



An Analysis of the Vulnerability of Plants on BLM Lands to Climate Change

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By

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Table of Contents

Executive Summary.....	1
Introduction	2
Methods.....	4
Results.....	10
Discussion.....	25
Acknowledgements.....	31
Literature Cited	32
Appendix 1. Complete CCVI results	41
Appendix 2a. CCVI Results: Arizona	55
Appendix 2b. CCVI Results: California.....	64
Appendix 2c. CCVI Results: Colorado.....	72
Appendix 2d. CCVI Results: Idaho	78
Appendix 2e. CCVI Results: Montana	83
Appendix 2f. CCVI Results: New Mexico.....	88
Appendix 2g. CCVI Results: Nevada	96
Appendix 2h. CCVI Results: Oregon	103
Appendix 2i. CCVI Results: Utah	108
Appendix 2j. CCVI Results: Washington.....	115
Appendix 2k. CCVI Results: Wyoming.....	119
Appendix 3. Hot spot map methodology.....	124

Executive Summary

We assessed the vulnerability of 391 species of plants and lichens of the western U.S. to climate change to aid in plant conservation efforts and the prioritization of seed collection by the Seeds of Success Program, a partnership of organizations that collect and curate native plant seed collections for rehabilitation and restoration purposes. To do so, we used the Climate Change Vulnerability Index (CCVI), a tool that enables rapid screening of species' vulnerability to climate change by considering climate exposure data and scoring for sensitivity and adaptive capacity, to evaluate species across both their geographic range within the conterminous 48 U.S. states and within selected states. Although species spanned the range of possible vulnerability categories, the majority were assessed as not vulnerable to climate change on a range-wide basis. Nevertheless, many species appear to be vulnerable to climate change in specific states even if they are not vulnerable range-wide.

We explored vulnerability trends relating to geography, conservation status, and taxonomic affiliation. Spatial analyses revealed that the greatest concentrations of taxa vulnerable to climate change were found in arid to semi-arid regions of the southwestern states. Statistical analyses of conservation status (Global Rank) and vulnerability to climate change showed that taxa of conservation concern tend to show greater vulnerability to climate change. Examination of taxonomic group found that species of the Cactaceae, Pinaceae, and lichens showed higher overall vulnerability compared to most other groups. Asteraceae, Poaceae, and Rosaceae, overall, showed lower vulnerability to climate change. Some factors relating to vulnerability were common across numerous taxa: natural and anthropogenic barriers that limit dispersal, pollinator diversity, and predicted decreases in precipitation that extend beyond historical climatic variation experienced by species.

Although we detected several patterns across taxonomic groups, geographic ranges, and the landscape, each species assessed has a suite of idiosyncrasies that likely will lead to a unique response to changes in the climate. The findings of which species may be more vulnerable to climate change and the factors causing vulnerability should provide resource managers with important insight into addressing the emerging threat posed by climate change and guide seed collection efforts by the Seeds of Success Program.

Introduction

Evidence that our climate is changing is now unequivocal. Over the last 50 years, the average temperature of the United States has increased 2°F, the frequency and intensity of extreme weather events such as droughts and heat waves have increased, and precipitation has increased 5% (Karl et al. 2009). Climate projections unanimously indicate accelerating warming during this century. By the century's end, temperatures in the American Southwest are expected to increase 4–10° F above historical baseline numbers and precipitation could decrease by 10–30% under a low greenhouse-gas emission scenario. In the Pacific Northwest, a decline in springtime snowpack will cause reduced summer stream flows, increasing the strain on water supplies (Karl et al. 2009). These and myriad other direct effects of climate change threaten the well-being of humans as well as the natural ecosystems they depend on.

Climate change thus poses new and difficult challenges to conservation practitioners. Because we have only recently begun to address climate change in our conservation plans, we do not have a lot of practical experience to build on. Climate change can threaten species and habitats by interacting with non-climate stressors or it can act on its own by taxing physiological thresholds. Determining how to limit the impacts of climate change on biodiversity requires balancing actions aimed at reducing immediate non-climate threats such as habitat destruction with impending, but usually longer-term climate threats. A key step to help inform these decisions is to perform an assessment of the vulnerability of biodiversity to climate change.

Plants are essential for human existence and form the base of virtually all food webs. Understanding how plants might be vulnerable to climate change is therefore an important component to any vulnerability assessment. We know from both the fossil record and recent observations that plants and plant communities can respond to climate change in a variety of ways (Hawkins 2008, Chen et al. 2011). Depending on their characteristics and the landscape where they occur, plants can evolve traits to adapt to the new climate, express phenotypically plastic traits in ways that allow persistence, shift their range to a more favorable climate, retreat to a climate refuge within their current range, or become locally extirpated or even globally extinct. Specific climate threats to plants include physiological stresses caused by changing water availability, changing temperature, and rising CO₂; desynchronization of

interspecific interactions (such as with pollinators and dispersers); reduced or increased competition (Hawkins 2008, Gilman et al. 2011); and changing exposure to natural enemies such as herbivores or diseases. Gauging plants' responses to these potential stresses is a key component to climate change vulnerability assessment.

A number of approaches have been described for carrying out a climate change vulnerability assessment (Rowland et al. 2011). Trait-based approaches examine projected climate change where the species occurs, aspects of the genetic variation, natural history, physiology, and landscape context to assess sensitivity and adaptive capacity (Foden 2009, Young et al. 2012). Bioclimatic modeling approaches assess how climatic "envelopes" of suitable climate conditions might change and move over time (Peterson et al. 2002, Thomas et al. 2004). The Climate Change Vulnerability Index (CCVI) is a trait-based method to rapidly assess species at any geographic scale and compare relative vulnerability to climate change (Young et al. 2012). The CCVI addresses the three components of vulnerability: exposure to changing climate, sensitivity of species to changes in climate, and the adaptive capacity of species to adjust to changes in the climate they experience (Williams et al. 2008). Designed to be used with the NatureServe Conservation Status Ranks, factors used to assess status ranks are not considered in the CCVI. Using these two assessment tools in concert provides a more complete evaluation of a species' imperilment and vulnerability to climate change for land managers and conservationists.

This report describes the results of an exercise to assess the relative vulnerability of a large sample of plant and lichen species occurring on lands managed by the Bureau of Land Management (BLM) to climate change using the CCVI. We completed assessments of two groups of species: vascular plants and lichens. The vascular plant species chosen play important roles in their ecosystems, are valuable for cultural or public awareness reasons, or are of conservation concern. Among the vascular plants, cacti were chosen due to their relatively high levels of rarity and endemism, particularly in the southwestern United States. Lichens are an important group to consider because their lack of a vascular system potentially makes them more sensitive to climate than vascular plants. Because most lands managed by BLM occur in western U.S. states, this analysis focuses almost exclusively on western plant species.

To understand patterns of vulnerability in the plants assessed, we evaluated which species are vulnerable to climate change, identified geographic areas with high levels of vulnerability, explored how vulnerability varies at different portions of a species range, described factors that influence vulnerability, and assessed which taxonomic families show greater vulnerability to climate change. We also investigated the relationship between vulnerability to climate change and conservation status to learn whether conservation status can be a proxy for vulnerability to climate change. These results provide important input to plant conservation efforts for these species and aid in the prioritization of seed collection by the Seeds of Success Program, a partnership of organizations that collect and curate native plant seed collections for rehabilitation and restoration purposes (US DOI BLM 2012).

Methods

Species selection

We chose species in the two groups (vascular plants and lichens) as follows. All species are confirmed or suspected to occur on lands managed by the BLM in one or more of the following western states: Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming. We worked with BLM state botanists and representatives of the Seeds of Success Program to develop a list of plant and lichen species for assessment. These species can be considered “iconic” (official state trees or flowers or species of cultural importance or public awareness value), “workhorses” (used for brush control or habitat restoration), sensitive (narrow endemic or candidate for listing), and/or provide important habitat for wildlife. We excluded exotic and hybrid species. To a large extent, the taxonomy follows that used in the USDA PLANTS database (2012). For additional details of the species selection process, see Frances (2012). Despite the large sample size in our project, conclusions on vulnerability across the landscape and within families must be considered in the context of the study and with the understanding that species selection was not random.

The cactus species list was developed by combining data from NatureServe’s conservation database, Biotics, with the International Union for Conservation of Nature’s

(IUCN) Global Cactus Assessment database (2011). Cactus species occurring in at least one western state were selected. Most cacti were assessed at the species level. Ten cacti were assessed that are listed by the U.S. Fish and Wildlife Service as Endangered, Threatened, or Candidate. Nine of these are currently considered infraspecific taxa and these were assessed; one taxon was previously a variety but recently elevated to a species.

Assessing species using the Climate Change Vulnerability Index

We assessed all species with Version 2 of the CCVI, a tool created in Microsoft Excel (Young et al. 2012). Assessments entail entering climate exposure data and then scoring species' sensitivity and adaptive capacity for a series of specific factors (Table 1). Once the minimum input data requirements are met, the CCVI assigns an overall vulnerability category (CCVI category) ranging from Extremely Vulnerable to Not Vulnerable/Increase Likely (Table 2).

Factors related to direct exposure to climate change estimate the scope and severity of predicted climate change across the species' range within the given assessment area for the mid 21st century. Factors for indirect exposure to climate change evaluate how a species' distribution relative to landscape features such as the coast (where sea level rise can impact some species) and human and anthropogenic barriers to exposure. The CCVI also considers 16 factors relating to a species' sensitivity to climate change and its adaptive capacity (see Table 1 for full list).

Following the CCVI recommendations (Young et al. 2011), we used climate projections provided by Climate Wizard (2011a, b) for a medium A1B emissions scenario, an ensemble average of 15 Global Circulation Models, and a mid-century (2050s) time horizon. We used ArcGIS 10 (ESRI 2011) to calculate the direct exposure, historical thermal niche, and historical hydrological niche for each species from the climate data and species range map.

The results presented here exclude five factors from the standard CCVI. First, we eliminated an indirect exposure factor, predicted impact of land use changes resulting from human responses to climate change, because of the uncertain nature of alternative energy development projects in the western U.S. We also eliminated four factors relating to documented or modeled responses to climate change, an optional section of the CCVI, because

information to score these factors was available for only 3.5% of the species assessed. Doing so maintains consistency across the assessments.

Completion of assessments

Botanists at NatureServe, the Michigan Natural Features Inventory, and the Colorado Natural Heritage Program completed the assessments. NatureServe botanists assessed all cacti, lichens, and iconic species, as well as some vascular plants in other categories. The Michigan and Colorado botanists assessed vascular plants excluding those in the iconic category. Although Michigan and Colorado botanists were familiar with the CCVI methodology, NatureServe provided additional training specific to the project at the onset of the study. NatureServe analyzed results from each program and each assessor subsequently to ensure that factors were scored consistently.

Range maps

The CCVI assessments require a range map for every species assessed. The source of the range map varied according to species and is documented in the detailed CCVI results workbooks. Range maps for most of the commonly occurring species were digitized from published sources (e.g., Stubbendieck et al. 2003 and FNA 1993+) or acquired online (USGS 2011). If a published range map was not available, a map was produced as a minimum convex polygon surrounding herbarium specimen record localities (excluding large areas with no records) supplemented with county level records for the species (Frances 2012). Range maps for most cactus species were provided by the Global Cactus Assessment (2011). If a range map from the Global Cactus Assessment was not available, a published source was used to generate the range map (e.g., FNA 1993+, Kartesz 1999, and USGS 2011). Range maps for most lichens were produced from specimen data from the Consortium of North American Lichen Herbaria (2011) using the same methods outlined above for vascular plants. We also digitized range maps from published sources (Brodo et al. 2001 and Sohrabi et al. 2011) for the remaining lichens.

Table 1. CCVI sections addressed in the study with organizational framework. CCVI factors appear in **bold**. See Young et al. (2011) for further descriptions of the factors.

A: EXPOSURE: Temperature and Moisture
B: INDIRECT EXPOSURE
B1 Exposure to sea level rise
B2 Distribution relative to barriers
B2a Natural barriers
B2b Anthropogenic barriers
C: SENSITIVITY AND ADAPTIVE CAPACITY
C1 Dispersal and movements
C2 Predicted sensitivity to temperature and moisture changes
C2a Predicted sensitivity to changes in temperature, based on current/recent past temperature tolerance
C2ai Historical thermal niche
C2aii Physiological thermal niche
C2b Predicted sensitivity to changes in perception, hydrology, or moisture regime
C2bi Historical hydrological niche
C2bii Physiological hydrological niche
C2c Dependence on a specific disturbance regime likely to be impacted by climate change
C2d Dependence on ice, ice-edge, or snow-cover habitats
C3 Restriction to uncommon geological features or derivatives
C4 Reliance on Interspecific Interactions
C4a Dependence on other species to generate habitat.
C4b Dietary versatility (animals only)
C4c Pollinator versatility (plants only)
C4d Dependence on other species for propagule dispersal
C4e Forms part of an interspecific interaction not covered by C4a-d
C5 Genetic Factors
C5a Measured genetic variation.
C5b Occurrence of bottlenecks in recent evolutionary history
C6 Phenological response to changing seasonal temperature or precipitation dynamics

Table 2. Definitions of CCVI Categories (Young et al. 2011).

Index Score		Definition
EV	Extremely Vulnerable	Abundance and/or range extent within geographical area assessed extremely likely to substantially decrease or disappear by 2050.
HV	Highly Vulnerable	Abundance and/or range extent within geographical area assessed likely to decrease significantly by 2050.
MV	Moderately Vulnerable	Abundance and/or range extent within geographical area assessed likely to decrease by 2050.
PS	Not Vulnerable/Presumed Stable	Available evidence does not suggest that abundance and/or range extent within the geographical area assessed will change (increase/decrease) substantially by 2050. Actual range boundaries may change.
IL	Not Vulnerable/Increase Likely	Available evidence suggests that abundance and/or range extent within geographical area assessed is likely to increase by 2050.

Geographic assessment areas

Recognizing that vulnerability to climate change can vary across the range of species, the CCVI allows for assessments at different geographic scales. We completed rangewide assessments, within the conterminous 48 U.S. states only, for all taxa. We also conducted state-level assessments for 216 species of vascular plants, with the exception of taxa endemic to a single state (which in effect are already state-level assessments).

Climate-driven threats to species may be more pronounced at the edges of a species' range compared to the overall geographic range (Anderson et al. 2009). For this reason, we selected for state-level assessments states both near the center of the species' global range and at the southern edge of the species' global range. If the range extended into Mexico, a state on the eastern or western edge of the range was chosen. If neither of these were available, a state on the northern edge or a second state in the center of the range was chosen.

Analysis of Global Rank and CCVI Category

To assess the relationship between the NatureServe Global Conservation Status Rank ("Global Rank") and the CCVI category, we used the underlying numerical score calculated by the CCVI to assign a CCVI category. Although the underlying CCVI category is based on continuous numerical score, it does not conform to a normal distribution. We therefore used a

non-parametric Kruskal-Wallis One-Way Analysis of Variance to test the hypothesis that CCVI categories are independent of Global Rank (Minitab v. 16 2010). To explore comparisons among CCVI categories, we employed Dunn's test for multiple comparisons.

Geospatial Analyses: states, ecoregions, and hotspots

We summarized CCVI categories of plant species by state for the eleven states with significant BLM land holdings (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). Similarly, we summarized CCVI categories by level 3 ecoregion (US EPA 2011). CCVI categories were divided into two groups, vulnerable (EV, HV, and MV) and not vulnerable (PS and IL), and the percentage of vulnerable scores were calculated for each state and ecoregion.

In addition to providing summaries by predetermined boundaries (state and ecoregion), a hotspot map was created to show where concentrations of taxa vulnerable to climate change are found. Again, the scores were divided into two categories, vulnerable and not vulnerable. Following the protocol in Appendix 3, we used spatial analyses in ArcMap 10 (ESRI 2011) to calculate the proportion of vulnerable taxa in polygons derived from intersecting all range maps. We used a minimum mapping unit of 1000 km².

Analyses of CCVI Factor Scores

We used a principal components analysis (PCA) to explore which factors best explain the CCVI categories. Prior to performing the PCA, factor scores were standardized for each factor to have a mean of zero and standard deviation of one. In the final PCA, five factors were used (historical thermal niche, historical hydrological niche, dependence on ice or snow, dependence on other species to create habitat, and pollinator versatility).

We also examined the scores for individual sensitivity and adaptive capacity factors to search for patterns in factors contributing to a taxon's vulnerability to climate change. Examining factor scores independently of CCVI categories provides valuable information about why a species or a group of species may or may not be vulnerable to climate change. Factor scores range from "Greatly Increase" to "Decrease" vulnerability to climate change (Table 3).

