

Floristics and Biogeography of the High Idaho Batholith Ecoregion

A Thesis

Presented in Partial Fulfillment of the Requirements for the

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by

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Authorization to Submit Thesis

This thesis of Graham M. Johnson, submitted for the degree of Master of Science with a Major in Biology and titled "Floristics and Biogeography of the High Idaho Batholith Ecoregion," has been reviewed in final form. Permission, as indicated by the signatures and dates below, is now granted to submit final copies to the College of Graduate Studies for approval.

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Abstract

Chapter 1:

This inventory expands the floristic knowledge of the disparate, subalpine-alpine mountain ranges of the High Idaho Batholith Ecoregion (HIBE), a notably under-collected region in the interior Pacific Northwest (Consortium of the Pacific Northwest Herbaria, 2007). Located in central Idaho, the 3,295 sq km (1,272 sq mi) ecoregion spans eight national forests and ranges in elevation from 1830-3350 m (6,000-11,000 ft) (McGrath et al., 2002; Woods et al. 2002). The HIBE was surveyed for all vascular plants within the top 152 m (500 ft) of elevation for targeted peaks, with permanent voucher specimens taken and housed at the University of Idaho Stillinger Herbarium, Moscow, Idaho. Over four summers, 1,302 numbered specimens were collected from 20 different peaks, with 47 families, 175 genera, 310 species, and 414 unique taxa represented. Also, six species of conservation concern were found on 19 peaks, and 12 collections represented new county records. Remarkably, only two exotics from one locality were documented. In addition, formal description of a new variety, *Montia parvifolia* var. *batholica*, which was collected at three localities, is the subject of ongoing work (unpubl. data).

Chapter 2:

Although alpine ecosystems are the only globally distributed terrestrial biome, they represent one of the largest remaining gaps in floristic knowledge, making accurate predictions of the impacts of climate change difficult. In this study, we investigated community composition of the subalpine and alpine restricted flora from 20 peaks across the High Idaho Batholith Ecoregion (HIBE) of central Idaho in light of both abiotic (temperature, precipitation, ruggedness) and biotic (species-specific functional traits) variables. Non-metric multidimensional scaling and clustering analyses supported three, geographically distinct floristic groups within the ecoregion. Furthermore, environmental and species-specific trait data revealed a correlation between the three floristic groups and a gradient of increasingly harsh and heterogeneous alpine habitat from the northwest to the southeast across the ecoregion, suggesting a strong environmental filter. With this framework, it may be possible to incorporate knowledge of floristic patterns, hypotheses of climatic resiliency with respect to landscape ruggedness, and our floristic knowledge gaps into land management decision-making processes

Acknowledgements

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Dedications

Dr. David Tank and Dr. Alma Hanson are thanked for their constant support, encouragement, guidance, and belief in me. Without you, this project would have certainly never have come to fruition. My sacrificing and courageous wife Joy, is thanked for her steadfast character. Through this project, we experienced the joys of starting a family and the grief of a losing a child. Thank you for your bravery and faith. I also thank my two sons, Issac and Logan, who have enriched my life greatly. May you have such life opportunities as this project. Kim Pierson is thanked for encouraging me to never give up, and Dr. Dave Hanson is thanked for cheerful smiles, big hugs, handshakes, and for praising my efforts during setbacks and difficulties.

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Chapter 1: A FLORISTIC INVENTORY OF THE HIGH IDAHO BATHOLITH ECOREGION IN THE MOUNTAINS OF CENTRAL IDAHO, U.S.A.

Submitted to the Journal of the Botanical Research Institute of Texas

Grahm M. Johnson; Hannah E. Marx; David C. Tank

Introduction

The Environmental Protection Agency (EPA) has produced four levels of ecoregion designation maps for the United States of America. These ecoregion maps are modeled with vegetation, climate, geology, physiography, soils, wildlife, land use, and hydrology parameters and are intended to aid scientists and land managers (McGrath et al., 2002; Woods et al., 2002). The Level III Idaho Batholith Ecoregion (IBE; Fig. 1), a vast expanse of mostly federally administered, granitic igneous rock stretching across central and northern Idaho into western Montana, is situated at a unique zone of floristic overlap in western North America at the intersection of the Pacific Northwest, Rocky Mountain, and Great Basin floras. Thus the flora contains many species at their distributional limits (Steele et al., 1981, Ertter & Moseley, 1992). Prior to the start of this project, searches in the Consortium of the Pacific Northwest Herbaria data portal (Consortium of the Pacific Northwest Herbaria, 2007) showed a dramatic lack of collections across central Idaho when compared to the rest of the Pacific Northwest. This is largely due to the difficulty of access to this remote ecoregion.

Much of IBE is comprised of federally designated wilderness, with the largest contiguous swath of wilderness in the lower 48 states, the Frank Church River of No Return Wilderness, along with the Selway-Bitterroot Wilderness, and the Gospel Hump Wilderness, lie in the heart of the IBE (Fig. 2). Other notable wilderness areas the Jim McClure-Jerry Peak Wilderness, Hemingway-Boulders Wilderness, White Clouds Wilderness, Sawtooth Wilderness, and Anaconda Pintler Wilderness, lie in the northeastern and southern portions of the IBE. Of the 54,908 sq km (21,200 sq mi) ecoregion, over 17,825 sq km (6,882 sq mi) of the IBE is

designated as wilderness (Wilderness connect.org, 1996). IBE lands not designated as federal wilderness tend to lack a well-maintained, thorough road network (Fig. 2).

The IBE is an ecoregion of diversity, housing multiple vast mountain ranges with high peaks soaring over 3350 m (11,000 ft), and numerous deep canyons as low as 425 m (1,400 ft). It is a dissected, mountainous plateau (Figure 1.1) with partially glaciated peaks and ranges (McGrath et al., 2002; Woods et al., 2002). The sheer size, inaccessibility, and rugged, steep terrain, combined with multiple, widespread wildernesses areas, and multiple, national forest administrations (Figure 1.2), makes large scale floristics projects in the IBE expensive, logistically complicated, and collection permits difficult to obtain. This work aims at filling in the floristic gaps of the IBE, specifically in the High Idaho Batholith Ecoregion a sub-ecoregion comprised of the subalpine and alpine peaks (1825-2440 m (6,000-8,000 ft) to over 3350 ft (11,000ft)) of the IBE (Fig. 1, McGrath et al., 2002; Woods et al., 2002).

As a consequence of the rugged, remote nature of the IBE, much of the ecoregion's ecosystems have remained intact in comparison to the rest of North America, continuing to support populations of most pre-European settlement large mammals (Laliberte & Ripple, 2004). Ecologists and conservationists, e.g. The Yellowstone to Yukon Conservation Initiative, have recognized the IBE as a crucial biological corridor between the Yellowstone and Yukon ecosystems, one of the world's largest, most intact mountain range ecosystems (Yellowstone to Yukon Conservation Initiative, 1993). Conservationists invoke the grizzly bear and other large mammals as umbrella species for conservation strategies for the IBE. Such strategies, which have been found effective in a recent literature review (Branton & Richardson, 2011), target one or a few species for conservation efforts, with indirect effects benefiting other species in the system.

The IBE and HIBE are critical components to the ecological health of the Northern Rocky Mountain ecosystem, yet much of the area is still botanically under-collected (Hartman, 1992; Marx et al., *AJB*, in review). Based on current levels of habitat connectivity and its limited extent, Cushman and Landguth (2012) found high elevation species of the IBE to be highly vulnerable to habitat fragmentation and loss. This work aims to expand and synthesize floristic data targeting the subalpine and alpine peaks of the IBE (i.e., the HIBE, McGrath et al., 2002; Woods et al., 2002), to establish a botanical baseline with vouchered specimen data for the HIBE's vascular flora, an area even more under collected than the IBE.

High Idaho Batholith Ecoregion

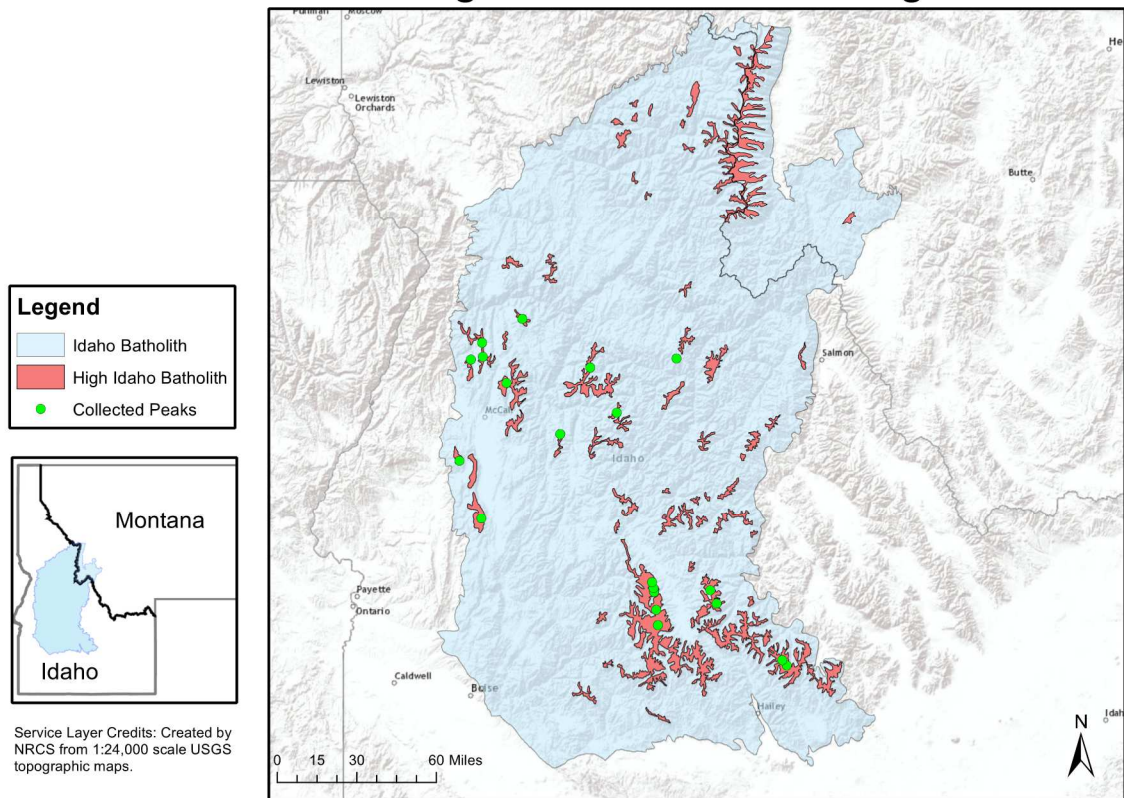


Figure 1.1 Map of the Idaho Batholith Ecoregion (blue) and the alpine-subalpine High Idaho Batholith Ecoregion (red) of central Idaho and western Montana (McGrath et al, 2002; Woods et al., 2002). Specimens were collected at 20 different High Idaho Batholith Ecoregion peaks (green dots) during the summers of 2012, 2013, 2016, and 2017.

Federal Lands and Wilderness Areas of the Idaho Batholith Ecoregion

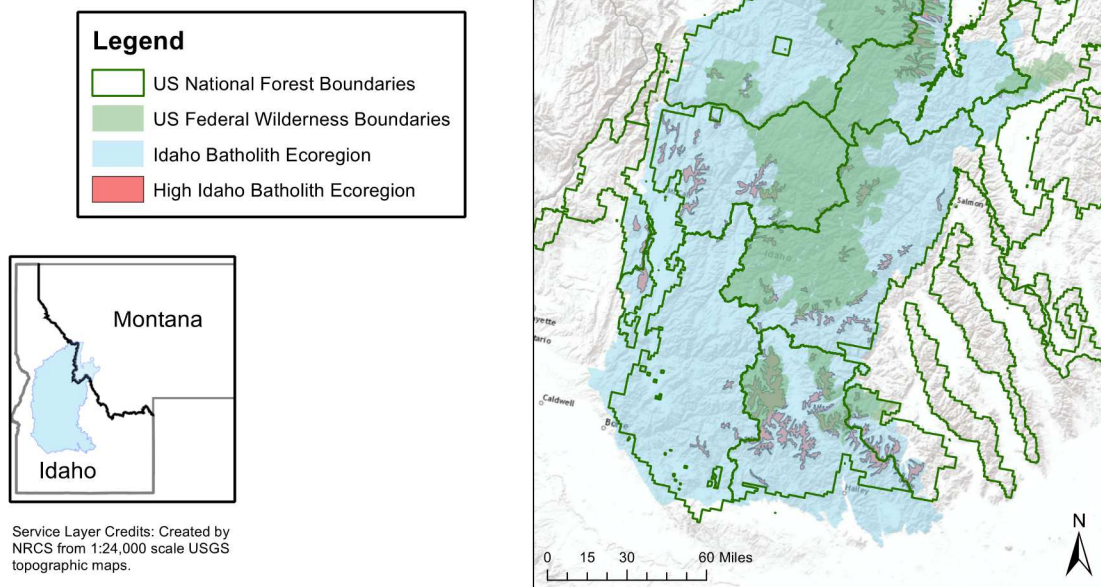


Figure 1.2 Map of the ownership and federally designated wildernesses of the Idaho Batholith Ecoregion and High Idaho Batholith Ecoregion (McGrath et al., 2002; Woods et al., 2002).

Study Area

The IBE consists of massive mountain range complexes, interspersed with deep valleys. Folding and faulting created the general topography, producing high ridges with broad, parallel valleys in some areas, and narrow canyons with weakly defined mountain ranges in others (Arnold, 1975). Steele et al. (1981) described the climate for the IBE in gradients. A north-south precipitation gradient dominates the ecoregion, with a northern moist, cool, maritime influence transitioning to a southern dry, hot, continental regime. A transition of decreasing maritime influence also exists in a west-east gradient, with the climate becoming hotter and drier towards the east. Those gradients, coupled with fluctuating elevations between disparate mountain ranges, complex geology, and the unique overlap of the Pacific Northwest, Rocky Mountain, and Great Basin floras often produce species range limits and even some endemic species (Steele et al., 1981; Ertter & Moseley, 1992).

Geology has a strong influence on plant distribution (Ertter & Mosely, 1992), and Alt and Hyndman (1989) synthesized the complex geology of Idaho, the product of tectonic subduction, volcanic activity, and the crushing of ancient oceanic islands into the western border. The ancient continental edge and ocean floor boundary existed along the western portions of the state, and the subduction of those two plates created much of central Idaho's and Montana's mountains, with diorites of oceanic affinity to the west of the margin, and pale granites to the east. Geologic studies have discovered that the granite of central Idaho is not all uniform and continuous as was once supposed. Rather, there were two periods of igneous rock formation in Idaho: one during the Cretaceous about 70-80 million years ago, and the other during the Eocene about 50 million years ago. In general, the Cretaceous granites compose the western and northern areas of igneous rock in central and northern Idaho, with a pale grey color and small mineral crystals, while the Eocene granites compose the eastern and southeastern areas of central Idaho, with a pinkish color and large mineral crystals. It is important to note that other IBE substrates, such as the explosive Challis Volcanics group that formed during the Eocene, and some Precambrian rocks, are spread across central and eastern Idaho, as well (Alt and Hyndman, 1989).

In the EPA Level IV ecoregions map, McGrath et al. (2002) and Woods et al. (2002) defined the HIBE (Fig. 1). This ecoregion is characterized by the dramatic carving of glaciers, the last from the Pinedale events 15,000-20,000 years before present (Richmond, 1986). Cirques, tarns, moraines, arêtes, horns, and steep headwalls dominate much of the ecoregion, creating a blend of subalpine and alpine habitat. Other than a few local studies in the West Mountains (Doerner & Carrara, 1999), the Sawtooth Mountains (Lundeen, 2001), the Bitterroot Mountains (Dingler & Breckenridge, 1982), and the Pioneer Mountains (Evenson et al., 1982), little has been done to systematically map the historical maximum glacial extent of central Idaho's mountains. Despite the lack of known glacial extents, the HIBE roughly begins at the lower bounds of the Pinedale alpine glaciers, between 1825-2440 m (6,000-8,000 ft), and continues to peaks over 3350 m (11,000 ft). The mean annual precipitation for the HIBE, 482.6-1270+ mm (19-50+ in)(McGrath et al., 2002; Woods et al., 2002), is greater than other nearby Level IV ecoregions, and supports *Pinus albicaulis* Engelm, *Abies lasiocarpa* (Hook.) Nutt, *Pinus contorta* Douglas ex Loudon, *Tsuga mertensiana* (Bong.) Carrière, and *Larix lyallii* Parl. in open-canopied parklands or as scattered trees, often krummholz, among glacial cirques and exposed sites. With an average of 10-60 frost-free days, tundra, meadows, alpine grasslands, and wetlands are found above treeline (McGrath et al., 2002; Woods et al., 2002). The wide range of

mean annual measurements is the result of the afore mentioned climatic gradients across the IBE (Steele et al. 1981).

Materials and Methods

The primary objective was to document the vascular plant diversity of the HIBE, an area with few botanical voucher collections. This study used a novel collection approach, but utilized many techniques employed by Marx et al. (AJB, in review) and various floristic studies based out of the Rocky Mountain Herbarium (e.g., Hartman, 1992, Kuhn et al., 2011, Legler, 2010, Lukas et al., 2012, Reif, 2009). Following Marx et al. (AJB, in review), this study is the second floristic endeavor targeting the HIBE, and first formal synthesis of vouchered collections.

The EPA Draft: Level III & IV Ecoregions of the Northwestern United States (McGrath et al. 2002; Woods et al., 2002) map was referenced to delimit ecoregion boundaries. Targeted peaks across the HIBE were selected based upon ease and safety of access and collecting, past collection history, successful Forest Service permitting, and potential for unique ecological or biogeographical information. Each targeted peak was hiked to the highest point, and then hiked down spiraling clockwise for the top 152 m (500 ft) of elevation, with a cut off threshold of 2,440 m (8,000 ft), traversing across all aspects at least one time. GPS tracking records were recorded for seven out of 20 forays and are available upon request. All species, intraspecific taxa, and putative hybrids encountered were collected following standard herbarium protocols. Most collections were made in triplicate. Collected plants were in fruit or flower, though non-reproductive, vegetative collections were made of specimens readily identifiable for a small number of species (e.g. *Abies lasiocarpa*, *Picea engelmannii* Parry ex Engelm., and *Pinus albicaulis*).

Specimens were pressed in the field on the same day as collection, or kept in a cooler with ice over night to reduce wilting and pressed the following day. Pressed specimens were then dried with a portable plant drier, bundled, and frozen in a freezer for two weeks to decontaminate. Specimens were identified using *The Flora of the Pacific Northwest* (Hitchcock & Cronquist, 1973), *The Flora of the Pacific Northwest* revised edition (Giblin et al., 2018), the *Flora of North America* (Flora of North America Editorial Committee, 1993+), and other relevant literature (e.g. Wilson et al., 2014). During mounting the Stillinger Herbarium preserved leaf

tissue in silica for specimens with ample foliage. Species' characteristic and habitat information was gathered from the same botanical manuals (Table 1.1). Nomenclature followed that from the Consortium of Pacific Northwest Herbaria data portal (Consortium of the Pacific Northwest Herbaria, 2007). All voucher collections are housed at the University of Idaho Stillinger Herbarium (ID) and are available online through the Consortium of the Pacific Northwest Herbaria data portal (Consortium of the Pacific Northwest Herbaria, 2007). Duplicate specimens were distributed to regional herbaria, including the Burke Museum Herbarium (WTU) and the Snake River Plains Herbarium (SRP).

A total of 11 peaks were collected in the West Salmon River Mountains by teams of two to three people during the months of July and August during 2016 and 2017. Marx et al. (AJB, in review) collected a total of nine peaks from the Sawtooth, Pioneer, and White Cloud Mountains during the summers of 2012 and 2013.

Results

Noxious Weeds and Exotics

No noxious weeds were found on the 20 peaks surveyed across the HIBE. Only two exotics, *Bromus japonicus* Thunb. ex Murr. and *Rumex acetosella* L., were documented from Snowbank Mountain, a peak with a FCC radio tower facility nearby, and a road leading to the top. The lack of noxious weeds and exotics across the HIBE speaks to the ecoregion's ecological integrity, something noted by Laliberte and Ripple (2004), lack of human disturbance, and wilderness land management practices. These exotics are noted with a "•" in the Annotated Checklist.

Taxa of Conservation Concern

Another goal of the floristic inventories was to document populations of species of conservation concern. A total of six species of conservation concern were collected on 19 of the peaks, and all but *Phacelia minutissima* L.F. Hend. and *Eriogonum crosbyae* Reveal, which are more general in their habitat requirements, are restricted to the subalpine-alpine habitat of the HIBE (Hitchcock and Cronquist, 1973). All of these populations are either on Forest Service Region 1 and/or 4 Threatened, Endangered, or Sensitive (TES) Species list, or are S1 (state

ranked critically imperiled), S2 (state ranked imperiled), G1 (globally critically imperiled), or G2 (globally imperiled). They are listed alphabetically with each followed by family name in parenthesis, the counties collected in, and the corresponding voucher information. These species are noted with a “♦” in the Annotated Checklist.

Carex straminiformis L.H. Bailey (Cyperaceae) Blaine, Custer, Idaho, Valley: G. Johnson 16-169, 17-38, 17-49, 17-76, 17-110, 17-133, 17-198, 17-441, 17-581, 17-604; H. Marx 2012-13, 2012-030, 2013-267, 2013-335, 2013-360

Eriogonum crosbyae Reveal (Polygonaceae) Blaine, Custer: H. Marx 2012-006, 2013-119, 2013-147, 2013-306

Lewisia sacajaweana B.L. Wils. (Montiaceae) Valley: G. Johnson 17-425

Noccaea fendleri (A. Gray) Holub ssp. *idahoensis* (Payson) Al-Shehbaz & M. Koch (Brassicaceae) Valley: G. Johnson 17-419, 17-431, 17-438

Phacelia minutissima L.F. Hend. (Hydrophyllaceae) Idaho: G. Johnson 17-180

Pinus albicaulis Engelm. (Pinaceae) Adams, Blaine, Custer, Idaho, Valley: G. Johnson 16-7, 16-93, 16-154, 16-228, 17-85, 17-263, 17-340, 17-392, 17-482, 17-538; H. Marx 2013-121, 2012-040

Endemic Taxa

A total of five species endemic to Idaho, *Chaenactis evermannii* Greene, *Draba oreibata* J.F. Macbr. & Payson, *Draba sphaerocarpa* J.F. Macbr. & Payson, *Lewisia sacajaweana*, *Trifolium longipes* Nutt. var. *pedunculatum* (Rydb.) C.L. Hitchc., were collected on six of the peaks. These species are noted with a “■” in the Annotated Checklist.

Summary of Taxa

A total of 414 unique taxa were represented from the collection of 1,302 specimens from 20 different HIBE peaks (Table 1.2). The specimens are organized in the following:

Table 1.1 Specimens classified into habitat and elevational ranges, as described in *Flora of the Pacific Northwest* (Hitchcock and Cronquist, 1973) and *Flora of North America* (Flora of North America Editorial Committee, 1993+).

Elevational and Habitat Ranges	Number of Specimens
Alpine/tundra	52
Foothills and Valleys	10
Foothills to Montane	82
Foothills to Subalpine	226
Lowlands to Alpine	95
Lowlands to Subalpine	13
Montane to Alpine	273
Montane to Subalpine	151
Subalpine	16
Subalpine to Alpine	376

Table 1.2 High Idaho Batholith specimens organized into various taxonomic and ecological categories.

List by Taxonomic Category		List by Special Category	
Families	47	Exotic taxa	2
Genera	175	Percent exotic taxa	0.004
Species	310	ID Noxious Weeds	0
Hybrid	0	Taxa conservation concern	6
Infraspecies	104	ID endemic taxa	5
Unique taxa	414	County records	12
List of Unique Taxa by Major Plant Group			
Pteridophytes	7		
Gymnosperms	9		
Angiosperms	398		
Total	414		

Discussion and Conclusion

Here we synthesized two floristic studies targeting the HIBE peaks of central Idaho. Marx et al. (AJB, in review) surveyed peaks in southern portions of the HIBE (Sawtooth Mountains, the Pioneer Mountains, and White Cloud Mountains), and totaled 377 numbered collections of vascular plants, while G. Johnson surveyed the western and central portions of the HIBE (West Mountains, West Salmon River Mountains, and Central Salmon River Mountains), and totaled 925 numbered collections of vascular plants. Over four summers, 1,302 numbered specimens were collected from 20 different peaks, with 47 families, 175 genera, 310 species, and 414 unique taxa represented (Table 1.2), including six of conservation concern, two exotics, five endemics, one novel variety, and 12 collections representing new county records. All surveys were conducted on US Forest Service administered lands.

Author Contribution

G.M.J. and D.C.T. conceptualized the research. G.M.J. organized and led collecting expeditions to the Payette and Boise National Forests, while H.E.M. organized and led collecting expeditions to the Sawtooth National Forest. G.M.J. and H.E.M. identified their respective collections, but all other ecological and annotated list information was gathered by G.M.J. G.M.J. wrote the manuscript, with input from D.C.T. and H.E.M.

Annotated Checklist

The checklist is organized by major plant groups (Pteridophytes, Gymnosperms, Angiosperms, and major clades of Angiosperms) following The Angiosperm Phylogeny Group IV classification (APG, 2016), and is then organized alphabetically by family and species. Nomenclature follows that of the Consortium of the Pacific Northwest data portal (Consortium of the Pacific Northwest Herbaria, 2007).

Peak abbreviations

BB Black Butte
BP Braxon Peak
BM Bruin Mountain

County abbreviations

A Adams
B Blaine
C Custer

CP	Castle Peak	I	Idaho
CM	Council Mt	V	Valley
DP	D. O. Lee Peak		
HaP	Hard Peak		
HoP	Horstmann Peak		
HP	Hyndman Peak		
LP	Lava Peak		
LM	Log Mountain		
MM	Marshall Mt		
MC	Mount Cramer		
ME	Mount Eldridge		
PP	Pyramid Point		
RP	Rain Pk		
SS	Salzburger Spitzl		
SM	Snowbank Mountain		
SP	Snowside Peak		
TP	Thompson Peak		

Elevational and habitat range abbreviations

AT	Alpine/tundra
FV	Foothills and Valleys
FM	Foothills to Montane
FS	Foothills to Subalpine
LA	Lowlands to Alpine
LS	Lowlands to Subalpine
MA	Montane to Alpine
MS	Montane to Subalpine
S	Subalpine
SA	Subalpine to Alpine

Geologic substrate abbreviations

CG	Granite (Cretaceous)
CI	Challis intrusive rocks (Eocene)
CV	Challis Volcanic Group (Eocene)
CB	Columbia River Basalt Group (Miocene)
CG/SR	half Granite (Cretaceous), half Sedimentary rocks (Permian and Pennsylvanian)
WS	Windermere Supergroup (Cambrian and Neoproterozoic)

Taxon Authority (**number of vouchers collected**); COUNTY; **GEOLOGIC AREA**; ELEVATIONAL RANGE; *Peaks found on*

LYCOPODIOPSIDA**Lycopodiales****Isoetaceae**

Isoetes bolanderi Engelm. **(1)**; V; **CG**; MS; *LM*

Selaginellaceae

Selaginella densa Rydb. **(2)**; B,C; **CG,CV**; MA; *CP,SP*

Selaginella watsonii L. Underw. **(1)**; B; **CI**; SA; *SS*

POLYPODIOPSIDA**Eupolpod II****Athyriaceae**

Athyrium distentifolium Tausch ex Opiz **(2)**; I,V; **CG,WS**; SA; *MM,RP*

Woodsiaceae

Woodsia oregana D.C. Eaton **(6)**; I,V; **CB,CG,WS**; LS; *BM,HaP,LP,LM,MM*

Polypodiales-Eupolypod I**Dryopteridaceae**

Polystichum lonchitis (L.) Roth **(1)**; I; **CG**; SA; *BM*

Polypodiales-Eupolypod II**Cystopteridaceae**

Cystopteris fragilis (L.) Bernh. **(4)**; A,B,C; **CG,CV,WS**; MA; *CP,HoP,HP,SM*

Polypodiales**Pteridaceae**

Cryptogramma acrostichoides R. Br. **(12)**; A,B,C,I,V; **CB,CG,CI,CV,WS**; MS;

BM,HoP,HaP,LP,LM,MM,MC,PP,RP,SS,SM,SP

Myriopteris gracillima (D. C. Eaton) J. Sm. **(3)**; I,V; **CB,CG,WS**; LS; *LP,LM,MM*

Pellaea breweri D.C. Eaton **(1)**; A; **CG**; MS; *SM*

GYMNOSPERMS**Pinales****Cupressaceae**

Juniperus communis L. **(4)**; A,C; **CG,CI,CV**; MA; *CP,HoP,MC,SM*

Juniperus communis L. var. *kelleyi* R.P. Adams **(6)**; I,V; **CB,CG,WS**; LS;

BM,HaP,LP,LM,MM

Juniperus communis L. var. *saxatilis* Pall. **(1)**; V; **CG**; LS; *RP*

Pinaceae

Abies lasiocarpa (Hook.) Nutt. **(12)**; A,B,C,I,V; **CB,CG,CI,CV,WS**; MS;

BB,BM,CM,HaP,HoP,LP,LM,MM,ME,PP,RP,SM,SP

Picea engelmannii Parry ex Engelm. **(7)**; C,I,V; **CG,CI,CV,WS**; MS; *BB,BP,BM,MM,ME,PP,RP*

- ♦ *Pinus albicaulis* Engelm. **(13)**; A,B,C,I,V; **CB,CG,CI,CV,WS**; SA; BB,BP,BM,CM,HaP,HoP,LM,MM,ME,PP,RP,SM,SP
Pinus contorta Douglas ex Loudon **(6)**; I,V; **CG,CI,CV,WS**; LS; BB,LM,MM,ME,PP,RP
Pinus ponderosa Douglas ex P. Lawson & C. Lawson **(2)**; I,V; **CB,CG**; LS; LP,RP
Pseudotsuga menziesii (Mirb.) Franco **(1)**; V; **CI**; FM; BB

ANGIOSPERMS

MONOCOTS

Liliales

Liliaceae

- Calochortus eurycarpus* S. Watson **(1)**; I; **CB**; FM; LP
Erythronium grandiflorum Pursh **(2)**; I,V; **CG,WS**; LS; LM,MM
Erythronium grandiflorum Pursh var. *grandiflorum* **(2)**; I; **CG**; LS; BM,HaP

Melanthiaceae

- Toxicoscordion venenosum* (S. Watson) Rydb. var.
gramineum (Rydb.) Brasher **(1)**; A; **CB**; FM; CM
Veratrum viride Aiton **(2)**; I,V; **CG,CI**; FM; BB,BM
Xerophyllum tenax (Pursh) Nutt. **(2)**; I,V; **CI,WS**; LS; BB,MM

Asparagales

Amaryllidaceae

- Allium brandegeei* S. Watson **(2)**; A,V; **CG,CV**; MA; PP,SM

Orchidaceae

- Platanthera stricta* Lindl. **(1)**; I; **WS**; FM; MM

COMMELINIDS

Poales

Cyperaceae

- Carex elynoides* T. Holm **(1)**; V; **CI**; SA; ME
Carex geyeri Boott **(6)**; I,V; **CG,CI,CV,WS**; FS; BB,LM,MM,ME,PP,RP
Carex luzulina Olney **(1)**; B; **CI**; FS; SS
Carex micropoda C.A. Mey. **(1)**; I; **CG**; LS; BM
Carex microptera Mack. **(1)**; B; **WS**; LA; HP
Carex multicosata Mack. **(1)**; V; **CG**; MS; RP
Carex nardina Fr. **(3)**; B,C; **CG/SR,WS**; AT; DP,HP,TP
Carex pachycarpa Mack. **(2)**; A,C; **CG,CI**; FS; MC,SM
Carex paysonis Clokey **(9)**; A,I,V; **CB,CG,CI,WS**; SA; BM,HaP,LP,LM,MM,ME,RP,SM
Carex phaeocephala Piper **(11)**; I,V; **CG,CI,WS**; SA; BB,BM,HaP,LM,MM,ME,RP
Carex preslii Steud. **(1)**; V; **CG**; LA; LM
Carex rossii Boott **(7)**; A,I,V; **CG,CI,CV,WS**; MA; LM,MM,ME,PP,RP,SM
Carex scopulorum T. Holm var. *bracteosa* (L.H. Bailey) F.J. Herm. **(1)**; I; **WS**; SA; MM

♦*Carex straminiformis* L.H. Bailey **(16)**; B,C,I,V; **CB,CG,CG/SR,CI,CV,WS**; SA;
BP,BM,DP,HoP,HP,LP,MM,PP,RP,SS,TP
Carex subfusca W. Boott **(1)**; I; **CB**; MS; *LP*
Carex tahoensis Smiley **(1)**; I; **CG**; LA; *BM*