We evaluated the percentage of scores for each factor for rangewide assessments of vascular plants and lichens as well as for six families of vascular plants (Asteraceae, Cactaceae, Fabaceae, Pinaceae, Poaceae, and Rosaceae), each of which had more than 15 representative taxa assessed. This analysis did not consider factors relating to genetic diversity or phenological response because these were rarely scored for any taxon due to a lack of information.

Table 3. CCVI factors scores and abbreviations.

Factor Scores	Abbreviation
Greatly Increase Vulnerability	GI
Greatly Increase to Increase Vulnerability	GI-Inc
Increase Vulnerability	Inc
Increase to Somewhat Increase Vulnerability	Inc-SI
Somewhat Increase Vulnerability	SI
Somewhat Increase to Neutral Vulnerability	SI-N
Neutral Vulnerability	N
Neutral to Somewhat Decrease Vulnerability	N-SD
Somewhat Decrease Vulnerability	SD
Somewhat Decrease to Decrease Vulnerability	SD-Dec
Decrease Vulnerability	Dec
Unknown	U

Results

Table 4. Numbers of taxa and assessments by group.

Group	Number of Taxa Assessed	Number of Assessments
Vascular Plants	381	806
Lichens	10	10
Total	391	816

We completed 816 assessments of 391 species of vascular plants and lichens (Table 4). Appendix 1 includes results of each of these assessments. These results are also provided in a Microsoft Excel workbook (NatureServe_CCVI_FinalResults.xlsx) and a zipped shapefile of geospatial data (NatureServe_CCVI_DistributionMaps.shp). The Excel workbook additionally includes taxonomic information, the CCVI category, Global Rank, subscores for each factor, a confidence estimate in the CCVI category, and assessment notes detailing the justifications for the factor scores. A second worksheet within the workbook includes all references cited in the

results table. The shapefile contains distribution maps, as polygons, for every assessment except those using unpublished maps contributed by the Global Cactus Assessment (2011). The attribute table includes CCVI categories, global ranks, map sources, and permissions related to the use of each map.

Vulnerability to climate change, as suggested by the CCVI categories, varied between vascular plants and lichens assessed (Fig. 1). The CCVI indicated that the majority of the vascular plants assessed are not vulnerable to climate change across their entire ranges within the conterminous U.S. (49% categorized as Presumed Stable and 8% as Increase Likely). In contrast, the majority of lichen species assessed are vulnerable to climate change. Of the 10 lichen species assessed 90% were scored as Extremely Vulnerable, Highly Vulnerable, or Moderately Vulnerable.

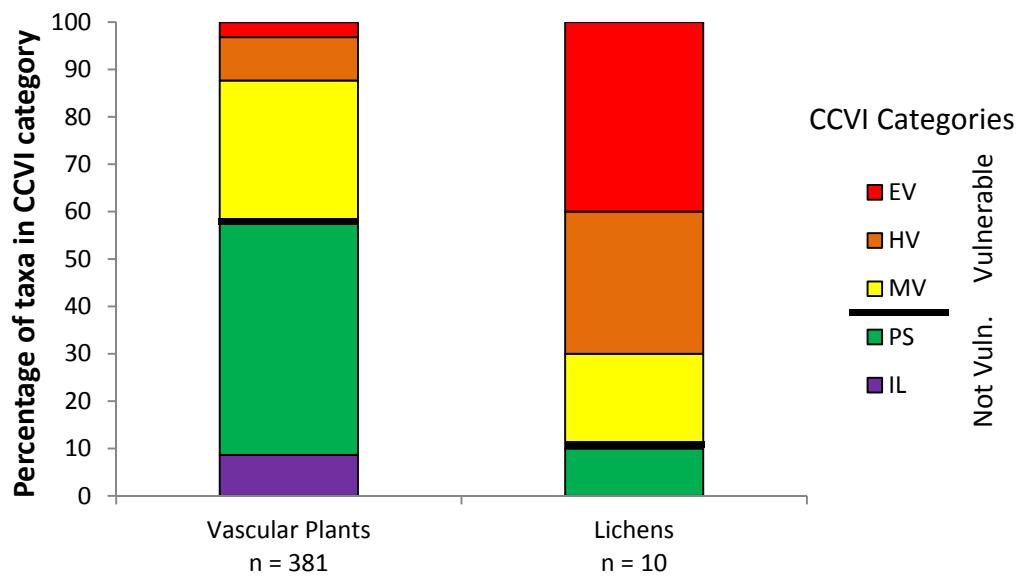


Figure 1. Relative vulnerability of selected western vascular plants and lichens to climate change. CCVI category abbreviations as in Table 2. Analysis includes rangewide (within conterminous U.S.) assessments only.

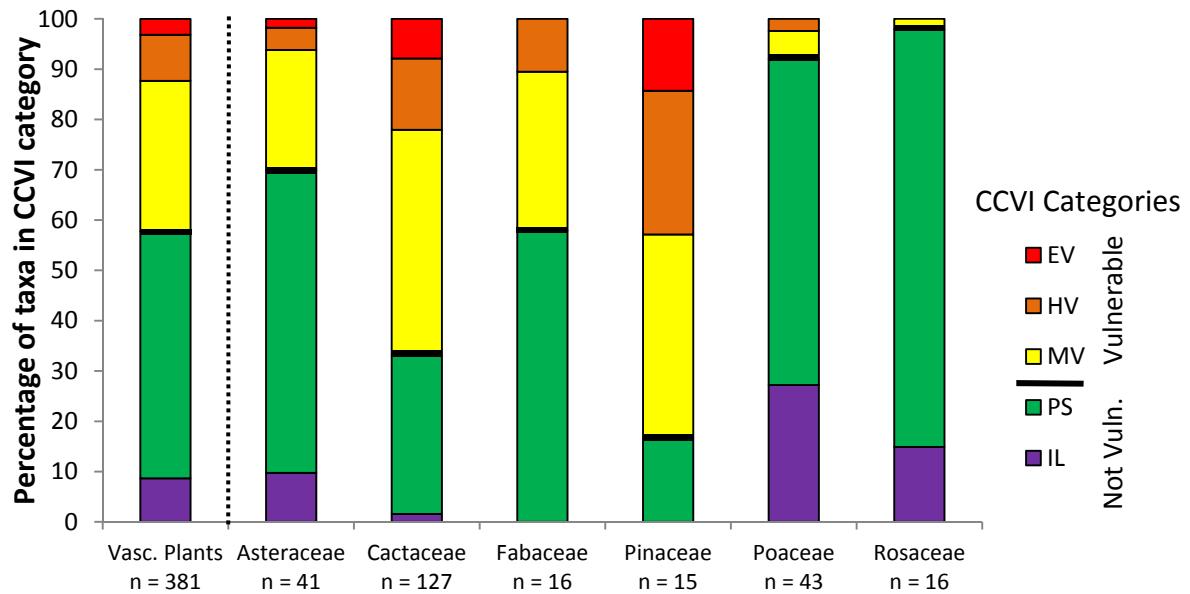


Figure 2. CCVI categories for vascular plants and by family (≥ 15 representative taxa). CCVI category abbreviations as in Table 2. Analysis includes rangewide (within conterminous U.S.) assessments only.

Vascular plant families varied in their levels of vulnerability to climate change (Fig. 2). Pinaceae and Cactaceae had the greatest portion of species assessed in one of the vulnerable categories, whereas very few species in the Poaceae and Rosaceae were assessed as vulnerable to climate change. Asteraceae and Fabaceae had roughly average levels of vulnerability to climate change for the sample of species assessed.

Table 5. Resulting p -values from Dunn's multiple comparison test of CCVI categories by Global Rank.

	G1	G2	G3	G4	G5
G1	1				
G2	0.921	1			
G3	0.045	0.039	1		
G4	<0.001	<0.001	0.030	1	
G5	<0.001	<0.001	<0.001	<0.001	1

Global Rank and CCVI Category

CCVI numerical scores were not random with respect to the Global Rank of species (Kruskal-Wallis test, $H=96.45$, d.f.=4, $P<0.0001$). The Dunn's test for multiple comparisons found CCVI scores differed significantly ($P\leq 0.05$) by global rank between all pairwise comparisons, except G1 and G2 (Table 5).

Figure 3 shows the percentage of CCVI categories by Global Rank. Taxa ranked as G1 (Critically Imperiled) or G2 (Imperiled) have the highest percentage of vulnerable CCVI categories, 88% and 90%, respectively. In contrast, most (73%) taxa ranked as G5 (Secure) were scored as not vulnerable to climate change.

Despite the statistically significant relationship between Global Rank and CCVI category, we found a number of exceptions. Of the commonly occurring species, *Picea glauca*, *Pinus jeffreyi*, and *Sheperdia argentea* were scored as Extremely Vulnerable and all have a Global Rank of G5 (Secure). *Chlorogalum grandiflorum* and *Wyethia reticulata* have a Global Rank of G2 (Imperiled) but are Presumed Stable with respect to climate change. Two cacti, *Sclerocactus nyensis* and *Sclerocactus sileri*, received the CCVI category Presumed Stable but have a Global Rank of G1 (Critically Imperiled). Lichen species of exception are *Bryoria capillaris* (Extremely Vulnerable and G4, Apparently Secure), *Catapyrenium congestum* (Moderately Vulnerable and G4), and *Teloschistes flavicans* (Moderately Vulnerable and G4G5).

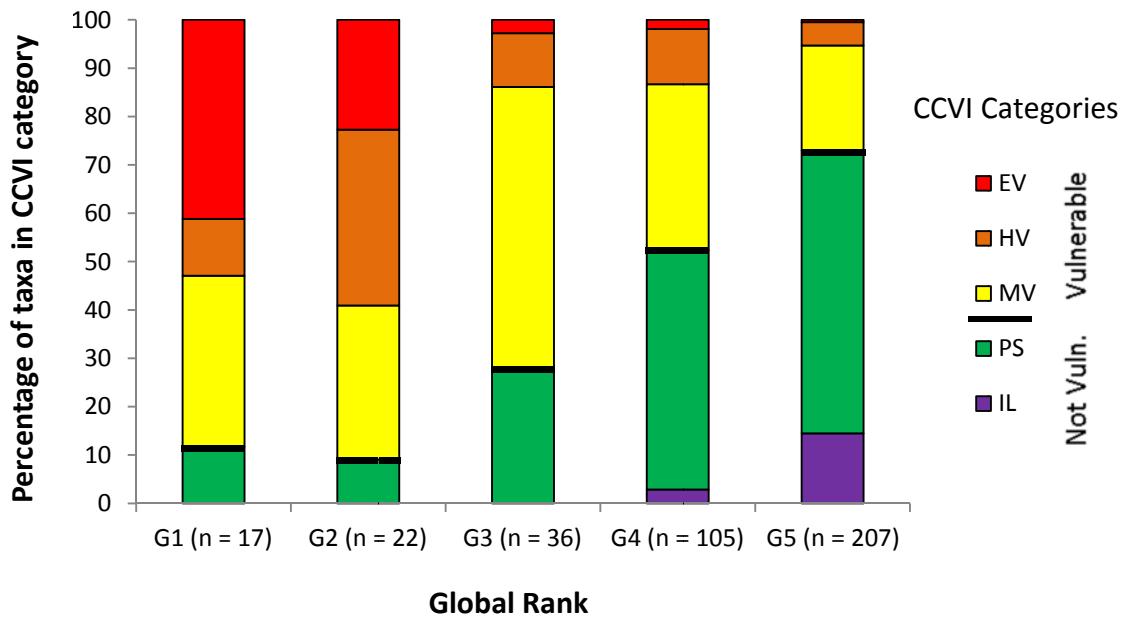


Figure 3. Relation between Global ranks and CCVI categories for vascular plant and lichen rangewide assessments. Global Ranks: G1 (Critically Imperiled), G2 (Imperiled), G3 (Vulnerable), G4 (Apparently Secure), and G5 (Secure). CCVI category abbreviations as in Table 2. Analysis included rangewide (within conterminous U.S.) assessments only.

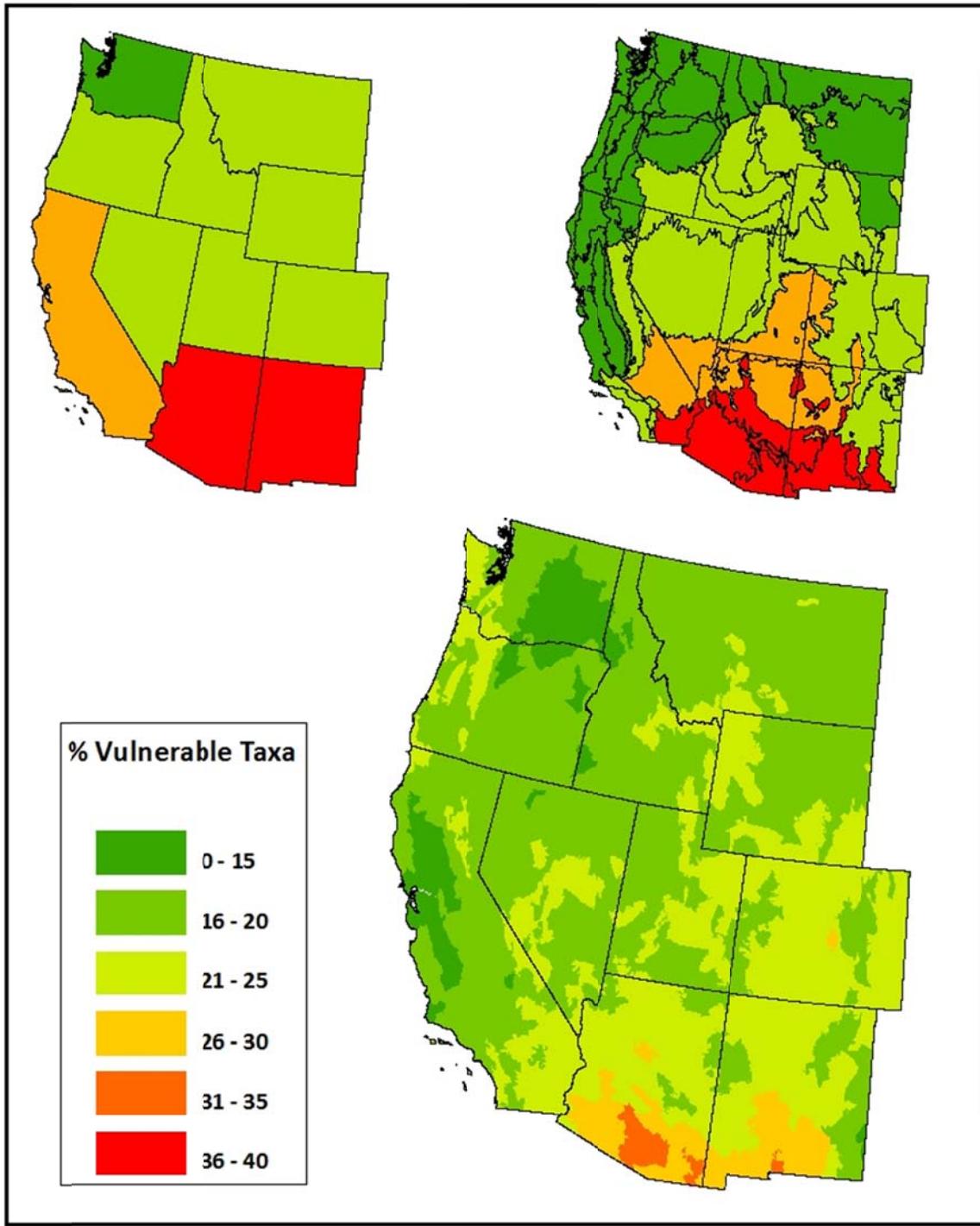


Figure 4. Percentage of rangewide assessments scored as vulnerable (EV, HV, or MV) to climate change summarized by state (upper left) and level 3 ecoregions (upper right). The hot spot map (lower) shows the percentage of rangewide assessments scored as vulnerable to climate change across the landscape.

Geospatial Patterns: states, ecoregions, and hotspots

Our geospatial analysis revealed a south-north trend of species having decreasing vulnerability to climate change. The states with the greatest percentage of taxa (rangewide assessments only) scored as vulnerable to climate change are Arizona (40%), New Mexico (35%), and California (31%) (Fig. 4) whereas the state with lowest percentage of taxa scored as vulnerable is Washington (21%).