Juncaceae

Juncus drummondii E. Mey. **(3)**; B,C; **CG,CI,WS**; MA; *HoP,HP,MC*
Juncus ensifolius Wikstr. **(1)**; V; **CI**; MS; *BB*
Juncus parryi Engelm. **(14)**; A,B,C,I,V; **CG,CG/SR,CI,CV**; MA;
BM,CP,DP,HoP,HaP,LM,MM,MC,ME,RP,SS,SM,SP
Luzula hitchcockii Hamet-Ahti **(7)**; I,V; **CB,CG,CI,WS**; MA; *BM,HaP,LP,LM,MM,ME,RP*
Luzula piperi (Coville) M.E. Jones **(2)**; C; **CI**; LS; *BP,MC*
Luzula spicata (L.) DC. **(7)**; A,B,C,I,V; **CB,CG,CI,CV,WS**; SA; *BP,BM,CP,CM,HP,RP*

Poaceae

Achnatherum lettermanii (Vasey) Barkworth **(1)**; I; **CB**; MS; *LP*
Achnatherum nelsonii (Scribn.) Barkworth ssp. *dorei* (Barkworth & J. Maze) Barkworth
(1); I; **CG**; MS; *HaP*
Achnatherum nelsonii (Scribn.) Barkworth ssp. *nelsonii* **(5)**; V,I; **CB,CG,WS**; MS;
BM,LP,LM,MM
Achnatherum occidentale (Thurb. ex S. Watson) Barkworth ssp. *occidentale* **(1)**; A; **CG**; SA;
SM
Achnatherum occidentale (Thurb. ex S. Watson) Barkworth ssp. *pubescens* (Vasey)
 Barkworth **(1)**; V; **CI**; MA; *BB*
Agrostis scabra Willd. **(2)**; I; **CG**; FS; *BM*
 •*Bromus japonicus* Thunb. ex Murr. **(1)**; A; **CG**; FM; *SM*
Bromus sitchensis Trin. **(1)**; I; **CB**; FS; *LP*
Calamagrostis canadensis (Michx.) P. Beauv. **(1)**; V; **CI**; FS; *BB*
Calamagrostis purpurascens R. Br. **(4)**; B,C,I; **CG,CI,WS**; FS; *BM,HP,MC,TP*
Calamagrostis rubescens Buckley **(1)**; V; **CI**; FS; *BB*
Danthonia intermedia Vasey **(1)**; I; **CG**; MA; *BM*
Deschampsia cespitosa (L.) P. Beauv. **(2)**; B,C; **CG/SR,CI**; LA; *DP,SS*
Deschampsia cespitosa (L.) P. Beauv. ssp. *cespitosa* **(1)**; B; **WS**; LA; *HP*
Elymus elymoides (Raf.) Swezey **(12)**; C,B,I,V; **CB,CG,CI,CV,WS**; MA;
BM,CP,HaP,HoP,HP,LP,ME,PP,SS,SP
Elymus glaucus Buckley ssp. *glaucus* **(3)**; I,V; **CG,CI**; LS; *BB,BM,HaP*
Elymus scribneri (Vasey) M.E. Jones **(3)**; B,C; **CG/SR,CI**; MA; *DP,SS*
Festuca brachyphylla Schult. & Schult. f. ssp. *brachyphylla* **(5)**; B,C; **CI,CV,WS**; SA;
BP,CP,HP,MC
Festuca idahoensis Elmer **(2)**; A,I; **CB,CG**; MA; *LP,SM*
Festuca rubra L. ssp. *rubra* **(2)**; A,V; **CB,CG**; LS; *CM,RP*
Festuca viridula Vasey **(2)**; A; **CG**; SA; *SM*
Glyceria grandis S. Watson **(1)**; I; **WS**; FM; *MM*
Hordeum jubatum L. ssp. *intermedium* Bowden **(2)**; A,I; **CB**; LS; *CM,LP*
Hordeum jubatum L. ssp. *jubatum* **(6)**; A,I,V; **CG,CI,WS**; LS; *BB,LM,MM,RP,SM*
Melica bulbosa Geyer ex Porter & J.M. Coult. **(4)**; A,I; **CB,CG**; MA; *CM,HaP,LP,SM*

Oryzopsis exigua Thurb. **(3)**; I,V; **CG**; MA; *BM,LM*
Phleum alpinum L. **(2)**; B; **CI,WS**; MS; *HP,SS*
Piptatheropsis exigua (Thurb.) Romasch. **(7)**; I,V; **CB,CG,CI,CV,WS**; MA; *HaP,LP,LM,MM,ME,PP,RP*
Poa compressa L. **(1)**; V; **CI**; LS; *ME*
Poa fendleriana (Steud.) Vasey ssp. *fendleriana* **(3)**; B,C; **CG,CV**; LA; *CP,HoP,SP*
Poa fendleriana (Steud.) Vasey ssp. *longiligula* (Scribn. & T.A. Williams) Soreng **(4)**; A,V; **CB,CG**; LS; *CM,RP*
Poa nervosa (Hook.) Vasey **(1)**; V; **CI**; MA; *ME*
Poa secunda J. Presl **(8)**; B,C; **CG,CI,CV,WS**; LA; *BP,CP,HP,SS,SP*
Poa secunda J. Presl ssp. *juncifolia* (Scribn.) Soreng **(4)**; I,V; **CG,CI**; LA; *BM,HaP,ME,RP*
Poa secunda J. Presl ssp. *secunda* **(3)**; I,V; **CB,CG,WS**; LA; *LP,LM,MM*
Poa wheeleri Vasey **(15)**; A,I,V; **CB,CG,CICV,WS**; MA; *BB,BM,CM,HaP,LP,LM,MM,PP,SM*
Pseudoroegneria spicata (Pursh) Å . LÃ¶ve **(2)**; A; **CB,CG**; FM; *CM,SM*
Trisetum spicatum (L.) K. Richt. **(25)**; A,B,C,I,V; **CB,CG,CG/SR,CI,CV**; MA; *BM,CP,CM,DP,HaP,HoP,HP,LP,LM,MM,MC,ME,PP,RP,SS,SM,SP,TP*

EUDICOTS

Ranunculales

Ranunculaceae

Anemone drummondii S. Watson **(3)**; C; **CI,CG/SR**; MA; *BP,DP,MC*
Aquilegia flavescens S. Watson **(8)**; A,B,I,V; **CG,CI,CB,WS**; MA; *BM,CM,LP,LM,MM,RP,SS,SM*
Caltha leptosepala DC. **(1)**; I; **WS**; MA; *MM*
Ranunculus eschscholtzii Schltld. **(1)**; C; **CV**; AT; *CP*
Ranunculus eschscholtzii Schltld. var. *suksdorfii* (A. Gray) L.D. Benson **(1)**; V; **CI**; MA; *ME*
Ranunculus eschscholtzii Schltld. var. *trisectus* (B.L. Rob.) L.D. Benson **(5)**; A,I,V; **CB,CG,WS**; MA; *BM,CM,LP,LM,MM*
Thalictrum occidentale A. Gray **(1)**; V; **CI**; LS; *BB*

PENTAPETALAE

Saxifragales

Crassulaceae

Rhodiola rosea L. **(1)**; V; **CG**; SA; *RP*
Sedum borschii (R.T. Clausen) R.T. Clausen **(1)**; V; **CI**; FM; *BB*
Sedum debile S. Watson **(2)**; C; **CG/SR,CV**; MA; *CP,DP*
Sedum lanceolatum Torr. **(14)**; A,B,C,I,V; **CB,CG,CG/SR,CI,CV,WS**; AT; *BP,BM,CM,DP,HaP,HoP,HP,LP,LM,MC,ME,PP,SS,TP*

Grossulariaceae

Ribes cereum Douglas var. *cereum* **(1)**; A; **CB**; LA; *CM*
Ribes lacustre (Pers.) Poir. **(7)**; B,C,V; **CG,CICV,WS**; MS; *BB,BP,CP,HP,LM,SS*
Ribes montigenum McClatchie **(7)**; A,I,V; **CB,CG**; SA; *BM,CM,HaP,LP,LM,RP,SM*
Ribes viscosissimum Pursh **(1)**; V; **CG**; MS; *RP*

Saxifragaceae

Hemieva ranunculifolia (Hook.) Raf. **(1)**; I; **CB**; FM; LP
Heuchera grossulariifolia Rydb. **(6)**; I,V; **CB,CG,CV,WS**; LA; BM,HaP,LP,LM,MM,PP
Heuchera grossulariifolia Rydb. var. *grossulariifolia* **(4)**; A,V; **CB,CG,CI**; LA; CM,ME,RP,SM
Heuchera parvifolia Nutt. ex Torr. & A. Gray **(6)**; B,C; **CG,CI,CV,WS**; MS;
 CP,HoP,HP,MC,SS,SP,SP
Lithophragma glabrum Nutt. **(1)**; A; **CB**; LS; CM
Micranthes ferruginea (Graham) Brouillet & Gornall **(2)**; C,V; **CG,CV**; LS; CP,RP
Micranthes idahoensis (Piper) Brouillet & Gornall **(1)**; A; **CB**; LS; CM
Micranthes odontoloma (Piper) A. Heller **(1)**; I; **WS**; LA; MM
Micranthes oregana (Howell) Small **(1)**; I; **WS**; FM; MM
Micranthes tolmiei (Torr. & A. Gray) Brouillet & Gornall **(2)**; V; **CG,CI**; SA; LM,ME
Saxifraga austromontana Wiegand **(4)**; I,V; **CB,CG,CI**; SA; BM,LP,LM,ME
Saxifraga bronchialis L. **(1)**; C; **CI**; SA; BP
Saxifraga debilis Engelm. ex A. Gray **(1)**; V; **CG**; MA; LM
Saxifraga mertensiana Bong. **(3)**; I,B; **CG,CI,WS**; LS; BM,HP,SS
Saxifraga oppositifolia L. **(1)**; C; **CG/SR**; AT; DP

ROSIDS FABID/ROSID I

Celastrales

Celastraceae

Parnassia fimbriata K.D. Koenig **(1)**; B; **CI**; LA; SS

Malpighiales

Hypericaceae

Hypericum scouleri Hook. **(2)**; I,V; **CG**; LA; BM,RP

Linaceae

Linum lewisii Pursh var. *lewisii* **(2)**; A,I; **CB,CG**; MA; LP,SM

Salicaceae

Populus tremuloides Michx. **(2)**; V; **CG**; LS; LM,RP

Salix arctica Pall. **(2)**; B; **CI,WS**; AT; HP,SS

Salix eastwoodiae Cockerell ex A. Heller **(5)**; I,V; **CG,GI**; SA;
 BB,BM,LM

Salix nivalis Hook. **(1)**; C; **CG/SR**; AT; DP

Salix scouleriana Barratt ex Hook. **(1)**; V; **CG**; FM; RP

Violaceae

Viola adunca Sm. **(1)**; B; **WS**; LA; HP

Viola purpurea Kellogg **(1)**; V; **CV**; LS;
 PP

N-FIXING CLADE

Fabales

Fabaceae

- Astragalus alpinus* L. **(1)**; B; **CI**; SA; *SS*
Astragalus eucosmus B.L. Rob. **(1)**; B; **WS**; MS; *HP*
Astragalus kentrophyta A. Gray **(4)**; B,C; **CI,CG/SR,WS**; FV; *DP,HP,SS*
Lupinus arbustus Douglas ex Lindl. **(1)**; V; **CI**; FV; *BB*
Lupinus argenteus Pursh var. *depressus* (Rydb.) C.L. Hitchc. **(4)**; B,C,I; **CG/SR,CI,CV,WS**; S; *CP,DP,MM,SS*
Lupinus caudatus Kellogg **(9)**; A,I; **CB,CG**; FM; *BM,CM,HaP,LP,SM*
Lupinus leucophyllus Douglas ex Lindl. var. *leucophyllus* **(1)**; I; **WS**; LS; *MM*
Oxytropis deflexa (Pall.) DC. **(2)**; C; **CG/SR**; LS; *DP*
Oxytropis parryi A. Gray **(1)**; C; **CG/SR**; AT; *DP*
 ■ *Trifolium longipes* Nutt. var. *pedunculatum* (Rydb.) C.L. Hitchc. **(1)**; I; **CB**; FM; *LP*

Rosales

Rosaceae

- Dasiphora fruticosa* (L.) Rydb. **(1)**; B; **CI**; LA; *SS*
Drymocallis arguta (Pursh) Rydb. **(2)**; A,V; **CB,CI**; LS; *CM,ME*
Drymocallis glandulosa (Lindl.) Rydb. **(9)**; A,B,C,I; **CB,CG,CI,CV,WS**; LS; *CP,HaP,HoP,HP,LP,MC,SS,SM,SP*
Drymocallis glandulosa (Lindl.) Rydb. ssp. *pseudorupestris* (Rydb.) Soják **(2)**; B,C; **CG,CI**; FS; *SS,HoP*,
Drymocallis lactea (Greene) Rydb. **(5)**; B,I,V; **CG,WS**; LS; *BM,HP,MM,RP*
Ivesia gordonii (Hook.) Torr. & A. Gray **(4)**; B,C; **CG,CG/SR,WS**; SA; *DP,HP,SP,TP*
Potentilla brevifolia Nutt. **(1)**; C; **CI**; SA; *MC*
Potentilla flabellifolia Hook. ex Torr. & A. Gray **(2)**; I; **CG**; MA; *BM,HaP*
Potentilla glaucophylla Lehm. var. *glaucophylla* **(5)**; B,C,I,V; **CB,CG,CG/SR,WS**; MA; *DP,HP,LP,LM,TP*
Potentilla gracilis Douglas ex Hook. **(1)**; I; **CB**; LS; *LP*
Rubus idaeus L. ssp. *strigosus* (Michx.) Focke **(7)**; I,V; **CG,CI,CV,WS**; LS; *BM,LM,MM,ME,PP,RP*
Sibbaldia procumbens L. **(11)**; B,C,V; **CG,CG/SR,CI,WS**; SA; *BP,CP,DP,HoP,HP,LM,MC,PP,RP,SS*
Spiraea betulifolia Pall. var. *corymbosa* (Raf.) Maxim. **(1)**; V; **CI**; MA; *BB*
Spiraea splendens Baumann ex K. Koch **(2)**; I,V; **CG,WS**; MA; *MM,RP*

MALVID/ROSID II

Myrtales

Onagraceae

- Chamerion angustifolium* (L.) Holub **(8)**; I,V; **CB,CG,CI,CV**; LS; *BB,BM,HaP,LP,LM,ME,PP,RP*
Epilobium alpinum L. **(7)**; B,C; **CG,CG/SR,CI,CV**; SA; *CP,DP,HoP,MC,SS,SP*
Epilobium anagallidifolium Lam. **(1)**; V; **CG**; SA; *LM*
Epilobium brachycarpum C. Presl **(4)**; I,V; **CG,CI,CB**; FM; *BB,BM,HaP,LP*
Epilobium clavatum Trel. **(2)**; V; **CI,CV**; SA; *BB,PP*
Epilobium hallianum Hausskn. **(2)**; I,V; **CI,WS**; MS; *BB,MM*
Epilobium lactiflorum Hausskn. **(1)**; V; **CG**; SA; *LM*

Epilobium minutum Lindl. ex Lehm. **(2)**; A,I; **CB,WS**; FM; *CM,MM*
Epilobium obcordatum A. Gray **(1)**; C; **CG**; SA; *HoP*
Epilobium oregonense Hausskn. **(3)**; I,V; **CB,CG,CI**; SA; *HaP,LP,ME*
Gayophytum decipiens F.H. Lewis & Szweyk. **(1)**; A; **CG**; MS; *SM*

Brassicales

Brassicaceae

Arabis eschscholtziana Andr. **(1)**; I; **CG**; FS; *HaP*
Boechea calderi (G.A. Mulligan) Windham & Al-Shehbaz **(2)**; A,V; **CB,CI**; S; *BB,CM*
Boechea cobrensis (M.E. Jones) Dorn **(1)**; I; **CG**; FM; *HaP*
Boechea divaricarpa (A. Nelson) Å . LÃ¶ve & D. LÃ¶ve **(1)**; I; **CG**; FM; *HaP*
Boechea lemmonii (S. Watson) W.A. Weber **(8)**; B,C; **CG,CG/SR,CI,CV,WS**; SA;
CP,DP,HP,SS,SP,TP
Boechea lyallii (S. Watson) Dorn **(11)**; I,V; **CB,CG,CI,CV,WS**; SA;
BB,BM,LP,LM,MM,ME,PP,PP
Boechea microphylla (Nutt.) Dorn **(4)**; A,C; **CB,CI,CV**; MS; *CP,CM,MC*
Boechea paupercula (Greene) Windham & Al-Shehbaz **(4)**; A,V; **CG,CI**; SA; *ME,RP,SM*
Boechea pinetorum (Tidestr.) Windham & Al-Shehbaz **(1)**; A; **CB**; MS; *CM*
Boechea saximontana (Rollins) Windham & Al-Shehbaz **(1)**; V; **CG**; MS; *LM*
Boechea sparsiflora (Nutt.) Dorn **(1)**; A; **CB**; FS; *CM*
Boechea suffrutescens (S. Watson) Dorn **(4)**; A,I,V; **CB,CG,CV**; FM; *CM,HaP,LP,PP*
Descurainia incana (Bernh. ex Fisch. & C.A. Mey.) Dorn **(1)**; A; **CG**; LA; *SM*
Descurainia incisa (Engelm. ex A. Gray) Britt. **(1)**; I; **CG**; LA; *HaP*
Draba crassifolia Graham **(2)**; C; **CG,CI**; SA; *BP,HoP*,
Draba densifolia Nutt. **(2)**; B,C; **CV,WS**; MA; *CP,HP*
Draba lonchocarpa Rydb. **(6)**; B,C; **CG/SR,CI,CV,WS**; AT; *CP,DP,HP,SS*
Draba oligosperma Hook. **(4)**; B,C; **CG/SR,WS**; SA; *DP,HP,TP*
■ *Draba oreibata* J.F. Macbr. & Payson **(3)**; B,C; **CG**; MS; *SP,HoP*
■ *Draba sphaerocarpa* J.F. Macbr. & Payson **(2)**; V; **CI,CV**; SA; *ME,PP*
Draba stenoloba Ledeb. **(2)**; C,V; **CG,CV**; AT; *CP,LM*
Erysimum capitatum (Douglas ex Hook.) Greene **(2)**; C; **CG,CI**; LA; *HoP,MC*
◆ *Noccaea fendleri* (A. Gray) Holub ssp. *idahoensis* (Payson) Al-Shehbaz & M. Koch **(3)**; V;
CV; SA; *PP*
Phoenicaulis cheiranthoides Nutt. **(1)**; A; **CB**; LA; *CM*
Smelowskia americana Rydb. **(6)**; B,C; **CG,CG/SR,CI,WS**; AT; *DP,HP,SS,SP,TP*

Caryophyllales

Amaranthaceae

Blitum hastatum Rydb. **(1)**; A; **CG**; MA; *SM*

Caryophyllaceae

Cerastium arvense L. **(1)**; B; **WS**; LA; *HP*
Cerastium beeringianum Cham. & Schltld. **(4)**; B,C; **CG/SR,CI,WS**; LA; *DP,HP,SS*
Cherleria obtusiloba (Rydb.) A. J. Moore & Dillenb. **(9)**; B,C; **CG/SR,CI,CV,WS**; SA;
BP,CP,DP,HP,MC,TP

Eremogone aculeata (S. Watson) Ikonn. (5); A,B,C,V; **CB,CG,CG/SR,CI**; MA; *CM,DP,RP,SS,SM*
Eremogone congesta (Nutt.) Ikonn. (3); C,B; **CG/SR,CI,WS**; LS; *DP,HP,SS*
Eremogone congesta (Nutt.) Ikonn. var. *cephaloidea* (Rydb.) R.L. Hartm. & Rabeler (5); I,V;
CB,CG,CI,WS; LS; *BB,BM,LP,LM,MM*
Eremogone kingii (S. Watson) Ikonn. var. *glabrescens* (S. Watson) Dorn (8); I,V;
CB,CG,CI,CV,WS; MA; *BB,BM,HaP,LP,LM,MM,ME,PP*
Pseudostellaria jamesiana (Torr.) W.A. Weber & R.L. Hartm. (2); V; **CI,CV**; FM; *BB,PP*
Sabulina nuttallii (Pax) Dillenb. & Kadereit (3); C; **CG/SR,CI,WS**; LA; *DP,MC,TP*
Sabulina nuttallii (Pax) Dillenb. & Kadereit var. *nuttallii* (1); V; **CV**; LA; *PP*
Silene acaulis (L.) Jacq. (1); C; **WS**; AT; *TP*
Silene douglasii Hook. var. *douglasii* (7); A,I,V; **CB,CG,WS**; LA; *BM,CM,HaP,LP,LM,MM*
Silene menziesii Hook. (1); V; **CI**; LS; *BB*
Silene parryi (S. Watson) C.L. Hitchc. & Maguire (1); V; **CG**; MA; *RP*
Stellaria calycantha (Ledeb.) Bong. (1); A; **CB**; MS; *CM*
Stellaria longipes Goldie ssp. *longipes* (2); I,V; **CV,WS**; AT; *MM,PP*
Cerastium arvense L. (1); B; **WS**; LA; *HP*
Cerastium beeringianum Cham. & Schtdl. (4); B,C; **CG/SR,CI,WS**; LA; *DP,HP,SS*
Cherleria obtusiloba (Rydb.) A. J. Moore & Dillenb. (9); B,C; **CG/SR,CI,CV,WS**; SA;
BP,CP,DP,HP,MC,TP

Montiaceae

Calyptridium umbellatum (Torr.) Greene (7); A,B,I,V; **CB,CG,CI,WS**; MS;
BB,HaP,LP,LM,MM,SS,SM
Claytonia lanceolata Pursh (2); A,I; **CG,WS**; MA; *MM,SM*
Claytonia megarhiza (A. Gray) Parry ex S. Watson (7); B,C,V; **CG,CI,CV,WS**; SA;
BP,CP,HP,MC,ME,SS,SP
Lewisia pygmaea (A. Gray) B.L. Rob. (3); B,C,V; **CG,WS**; SA; *HP,LM,TP*
◆■ *Lewisia sacajawean*a B.L. Wils. & Rey-Vizg. (1); V; **CV**; SA; *PP*
Montia parvifolia (Moc. ex DC.) Greene (3); I,V; **CG**; SA; *BM,LM,RP*

Polygonaceae

Aconogonon phytolaccifolium (Meisn. ex Small) Small (9); A,C,I,V; **CB,CG,WS,CV**; SA;
BM,CM,HaP,HoP,LP,MM,PP,RP,SM
Bistorta bistortoides (Pursh) Small (4); B,V; **CI,WS**; MA; *HP,ME,SS*
Bistorta vivipara (L.) Delarbre (1); B; **WS**; LA; *HP*
◆ *Eriogonum crosbyae* Reveal (4); B,C; **CG,CV,WS**; LA; *CP,HP,SP,TP*
Eriogonum douglasii Benth. var. *douglasii* (2); A,I; **CB**; FM; *CM,LP*
Eriogonum flavum Nutt. var. *flavum* (4); A,I,V; **CG,CI**; LS; *BB,HaP,LM,SM*
Eriogonum flavum Nutt. var. *piperi* (Greene) M.E. Jones (5); C,I; **CB,CG/SR,WS**; LS;
DP,LP,MM
Eriogonum heracleoides Nutt. (5); A,I; **CB,CG,WS**; FM; *BM,HaP,LP,MM,SM*
Eriogonum ovalifolium Nutt. (4); C,B; **CG,CI,CV**; LA; *CP,HoP,MC,SS*
Eriogonum ovalifolium Nutt. var. *depressum* Blank. (6); B,C,I; **CG,CG/SR,CI,WS**; MA;
BP,BM,DP,HP,SPTP
Eriogonum pyrolifolium Hook. (8); A,C,I,V; **CG,CI,WS**; SA; *BP,HaP,HoP,LM,MM,ME,RP,SM*

- Eriogonum sphaerocephalum* Douglas ex Benth. var. *halimioides* (Gand.) S. Stokes **(1)**; A; **CB**; LS; *CM*
- Eriogonum sphaerocephalum* Douglas ex Benth. var. *sphaerocephalum* **(1)**; A; **CB**; FM; *CM*
- Eriogonum strictum* Benth. var. *strictum* **(1)**; A; **CB**; FM; *CM*
- Eriogonum umbellatum* Torr. var. *ellipticum* (Nutt.) Reveal **(1)**; I; **CB**; FM; *LP*
- Oxyria digyna* (L.) Hill **(16)**; A,B,I,C,V; **CB,CG,CG/SR,CI,WS**; SA; *BB,BP,BM,CP,CM,DP,HoP,HP,LP,LM,MM,MC,ME,PP,RP,SS,SP*
- Polygonum douglasii* Greene **(1)**; I; **CB**; FM; *LP*
- *Rumex acetosella* L. **(1)**; A; **CG**; LA; *SM*
- Rumex paucifolius* Nutt. **(1)**; A; **CG**; SA; *SM*

Ericales

Ericaceae

- Cassiope mertensiana* (Bong.) G. Don ssp. *gracilis* Piper **(4)**; C,V; **CG,CG/SR,CI,WS**; S; *DP,LM,MC,TP*
- Chimaphila umbellata* (L.) W.P.C. Barton **(1)**; V; **CV**; LS; *PP*
- Gaultheria humifusa* (Graham) Rydb. **(1)**; I; **WS**; MS; *MM*
- Orthilia secunda* (L.) House **(1)**; V; **CI**; LA; *BB*
- Phyllodoce empetriformis* (Sm.) D. Don **(15)**; A,B,C,I,V; **CB,CG,CI,WS**; SA; *BM,HaP,HoP,HP,LP,LM,MM,MC,ME,RP,SS,SM,SP*
- Phyllodoce glanduliflora* (Hook.) Coville **(3)**; B,C,V; **CG,CI,WS**; SA; *HP,,MC,RP*
- Pterospora andromedea* Nutt. **(1)**; V; **CV**; LS; *PP*
- Pyrola picta* Sm. **(2)**; V; **CG,CV**; LS; *LM,PP*
- Rhododendron columbianum* (Piper) Harmaja **(2)**; I,V; **CG**; LA; *HaP,LM*
- Rhododendron menziesii* Craven **(3)**; I,V; **CG,CI**; FS; *BB,BM,LM*
- Vaccinium membranaceum* Douglas ex Torr. **(1)**; V; **CG**; LS; *RP*
- Vaccinium scoparium* Leiberg ex Coville **(9)**; I,V; **CB,CG,CI,CV,WS**; MA; *BB,BM,HaP,LP,LM,MM,ME,PP,RP*

Polemoniaceae

- Collomia debilis* (S. Watson) Greene **(2)**; B,C; **CG,CG/SR**; SA; *DP,SP*
- Collomia debilis* (S. Watson) Greene var. *debilis* **(2)**; V; **CI,CV**; SA; *ME,PP*
- Collomia linearis* Nutt. **(1)**; I; **CB**; FM; *LP*
- Ipomopsis aggregata* (Pursh) V.E. Grant ssp. *aggregata* **(1)**; I; **CB**; LS; *LP*
- Ipomopsis congesta* (Hook.) V.E. Grant ssp. *viridis* (Cronquist) A.G. Day **(1)**; A; **CG**; LS; *SM*
- Leptosiphon nuttallii* (A. Gray) J.M. Porter & L.A. Johnson **(7)**; A,I,V; **CG,CI,CV,WS**; MA; *BB,LM,MM,ME,PP,RP,SM*
- Phlox austromontana* Coville **(3)**; A,I; **CB,CG**; LS; *CM,HaP,SM*
- Phlox condensata* (A. Gray) E.E. Nelson **(6)**; B,C,V; **CG,CG/SR,CI,CV,WS**; MA; *CP,DP,HoP,HP,RP,SS*
- Phlox diffusa* Benth. **(5)**; B,I,V; **CB,CG,CI,WS**; MA; *BM,HP,LP,MM,ME*
- Polemonium occidentale* Greene **(1)**; I; **WS**; FS; *MM*
- Polemonium pulcherrimum* Hook. ssp. *pulcherrimum* **(8)**; A,I,V; **CB,CG,WS**; SA; *BM,CM,HaP,LP,LM,MM,RP,SM*
- Polemonium viscosum* Nutt. **(6)**; B,C; **CG,CG/SR,CI,CV,WS**; SA; *CP,DP,HP,SS,SP,TP*

Primulaceae

Androsace septentrionalis L. **(3)**; B,C; **CI,CG/SR,WS**; LA; *DP,HP,SS*

Dodecatheon jeffreyi Van Houtte **(3)**; I,V; **CG,WS**; LS; *BM,LM,MM*

EUASTERIDS LAMIID/ASTERID I**Gentianales****Gentianaceae**

Gentiana calycosa Griseb. **(4)**; B,C; **CG/SR,CI,WS**; MA; *DP,HP,SS,TP*

Rubiaceae

Kelloggia galioides Torr. **(2)**; I; **CB,WS**; MS; *LP,MM*

Boraginales**Boraginaceae**

Amsinckia menziesii (Lehm.) A. Nelson & J.F. Macbr. **(1)**; I; **CB**; FM; *LP*

Cryptantha torreyana (A. Gray) Greene **(1)**; I; **CB**; FM; *LP*

Eritrichium argenteum W. Wight **(4)**; C; **CG/SR**; AT; *DP*

Hackelia cinerea (Piper) I.M. Johnst. **(1)**; I; **CB**; FM; *LP*

Hackelia deflexa (Wahlenb.) Opiz **(1)**; I; **CB**; LS; *LP*

Mertensia campanulata A. Nelson **(3)**; I; **CB,CG**; LS; *BM,HaP,LP*

Mertensia paniculata (Aiton) G. Don var. *borealis* (J.F. Macbr.) L.O. Williams **(1)**; A; **CB**; LS; *CM*

Myosotis laxa Lehm. ssp. *caespitosa* **(1)**; A; **CB**; LS; *CM*

Hydrophyllaceae

Hydrophyllum capitatum Douglas ex Benth. **(1)**; A; **CB**; LS; *CM*

Phacelia hastata Douglas ex Lehm. var. *alpina* (Rydb.) Cronquist **(6)**; B,C,I,V; **CG,CI,CV**; SA; *BM,CP,HaP,ME,PP,SS*

Phacelia hastata Douglas ex Lehm. var. *leptosepala* (Rydb.) Cronquist **(2)**; I,A; **CG**; MS; *HaP,SM*

♦ *Phacelia minutissima* L.F. Hend. **(1)**; I; **CB**; FM; *LP*

Phacelia sericea (Graham) A. Gray var. *ciliosa* Rydb. **(4)**; I; **CB,CG,WS**; MS; *HaP,LP,MM*

Lamiales**Lamiaceae**

Agastache urticifolia (Benth.) Kuntze **(1)**; I; **CB**; FS; *LP*

Orobanchaceae

Castilleja applegatei Fernald **(5)**; C.; **CG/SR,CV,WS**; LS; *CP,DP,TP*

Castilleja applegatei Fernald var. *pinetorum* (Fernald) N.H. Holmgren **(9)**; A,I,V; **CB,CG,WS**; LS; *BM,CM,HaP,LP,LM,MM,RP,SM*

Castilleja applegatei Fernald var. *viscida* (Rydb.) Ownbey **(1)**; C; **WS**; LS; *TP*

Castilleja covilleana L.F. Hend. **(3)**; V; **CI,CV**; SA; *BB,PP*

Castilleja cusickii Greenm. **(5)**; B,C,I; **CG,CI,CV,WS**; MA; *CP,MM,MC,SS,SP*

Castilleja miniata Douglas ex Hook. **(4)**; B,C; **CG,CI,WS**; FM; *HP,MC,SS,SP,SP*

Castilleja pallescens (A. Gray) Greenm. **(1)**; V; **CI**; LS; *ME*

Castilleja rhexiifolia Rydb. **(13)**; A,B,I,V; **CB,CG,CI,CV,WS**; SA;
BM,CM,LP,LM,MM,ME,PP,RP,SS,SM
Pedicularis bracteosa Benth. var. *siifolia* (Rydb.) Cronquist **(2)**; I,V; **CG,WS**; MS; *LM,MM*
Pedicularis contorta Benth. var. *contorta* **(7)**; A,I,V; **CB,CG,CI,WS**; MS;
BB,CM,LM,MM,ME,RP,SM
Pedicularis groenlandica Retz. **(3)**; B,I; **CI,WS**; MS; *HP,MM,SS*
Pedicularis racemosa Douglas ex Benth. var. *alba* (Pennell) Cronquist **(4)**; I,V; **CB,CG,CV**;
LS; BM,LP,LM,PP

Phrymaceae

Erythranthe breweri (Greene) G.L. Nesom & N.S. Fraga **(1)**; I; **CB**; FM; *LP*
Erythranthe guttata (Fisch. ex DC.) G.L. Nesom **(1)**; I; **CG**; FM; *BM*
Erythranthe lewisii (Pursh) G.L. Nesom & N.S. Fraga **(2)**; I,V; **CG,WS**; MS; *LM,MM*
Erythranthe tilingii (Regel) G.L. Nesom **(2)**; B; **CI,WS**; SA; *HP,SS*