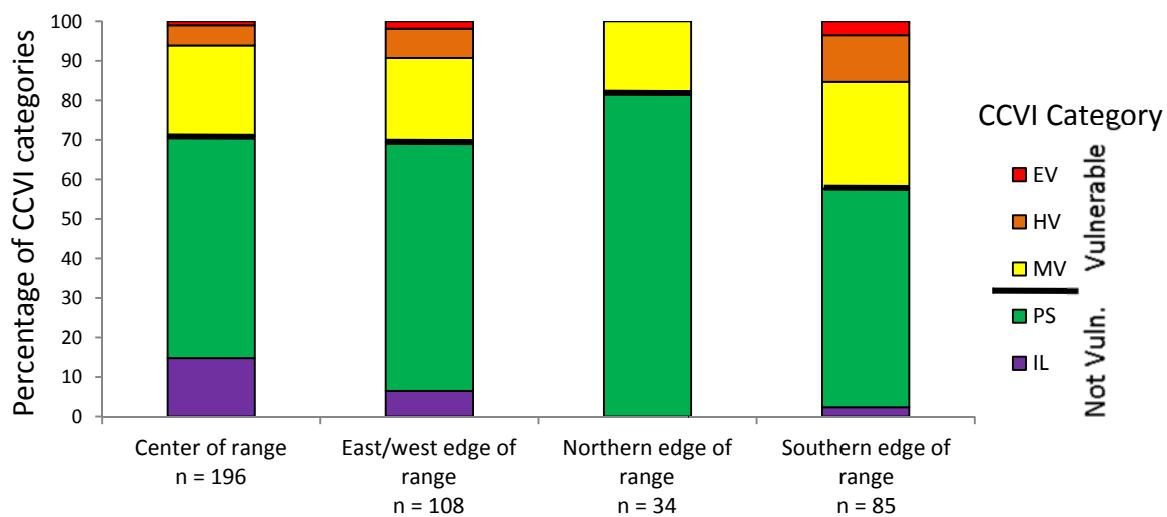


Figure 5. CCVI categories for statewide assessments grouped by the relation of that state to the species' entire range. CCVI category abbreviations as in Table 2.

At the ecoregion level, southern and south central ecoregions tended to contain more species scored as vulnerable to climate change (Fig. 4). Arizona/New Mexico Mountains (39%), Chihuahuan Desert (36%), Madrean Archipelago (36%), and Sonoran Basin and Range (37%) had the highest percentage of taxa scored as vulnerable (Fig. 4). In most ecoregions of California, 19–30% of taxa were found to be vulnerable to climate change. However, 37% in the Sonoran Basin and Range and 33% in the Mojave Basin and Range in southeastern California were scored as vulnerable to climate change, which accounts for the high percentage of taxa vulnerable in California overall as shown in the state map.

The hotspot map (Fig. 4) illustrates where the greatest percentage of taxa evaluated as vulnerable occur. Southern Arizona and New Mexico, overlapping the same areas highlighted in the ecoregion analysis, have the highest percentage (31–35%) of reviewed plant taxa

vulnerable to climate change. In contrast, the areas with the lowest percentage (9–15%) of taxa scored as vulnerable are clustered in the Central California Foothills and Coastal Mountains as well as the Columbia Plateau of Washington, including adjacent regions of Oregon and Idaho.

Statewide assessments revealed that taxa assessed in a state at the southern edge of their range show a slight tendency to be scored as Highly Vulnerable or Extremely Vulnerable (Fig. 5). Eighty-two percent of taxa assessed in a state at the northern edge of the taxon's range are Presumed Stable in that state. Fifteen percent of taxa assessed in a state at the center of the taxon's range are scored Presumed Stable/Increase Likely.

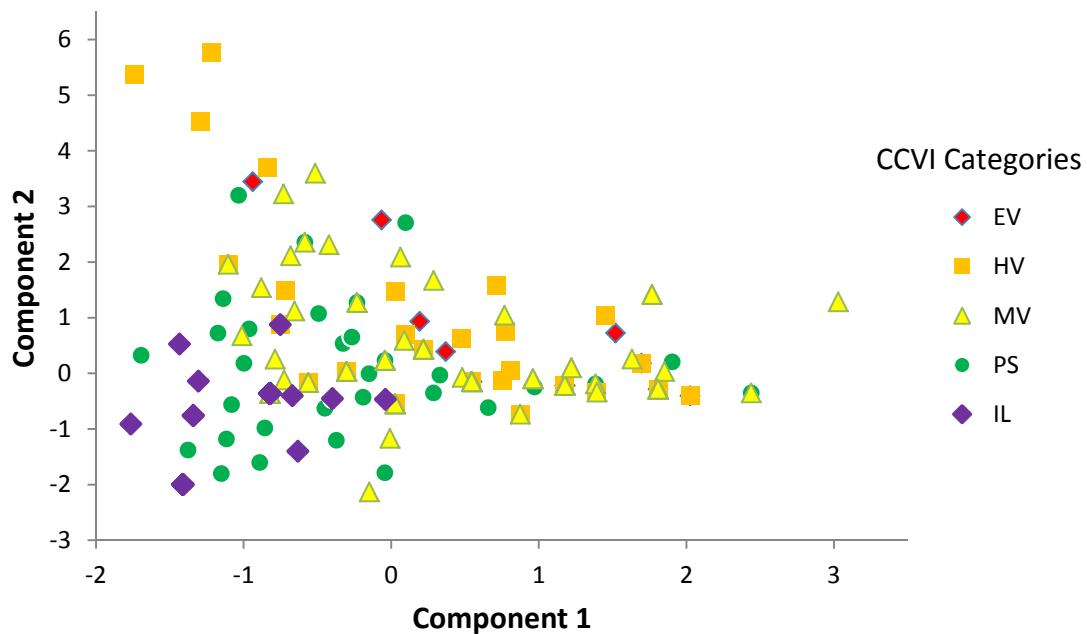


Figure 6. Scatter plot of the PCA factor scores for the first and second principal components. PCA factor score symbols represent the CCVI categories explained in Table 2.

Table 6. Loadings of the first two principle components for factors included in PCA.

CCVI Factor	Component 1	Component 2
C4c	0.768	-0.135
C4a	0.759	-0.064
C2bii	0.677	0.417
C2aii	0.06	0.852
C2d	-0.27	0.669

CCVI Factor Scores

The first two components of the PCA explain 62% of the variance in the dataset (factor 1—34%, factor 2—27%). The CCVI factor with the greatest explanatory value for component 1 is C4c (pollinator diversity) and C2aii (physiological thermal niche) for component 2 (Table 6). A plot of the first two components shows a tendency of species assessed as Extremely Vulnerable, Highly Vulnerable, and Moderately Vulnerable to group further away from those assessed as Increase Likely (Fig. 6). Similar degrees of separation are achieved along both the x- and y-axes.

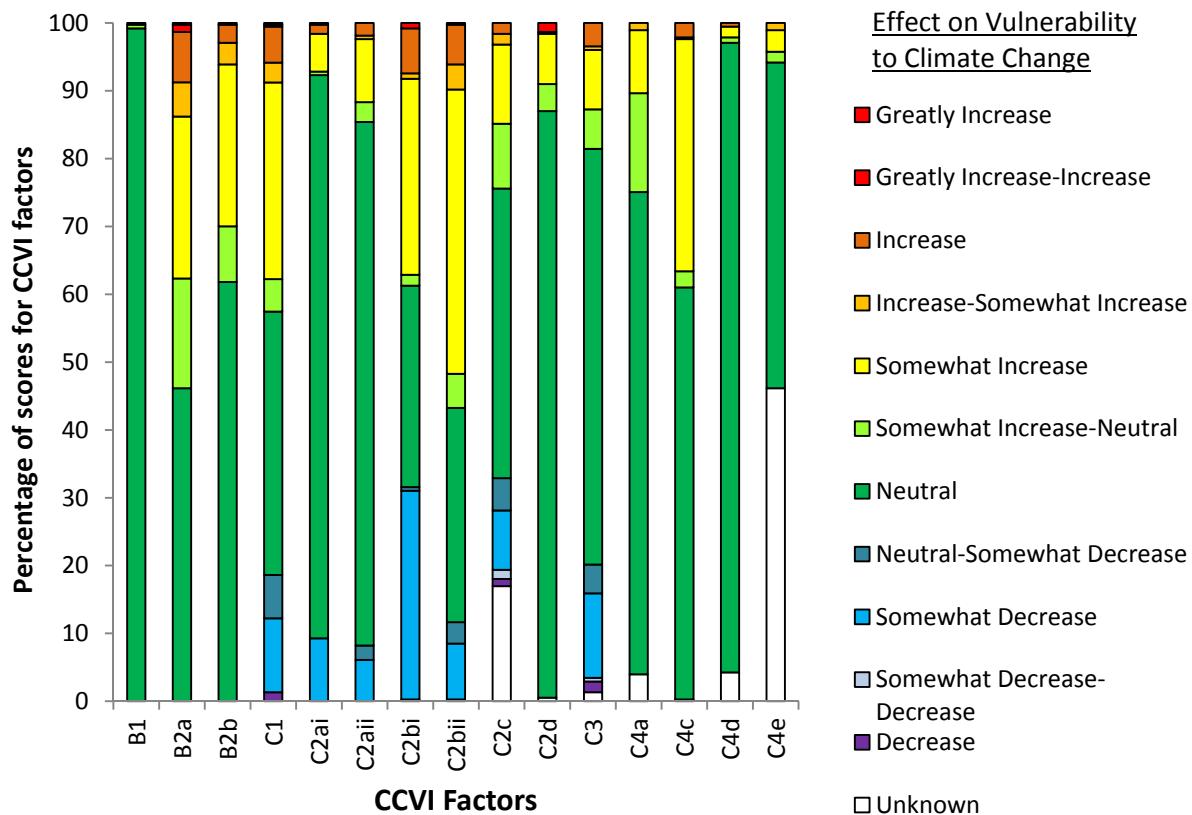


Figure 7. Percentage of taxon scores for CCVI factors for rangewide vascular plant assessments ($n=377$). CCVI factors are defined in Table 1. Figure includes rangewide (within conterminous U.S.) assessments only.

Independent of the CCVI categories, different trends were observed in factor scores for vascular plants (Fig. 7), lichens (Fig. 9), and across six vascular plant families (each with ≥ 15 taxa assessed) (Figs. 8 and 9). Aside from the factors (C5a, C5b, and C6) omitted from Figures 7–

9 for lack of information, the bar graphs show additional knowledge gaps where these factors were scored as unknown for taxa.

Sea Level Rise

Nearly all of the vascular plants were scored neutral for exposure to sea level rise, primarily due to the fact that only five species assessed, including one lichen, occur on the coast in areas impacted by sea level rise. Of those four, most were scored as sensitive (Somewhat Increase to Greatly Increase) to climate change, but some were neutral or may benefit from sea level rise. For example, the widely-distributed *Distichlis spicata* is likely to lose habitat in some parts of its geographic range where the species can't move inland, but in New England the species has already started to shift its range, as it is increasingly dominating upper marshes (Weiss et al. 2011 and Donnelly and Bertness 2001).

Distribution Relative to Natural Barriers

Over 50% of vascular plants assessed were scored as sensitive (Somewhat Increase–Greatly Increase) to climate change for factor B2a (Fig. 7). In the Cactaceae, 74% of taxa assessed were scored as sensitive (Fig. 8). Natural barriers, like mountains or areas of high elevations that may affect a species' ability to shift its range, were frequently considered when scoring this factor. This was often the case in the desert-dwelling Cactaceae, for which mountains border the Sonoran Desert to the North and the Sierra Nevada Mountain Range borders the Mojave Desert in California to the west (Marshall 1994). Alternatively, areas of low elevation surrounding areas of high elevation also serve as barriers for species assessed in the Pinaceae, like *Picea glauca* and *Pinus longaeva* (Fryer 2004). Unsuitable habitat, independent of changes in elevation, can also serve as barriers to dispersal: *Cupressus macnabiana* and *Cupressus sargentii* are restricted to serpentine soils that are rare in the west (Esser 1994 and Kruckeberg 1992).

Distribution Relative to Anthropogenic Barriers

Across the western U.S. where the study was focused, various anthropogenic barriers affected the species assessed, including urban areas and surrounding development and large

expanses of agricultural land. About 40% of species occur where anthropogenic barriers are significant (Fig. 7).

Dispersal and Movements

Over 40% of vascular plants were scored as sensitive (Somewhat Increase–Greatly Increase) for the dispersal and movements factor (C1) due to their limited dispersal capability. In the Pinaceae, Poaceae, and Asteraceae, 80%, 70%, and 58% of taxa, respectively, were scored as sensitive to climate change for this factor. Seeds of some taxa in the Asteraceae are dispersed by gravity and opportunistically by water or wind (Anderson 2005 and McWilliams 2003). Fruit appendages that aid in long distance dispersal by wind (Stromberg et al. 2008, Tirmenstein 1999a, and Tirmenstein 1999b) or by attaching to animal fur are found in some assessed taxa in the Asteraceae, lowering family-wide vulnerability for this factor. Seeds in the Pinaceae are dispersed by wind but only short distances (Cope 1993, Uchytíl 1991a, and Uchytíl 1991b). However, some seeds are dispersed by birds, like Clark's Nutcracker (*Nucifraga columbiana*), and mammals (Zouhar 2001, Habeck 1992, and Howard 1992). Short distance seed dispersal by gravity is frequent in assessed taxa in the Poaceae but some taxa are suited for long distance dispersal by wind (Howard 1997, Pavek 1993, and Crampton 1974).

In contrast, taxa assessed in Rosaceae and Cactaceae showed decreased sensitivity (Neutral—Somewhat Decrease) for the dispersal and movements factor, overall. The fleshy, sometimes red fruits common to many cacti are dispersed significant distances by birds and small mammals (Dicht and Lüthy 2005 and van Rheede van Oudtshoorn and van Rooyen 1999). Bird and mammal dispersal was also common in the Rosaceae (Hauser 2006, and Young and Young 1992).

Predicted sensitivity to changes in temperature

Overall, most taxa were scored as neutral for the two thermal niche factors (C2ai and C2aii). However, a large percentage of taxa assessed in the Pinaceae were sensitive (Somewhat Increase–Increase) to climate change for their physiological thermal niche (C2aii), because they

occur in alpine to sub-alpine, Mediterranean, or generally cooler areas within the landscape (at higher elevations, in some cases) (Rehfeldt et al. 2006 and Scher 2002).

Seventy percent of lichens were scored as Greatly Increase-Increased to Somewhat Increased vulnerability to climate change for physiological thermal niche (C2aii). A number of species assessed occur in cool areas that may be subject to temperature increases of 2-6°F by mid-century (Climate Wizard 2011a).

Predicted sensitivity to changes in precipitation

Vascular plants, especially the cacti, were divergent in how they were scored for the two hydrological niche factors (C2bi and C2bii), with some scoring as having increased vulnerability and others as having decreased vulnerability to climate change.

Asteraceae, Pinaceae, Poaceae, and Rosaceae were least sensitive to the historical hydrological niche factor (C2bi). Most of the Cactaceae were sensitive for this factor, because they have low average and relatively low variation in annual precipitation within their geographic ranges (Climate Wizard 2011b).

Two families appear especially sensitive because of their physiological hydrological niche (C2bii): 93% of taxa assessed in Cactaceae and 73% in Pinaceae. Many cacti are dependent on seasonal rains to initiate flowering. Within the Pinaceae, species tend to occur in cooler, wetter areas of the landscape. Species with these natural history characteristics are particularly vulnerable to changing precipitation regimes. A number of taxa assessed in Poaceae and Rosaceae are wide ranging generalists that cross a variety of temperature and moisture conditions and are therefore less sensitive to precipitation.

Sixty percent of the lichens assessed were scored as sensitive to climate change due to their physiological hydrological niche (C2bii). Most of the lichens assessed grow in cool, moist microsites; humid forests (Thomson 1984); or sites with year round fog and humidity (Geiser 2000 and Peterson et al. 1998).

Dependence on a specific disturbance regime

Dependence on specific disturbance regime (factor C2c), was scored as Neutral for 43% of vascular plants and unknown for 17%. In the Cactaceae, 40% of taxa were scored as unknown. A large majority, 83%, of the taxa assessed in Poaceae were Neutral or had decreased sensitivity to climate change for disturbance. Many taxa scored from Neutral to Decreased vulnerability are well adapted to fire or are early colonizers. In the Pinaceae, *Pinus albicaulis* and *Pinus flexilis* have declined rapidly in recent years due to the Mountain Pine Beetle (*Dendroctonus ponderosae*), which has spread at an unprecedented rate during the last decade due to increased warming and is expected to continue spreading with climate change (Bentz et al. 2011). Mortality from pests and pathogens are a natural disturbance but increased frequency could have negative consequences. Predicted increases in fire frequency and intensity that may result in stand-replacing fires elevated the scores for many taxa in the Pinaceae (Krawchuk et al. 2009, Howard 1992, Uchytil 1991a).

Dependence on ice, ice-edge, or snow-cover habitats

The majority of taxa, 86% of vascular plants and 70% of lichens, were scored as Neutral for dependence on ice, ice-edge, or snow-cover habitats (factor C2d). Fifty-four percent of the taxa assessed in Pinaceae showed some level of dependence on snow. Many occur at high elevations where the majority of annual precipitation is in the form of snow (NCDC 2002).