Plantaginaceae

Chionophila tweedyi (Canby & Rose) L.F. Hend. **(11)**; A,C,I,V; **CB,CG,CI,CV,WS**; SA;
BB,BP,BM,LP,LM,MM,MC,ME,PP,RP,SM
Penstemon attenuatus Douglas ex Lindl. var. *militaris* (Greene) Cronquist **(6)**; A,I,V;
CB,CG,WS; MA; *BM,CM,HaP,LP,LM,MM*
Penstemon attenuatus Douglas ex Lindl. var. *pseudoprocerus* (Rydb.) Cronquist **(5)**; A,I,V;
CG,CI,CV,WS; MA; *BB,MM,PP,SM*
Penstemon fruticosus (Pursh) Greene var. *fruticosus* **(4)**; A,I,V; **CB,CG**; LS; *LP,LM,RP,SM*
Penstemon fruticosus (Pursh) Greene var. *serratus* (D.D. Keck) Cronquist **(2)**; I,V; **CG,WS**;
LS; LM,MM
Penstemon globosus (Piper) Pennell & D.D. Keck **(3)**; A,V; **CG,CI**; LS; *ME,RP,SM*
Penstemon montanus Greene var. *idahoensis* (D.D. Keck) Cronquist **(5)**; C,V; **CG,CI,CV**; SA;
BP,CP,HoP,ME,RP
Penstemon montanus Greene var. *montanus* **(2)**; V; **CG,CV**; SA; *LM,PP*
Penstemon payettensis A. Nelson & J.F. Macbr. **(1)**; A; **CG**; FM; *SM*
Penstemon procerus Douglas ex Graham var. *formosus* (A. Nelson) Cronquist **(1)**; B; **CI**; SA;
SS
Penstemon venustus Douglas ex Lindl. **(2)**; A,I; **CB**; FM; *CM,LP*
Synthyris dissecta Rydb. **(1)**; C; **WS**; SA; *TP*
Synthyris missurica (Raf.) Pennell **(1)**; A; **CB**; FM; *CM*
Veronica cusickii A. Gray **(1)**; A; **CG**; SA; *SM*

CAMPANULID/ASTERID II

Asterales

Asteraceae

Achillea millefolium L. **(18)**; A,B,C,I,V; **CB,CG,CG/SR,CI,CV,WS**; LA;
BB,BM,CP,CM,DP,HaP,HoP,HP,LP,LM,MM,ME,PP,RP,SS,SM
Agoseris aurantiaca (Hook.) Greene **(1)**; B; **WS**; MS; *HP*
Agoseris aurantiaca (Hook.) Greene var. *aurantiaca* **(9)**; I,V; **CB,CG,CI,CV,WS**; MS;
BB,BM,HaP,LP,LM,MM,ME,PP
Agoseris glauca (Pursh) Raf. var. *dasycephala* (Torr. & A. Gray) Jeps. **(1)**; A; **CB**; MA; *CM*
Agoseris glauca (Pursh) Raf. var. *glauca* **(1)**; I; **WS**; FS; *MM*

- Agoseris parviflora* (Nutt.) D. Dietr. **(2)**; V; **CG,CI**; FM; *ME,RP*
- Anaphalis margaritacea* (L.) Benth. & Hook. f. **(8)**; A,I,V; **CB,CG,CI,CV,WS**; FS; *BB,BM,CM,LM,MM,PP,RP,SM*
- Antennaria corymbosa* E.E. Nelson **(4)**; B,C; **CI,CG**; SA; *MC,SP*
- Antennaria lanata* (Hook.) Greene **(2)**; A,B,V; **CI,CG,CV**; SA; *BB,PP,SS,SM*
- Antennaria media* Greene **(14)**; B,C,I,V; **CB,CG,CG/SR,CI,CV,WS**; AT; *BM,CP,DP,HaP,HP,LP,LM,MM,MC,RP,SP*
- Antennaria microphylla* Rydb. **(4)**; A,B,C,V; **CB,CI,CG**; FS; *BP,CM,ME,SP*
- Antennaria pulcherrima* (Hook.) Greene ssp. *pulcherrima* **(1)**; I; **WS**; MS; *MM*
- Antennaria rosea* Greene **(1)**; C; **CV**; LA; *CP*
- Antennaria rosea* Greene ssp. *arida* (E.E. Nelson) R.J. Bayer **(1)**; I; **CB**; LA; *LP*
- Antennaria rosea* Greene ssp. *confinis* (Greene) R.J. Bayer **(4)**; I,V; **CB,CG,CI,WS**; LA; *BB,BM,LP,MM*
- Antennaria rosea* Greene ssp. *pulvinata* (Greene) R.J. Bayer **(7)**; I,V; **CB,CG,CI,CV,WS**; LA; *BB,LP,LM,MM,PP*
- Antennaria rosea* Greene ssp. *rosea* **(1)**; I; **CG**; LA; *HaP*
- Antennaria umbrinella* Rydb. **(1)**; B,V; **CG,CI**; FS; *LM,SS*
- Arnica chamissonis* Less. **(2)**; B; **CI,WS**; MS; *HP,SS*
- Arnica cordifolia* Hook. **(11)**; A,I,V; **CB,CG,CI,CV,WS**; MA; *BB,BM,CM,HaP,LP,LM,MM,PP,RP,SM*
- Arnica fulgens* Pursh **(1)**; V; **CI**; FS; *BB*
- Arnica gracilis* Rydb. **(2)**; V; **CI**; SA; *ME*
- Arnica latifolia* Bong. **(7)**; B,C; **CG,CG,CV,WS**; MS; *BP,CP,HoP,HP,MC,SP*
- Arnica longifolia* D.C. Eaton **(3)**; I,V; **CG,CV,WS**; MA; *LM,MM,PP*
- Arnica mollis* Hook. **(3)**; B,I; **CI,WS**; MS; *MM,SS*
- Arnica parryi* A. Gray **(3)**; I,C,V; **CG,CI,CV**; MA; *BB,BM,CP*
- Artemisia dracunculus* L. **(1)**; C; **CV**; FS; *CP*
- Artemisia tridentata* Nutt. **(2)**; I; **CB,CG**; MS; *HaP,LP*
- Artemisia tridentata* Nutt. ssp. *vaseyana* (Rydb.) Beetle **(2)**; A; **CB,CG**; MS; *CM,SM*
- Askellia pygmaea* (Ledeb.) Sennikov **(1)**; C; **CG/SR**; AT; *DP*
- Aster alpinus* L. **(1)**; B; **WS**; MA; *HP*
- Balsamorhiza sagittata* (Pursh) Nutt. **(2)**; A,I; **CB**; FM; *CM,LP*
- Chaenactis douglasii* (Hook.) Hook. & Arn. var. *alpina* A. Gray **(7)**; B,C,V; **CG,CI,CV,WS**; SA; *BP,CP,MC,ME,SS,SP,TP*
- *Chaenactis evermannii* Greene **(1)**; V; **CV**; SA; *PP*
- Cirsium brevifolium* Nutt. **(1)**; V; **CV**; FM; *PP*
- Cirsium inamoenum* (Greene) D.J. Keil var. *inamoenum* **(1)**; C; **CV**; LS; *CP*
- Cirsium scariosum* Nutt. **(1)**; B; **CI**; LS; *SS*
- Crepis acuminata* Nutt. **(1)**; A; **CB**; MS; *CM*
- Ericameria discoidea* (Nutt.) G.L. Nesom **(11)**; B,C,I,V; **CB,CG,CI,CV,WS**; SA; *BB,BM,CP,HaP,HP,LP,LM,MC,ME,PP,SP*
- Ericameria nana* Nutt. **(1)**; C; **WS**; MA; *TP*
- Ericameria suffruticosa* (Nutt.) G.L. Nesom **(2)**; C; **CV,CG/SR**; MA; *CP,DP*
- Erigeron asperugineus* (D.C. Eaton) A. Gray **(1)**; C; **CV**; SA; *CP*
- Erigeron chrysopsidis* A. Gray var. *chrysopsidis* **(1)**; A; **CG**; FS; *SM*

Erigeron compositus Pursh **(13)**; A,B,C,I,V; **CB,CG,CG/SR,CI,CV,WS**; MA; BP,BM,CP,CM,DP,HP,LP,LM,MC,ME,SS,SP,TP
Erigeron evermannii Rydb. **(6)**; B,C,V; **CG,CI**; SA; BP,HoP,LM,ME,SP
Erigeron filifolius (Hook.) Nutt. **(2)**; A,I; **CB**; FV; CM,LP
Erigeron glacialis (Nutt.) A. Nelson var. *glacialis* **(1)**; A; **CG**; S; SM
Erigeron grandiflorus Hook. **(2)**; B,C; **CI,WS**; SA; HP,MC
Erigeron lonchophyllus Hook. **(1)**; B; **WS**; MA; HP
Erigeron nivalis Nutt. **(1)**; V; **CG**; FS; LM
Erigeron ovalifolium Nutt. var. *depressum* Blank **(1)**; I; **CG**; MA; BM
Erigeron ursinus D.C. Eaton **(1)**; V; **CV**; SA; PP
Eriophyllum lanatum (Pursh) J. Forbes var. *integrifolium* (Hook.) Smiley **(1)**; I; **CG**; LA; HaP
Eurybia sibirica (L.) G.L. Nesom **(1)**; A; **CB**; S; CM
Helianthella uniflora (Nutt.) Torr. & A. Gray var. *douglasii* (Torr. & A. Gray) W.A. weber **(1)**; A; **CB**; FS; CM
Helianthella uniflora (Nutt.) Torr. & A. Gray var. *uniflora* **(1)**; I; **CB**; LS; LP
Heterotheca villosa (Pursh) Shinnars var. *minor* (Hook.) Semple **(1)**; V; **CG**; LA; RP
Hieracium albiflorum Hook. **(4)**; V; **CG,CI,CV**; MS; BB,LM,ME,PP
Hieracium scouleri Hook. **(4)**; I,V; **CG**; LS; BM,HaP,LM,RP
Hieracium triste Willd. ex Spreng. **(10)**; C,I,V; **CB,CG,CI,CV,WS**; LS; BB,BM,HaP,LP,LM,MM,MC,ME,PP,RP
Hulsea algida A. Gray **(8)**; B,C; **CG,CI,CV,WS**; SA; BP,CP,HoP,HP,MC,SS,SP,TP
Ionactis stenomeres (A. Gray) Greene **(4)**; I,V; **CI,WS**; MA; BB,MM,ME
Packera subnuda (DC.) Trock & T.M. Barkley **(1)**; B; **WS**; SA; HP
Packera wernerifolia (A. Gray) W.A. Weber & Å . LÅ¶ve **(6)**; B,C; **CG,CG/SR,CV**; SA; CP,DP,SP
Pyrocoma carthamoides Hook. var. *carthamoides* **(1)**; A; **CB**; FM; CM
Senecio crassulus A. Gray **(10)**; I,V; **CI,CB,CG,WS,CV**; MA; BB,BM,HaP,LP,LM,MM,ME,PP,,RP
Senecio fremontii Torr. & A. Gray **(13)**; A,B,C,V; **CI,CV,CB,CG/SR,CG,WS**; SA; BB,BP,CP,CM,DP,HoP,HP,LM,ME,PP,SS,SP
Senecio integerrimus Nutt. var. *exaltatus* (Nutt.) Cronquist **(2)**; I,V; **CB,CV**; LA; LP,PP
Senecio integerrimus Nutt. var. *integerrimus* **(2)**; A,V; **CI,CB**; LS; BB,CM
Senecio serra Hook. **(1)**; A; **CG**; FM; SM
Senecio triangularis Hook. var. *triangularis* **(2)**; I; **CG,WS**; LS; BM,MM
Solidago multiradiata Aiton **(8)**; B,C,V; **CG,CG/SR,CI,CV,WS**; SA; DP,HoP,HP,LM,ME,PP,RP,SS
Stenotus acaulis (Nutt.) Nutt. **(3)**; C; **CG/SR,CV**; LA; CP,DP
Stenotus lanuginosus (A. Gray) Greene var. *andersonii* (Rydb.) C.A. Morse **(3)**; I; **CG,WS**; LA; BM,BM,MM
Stenotus lanuginosus (A. Gray) Greene var. *lanuginosus* **(2)**; A,V; **CB,CI**; LS; BB,CM
Symphyotrichum foliaceum (Lindl. ex DC.) G.L. Nesom var. *apricum* (A. Gray) G.L. Nesom **(7)**; B,C,I; **CB,CG,CG/SR,CI,WS**; SA; BM,DP,HP,LP,SS
Symphyotrichum foliaceum (Lindl. ex DC.) G.L. Nesom var. *foliaceum* **(1)**; I; **CG**; MA; BM
Symphyotrichum foliaceum (Lindl. ex DC.) G.L. Nesom var. *parryi* (D.C. Eaton) G.L. Nesom **(2)**; I; **CG,CB**; MS; HaP,LP

Symphyotrichum spathulatum (Lindl.) G.L. Nesom var. *spathulatum* **(5)**; B,I,V; **CG,CI,WS**; LS; *BB,LM,MM,SS*

Taraxacum scopulorum (A. Gray) Rydb. **(2)**; B; **CI,WS**; AT; *HP,SS*

Tonestus lyallii (A. Gray) A. Nelson **(4)**; B,C; **CG,CI,CV,WS**; SA; *CP,HP,MC,SP*

Campanulaceae

Campanula parryi A. Gray **(1)**; I; **CG**; SA; *BM*

Campanula parryi A. Gray var. *idahoensis* McVaugh **(1)**; V; **CI**; SA; *ME*

Apiales

Apiaceae

Angelica roseana L.F. Hend. **(1)**; V; **CI**; SA; *ME*

Bupleurum americanum J.M. Coult. & Rose **(2)**; B,C; **CG,WS**; MA; *SP,TP*

Cymopterus foeniculaceus Torr. & A. Gray **(1)**; A; **CB**; FM; *CM*

Cymopterus glaucus Nutt. **(2)**; V; **CI,CV**; MA; *ME,PP*

Ligusticum canbyi (J.M. Coult. & Rose) J.M. Coult. & Rose **(1)**; I; **WS**; MS; *MM*

Ligusticum verticillatum (Hook.) J.M. Coult. & Rose ex Rose **(2)**; A,I; **CB**; FV; *CM,LP*

Lomatium grayi (J.M. Coult. & Rose) J.M. Coult. & Rose **(2)**; I; **CB,CG**; FM; *HaP,LP*

Lomatium idahoense Mathias & Constance **(10)**; C,I,V; **CB,CG,CI,CV,WS**; MS; *BB,CP,HaP,HoP,LP,LM,MM,ME,PP*

Musineon divaricatum (Pursh) Raf. **(1)**; C; **CG**; FV; *HoP*

Perideridia bolanderi (A. Gray) A. Nelson & J.F. Macbr. **(1)**; I; **CB**; FM; *LP*

Dipsacales

Adoxaceae

Sambucus racemosa L. var. *melanocarpa* (A. Gray) McMinn **(4)**; I,V; **CG,CI,CV,WS**; S; *BB,BM,MM,PP*

Caprifoliaceae

Lonicera involucrata (Rich.) Banks ex Spreng. **(1)**; I; **WS**; LS; *MM*

Lonicera utahensis S. Watson **(5)**; I,V; **CG,CI,WS**; MS; *BB,BM,LM,MM,ME*

Symphoricarpos rotundifolius A. Gray var. *oreophilus* (A. Gray) M.E. Jones **(2)**; A,I; **CB,CG**; LS; *LP,SM*

Valerianaceae

Valeriana occidentalis A. Heller **(1)**; V; **CI**; LS; *ME*

Valeriana sitchensis Bong. **(7)**; A,I,V; **CB,CG,CI,WS**; MS; *BB,BM,CM,LP,LM,MM,RP*

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Chapter 2: LANDSCAPE HETEROGENIETY AND SCALE INFLUENCE ALPINE PLANT COMMUNITY ASSEMBLAGE PROCESSES IN REMOTE MOUNTAINS OF CENTRAL IDAHO

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Introduction

The fields of biogeography and landscape ecology allow us to investigate the relationship between the organisms occupying the landscape and the abiotic processes influencing those communities, and to predict their possible future dynamics in the face of climate change. Federal land managers in the western United States often administer vast tracts of public lands, yet they have limited budgets for exploratory botanical and ecological scientific study. Nonetheless, they are charged with managing biodiversity and ecosystem resiliency – both at present, and with respect to future climate predictions – and are largely dependent on the primary literature for this exploratory research.

The Environmental Protection Agency (EPA) has produced variously scaled ecoregion maps of the United States to aid scientists and land managers in ecosystem research and successful management. The EPA Level III, Idaho Batholith Ecoregion (IBE, Figure 2.1), is a vast expanse of mostly federally administered, granitic mountains stretching across central and northern Idaho into western Montana (McGrath et al, 2002; Woods et al., 2002). Many endemics and species at the edges of their distributional limits exist across the ecoregion, and this is likely a product of the unique overlap of the Pacific Northwest, Rocky Mountain, and Great Basin floras (Johnson et al., Chapter 1) in the region, as well as the north-south and east-west climatic gradients present across the ecoregion (Steele et al., 1981, Ertter & Moseley, 1992). Previous studies have found the IBE ecosystems to be relatively intact in comparison to other North American systems (Johnson et al. Chapter 1, Laliberte & Ripple, 2004). The IBE has also been recognized as a crucial component to the Yellowstone to Yukon conservation initiative in the Northern Rocky Mountains, one of the world's largest most intact mountain ecosystems (Yellowstone to Yukon Conservation Initiative, 2018). Despite these unique ecological features, much of the IBE remains botanically understudied, mainly due to difficult access to these remote, rugged mountain ranges and steep canyons (Johnson et al., Chapter 1,

Consortium of the Pacific Northwest Herbaria, 2007+). Furthermore, the disparately spaced alpine and subalpine mountain peaks of the IBE, designated as the EPA Level IV High Idaho Batholith Ecoregion (HIBE, Figure 2.1), are even more botanically under-collected than the IBE at large (Consortium of the Pacific Northwest Herbaria, 2007+). The HIBE harbors numerous species of conservation concern and Idaho endemics (Johnson et al., Chapter 1), and Cushman & Landguth (2012) found that the HIBE is highly vulnerable to habitat loss and fragmentation as a result of climate change. That said, other than anecdotal observations (e.g., Ertter & Moseley, 1992), little is known about the floristic dynamics of the threatened, high elevation species of the HIBE.

In general, high elevation plants are considered to be highly vulnerable to climate change (Ackerly et al., 2015, Loarie et al., 2008), yet recent studies on their community assemblage have found differing conclusions. In the Sawtooth Mountains of central Idaho and the Ecrins National Park, France, Marx et al. (2017, in review) could not reject a species neutral or stochastic process for alpine plant community assemblage, while Jin et al. (2015) found elevation informative on phylogenetic species clustering in Rocky Mountain National Park, Colorado, supporting an environmental filter process. González-Caro et al. (2012) also found phylogenetic clustering for high elevation hummingbird species in Colombia. Yet in the Trans-Himalaya, Le Bagousse-Pinguet (2018) found a tendency of phylogenetic overdispersion for high elevation species, supporting competition-based community, but found random phylogenetic diversity in general across spatial and phylogenetic scales. Li et al. (2013) found low elevation species assemblages to be overdispersed and competition filtered, yet high elevation species clustered and environmentally filtered, but the highest assemblages (over 5500 meters) were found to be randomly assembled. González-Caro et al. (2012) found phylogenetic metrics to be sensitive to changes in spatial scale, with phylogenetic structure changing widely between coarse-grain (800 m elevational bands) and fine-grain (1-km² plots). Coarse-grained analyses displayed greater phylogenetic evenness, supporting a random filtering interpretation, than fine-grained analyses. Data source, whether from field surveys, museum collections, or range maps, also greatly influenced phylogenetic results.

Greater refinement in alpine landscape ecology may help resolve such varied findings. Building from Leibold et al.'s, (2004) meta community concepts, i.e., dispersal vs. competitive ability trade-offs (patch dynamics), stochastic processes (neutral processes), environmental filtering (species sorting), and environmental filtering with "sink" populations (mass effects), Graae et al. (2018) produced a theoretical frame work explaining the dynamics between

landscape driven climatic heterogeneity, species richness, meta community processes, and functional trait selection. Other studies have also found positive relationships between landscape heterogeneity and ecosystem resiliency to climate change, through microclimate and refugia creation, presence, and/or persistence (De Frenne et al., 2013; Randin et al., 2009; Spasojevic et al., 2013; Tscharrntke et al., 2012).

In this paper, we investigate floristic patterns of subalpine to alpine restricted plant species in the HIBE to: 1) explore how multiple lines of evidence, e.g. species-specific traits, environmental variables, and multiple statistical analyses, can be used collectively to inform floristic dynamics, 2) case test theories on alpine plant meta community processes, 3) tease apart possible differences in community assemblage processes at different scales, 4) examine the vulnerability of HIBE high elevation plant species to climate change in light of landscape heterogeneity, and to 5) provide land managers with a botanically predictive framework for species of conservation concern. To address these questions, we synthesized floristic surveys for 20 peaks of the HIBE and investigated patterns of α - and β -diversity across the HIBE using non-metric multidimensional scaling ordination and clustering approaches. We then interpret these statistical analyses in light of both species-specific traits and environmental variables for the 20 HIBE peaks in the context of previous work on alpine plant communities.

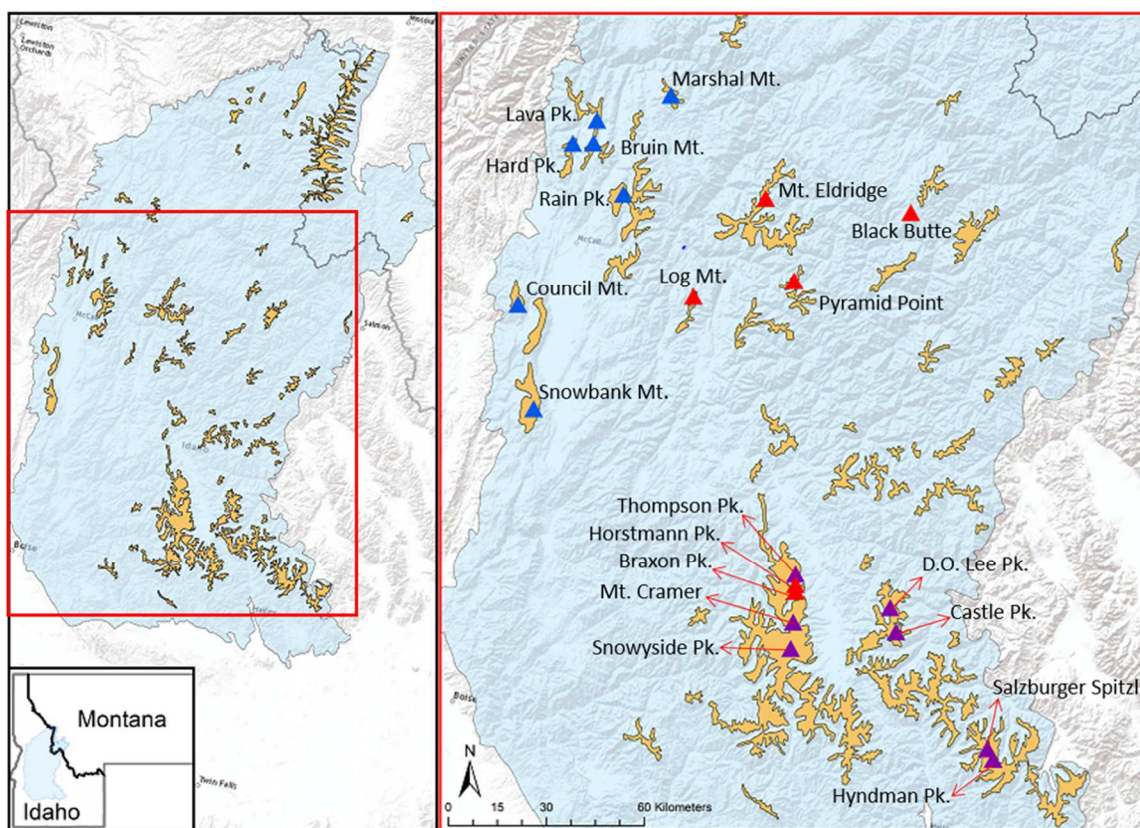


Figure 2.1 The Idaho Batholith (blue) and High Idaho Batholith Ecoregions (yellow) of central Idaho and western Montana (McGrath et al, 2002; Woods et al., 2002). USA state reference map for IBE in lower left concern of left map. The red bordered map on right is a blow up of the red bordered area in left map. Specimens were collected from 20 HIBE peaks (colored triangles) during the summers of 2012, 2013, 2016, and 2017. Color coding: red (group a), blue (group b), and purple (group c) corresponds to the three floristic clusters identified with the NMDS and clustering analyses (see results).

Materials and Methods

Floristic Surveys

Botanical collection protocols can be found in Johnson et al. (Chapter 1) and Marx et al. (in review). Vascular plant specimens were identified primarily using the *Flora of the Pacific Northwest* (Hitchcock & Cronquist, 1973), the revised *Flora of the Pacific Northwest* second edition (Giblin et al., 2018), and the *Flora of North America* (Flora of North America Editorial Committee, 1993+), along with other taxon-specific literature (e.g. Wilson et al., 2014).

Nomenclature followed that from the Consortium of the Pacific Northwest online data portal (Consortium of the Pacific Northwest Herbaria, 2007+). HIBE restricted species were defined as species requiring subalpine, subalpine to alpine, or alpine/tundra habitat.

Statistical Analyses

To investigate the similarity of plant communities across HIBE peaks, we performed non-metric multidimensional scaling (NMDS) ordination using autopilot, slow and thorough, and relative Euclidean distance measure settings, with the presence/absence HIBE restricted species data for each peak. To corroborate an appropriate number of specific floristic groups for the 20 HIBE peaks, we performed a clustering analysis using Wards Method and relative Euclidean distances and a two-way cluster analysis using Wards Method and relative Euclidean distance for comparison. The three floristic clusters groups identified here were then analyzed with an NMDS analysis using the HIBE restricted species presence/absence data in respect to the three cluster groups. The ordination results were then geographically mapped. These analyses were implemented in PCORD v.7.04 (McCune & Mefford, 2016).

Species-Specific Traits

Trait data and ecological information (Appendix 1) was gathered from the *Flora of the Pacific Northwest* (Hitchcock & Cronquist, 1973), the revised *Flora of the Pacific Northwest* second edition (Giblin et al., 2018), the *Flora of North America* (Flora of North America Editorial Committee, 1993+), along with other taxon-specific literature (e.g. Wilson et al., 2014). Species-specific traits included max growth height (natural log), growth habit (dwarf shrub, forb, matted forb, shrub, tree), life strategy (annual, annual or perennial, biennial or perennial, perennial), and dispersal mechanism (animal, not dispersed, wind). Species with fleshy, baccate fruits or hooked armaments were determined to be animal dispersed, and species with winged or parachute-like fruits were determined to be wind dispersed; remaining species were determined to have no clear dispersal mechanism. Species with a known animal dispersal ecology, e.g. *Pinus albicaulis*, were also considered animal dispersed. Ecological data included habitat requirements (alpine/tundra, subalpine to alpine, subalpine, lowlands to alpine, montane to subalpine, montane to alpine, foothills to montane, foothills to subalpine).

Environmental Variables

Average annual temperature and average annual precipitation, based on measurements from 1997-2000, for each peak were obtained from WorldClim v.2.0 (Hijmans et al., 2005). Floristic

surveys for each peak from Johnson et al. (Chapter 1) were restricted to the top 500 feet of elevation down to an 8,000 feet threshold. Marx et al. (in review) collections were made from the summit to tree line and required satellite imagery to create peak collection perimeters. In ARC GIS v. 10.6.0.8321 polygon perimeters for each of Marx et al.'s (in review) peaks were created following the respective tree lines and for Johnson et al.'s (Chapter 1) collections following topographic lines. A 10m x 10m cell size digital elevation model (DEM) was used to create three-dimensional areas for each peak. The DEM was projected into a NAD-1983-UTM-11 geospatial system with bilinear resampling and x and y cell sizes of nine. Then each peak's polygon was converted to a raster format with x and y cell sizes of nine. Each peak's polygon was extracted from the DEM and the Surface Volume 3D Analyst Tool was used to gain the 3D surface area and 2D surface area for each peak. The results for each peak were plotted using linear regression against peak species richness and cluster groupings. Following Ascione et al. (2008), to quantify topographic ruggedness for each peak, we examined the standard deviation of elevation for each peak's three-dimensional raster polygon. The higher the standard deviation of elevation ruggedness index (SD RI) the more rugged the polygon. We also examined the ratio of three dimensional to two-dimensional surface areas for each peak (3D/2D RI), where the higher the 3D/2D RI value, the more rugged the polygon (Rashid, 2010).

Results

Floristic Survey

A total of 414 unique taxa were represented from the collection of 1,302 specimens from 20 different HIBE peaks Johnson et al. (Chapter 1). A total of 431 specimens representing 105 species collected were restricted to HIBE subalpine or alpine habitat (Appendix 1).

Statistical Analysis

Although initial NMDS analysis suggested two significant dimensions for the peak presence/absence data, following (McCune & Grace, 2002) three groups were chosen because three groups were meaningful in the cluster analysis (Figure 2.2), the NMDS scree plot (Figure 2.3), and two-way cluster analysis (Figure 2.4). When these three groups are mapped (Figure 2.1), they form three distinct geographic groups as well, with some intermixing of identified cluster groups around Braxon Pk and Horstmann Pk (group a) and Thompson Pk (group c). Also, when the three groups are analyzed in a NMDS analysis with the HIBE restricted species

data, distinct peak patterns display in ordination space (Figure 2.3), matching the three geographic floristic patterns.

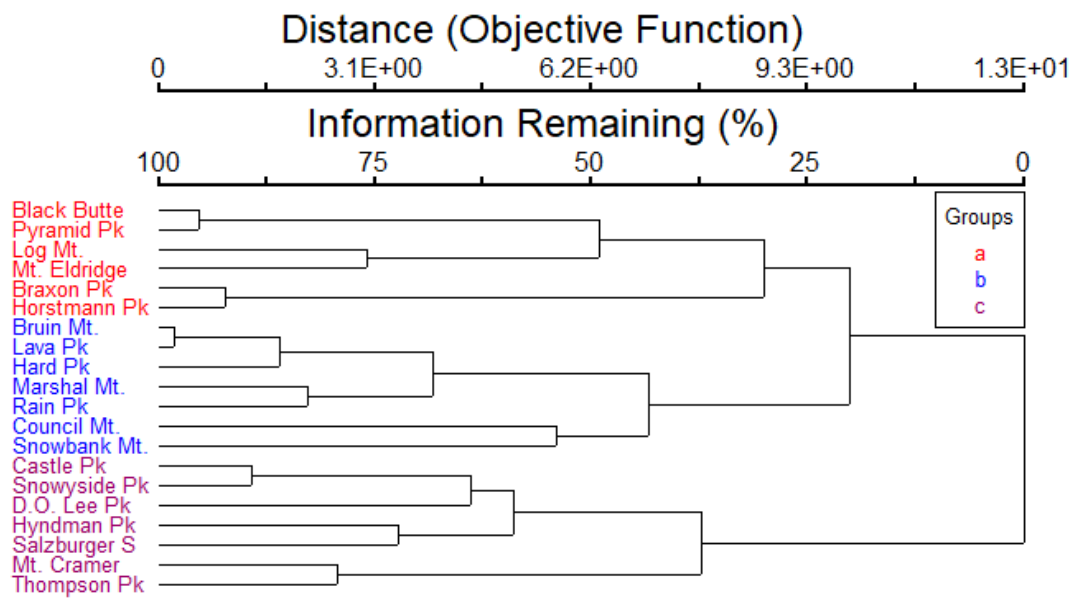


Figure 2.2 Cluster analysis using Wards Method and Relative Euclidean distances. The three primary clusters indicating which peaks belonged to which groups (a, b, c) are color coded (following the legend) and correspond to the three groupings identified by the NMDS analysis.