Restriction to uncommon geological features or derivatives

Only a small percent of taxa assessed were sensitive to climate change because they are restricted to uncommon geological features or specific substrates. Of those that were sensitive to this factor, a number occur on serpentine soils (*Chlorogalum grandiflorum*, *C. pomeridianum*, *Cupressus macnabiana*, and *C. sargentii*), gypsum (*Eriogonum havardii*, *Gaillardia multiceps*), specific formations (*Coryphantha sneedii*, *Escobaria havardii*), or limestone outcrops or formations (*Echinocereus fendleri*, *Escobaria robbinsorum*, and *Pediocactus peeblesianus*) (NatureServe 2012, Reeves 2006, FNA 1993+, and USFWS 1986).

By contrast, 70% of lichens assessed had strong affinities for geological features. *Aspicilia rogeri*, *Rhizoplaca idahoensis*, *Xanthoparmelia idahoensis*, and *X. norchlorochroa* are calciphiles (McCune and Rosentreter 2007 and Rosentreter 1993) and *Cladonia perforata* occurs on inland dunes or stable coastal dunes (Yahr 2003).

Dependence on other species to generate habitat

Members of Cactaceae frequently depend on other species to generate habitat: 95% of taxa assessed were scored as sensitive (SI–N to Inc–SI) for this factor (C2a). Most cacti assessed and a number of other species including *Larrea tridentata* (also a nurse plant) and *Pinus monophylla* require or germinate best under nurse plants such as *Ambrosia dumosa*, *Ambrosia deltoidea*, *Cercidium microphyllum*, and *Olinya tesota*, among many others (Drezner and Garrity 2003, Zouhar 2001, Marshall 1995, Suzan et al. 1994, and Cody 1991).

Pollinator versatility

Most taxa (61% of vascular plants) had multiple pollinators or are wind pollinated, such as the Poaceae and Pinaceae, and thus scored as neutral for vulnerability based on their pollinators (C4c). The taxa assessed employ a variety of pollination strategies: flowers of *Mirabilis multiflora* last only one night and are primarily pollinated by the sphingid moth *Hyles lineata* (Hodges 1987, 1990); *Rhus trilobata* is pollinated by small mammals (Pendleton et al. 1989); the moth *Tegeticula yuccasella* is the obligate pollinator of *Yucca elata* (James et al. 1994); and *Yucca brevifolia* is pollinated by either *Tegeticula synthetica* or *T. antithetica*, two allopatric moths (Gucker 2006).

Dependence on other species for propagule dispersal

Most vascular plants, 93%, were scored neutral for vulnerability to reliance on specific dispersers of their propagules (C4d) because they are dispersed by numerous species. Birds, especially Clark's Nutcracker, and small mammals are important seed dispersers in the Pinaceae, a family that stands out as having 26% of species assessed scored vulnerable for this factor.

Forms part of an interspecific interaction not covered by above factors

A variety of species-specific issues that were not touched on in the other interspecific interaction factors (C4a, C4c, and C5d) were captured by this factor. Extrafloral nectarines that attract ants, which in turn provide protection to the plant against pests, were present in a few species: *Coryphantha macromeris*, *C. robustispina*, *C. scheeri* var. *robustispina* (Dicht and Luthy 2005), *Ferocactus wislizeni* (Ness et al. 2004), and *Pteridium aquilinum* (Crane 1990). Other species scored as sensitive for this factor respond well or require mycorrhizal fungi for growth or have the ability to fix nitrogen and require *Rhizobium* bacteria to inhabit nodules in the roots.

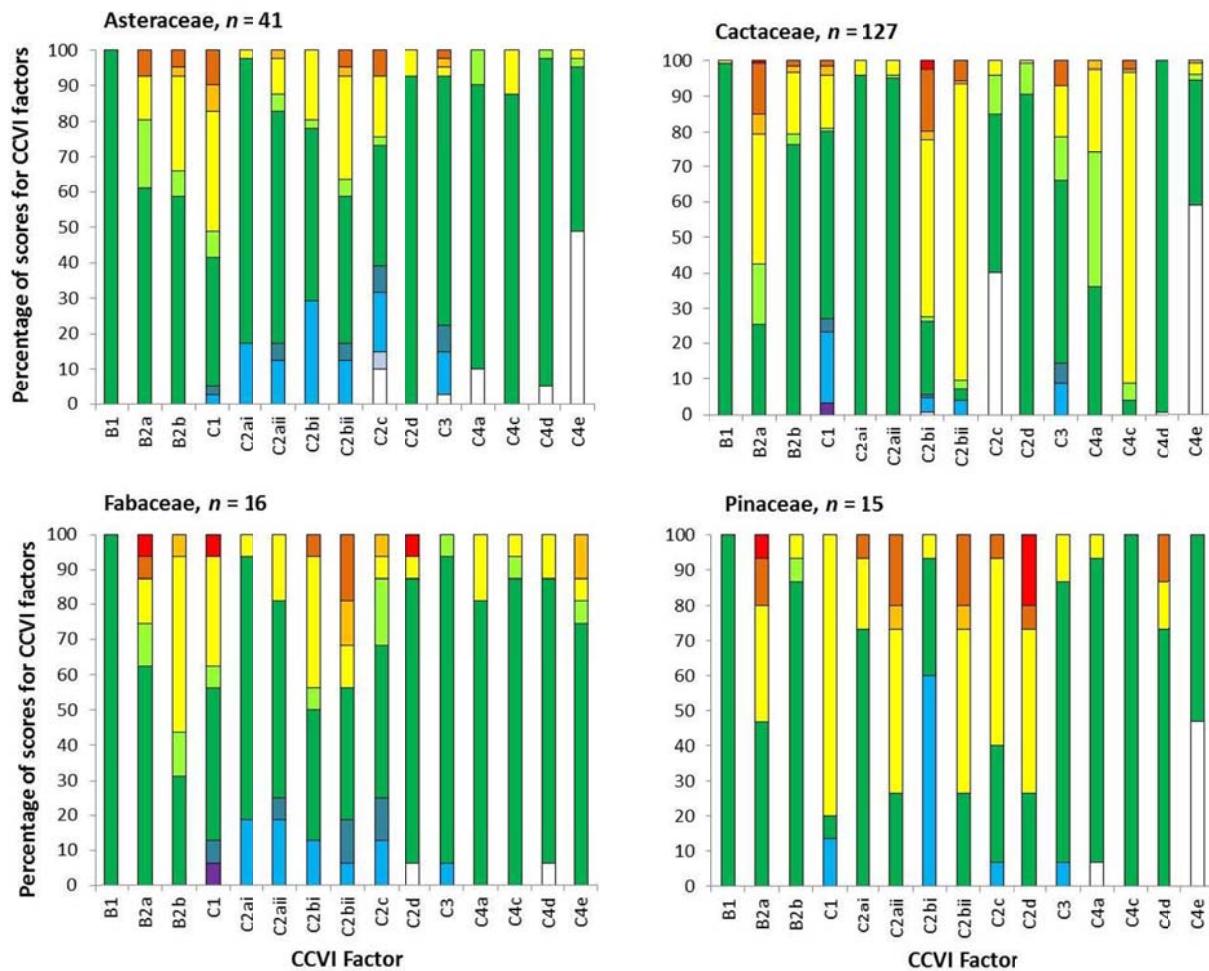


Figure 9. Percentage of taxon scores for CCVI factors, rangewide assessments only, for Poaceae, Rosaceae, and Lichens. Factor abbreviations as in Fig. 7.

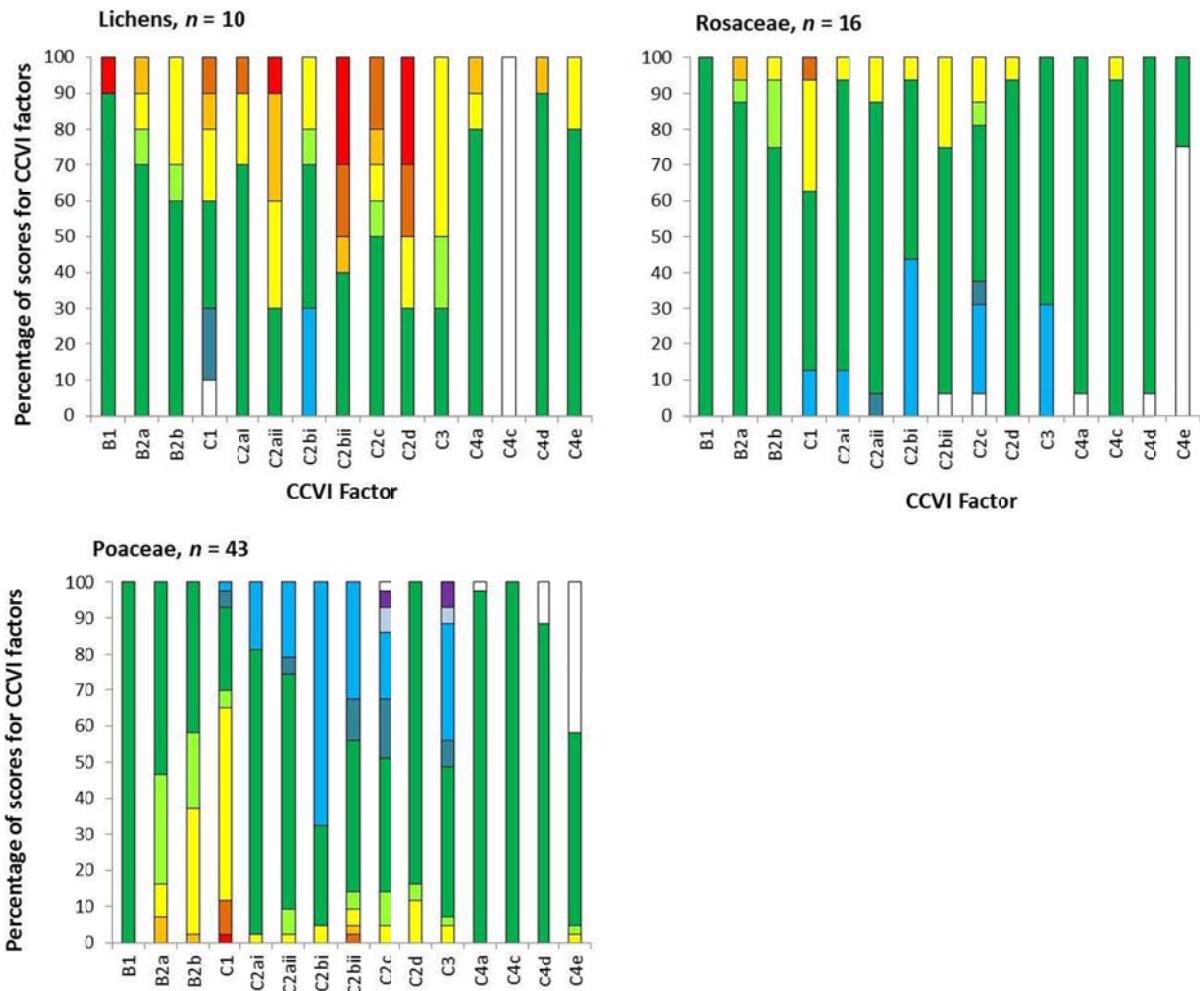


Figure 10. Percentage of taxon scores for CCVI factors, rangewide assessments only, for Poaceae, Rosaceae, and Lichens. Factor abbreviations as in Fig. 7.

Discussion

Our assessments using the CCVI suggest that the majority of taxa assessed are not vulnerable to climate change on a range-wide basis. For these non-vulnerable species, either climates are not predicted to change drastically within their ranges or they possess characteristics that make them less sensitive to climate change or enable them to adapt to changing climates. However, species of the Cactaceae, Pinaceae, and lichens showed higher overall vulnerability as compared to most other groups examined. Also, many species appear to be vulnerable to climate change in specific states even if they are not vulnerable range-wide. Our hypothesis that taxa of conservation concern would tend to be more vulnerable to climate change was supported by univariate statistical analysis. The greatest concentrations of taxa

vulnerable to climate change were found in arid to semi-arid regions of the southwestern states. We found that families are impacted differently by climate change as a result of shared morphology and natural history.

Thus far, CCVI assessment projects tend to focus on rare species within a single state. Our project examined the vulnerability of species, common and uncommon, across the conterminous U.S., as well as at the state level. In addition to differences in geographic assessment area, caveats unique to our project (the exclusion of four factors from the CCVI assessments) limit the degree of comparison between studies. However, some trends like the correlation between CCVI category and Global Rank can be considered. Concurrent with our findings, other studies have found a positive correlation between the rarity of a species and its vulnerability to climate change (Anacker et al. 2012 and Lee et al. 2011). These studies also found that there are enough exceptions to this generality to justify the individual analysis of a species. It is recommended that the Global Rank be considered with the CCVI category, as each considers a different set of variables (Young et al. 2011). The correlation could be attributed to geographic range size, incorporated directly into Global Rank criteria and indirectly by CCVI factors. Direct exposure to local climate change, historical thermal niche, and historical hydrological niche of the CCVI are calculated using a species range; smaller ranges have more specific climate portfolios than large ranges that cross many climate zones. Attributing the correlation to range size may be an over simplified explanation, as range size is sometimes an artifact of the niche a species occupies. Rare species could have narrow ecological niches, rare habitat types, low abundance, and restricted geographic ranges (Rabinowitz et al. 1986).

Southern Arizona and New Mexico had the greatest concentrations of taxa vulnerable to climate change. This arid to semi-arid region is expected to experience increases in temperature of approximately 5°F and up to 10% decrease in precipitation by mid-century under a medium emissions scenario (ClimateWizard 2011a, b and Karl et al. 2012). The landscape of this region is complex in terms of elevation and geology, both of which influence the rich biodiversity found there. For example, the Madrean Archipelago, with “sky islands” in the Chihuahuan and Mojave deserts, creates a dispersal-limited system for both high and low elevation species (McLaughlin 1995). Cactaceae, the family with greatest number of taxa

represented in this project, have high rates of endemism in the Chihuahuan desert, which extends into Southern Arizona and New Mexico from Mexico (Hernandez and Gomez-Hinostrosa 2011).

The lowest concentrations of taxa vulnerable to climate change were found on the Columbia Plateau of Washington and adjacent regions of Oregon and Idaho. This is a dry region of the Northwest receiving 0–63.5 cm of rain, annually. Under a medium emissions scenario, precipitation is projected to stay the same or increase slightly and temperature is projected to increase by 3°F by 2050 (ClimateWizard 2011a, b). These exposure values are less drastic than other regions and likely led to less extreme CCVI categories for the species occurring there.

A common prediction is that the southern edge of a species' range will contract and the northern edge will extend as a result of climate change, causing latitudinal shifts in distribution. The comparison of state assessment scores supported this prediction. Although other studies have shown that many taxa are shifting along latitudinal and elevation gradients, they have also noted that the pattern is variable. Specific physiological, ecological, and environmental characters can lead to different distributional responses by individual species to climate change (Chen et al. 2011 and Crimmins et al. 2011). Our results, while not directly addressing range shifts, also showed variable levels of climate change vulnerability at the edges of species' ranges.

Some factors relating to climate change vulnerability were common across numerous taxa. Over 50% of taxa were sensitive to climate change because of natural barriers that limit dispersal, and a similar portion is vulnerable because of predicted decreases in precipitation that extend beyond historical climatic variation recorded within a species range. The PCA also detected the importance of factors related to temperature and precipitation in defining the CCVI category, in addition to pollinator diversity and dependence on other species to generate habitat. Several families stood out for both factor scores and the final CCVI categories. They include Asteraceae, Cactaceae, Pinaceae, and Poaceae.

Our assessment of 127 taxa in the Cactaceae revealed that the majority of them were vulnerable to climate change. Overall, Cactaceae show resiliency to climate change in their ability to disperse over long distances via bird and small mammal seed dispersers, by

adaptations for survival in arid environments, and their lack of reliance on snow or ice. For many taxa, few anthropogenic barriers were found but natural barriers appear to limit dispersal in a number of species. Reliance on nurse plants and extrafloral nectaries found in some species increased the score for factors under reliance on interspecific interactions. Despite the adaptations for arid environments, threats of decreasing precipitation and the phenological response to seasonal rains common in cacti contributed to species' vulnerability to climate change.

Pinaceae also exhibited high proportions of taxa vulnerable to climate change. Species assessed typically occur in cool, moist pockets relative to the surrounding landscape and may be dependent on snow or ice, they have limited long distance dispersal, may be subject to increased mortality by insects that are expanding in range with climate change, and are predicted to experience altered fire regimes. Warmer temperatures are expected to expand available habitat for pests, including the Mountain Pine Beetle (*Dendroctonus ponderosae*, Bentz et al. 2010). Hotter temperatures and drought weaken trees, making them more susceptible to death by insect damage (Allen et al. 2010). During the early 2000's, 40-80% of pinyon pine (*Pinus edulis*) in the southwest were killed by drought that was exacerbated by unusually warm temperatures which lead to increased mortality by insect damage. Although large scale tree die-offs are natural, these events could increase in frequency with climate change (Allen et al. 2010, Breshears et al. 2010, and Ganey & Vojta 2011). With the compounding effects of more frequent and intense fires and increases in pathogen outbreaks, shifts in the composition of pine communities or entire ecosystems are predicted (Nijhuis 2012).

Of the families examined, Poaceae and Asteraceae had the lowest fraction of vulnerable taxa. Both families had representatives that may expand their ranges as a result of climate change. Although some members of these groups have limited dispersal, most species nevertheless exhibited other characteristics such as nonspecific thermal niches, wind or generalist pollination, and a lack of tight interspecific interactions with other species that caused them to be assessed in nonvulnerable CCVI categories.

Lichens, like vascular plants, face both direct and indirect threats from climate change. The lichens reviewed are dispersal limited, have affinities to substrates where climate

envelopes may shift away, and are particularly sensitive to disturbance that may increase with climate change. The CCVI detected sensitivity in Pacific Northwest lichens that have strong affinities to old-growth forests, require moderate temperatures regulated by coastal humidity regimes, and are poor dispersers. Lichens that may be well adapted to climate change were not represented in our project. It has been shown that some lichen distributions are better predicted by wind patterns than by geography due to the dispersal of spores by wind and that they possess life history characters that are linked with high genetic variability (Ellis and Yahr 2011), both of which facilitate adaptation to changes in climate. Thus assessing a larger group of western lichens could result in a greater tally of species assessed as not vulnerable to climate change.

The results of this vulnerability assessment can help inform a subsequent adaptation planning process, or efforts to develop management strategies to prevent the catastrophic loss of biodiversity as a result of climate change (Cross et al. 2012). Knowing which factors are driving vulnerability to climate change provide important clues to potential management activities. For example, if many species in a particular area are threatened by their physiological hydrological niche, then strategies to increase water availability in a system should be considered. If a species has an obligate pollinator, conserving habitat for the pollinator may be important for buffering the plant against climate change. Although most adaptation planning will take place at the scale of entire plant communities or a specific managed area rather than at the species level, understanding the specific vulnerability of the species assessed here, many of which are dominant members of their ecosystems, is important input to the process.

Although we detected several patterns across taxonomic groups, geographic ranges, and the landscape, each species assessed has a suite of idiosyncrasies that will initiate a unique response to changes in the climate. This finding emphasizes the utility of a tool for rapid screening of taxa. Taxa assessed in this project include much-loved iconic species, state trees and wildflowers, other attractive wildflowers, species of cultural importance, food sources for wildlife, and species used for restoration. The findings of which species may be more vulnerable than others to climate change and why, should provide resource managers with important

insight into addressing the emerging threat posed by climate change and guide seed collection efforts by the Seeds of Success Program.

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Flowering cactus in Arizona. Photo by F. Marenghi.

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Appendix 1. CCVI categories for all taxa. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agave neomexicana</i>	MV							PS				
<i>Agave palmeri</i>	MV											
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Ambrosia deltoidea</i>	PS											
<i>Ambrosia dumosa</i>	HV		HV	HV								
<i>Amelanchier alnifolia</i>	IL				IL					IL		
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS		PS		MV							
<i>Anisocoma acaulis</i>	MV		HV	MV								PS
<i>Apocynum cannabinum</i>	IL			PS								
<i>Arbutus menziesii</i>	PS			PS					PS			
<i>Arctostaphylos glauca</i>	PS											
<i>Arctostaphylos manzanita</i>	PS			PS								
<i>Arctostaphylos viscida</i>	PS			PS					PS			
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia californica</i>	PS											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Artemisia cana</i>	PS	PS				PS					
<i>Artemisia douglasiana</i>	PS		PS				PS				
<i>Artemisia filifolia</i>	MV						PS	MV			
<i>Artemisia frigida</i>	PS					IL	IL				
<i>Artemisia ludoviciana</i>	IL									PS	IL
<i>Artemisia nova</i>	MV							MV		MV	
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS			
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV
<i>Aspicilia rogeri</i>	EV										
<i>Astragalus utahensis</i>	HV								HV		HV
<i>Atriplex canescens</i>	IL							PS	IL		
<i>Atriplex confertifolia</i>	PS	PS							IL		
<i>Atriplex nuttallii</i>	PS						PS		PS		
<i>Baccharis salicifolia</i>	PS	PS							MV		
<i>Baccharis salicina</i>	MV										
<i>Baileya multiradiata</i>	PS	PS	PS								
<i>Balsamorhiza sagittata</i>	PS			PS	PS						
<i>Bergerocactus emoryi</i>	MV										
<i>Bouteloua curtipendula</i>	IL							PS			IL
<i>Bouteloua eriopoda</i>	PS		PS					MV			
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS			PS		
<i>Bromus vulgaris</i>	PS				PS						PS
<i>Bryoria capillaris</i>	EV										
<i>Buchloe dactyloides</i>	IL	PS		PS							
<i>Calamovilfa longifolia</i>	IL					PS		PS			
<i>Calliandra eriophylla</i>	PS										
<i>Calocedrus decurrens</i>	PS		PS						PS		
<i>Calycoseris parryi</i>	PS	PS							PS		

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Camassia quamash</i>	PS								PS			PS
<i>Carex aquatilis</i>	MV							HV			HV	
<i>Carex barbarae</i>	PS		PS						PS			
<i>Carex nebrascensis</i>	PS	MV										MV
<i>Carnegiea gigantea</i>	MV											
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV	
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS									
<i>Catapryrenium congestum</i>	MV											
<i>Ceanothus cuneatus</i>	PS		PS						PS			
<i>Cercis canadensis</i> var. <i>orbiculata</i> (= <i>C. orbiculata</i>)	MV	MV	MV									
<i>Cercocarpus ledifolius</i>	PS			PS					PS			
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS								PS		PS	
<i>Chaetopappa ericoides</i>	PS		PS					PS				
<i>Chlorogalum grandiflorum</i>	PS											
<i>Chlorogalum pomeridianum</i>	MV		MV						PS			
<i>Chrysanthus depressus</i>	PS						PS			IL		
<i>Chrysanthus viscidiflorus</i>	IL				IL			PS				
<i>Cladonia perforata</i>	MV											
<i>Cleome lutea</i>	PS						PS		PS			
<i>Cleome serrulata</i>	PS											
<i>Coleogyne ramosissima</i>	PS	PS					PS					
<i>Cornus sericea</i>	MV							MV		MV		
<i>Corynopuntia clavata</i>	MV											
<i>Corynopuntia grahamii</i>	PS											
<i>Corynopuntia kunzei</i>	MV											
<i>Corynopuntia parishii</i>	MV											
<i>Corynopuntia pulchella</i>	MV											
<i>Coryphantha macromeris</i>	MV											
<i>Coryphantha recurvata</i>	MV											
<i>Coryphantha robustispina</i>	HV											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	EV										
<i>Coryphantha sneedii</i> var. <i>leei</i>	EV										
<i>Coryphantha sneedii</i> var. <i>sneedii</i>	HV										
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL				PS		PS				
<i>Cupressus macnabiana</i>	PS										
<i>Cupressus sargentii</i>	PS										
<i>Cylindropuntia abyssi</i>	MV										
<i>Cylindropuntia acanthocarpa</i>	PS										
<i>Cylindropuntia arbuscula</i>	PS										
<i>Cylindropuntia bigelovii</i>	MV										
<i>Cylindropuntia californica</i>	MV										
<i>Cylindropuntia davisii</i>	MV										
<i>Cylindropuntia echinocarpa</i>	PS										
<i>Cylindropuntia fulgida</i>	MV										
<i>Cylindropuntia ganderi</i>	PS										
<i>Cylindropuntia imbricata</i>	MV										
<i>Cylindropuntia kleiniae</i>	PS										
<i>Cylindropuntia leptocaulis</i>	PS										
<i>Cylindropuntia munzii</i>	PS										
<i>Cylindropuntia prolifera</i>	HV										
<i>Cylindropuntia ramosissima</i>	HV										
<i>Cylindropuntia spinosior</i>	MV										
<i>Cylindropuntia versicolor</i>	MV										
<i>Cylindropuntia whipplei</i>	MV										
<i>Cylindropuntia wolfii</i>	PS										
<i>Dalea candida</i>	PS					PS			PS		
<i>Dalea purpurea</i>	PS						MV			PS	
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Echinocactus horizonthalonius</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	EV										
<i>Echinocactus polycephalus</i>	PS										
<i>Echinocactus texensis</i>	PS										
<i>Echinocereus apachensis</i>	MV										
<i>Echinocereus arizonicus</i>	HV										
<i>Echinocereus bonkerae</i>	PS										
<i>Echinocereus coccineus</i>	PS										
<i>Echinocereus dasyacanthus</i>	MV										
<i>Echinocereus engelmannii</i>	PS										
<i>Echinocereus enneacanthus</i>	PS										
<i>Echinocereus fasciculatus</i>	PS										
<i>Echinocereus fendleri</i>	MV										
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	EV										
<i>Echinocereus nicholii</i>	MV										
<i>Echinocereus polyacanthus</i>	HV										
<i>Echinocereus pseudopectinatus</i>	MV										
<i>Echinocereus reichenbachii</i>	PS										
<i>Echinocereus rigidissimus</i>	MV										
<i>Echinocereus stramineus</i>	MV										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	HV										
<i>Echinocereus viridiflorus</i>	HV										
<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	HV										
<i>Elymus canadensis</i>	HV					HV				HV	
<i>Elymus elymoides</i>	IL						IL			IL	
<i>Elymus glaucus</i>	PS			PS					IL		
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Encelia virginensis</i> var. <i>actonii</i>	MV		MV				MV				
<i>Ephedra nevadensis</i>	PS						PS		PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Ephedra viridis</i>	PS			IL			PS				
<i>Epithelantha micromeris</i>	PS										
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS						PS				PS
<i>Eriogonum corymbosum</i>	PS	PS							PS		
<i>Eriogonum fasciculatum</i>	PS	PS							MV		
<i>Eriogonum havardii</i>	PS										
<i>Eriogonum inflatum</i>	PS	PS	PS								
<i>Eriogonum umbellatum</i>	IL	PS					PS				
<i>Eriophyllum lanatum</i>	PS								PS	PS	
<i>Escobaria alversonii</i>	MV										
<i>Escobaria duncanii</i>	MV										
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria robbinsorum</i>	HV										
<i>Escobaria sneedii</i>	HV										
<i>Escobaria tuberculosa</i>	MV										
<i>Escobaria vivipara</i>	PS										
<i>Ferocactus cylindraceus</i>	MV										
<i>Ferocactus emoryi</i>	MV										
<i>Ferocactus hamatacanthus</i>	MV										
<i>Ferocactus viridescens</i>	HV										
<i>Ferocactus wislizeni</i>	MV										
<i>Festuca californica</i>	PS		PS						PS		
<i>Festuca campestris</i>	PS										
<i>Festuca idahoensis</i>	PS	MV		PS							
<i>Festuca roemeri</i>	PS		PS						PS		
<i>Fouquieria splendens</i>	HV	HV	MV								
<i>Fraxinus anomala</i>	PS	PS							PS		
<i>Fraxinus pennsylvanica</i>	PS					MV					MV
<i>Fraxinus velutina</i>	PS	PS						PS			

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Gaillardia aristata</i>	PS					PS		PS				
<i>Gaillardia multiceps</i>	MV											
<i>Gaillardia pulchella</i>	PS	PS						PS				
<i>Grayia spinosa</i>	PS	PS							PS			
<i>Gutierrezia microcephala</i>	PS	PS	PS									
<i>Gutierrezia sarothrae</i>	IL					IL				PS		
<i>Hedysarum boreale</i>	PS							PS		PS		
<i>Helianthus maximiliani</i>	PS			MV		PS						
<i>Hesperostipa comata</i>	PS	PS			PS							
<i>Ipomopsis aggregata</i>	PS	PS							PS			
<i>Juncus balticus</i>	MV							HV			MV	
<i>Juniperus californica</i>	PS	PS	PS									
<i>Juniperus deppeana</i>	PS	PS						PS				
<i>Juniperus monosperma</i>	PS	PS						PS				
<i>Juniperus occidentalis</i>	PS			PS					PS			
<i>Juniperus osteosperma</i>	PS	PS								PS		
<i>Juniperus pinchotii</i>	MV							MV				
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV			MV
<i>Larix occidentalis</i>	MV				MV				MV			
<i>Larrea tridentata</i>	MV	MV						MV				
<i>Lewisia rediviva</i>	PS			PS	MV							
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lithocarpus densiflorus</i>	PS		PS						PS			
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Lupinus excubitus</i>	PS		PS				PS					
<i>Mahonia aquifolium</i>	PS					PS				PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Mahonia fremontii</i>	PS	PS	PS								
<i>Mahonia trifoliolata</i>	PS										
<i>Malacothrix glabrata</i>	PS						MV	PS			
<i>Mammillaria dioica</i>	MV										
<i>Mammillaria grahamii</i>	PS										
<i>Mammillaria heyderi</i>	PS										
<i>Mammillaria lasiacantha</i>	MV										
<i>Mammillaria mainiae</i>	MV										
<i>Mammillaria tetrancistra</i>	PS										
<i>Mammillaria thornberi</i>	HV										
<i>Mammillaria viridiflora</i>	HV										
<i>Mammillaria wrightii</i>	MV										
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Mirabilis multiflora</i>	MV			PS				MV			
<i>Morella californica</i>	PS		PS						PS		
<i>Nassella viridula</i>	PS					PS		PS			
<i>Nolina bigelovii</i> var. <i>parryi</i>	MV										
<i>Oenothera caespitosa</i>	PS								PS	PS	
<i>Olneya tesota</i>	MV										
<i>Opuntia aurea</i>	MV										
<i>Opuntia basilaris</i>	PS										
<i>Opuntia chlorotica</i>	PS										
<i>Opuntia engelmannii</i>	PS										
<i>Opuntia fragilis</i>	IL										
<i>Opuntia gosseliniana</i>	PS										
<i>Opuntia littoralis</i>	MV										
<i>Opuntia macrocentra</i>	PS										
<i>Opuntia macrorhiza</i>	IL										
<i>Opuntia martiniana</i>	MV										
<i>Opuntia oricola</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Opuntia phaeacantha</i>	PS										
<i>Opuntia pinkavae</i>	MV										
<i>Opuntia polyacantha</i>	PS										
<i>Opuntia pottsii</i>	PS										
<i>Opuntia santa-rita</i>	MV										
<i>Opuntia treleasei</i>	MV										
<i>Pachycereus schottii</i>	PS										
<i>Packera multilobata</i>	PS							PS		IL	
<i>Parkinsonia florida</i>	MV										
<i>Parkinsonia microphylla</i>	MV										
<i>Pascopyrum smithii</i>	IL			PS							PS
<i>Pediocactus bradyi</i>	MV										
<i>Pediocactus despainii</i>	MV										
<i>Pediocactus knowltonii</i>	EV										
<i>Pediocactus nigrispinus</i>	PS										
<i>Pediocactus paradisei</i>	MV										
<i>Pediocactus peeblesianus</i>	MV										
<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	EV										
<i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i>	EV										
<i>Pediocactus sileri</i>	EV										
<i>Pediocactus simpsonii</i>	MV										
<i>Pediocactus winkleri</i>	HV										
<i>Peniocereus greggii</i>	HV										
<i>Peniocereus striatus</i>	MV										
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV		MV	MV							
<i>Penstemon osterhoutii</i>	MV										
<i>Penstemon pachyphyllus</i> var. <i>mucronatus</i>	MV										
<i>Penstemon secundiflorus</i>	MV										
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Picea glauca</i>	HV					HV					EV