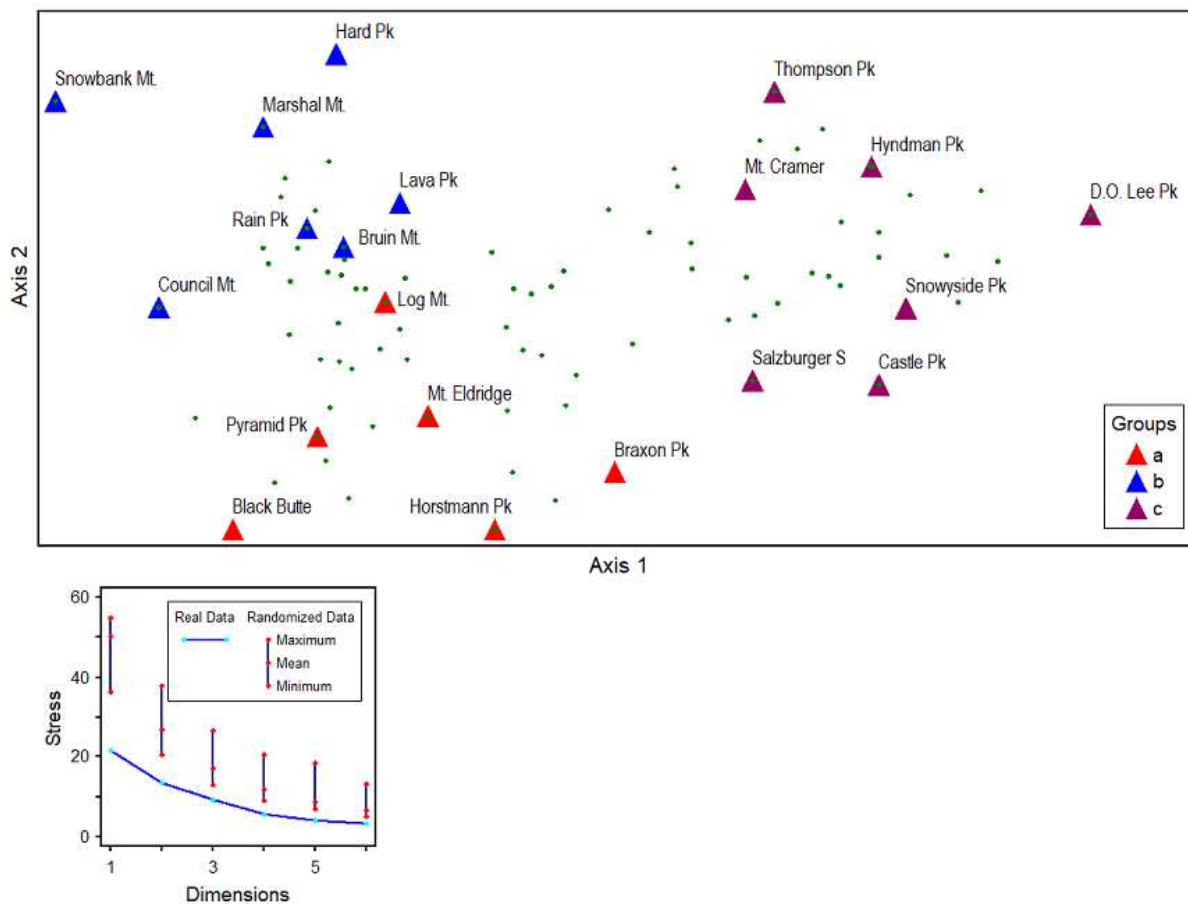


Figure 2.3 Non-metric multidimensional scaling analysis using Autopilot, Slow and Thorough, and Relative Euclidean distances. Triangles represent the collected peaks in ordination space, produced in relation to the presence or absence of species restricted to alpine and/or subalpine habitat. The peaks are categorized according to the three groups (a, b, c) produced from the cluster analysis. Green dots represent individual species in ordination space, produced from the presence or absence of species restricted to alpine and/or subalpine habitat. The lower graph is the NMDS scree plot displaying the relationship between stress and dimensions for the NMDS analysis.

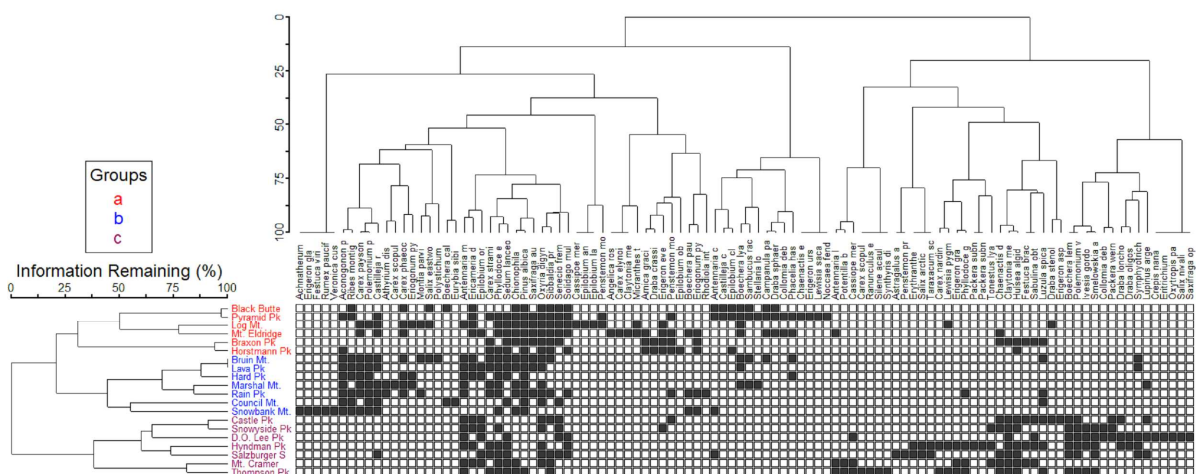


Figure 2.4 Dendrogram resulting from a two-way clustering analysis of species restricted to alpine/subalpine habitats and their peak presence or absence using Wards Method and Relative Euclidean distances. Black squares represent species presence. The peak cluster dendrogram (left) is color coded to three groups (a, b, c) identified by NMDS and clustering analyses.

Species-Specific Trait Patterns

From the northwest to the southeast across the HIBE, several trends were identified that matched the geographically based floristic groups (Table 1, Figure 2.1). Animal dispersal, max height, and the annual life strategy decreased northwest to southeast across the HIBE. Matted forb growth habit, wind dispersal, alpine or tundra habitat requirements, and dwarf shrub and matted forb growth habits increased from the northwest to southeast, while shrub and tree habits showed a flat pattern for groups a and b, but with marked decreases in group c. The forb growth habit, biennial or perennial life strategy, annual or perennial life strategy, not dispersed dispersal mechanism, and subalpine to alpine habitat requirements showed a negative quadratic pattern, while average annual precipitation, perennial life strategy, and subalpine to alpine and subalpine habitat requirements showed a positive quadratic pattern from the northwest to the southeast.

Environmental Variables

Figure 5 shows the comparison of peak species richness, of all species collected and HIBE restricted species, by cluster groups to environmental variables of peak average annual precipitation, average annual temperature, SD RI, and 3D/2D RI. In general, peak average annual temperature decreased from northwest to southeast, with the floristic group averages

also decreasing from the northwest to the southeast. HIBE restricted species richness did not display a relationship to temperature gradients, but total peak species richness was strongly correlated to temperature gradients with an R^2 value of 0.4294. Average annual precipitation displayed a positive quadratic pattern for floristic group averages from the northwest to southeast and had a positive relationship with a moderate R^2 value of 0.2395 with the species richness of all species. Both SD RI and 3D/2D RI increased from the northwest to the southeast for floristic group averages. The 3D/2D RI showed a very strong negative relationship with total species richness ($R^2 = 0.6293$), and the SD RI displayed a similar, but weaker, negative relationship ($R^2 = 0.2178$). HIBE restricted species richness showed a moderate positive relationship to SD RI ($R^2 = 0.2567$), which was not detected with the 3D/2D RI ($R^2 = 0.0163$). Both SD RI and 3D/2D RI displayed clustered patterning corresponding to the floristic groups, but was most distinct regarding cluster group c.

Table 2.1 Environmental and species trait variables for HIBE restricted species organized by peak collections and cluster groupings.

Cluster Group	b	b	b	b	b	b	b	b
Peak	Bruin Mt.	Council Mt.	Hard Pk.	Lava Pk.	Marshal Mt.	Rain Pk.	Snowbank Mt.	Average
3D/2D Ruggedness Index	1.09	1.11	1.13	1.07	1.12	1.22	1.13	1.13
SD Ruggedness Index	22.87	10.75	10.89	9.01	37.28	36.76	27.15	23.85
Annual Average Precipitation (mm)	695	661	688	697	698	683	639	682.99
Annual Average Temperature (Celsius)	6.6	16.5	12.9	8.9	6.5	4.2	15.5	9.18
LN Max Height (average)	3.70	3.99	3.78	3.76	3.94	3.75	4.01	3.83
Growth Habit								
dwarf shrub	1	0	1	1	0	1	0	0.57
forb	19	11	10	12	18	19	14	14.71
matted forb	5	1	3	4	4	3	1	3.00
shrub	3	1	1	1	1	1	1	1.29
tree	1	1	1	1	1	1	1	1.00
Life Strategy								
annual	1	0	0	0	0	1	0	0.29
annual or perennial	0	0	0	0	0	0	0	0.00
biennial or perennial	0	0	0	0	0	0	0	0.00
perennial	28	14	16	19	24	24	17	20.29
Dispersal Mechanism								
animal	2	2	2	2	1	4	2	2.14
not dispersed	19	7	10	12	20	16	11	13.57

wind	8	5	4	5	3	5	4	4.86
% of Average Floristic Group Community								
animal dispersal								0.1
not dispersed								0.66
wind dispersed								0.24
Habitat Requirements								
alpine/tundra	2	0	1	1	2	1	0	1.00
subalpine to alpine	24	8	13	17	18	22	16	16.86
subalpine	1	2	0	0	2	0	1	0.86

Cluster Group	a	a	a	a	a	a	a
Peak	Black Butte	Braxon Pk.	Horstmann Pk.	Log Mt.	Mt. Eldridge	Pyramid Pk.	Average
3D/2D Ruggedness Index	1.06	1.36	1.46	1.13	1.14	1.15	1.19
SD Ruggedness Index	37.66	41.00	38.06	30.40	39.38	42.21	38.15
Annual Average Precipitation (mm)	517	588	576	639	624	577	590.55
Annual Average Temperature (Celcius)	9.5	-7.7	-7.7	6	2.5	6.7	2.81
LN Max Height (average)	4.03	3.31	3.45	3.32	3.22	3.28	3.41
Growth Habit							
dwarf shrub	1	0	0	2	1	1	0.83
forb	14	15	12	18	26	19	17.33
matted forb	3	3	3	6	6	10	5.17
shrub	5	0	0	1	0	2	1.33
tree	1	1	1	1	1	1	1.00
Life Strategy							
annual	0	0	0	1	0	0	0.17
annual or perennial	0	1	1	0	0	0	0.33
biennial or perennial	0	0	0	1	0	1	0.33
perennial	24	18	15	26	34	32	24.83
Dispersal Mechanism							
animal	2	1	1	1	1	2	1.33
not dispersed	13	12	7	17	21	22	15.33
wind	9	6	8	10	12	9	9.00

**% of Average Floristic Group
Community**

animal dispersal **0.05**

not dispersed **0.6**

wind dispersed **0.35**

Habitat Requirements

alpine/tundra 0 0 0 2 0 1 **0.50**

subalpine to alpine 22 18 15 24 32 30 **23.50**

subalpine 2 0 0 1 0 1 **0.67**

Cluster Group	c	c	c	c	c	c	c	c
Peak	Castle Pk.	D.O. Lee Pk.	Hyndman Pk.	Mt. Cramer	Salzburger Spitzl	Snowyside Pk.	Thompson Pk.	Average
3D/2D Ruggedness Index	1.46	1.35	1.34	1.30	1.47	1.35	1.51	1.40
SD Ruggedness Index	41.61	39.54	38.93	39.70	45.48	43.26	41.65	41.32
Annual Average Precipitation (mm)	631	606	610	609	592	608	606	608.59
Annual Average Temperature (Celcius)	-19.7	-17.9	-18.2	-12	-16.3	-11.1	-12.8	-15.78
LN Max Height (average)	3.24	2.71	3.09	3.08	3.09	3.06	3.18	3.06
Growth Habit								
dwarf shrub	1	1	2	2	1	1	1	1.29
forb	14	16	22	10	18	11	16	15.29
matted forb	6	8	4	6	4	4	6	5.43
shrub	0	0	0	0	0	0	0	0.00
tree	0	0	0	0	0	0	1	0.14
Life Strategy								
annual	0	0	0	0	0	0	0	0.00
annual or perennial	0	0	0	0	0	0	0	0.00
biennial or perennial	1	0	0	0	0	0	0	0.14
perennial	20	25	28	18	23	16	24	22.00
Dispersal Mechanism								
animal	0	0	0	0	0	0	1	0.14
not dispersed	11	16	15	9	12	6	18	12.43
wind	10	9	13	9	11	10	5	9.57

**% of Average Floristic Group
Community**

animal dispersal								0.01
not dispersed								0.57
wind dispersed								0.43

Habitat Requirements

alpine/tundra	3	8	6	1	3	2	5	4.00
subalpine to alpine	16	12	22	16	18	15	19	16.86
subalpine	1	2	0	1	1	0	1	0.86

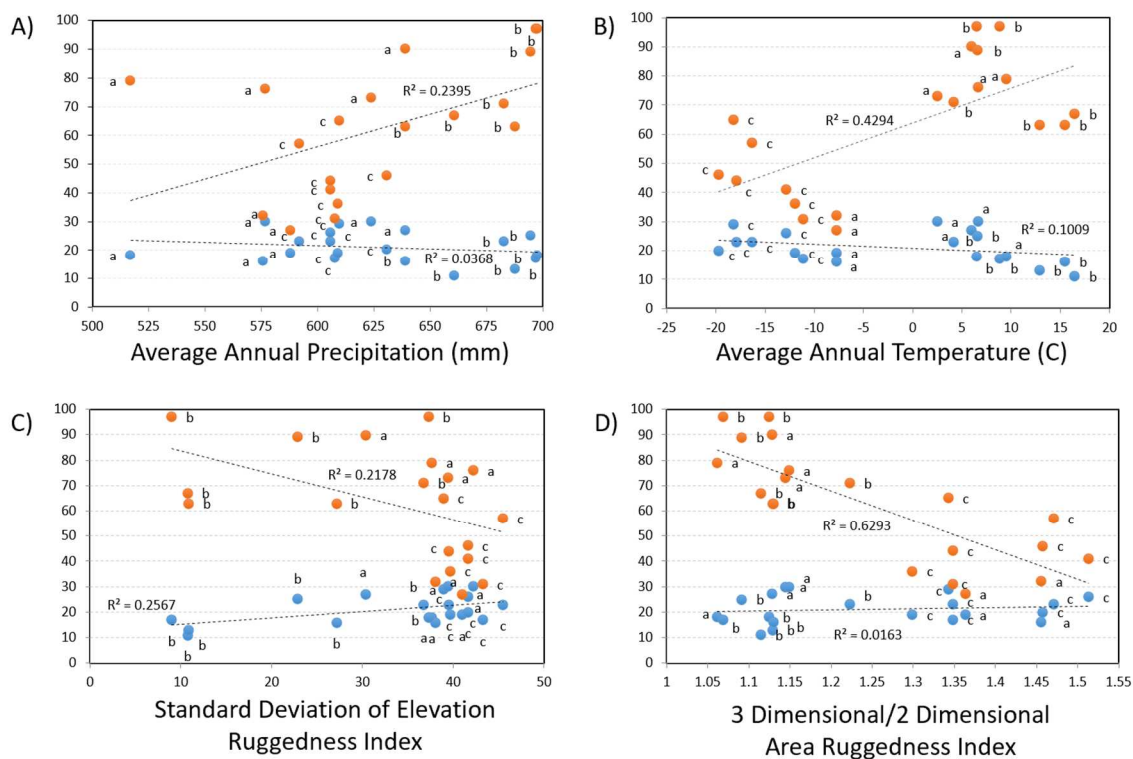


Figure 2.5 HIBE peak collections' species richness (circles) organized into 'subalpine to alpine restricted species' (blue) and 'all species' species richness (orange). Peak points labeled according to cluster groups, a, b, and c. Linear regression of species richness (y-axis) and peak average annual precipitation in millimeters (A), peak annual temperature in Celsius (B), peak standard deviation of elevation ruggedness index (C), and peak 3-dimensional/2-dimensional area ruggedness index (D). Ruggedness increases as both ruggedness indexes increase.

Discussion and Conclusion

Many of the environmental and species trait variables examined displayed trends that closely followed the geographic pattern of the three statistically derived, cluster groups from the northwest to the southeast of the HIBE. The species comprising the three floristic cluster groups had increasing adaptations to harsh, high elevation habitat towards the southeast, which matched environmental variable trends of increasing alpine harshness towards the southeast, e.g. decreasing average annual temperature and increasingly glacially carved ruggedness (Figure 2.5). The different floristic groups' community assemblages reveal species trait

patterns sorted according to function, e.g. decrease of max growth height, increase of dwarf shrub and matted forb growth habit, decrease of annual life strategy, decrease of animal and increase of wind dispersal mechanisms, and increase of species with alpine/tundra habitat requirements (Table 2.1) corresponding to increases in harsher alpine environmental conditions to the southeast. This correspondence suggests that geographic differences in climate and terrain may act as an environmental filter influencing species community assemblage across the HIBE.

The directional trend of average annual temperature and marked differences in average annual precipitation across the three HIBE floristics groups are strong evidence for a current regional climatic gradient, but the RI values provide substantial support for its historical existence as well. The HIBE has been eroded by precipitation, water, wind, solar radiation, and frost, but most influentially by ice in the form of glaciers (Ertter & Moseley, 1992; Steel et al. 1981; McGrath et al, 2002; Woods et al., 2002). Ruggedness, as quantified by RI, is an index of topographic heterogeneity (Ascione et al. 2008, Riley, 1999), which for the HIBE reflects the degree to which a peak has undergone historic glaciation, creating aretes, horns, cliffs, and cirques. The process of glaciation is itself a result of complex climatic, topographic, and environmental interactions, culminating in a locale's alpine conditions (Benn & Evans, 2014), and direct measures of glacially produced topographical heterogeneity upon a landscape can be used to indirectly measure the environmental conditions that produced the glaciation. The more rugged an alpine peak is, the harsher the historic climate was, at least since that last glacial maximum. Based on such climatic inferences, the HIBE had a similar regional climatic gradient historically, at least since the Pinedale Glaciation approximately 15,000-20,000 years before present, though with markedly harsher environmental conditions capable of producing massive alpine and valley glaciers (Dingler & Brechenridge, 1982; Doerner & Carrara 1999; Evenson et al. 1982; Lundeen, 2001; Richmond, 1986). Though temperature has been shown to strongly influence alpine and tundra species (Chapin & Körner, 1995; Kröner, 2003), temperature alone is not enough to account for the floristic groupings. The geographic mixing of two floristic groups over peaks only a few air miles apart, i.e., group a (Braxton Pk. and Horstmann Pk.) with group c (Thompson Pk.; Figure 2.1), may be better explained by average annual precipitation. Though Braxton Pk. and Horstmann Pk. have average annual temperatures much more similar to the peaks of floristic group c, their average annual precipitation fits in the range of floristic group a, much less than that of floristic group c. Microclimates (e.g., local rain shadow effects caused by north south running ridges, or minor ranges within HIBE patches)

may interfere with distinct floristic groupings of particular HIBE patches. This may explain the floristic overlap between group a and c, and demonstrates that these floristics groups are likely sorted according to a complex suite of environmental variables.

Alpine community assemblage is widely studied around the world (Anthelme, 2017), but recent studies have found evidence for myriad processes influencing assemblage, including environmental filtering (González-Caro et al., 2012, Jin et al., 2015; Li et al., 2013), competition (Le Bagousse 2018), and neutral processes (Li et al. 2013; Marx et al., 2017). Marx et al. (in review) found alpine plant community assemblage on peaks from the Sawtooth, Boulder-White Cloud, and Pioneer Mountains, a subset of peaks within this work, to be randomly or neutrally assembled, which may appear contrary to our findings. However, the relative influence of these different ecological processes will vary at different spatial scales, and fine scale processes and patterns will not necessarily hold for analyses investigating broad scales, and vice versa (Schneider, 2001; Marx et al. 2017). The different results from Marx et al. (in review) and this study may be the artifact of the scale at which analyses were performed. Except for Braxon Pk and Hosrtmann Pk, Marx et al.'s (in review) collections all belong to a single floristic cluster group (c) and may be too fine a scale to detect biologically meaningful climatic regime differences across the HIBE system, while the courser EPA Level IV HIBE scale may be broad enough to capture such environmental filtering. Choosing an appropriate study scale, one that captures relevant, meaningful information, is paramount for effective ecological research (González-Caro et al., 2012), and climatic environmental variables may require broader scales than a single national forest, park, or local mountain range. Furthermore, here we exclusively examined species restricted to subalpine to alpine habitats, providing further focus to the analysis of alpine community assembly across the HIBE. It is likely that the variety of processes found to contribute to the assemblage of high alpine plant communities is the result of studies focused on different scales and different subsets of species.

Recently, Graae et al. (2018) combined concepts from population and community ecology, and introduced a theoretical framework describing how spatial patterns of microclimates, which are closely associated with topography, climate patchiness, and climatic range breadth, influence alpine community dynamics. Landscape topographic complexity, such as that found between flatlands and mountains (Lenoir et al., 2013), flatlands and ridgelines (Graae et al. 2011, Körner 2003), and flatlands and microtopographic complexity in tundra or grasslands (Armbruster et al., 2007, Opedal et al. 2015), has been shown to be a strong

determinant of regional and microsite climate, and in regions of high topographic complexity, microclimatic variation at fine spatial scales (e.g., tens of meters) matches future predictions of climate change (e.g., mean annual temperature increase of 2-6⁰C; Armbruster et al., 2007; Dobrowski et al., 2013; Graae et al., 2011; Graae et al., 2018; Lenoir et al., 2013; Opdedal et al., 2015; Scherre and Körner, 2011). The alpine/tundra ecological model of Graae et al. (2018) demonstrated how species diversity increased in relation to climatic patchiness and climatic range across seven landscapes. They modeled how the pattern and breadth of (micro)climates across a landscape influence species diversity and correlate with selective pressure for particular functional traits.

Furthermore, Graae et al. (2018) present a predictive framework for the relative importance of different meta-community dynamics (*sensu* Leibold et al., 2004), i.e., dispersal vs. competitive ability trade-offs (patch dynamics), stochastic processes (neutral processes), environmental filtering (species sorting), and environmental filtering with “sink” populations (mass effects), for each modeled landscape. Because our results suggest that the high elevation restricted flora of the HIBE are climatically sorted into three geographically distinct floristic groups, the EPA Level IV landscape scale likely functions with low to moderate climatic patchiness and a wide climatic range, an example of L2 or L4 in Graae et al.’s (2018) model, dominated by species sorting according to their respective niches in an environmentally heterogeneous landscape (Chase and Leibold, 2003; Whittaker, 1962). But finer scales with a specific floristic group, Marx et al. (in review) could not reject neutral processes shaping community assemblage, despite group c having very high topographical heterogeneity (as quantified by RI’s), which places it in Graae et al.’s (2018) L6 category, the modeled landscape with the most climatic patchiness and widest climatic range. Mass effects, or species sorting with the maintenance of “sink” populations (Holt, 1993; Mouquet and Loreau, 2003), is expected to shape such landscapes, but Graae et al. (2018) made a special caveat: for some species, such a climatically heterogeneous landscape may be “perceived” homogeneously due to short microclimate dispersal distances with stochastic processes seeming to determine community assemblage. To offset such highly fragmented landscapes, selective pressures may favor species with greater dispersal capability in space or time (i.e., the remnant strategy; Eriksson, 1996) and smaller size, requiring less total area per individual. Floristic group c had the lowest average species max height, the greatest number of average wind dispersed species per peak, and the greatest number of average dispersed species total per peak (Table 2.1). When each floristic groups’ species’ average dispersal mechanisms are examined as a

proportion of the average peak community, group c has the greatest proportion of dispersed species, with wind dispersal dominating inferred dispersal mechanisms. Following the climatic gradient across the HIBE, group b and group a increase in the proportion of total number of species dispersed and wind dispersed species per peak, while animal dispersed species proportion decreases along the gradient (Nagy & Grabherr, 2009). It is important to note, the trend of this species trait data inversely matches the floristic group ruggedness trend (Table 2.1, Figure 2.5). The species trait and ruggedness data, combined with the stochastic community dynamics found by Marx et al. (in review), verify that floristic group c is so topographically, and therefore microclimatically, heterogenous, that the landscape functions homogeneously for most of its species, hence the stochastic, neutral meta-community dynamics. Following Marx et al. (in review), analyses of phylogenetic community structure on floristic groups a and b individually, and upon the entire HIBE, could further test the validity of Graae et al.'s (2018) theoretical frameworks and predictions.

In light of a rapidly changing global climate, many studies highlight the biodiversity and ecosystem resiliency benefits of microclimates (De Frenne et al. 2013) and complex topography (Graae et al., 2018; Randin et al., 2009; Tschardt et al., 2012). Over a 44-year period in France, mountainous plant communities were found to have better tracked climatic change with biotic response than lowland communities (Bertrand et al., 2011). Over 21 years of observation in 10 m alpine vegetation plots, Spasojevic et al. (2013) found vegetation to track fine scale environmental variability in very heterogeneous topographies, leading them to conclude environmental heterogeneity may enhance ecological resiliency in topographically complex landscapes. In their review on landscape impacts on ecosystem services, function, and ecological communities, Tschardt et al. (2012) hypothesized complex landscapes to contribute temporal and spatial ecological and biodiversity resiliency. Furthermore, highly heterogeneous landscapes under source-sink meta-population dynamics (mass effects) can give rise to long-lived refugial populations that maintain sink populations (Eriksson et al., 1996).

As a metric of topographical and therefore climatic heterogeneity, peak ruggedness may be able to predict ecological resiliency and the likely presence of present and future refugial populations for the HIBE. This can be done on the EPA Level IV HIBE scale, laying out a framework of what floristic groups may be the most vulnerable to climate change, and these predictions could also be made at the floristic group scale to predict individual HIBE patch resiliency.

The NMDS, cluster, and two-way cluster analyses performed here also provide a predictive framework for species presence and community assemblages within each cluster group. It is notable that Consortium of the Pacific Northwest Herbaria data portal searches (Consortium of the Pacific Northwest Herbaria, 2007+) for species of conservation concern display distributional patterns matching distinct cluster groups. For example: *Eriogonum crosbyae* Reveal is restricted to cluster group c, *Lewisia sacajaweanana* B.L. Wils. is restricted to cluster groups a and c, and *Noccaea fendleri* (A. Gray) Holub ssp. *idahoensis* (Payson) Al-Shehbaz & M. Koch is mostly present in group c, with decreasing collections towards the northwest. The same is true for Idaho endemic species, for example: *Chaenactis evermannii* Greene is restricted to groups c and a, *Draba oreibata* J.F. Macbr. & Payson is restricted to group c, *Draba sphaerocarpa* J.F. Macbr. & Payson is mostly in groups a and c, and *Trifolium longipes* Nutt. var. *pedunculatum* (Rydb.) C.L. Hitchc. mostly in groups b and c). Understanding the drivers behind these floristic group distributions, i.e., temperature, precipitation, and ruggedness as a cumulative proxy, can provide an informative framework for assessing the likely floristic affiliation of unsampled peaks, and land managers may be able to use these tools to refine their survey and management strategies.

In conclusion, our findings show that plants restricted to alpine and subalpine habitats are not distributed equally across all EPA Level IV HIBE patches. Rather, we identified three distinct floristic groups that were statistically and ecologically supported. Given that only about half of the ecoregion was sampled here, it is likely that more floristic groups are present across unsampled HIBE patches, likely corresponding to levels of habitat heterogeneity. Other divergent ranges of subalpine-alpine EPA Level IV ecoregions may not be floristically uniform, and therefore, may display similar floristic patterns to the HIBE. Land managers are encouraged to incorporate knowledge of these floristic patterns, hypotheses of climatic resiliency with respect to ruggedness, and our floristic knowledge gaps in their decision-making process.

Author Contributions

G.M.J. and D.C.T. conceptualized the research. E.K.S. guided GIS work for ruggedness indices. G.M.J. performed analyses and wrote manuscript with input from H.E.M, D.C.T., and E.K.S.

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Appendix 1. All specimens collected across all peaks with corresponding species trait information.

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/ Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Abies lasiocarpa	Black Butte	G.Johnson 17-339	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Bruin Mt. (minor peak)	G.Johnson 17-539	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Council Mt.	G. Johnson 16-74	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Hard Pk.	G.Johnson 17-480	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Horstmann Peak	Zion 2012-034	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Lava Pk.	G.Johnson 17-145	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Log Mt. (minor peak)	G.Johnson 17-264	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Marshal Mt.	G.Johnson 17-93	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Mt. Eldridge	G. Johnson 16-230	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Pyramid Pk.	G.Johnson 17-390	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Rain Pk.	G. Johnson 16-184	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Snowbank Mt.	G. Johnson 16-8	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Snowyside Peak	Marx 2013-120	tree	3000 cm	perennial	wind					y			
Abies lasiocarpa	Thompson Peak	Clevenger 2012-022	tree	3000 cm	perennial	wind					y			
Achillea millefolium	Black Butte	G.Johnson 17-326	forb	100 cm	perennial	wind				y				
Achillea millefolium	Bruin Mt. (minor peak)	G.Johnson 17-541	forb	30 cm	perennial	wind				y				
Achillea millefolium	Castle Peak	Marx 2013-193	forb	30 cm	perennial	wind				y				
Achillea millefolium	Council Mt.	G. Johnson 16-70	forb	30 cm	perennial	wind				y				
Achillea millefolium	D.O. Lee Peak	Marx 2013-366	forb	30 cm	perennial	wind				y				
Achillea millefolium	Hard Pk.	G.Johnson 17-476	forb	100 cm	perennial	wind				y				
Achillea millefolium	Horstmann Peak	Zion 2012-014	forb	30 cm	perennial	wind				y				
Achillea millefolium	Hyndman Peak	Marx 2013-318	forb	30 cm	perennial	wind				y				
Achillea millefolium	Lava Pk.	G.Johnson 17-123	forb	100 cm	perennial	wind				y				
Achillea millefolium	Marshal Mt.	G.Johnson 17-72	forb	30 cm	perennial	wind				y				

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Achillea millefolium	Mt. Eldridge	G. Johnson 16-249	forb	100 cm	perennial	wind				y				
Achillea millefolium	Pyramid Pk.	G. Johnson 17-388	forb	30 cm	perennial	wind				y				
Achillea millefolium	Rain Pk.	G. Johnson 16-135	forb	100 cm	perennial	wind				y				
Achillea millefolium	Salzburger Spitzl	Marx 2013- 228	forb	30 cm	perennial	wind				y				
Achillea millefolium	Snowbank Mt.	G. Johnson 16-18	forb	30 cm	perennial	wind				y				
Achillea millefolium ssp. lanulosa	Log Mt. (minor peak)	G. Johnson 17-292	forb	100 cm	perennial	wind							y	
Achillea millefolium ssp. lanulosa	Marshal Mt.	G. Johnson 17-52	forb	100 cm	perennial	wind							y	
Achnatherum lettermanii	Lava Pk.	G. Johnson 17-126	forb	90 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. dorei	Hard Pk.	G. Johnson 17-481	forb	175 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. nelsonii	Bruin Mt. (minor peak)	G. Johnson 17-551	forb	175 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. nelsonii	Bruin Mt. (minor peak)	G. Johnson 17-563	forb	175 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. nelsonii	Lava Pk.	G. Johnson 17-624	forb	175 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. nelsonii	Log Mt. (minor peak)	G. Johnson 17-242	forb	175 cm	perennial	dispersed					y			
Achnatherum nelsonii subsp. nelsonii	Marshal Mt.	G. Johnson 17-71	forb	175 cm	perennial	dispersed					y			
Achnatherum occidentale subsp. occidentale	Snowbank Mt.	G. Johnson 16-33	forb	120 cm	perennial	dispersed		y						
Achnatherum occidentale subsp. pubescens	Black Butte	G. Johnson 17-324	forb	200 cm	perennial	dispersed						y		
Aconogonon phytolaccaefolium	Bruin Mt. (minor peak)	G. Johnson 17-544	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Council Mt.	G. Johnson 16-113	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Hard Pk.	G. Johnson 17-467	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Horstmann Peak	Zion 2012- 031	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Lava Pk.	G. Johnson 17-114	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Marshal Mt.	G. Johnson 17-86	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Pyramid Pk.	G. Johnson 17-421	forb	200 cm	perennial	dispersed		y						
Aconogonon phytolaccaefolium	Rain Pk.	G. Johnson 16-196	forb	200 cm	perennial	dispersed		y						

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Aconogonon phytolaccaefolium	Snowbank Mt.	G. Johnson 16-24	forb	200 cm	perennial	not dispersed		y						
Agastache urticicolia	Lava Pk.	G. Johnson 17-167	forb	150 cm	perennial	not dispersed								y
Agoseris aurantiaca var. aurantiaca	Black Butte	G. Johnson 17-318	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Bruin Mt. (minor peak)	G. Johnson 17-580	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Bruin Mt. (minor peak)	G. Johnson 17-615	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Hard Pk.	G. Johnson 17-458	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Lava Pk.	G. Johnson 17-618	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Log Mt. (minor peak)	G. Johnson 17-239	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Marshal Mt.	G. Johnson 17-27	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Mt. Eldridge	G. Johnson 16-248	forb	60 cm	perennial	wind					y			
Agoseris aurantiaca var. aurantiaca	Pyramid Pk.	G. Johnson 17-433	forb	60 cm	perennial	wind					y			
Agoseris glauca var. dasycephala	Council Mt.	G. Johnson 16-67	forb	90 cm	perennial	wind						y		
Agoseris glauca var. glauca	Marshal Mt.	G. Johnson 17-31	forb	50 cm	perennial	wind								y
Agoseris parviflora	Mt. Eldridge	G. Johnson 16-244	forb	25 cm	perennial	wind							y	
Agoseris parviflora	Rain Pk. Bruin Mt.	G. Johnson 16-144	forb	25 cm	perennial	wind							y	
Agrostis scabra	(minor peak)	G. Johnson 17-566	forb	90 cm	annual or perennial	dispersed								y
Allium brandegeei	Pyramid Pk.	G. Johnson 17-391	forb	20 cm	perennial	not dispersed						y		
Allium brandegeei	Snowbank Mt.	G. Johnson 16-2	forb	27 cm	perennial	dispersed						y		
Amsinckia menziesii	Lava Pk.	G. Johnson 17-181	forb	70 cm	annual	not dispersed							y	
Anaphalis margaritacea	Black Butte Bruin Mt.	G. Johnson 17-335	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	(minor peak)	G. Johnson 17-606	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	Council Mt.	G. Johnson 16-88	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	Log Mt. (minor peak)	G. Johnson 17-247	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	Marshal Mt.	G. Johnson 17-32	forb	90 cm	perennial	wind								y

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Anaphalis margaritacea	Pyramid Pk.	G.Johnson 17-432	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	Rain Pk. Snowbank	G. Johnson 16-182	forb	90 cm	perennial	wind								y
Anaphalis margaritacea	Mt.	G. Johnson 16-51	forb	90 cm	perennial	wind								y
Androsace septentrionalis	D.O. Lee Peak	Marx 2013- 392	forb	15 cm	perennial or annual or	dispersed not				y				
Androsace septentrionalis	Salzburger Spitzl	Marx 2013- 263	forb	15 cm	perennial	dispersed not				y				
Anemone drummondii	D.O. Lee Peak	Marx 2013- 385	forb	30 cm	perennial	dispersed not						y		
Anemone drummondii	Mount Cramer	Marx 2013- 078	forb	30 cm	perennial	dispersed not						y		
Anemone drummondii var. drummondii	Braxton Peak	Marx 2012- 029	forb	30 cm	perennial	dispersed not						y		
Angelica roseana	Mt. Eldridge	G. Johnson 16-266	forb	80 cm	perennial	dispersed		y						
Antennaria corymbosa	Black Butte	G.Johnson 17-327	matted forb	15 cm	perennial	wind		y						
Antennaria corymbosa	Pyramid Pk. Salzburger	G.Johnson 17-410	matted forb	15 cm	perennial	wind		y						
Antennaria corymbosa	Spitzl	Marx 2013- 212	matted forb	15 cm	perennial	wind		y						
Antennaria corymbosa	Snowbank Mt.	G. Johnson 16-22	matted forb	15 cm	perennial	wind		y						
Antennaria lanata	Mount Cramer	Marx 2013- 081	matted forb	20 cm	perennial	wind		y						
Antennaria lanata	Mt. Eldridge	G. Johnson 16-207	matted forb	20 cm	perennial	wind		y						
Antennaria lanata	Thompson Peak	Clevenger 2012-007	matted forb	20 cm	perennial	wind		y						
Antennaria media	Bruin Mt. (minor peak)	G.Johnson 17-568	matted forb	13 cm	perennial	wind	y							
Antennaria media	Bruin Mt. (minor peak)	G.Johnson 17-577	matted forb	13 cm	perennial	wind	y							
Antennaria media	Castle Peak	Marx 2013- 164	matted forb	13 cm	perennial	wind	y							
Antennaria media	D.O. Lee Peak	Marx 2013- 362	matted forb	13 cm	perennial	wind	y							
Antennaria media	Hard Pk. Hyndman	G.Johnson 17-518	matted forb	13 cm	perennial	wind	y							
Antennaria media	Peak	Marx 2013- 290	matted forb	13 cm	perennial	wind	y							
Antennaria media	Lava Pk. Log Mt.	G.Johnson 17-184	matted forb	13 cm	perennial	wind	y							
Antennaria media	(minor peak)	G.Johnson 17-203	matted forb	13 cm	perennial	wind	y							

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Antennaria media	Marshal Mt.	G.Johnson 17-101	matted forb	13 cm	perennial	wind	y							
Antennaria media	Mount Cramer	Marx 2013-080	matted forb	13 cm	perennial	wind	y							
Antennaria media	Rain Pk.	G. Johnson 16-187	matted forb	13 cm	perennial	wind	y							
Antennaria media	Snowside Peak	Marx 2013-131	matted forb	13 cm	perennial	wind	y							
Antennaria media	Thompson Peak	Clevenger 2012-012	matted forb	13 cm	perennial	wind	y							
Antennaria microphylla	Braxton Peak	Marx 2012-051	matted forb	30 cm	perennial	wind								y
Antennaria microphylla	Council Mt.	G. Johnson 16-71	matted forb	30 cm	perennial	wind								y
Antennaria microphylla	Mt. Eldridge	G. Johnson 16-208	matted forb	30 cm	perennial	wind								y
Antennaria microphylla	Snowside Peak	Marx 2013-117	matted forb	30 cm	perennial	wind								y
Antennaria pulcherrima subsp. pulcherrima	Marshal Mt.	G.Johnson 17-87	matted forb	65 cm	perennial	wind					y			
Antennaria rosea	Castle Peak	Marx 2013-179	matted forb	30 cm	perennial	wind				y				
Antennaria rosea subsp. arida	Lava Pk.	G.Johnson 17-121	matted forb	30 cm	perennial	wind				y				
Antennaria rosea subsp. confinis	Black Butte	G.Johnson 17-316	matted forb	25 cm	perennial	wind				y				
Antennaria rosea subsp. confinis	Bruin Mt. (minor peak)	G.Johnson 17-574	matted forb	25 cm	perennial	wind				y				
Antennaria rosea subsp. confinis	Lava Pk.	G.Johnson 17-137	matted forb	25 cm	perennial	wind				y				
Antennaria rosea subsp. confinis	Marshal Mt.	G.Johnson 17-82	matted forb	25 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Black Butte	G.Johnson 17-329	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Lava Pk.	G.Johnson 17-127	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Log Mt. (minor peak)	G.Johnson 17-221	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Log Mt. (minor peak)	G.Johnson 17-282	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Marshal Mt.	G.Johnson 17-55	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Pyramid Pk.	G.Johnson 17-434	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. pulvinata	Pyramid Pk.	G.Johnson 17-437	matted forb	17 cm	perennial	wind				y				
Antennaria rosea subsp. rosea	Hard Pk.	G.Johnson 17-474	matted forb	40 cm	perennial	wind				y				

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Antennaria umbrinella	Black Butte	G.Johnson 17-367	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Horstmann Peak	Zion 2012-025	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Hyndman Peak	Marx 2013-300	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Log Mt. (minor peak)	G.Johnson 17-212	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Mt. Eldridge	G. Johnson 16-209	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Mt. Eldridge	G. Johnson 16-254	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Salzburger Spitzl	Marx 2013-244	matted forb	16 cm	perennial	wind								y
Antennaria umbrinella	Thompson Peak	Marx 2012-005	matted forb	16 cm	perennial	wind								y
Aquilegia flavescens	Bruin Mt. (minor peak)	G.Johnson 17-602	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Council Mt.	G. Johnson 16-124	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Lava Pk. Log Mt.	G.Johnson 17-185	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	(minor peak)	G.Johnson 17-214	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Marshal Mt.	G.Johnson 17-35	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Rain Pk. Salzburger	G. Johnson 16-137	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Spitzl	Marx 2013-224	forb	70 cm	perennial	not dispersed							y	
Aquilegia flavescens	Snowbank Mt.	G. Johnson 16-10	forb	70 cm	perennial	not dispersed							y	
Arabis eschscholtziana	Hard Pk. Hyndman	G.Johnson 17-471	forb	100 cm	biennial or perennial	not dispersed								y
Arnica chamissonis	Peak	Marx 2013-281	forb	30 cm	perennial	wind					y			
Arnica chamissonis	Salzburger Spitzl	Marx 2013-210	forb	30 cm	perennial	wind					y			
Arnica cordifolia	Black Butte	G.Johnson 17-319	forb	60 cm	perennial	wind							y	
Arnica cordifolia	Bruin Mt. (minor peak)	G.Johnson 17-586	forb	60 cm	perennial	wind							y	
Arnica cordifolia	Hard Pk.	G.Johnson 17-520	forb	60 cm	perennial	wind							y	
Arnica cordifolia	Lava Pk. Log Mt.	G.Johnson 17-195	forb	60 cm	perennial	wind							y	
Arnica cordifolia	(minor peak)	G.Johnson 17-627	forb	60 cm	perennial	wind							y	

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Arnica cordifolia	Marshal Mt.	G.Johnson 17-64	forb	60 cm	perennial	wind						y		
Arnica cordifolia	Pyramid Pk.	G.Johnson 17-385	forb	60 cm	perennial	wind						y		
Arnica cordifolia	Rain Pk.	G. Johnson 16-157	forb	60 cm	perennial	wind						y		
Arnica cordifolia	Council Mt.	G. Johnson 16-128	forb	60 cm	perennial	wind						y		
Arnica cordifolia	Rain Pk.	G. Johnson 16-163	forb	60 cm	perennial	wind						y		
Arnica cordifolia	Snowbank Mt.	G. Johnson 16-15	forb	60 cm	perennial	wind						y		
Arnica fulgens	Black Butte	G.Johnson 17-381	forb	75 cm	perennial	wind								y
Arnica gracilis	Braxton Peak	Marx 2012- 044	forb	40 cm	perennial	wind		y						
Arnica gracilis	Horstmann Peak	Zion 2012- 006	forb	50 cm	perennial	wind		y						
Arnica gracilis	Mt. Eldridge	G. Johnson 16-214	forb	30 cm	perennial	wind		y						
Arnica gracilis	Mt. Eldridge	G. Johnson 16-255	forb	30 cm	perennial	wind		y						
Arnica latifolia	Hyndman Peak	Marx 2013- 298	forb	50 cm	perennial	wind					y			
Arnica latifolia	Mount Cramer	Marx 2013- 072	forb	50 cm	perennial	wind					y			
Arnica latifolia	Snowyside Peak	Marx 2013- 132	forb	50 cm	perennial	wind					y			
Arnica longifolia	Log Mt. (minor peak)	G.Johnson 17-228	forb	110 cm	perennial	wind							y	
Arnica longifolia	Marshal Mt.	G.Johnson 17-58	forb	110 cm	perennial	wind							y	
Arnica longifolia	Pyramid Pk.	G.Johnson 17-399	forb	110 cm	perennial	wind							y	
Arnica mollis	Marshal Mt.	G.Johnson 17-07	forb	70 cm	perennial	wind					y			
Arnica mollis	Marshal Mt.	G.Johnson 17-57	forb	70 cm	perennial	wind					y			
Arnica mollis	Salzburger Spitzl	Marx 2013- 251	forb	70 cm	perennial	wind					y			
Arnica parryi	Black Butte	G.Johnson 17-368	forb	60 cm	perennial	wind							y	
Arnica parryi	Bruin Mt. (minor peak)	G.Johnson 17-609	forb	60 cm	perennial	wind							y	
Arnica parryi	Castle Peak	Marx 2013- 145	forb	60 cm	perennial	wind							y	
Artemisia dracuncululus	Castle Peak	Marx 2013- 190	forb	150 cm	perennial	wind								y

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Artemisia tridentata	Council Mt.	G. Johnson 16-108	shrub	200 cm	perennial	wind					y			
Artemisia tridentata	Hard Pk.	G. Johnson 17-504	shrub	200 cm	perennial	wind					y			
Artemisia tridentata	Lava Pk.	G. Johnson 17-128	shrub	200 cm	perennial	wind					y			
Artemisia tridentata	Snowbank Mt.	G. Johnson 16-6	shrub	200 cm	perennial	wind					y			
Aster alpinus	Hyndman Peak	Marx 2013- 308	forb	40 cm	perennial	wind not						y		
Astragalus alpinus	Salzburger Spitzl	Marx 2013- 223	forb	20 cm	perennial	dispersed not		y						
Astragalus eucosmus	Hyndman Peak	Marx 2013- 297	forb	70 cm	perennial	dispersed not					y			
Astragalus kentrophyta	D.O. Lee Peak	Marx 2013- 404	forb	10 cm	perennial	dispersed not							y	
Astragalus kentrophyta	Hyndman Peak	Marx 2013- 319	forb	11 cm	perennial	dispersed not							y	
Astragalus kentrophyta	Salzburger Spitzl	Marx 2013- 254	forb	12 cm	perennial	dispersed not							y	
Athyrium distentifolium	Marshal Mt.	G. Johnson 17-61	forb	80 cm	perennial	dispersed not		y						
Athyrium distentifolium	Rain Pk.	G. Johnson 16-152	forb	80 cm	perennial	dispersed		y						
Balsamorhiza sagittata	Council Mt.	G. Johnson 16-125	forb	65 cm	perennial	wind							y	
Balsamorhiza sagittata	Lava Pk. Hyndman Peak	Marx 2013- 17-140 283	forb	65 cm	perennial	wind not dispersed						y		y
Bistorta bistortoides	Mt. Eldridge	G. Johnson 16-242	forb	75 cm	perennial	dispersed not						y		
Bistorta bistortoides	Salzburger Spitzl	Marx 2013- 211	forb	77 cm	perennial	dispersed not						y		
Bistorta viviparum	Hyndman Peak	Marx 2013- G. Johnson 17-331	forb	45 cm	perennial	dispersed not dispersed				y				
Boecheera calderi	Black Butte	G. Johnson 17-331	forb	40 cm	perennial	dispersed not			y					
Boecheera calderi	Council Mt.	G. Johnson 16-84	forb	40 cm	perennial	dispersed not			y					
Boecheera cobrensis	Hard Pk.	G. Johnson 17-505	forb	60 cm	perennial	dispersed not							y	
Boecheera divaricarpa	Hard Pk.	G. Johnson 17-501	forb	90 cm	perennial	dispersed not							y	
Boecheera lemmonii	Castle Peak	Marx 2013- 195	matted forb	25 cm	perennial	dispersed not		y						
Boecheera lemmonii	D.O. Lee Peak	Marx 2013- 370	matted forb	25 cm	perennial	dispersed		y						

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Boechea lemmonii	Hyndman Peak	Marx 2013-329	matted forb	25 cm	perennial	not dispersed		y						
Boechea lemmonii	Salzburger Spitzl	Marx 2013-252	matted forb	25 cm	perennial	not dispersed		y						
Boechea lemmonii	Snowyside Peak	Marx 2013-114	matted forb	25 cm	perennial	not dispersed		y						
Boechea lemmonii	Thompson Peak	Marx 2012-011	matted forb	25 cm	perennial	not dispersed		y						
Boechea lyallii	Black Butte	G.Johnson 17-305	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Black Butte Bruin Mt.	G.Johnson 17-367	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	(minor peak) Bruin Mt.	G.Johnson 17-557	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	(minor peak)	G.Johnson 17-567	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Lava Pk. Log Mt.	G.Johnson 17-204	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	(minor peak) Log Mt.	G.Johnson 17-252	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	(minor peak)	G.Johnson 17-277	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Marshal Mt.	G. Johnson 17-45	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Mt. Eldridge	G. Johnson 16-251	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Pyramid Pk.	G. Johnson 17-388	forb	20 cm	perennial	not dispersed		y						
Boechea lyallii	Pyramid Pk.	G. Johnson 17-427	forb	20 cm	perennial	not dispersed		y						
Boechea microphylla	Council Mt. Mount	G. Johnson 16-95	matted forb	35 cm	perennial	not dispersed					y			
Boechea microphylla	Cramer Thompson Peak	Marx 2013-064	matted forb	35 cm	perennial	not dispersed					y			
Boechea microphylla		Clevenger 2012-002	matted forb	35 cm	perennial	not dispersed					y			
Boechea paupercula	Mt. Eldridge	G. Johnson 16-237	forb	15 cm	perennial	not dispersed		y						
Boechea paupercula	Mt. Eldridge	G. Johnson 16-262	forb	15 cm	perennial	not dispersed		y						
Boechea paupercula	Rain Pk. Snowbank Mt.	G. Johnson 16-203	forb	15 cm	perennial	not dispersed		y						
Boechea paupercula		G. Johnson 16-48	forb	15 cm	perennial	not dispersed		y						
Boechea pinetorum	Council Mt. Log Mt.	G. Johnson 16-109b	forb	96 cm	perennial	not dispersed					y			
Boechea saximontana	(minor peak)	G. Johnson 17-254	forb	30 cm	perennial	not dispersed					y			

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Boechera sparsiflora	Council Mt.	G. Johnson 16-109a	forb	80 cm	biennial or perennial	dispersed not								y
Boechera suffrutescens	Council Mt.	G. Johnson 16-106	forb	50 cm	perennial	dispersed not							y	
Boechera suffrutescens	Hard Pk.	G. Johnson 17-490	forb	50 cm	perennial	dispersed not							y	
Boechera suffrutescens	Lava Pk.	G. Johnson 17-158	forb	50 cm	perennial	dispersed not							y	
Boechera suffrutescens	Pyramid Pk. Snowbank	G. Johnson 17-455	forb	50 cm	perennial	dispersed not							y	
Bromus japonicus	Mt.	G. Johnson 16-58	forb	70 cm	annual	dispersed not							y	
Bromus sitchensis	Lava Pk. Snowyside	G. Johnson 17-115	forb	cm	perennial	dispersed not								y
Bupleurum americanum	Peak	Marx 2013- 137	forb	50 cm	perennial	dispersed not						y		
Bupleurum americanum	Thompson Peak	Marx 2012- 027	forb	50 cm	perennial	dispersed not						y		
Calamagrostis canadensis	Black Butte Bruin Mt.	G. Johnson 17-371	forb	cm	perennial	dispersed not								y
Calamagrostis purpurescens	(minor peak) Hyndman	G. Johnson 17-619	forb	90 cm	perennial	dispersed not								y
Calamagrostis purpurescens	Peak	Marx 2013- 341	forb	90 cm	perennial	dispersed not								y
Calamagrostis purpurescens	Mount Cramer	Marx 2013- 088	forb	90 cm	perennial	dispersed not								y
Calamagrostis purpurescens	Thompson Peak	Marx 2012- 016	forb	90 cm	perennial	dispersed not								y
Calamagrostis rubescens	Black Butte	G. Johnson 17-346	forb	cm	perennial	dispersed not								y
Calochortus eurycarpus	Lava Pk.	G. Johnson 17-161	forb	20 cm	perennial	dispersed not							y	
Caltha leptosepala	Marshal Mt.	G. Johnson 17-20	forb	26 cm	perennial annual or	dispersed not						y		
Calyptridium umbellatum	Black Butte	G. Johnson 17-310	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	Hard Pk.	G. Johnson 17-514	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	Lava Pk. Log Mt.	G. Johnson 17-192	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	(minor peak)	G. Johnson 17-279	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	Marshal Mt.	G. Johnson 17-63	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	Pyramid Pk. Salzburger	Marx 2013- 231	matted forb	15 cm	perennial annual or	dispersed not					y			
Calyptridium umbellatum	Spitzl		forb	15 cm	perennial	dispersed					y			

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Calyptridium umbellatum	Snowbank Mt.	G. Johnson 16-16	matted forb	15 cm	annual or perennial	not dispersed					y			
Campanula parryi var. idahoensis	Black Butte		forb	35 cm	perennial	dispersed not		y						
Campanula parryi var. idahoensis	Bruin Mt. (minor peak)	G. Johnson 17-600	forb	35 cm	perennial	dispersed not		y						
Campanula parryi var. idahoensis	Mt. Eldridge	G. Johnson 16-236	forb	35 cm	perennial	dispersed not		y						
Campanula parryi var. idahoensis	Pyramid Pk.		forb	35 cm	perennial	dispersed not		y						
Carex elynoides	Mt. Eldridge	G. Johnson 16-267	forb	22 cm	perennial	dispersed not		y						
Carex geayeri	Black Butte Log Mt. (minor peak)	G. Johnson 17-330	forb	50 cm	perennial	dispersed not								y
Carex geayeri	Marshal Mt.	G. Johnson 17-261	forb	50 cm	perennial	dispersed not								y
Carex geayeri	Marshal Mt.	G. Johnson 17-29	forb	50 cm	perennial	dispersed not								y
Carex geayeri	Mt. Eldridge	G. Johnson 16-232	forb	50 cm	perennial	dispersed not								y
Carex geayeri	Pyramid Pk.	G. Johnson 17-440	forb	50 cm	perennial	dispersed not								y
Carex geayeri	Rain Pk.	G. Johnson 16-200	forb	50 cm	perennial	dispersed not								y
Carex luzulina	Salzburger Spitzl Bruin Mt. (minor peak)	Marx 2013-256	forb	90 cm	perennial	dispersed not								y
Carex micropoda	Hyndman Peak	G. Johnson 17-583	forb	40 cm	perennial	dispersed not								y
Carex microptera	Hyndman Peak	Marx 2013-338	forb	cm	perennial	dispersed not				y				
Carex multicostat	Rain Pk. Hyndman Peak	G. Johnson 16-197	forb	60 cm	perennial	dispersed not					y			
Carex nardina	Thompson Peak	Marx 2013-302	forb	15 cm	perennial	dispersed not	y							
Carex nardina	Thompson Peak	Clevenger 2012-019	forb	15 cm	perennial	dispersed not	y							
Carex pachycarpa	Snowbank Mt.	G. Johnson 16-43	forb	3.5 cm	perennial	dispersed not								y
Carex paysonis	Bruin Mt. (minor peak)	G. Johnson 17-573	forb	50 cm	perennial	dispersed not			y					
Carex paysonis	Hard Pk.	G. Johnson 17-483	forb	50 cm	perennial	dispersed not			y					
Carex paysonis	Lava Pk. Log Mt. (minor peak)	G. Johnson 17-628	forb	50 cm	perennial	dispersed not			y					
Carex paysonis	Log Mt. (minor peak)	G. Johnson 17-211	forb	50 cm	perennial	dispersed not			y					
Carex paysonis	Marshal Mt.	G. Johnson 17-57	forb	50 cm	perennial	dispersed not			y					

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Carex paysonis	Marshal Mt.	G.Johnson 17-67	forb	50 cm	perennial	dispersed not		y						
Carex paysonis	Mt. Eldridge	G. Johnson 16-256	forb	50 cm	perennial	dispersed not		y						
Carex paysonis	Rain Pk.	G. Johnson 16-145	forb	50 cm	perennial	dispersed not		y						
Carex paysonis	Snowbank Mt.	G. Johnson 16-9	forb	50 cm	perennial	dispersed not		y						
Carex phaeocephala	Black Butte	G.Johnson 17-298	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Black Butte	G.Johnson 17-363	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Black Butte Bruin Mt.	G.Johnson 17-380	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	(minor peak)	G.Johnson 17-595	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Hard Pk.	G.Johnson 17-466	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Hard Pk.	G.Johnson 17-495	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Hard Pk. Log Mt.	G.Johnson 17-500	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	(minor peak)	G.Johnson 17-265	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Marshal Mt.	G.Johnson 17-620	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Mt. Eldridge	G. Johnson 16-260	forb	40 cm	perennial	dispersed not		y						
Carex phaeocephala	Rain Pk. Log Mt.	G. Johnson 16-177	forb	40 cm	perennial	dispersed not		y						
Carex preslii	(minor peak)	G.Johnson 17-218	forb	56 cm	perennial	dispersed not				y				
Carex rossii	(minor peak)	G.Johnson 17-243	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Marshal Mt.	G.Johnson 17-621	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Mt. Eldridge	G. Johnson 16-220	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Pyramid Pk.	G.Johnson 17-446	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Rain Pk. Snowbank Mt.	G. Johnson 16-193	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Snowbank Mt.	G. Johnson 16-1	forb	40 cm	perennial	dispersed not						y		
Carex rossii	Snowbank Mt.	G. Johnson 16-26	forb	40 cm	perennial	dispersed not						y		
Carex scopulorum	Thompson Peak	Clevenger 2012-009	forb	90 cm	perennial	dispersed not			y					

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Carex scopulorum var. bracteosa	Marshal Mt.	G.Johnson 17-15 Marx 2012-030	forb	65 cm	perennial	not dispersed		y						
Carex straminiformis	Braxon Peak Bruin Mt.	G.Johnson 17-581	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	(minor peak) Bruin Mt.	G.Johnson 17-604	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	(minor peak) Horstmann Peak	Zion 2012-028	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Hyndman Peak	Marx 2013-335	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Lava Pk.	G.Johnson 17-110	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Lava Pk.	G.Johnson 17-133	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Lava Pk.	G.Johnson 17-198	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Marshal Mt.	G.Johnson 17-38	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Marshal Mt.	G.Johnson 17-49	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Marshal Mt.	G.Johnson 17-76	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Pyramid Pk.	G.Johnson 17-441	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Rain Pk.	G. Johnson 16-169	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Salzburger Spitzl	Marx 2013-267	forb	50 cm	perennial	not dispersed		y						
Carex straminiformis	Thompson Peak	Clevenger 2012-010	forb	50 cm	perennial	not dispersed		y						
Carex subfusca	Lava Pk. Bruin Mt.	G. Johnson 17-179	forb	104 cm	perennial	not dispersed					y			
Carex tahoensis	(minor peak)	G.Johnson 17-550	forb	45 cm	perennial	not dispersed				y				
Cassiope mertensiana ssp. gracilis	D.O. Lee Peak	Marx 2013-347	dawrf shrub	30 cm	perennial	not dispersed			y					
Cassiope mertensiana ssp. gracilis	Mount Cramer	Marx 2013-060	dawrf shrub	30 cm	perennial	not dispersed			y					
Cassiope mertensiana ssp. gracilis	Thompson Peak	Clevenger 2012-015	dawrf shrub	30 cm	perennial	not dispersed			y					
Cassiope mertensiana ssp. gracilis	Log Mt. (minor peak)	G.Johnson 17-216	dawrf shrub	30 cm	perennial	not dispersed			y					
Castilleja applegatei var. fragilis	Rain Pk.	G. Johnson 16-150	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. fragilis	Snowbank Mt.	G. Johnson 16-27	forb	60 cm	perennial	not dispersed								y

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Castilleja applegatei var. pinetorum	Bruin Mt. (minor peak)	G.Johnson 17-554	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Bruin Mt. (minor peak)	G.Johnson 17-757	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Council Mt.	G. Johnson 16-117	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Hard Pk.	G.Johnson 17-484	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Lava Pk.	G.Johnson 17-152	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Log Mt. (minor peak)	G.Johnson 17-288	forb	60 cm	perennial	not dispersed								y
Castilleja applegatei var. pinetorum	Marshal Mt.	G.Johnson 17-73	forb	60 cm	perennial	not dispersed								y
Castilleja covilleana	Black Butte	G.Johnson 17-350	forb	40 cm	perennial	not dispersed		y						
Castilleja covilleana	Black Butte	G.Johnson 17-351	forb	40 cm	perennial	not dispersed		y						
Castilleja covilleana	Pyramid Pk.	G.Johnson 17-418	forb	40 cm	perennial	not dispersed		y						
Castilleja cusickii	Castle Peak	Marx 2013-143	forb	60 cm	perennial	not dispersed						y		
Castilleja cusickii	Marshal Mt. Mount	G.Johnson 17-09	forb	60 cm	perennial	not dispersed						y		
Castilleja cusickii	Cramer Salzburger	Marx 2013-065	forb	60 cm	perennial	not dispersed						y		
Castilleja cusickii	Spitzl Hyndman	Marx 2013-198	forb	60 cm	perennial	not dispersed						y		
Castilleja miniata	Peak Mount	Marx 2013-285	forb	80 cm	perennial	not dispersed							y	
Castilleja miniata	Cramer Salzburger	Marx 2013-057	forb	80 cm	perennial	not dispersed							y	
Castilleja miniata	Spitzl	Marx 2013-199	forb	80 cm	perennial	not dispersed							y	
Castilleja oresbia	Lava Pk.	G.Johnson 17-136	forb	20 cm	perennial	not dispersed								y
Castilleja pallescens	Mt. Eldridge Bruin Mt.	G. Johnson 16-238	forb	30 cm	perennial	not dispersed								y
Castilleja rhexifolia	(minor peak)	G.Johnson 17-614	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Council Mt.	G. Johnson 16-94	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Lava Pk. Log Mt.	G.Johnson 17-189	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	(minor peak)	G.Johnson 17-249	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Marshal Mt.	G.Johnson 17-104	forb	30 cm	perennial	not dispersed		y						

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Castilleja rhexifolia	Marshal Mt.	G.Johnson 17-90	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Mt. Eldridge	G. Johnson 16-239	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Mt. Eldridge	G. Johnson 16-245	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Pyramid Pk.	G.Johnson 17-424	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Rain Pk.	G. Johnson 16-147	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Snowbank Mt.	G. Johnson 16-29	forb	30 cm	perennial	not dispersed		y						
Castilleja rhexifolia	Salzburger Spitzl	Marx 2013- 199	forb	30 cm	perennial	not dispersed		y						
Cerastium arvense	Hyndman Peak	Marx 2013- 274	matted forb	30 cm	perennial	not dispersed				y				
Cerastium beeringianum	D.O. Lee Peak	Marx 2013- 390	matted forb	25 cm	perennial	not dispersed				y				
Cerastium beeringianum	Hyndman Peak	Marx 2013- 327	matted forb	26 cm	perennial	not dispersed				y				
Cerastium beeringianum	Salzburger Spitzl	Marx 2013- 249	matted forb	27 cm	perennial	not dispersed				y				
Chaenactis douglasii var. alpina	Braxon Peak	Marx 2012- 046	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Castle Peak	Marx 2013- 189	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Mount Cramer	Marx 2013- 066	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Mt. Eldridge	G. Johnson 16-264	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Salzburger Spitzl	Marx 2013- 230	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Snowyside Peak	Marx 2013- 106	forb	20 cm	perennial	wind		y						
Chaenactis douglasii var. alpina	Thompson Peak	Marx 2012- 018	forb	20 cm	perennial	wind		y						
Chaenactis evermannii	Pyramid Pk.	G.Johnson 17-452	matted forb	12 cm	perennial	wind		y						
Chamerion angustifolium	Black Butte	G.Johnson 17-328	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Bruin Mt. (minor peak)	G.Johnson 17-535	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Hard Pk.	G.Johnson 17-488	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Lava Pk.	G.Johnson 17-122	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Log Mt. (minor peak)	G.Johnson 17-266	forb	300 cm	perennial	wind								y

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Chamerion angustifolium	Mt. Eldridge	G. Johnson 16-269	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Pyramid Pk.	G. Johnson 17-400	forb	300 cm	perennial	wind								y
Chamerion angustifolium	Rain Pk.	G. Johnson 16-191	forb	300 cm	perennial	wind								y
Chenopodium capitatum var. parvicapitatum	Snowbank Mt.	G. Johnson 16-60	forb	100 cm	annual	not dispersed						y		
Chimaphila umbellata	Pyramid Pk.	G. Johnson 17-429	forb	45 cm	perennial	not dispersed								y
Chionophila tweedyi	Black Butte	G. Johnson 17-337	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Braxton Peak	Marx 2012- 055	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Bruin Mt. (minor peak)	G. Johnson 17-629	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Lava Pk. Log Mt. (minor peak)	G. Johnson 17-190	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Log Mt. (minor peak)	G. Johnson 17-271	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Marshal Mt. Mount	G. Johnson 17-106	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Cramer	Marx 2013- 062	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Mt. Eldridge	G. Johnson 16-240	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Pyramid Pk.	G. Johnson 17-409	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Rain Pk. Snowbank Mt.	G. Johnson 16-153	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Mt. Thompson	G. Johnson 16-25	forb	25 cm	perennial	not dispersed			y					
Chionophila tweedyi	Thompson Peak	Clevenger 2012-004	forb	25 cm	perennial	not dispersed			y					
Cirsium brevifolium	Pyramid Pk. Salzburger	G. Johnson 17-455	forb	120 cm	perennial	wind							y	
Cirsium scariosum	Spitzl	Marx 2013- 232	forb	200 cm	biennial or perennial	wind								y
Cirsium subniveum	Castle Peak	Marx 2013- 194	forb	100 cm	biennial or perennial	wind								y
Claytonia lanceolata	Marshal Mt. Snowbank Mt.	G. Johnson 17-75	forb	10 cm	perennial	not dispersed						y		
Claytonia lanceolata	Mt.	G. Johnson 16-61	forb	10 cm	perennial	not dispersed						y		
Claytonia megarhiza	Braxton Peak	Marx 2012- 048	forb	26 cm	perennial	not dispersed			y					
Claytonia megarhiza	Castle Peak	Marx 2013- 173	forb	25 cm	perennial	not dispersed			y					