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Picea mariana</i>	MV										
<i>Pinus albicaulis</i>	HV						HV				HV
<i>Pinus contorta</i> var. <i>murrayana</i>	HV										
<i>Pinus edulis</i>	MV	PS						MV			
<i>Pinus flexilis</i>	HV				HV			HV			
<i>Pinus jeffreyi</i>	EV		EV				HV				
<i>Pinus lambertiana</i>	MV		MV					MV			
<i>Pinus longaeva</i>	EV						EV			EV	
<i>Pinus monophylla</i>	MV	MV					MV				
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS	
<i>Pinus sabiniana</i>	MV										
<i>Platanus wrightii</i>	HV										
<i>Pleuraphis jamesii</i>	PS	PS	PS								
<i>Pleuraphis mutica</i>	MV										
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus deltoides</i>	MV					MV					MV
<i>Populus fremontii</i>	PS	MV	MV								
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prosopis pubescens</i>	PS		PS				PS				
<i>Prunus andersonii</i>	PS		PS				PS				
<i>Prunus fasciculata</i>	PS	PS	PS								
<i>Prunus virginiana</i>	IL				IL					IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i>	MV		HV							PS	
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV					PS				MV	
<i>Psorothamnus arborescens</i>	PS	PS	PS								
<i>Psorothamnus scoparius</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Psorothamnus spinosus</i>	MV	MV	MV								
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS					PS		MV			
<i>Purshia stansburiana</i>	PS			MV						PS	
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus agrifolia</i>	HV										
<i>Quercus alba</i>	PS										
<i>Quercus chrysolepis</i>	PS		PS				PS				
<i>Quercus douglasii</i>	PS										
<i>Quercus gambelii</i>	PS			PS			PS				
<i>Quercus garryana</i>	PS		PS						PS		
<i>Quercus grisea</i>	PS	PS						PS			
<i>Quercus havardii</i>	PS							PS			
<i>Quercus kelloggii</i>	PS		MV						PS		
<i>Quercus lobata</i>	PS										
<i>Quercus macrocarpa</i>	IL										
<i>Quercus wislizeni</i>	PS										
<i>Rhizoplaca idahoensis</i>	EV										
<i>Rhus microphylla</i>	PS	PS						PS			
<i>Rhus trilobata</i>	IL								PS		IL
<i>Ribes aureum</i>	MV										MV
<i>Ribes roezlii</i>	MV		MV			PS					
<i>Rorippa calycina</i>	PS				MV						PS
<i>Rosa arkansana</i>	PS				PS		PS				
<i>Rosa blanda</i>	PS										PS
<i>Rosa californica</i>	PS		PS						PS		
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix amygdaloides</i>	MV				PS		MV				
<i>Salix bebbiana</i>	MV				MV			MV			
<i>Salix boothii</i>	PS	PS		MV							

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV			PS						
<i>Salix gooddingii</i>	PS	PS						PS			
<i>Salix lutea</i>	PS	MV			PS						
<i>Sambucus mexicana</i>	PS										
<i>Schizachyrium scoparium</i>	IL	PS		IL							
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV			
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS			HV		
<i>Sclerocactus brevispinus</i>	EV										
<i>Sclerocactus erectocentrus</i>	PS										
<i>Sclerocactus glaucus</i>	PS										
<i>Sclerocactus intertextus</i>	HV										
<i>Sclerocactus johnsonii</i>	PS										
<i>Sclerocactus mesae-verdae</i>	MV										
<i>Sclerocactus nyensis</i>	PS										
<i>Sclerocactus papyracanthus</i>	MV										
<i>Sclerocactus parviflorus</i>	MV										
<i>Sclerocactus polyancistrus</i>	MV										
<i>Sclerocactus pubispinus</i>	MV										
<i>Sclerocactus sileri</i>	PS										
<i>Sclerocactus spinosior</i>	HV										
<i>Sclerocactus uncinatus</i>	PS										
<i>Sclerocactus wetlandicus</i>	MV										
<i>Sclerocactus whipplei</i>	MV										
<i>Sclerocactus wrightiae</i>	EV										
<i>Sequoia sempervirens</i>	PS		PS						MV		
<i>Sequoiadendron giganteum</i>	MV										
<i>Shepherdia argentea</i>	MV					MV		EV			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Shoshonea pulvinata</i>	HV										
<i>Simmondsia chinensis</i>	PS	MV	MV								
<i>Spartina gracilis</i>	PS							MV			PS
<i>Spartina pectinata</i>	PS					PS		MV			
<i>Sphaeralcea ambigua</i>	PS	PS					PS				
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sphaeralcea parvifolia</i>	MV							MV		PS	
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Sporobolus flexuosus</i>	PS	PS	PS								
<i>Sporobolus giganteus</i>	PS		PS					PS			
<i>Stenocereus thurberi</i>	MV										
<i>Sulcaria badia</i>	PS										
<i>Symphoricarpos occidentalis</i>	PS					PS		PS			
<i>Teloschistes flavicans</i>	HV										
<i>Tetradymia axillaris</i>	PS	MV					PS				
<i>Tetradymia glabrata</i>	MV		MV				MV				
<i>Texosporium sancti-jacobi</i>	HV										
<i>Thuja plicata</i>	MV		PS							MV	
<i>Typha latifolia</i>	PS								PS	PS	
<i>Ulmus americana</i>	PS					PS					PS
<i>Umbellularia californica</i>	PS		PS					PS			
<i>Vitis californica</i>	PS		PS					PS			
<i>Wyethia reticulata</i>	PS										
<i>Xanthoparmelia idahoensis</i>	EV										
<i>Xanthoparmelia norchlorochroa</i>	MV										
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	MV		MV							MV	
<i>Yucca angustissima</i>	MV	MV						MV			
<i>Yucca brevifolia</i>	MV	MV	MV								
<i>Yucca campestris</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Yucca elata</i>	HV	HV						HV				
<i>Yucca glauca</i>	HV							HV				MV
<i>Yucca torreyi</i>	PS							PS				
<i>Zuckia brandegeei</i>	MV	HV								MV		

Appendix 2a. CCVI categories for all taxa that occur in Arizona. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Adenostoma fasciculatum</i>	PS		PS			PS						
<i>Agave palmeri</i>	MV											
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV		MV	
<i>Ambrosia deltoidea</i>	PS											
<i>Ambrosia dumosa</i>	HV	HV	HV									
<i>Amelanchier utahensis</i>	PS									PS		PS
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Anisocoma acaulis</i>	MV	HV	MV									
<i>Apocynum cannabinum</i>	IL		PS								PS	
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS					PS	PS					
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	
<i>Atriplex canescens</i>	IL							PS	IL			

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Atriplex confertifolia</i>	PS	PS								IL		
<i>Baccharis salicifolia</i>	PS	PS								MV		
<i>Baccharis salicina</i>	MV											
<i>Baileya multiradiata</i>	PS	PS	PS									
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bouteloua curtipendula</i>	IL								PS			IL
<i>Bouteloua eriopoda</i>	PS		PS						MV			
<i>Bouteloua gracilis</i>	IL			IL	IL							
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Buchloe dactyloides</i>	IL	PS		PS								
<i>Calliandra eriophylla</i>	PS											
<i>Calycoseris parryi</i>	PS	PS								PS		
<i>Carex aquatilis</i>	MV							HV			HV	
<i>Carex nebrascensis</i>	PS	MV										MV
<i>Carnegiea gigantea</i>	MV											
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV							HV			MV	
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS									
<i>Ceanothus cuneatus</i>	PS		PS						PS			
<i>Cercis canadensis</i> var. <i>orbiculata</i> (= <i>C. orbiculata</i>)	MV	MV	MV									
<i>Cercocarpus ledifolius</i>	PS			PS						PS		
<i>Chaetopappa ericoides</i>	PS		PS					PS				
<i>Chrysothamnus depressus</i>	PS					PS				IL		
<i>Chrysothamnus viscidiflorus</i>	IL			IL			PS					
<i>Cleome lutea</i>	PS					PS			PS			
<i>Cleome serrulata</i>	PS											
<i>Coleogyne ramosissima</i>	PS	PS					PS					
<i>Cornus sericea</i>	MV							MV			MV	
<i>Corynopuntia kunzei</i>	MV											
<i>Corynopuntia parishii</i>	MV											
<i>Coryphantha recurvata</i>	MV											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Coryphantha robustispina</i>	HV										
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	EV										
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL				PS			PS			
<i>Cylindropuntia abyssi</i>	MV										
<i>Cylindropuntia acanthocarpa</i>	PS										
<i>Cylindropuntia arbuscula</i>	PS										
<i>Cylindropuntia bigelovii</i>	MV										
<i>Cylindropuntia echinocarpa</i>	PS										
<i>Cylindropuntia fulgida</i>	MV										
<i>Cylindropuntia imbricata</i>	MV										
<i>Cylindropuntia kleiniae</i>	PS										
<i>Cylindropuntia leptocaulis</i>	PS										
<i>Cylindropuntia ramosissima</i>	HV										
<i>Cylindropuntia spinosior</i>	MV										
<i>Cylindropuntia versicolor</i>	MV										
<i>Cylindropuntia whipplei</i>	MV										
<i>Dalea candida</i>	PS					PS			PS		
<i>Dalea purpurea</i>	PS						MV			PS	
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Echinocactus horizonthalonius</i>	MV										
<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	EV										
<i>Echinocactus polycephalus</i>	PS										
<i>Echinocereus apachensis</i>	MV										
<i>Echinocereus arizonicus</i>	HV										
<i>Echinocereus bonkerae</i>	PS										
<i>Echinocereus coccineus</i>	PS										
<i>Echinocereus dasycanthus</i>	MV										
<i>Echinocereus engelmannii</i>	PS										
<i>Echinocereus fasciculatus</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Echinocereus fendleri</i>	MV										
<i>Echinocereus nicholii</i>	MV										
<i>Echinocereus polyacanthus</i>	HV										
<i>Echinocereus pseudopectinatus</i>	MV										
<i>Echinocereus rigidissimus</i>	MV										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	HV										
<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	HV										
<i>Elymus canadensis</i>	HV					HV				HV	
<i>Elymus elymoides</i>	IL						IL			IL	
<i>Elymus glaucus</i>	PS		PS					IL			
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Encelia virginensis</i> var. <i>actonii</i>	MV		MV				MV				
<i>Ephedra nevadensis</i>	PS						PS		PS		
<i>Ephedra viridis</i>	PS			IL			PS				
<i>Epithelantha micromeris</i>	PS										
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS						PS			PS	
<i>Eriogonum corymbosum</i>	PS	PS							PS		
<i>Eriogonum fasciculatum</i>	PS	PS							MV		
<i>Eriogonum inflatum</i>	PS	PS	PS								
<i>Eriogonum umbellatum</i>	IL	PS					PS				
<i>Escobaria alversonii</i>	MV										
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria robbinsorum</i>	HV										
<i>Escobaria vivipara</i>	PS										
<i>Ferocactus cylindraceus</i>	MV										
<i>Ferocactus emoryi</i>	MV										
<i>Ferocactus wislizeni</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Festuca idahoensis</i>	PS	MV			PS						
<i>Fouquieria splendens</i>	HV	HV	MV								
<i>Fraxinus anomala</i>	PS	PS							PS		
<i>Fraxinus velutina</i>	PS	PS						PS			
<i>Gaillardia aristata</i>	PS					PS		PS			
<i>Gaillardia multiceps</i>	MV										
<i>Gaillardia pulchella</i>	PS	PS						PS			
<i>Grayia spinosa</i>	PS	PS								PS	
<i>Gutierrezia microcephala</i>	PS	PS	PS								
<i>Gutierrezia sarothrae</i>	IL					IL				PS	
<i>Hedysarum boreale</i>	PS							PS		PS	
<i>Helianthus maximiliani</i>	PS			MV		PS					
<i>Hesperostipa comata</i>	PS	PS			PS						
<i>Ipomopsis aggregata</i>	PS	PS								PS	
<i>Juncus balticus</i>	MV							HV			MV
<i>Juniperus californica</i>	PS	PS	PS								
<i>Juniperus deppeana</i>	PS	PS						PS			
<i>Juniperus monosperma</i>	PS	PS						PS			
<i>Juniperus osteosperma</i>	PS	PS								PS	
<i>Koeleria macrantha</i>	IL			PS							IL
<i>Krascheninnikovia lanata</i>	MV								MV		MV
<i>Larrea tridentata</i>	MV	MV				MV					
<i>Lewisia rediviva</i>	PS			PS	MV						
<i>Leymus cinereus</i>	IL				IL					IL	
<i>Leymus salinus</i>	IL		PS							PS	
<i>Linum lewisii</i>	IL					IL	PS				
<i>Lomatium dissectum</i>	PS	PS			PS						
<i>Lupinus argenteus</i>	HV					MV		MV			
<i>Mahonia aquifolium</i>	PS				PS					PS	
<i>Mahonia fremontii</i>	PS	PS	PS								

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Mahonia trifoliolata</i>	PS										
<i>Malacothrix glabrata</i>	PS						MV	PS			
<i>Mammillaria dioica</i>	MV										
<i>Mammillaria grahamii</i>	PS										
<i>Mammillaria heyderi</i>	PS										
<i>Mammillaria mainiae</i>	MV										
<i>Mammillaria tetrancistra</i>	PS										
<i>Mammillaria thornberi</i>	HV										
<i>Mammillaria viridiflora</i>	HV										
<i>Mammillaria wrightii</i>	MV										
<i>Mentzelia albicaulis</i>	PS		PS			PS					
<i>Mirabilis multiflora</i>	MV		PS				MV				
<i>Nassella viridula</i>	PS				PS		PS				
<i>Oenothera caespitosa</i>	PS							PS	PS		
<i>Olneya tesota</i>	MV										
<i>Opuntia aurea</i>	MV										
<i>Opuntia basilaris</i>	PS										
<i>Opuntia chlorotica</i>	PS										
<i>Opuntia engelmannii</i>	PS										
<i>Opuntia fragilis</i>	IL										
<i>Opuntia gosseliniana</i>	PS										
<i>Opuntia macrocentra</i>	PS										
<i>Opuntia macrorhiza</i>	IL										
<i>Opuntia martiniana</i>	MV										
<i>Opuntia phaeacantha</i>	PS										
<i>Opuntia pinkavae</i>	MV										
<i>Opuntia polyacantha</i>	PS										
<i>Opuntia pottsii</i>	PS										
<i>Opuntia santa-rita</i>	MV										
<i>Pachycereus schottii</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Packera multilobata</i>	PS							PS		IL		
<i>Parkinsonia florida</i>	MV											
<i>Parkinsonia microphylla</i>	MV											
<i>Pascopyrum smithii</i>	IL			PS						PS		
<i>Pediocactus bradyi</i>	MV											
<i>Pediocactus paradigmeli</i>	MV											
<i>Pediocactus peeblesianus</i>	MV											
<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	EV											
<i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i>	EV											
<i>Pediocactus sileri</i>	EV											
<i>Pediocactus simpsonii</i>	MV											
<i>Peniocereus greggii</i>	HV											
<i>Peniocereus striatus</i>	MV											
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV									
<i>Phlox longifolia</i>	PS						PS	MV				
<i>Pinus edulis</i>	MV	PS						MV				
<i>Pinus flexilis</i>	HV				HV			HV				
<i>Pinus longaeva</i>	EV						EV			EV		
<i>Pinus monophylla</i>	MV	MV					MV					
<i>Pinus ponderosa</i>	PS					HV			PS			
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS		
<i>Platanus wrightii</i>	HV											
<i>Pleuraphis jamesii</i>	PS	PS	PS									
<i>Pleuraphis mutica</i>	MV											
<i>Poa secunda</i>	IL				IL			PS				
<i>Populus angustifolia</i>	MV	MV	MV									
<i>Populus fremontii</i>	PS	MV	MV									
<i>Populus tremuloides</i>	IL				IL			IL				
<i>Prosopis glandulosa</i>	PS	PS	PS									
<i>Prosopis pubescens</i>	PS		PS					PS				

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Prunus fasciculata</i>	PS	PS	PS								
<i>Prunus virginiana</i>	IL					IL					IL
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS			MV	
<i>Psorothamnus arborescens</i>	PS	PS	PS								
<i>Psorothamnus scoparius</i>	PS										
<i>Psorothamnus spinosus</i>	MV	MV	MV								
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL						IL	
<i>Purshia stansburiana</i>	PS			MV					PS		
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus chrysolepis</i>	PS		PS				PS				
<i>Quercus gambelii</i>	PS			PS			PS				
<i>Quercus grisea</i>	PS	PS						PS			
<i>Rhus microphylla</i>	PS	PS						PS			
<i>Rhus trilobata</i>	IL								PS		IL
<i>Ribes aureum</i>	MV										MV
<i>Rosa woodsii</i>	IL	PS			PS						
<i>Salix amygdaloides</i>	MV				PS		MV				
<i>Salix bebbiana</i>	MV				MV		MV				
<i>Salix boothii</i>	PS	PS		MV							
<i>Salix exigua</i>	MV						MV			MV	
<i>Salix geyeriana</i>	PS	HV		PS							
<i>Salix gooddingii</i>	PS	PS					PS				
<i>Salix lutea</i>	PS	MV		PS							
<i>Sambucus mexicana</i>	PS										
<i>Schizachyrium scoparium</i>	IL	PS	IL								
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV			HV				
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV				PS				HV		
<i>Sclerocactus erectocentrus</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Sclerocactus intertextus</i>	HV										
<i>Sclerocactus johnsonii</i>	PS										
<i>Sclerocactus papyracanthus</i>	MV										
<i>Sclerocactus parviflorus</i>	MV										
<i>Sclerocactus sileri</i>	PS										
<i>Sclerocactus whipplei</i>	MV										
<i>Shepherdia argentea</i>	MV					MV		EV			
<i>Simmondsia chinensis</i>	PS	MV	MV								
<i>Spartina gracilis</i>	PS						MV				PS
<i>Sphaeralcea ambigua</i>	PS	PS					PS				
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sphaeralcea parvifolia</i>	MV							MV		PS	
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Sporobolus flexuosus</i>	PS	PS	PS								
<i>Sporobolus giganteus</i>	PS		PS					PS			
<i>Stenocereus thurberi</i>	MV										
<i>Tetradymia axillaris</i>	PS	MV					PS				
<i>Tetradymia glabrata</i>	MV		MV				MV				
<i>Typha latifolia</i>	PS								PS	PS	
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	MV		MV						MV		
<i>Yucca angustissima</i>	MV	MV						MV			
<i>Yucca brevifolia</i>	MV	MV	MV								
<i>Yucca elata</i>	HV	HV						HV			
<i>Zuckia brandegeei</i>	MV	HV							MV		