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Claytonia megarhiza	D.O. Lee Peak	Marx 2013-400	forb	25 cm	perennial	not dispersed		y						
Claytonia megarhiza	Hyndman Peak	Marx 2013-313	forb	25 cm	perennial	not dispersed		y						
Claytonia megarhiza	Mount Cramer	Marx 2013-061	forb	25 cm	perennial	not dispersed		y						
Claytonia megarhiza	Salzburger Spitzl	Marx 2013-246	forb	25 cm	perennial	not dispersed		y						
Claytonia megarhiza	Snowyside Peak	Marx 2013-110	forb	25 cm	perennial	not dispersed		y						
Claytonia megarhiza	Thompson Peak	Clevenger 2012-027	forb	27 cm	perennial	not dispersed		y						
Claytonia megarhiza	G. Johnson	16-252	forb	25 cm	perennial	not dispersed		y						
Collomia debilis	Mt. Eldridge Peak	D.O. Lee Marx 2013-382	matted forb	1.5 cm	perennial	not dispersed		y						
Collomia debilis	Snowyside Peak	Marx 2013-105	matted forb	1.5 cm	perennial	not dispersed		y						
Collomia debilis var. debilis	G. Johnson	16-265	matted forb	1.5 cm	perennial	not dispersed		y						
Collomia debilis var. debilis	Mt. Eldridge	G. Johnson 17-426	matted forb	1.5 cm	perennial	not dispersed		y						
Collomia linearis	Pyramid Pk.	G. Johnson 17-129	forb	60 cm	annual	not dispersed							y	
Crepis acuminata	Lava Pk.	G. Johnson 16-123	forb	65 cm	perennial	wind					y			
Crepis nana	Council Mt. D.O. Lee Peak	Marx 2013-402	forb	20 cm	perennial	wind not	y							
Cryptantha torreyana	G. Johnson	17-172	forb	40 cm	annual	not dispersed							y	
Cryptogramma acrostichoides	Lava Pk. Bruin Mt. (minor peak)	G. Johnson 17-542	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	Hard Pk.	G. Johnson 17-512	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	G. Johnson	17-202	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	Lava Pk. Log Mt. (minor peak)	G. Johnson 17-285	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	G. Johnson	17-48	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	Marshal Mt.	G. Johnson 17-411	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	Pyramid Pk.	G. Johnson 16-181	forb	25 cm	perennial	not dispersed					y			
Cryptogramma acrostichoides	Rain Pk. Snowbank Mt.	G. Johnson 16-4	forb	25 cm	perennial	not dispersed					y			
Cymopterus foeniculaceus	Mt.	G. Johnson 16-119	forb	60 cm	perennial	not dispersed							y	
Cymopterus foeniculaceus	Council Mt.		forb	60 cm	perennial	dispersed								y

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
		G. Johnson				not								
Cymopterus glaucus	Mt. Eldridge	16-272	forb	15 cm	perennial	dispersed						y		
		G. Johnson				not								
Cymopterus glaucus	Pyramid Pk. Snowbank	17-394	forb	15 cm	perennial	dispersed						y		
		G. Johnson				not								
Cystopteris fragilis	Mt.	16-59	forb	40 cm	perennial	dispersed						y		
	Bruin Mt.	G. Johnson				not								
Danthonia intermedia	(minor peak)	17-570	forb	70 cm	perennial	dispersed						y		
	Salzburger	Marx 2013-		160		not								
Dasiphora fruticosa	Spitzl	209	shrub	cm	perennial	dispersed				y				
Deschampsia cespitosa subsp. cespitosa	D.O. Lee Peak	Marx 2013-363	forb	cm	perennial	dispersed					y			
Deschampsia cespitosa subsp. cespitosa	Hyndman Peak	Marx 2013-284	forb	cm	perennial	dispersed				y				
Deschampsia cespitosa subsp. cespitosa	Salzburger	Marx 2013-		120		not								
	Spitzl	201	forb	cm	perennial	dispersed				y				
	Snowbank	G. Johnson		120		not								
Descurainia incana	Mt.	16-54	forb	cm	biennial	dispersed				y				
		G. Johnson		107		not								
Descurainia incisa	Hard Pk.	17-478	forb	cm	annual	dispersed				y				
	Bruin Mt.	G. Johnson				not								
Dodecatheon jeffreyi	(minor peak)	17-589	forb	75 cm	perennial	dispersed								y
	Log Mt.	G. Johnson				not								
Dodecatheon jeffreyi	(minor peak)	17-245	forb	75 cm	perennial	dispersed								y
		G. Johnson				not								
Dodecatheon jeffreyi	Marshal Mt.	17-11	forb	75 cm	perennial	dispersed								y
		Marx 2012-			annual or	not								
Draba crassifolia	Braxon Peak	036	forb	15 cm	perennial	dispersed								
	Horstmann	Zion 2012-			annual or	not		y						
Draba crassifolia	Peak	020	forb	15 cm	perennial	dispersed			y					
		Marx 2013-				not								
Draba densifolia	Castle Peak	146	forb	17 cm	perennial	dispersed						y		
	Hyndman	Marx 2013-				not								
Draba densifolia	Peak	304	forb	17 cm	perennial	dispersed						y		
		Marx 2013-				not								
Draba lonchocarpa	Castle Peak	174	forb	11 cm	perennial	dispersed	y							
	D.O. Lee	Marx 2013-				not								
Draba lonchocarpa	Peak	393	forb	11 cm	perennial	dispersed	y							
	Hyndman	Marx 2013-				not								
Draba lonchocarpa	Peak	309	forb	11 cm	perennial	dispersed	y							
	D.O. Lee	Marx 2013-				not								
Draba oligosperma	Peak	391	forb	10 cm	perennial	dispersed			y					
	Hyndman	Marx 2013-				not								
Draba oligosperma	Peak	303	forb	20 cm	perennial	dispersed			y					
	Horstmann	Zion 2012-				not						y		
Draba oreibata	Peak	019	forb	90 cm	perennial	dispersed								
	Snowyside	Marx 2013-				not								
Draba oreibata	Peak	104	forb	90 cm	perennial	dispersed						y		

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Draba sphaerocarpa	Black Butte		forb	11 cm	perennial	dispersed not		y						
Draba sphaerocarpa	Mt. Eldridge	G. Johnson 16-215	forb	11 cm	perennial	dispersed not		y						
Draba sphaerocarpa	Pyramid Pk.	G. Johnson 17-396	forb	11 cm	perennial	dispersed not		y						
Draba stenoloba	Castle Peak	Marx 2013- 197	forb	34 cm	perennial or biennial	dispersed not	y							
Draba stenoloba	Log Mt. (minor peak)	G. Johnson 17-208	forb	34 cm	perennial or biennial	dispersed not	y							
Drymocallis glandulosa	Castle Peak	Marx 2013- 161	forb	75 cm	perennial	dispersed not								y
Drymocallis glandulosa	Hyndman Peak	Marx 2013- 333	forb	75 cm	perennial	dispersed not								y
Drymocallis glandulosa	Mount Cramer	Marx 2013- 083	forb	75 cm	perennial	dispersed not								y
Drymocallis glandulosa	Salzburger Spitzl	Marx 2013- 240	forb	75 cm	perennial	dispersed not								y
Drymocallis glandulosa	Snowyside Peak	Marx 2013- 138	forb	75 cm	perennial	dispersed not								y
Drymocallis glandulosa	Snowbank Mt.	G. Johnson 16-44	forb	75 cm	perennial	dispersed not								y
Drymocallis lactea	Bruin Mt. (minor peak)	G. Johnson 17-545	forb	65 cm	perennial	dispersed not								y
Drymocallis lactea	Marshal Mt.	G. Johnson 17-01	forb	65 cm	perennial	dispersed not								y
Drymocallis lactea	Marshal Mt.	G. Johnson 17-39	forb	65 cm	perennial	dispersed not								y
Drymocallis lactea	Pyramid Pk.	G. Johnson 17-408	forb	65 cm	perennial	dispersed not								y
Drymocallis lactea	Rain Pk. Bruin Mt.	G. Johnson 16-138	forb	65 cm	perennial	dispersed not								y
Elymus elymoides	(minor peak)	G. Johnson 17-549	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Castle Peak	Marx 2013- 157	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Hard Pk.	G. Johnson 17-477	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Horstmann Peak	Zion 2012- 027	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Hyndman Peak	Marx 2013- 336	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Lava Pk.	G. Johnson 17-124	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Mt. Eldridge	G. Johnson 16-206	forb	45 cm	perennial	dispersed not							y	
Elymus elymoides	Pyramid Pk.	G. Johnson 17-386	forb	45 cm	perennial	dispersed							y	

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Elymus elymoides	Pyramid Pk.	G.Johnson 17-415	forb	45 cm	perennial	not dispersed						y		
Elymus elymoides	Pyramid Pk.	G.Johnson 17-436	forb	45 cm	perennial	not dispersed						y		
Elymus elymoides	Salzburger Spitzl	Marx 2013- 236	forb	45 cm	perennial	not dispersed						y		
Elymus elymoides	Snowyside Peak	Marx 2013- 127	forb	45 cm	perennial	not dispersed						y		
Elymus glaucus ssp. glaucus	Black Butte Bruin Mt.	G.Johnson 17-369	forb	140 cm	perennial	not dispersed								y
Elymus glaucus ssp. glaucus	(minor peak)	G.Johnson 17-565	forb	140 cm	perennial	not dispersed								y
Elymus glaucus ssp. glaucus	Hard Pk.	G.Johnson 17-491	forb	140 cm	perennial	not dispersed								y
Elymus scribneri	D.O. Lee Peak	Marx 2013- 375	forb	60 cm	perennial	not dispersed						y		
Epilobium anagallidifolium	Log Mt. (minor peak)	G.Johnson 17-229	matted forb	15 cm	perennial	wind		y						
Epilobium brachycarpum	Black Butte Bruin Mt.	G.Johnson 17-320	forb	200 cm	annual	wind							y	
Epilobium brachycarpum	(minor peak)	G.Johnson 17-582	forb	200 cm	annual	wind							y	
Epilobium brachycarpum	Hard Pk.	G.Johnson 17-472	forb	200 cm	annual	wind							y	
Epilobium brachycarpum	Lava Pk.	G.Johnson 17-116	forb	200 cm	annual	wind							y	
Epilobium clavatum	Black Butte Horstmann Peak	G.Johnson 17-376	forb	40 cm	perennial	wind		y						
Epilobium clavatum	Pyramid Pk.	Zion 2012- 001	matted forb	15 cm	perennial	wind		y						
Epilobium clavatum		G.Johnson 17-430	matted forb	15 cm	perennial	wind		y						
Epilobium hallianum	Black Butte	G.Johnson 17-372	forb	90 cm	perennial	wind					y			
Epilobium hallianum	Marshal Mt. Log Mt.	G.Johnson 17-10	forb	90 cm	perennial	wind					y			
Epilobium lactiflorum	(minor peak)	G.Johnson 17-235	forb	30 cm	perennial	wind		y						
Epilobium minutum	Council Mt.	G. Johnson 16-104	forb	45 cm	annual	wind							y	
Epilobium minutum	Marshal Mt. Horstmann Peak	G.Johnson 17-97	forb	45 cm	annual	wind							y	
Epilobium obcordatum		Zion 2012- 008	matted forb	10 cm	perennial	wind		y						
Epilobium oregonense	Castle Peak	Marx 2013- 158	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	D.O. Lee Peak	Marx 2013- 377	matted forb	40 cm	perennial	wind		y						

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Epilobium oregonense	Hard Pk.	G.Johnson 17-521	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	Lava Pk.	G.Johnson 17-173	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	Mount Cramer	Marx 2013- 070	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	Mt. Eldridge	G. Johnson 16-253	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	Salzburger Spitzl	Marx 2013- 203	matted forb	40 cm	perennial	wind		y						
Epilobium oregonense	Snowyside Peak	Marx 2013- 108	matted forb	40 cm	perennial	wind		y						
Eremogone aculeata	Council Mt.	G. Johnson 16-89	matted forb	30 cm	perennial	dispersed							y	
Eremogone aculeata	D.O. Lee Peak	Marx 2013- 364	matted forb	30 cm	perennial	dispersed							y	
Eremogone aculeata	Rain Pk.	G. Johnson 16-134	matted forb	30 cm	perennial	dispersed							y	
Eremogone aculeata	Salzburger Spitzl	Marx 2013- 235	matted forb	30 cm	perennial	dispersed							y	
Eremogone aculeata	Snowbank Mt.	G. Johnson 16-31	matted forb	30 cm	perennial	dispersed							y	
Eremogone congesta	D.O. Lee Peak	Marx 2013- 372	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta	Hyndman Peak	Marx 2013- 288	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Black Butte	G.Johnson 17-338	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Black Butte	G.Johnson 17-338	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Bruin Mt. (minor peak)	G.Johnson 17-532	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Lava Pk.	G.Johnson 17-149	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Log Mt. (minor peak)	G.Johnson 17-296	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Marshal Mt.	G.Johnson 17-36	matted forb	50 cm	perennial	dispersed								y
Eremogone congesta var. cephalodea	Pyramid Pk.	G.Johnson 17-333	matted forb	50 cm	perennial	dispersed								y
Eremogone kingii var. glabrescens	Black Butte	G.Johnson 17-333	matted forb	30 cm	perennial	dispersed							y	
Eremogone kingii var. glabrescens	Bruin Mt. (minor peak)	G.Johnson 17-528	matted forb	30 cm	perennial	dispersed							y	
Eremogone kingii var. glabrescens	Hard Pk.	G.Johnson 17-460	matted forb	30 cm	perennial	dispersed							y	
Eremogone kingii var. glabrescens	Lava Pk.	G.Johnson 17-146	matted forb	30 cm	perennial	dispersed							y	

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Eremogone kingii var. glabrescens	Log Mt. (minor peak)	G.Johnson 17-260	forb	30 cm	perennial	not dispersed						y		
Eremogone kingii var. glabrescens	Marshal Mt.	G.Johnson 17-84	forb	30 cm	perennial	not dispersed						y		
Eremogone kingii var. glabrescens	Mt. Eldridge	G. Johnson 16-243	forb	30 cm	perennial	not dispersed						y		
Eremogone kingii var. glabrescens	Pyramid Pk.	G.Johnson 17-393	forb	30 cm	perennial	dispersed						y		
Ericameria discoidea	Black Butte	G.Johnson 17-314	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Bruin Mt. (minor peak)	G.Johnson 17-607	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Castle Peak	Marx 2013-180	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Hard Pk.	G.Johnson 17-404	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Hyndman Peak	Marx 2013-325	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Lava Pk.	G.Johnson 17-163	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Log Mt. (minor peak)	G.Johnson 17-280	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Mount Cramer	Marx 2013-084	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Mt. Eldridge	G. Johnson 16-218	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Pyramid Pk.	G.Johnson 17-420	shrub	40 cm	perennial	wind		y						
Ericameria discoidea	Snowyside Peak	Marx 2013-111	shrub	40 cm	perennial	wind		y						
Erigeron asperugineus	Castle Peak	Marx 2013-152	forb	20 cm	perennial	wind		y						
Erigeron chrysopsidis var. chrysopsidis	Snowbank Mt.	G. Johnson 16-36	forb	15 cm	perennial	wind								y
Erigeron compositus	Black Butte	G.Johnson 17-354	forb	25 cm	perennial	wind						y		
Erigeron compositus	Braxon Peak	Marx 2012-056	forb	25 cm	perennial	wind						y		
Erigeron compositus	Bruin Mt. (minor peak)	G.Johnson 17-559	forb	25 cm	perennial	wind						y		
Erigeron compositus	Castle Peak	Marx 2013-153	forb	25 cm	perennial	wind						y		
Erigeron compositus	D.O. Lee Peak	Marx 2013-403	forb	25 cm	perennial	wind						y		
Erigeron compositus	Hyndman Peak	Marx 2013-322	forb	25 cm	perennial	wind						y		
Erigeron compositus	Lava Pk.	G.Johnson 17-157	forb	25 cm	perennial	wind						y		

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Erigeron compositus	Mount Cramer	Marx 2013-076	forb	25 cm	perennial	wind						y		
Erigeron compositus		G. Johnson												
Erigeron compositus	Mt. Eldridge	16-247	forb	25 cm	perennial	wind						y		
Erigeron compositus	Salzburger Spitzl	Marx 2013-250	forb	25 cm	perennial	wind						y		
Erigeron compositus	Snowyside Peak	Marx 2013-126	forb	25 cm	perennial	wind						y		
Erigeron compositus	Thompson Peak	Marx 2012-001	forb	25 cm	perennial	wind						y		
Erigeron compositus		G. Johnson												
Erigeron compositus	Council Mt.	16-80	forb	25 cm	perennial	wind						y		
Erigeron compositus		Marx 2012-												
Erigeron evermannii	Braxon Peak	045	forb	10 cm	perennial	wind		y						
Erigeron evermannii	Horstmann Peak	Zion 2012-026	forb	10 cm	perennial	wind		y						
Erigeron evermannii	Log Mt. (minor peak)	G. Johnson 17-219	forb	10 cm	perennial	wind		y						
Erigeron evermannii		G. Johnson												
Erigeron evermannii	Mt. Eldridge	16-274	forb	10 cm	perennial	wind		y						
Erigeron evermannii	Snowyside Peak	Marx 2013-135	forb	10 cm	perennial	wind		y						
Erigeron evermannii		G. Johnson												
Erigeron filifolius	Council Mt.	16-111	forb	50 cm	perennial	wind							y	
Erigeron filifolius		G. Johnson												
Erigeron filifolius	Lava Pk. Snowbank	17-161	forb	50 cm	perennial	wind							y	
Erigeron glacialis var. glacialis	Mt. Hyndman	16-47	forb	70 cm	perennial	wind				y				
Erigeron grandiflorus	Peak	Marx 2013-299	forb	25 cm	perennial	wind		y						
Erigeron grandiflorus	Mount Cramer	079	forb	25 cm	perennial	wind		y						
Erigeron grandiflorus	Thompson Peak	Clevenger 2012-003	forb	25 cm	perennial	wind		y						
Erigeron lonchophyllus	Hyndman Peak	Marx 2013-311	forb	60 cm	perennial or biennial	wind						y		
Erigeron nivalis	Log Mt. (minor peak)	G. Johnson 17-226	forb	35 cm	perennial or biennial	wind								y
Erigeron ursinus	Pyramid Pk.	17-456	forb	35 cm	perennial	wind		y						
Erigeron ursinus		Marx 2013-												
Eriogonum crosbyae	Castle Peak	147	matted forb	30 cm	perennial	dispersed not				y				
Eriogonum crosbyae	D.O. Lee Peak	Marx 2013-384	matted forb	30 cm	perennial	dispersed not				y				
Eriogonum crosbyae	Hyndman Peak	Marx 2013-306	matted forb	30 cm	perennial	dispersed not				y				
Eriogonum crosbyae	Snowyside Peak	Marx 2013-119	matted forb	30 cm	perennial	dispersed not				y				

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Eriogonum crosbyae	Thompson Peak	Marx 2012-006	matted forb	30 cm	perennial	not dispersed				y				
Eriogonum douglasii var. douglasii	Council Mt.	G. Johnson 16-81	dwarf shrub	10 cm	perennial	not dispersed							y	
Eriogonum douglasii var. douglasii	Lava Pk.	G. Johnson 17-206	dwarf shrub	10 cm	perennial	not dispersed							y	
Eriogonum flavum var. flavum	Black Butte	G. Johnson 17-321	forb	20 cm	perennial	not dispersed								y
Eriogonum flavum var. flavum	Hard Pk. Log Mt.	G. Johnson 17-470	forb	20 cm	perennial	not dispersed								y
Eriogonum flavum var. flavum	(minor peak) Snowbank	G. Johnson 17-286	forb	20 cm	perennial	not dispersed								y
Eriogonum flavum var. flavum	Mt. D.O. Lee	G. Johnson 16-35	forb	20 cm	perennial	not dispersed								y
Eriogonum flavum var. piperi	Peak	Marx 2013-351	matted forb	30 cm	perennial	not dispersed								y
Eriogonum flavum var. piperi	Lava Pk.	G. Johnson 17-117	matted forb	30 cm	perennial	not dispersed								y
Eriogonum flavum var. piperi	Marshal Mt.	G. Johnson 17-24	matted forb	30 cm	perennial	not dispersed								y
Eriogonum flavum var. piperi	Marshal Mt. Bruin Mt.	G. Johnson 17-60	matted forb	30 cm	perennial	not dispersed								y
Eriogonum heracleoides	(minor peak)	G. Johnson 17-553	forb	20 cm	perennial	not dispersed							y	
Eriogonum heracleoides	Hard Pk.	G. Johnson 17-502	forb	20 cm	perennial	not dispersed							y	
Eriogonum heracleoides	Lava Pk.	G. Johnson 17-118	forb	20 cm	perennial	not dispersed							y	
Eriogonum heracleoides	Marshal Mt. Snowbank	G. Johnson 17-44	forb	20 cm	perennial	not dispersed							y	
Eriogonum heracleoides	Mt.	G. Johnson 16-28	forb	20 cm	perennial	not dispersed							y	
Eriogonum ovalifolium	Castle Peak	Marx 2013-149	matted forb	50 cm	perennial	not dispersed				y				
Eriogonum ovalifolium	Mount Cramer	Marx 2013-096	matted forb	50 cm	perennial	not dispersed				y				
Eriogonum ovalifolium	Snowside	Marx 2013-113	matted forb	50 cm	perennial	not dispersed				y				
Eriogonum ovalifolium var. depressum	Peak	Marx 2012-031	matted forb	25 cm	perennial	not dispersed							y	
Eriogonum ovalifolium var. depressum	Braxton Peak	G. Johnson 17-546	matted forb	25 cm	perennial	not dispersed							y	
Eriogonum ovalifolium var. depressum	(minor peak)	G. Johnson 17-546	forb	25 cm	perennial	not dispersed							y	
Eriogonum ovalifolium var. depressum	D.O. Lee Peak	Marx 2013-350	matted forb	25 cm	perennial	not dispersed							y	
Eriogonum ovalifolium var. depressum	Hyndman Peak	Marx 2013-301	matted forb	25 cm	perennial	not dispersed							y	
Eriogonum ovalifolium var. depressum	Salzburger Spitzl	Marx 2013-248	matted forb	25 cm	perennial	not dispersed							y	

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Eriogonum ovalifolium var. depressum	Thompson Peak	Marx 2012-007	matted forb	25 cm	perennial	not dispersed						y		
Eriogonum ovalifolium var. purpureum	Horstmann Peak	Zion 2012-009	matted forb	20 cm	perennial	not dispersed				y				
Eriogonum pyrolifolium	Braxton Peak	Marx 2012-034	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Horstmann Peak	Zion 2012-004	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Mt. Eldridge	G. Johnson 16-210	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Rain Pk. Snowbank	G. Johnson 16-136	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Mt.	G. Johnson 16-45	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Hard Pk. Log Mt.	G. Johnson 17-515	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	(minor peak)	G. Johnson 17-256	forb	18 cm	perennial	not dispersed		y						
Eriogonum pyrolifolium	Marshal Mt.	G. Johnson 17-88	forb	18 cm	perennial	not dispersed		y						
Eriogonum sphaerocephalum var. halimoides	Council Mt.	G. Johnson 16-78	shrub	30 cm	perennial	not dispersed								y
Eriogonum sphaerocephalum var. sphaerocephalum	Council Mt.	G. Johnson 16-116	forb	30 cm	perennial	not dispersed							y	
Eriogonum strictum var. strictum	Council Mt.	G. Johnson 16-102	forb	100 cm	perennial	not dispersed							y	
Eriogonum umbellatum var. ellipticum	Lava Pk.	G. Johnson 17-166	matted forb	50 cm	perennial	not dispersed							y	
Eriophyllum lanatum var. integrifolium	Hard Pk. D.O. Lee Peak	G. Johnson 17-496	shrub	25 cm	perennial	wind not dispersed				y				
Eritrichium nanum	Marx 2013-413	Peak	forb	10 cm	perennial	not dispersed	y							
Erysimum asperum	Horstmann Peak	Zion 2012-037	forb	80 cm	biennial	not dispersed							y	
Erysimum asperum	Mount Cramer	Marx 2013-071	forb	80 cm	biennial	not dispersed							y	
Erythranthe breweri	Lava Pk. Bruin Mt. (minor peak)	G. Johnson 17-177	forb	15 cm	annual	not dispersed							y	
Erythranthe guttata	Log Mt. (minor peak)	G. Johnson 17-610	forb	100 cm	perennial	not dispersed							y	
Erythranthe lewisii	Log Mt. (minor peak)	G. Johnson 17-227	forb	100 cm	perennial	not dispersed					y			
Erythranthe lewisii	Marshal Mt. Hyndman Peak	G. Johnson 17-12	forb	100 cm	perennial	not dispersed					y			
Erythranthe tilingii	Salzburger Spitzl	Marx 2013-273	forb	20 cm	perennial	not dispersed		y						
Erythranthe tilingii	Spitzl	Marx 2013-207	forb	20 cm	perennial	not dispersed		y						

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Erythronium grandiflorum	Log Mt. (minor peak)	G.Johnson 17-238	forb	20 cm	perennial	not dispersed								y
Erythronium grandiflorum	Marshal Mt.	G.Johnson 17-99	forb	20 cm	perennial	not dispersed								y
Erythronium grandiflorum var. grandiflorum	Bruin Mt. (minor peak)	G.Johnson 17-612	forb	20 cm	perennial	not dispersed								y
Erythronium grandiflorum var. grandiflorum	Hard Pk.	G.Johnson 17-519	forb	20 cm	perennial	not dispersed								y
Eurybia sibirica	Council Mt.	G. Johnson 16-96	forb	60 cm	perennial	wind not								y
Festuca brachyphylla subsp. brachyphylla	Braxton Peak	Marx 2012-033	forb	55 cm	perennial	not dispersed		y						
Festuca brachyphylla subsp. brachyphylla	Castle Peak	Marx 2013-156	forb	55 cm	perennial	not dispersed		y						
Festuca brachyphylla subsp. brachyphylla	Hyndman Peak	Marx 2013-340	forb	55 cm	perennial	not dispersed		y						
Festuca brachyphylla subsp. brachyphylla	Mount Cramer	Marx 2013-087	forb	55 cm	perennial	not dispersed		y						
Festuca idahoensis	Lava Pk. Snowbank Mt.	G.Johnson 17-121	forb	85 cm	perennial	not dispersed						y		
Festuca idahoensis		G. Johnson 16-56	forb	85 cm	perennial	not dispersed						y		
Festuca rubra subsp. rubra	Council Mt.	G. Johnson 16-132	forb	90 cm	perennial	not dispersed								y
Festuca rubra subsp. rubra	Rain Pk. Snowbank Mt.	G. Johnson 16-199	forb	60 cm	perennial	not dispersed								y
Festuca viridula	Snowbank Mt.	G. Johnson 16-12	forb	100 cm	perennial	not dispersed		y						
Festuca viridula	Snowbank Mt.	G. Johnson 16-62	forb	100 cm	perennial	not dispersed		y						
Gaultheria humifusa	Marshal Mt. Snowbank Mt.	G.Johnson 17-13	shrub	10 cm	perennial	animals, water not					y			
Gayophytum decipiens	Hyndman Peak	G. Johnson 16-14	forb	1.05 cm	annual	not dispersed					y			
Gentiana calycosa	Salzburger Spitzl	Marx 2013-276	forb	30 cm	perennial	not dispersed						y		
Gentiana calycosa	Thompson Peak	Marx 2013-208	forb	30 cm	perennial	not dispersed						y		
Gentiana calycosa var. obtusiloba		Clevenger 2012-025	forb	30 cm	perennial	not dispersed								
Glyceria grandis	Marshal Mt.	G.Johnson 17-47	forb	200 cm	perennial	not dispersed							y	
Hackelia cinerea	Lava Pk.	G.Johnson 17-162	forb	80 cm	perennial	animal							y	
Hackelia deflexa	Lava Pk.	G.Johnson 17-130	forb	100 cm	annual or biennial	animal								y
Haplopappus suffruticosus	D.O. Lee Peak	Marx 2013-358	shrub	40 cm	perennial	wind						y		

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Helianthella uniflora var. douglasii	Council Mt.	G. Johnson 16-127	forb	120 cm	perennial	wind								y
Helianthella uniflora var. uniflora	Lava Pk.	G. Johnson 17-168	forb	120 cm	perennial	wind								y
Hemieva ranunculifolia	Lava Pk.	G. Johnson 17-178	forb	40 cm	perennial	dispersed							y	
Heterotheca villosa var. minor	Rain Pk. Bruin Mt.	G. Johnson 16-160	forb	48 cm	perennial	wind				y				
Heuchera grossulariifolia	(minor peak)	G. Johnson 17-529	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Hard Pk.	G. Johnson 17-498	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Lava Pk. Log Mt.	G. Johnson 17-155	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	(minor peak)	G. Johnson 17-270	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Marshal Mt.	G. Johnson 17-37	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Mt. Eldridge	G. Johnson 16-270	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Pyramid Pk.	G. Johnson 17-414	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Council Mt.	G. Johnson 16-82	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia	Rain Pk. Snowbank Mt.	G. Johnson 16-151	forb	65 cm	perennial	dispersed				y				
Heuchera grossulariifolia		G. Johnson 16-52	forb	65 cm	perennial	dispersed				y				
Heuchera parvifolia var. dissecta	Castle Peak	Marx 2013-155	forb	20 cm	perennial	dispersed					y			
Heuchera parvifolia var. dissecta	Horstmann Peak	Zion 2012-018	forb	20 cm	perennial	dispersed					y			
Heuchera parvifolia var. dissecta	Hyndman Peak	Marx 2013-324	forb	20 cm	perennial	dispersed					y			
Heuchera parvifolia var. dissecta	Mount Cramer	Marx 2013-089	forb	20 cm	perennial	dispersed					y			
Heuchera parvifolia var. dissecta	Salzburger Spitzl	Marx 2013-247	forb	20 cm	perennial	dispersed					y			
Heuchera parvifolia var. dissecta	Snowyside Peak	Marx 2013-115	forb	20 cm	perennial	dispersed					y			
Hieracium albiflorum	Black Butte Log Mt.	G. Johnson 17-309	forb	90 cm	perennial	wind					y			
Hieracium albiflorum	(minor peak)	G. Johnson 17-295	forb	90 cm	perennial	wind					y			
Hieracium albiflorum	Mt. Eldridge	G. Johnson 16-258	forb	90 cm	perennial	wind					y			
Hieracium albiflorum	Pyramid Pk.	G. Johnson 17-397	forb	90 cm	perennial	wind					y			

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Hieracium scouleri	Black Butte Bruin Mt.	G.Johnson 17-344	forb	60 cm	perennial	wind								y
Hieracium scouleri	(minor peak)	G.Johnson 17-611	forb	60 cm	perennial	wind								y
Hieracium scouleri	Hard Pk.	G.Johnson 17-463	forb	60 cm	perennial	wind								y
Hieracium scouleri	(minor peak)	G.Johnson 17-287	forb	60 cm	perennial	wind								y
Hieracium scouleri	Rain Pk.	G. Johnson 16-159	forb	20 cm	perennial	animals				y				
Hieracium scouleri	Rain Pk.	G. Johnson 16-168	forb	60 cm	perennial	wind								y
Hieracium triste	Black Butte Bruin Mt.	G.Johnson 17-325	forb	35 cm	perennial	wind								y
Hieracium triste	(minor peak)	G.Johnson 17-579	forb	35 cm	perennial	wind								y
Hieracium triste	Hard Pk.	G.Johnson 17-517	forb	35 cm	perennial	wind								y
Hieracium triste	(minor peak)	G.Johnson 17-217	forb	35 cm	perennial	wind								y
Hieracium triste	Marshal Mt.	G.Johnson 17-68	forb	35 cm	perennial	wind								y
Hieracium triste	Mount Cramer	Marx 2013-068	forb	35 cm	perennial	wind								y
Hieracium triste	Mt. Eldridge	G. Johnson 16-216	forb	35 cm	perennial	wind								y
Hieracium triste	Pyramid Pk.	G.Johnson 17-407	forb	35 cm	perennial	wind								y
Hieracium triste	Rain Pk.	G. Johnson 16-175	forb	35 cm	perennial	wind								y
Hieracium triste	Thompson Peak	Clevenger 2012-008	forb	35 cm	perennial	wind								y
Hordeum jubatum subsp. intermedium	Council Mt.	G. Johnson 16-97	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. intermedium	Lava Pk.	G.Johnson 17-151	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Black Butte	G.Johnson 17-364	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Black Butte	G.Johnson 17-379	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Log Mt.	G.Johnson 17-262	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	(minor peak)	G.Johnson 17-262	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Marshal Mt.	G.Johnson 17-622	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Rain Pk.	G. Johnson 16-201	forb	80 cm	perennial	dispersed not								y
Hordeum jubatum subsp. jubatum	Snowbank Mt.	G. Johnson 16-11	forb	80 cm	perennial	dispersed not								y

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Hulsea algida	Braxton Peak	Marx 2012-042	forb	40 cm	perennial	wind		y						
Hulsea algida	Castle Peak	Marx 2013-182	forb	40 cm	perennial	wind		y						
Hulsea algida	Horstmann Peak	Zion 2012-024	forb	40 cm	perennial	wind		y						
Hulsea algida	Hyndman Peak	Marx 2013-326	forb	40 cm	perennial	wind		y						
Hulsea algida	Mount Cramer	Marx 2013-090	forb	40 cm	perennial	wind		y						
Hulsea algida	Salzburger Spitzl	Marx 2013-257	forb	40 cm	perennial	wind		y						
Hulsea algida	Snowyside Peak	Marx 2013-139	forb	40 cm	perennial	wind		y						
Hulsea algida	Thompson Peak	Marx 2012-010	forb	40 cm	perennial	wind not		y						
Hydrophyllum capitatum	Council Mt. Bruin Mt. (minor peak)	G. Johnson 16-100	forb	40 cm	perennial	dispersed								y
Hypericum scouleri		G. Johnson 17-601	forb	80 cm	perennial	animals								y
Ionactis stenomeris	Black Butte	G. Johnson 17-349	forb	30 cm	perennial	wind						y		
Ionactis stenomeris	Marshal Mt.	G. Johnson 17-43	forb	30 cm	perennial	wind						y		
Ionactis stenomeris	Marshal Mt.	G. Johnson 17-83	forb	30 cm	perennial	wind						y		
Ionactis stenomeris	Mt. Eldridge	G. Johnson 16-271	forb	30 cm	perennial	wind not						y		
Ipomopsis aggregata ssp. aggregata	Lava Pk.	G. Johnson 17-164	forb	100 cm	biennial or perennial	dispersed not								y
Ipomopsis congesta var. viridis	Snowbank Mt.	G. Johnson 16-20	forb	30 cm	perennial	dispersed not								y
Isoetes bolanderi	Log Mt. (minor peak)	G. Johnson 17-207	forb	20 cm	perennial	dispersed not					y			
Ivesia gordonii	D.O. Lee Peak	Marx 2013-365	forb	40 cm	perennial	dispersed not		y						
Ivesia gordonii	Hyndman Peak	Marx 2013-312	forb	40 cm	perennial	dispersed not		y						
Ivesia gordonii	Snowyside Peak	Marx 2013-116	forb	40 cm	perennial	dispersed not		y						
Ivesia gordonii	Thompson Peak	Clevenger 2012-017	forb	40 cm	perennial	dispersed not		y						
Jucus ensifolius	Black Butte Horstmann Peak	G. Johnson 17-378	forb	60 cm	perennial	dispersed not					y			
Juncus drummondii	Zion Peak	Zion 2012-007	forb	40 cm	perennial	dispersed not						y		
Juncus drummondii	Mount Cramer	Marx 2013-093	forb	40 cm	perennial	dispersed not						y		

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Juncus drummondii	Thompson Peak	Clevenger 2012-018 G.Johnson	forb	40 cm	perennial	not dispersed						y		
Juncus parryi	Black Butte Bruin Mt.	17-356 G.Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	(minor peak)	17-555 G.Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	Hard Pk. Log Mt.	17-524 G.Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	(minor peak)	17-278 G.Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	Marshal Mt.	17-81 G. Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	Mt. Eldridge	16-221 G. Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi	Rain Pk. Snowbank Mt.	16-179 G. Johnson	forb	30 cm	perennial	not dispersed						y		
Juncus parryi		16-39 Marx 2013-	forb	30 cm	perennial	not dispersed						y		
Juncus parryii	Castle Peak	169 Marx 2013-	forb	30 cm	perennial	not dispersed						y		
Juncus parryii	D.O. Lee Peak	Marx 2013-359	forb	30 cm	perennial	not dispersed						y		
Juncus parryii	Horstmann Peak	Zion 2012-030	forb	30 cm	perennial	not dispersed						y		
Juncus parryii	Mount Cramer	Marx 2013-094	forb	30 cm	perennial	not dispersed						y		
Juncus parryii	Salzburger Spitzl	Marx 2013-238	forb	30 cm	perennial	not dispersed						y		
Juniperus communis	Castle Peak	191 Horstmann	shrub	200 cm	perennial	animals						y		
Juniperus communis	Horstmann Peak	Zion 2012-035	dawrf shrub	200 cm	perennial	animals						y		
Juniperus communis	Mount Cramer	Marx 2013-099	dawrf shrub	200 cm	perennial	animals						y		
Juniperus communis	Thompson Peak	Clevenger 2012-024	dawrf shrub	200 cm	perennial	animals						y		
Juniperus communis	Snowbank Mt.	G. Johnson 16-65	dawrf shrub	200 cm	perennial	animals						y		
Juniperus communis var. kelleyi	Black Butte Bruin Mt.	G.Johnson 17-353	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. kelleyi	(minor peak)	G.Johnson 17-576	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. kelleyi	Hard Pk.	G.Johnson 17-487	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. kelleyi	Lava Pk.	G.Johnson 17-147	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. kelleyi	Log Mt. (minor peak)	G.Johnson 17-267	dawrf shrub	100 cm	perennial	animals								y

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Juniperus communis var. kelleyi	Marshal Mt.	G.Johnson 17-41	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. kelleyi	Pyramid Pk.	G. Johnson 17-143	dawrf shrub	100 cm	perennial	animals								y
Juniperus communis var. montana	Rain Pk.	G. Johnson 16-190	dawrf shrub	100 cm	perennial	animals								y
Kelloggia galioides	Lava Pk.	G.Johnson 17-143	forb	60 cm	perennial	animals					y			
Kelloggia galioides	Marshal Mt.	G.Johnson 17-62	forb	60 cm	perennial	animals not					y			
Leptosiphon nuttallii	Black Butte Log Mt.	G.Johnson 17-334	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	(minor peak)	G.Johnson 17-283	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	Marshal Mt.	G. Johnson 17-26	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	Mt. Eldridge	G. Johnson 16-273	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	Pyramid Pk.	G.Johnson 17-417	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	Rain Pk.	G. Johnson 16-185	forb	30 cm	perennial	dispersed not						y		
Leptosiphon nuttallii	Snowbank Mt.	G. Johnson 16-34	forb	30 cm	perennial	dispersed not						y		
Lewisia pygmaea	Hyndman Peak	Marx 2013-291	forb	6 cm	perennial	dispersed not		y						
Lewisia pygmaea	Log Mt. (minor peak)	G.Johnson 17-631	forb	6 cm	perennial	dispersed not		y						
Lewisia pygmaea	Thompson Peak	Clevenger 2012-001	forb	6 cm	perennial	dispersed not		y						
Lewisia sacajaweana	Pyramid Pk.	G.Johnson 17-425	forb	7 cm	perennial	dispersed not		y						
Ligusticum canbyi	Marshal Mt.	G. Johnson 17-18	forb	cm	perennial	dispersed not					y			
Ligusticum verticillatum	Council Mt.	G. Johnson 16-112	forb	cm	perennial	dispersed not							y	
Ligusticum verticillatum	Lava Pk.	G.Johnson 17-125	forb	cm	perennial	dispersed not							y	
Linum lewisii var. lewisii	Lava Pk.	G. Johnson 17-171	forb	80 cm	perennial	dispersed not						y		
Linum lewisii var. lewisii	Snowbank Mt.	G. Johnson 16-37	forb	80 cm	perennial	dispersed not						y		
Lithophragma glabrum	Council Mt.	G. Johnson 16-72	forb	35 cm	perennial	dispersed not								y
Lomatium grayi	Hard Pk.	G.Johnson 17-493	forb	50 cm	perennial	dispersed not							y	
Lomatium grayi	Lava Pk.	G.Johnson 17-144	forb	50 cm	perennial	dispersed							y	

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Lomatium idahoense	Black Butte Bruin Mt.	G.Johnson 17-347	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	(minor peak)		forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Castle Peak	Marx 2013-151	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Hard Pk.	G.Johnson 17-462	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Horstmann Peak	Zion 2012-012	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Lava Pk. Log Mt.	G.Johnson 17-205	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	(minor peak)	G.Johnson 17-250	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Marshal Mt.	G.Johnson 17-98	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Mt. Eldridge	G. Johnson 16-235	forb	40 cm	perennial	dispersed not					y			
Lomatium idahoense	Pyramid Pk.	G.Johnson 17-445	forb	40 cm	perennial	dispersed not					y			
Lonicera involucreta	Marshal Mt.	G.Johnson 17-28	shrub	200 cm	perennial	dispersed not								y
Lonicera utahensis	Black Butte Bruin Mt.	G.Johnson 17-299	shrub	200 cm	perennial	dispersed not					y			
Lonicera utahensis	(minor peak)	G.Johnson 17-593	shrub	200 cm	perennial	dispersed not					y			
Lonicera utahensis	(minor peak)	G.Johnson 17-225	shrub	200 cm	perennial	dispersed not					y			
Lonicera utahensis	Marshal Mt.	G.Johnson 17-59	shrub	200 cm	perennial	dispersed not					y			
Lonicera utahensis	Mt. Eldridge	G. Johnson 16-231	shrub	200 cm	perennial	dispersed not					y			
Lupinus arbustus	Black Butte	G.Johnson 17-348	forb	70 cm	perennial	dispersed not							y	
Lupinus arbustus	Black Butte	G.Johnson 17-375	forb	70 cm	perennial	dispersed not							y	
Lupinus argenteus var. depressus	Castle Peak	Marx 2013-192	forb	25 cm	perennial	dispersed not			y					
Lupinus argenteus var. depressus	D.O. Lee Peak	Marx 2013-348	forb	25 cm	perennial	dispersed not			y					
Lupinus argenteus var. depressus	Marshal Mt.	G.Johnson 17-78	forb	25 cm	perennial	dispersed not			y					
Lupinus argenteus var. depressus	Salzburger Spitzl Bruin Mt.	Marx 2013-202	forb	25 cm	perennial	dispersed not			y					
Lupinus caudatus	(minor peak)	G.Johnson 17-537	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	(minor peak)	G.Johnson 17-616	forb	60 cm	perennial	dispersed not							y	

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Lupinus caudatus	Council Mt.	G. Johnson 16-98	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Hard Pk.	G. Johnson 17-457	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Hard Pk.	G. Johnson 17-485	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Hard Pk.	G. Johnson 17-508	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Hard Pk.	G. Johnson 17-516	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Lava Pk. Snowbank	G. Johnson 17-119	forb	60 cm	perennial	dispersed not							y	
Lupinus caudatus	Mt.	G. Johnson 16-30	forb	60 cm	perennial	dispersed not							y	
Lupinus leucophyllus var. leucophyllus	Marshal Mt. Bruin Mt. (minor peak)	G. Johnson 17-22	forb	90 cm	perennial	dispersed not								y
Luzula hitchcockii	(minor peak)	G. Johnson 17-572	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	Hard Pk.	G. Johnson 17-522	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	Lava Pk. Log Mt.	G. Johnson 17-191	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	(minor peak)	G. Johnson 17-233	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	Marshal Mt.	G. Johnson 17-78	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	Mt. Eldridge	G. Johnson 16-226	forb	50 cm	perennial	dispersed not						y		
Luzula hitchcockii	Rain Pk.	G. Johnson 16-188	forb	50 cm	perennial	dispersed not						y		
Luzula piperi	Braxton Peak	Marx 2012- 039	forb	35 cm	perennial	dispersed not								y
Luzula spicata	Braxton Peak Bruin Mt. (minor peak)	Marx 2012- 050	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	(minor peak)	G. Johnson 17-617	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	Castle Peak	Marx 2013- 175	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	Council Mt. Hyndman Peak	G. Johnson 16-77	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	Hyndman Peak	Marx 2013- 337	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	Rain Pk. Thompson Peak	G. Johnson 16-183	forb	33 cm	perennial	dispersed not			y					
Luzula spicata	Thompson Peak	Marx 2012- 012	forb	33 cm	perennial	dispersed not			y					
Melica bulbosa	Hard Pk.	G. Johnson 17-503	forb	100 cm	perennial	dispersed not						y		

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/ Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
		G.Johnson		100		not								
Melica bulbosa	Lava Pk.	17-153	forb	cm	perennial	dispersed						y		
		G. Johnson		100		not								
Melica bulbosa	Council Mt.	16-114	forb	cm	perennial	dispersed						y		
	Snowbank Mt.	G. Johnson		100		not								
Melica bulbosa		16-46	forb	cm	perennial	dispersed						y		
		G.Johnson		250		not								
Menziesia ferruginea	Black Butte	17-312	shrub	cm	perennial	dispersed								y
	Bruin Mt.	G.Johnson		250		not								
Menziesia ferruginea	(minor peak)	17-590	shrub	cm	perennial	dispersed								y
	Log Mt.	G.Johnson		250		not								
Menziesia ferruginea	(minor peak)	17-231	shrub	cm	perennial	dispersed								y
	Bruin Mt.	G.Johnson		100		not								
Mertensia campanulata	(minor peak)	17-547	forb	cm	perennial	dispersed								y
		G.Johnson		100		not								
Mertensia campanulata	Hard Pk.	17-489	forb	cm	perennial	dispersed								y
		G.Johnson		100		not								
Mertensia campanulata	Lava Pk.	17-134	forb	cm	perennial	dispersed								y
		G. Johnson		150		not								
Mertensia paniculata	Council Mt.	16-115	forb	cm	perennial	dispersed								y
				150		not								
Mertensia paniculata	Mt. Eldridge		forb	cm	perennial	dispersed								y
		G. Johnson				not								
Micranthes ferruginea	Rain Pk.	16-158	forb	40 cm	perennial	dispersed								y
		G. Johnson				not								
Micranthes idahoensis	Council Mt.	16-86	forb	40 cm	perennial	dispersed								y
		G.Johnson				not								
Micranthes odontoloma	Marshal Mt.	17-06	forb	85 cm	perennial	dispersed				y				
		G.Johnson		120		not								
Micranthes oregana	Marshal Mt.	17-16	forb	cm	perennial	dispersed							y	
	Log Mt.	G.Johnson	matted			not								
Micranthes tolmiei	(minor peak)	17-234	forb	8 cm	perennial	dispersed			y					
		G. Johnson	matted			not								
Micranthes tolmiei	Mt. Eldridge	16-212	forb	8 cm	perennial	dispersed			y					
Montia parvifolia var. batholica	Bruin Mt.	G. Johnson												
	(minor peak)	17-585	forb	15 cm	annual	wind			y					
Montia parvifolia var. batholica	Log Mt.	G.Johnson												
	(minor peak)	17-230	forb	15 cm	annual	wind			y					
Montia parvifolia var. batholica		G. Johnson												
	Rain Pk.	16-186	forb	15 cm	annual	wind			y					
	Horstmann Peak	Zion 2012-038	forb	30 cm	perennial	dispersed							y	
Musineon divaricatum		G. Johnson			annual or	not								
Myosotis laxa	Council Mt.	16-122	forb	40 cm	perennial	dispersed								y
		G.Johnson				not								
Myriopteris gracillima	Lava Pk.	17-169	forb	25 cm	perennial	dispersed								y
	Log Mt.	G.Johnson				not								
Myriopteris gracillima	(minor peak)	17-291	forb	25 cm	perennial	dispersed								y

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Myriopteris gracillima	Marshal Mt.	G.Johnson 17-42	forb	25 cm	perennial	dispersed not								y
Myriopteris gracillima	Pyramid Pk.		forb	25 cm	perennial	dispersed not								y
Noccaea fendleri ssp. idahoensis	Pyramid Pk.	G.Johnson 17-419	matted forb	12 cm	perennial	dispersed not		y						
Noccaea fendleri ssp. idahoensis	Pyramid Pk.	G.Johnson 17-431	matted forb	12 cm	perennial	dispersed not		y						
Noccaea fendleri ssp. idahoensis	Pyramid Pk.	G.Johnson 17-438	matted forb	12 cm	perennial	dispersed not		y						
Orthilla secunda	Black Butte	G.Johnson 17-307	forb	33 cm	perennial	dispersed not				y				
Oryzopsis exigua	Black Butte Bruin Mt.	G.Johnson 17-357	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	(minor peak)	G.Johnson 17-545	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	Hard Pk. Log Mt.	G.Johnson 17-511	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	(minor peak)	G.Johnson 17-259	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	Marshal Mt.	G. Johnson 17-25	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	Mt. Eldridge	G.Johnson 16-233	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	Pyramid Pk.	G. Johnson 17-404	forb	35 cm	perennial	dispersed not						y		
Oryzopsis exigua	Rain Pk.	G.Johnson 16-186	forb	35 cm	perennial	dispersed						y		
Oxyria digyna	Black Butte	Marx 2012- 17-303	forb	60 cm	perennial	wind		y						
Oxyria digyna	Braxton Peak Bruin Mt.	G.Johnson 17-594	forb	60 cm	perennial	wind		y						
Oxyria digyna	(minor peak)	Marx 2013- 163	forb	60 cm	perennial	wind		y						
Oxyria digyna	Castle Peak	G. Johnson 16-105	forb	60 cm	perennial	wind		y						
Oxyria digyna	Council Mt. Horstmann Peak	Zion 2012- 003	forb	60 cm	perennial	wind		y						
Oxyria digyna	Hyndman Peak	Marx 2013- 330	forb	60 cm	perennial	wind		y						
Oxyria digyna	Lava Pk. Log Mt.	G.Johnson 17-187	forb	60 cm	perennial	wind		y						
Oxyria digyna	(minor peak)	G.Johnson 17-275	forb	60 cm	perennial	wind		y						
Oxyria digyna	Marshal Mt.	G.Johnson 17-34	forb	60 cm	perennial	wind		y						

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Oxyria digyna	Mount Cramer	Marx 2013-098	forb	60 cm	perennial	wind		y						
Oxyria digyna		G. Johnson 16-259	forb	60 cm	perennial	wind		y						
Oxyria digyna	Mt. Eldridge	G. Johnson 17-442	forb	60 cm	perennial	wind		y						
Oxyria digyna	Pyramid Pk.	G. Johnson 16-146	forb	60 cm	perennial	wind		y						
Oxyria digyna	Rain Pk.	Marx 2013-243	forb	60 cm	perennial	wind		y						
Oxyria digyna	Salzburger Spitzl	Marx 2013-112	forb	60 cm	perennial	wind		y						
Oxyria digyna	Snowyside Peak	Marx 2013-380	forb	30 cm	perennial	wind not								
Oxytropis deflexa	D.O. Lee Peak	Marx 2013-398	forb	7.3 cm	perennial	dispersed not								y
Oxytropis parryi	D.O. Lee Peak	Marx 2013-279	forb	30 cm	perennial	dispersed	y							
Packera subnuda	Hyndman Peak	Marx 2013-148	forb	15 cm	perennial	wind		y						
Packera subnuda var. subnuda	Hyndman Peak	Marx 2013-373	forb	30 cm	perennial	wind		y						
Packera werneriiifolius	Castle Peak	Marx 2013-107	forb	15 cm	perennial	wind		y						
Packera werneriiifolius	D.O. Lee Peak	Marx 2013-200	forb	15 cm	perennial	wind not		y						
Packera werneriiifolius	Snowyside Peak	Marx 2013-100	forb	15 cm	perennial	wind not		y						
Parnassia fimbriata	Salzburger Spitzl	Marx 2013-200	forb	35 cm	perennial	wind not				y				
Pedicularis bracteosa var. siifolia	Log Mt. (minor peak)	G. Johnson 17-248	forb	100 cm	perennial	dispersed not						y		
Pedicularis bracteosa var. siifolia	Marshal Mt.	G. Johnson 17-19	forb	100 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Black Butte	G. Johnson 17-345	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta		G. Johnson 16-121	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Council Mt.	G. Johnson 17-274	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Log Mt. (minor peak)	G. Johnson 17-100	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Marshal Mt.	G. Johnson 16-261	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Mt. Eldridge	G. Johnson 16-155	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Rain Pk.	G. Johnson 16-53	forb	60 cm	perennial	dispersed not						y		
Pedicularis contorta var. contorta	Snowbank Mt.	G. Johnson 16-53	forb	60 cm	perennial	dispersed not						y		
Pedicularis groenlandica	Hyndman Peak	Marx 2013-295	forb	70 cm	perennial	dispersed not						y		

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
		G.Johnson				not								
Pedicularis groenlandica	Marshal Mt.	17-08	forb	70 cm	perennial	dispersed					y			
	Salzburger Spitzl	Marx 2013-204	forb	70 cm	perennial	dispersed					y			
Pedicularis groenlandica	Bruin Mt.	G.Johnson				not								
Pedicularis racemosa var. alba	(minor peak)	17-587	forb	50 cm	perennial	dispersed								y
		G.Johnson				not								
Pedicularis racemosa var. alba	Lava Pk.	17-193	forb	50 cm	perennial	dispersed								y
	Log Mt.	G.Johnson				not								
Pedicularis racemosa var. alba	(minor peak)	17-244	forb	50 cm	perennial	dispersed								y
		G.Johnson				not								
Pedicularis racemosa var. alba	Pyramid Pk.	17-406	forb	50 cm	perennial	dispersed								y
	Snowbank	G. Johnson				not								
Pellaea breweri	Mt.	16-64	forb	20 cm	perennial	dispersed					y			
Penstemon attenuatus var. militaris	Bruin Mt.	G.Johnson				not								
	(minor peak)	17-536	forb	90 cm	perennial	dispersed						y		
Penstemon attenuatus var. militaris	Council Mt.	G. Johnson				not							y	
		16-79	forb	90 cm	perennial	dispersed								
Penstemon attenuatus var. militaris	Hard Pk.	G.Johnson				not								
		17-506	forb	90 cm	perennial	dispersed						y		
Penstemon attenuatus var. militaris	Lava Pk.	G.Johnson				not								
		17-132	forb	90 cm	perennial	dispersed						y		
Penstemon attenuatus var. militaris	Log Mt.	G.Johnson				not								
	(minor peak)	17-272	forb	90 cm	perennial	dispersed							y	
Penstemon attenuatus var. militaris	Marshal Mt.	G.Johnson				not								
		17-74	forb	90 cm	perennial	dispersed							y	
Penstemon attenuatus var. pseudoprocerus	Black Butte	G.Johnson				not								
		17-343	forb	40 cm	perennial	dispersed							y	
Penstemon attenuatus var. pseudoprocerus	Marshal Mt.	G.Johnson				not								
		17-105	forb	40 cm	perennial	dispersed							y	
Penstemon attenuatus var. pseudoprocerus	Marshal Mt.	G.Johnson				not								
		17-33	forb	40 cm	perennial	dispersed							y	
Penstemon attenuatus var. pseudoprocerus	Pyramid Pk.	G.Johnson				not								
		17-399	forb	40 cm	perennial	dispersed							y	
Penstemon attenuatus var. pseudoprocerus	Snowbank	G. Johnson				not								
		16-49	forb	40 cm	perennial	dispersed							y	
Penstemon fruticosus var. fruticosus	Log Mt.	G.Johnson				not								
	(minor peak)	17-292	forb	40 cm	perennial	dispersed								y
Penstemon fruticosus var. fruticosus	Pyramid Pk.	G.Johnson				not								
		17-403	forb	40 cm	perennial	dispersed								y
Penstemon fruticosus var. fruticosus	Rain Pk.	G. Johnson				not								
		16-140	forb	40 cm	perennial	dispersed								y
Penstemon fruticosus var. fruticosus	Snowbank	G. Johnson				not								
		16-13	forb	40 cm	perennial	dispersed								y
Penstemon fruticosus var. serratus	Lava Pk.	G.Johnson				not								
		17-155	forb	40 cm	perennial	dispersed								y
Penstemon fruticosus var. serratus	Marshal Mt.	G.Johnson				not								
		17-65	forb	40 cm	perennial	dispersed								y

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Penstemon globosus	Mt. Eldridge	G. Johnson 16-234	forb	60 cm	perennial	dispersed not								y
Penstemon globosus	Rain Pk. Snowbank	G. Johnson 16-165	forb	60 cm	perennial	dispersed not								y
Penstemon globosus	Mt.	16-5	forb	60 cm	perennial	dispersed not								y
Penstemon montanus var. idahoensis	Braxton Peak	Marx 2012-037	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. idahoensis	Castle Peak	Marx 2013-185	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. idahoensis	Horstmann Peak	Zion 2012-036	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. idahoensis	Mt. Eldridge	G. Johnson 16-268	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. idahoensis	Pyramid Pk.		forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. idahoensis	Rain Pk.	G. Johnson 16-143	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. montanus	Log Mt. (minor peak)	G. Johnson 17-281	forb	30 cm	perennial	dispersed not		y						
Penstemon montanus var. montanus	Pyramid Pk. Snowbank	G. Johnson 17-383	forb	30 cm	perennial	dispersed not		y						
Penstemon payettensis	Mt.	G. Johnson 16-41	forb	70 cm	perennial	dispersed not							y	
Penstemon procerus var. formosus	Salzburger Spitzl	Marx 2013-245	forb	15 cm	perennial	dispersed not		y						
Penstemon venustus	Council Mt.	G. Johnson 16-126	forb	80 cm	perennial	dispersed not							y	
Penstemon venustus	Lava Pk.	G. Johnson 17-170	forb	80 cm	perennial	dispersed not							y	
Perideridia bolanderi	Lava Pk.	G. Johnson 17-175	forb	60 cm	perennial	dispersed not							y	
Phacelia hastata	Castle Peak Bruin Mt. (minor peak)	Marx 2013-150	forb	50 cm	perennial	dispersed not				y				
Phacelia hastata var. alpina		G. Johnson 17-613	forb	20 cm	perennial	dispersed not		y						
Phacelia hastata var. alpina	Hard Pk.	G. Johnson 17-486	forb	20 cm	perennial	dispersed not		y						
Phacelia hastata var. alpina	Mt. Eldridge	G. Johnson 16-276	forb	20 cm	perennial	dispersed not		y						
Phacelia hastata var. alpina	Pyramid Pk.	G. Johnson 17-449	forb	20 cm	perennial	dispersed not		y						
Phacelia hastata var. leptosepala	Hard Pk.	G. Johnson 17-479	forb	50 cm	perennial	dispersed not					y			
Phacelia hastata var. leptosepala	Snowbank Mt.	G. Johnson 16-23	forb	50 cm	perennial	dispersed not					y			
Phacelia minutissima	Lava Pk.	G. Johnson 17-180	forb	10 cm	annual	dispersed							y	

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Phacelia sericea var. ciliosa	Bruin Mt. (minor peak)	G.Johnson 17-459	forb	90 cm	perennial	not dispersed					y			
Phacelia sericea var. ciliosa	Lava Pk.	G.Johnson 17-113	forb	90 cm	perennial	not dispersed					y			
Phacelia sericea var. ciliosa	Marshal Mt.	G.Johnson 17-69	forb	90 cm	perennial	not dispersed					y			
Phacelia sericea var. ciliosa	Marshal Mt. Hyndman Peak	G.Johnson 17-96 Marx 2013-293	forb	90 cm	perennial	not dispersed					y			
Phleum alpinum	Salzburger Spitzl	Marx 2013-217	forb	50 cm	perennial	not dispersed					y			
Phlox austromontana	Council Mt.	G. Johnson 16-68	matted forb	10 cm	perennial	not dispersed								y
Phlox austromontana	Hard Pk. Snowbank Mt.	G. Johnson 17-475 16-38	matted forb	10 cm	perennial	not dispersed								y
Phlox austromontana	Bruin Mt. (minor peak)	G. Johnson 17-569	matted forb	10 cm	perennial	not dispersed								y
Phlox diffusa	Hyndman Peak	Marx 2013-323	matted forb	10 cm	perennial	not dispersed						y		
Phlox diffusa	Marshal Mt.	G. Johnson 17-103	matted forb	10 cm	perennial	not dispersed						y		
Phlox diffusa	Mt. Eldridge	G. Johnson 16-241 Marx 2013-160	matted forb	10 cm	perennial	not dispersed						y		
Phlox pulvinata	Castle Peak D.O. Lee Peak	Marx 2013-371	matted forb	0.5 cm	perennial	not dispersed						y		
Phlox pulvinata	Horstmann Peak	Zion 2012-017	matted forb	0.5 cm	perennial	not dispersed						y		
Phlox pulvinata	Rain Pk. Salzburger Spitzl	G. Johnson 16-133 Marx 2013-260	matted forb	0.5 cm	perennial	not dispersed						y		
Phlox pulvinata	Thompson Peak	Clevenger 2012-013	matted forb	0.5 cm	perennial	not dispersed						y		
Phoenicaulis cheiranthoides	Council Mt. Bruin Mt. (minor peak)	G. Johnson 16-87 G.Johnson 17-630	forb	30 cm	perennial	not dispersed				y				
Phyllodoce empetriformis		G.Johnson 17-523	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Hard Pk. Horstmann Peak	Zion 2012-021	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Hyndman Peak	Marx 2013-296	dawrf shrub	50 cm	perennial	not dispersed		y						

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/ Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Phyllodoce empetriformis	Lava Pk. Log Mt.	G.Johnson 17-197	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	(minor peak)	G.Johnson 17-232	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Marshal Mt.	G.Johnson 17-66	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Mount Cramer	Marx 2013-059	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Mt. Eldridge	G. Johnson 16-223	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Pyramid Pk.	G. Johnson 16-198	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Rain Pk. Salzburger Spitzl	Marx 2013-206	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Snowbank Mt.	G. Johnson 16-50	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Snowyside Peak	Marx 2013-130	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce empetriformis	Thompson Peak	Clevenger 2012-014	dawrf shrub	50 cm	perennial	not dispersed		y						
Phyllodoce glanduliflora	Hyndman Peak	Marx 2013-280	dawrf shrub	40 cm	perennial	not dispersed		y						
Phyllodoce glanduliflora	Mount Cramer	Marx 2013-059	dawrf shrub	40 cm	perennial	not dispersed		y						
Phyllodoce glanduliflora	Rain Pk. Thompson	G. Johnson 16-172	dawrf shrub	40 cm	perennial	not dispersed		y						
Phyllodoce glanduliflora	Peak	Clevenger 2012-016	dawrf shrub	40 cm	perennial	not dispersed		y						
Picea engelmannii	Black Butte	G.Johnson 17-306	tree	5000 cm	perennial	wind					y			
Picea engelmannii	Braxon Peak Bruin Mt.	Marx 2012-038	tree	5000 cm	perennial	wind					y			
Picea engelmannii	(minor peak)	G.Johnson 17-584	tree	5000 cm	perennial	wind					y			
Picea engelmannii	Marshal Mt.	G.Johnson 17-21	tree	5000 cm	perennial	wind					y			
Picea engelmannii	Mt. Eldridge	G. Johnson 16-229	tree	5000 cm	perennial	wind					y			
Picea engelmannii	Pyramid Pk.	G.Johnson 17-405	tree	5000 cm	perennial	wind					y			
Picea engelmannii	Rain Pk.	G. Johnson 16-173	tree	5000 cm	perennial	wind					y			
Pinus albicaulis	Black Butte	G.Johnson 17-340	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Braxon Peak	Marx 2012-040	tree	2100 cm	perennial	animals		y						

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Pinus albicaulis	Bruin Mt. (minor peak)	G.Johnson 17-538	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Council Mt.	G. Johnson 16-93	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Hard Pk.	G.Johnson 17-482	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Horstmann Peak	Zion 2012-033	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Lava Pk.		tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Log Mt. (minor peak)	G.Johnson 17-263	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Marshal Mt.	G.Johnson 17-85	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Mt. Eldridge	G. Johnson 16-228	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Pyramid Pk.	G. Johnson 17-392	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Rain Pk.	G. Johnson 16-154	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Snowbank Mt.	G. Johnson 16-7	tree	2100 cm	perennial	animals		y						
Pinus albicaulis	Thompson Peak	Clevenger 2012-023	tree	2100 cm	perennial	animals		y						
Pinus contorta	Black Butte Log Mt.	G.Johnson 17-336	tree	3500 cm	perennial	wind								y
Pinus contorta	(minor peak)	G.Johnson 17-294	tree	3500 cm	perennial	wind								y
Pinus contorta	Marshal Mt.	G. Johnson 17-95	tree	3500 cm	perennial	wind								y
Pinus contorta	Mt. Eldridge	G. Johnson 16-227	tree	3500 cm	perennial	wind								y
Pinus contorta	Pyramid Pk.	G. Johnson 17-444	tree	3500 cm	perennial	wind								y
Pinus contorta	Rain Pk.	G. Johnson 16-202	tree	7000 cm	perennial	wind								y
Pinus ponderosa	Lava Pk.	G. Johnson 17-165	tree	7000 cm	perennial	wind								y
Pinus ponderosa	Rain Pk.	G. Johnson 16-149	tree	100 cm	perennial	wind not								y
Plantanthera stricta	Marshal Mt.	G. Johnson 17-17	forb	cm	perennial	dispersed not							y	
Poa compressa	Mt. Eldridge	G. Johnson 16-246	forb	60 cm	perennial	dispersed not								y
Poa fendleriana subsp. fendleriana	Castle Peak	Marx 2013-188	forb	70 cm	perennial	dispersed not				y				
Poa fendleriana subsp. fendleriana	Horstmann Peak	Zion 2012-010	forb	70 cm	perennial	dispersed not				y				