Appendix 2b. CCVI categories for all taxa that occur in California. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum speciosum</i>	PS							PS	PS			
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Ambrosia dumosa</i>	HV	HV	HV									
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Anisocoma acaulis</i>	MV	HV	MV									
<i>Apocynum cannabinum</i>	IL		PS								PS	
<i>Arbutus menziesii</i>	PS		PS						PS			
<i>Arctostaphylos glauca</i>	PS											
<i>Arctostaphylos manzanita</i>	PS		PS									
<i>Arctostaphylos viscida</i>	PS		PS						PS			
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia californica</i>	PS											
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia douglasiana</i>	PS		PS				PS					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS					PS	PS					

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV								EV
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV										MV
<i>Atriplex canescens</i>	IL								PS	IL		
<i>Atriplex confertifolia</i>	PS	PS								IL		
<i>Baccharis salicifolia</i>	PS	PS								MV		
<i>Baccharis salicina</i>	MV											
<i>Baileya multiradiata</i>	PS	PS	PS									
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bergerocactus emoryi</i>	MV											
<i>Bouteloua curtipendula</i>	IL								PS			IL
<i>Bouteloua eriopoda</i>	PS		PS						MV			
<i>Bouteloua gracilis</i>	IL			IL	IL							
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Bromus vulgaris</i>	PS				PS							PS
<i>Bryoria capillaris</i>	EV											
<i>Calliandra eriophylla</i>	PS											
<i>Calocedrus decurrens</i>	PS		PS						PS			
<i>Calycoseris parryi</i>	PS	PS								PS		
<i>Camassia quamash</i>	PS								PS			PS
<i>Carex aquatilis</i>	MV						HV			HV		
<i>Carex barbarae</i>	PS		PS						PS			
<i>Carex nebrascensis</i>	PS	MV										MV
<i>Carnegiea gigantea</i>	MV											
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV					MV
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS									
<i>Ceanothus cuneatus</i>	PS		PS						PS			
<i>Cercis canadensis</i> var. <i>orbiculata</i> (= <i>C. orbiculata</i>)	MV	MV	MV									
<i>Cercocarpus ledifolius</i>	PS			PS						PS		
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS								PS			PS
<i>Chaetopappa ericoides</i>	PS		PS					PS				

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Chlorogalum grandiflorum</i>	PS										
<i>Chlorogalum pomeridianum</i>	MV		MV						PS		
<i>Chrysothamnus depressus</i>	PS						PS			IL	
<i>Chrysothamnus viscidiflorus</i>	IL				IL			PS			
<i>Cleome lutea</i>	PS						PS		PS		
<i>Cleome serrulata</i>	PS										
<i>Coleogyne ramosissima</i>	PS	PS					PS				
<i>Cornus sericea</i>	MV							MV		MV	
<i>Corynopuntia kunzei</i>	MV										
<i>Corynopuntia parishii</i>	MV										
<i>Corynopuntia pulchella</i>	MV										
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL				PS			PS			
<i>Cupressus macnabiana</i>	PS										
<i>Cupressus sargentii</i>	PS										
<i>Cylindropuntia acanthocarpa</i>	PS										
<i>Cylindropuntia bigelovii</i>	MV										
<i>Cylindropuntia californica</i>	MV										
<i>Cylindropuntia echinocarpa</i>	PS										
<i>Cylindropuntia ganderi</i>	PS										
<i>Cylindropuntia munzii</i>	PS										
<i>Cylindropuntia prolifera</i>	HV										
<i>Cylindropuntia ramosissima</i>	HV										
<i>Cylindropuntia wolffii</i>	PS										
<i>Dalea purpurea</i>	PS							MV			PS
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Echinocactus polycephalus</i>	PS										
<i>Echinocereus engelmannii</i>	PS										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Elymus canadensis</i>	HV					HV				HV	

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Elymus elymoides</i>	IL						IL				IL	
<i>Elymus glaucus</i>	PS			PS					IL			
<i>Elymus lanceolatus</i>	PS	PS										IL
<i>Elymus trachycaulus</i>	PS			IL	IL							
<i>Encelia virginensis</i> var. <i>actonii</i>	MV		MV				MV					
<i>Ephedra nevadensis</i>	PS						PS			PS		
<i>Ephedra viridis</i>	PS			IL			PS					
<i>Ericameria nauseosa</i>	PS									PS	PS	
<i>Erigeron pumilus</i>	PS						PS				PS	
<i>Eriogonum fasciculatum</i>	PS	PS								MV		
<i>Eriogonum inflatum</i>	PS	PS	PS									
<i>Eriogonum umbellatum</i>	IL	PS					PS					
<i>Eriophyllum lanatum</i>	PS								PS	PS		
<i>Escobaria alversonii</i>	MV											
<i>Escobaria vivipara</i>	PS											
<i>Ferocactus cylindraceus</i>	MV											
<i>Ferocactus viridescens</i>	HV											
<i>Festuca californica</i>	PS		PS						PS			
<i>Festuca idahoensis</i>	PS		MV		PS							
<i>Festuca roemeri</i>	PS			PS						PS		
<i>Fouquieria splendens</i>	HV	HV	MV									
<i>Fraxinus anomala</i>	PS	PS								PS		
<i>Fraxinus velutina</i>	PS	PS							PS			
<i>Gaillardia aristata</i>	PS					PS		PS				
<i>Gaillardia pulchella</i>	PS	PS						PS				
<i>Grayia spinosa</i>	PS	PS								PS		
<i>Gutierrezia microcephala</i>	PS	PS	PS									
<i>Gutierrezia sarothrae</i>	IL					IL					PS	
<i>Hesperostipa comata</i>	PS	PS			PS							
<i>Ipomopsis aggregata</i>	PS	PS								PS		

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Juncus balticus</i>	MV							HV			MV	
<i>Juniperus californica</i>	PS	PS	PS									
<i>Juniperus occidentalis</i>	PS				PS				PS			
<i>Juniperus osteosperma</i>	PS	PS								PS		
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV			MV
<i>Larrea tridentata</i>	MV	MV					MV					
<i>Lewisia rediviva</i>	PS			PS	MV							
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lithocarpus densiflorus</i>	PS		PS						PS			
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Lupinus excubitus</i>	PS		PS				PS					
<i>Mahonia aquifolium</i>	PS					PS					PS	
<i>Mahonia fremontii</i>	PS	PS	PS									
<i>Malacothrix glabrata</i>	PS						MV	PS				
<i>Mammillaria grahamii</i>	PS											
<i>Mammillaria tetrancistra</i>	PS											
<i>Mentzelia albicaulis</i>	PS			PS			PS					
<i>Mirabilis multiflora</i>	MV		PS					MV				
<i>Morella californica</i>	PS		PS						PS			
<i>Nolina bigelovii</i> var. <i>parryi</i>	MV											
<i>Oenothera caespitosa</i>	PS								PS	PS		
<i>Olneya tesota</i>	MV											
<i>Opuntia basilaris</i>	PS											
<i>Opuntia chlorotica</i>	PS											
<i>Opuntia engelmannii</i>	PS											
<i>Opuntia littoralis</i>	MV											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Opuntia oricola</i>	MV										
<i>Opuntia phaeacantha</i>	PS										
<i>Opuntia polyacantha</i>	PS										
<i>Opuntia treleasei</i>	MV										
<i>Pachycereus schottii</i>	PS										
<i>Packera multilobata</i>	PS							PS		IL	
<i>Parkinsonia florida</i>	MV										
<i>Parkinsonia microphylla</i>	MV										
<i>Pascopyrum smithii</i>	IL			PS						PS	
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV								
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Pinus albicaulis</i>	HV						HV			HV	
<i>Pinus contorta</i> var. <i>murrayana</i>	HV										
<i>Pinus edulis</i>	MV	PS						MV			
<i>Pinus flexilis</i>	HV				HV			HV			
<i>Pinus jeffreyi</i>	EV		EV				HV				
<i>Pinus lambertiana</i>	MV		MV						MV		
<i>Pinus longaeva</i>	EV						EV			EV	
<i>Pinus monophylla</i>	MV	MV					MV				
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus sabiniana</i>	MV										
<i>Pleuraphis jamesii</i>	PS	PS	PS								
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus fremontii</i>	PS	MV	MV								
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prosopis pubescens</i>	PS		PS					PS			
<i>Prunus andersonii</i>	PS		PS				PS				
<i>Prunus fasciculata</i>	PS	PS	PS								

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Prunus virginiana</i>	IL					IL					IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS				
<i>Pseudotsuga menziesii</i>	MV		HV								PS	
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS				MV	
<i>Psorothamnus arborescens</i>	PS	PS	PS									
<i>Psorothamnus spinosus</i>	MV	MV	MV									
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL	
<i>Purshia stansburiana</i>	PS			MV					PS			
<i>Purshia tridentata</i>	PS				PS			PS				
<i>Quercus agrifolia</i>	HV											
<i>Quercus chrysolepis</i>	PS		PS				PS					
<i>Quercus douglasii</i>	PS											
<i>Quercus garryana</i>	PS		PS						PS			
<i>Quercus kelloggii</i>	PS			MV					PS			
<i>Quercus lobata</i>	PS											
<i>Quercus wislizeni</i>	PS											
<i>Rhus trilobata</i>	IL								PS		IL	
<i>Ribes aureum</i>	MV										MV	
<i>Ribes roezlii</i>	MV		MV			PS						
<i>Rosa blanda</i>	PS										PS	
<i>Rosa californica</i>	PS		PS					PS				
<i>Rosa woodsii</i>	IL	PS			PS							
<i>Salix boothii</i>	PS	PS		MV								
<i>Salix drummondiana</i>	PS			PS			PS					
<i>Salix exigua</i>	MV							MV			MV	
<i>Salix geyeriana</i>	PS	HV		PS								
<i>Salix gooddingii</i>	PS	PS					PS					
<i>Salix lutea</i>	PS	MV		PS								
<i>Sambucus mexicana</i>	PS											
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV			HV					

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS				HV	
<i>Sclerocactus johnsonii</i>	PS										
<i>Sclerocactus polyancistrus</i>	MV										
<i>Sequoia sempervirens</i>	PS		PS						MV		
<i>Sequoiadendron giganteum</i>	MV										
<i>Shepherdia argentea</i>	MV					MV		EV			
<i>Simmondsia chinensis</i>	PS	MV	MV								
<i>Spartina gracilis</i>	PS							MV			PS
<i>Sphaeralcea ambigua</i>	PS	PS					PS				
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Sporobolus flexuosus</i>	PS	PS	PS								
<i>Sulcaria badia</i>	PS										
<i>Teloschistes flavicans</i>	HV										
<i>Tetradymia axillaris</i>	PS	MV					PS				
<i>Tetradymia glabrata</i>	MV		MV				MV				
<i>Texosporium sancti-jacobi</i>	HV										
<i>Thuja plicata</i>	MV		PS							MV	
<i>Typha latifolia</i>	PS								PS	PS	
<i>Umbellularia californica</i>	PS		PS					PS			
<i>Vitis californica</i>	PS		PS					PS			
<i>Wyethia reticulata</i>	PS										
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	MV		MV						MV		
<i>Yucca brevifolia</i>	MV	MV	MV								

Appendix 2c. CCVI categories for all taxa that occur in Colorado. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS									PS		PS
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL										PS	IL
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	
<i>Aspicilia rogeri</i>	EV											
<i>Atriplex canescens</i>	IL							PS	IL			
<i>Atriplex confertifolia</i>	PS	PS							IL			
<i>Baccharis salicina</i>	MV											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Balsamorhiza sagittata</i>	PS			PS	PS						
<i>Bouteloua curtipendula</i>	IL							PS			IL
<i>Bouteloua eriopoda</i>	PS		PS					MV			
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS		PS			
<i>Buchloe dactyloides</i>	IL	PS		PS							
<i>Calamovilfa longifolia</i>	IL					PS		PS			
<i>Carex aquatilis</i>	MV						HV			HV	
<i>Carex nebrascensis</i>	PS	MV									MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS								
<i>Catapyrenium congestum</i>	MV										
<i>Cercocarpus ledifolius</i>	PS			PS					PS		
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS
<i>Chaetopappa ericoides</i>	PS		PS					PS			
<i>Chrysothamnus depressus</i>	PS						PS			IL	
<i>Chrysothamnus viscidiflorus</i>	IL				IL		PS				
<i>Cleome lutea</i>	PS					PS			PS		
<i>Cleome serrulata</i>	PS										
<i>Coleogyne ramosissima</i>	PS	PS				PS					
<i>Cornus sericea</i>	MV						MV			MV	
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL			PS			PS				
<i>Cylindropuntia imbricata</i>	MV										
<i>Cylindropuntia whipplei</i>	MV										
<i>Dalea candida</i>	PS				PS				PS		
<i>Dalea purpurea</i>	PS						MV				PS
<i>Distichlis spicata</i>	PS				PS	PS					
<i>Echinocereus coccineus</i>	PS										
<i>Echinocereus fendleri</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Echinocereus reichenbachii</i>	PS										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Echinocereus viridiflorus</i>	HV										
<i>Elymus canadensis</i>	HV				HV					HV	
<i>Elymus elymoides</i>	IL					IL				IL	
<i>Elymus glaucus</i>	PS		PS					IL			
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS		IL	IL							
<i>Ephedra viridis</i>	PS		IL		PS						
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS						PS				PS
<i>Eriogonum corymbosum</i>	PS	PS							PS		
<i>Eriogonum inflatum</i>	PS	PS	PS								
<i>Eriogonum umbellatum</i>	IL	PS				PS					
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria vivipara</i>	PS										
<i>Festuca idahoensis</i>	PS	MV		PS							
<i>Fraxinus anomala</i>	PS	PS							PS		
<i>Fraxinus pennsylvanica</i>	PS				MV						MV
<i>Gaillardia aristata</i>	PS				PS		PS				
<i>Gaillardia pulchella</i>	PS	PS					PS				
<i>Grayia spinosa</i>	PS	PS							PS		
<i>Gutierrezia microcephala</i>	PS	PS	PS								
<i>Gutierrezia sarothrae</i>	IL				IL					PS	
<i>Hedysarum boreale</i>	PS			MV	PS			PS	PS		
<i>Helianthus maximiliani</i>	PS			MV	PS						
<i>Hesperostipa comata</i>	PS	PS		PS							
<i>Ipomopsis aggregata</i>	PS	PS							PS		
<i>Juncus balticus</i>	MV						HV			MV	
<i>Juniperus monosperma</i>	PS	PS					PS				

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Juniperus osteosperma</i>	PS	PS								PS		
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV			MV
<i>Lewisia rediviva</i>	PS			PS	MV							
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Mahonia fremontii</i>	PS	PS	PS									
<i>Mentzelia albicaulis</i>	PS			PS			PS					
<i>Mirabilis multiflora</i>	MV			PS				MV				
<i>Nassella viridula</i>	PS					PS		PS				
<i>Oenothera caespitosa</i>	PS								PS	PS		
<i>Opuntia fragilis</i>	IL											
<i>Opuntia macrorhiza</i>	IL											
<i>Opuntia phaeacantha</i>	PS											
<i>Opuntia polyacantha</i>	PS											
<i>Packera multilobata</i>	PS							PS		IL		
<i>Pascopyrum smithii</i>	IL			PS							PS	
<i>Pediocactus simpsonii</i>	MV											
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV									
<i>Penstemon osterhoutii</i>	MV											
<i>Penstemon pachyphyllus</i> var. <i>mucronatus</i>	MV											
<i>Penstemon secundiflorus</i>	MV											
<i>Phlox longifolia</i>	PS						PS	MV				
<i>Pinus edulis</i>	MV	PS						MV				
<i>Pinus flexilis</i>	HV				HV			HV				
<i>Pinus ponderosa</i>	PS						HV		PS			
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV							PS			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Pleuraphis jamesii</i>	PS	PS		PS							
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV		MV							
<i>Populus deltoides</i>	MV					MV					MV
<i>Populus fremontii</i>	PS	MV		MV							
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prunus virginiana</i>	IL					IL					IL
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS				MV
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS					PS		MV			
<i>Purshia stansburiana</i>	PS			MV						PS	
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus gambelii</i>	PS			PS			PS				
<i>Rhus trilobata</i>	IL								PS		IL
<i>Ribes aureum</i>	MV										MV
<i>Rosa arkansana</i>	PS					PS		PS			
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix amygdaloides</i>	MV					PS		MV			
<i>Salix bebbiana</i>	MV				MV			MV			
<i>Salix boothii</i>	PS	PS			MV						
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV		PS							
<i>Salix gooddingii</i>	PS	PS						PS			
<i>Salix lutea</i>	PS	MV			PS						
<i>Schizachyrium scoparium</i>	IL	PS		IL							
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV			
<i>Schoenoplectus maritimus</i>	HV									MV	HV