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/ Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Poa fendleriana subsp. fendleriana	Snowyside Peak	Marx 2013-141	forb	70 cm	perennial	not dispersed				y				
Poa fendleriana subsp. longiligula	Council Mt.	G. Johnson 16-66	forb	70 cm	perennial	not dispersed								y
Poa fendleriana subsp. longiligula	Council Mt.	G. Johnson 16-75	forb	70 cm	perennial	not dispersed								y
Poa fendleriana subsp. longiligula	Rain Pk.	G. Johnson 16-148	forb	70 cm	perennial	not dispersed								y
Poa fendleriana subsp. longiligula	Rain Pk.	G. Johnson 16-178	forb	70 cm	perennial	not dispersed								y
Poa nervosa	Mt. Eldridge	G. Johnson 16-224	forb	70 cm	perennial	not dispersed						y		
Poa secunda	Braxon Peak	Marx 2012-035	forb	30 cm	perennial	not dispersed				y				
Poa secunda	Castle Peak	Marx 2013-187	forb	30 cm	perennial	not dispersed				y				
Poa secunda	D.O. Lee Peak	Marx 2013-376	forb	30 cm	perennial	not dispersed				y				
Poa secunda	Hyndman Peak	Marx 2013-342	forb	30 cm	perennial	not dispersed				y				
Poa secunda	Salzburger Spitzl	Marx 2013-237	forb	30 cm	perennial	not dispersed				y				
Poa secunda	Snowyside Peak	Marx 2013-128	forb	30 cm	perennial	not dispersed				y				
Poa secunda subsp. juncifolia	Bruin Mt. (minor peak)	G. Johnson 17-560	forb	120 cm	perennial	not dispersed				y				
Poa secunda subsp. juncifolia	Hard Pk.	G. Johnson 17-464	forb	120 cm	perennial	not dispersed				y				
Poa secunda subsp. juncifolia	Mt. Eldridge	G. Johnson 16-277	forb	120 cm	perennial	not dispersed				y				
Poa secunda subsp. juncifolia	Rain Pk.	G. Johnson 16-204	forb	100 cm	perennial	not dispersed				y				
Poa secunda subsp. secunda	Lava Pk.	G. Johnson 17-159	forb	100 cm	perennial	not dispersed				y				
Poa secunda subsp. secunda	Log Mt. (minor peak)	G. Johnson 17-284	forb	100 cm	perennial	not dispersed				y				
Poa secunda subsp. secunda	Marshal Mt.	G. Johnson 17-626	forb	cm	perennial	not dispersed				y				
Poa wheeleri	Black Butte	G. Johnson 17-342	forb	80 cm	perennial	not dispersed						y		
Poa wheeleri	Black Butte	G. Johnson 17-362	forb	80 cm	perennial	not dispersed						y		
Poa wheeleri	Bruin Mt. (minor peak)	G. Johnson 17-552	forb	80 cm	perennial	not dispersed						y		
Poa wheeleri	Bruin Mt. (minor peak)	G. Johnson 17-561	forb	80 cm	perennial	not dispersed						y		
Poa wheeleri	Council Mt.	G. Johnson 16-130	forb	80 cm	perennial	not dispersed						y		

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Poa wheeleri	Hard Pk.	G.Johnson 17-465	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Hard Pk.	G.Johnson 17-468	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Lava Pk.	G.Johnson 17-139	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Lava Pk.	G.Johnson 17-625	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Log Mt. (minor peak)	G.Johnson 17-255	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Marshal Mt.	G.Johnson 17-23	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Marshal Mt.	G.Johnson 17-80	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Pyramid Pk.	G.Johnson 17-389	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Pyramid Pk.	G.Johnson 17-402	forb	80 cm	perennial	dispersed not						y		
Poa wheeleri	Snowbank Mt.	G. Johnson 16-17	forb	80 cm	perennial	dispersed not						y		
Polemonium occidentale	Marshal Mt.	G.Johnson 17-03	forb	100 cm	perennial	dispersed not								y
Polemonium pulcherrimum ssp. pulcherrimum	Bruin Mt. (minor peak)	G.Johnson 17-562	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Council Mt.	G. Johnson 16-83	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Hard Pk.	G.Johnson 17-499	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Lava Pk.	G.Johnson 17-186	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Log Mt. (minor peak)	G.Johnson 17-273	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Marshal Mt.	G.Johnson 17-102	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Rain Pk.	G. Johnson 16-139	forb	30 cm	perennial	dispersed not			y					
Polemonium pulcherrimum ssp. pulcherrimum	Snowbank Mt.	G. Johnson 16-3	forb	30 cm	perennial	dispersed not			y					
Polemonium viscosum	Castle Peak	Marx 2013- 177	forb	40 cm	perennial	dispersed not			y					
Polemonium viscosum	D.O. Lee Peak	Marx 2013- 401	forb	40 cm	perennial	dispersed not			y					
Polemonium viscosum	Hyndman Peak	Marx 2013- 332	forb	40 cm	perennial	dispersed not			y					
Polemonium viscosum	Salzburger Spitzl	Marx 2013- 266	forb	40 cm	perennial	dispersed not			y					
Polemonium viscosum	Snowyside Peak	Marx 2013- 123	forb	40 cm	perennial	dispersed not			y					

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Polemonium viscosum	Thompson Peak	Marx 2012-019	forb	40 cm	perennial	not dispersed		y						
Polygonum douglasii	Lava Pk. Bruin Mt.	G.Johnson 17-182	forb	80 cm	annual	not dispersed							y	
Polystichum lonchitis	(minor peak) Log Mt.	G.Johnson 17-596	forb	60 cm	perennial	not dispersed		y						
Populus tremuloides	(minor peak)	G. Johnson 17-237	tree	3500 cm	perennial	wind								y
Populus tremuloides	Rain Pk.	G. Johnson 16-174	tree	100 cm	perennial	wind not								y
Potentilla arguta	Council Mt. Mount	Marx 2013-16-118	forb	cm	perennial	not dispersed								y
Potentilla brevifolia	Cramer Thompson Peak	G.Johnson 2012-006	forb	20 cm	perennial	not dispersed		y						
Potentilla brevifolia	Bruin Mt. (minor peak)	G.Johnson 17-598	matted forb	30 cm	perennial	not dispersed		y				y		
Potentilla flabellifolia	Hard Pk.	G.Johnson 17-525	forb	30 cm	perennial	not dispersed						y		
Potentilla glandulosa	Hard Pk.	G.Johnson 17-509	forb	75 cm	perennial	not dispersed								y
Potentilla glandulosa	Lava Pk.	G.Johnson 17-148	forb	75 cm	perennial	not dispersed								y
Potentilla glaucophylla var. glaucophylla	Hyndman Peak	Marx 2013-271	forb	45 cm	perennial	not dispersed						y		
Potentilla glaucophylla var. glaucophylla	Lava Pk.	G.Johnson 17-138	forb	45 cm	perennial	not dispersed						y		
Potentilla glaucophylla var. glaucophylla	Log Mt. (minor peak)	G.Johnson 17-209	forb	45 cm	perennial	not dispersed						y		
Potentilla glaucophylla var. glaucophylla	Salzburger Spitzl	Marx 2013-222	forb	45 cm	perennial	not dispersed						y		
Potentilla gracilis	Lava Pk.	G.Johnson 17-176	forb	120 cm	perennial	not dispersed								y
Potentilla lactea	Mt. Eldridge	G. Johnson 16-263	forb	100 cm	perennial	not dispersed								y
Pseudoregneria spicata	Council Mt. Snowbank	G. Johnson 16-107	forb	100 cm	perennial	not dispersed							y	
Pseudoregneria spicata	Mt.	G.Johnson 16-19	forb	cm	perennial	not dispersed							y	
Pseudostellaria jamesiana	Black Butte	G.Johnson 17-308	forb	2.5 cm	perennial	not dispersed							y	
Pseudostellaria jamesiana	Pyramid Pk.	G.Johnson 17-450	forb	2.5 cm	perennial	not dispersed							y	
Pseudotsuga menziesii	Black Butte	G.Johnson 17-374	tree	10000 cm	perennial	wind not							y	
Pterospora andromedea	Pyramid Pk.	G.Johnson 17-453	forb	170 cm	perennial	not dispersed								y

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Pyrola picta	Log Mt. (minor peak)	G.Johnson 17-289	forb	46 cm	perennial	dispersed not								y
Pyrola picta	Pyramid Pk.	G.Johnson 17-451	forb	46 cm	perennial	dispersed not								y
Pyrrcoma carthamoides var. carthamoides	Council Mt.	G. Johnson 16-129	forb	50 cm	perennial	wind not							y	
Ranunculus eschscholtzii	Castle Peak	Marx 2013-144	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. eschscholtzii	Thompson Peak	Clevenger 2012-020	forb	3 cm	perennial	dispersed not	y							
Ranunculus eschscholtzii var. suksdorfii	Mt. Eldridge	G. Johnson 16-250	forb	3 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Bruin Mt. (minor peak)	G.Johnson 17-599	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Council Mt.	G. Johnson 16-90	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Lava Pk.	G.Johnson 17-183	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Log Mt. (minor peak)	G.Johnson 17-276	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Marshal Mt.	G. Johnson 17-92	forb	27 cm	perennial	dispersed not						y		
Ranunculus eschscholtzii var. trisectus	Rain Pk.	G. Johnson 16-156	forb	27 cm	perennial	dispersed not						y		
Rhodiola integrifolia sbsp. integrifolia	Rain Pk.	G. Johnson 16-171	forb	50 cm	perennial	dispersed not		y						
Rhododendron columbianum	Hard Pk. Log Mt. (minor peak)	G.Johnson 17-510	shrub	200 cm	perennial	dispersed not				y				
Rhododendron columbianum	Pyramid Pk.	G. Johnson 17-240	shrub	200 cm	perennial	dispersed not				y				
Ribes cereum var. cereum	Council Mt.	G. Johnson 16-101	shrub	200 cm	perennial	animals				y				
Ribes lacustre	Black Butte	G.Johnson 17-317	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Braxon Peak	Marx 2012-049	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Castle Peak	Marx 2013-165	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Hyndman Peak	Marx 2013-317	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Log Mt. (minor peak)	G.Johnson 17-257	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Log Mt. (minor peak)	G.Johnson 17-258	shrub	200 cm	perennial	animals					y			
Ribes lacustre	Salzburger Spitzl	Marx 2013-233	shrub	200 cm	perennial	animals					y			

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Ribes montigenum	Black Butte Bruin Mt.	G.Johnson 17-360	shrub	70 cm	perennial	animals		y						
Ribes montigenum	(minor peak)	G.Johnson 17-533	shrub	70 cm	perennial	animals		y						
Ribes montigenum	Council Mt.	G. Johnson 16-92	shrub	70 cm	perennial	animals		y						
Ribes montigenum	Hard Pk.	G.Johnson 17-492	shrub	70 cm	perennial	animals		y						
Ribes montigenum	Lava Pk.	G.Johnson 17-196	shrub	70 cm	perennial	animals		y						
Ribes montigenum	Pyramid Pk.		shrub	70 cm	perennial	animals		y						
Ribes montigenum	Rain Pk.	G. Johnson 16-142	shrub	70 cm	perennial	animals		y						
Ribes montigenum	Snowbank Mt.	G. Johnson 16-63	shrub	70 cm	perennial	animals		y						
Ribes viscosissimum var. viscosissimum	Rain Pk.	G. Johnson 16-192	shrub	200 cm	perennial	animals					y			
Rubus idaeus var. gracilipes	Black Butte Bruin Mt.	G.Johnson 17-358	forb	300 cm	perennial	animals								y
Rubus idaeus var. gracilipes	(minor peak)	G.Johnson 17-543	forb	300 cm	perennial	animals								y
Rubus idaeus var. gracilipes	Log Mt.	G.Johnson 17-269	forb	300 cm	perennial	animals								y
Rubus idaeus var. gracilipes	(minor peak)	G.Johnson 17-269	forb	300 cm	perennial	animals								y
Rubus idaeus var. gracilipes	Marshal Mt.	G.Johnson 17-50	forb	300 cm	perennial	animals								y
Rubus idaeus var. gracilipes	Pyramid Pk.	G.Johnson 17-413	forb	300 cm	perennial	animals								y
Rubus idaeus var. strigosus	Mt. Eldridge	G. Johnson 16-225	forb	300 cm	perennial	animals								y
Rubus idaeus var. strigosus	Rain Pk.	G. Johnson 16-170	forb	300 cm	perennial	animals								y
Rumex acetosella	Snowbank Mt.	G. Johnson 16-42	forb	45 cm	perennial	not dispersed				y				
Rumex paucifolius	Snowbank Mt.	G. Johnson 16-57	forb	70 cm	perennial	wind not		y						
Sabulina nuttallii	Mount Cramer	Marx 2013-074	matted forb	20 cm	perennial	dispersed				y				
Sabulina nuttallii	Thompson Peak	Marx 2012-009	matted forb	20 cm	perennial	not dispersed				y				
Sabulina nuttallii var. nuttallii	Pyramid Pk.	G.Johnson 17-435	matted forb	20 cm	perennial	dispersed				y				
Sabulina obtusiloba	Braxon Peak	Marx 2012-050	matted forb	12 cm	perennial	not dispersed		y						
Sabulina obtusiloba	Castle Peak	Marx 2013-154	matted forb	12 cm	perennial	dispersed		y						
Sabulina obtusiloba	D.O. Lee Peak	Marx 2013-381	matted forb	12 cm	perennial	not dispersed		y						
Sabulina obtusiloba	Hyndman Peak	Marx 2013-307	matted forb	12 cm	perennial	not dispersed		y						

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Sabulina obtusiloba	Mount Cramer Hyndman Peak	Marx 2013-073	matted forb	12 cm	perennial	not dispersed		y						
Salix arctica	Salzburger Spitzl	Marx 2013-277	shrub	25 cm	perennial	wind	y							
Salix arctica		Marx 2013-215	shrub	25 cm	perennial	wind	y							
Salix eastwoodiae	Black Butte	G.Johnson 17-315	shrub	400 cm	perennial	wind		y						
Salix eastwoodiae	Black Butte	G.Johnson 17-322	shrub	400 cm	perennial	wind		y						
Salix eastwoodiae	Black Butte Bruin Mt.	G.Johnson 17-382	shrub	400 cm	perennial	wind		y						
Salix eastwoodiae	(minor peak) Log Mt.	G.Johnson 17-605	shrub	400 cm	perennial	wind		y						
Salix eastwoodiae	(minor peak) D.O. Lee Peak	G.Johnson 17-246	shrub	400 cm	perennial	wind		y						
Salix nivalis		Marx 2013-361	matted forb	4 cm	perennial	wind	y							
Salix scouleriana	Rain Pk.	G. Johnson 16-195	shrub	1200 cm	perennial	wind not							y	
Sambucus racemosa var. melanocarpa	Black Butte Bruin Mt.	G.Johnson 17-302	shrub	200 cm	perennial	dispersed not			y					
Sambucus racemosa var. melanocarpa	(minor peak)	G.Johnson 17-564	shrub	200 cm	perennial	dispersed not			y					
Sambucus racemosa var. melanocarpa	Marshal Mt.	G.Johnson 17-54	shrub	200 cm	perennial	dispersed not			y					
Sambucus racemosa var. melanocarpa	Pyramid Pk.	G.Johnson 17-422	shrub	200 cm	perennial	dispersed not			y					
Saxifraga austromontana	Braxon Peak Bruin Mt.	Marx 2012-053	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	(minor peak)	G.Johnson 17-591	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	Lava Pk. Log Mt.	G.Johnson 17-200	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	(minor peak)	G. Johnson 17-253	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	Mt. Eldridge	G. Johnson 16-205	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	Pyramid Pk.		matted forb	20 cm	perennial	dispersed not		y						
Saxifraga austromontana	Rain Pk. Log Mt.	G.Johnson 17-223	matted forb	20 cm	perennial	dispersed not		y						
Saxifraga debilis	(minor peak) Bruin Mt.	G.Johnson 17-592	forb	10 cm	perennial	dispersed not						y		
Saxifraga mertensiana	(minor peak) Hyndman Peak	G.Johnson 17-592	forb	40 cm	perennial	dispersed not								y
Saxifraga mertensiana	Peak	Marx 2013-269	forb	40 cm	perennial	dispersed								y

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Saxifraga mertensiana	Salzburger Spitzl	Marx 2013-218	forb	40 cm	perennial	not dispersed								y
Saxifraga oppositifolia	D.O. Lee Peak	Marx 2013-411	matted forb	5 cm	perennial	not dispersed	y							
Sedum borschii	Black Butte	G.Johnson 17-311	forb	6 cm	perennial	not dispersed							y	
Sedum debile	Castle Peak	Marx 2013-178	forb	12 cm	perennial	not dispersed						y		
Sedum debile	D.O. Lee Peak	Marx 2013-357	forb	12 cm	perennial	not dispersed						y		
Sedum lanceolatum	Braxon Peak	Marx 2012-043	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Bruin Mt. (minor peak)	G.Johnson 17-609	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Council Mt.	G. Johnson 16-73	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	D.O. Lee Peak	Marx 2013-356	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	G.Johnson	17-497	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Hard Pk. Horstmann Peak	Zion 2012-015	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Hyndman Peak	Marx 2013-310	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	G.Johnson	17-109	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Lava Pk. Log Mt. (minor peak)	G.Johnson 17-222	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Mount Cramer	Marx 2013-069	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	G. Johnson	16-211	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	G.Johnson	17-443	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Pyramid Pk. Salzburger Spitzl	Marx 2013-242	forb	1.8 cm	perennial	not dispersed				y				
Sedum lanceolatum	Thompson Peak	Marx 2012-003	forb	1.8 cm	perennial	not dispersed				y				
Senecio crassulus	G.Johnson	17-332	forb	70 cm	perennial	wind						y		
Senecio crassulus	Black Butte Bruin Mt. (minor peak)	G.Johnson 17-531	forb	70 cm	perennial	wind						y		
Senecio crassulus	G.Johnson	17-469	forb	70 cm	perennial	wind						y		
Senecio crassulus	Hard Pk.	17-469	forb	70 cm	perennial	wind						y		
Senecio crassulus	Lava Pk. Log Mt.	G.Johnson 17-142	forb	70 cm	perennial	wind						y		
Senecio crassulus	G.Johnson	17-236	forb	70 cm	perennial	wind						y		

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Senecio crassulus	Marshal Mt.	G.Johnson 17-71	forb	70 cm	perennial	wind						y		
Senecio crassulus	Mt. Eldridge	G. Johnson 16-217	forb	70 cm	perennial	wind						y		
Senecio crassulus	Pyramid Pk.	G.Johnson 17-395	forb	70 cm	perennial	wind						y		
Senecio crassulus	Pyramid Pk.	G.Johnson 17-416	forb	70 cm	perennial	wind						y		
Senecio crassulus	Rain Pk.	G. Johnson 16-166	forb	70 cm	perennial	wind						y		
Senecio fremontii	Black Butte	G.Johnson 17-297	forb	20 cm	perennial	wind		y						
Senecio fremontii	Braxon Peak	Marx 2012- 052	forb	20 cm	perennial	wind		y						
Senecio fremontii	Castle Peak	Marx 2013- 159	forb	20 cm	perennial	wind		y						
Senecio fremontii	Council Mt.	G. Johnson 16-120	forb	20 cm	perennial	wind		y						
Senecio fremontii	D.O. Lee Peak	Marx 2013- 410	forb	20 cm	perennial	wind		y						
Senecio fremontii	Log Mt. (minor peak)	G.Johnson 17-224	forb	20 cm	perennial	wind		y						
Senecio fremontii	Mt. Eldridge	G. Johnson 16-213	forb	20 cm	perennial	wind		y						
Senecio fremontii	Pyramid Pk.	G.Johnson 17-423	forb	20 cm	perennial	wind		y						
Senecio fremontii	Salzburger Spitzl	Marx 2013- 265	forb	20 cm	perennial	wind		y						
Senecio fremontii	Snowyside Peak	Marx 2013- 103	forb	20 cm	perennial	wind		y						
Senecio integerrimus	Mt. Eldridge		forb	70 cm	perennial	wind								y
Senecio integerrimus var. exaltatus	Lava Pk.	G.Johnson 17-188	forb	70 cm	perennial or biennial	wind				y				
Senecio integerrimus var. exaltatus	Pyramid Pk.	G.Johnson 17-439	forb	70 cm	perennial or biennial	wind				y				
Senecio integerrimus var. integerrimus	Black Butte	G.Johnson 17-352	forb	70 cm	perennial	wind								y
Senecio integerrimus var. integerrimus	Council Mt.	G. Johnson 16-85	forb	70 cm	perennial	wind								y
Senecio serra	Snowbank Mt.	G. Johnson 16-40	forb	200 cm	perennial	wind							y	
Senecio triangularis var. triangularis	Bruin Mt. (minor peak)	G.Johnson 17-14	forb	200 cm	perennial	wind								y
Senecio triangularis var. triangularis	Bruin Mt. (minor peak)	G.Johnson 17-597	forb	200 cm	perennial	wind								y
Sibbaldia procumbens	Black Butte	G.Johnson 17-359	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Braxon Peak	Marx 2012- 041	matted forb	12 cm	perennial	dispersed		y						

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Sibbaldia procumbens	Bruin Mt. (minor peak)	Marx 2013-162	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Castle Peak	Zion 2012-029	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Log Mt. (minor peak)	G.Johnson 17-220	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Mount Cramer	Marx 2013-092	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Mt. Eldridge	G.Johnson 17-412	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Pyramid Pk.	G. Johnson 16-176	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Rain Pk.	Marx 2013-219	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Salzburger Spitzl	Clevenger 2012-005	matted forb	12 cm	perennial	dispersed not		y						
Sibbaldia procumbens	Thompson Peak	Marx 2012-020	matted forb	12 cm	perennial	dispersed not		y						
Silene acaulis	Thompson Peak	G.Johnson 17-530	matted forb	15 cm	perennial	dispersed not	y							
Silene douglasii var. douglasii	Bruin Mt. (minor peak)	G. Johnson 16-69	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Council Mt.	G.Johnson 17-507	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Hard Pk.	G.Johnson 17-201	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Lava Pk.	G.Johnson 17-290	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Log Mt. (minor peak)	G.Johnson 17-40	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Marshal Mt.	G.Johnson 17-51	matted forb	70 cm	perennial	dispersed not				y				
Silene douglasii var. douglasii	Marshal Mt.	G.Johnson 17-313	matted forb	70 cm	perennial	dispersed not								
Silene menziesii	Black Butte	G. Johnson 16-164	forb	60 cm	perennial	dispersed not								y
Silene parryi	Rain Pk.	D.O. Lee Marx 2013-396	forb	27 cm	perennial	dispersed not						y		
Smelowskia americana	Hyndman Peak	Marx 2013-316	forb	27 cm	perennial	dispersed not	y							
Smelowskia americana	Salzburger Spitzl	Marx 2013-264	forb	27 cm	perennial	dispersed not	y							
Smelowskia americana	Snowyside Peak	Marx 2013-122	forb	27 cm	perennial	dispersed not	y							

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Smelowskia americana	Thompson Peak	Marx 2012-004 G.Johnson	forb	27 cm	perennial	not dispersed	y							
Solidago multiradiata	Black Butte	17-555	forb	50 cm	perennial	wind		y						
Solidago multiradiata	D.O. Lee Peak	Marx 2013-354	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Horstmann Peak	Zion 2012-002	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Hyndman Peak	Marx 2013-294	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Log Mt. (minor peak)		forb	50 cm	perennial	wind		y						
Solidago multiradiata		G. Johnson 16-257	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Mt. Eldridge	G.Johnson 17-441	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Pyramid Pk.	G. Johnson 16-167	forb	50 cm	perennial	wind		y						
Solidago multiradiata	Rain Pk. Salzburger Spitzl	Marx 2013-213	forb	50 cm	perennial	wind		y						
Spiraea betulifolia		G.Johnson 17-304	shrub	100 cm	perennial	not dispersed								
Spiraea splendens	Black Butte	G.Johnson 17-56	shrub	100 cm	perennial	not dispersed						y		
Spiraea splendens	Marshal Mt.	G. Johnson 16-189	shrub	100 cm	perennial	not dispersed						y		
Stellaria calycantha		G. Johnson 16-76	forb	35 cm	annual	not dispersed					y			
Stellaria longipes ssp. longipes	Council Mt.	G.Johnson 17-30	matted forb	32 cm	perennial	not dispersed	y							
Stellaria longipes ssp. longipes	Marshal Mt.	G.Johnson 17-428	matted forb	32 cm	perennial	not dispersed	y							
Stenotus acaulis	Pyramid Pk.	Marx 2013-184	forb	21 cm	perennial	wind				y				
Stenotus acaulis	Castle Peak	D.O. Lee Marx 2013-368	forb	21 cm	perennial	wind				y				
Stenotus lanuginosus var. andersonii	Bruin Mt. (minor peak)	G.Johnson 17-540	forb	60 cm	perennial	wind				y				
Stenotus lanuginosus var. andersonii	Bruin Mt. (minor peak)	G.Johnson 17-559	forb	60 cm	perennial	wind				y				
Stenotus lanuginosus var. andersonii	Marshal Mt.	G.Johnson 17-91	forb	60 cm	perennial	wind				y				
Stenotus lanuginosus var. lanuginosus	Black Butte	G.Johnson 17-323	forb	31 cm	perennial	wind								y
Stenotus lanuginosus var. lanuginosus		G. Johnson 16-131	forb	31 cm	perennial	not wind								y
Symphoricarpos oreophilus	Council Mt.	G.Johnson 17-156	shrub	150 cm	perennial	not dispersed								y
Symphoricarpos oreophilus	Lava Pk.		shrub	cm	perennial	dispersed								y

Species	Peak Locality	Voucher Number	Growth Habit	Max Height	Life Strategy	Dispersal Mechanism	Alpine/Tundra	Subalpine to Alpine	Subalpine pine	Lowlands to Alpine	Montane to Subalpine	Montane to Alpine	Foothills to Montane	Foothills to Subalpine
Symphoricarpos oreophilus	Snowbank Mt.	G. Johnson 16-55	shrub	150 cm	perennial	not dispersed								y
Symphyotrichum foliaceum var. apricum	Bruin Mt. (minor peak)	G. Johnson 17-588	forb	20 cm	perennial	wind		y						
Symphyotrichum foliaceum var. apricum	D.O. Lee Peak	Marx 2013-349	forb	20 cm	perennial	wind		y						
Symphyotrichum foliaceum var. apricum	Hyndman Peak	Marx 2013-282	forb	20 cm	perennial	wind		y						
Symphyotrichum foliaceum var. apricum	Lava Pk.	G. Johnson 17-199	forb	20 cm	perennial	wind		y						
Symphyotrichum foliaceum var. apricum	Salzburger Spitzl	Marx 2013-226	forb	20 cm	perennial	wind		y						
Symphyotrichum foliaceum var. foliaceum	Bruin Mt. (minor peak)	G. Johnson 17-257	forb	50 cm	perennial	wind						y		
Symphyotrichum foliaceum var. parryi	Hard Pk.	G. Johnson 17-461	forb	30 cm	perennial	wind					y			
Symphyotrichum foliaceum var. parryi	Lava Pk.	G. Johnson 17-108	forb	30 cm	perennial	wind					y			
Symphyotrichum spathulatum var. spathulatum	Black Butte	G. Johnson 17-300	forb	60 cm	perennial	wind								y
Symphyotrichum spathulatum var. spathulatum	Log Mt. (minor peak)	G. Johnson 17-215	forb	60 cm	perennial	wind								y
Symphyotrichum spathulatum var. spathulatum	Marshal Mt.	G. Johnson 17-02	forb	60 cm	perennial	wind								y
Symphyotrichum spathulatum var. spathulatum	Marshal Mt.	G. Johnson 17-94	forb	60 cm	perennial	wind								y
Symphyotrichum spathulatum var. spathulatum	Salzburger Spitzl	Marx 2013-214	forb	60 cm	perennial	wind								y
Synthryis dissecta	Thompson Peak	Clevenger 2012-021	forb	25 cm	perennial	not dispersed		y						
Synthryis missurica	Council Mt. Hyndman	G. Johnson 16-99	forb	60 cm	perennial	not dispersed							y	
Taraxacum scopulorum	Peak	Marx 2013-314	forb	5 cm	perennial	wind	y							
Taraxacum scopulorum	Salzburger Spitzl	Marx 2013-241	forb	5 cm	perennial	wind	y							
Thalictrum occidentale	Black Butte Hyndman	G. Johnson 17-370	forb	1200 cm	perennial	not dispersed								y
Tonestus lyallii	Peak	Marx 2013-321	forb	15 cm	perennial	wind		y						
Tonestus lyallii	Mount Cramer	Marx 2013-077	forb	15 cm	perennial	wind		y						
Tonestus lyallii	Snowyside Peak	Marx 2013-134	forb	15 cm	perennial	wind		y						

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Trifolium longipes var. pedunculatum	Lava Pk.	G.Johnson 17-107	forb	30 cm	perennial	not dispersed							y	
Trisetum spicatum	Black Butte Bruin Mt.	G.Johnson 17-366	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	(minor peak)	G.Johnson 17-556	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Castle Peak	Marx 2013- 167	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Council Mt.	G. Johnson 16-110	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	D.O. Lee Peak	Marx 2013- 353	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Hard Pk.	G.Johnson 17-473	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Horstmann Peak	Zion 2012- 016	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Hyndman Peak	Marx 2013- 339	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Lava Pk.	G.Johnson 17-120	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Lava Pk.	G.Johnson 17-150	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Log Mt.	G.Johnson 17-268	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	(minor peak)	G.Johnson 17-268	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Marshal Mt.	17-89	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Mount Cramer	Marx 2013- 082	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Mt. Eldridge	G. Johnson 16-219	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Pyramid Pk.	G.Johnson 17-384	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Rain Pk.	G. Johnson 16-194	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Salzburger Spitzl	Marx 2013- 205	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Snowbank Mt.	G. Johnson 16-21	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Snowyside Peak	Marx 2013- 129	forb	70 cm	perennial	not dispersed						y		
Trisetum spicatum	Thompson Peak	Marx 2012- 017	forb	70 cm	perennial	not dispersed						y		
Vaccinium membranaceum	Rain Pk.	G. Johnson 16-141	shrub	200 cm	perennial	animals								y
Vaccinium scoparium	Black Butte Bruin Mt.	G.Johnson 17-341	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	(minor peak)	G.Johnson 17-571	dwarf shrub	30 cm	perennial	animals						y		

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Vaccinium scoparium	Hard Pk.	G.Johnson 17-520	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Lava Pk.	G.Johnson 17-203	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Log Mt. (minor peak)	G.Johnson 17-251	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Marshal Mt.	G. Johnson 17-70	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Mt. Eldridge	G. Johnson 16-222	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Pyramid Pk.	G.Johnson 17-401	dwarf shrub	30 cm	perennial	animals						y		
Vaccinium scoparium	Rain Pk.	G. Johnson 16-180	dwarf shrub	30 cm	perennial	animals						y		
Valeriana occidentalis	Mt. Eldridge	G. Johnson 16-275	forb	90 cm	perennial	wind								y
Valeriana sitchensis	Black Butte Bruin Mt.	G.Johnson 17-377	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	(minor peak)	G.Johnson 17-603	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	Council Mt.	G. Johnson 16-91	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	Lava Pk. Log Mt.	G.Johnson 17-131	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	(minor peak)	G.Johnson 17-241	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	Marshal Mt.	G. Johnson 17-5	forb	120 cm	perennial	wind					y			
Valeriana sitchensis	Rain Pk.	G. Johnson 16-162	forb	270 cm	perennial	wind not					y			
Veratrum viride	Black Butte Bruin Mt.	G.Johnson 17-373	forb	270 cm	perennial	dispersed not							y	
Veratrum viride	(minor peak)	G. Johnson 17-518	forb	270 cm	perennial	dispersed not							y	
Veronica cusickii	Snowbank Mt.	G. Johnson 16-32	forb	20 cm	perennial	dispersed not			y					
Veronica wormskjoldii	Hyndman Peak	Marx 2013- 286	forb	30 cm	perennial	dispersed not						y		
Veronica wormskjoldii	Marshal Mt. Hyndman	G.Johnson 17-04 Marx 2013-	forb	30 cm	perennial	dispersed not						y		
Viola adunca	Peak	275 G.Johnson	forb	35 cm	perennial	dispersed not				y				
Viola purpurea	Pyramid Pk.	G.Johnson 17-448	forb	25 cm	perennial	dispersed not								y
Woodsia oregana	Black Butte Bruin Mt.	G.Johnson 17-361	forb	25 cm	perennial	dispersed not								y
Woodsia oregana	(minor peak)	G.Johnson 17-534	forb	25 cm	perennial	dispersed								y

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Woodsia oregana	Hard Pk.	G.Johnson 17-513	forb	25 cm	perennial	dispersed not								y
Woodsia oregana	Lava Pk. Log Mt.	G.Johnson 17-174	forb	25 cm	perennial	dispersed not								y
Woodsia oregana	(minor peak)	G.Johnson 17-210	forb	25 cm	perennial	dispersed not								y
Woodsia oregana	Marshal Mt.	G.Johnson 17-46	forb	25 cm	perennial	dispersed not								y
Xerophyllum tenax	Black Butte	G.Johnson 17-301	forb	cm	perennial	dispersed not								y
Xerophyllum tenax	Marshal Mt.	G.Johnson 17-29	forb	cm	perennial	dispersed not								y
Zigadenus venenosus var. gramineus	Council Mt.	G. Johnson 16-103	forb	70 cm	perennial	dispersed							y	