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Schoenoplectus pungens</i>	MV					PS			HV		
<i>Sclerocactus mesae-verdae</i>	MV										
<i>Sclerocactus papyracanthus</i>	MV										
<i>Sclerocactus parviflorus</i>	MV										
<i>Sclerocactus whipplei</i>	MV										
<i>Shepherdia argentea</i>	MV					MV		EV			
<i>Spartina gracilis</i>	PS							MV			PS
<i>Spartina pectinata</i>	PS					PS		MV			
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sphaeralcea parvifolia</i>	MV							MV		PS	
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Sporobolus flexuosus</i>	PS	PS		PS							
<i>Sporobolus giganteus</i>	PS			PS				PS			
<i>Symphoricarpos occidentalis</i>	PS					PS		PS			
<i>Typha latifolia</i>	PS								PS	PS	
<i>Xanthoparmelia idahoensis</i>	EV										
<i>Xanthoparmelia norchlorochroa</i>	MV										
<i>Yucca glauca</i>	HV							HV			MV
<i>Zuckia brandegeei</i>	MV	HV							MV		

Appendix 2d. CCVI categories for all taxa that occur in Idaho. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Apocynum cannabinum</i>	IL		PS								PS	
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia douglasiana</i>	PS		PS				PS					
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	
<i>Aspicilia rogeri</i>	EV											
<i>Astragalus utahensis</i>	HV								HV		HV	
<i>Atriplex canescens</i>	IL							PS	IL			
<i>Atriplex confertifolia</i>	PS	PS							IL			
<i>Atriplex nuttallii</i>	PS					PS			PS			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Balsamorhiza sagittata</i>	PS			PS	PS						
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS			PS		
<i>Bromus vulgaris</i>	PS				PS						PS
<i>Bryoria capillaris</i>	EV										
<i>Calamovilfa longifolia</i>	IL					PS		PS			
<i>Camassia quamash</i>	PS								PS		PS
<i>Carex aquatilis</i>	MV						HV			HV	
<i>Carex nebrascensis</i>	PS	MV									MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV
<i>Catapryrenium congestum</i>	MV										
<i>Cercocarpus ledifolius</i>	PS		PS						PS		
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS
<i>Chrysanthus viscidiflorus</i>	IL			IL		PS					
<i>Cleome lutea</i>	PS					PS		PS			
<i>Cleome serrulata</i>	PS										
<i>Cornus sericea</i>	MV						MV			MV	
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL			PS		PS					
<i>Dalea purpurea</i>	PS						MV				PS
<i>Distichlis spicata</i>	PS				PS	PS					
<i>Elymus canadensis</i>	HV				HV					HV	
<i>Elymus elymoides</i>	IL					IL				IL	
<i>Elymus glaucus</i>	PS		PS					IL			
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS						PS				PS
<i>Eriogonum umbellatum</i>	IL	PS				PS					
<i>Eriophyllum lanatum</i>	PS							PS	PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Escobaria missouriensis</i>	PS										
<i>Festuca campestris</i>	PS										
<i>Festuca idahoensis</i>	PS	MV			PS						
<i>Gaillardia aristata</i>	PS					PS		PS			
<i>Grayia spinosa</i>	PS	PS								PS	
<i>Gutierrezia sarothrae</i>	IL					IL				PS	
<i>Hedysarum boreale</i>	PS							PS		PS	
<i>Hesperostipa comata</i>	PS	PS			PS						
<i>Ipomopsis aggregata</i>	PS	PS								PS	
<i>Juncus balticus</i>	MV							HV			MV
<i>Juniperus occidentalis</i>	PS				PS				PS		
<i>Juniperus osteosperma</i>	PS	PS								PS	
<i>Koeleria macrantha</i>	IL			PS						IL	
<i>Krascheninnikovia lanata</i>	MV								MV		MV
<i>Larix occidentalis</i>	MV					MV			MV		
<i>Lewisia rediviva</i>	PS			PS	MV						
<i>Leymus cinereus</i>	IL				IL					IL	
<i>Leymus salinus</i>	IL		PS							PS	
<i>Linum lewisii</i>	IL					IL	PS				
<i>Lomatium dissectum</i>	PS	PS			PS						
<i>Lupinus argenteus</i>	HV					MV		MV			
<i>Mahonia aquifolium</i>	PS					PS				PS	
<i>Malacothrix glabrata</i>	PS						MV	PS			
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Nassella viridula</i>	PS				PS			PS			
<i>Oenothera caespitosa</i>	PS								PS	PS	
<i>Opuntia fragilis</i>	IL										
<i>Opuntia polyacantha</i>	PS										
<i>Packera multilobata</i>	PS							PS		IL	
<i>Pascopyrum smithii</i>	IL			PS						PS	

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Pediocactus nigrispinus</i>	PS										
<i>Pediocactus simpsonii</i>	MV										
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV								
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Pinus albicaulis</i>	HV						HV				HV
<i>Pinus flexilis</i>	HV				HV			HV			
<i>Pinus monophylla</i>	MV	MV					MV				
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS	
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prunus virginiana</i>	IL					IL					IL
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS				MV
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL
<i>Purshia stansburiana</i>	PS			MV					PS		
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Rhizoplaca idahoensis</i>	EV										
<i>Rhus trilobata</i>	IL							PS			IL
<i>Ribes aureum</i>	MV										MV
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix amygdaloides</i>	MV					PS		MV			
<i>Salix bebbiana</i>	MV					MV		MV			
<i>Salix boothii</i>	PS	PS			MV						
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV		PS							
<i>Salix lutea</i>	PS	MV		PS							
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV			HV				

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS				HV	
<i>Shepherdia argentea</i>	MV					MV		EV			
<i>Spartina gracilis</i>	PS							MV			PS
<i>Spartina pectinata</i>	PS					PS		MV			
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Symporicarpos occidentalis</i>	PS					PS		PS			
<i>Tetradymia glabrata</i>	MV		MV				MV				
<i>Texosporium sancti-jacobi</i>	HV										
<i>Thuja plicata</i>	MV		PS							MV	
<i>Typha latifolia</i>	PS								PS	PS	
<i>Xanthoparmelia idahoensis</i>	EV										
<i>Xanthoparmelia norchlorochroa</i>	MV										

Appendix 2e. CCVI categories for all taxa that occur in Montana. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV								EV
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV										MV
<i>Atriplex canescens</i>	IL								PS	IL		
<i>Atriplex confertifolia</i>	PS	PS								IL		
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bouteloua curtipendula</i>	IL							PS				IL
<i>Bouteloua gracilis</i>	IL			IL	IL							

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Bromus vulgaris</i>	PS				PS							PS
<i>Bryoria capillaris</i>	EV											
<i>Buchloe dactyloides</i>	IL	PS		PS								
<i>Calamovilfa longifolia</i>	IL					PS		PS				
<i>Camassia quamash</i>	PS								PS			PS
<i>Carex aquatilis</i>	MV						HV			HV		
<i>Carex nebrascensis</i>	PS	MV										MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV					MV
<i>Catapryrenium congestum</i>	MV											
<i>Cercocarpus ledifolius</i>	PS			PS					PS			
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS	
<i>Chrysothamnus viscidiflorus</i>	IL				IL			PS				
<i>Cleome serrulata</i>	PS											
<i>Cornus sericea</i>	MV						MV			MV		
<i>Crataegus douglasii</i>	PS								PS	PS		
<i>Crepis occidentalis</i>	IL				PS			PS				
<i>Dalea candida</i>	PS					PS				PS		
<i>Dalea purpurea</i>	PS						MV				PS	
<i>Distichlis spicata</i>	PS					PS	PS					
<i>Elymus canadensis</i>	HV					HV					HV	
<i>Elymus elymoides</i>	IL						IL				IL	
<i>Elymus glaucus</i>	PS			PS					IL			
<i>Elymus lanceolatus</i>	PS	PS										IL
<i>Elymus trachycaulus</i>	PS			IL	IL							
<i>Ericameria nauseosa</i>	PS								PS	PS		
<i>Erigeron pumilus</i>	PS							PS				PS
<i>Eriogonum corymbosum</i>	PS	PS								PS		
<i>Eriogonum umbellatum</i>	IL	PS					PS					
<i>Eriophyllum lanatum</i>	PS								PS	PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria vivipara</i>	PS										
<i>Festuca campestris</i>	PS										
<i>Festuca idahoensis</i>	PS	MV			PS						
<i>Fraxinus pennsylvanica</i>	PS					MV					MV
<i>Gaillardia aristata</i>	PS					PS		PS			
<i>Grayia spinosa</i>	PS	PS							PS		
<i>Gutierrezia sarothrae</i>	IL					IL				PS	
<i>Hedysarum boreale</i>	PS							PS		PS	
<i>Helianthus maximiliani</i>	PS			MV		PS					
<i>Hesperostipa comata</i>	PS	PS		PS							
<i>Ipomopsis aggregata</i>	PS	PS							PS		
<i>Juncus balticus</i>	MV							HV			MV
<i>Juniperus osteosperma</i>	PS	PS							PS		
<i>Koeleria macrantha</i>	IL			PS						IL	
<i>Krascheninnikovia lanata</i>	MV								MV		MV
<i>Larix occidentalis</i>	MV				MV				MV		
<i>Lewisia rediviva</i>	PS			PS	MV						
<i>Leymus cinereus</i>	IL				IL					IL	
<i>Linum lewisii</i>	IL					IL	PS				
<i>Lomatium dissectum</i>	PS	PS		PS							
<i>Lupinus argenteus</i>	HV					MV		MV			
<i>Mahonia aquifolium</i>	PS					PS				PS	
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Nassella viridula</i>	PS				PS		PS				
<i>Oenothera caespitosa</i>	PS								PS	PS	
<i>Opuntia fragilis</i>	IL										
<i>Opuntia polyacantha</i>	PS										
<i>Pascopyrum smithii</i>	IL			PS						PS	
<i>Pediocactus simpsonii</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Phlox longifolia</i>	PS						PS	MV				
<i>Picea glauca</i>	HV					HV						EV
<i>Pinus albicaulis</i>	HV						HV				HV	
<i>Pinus flexilis</i>	HV				HV			HV				
<i>Pinus ponderosa</i>	PS						HV		PS			
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV							PS			
<i>Poa secunda</i>	IL				IL			PS				
<i>Populus angustifolia</i>	MV	MV	MV									
<i>Populus deltoides</i>	MV					MV						MV
<i>Populus tremuloides</i>	IL				IL			IL				
<i>Prunus virginiana</i>	IL					IL					IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS				
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS				MV	
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL	
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS					PS		MV				
<i>Purshia tridentata</i>	PS				PS			PS				
<i>Quercus macrocarpa</i>	IL											
<i>Rhizoplaca idahoensis</i>	EV											
<i>Rhus trilobata</i>	IL							PS			IL	
<i>Ribes aureum</i>	MV										MV	
<i>Rorippa calycina</i>	PS					MV					PS	
<i>Rosa arkansana</i>	PS					PS		PS				
<i>Rosa woodsii</i>	IL	PS				PS						
<i>Salix amygdaloides</i>	MV					PS		MV				
<i>Salix bebbiana</i>	MV				MV			MV				
<i>Salix boothii</i>	PS	PS			MV							
<i>Salix drummondiana</i>	PS				PS			PS				
<i>Salix exigua</i>	MV							MV			MV	
<i>Salix geyeriana</i>	PS	HV			PS							
<i>Salix lutea</i>	PS	MV			PS							

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Schizachyrium scoparium</i>	IL	PS		IL							
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV			
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS			HV		
<i>Shepherdia argentea</i>	MV					MV		EV			
<i>Shoshonea pulvinata</i>	HV										
<i>Spartina gracilis</i>	PS							MV			PS
<i>Spartina pectinata</i>	PS					PS		MV			
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Symphoricarpos occidentalis</i>	PS					PS		PS			
<i>Thuja plicata</i>	MV		PS							MV	
<i>Typha latifolia</i>	PS								PS	PS	
<i>Ulmus americana</i>	PS					PS					PS
<i>Xanthoparmelia idahoensis</i>	EV										
<i>Xanthoparmelia norchlorochroa</i>	MV										
<i>Yucca glauca</i>	HV							HV			MV

Appendix 2f. CCVI categories for all taxa that occur in New Mexico. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agave neomexicana</i>	MV							PS				
<i>Agave palmeri</i>	MV											
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier utahensis</i>	PS								PS			PS
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	
<i>Atriplex canescens</i>	IL							PS	IL			
<i>Atriplex confertifolia</i>	PS	PS							IL			
<i>Atriplex nuttallii</i>	PS						PS		PS			
<i>Baccharis salicifolia</i>	PS	PS							MV			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Baccharis salicina</i>	MV										
<i>Baileya multiradiata</i>	PS	PS	PS								
<i>Bouteloua curtipendula</i>	IL							PS			IL
<i>Bouteloua eriopoda</i>	PS		PS					MV			
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS			PS		
<i>Buchloe dactyloides</i>	IL	PS		PS							
<i>Calamovilfa longifolia</i>	IL					PS		PS			
<i>Calliandra eriophylla</i>	PS										
<i>Carex aquatilis</i>	MV							HV		HV	
<i>Carex nebrascensis</i>	PS	MV									MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV							HV			MV
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS								
<i>Cercocarpus ledifolius</i>	PS			PS					PS		
<i>Chaetopappa ericoides</i>	PS		PS					PS			
<i>Chrysothamnus depressus</i>	PS						PS			IL	
<i>Chrysothamnus viscidiflorus</i>	IL				IL			PS			
<i>Cleome lutea</i>	PS						PS		PS		
<i>Cleome serrulata</i>	PS										
<i>Cornus sericea</i>	MV							MV		MV	
<i>Corynopuntia clavata</i>	MV										
<i>Corynopuntia grahamii</i>	PS										
<i>Coryphantha macromeris</i>	MV										
<i>Coryphantha robustispina</i>	HV										
<i>Coryphantha sneedii</i> var. <i>leei</i>	EV										
<i>Coryphantha sneedii</i> var. <i>sneedii</i>	HV										
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL			PS			PS				
<i>Cylindropuntia davisii</i>	MV										
<i>Cylindropuntia imbricata</i>	MV										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Cylindropuntia kleiniae</i>	PS										
<i>Cylindropuntia leptocaulis</i>	PS										
<i>Cylindropuntia spinosior</i>	MV										
<i>Cylindropuntia whipplei</i>	MV										
<i>Dalea candida</i>	PS					PS			PS		
<i>Dalea purpurea</i>	PS							MV			PS
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Echinocactus horizonthalonius</i>	MV										
<i>Echinocactus texensis</i>	PS										
<i>Echinocereus arizonicus</i>	HV										
<i>Echinocereus coccineus</i>	PS										
<i>Echinocereus dasyacanthus</i>	MV										
<i>Echinocereus enneacanthus</i>	PS										
<i>Echinocereus fasciculatus</i>	PS										
<i>Echinocereus fendleri</i>	MV										
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	EV										
<i>Echinocereus polyacanthus</i>	HV										
<i>Echinocereus reichenbachii</i>	PS										
<i>Echinocereus rigidissimus</i>	MV										
<i>Echinocereus stramineus</i>	MV										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Echinocereus viridiflorus</i>	HV										
<i>Elymus canadensis</i>	HV					HV				HV	
<i>Elymus elymoides</i>	IL						IL			IL	
<i>Elymus glaucus</i>	PS			PS				IL			
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Ephedra viridis</i>	PS			IL		PS					
<i>Epithelantha micromeris</i>	PS										
<i>Ericameria nauseosa</i>	PS							PS	PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Erigeron pumilus</i>	PS							PS			PS
<i>Eriogonum corymbosum</i>	PS	PS								PS	
<i>Eriogonum havardii</i>	PS										
<i>Eriogonum inflatum</i>	PS	PS		PS							
<i>Eriogonum umbellatum</i>	IL	PS					PS				
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria sneedii</i>	HV										
<i>Escobaria tuberculosa</i>	MV										
<i>Escobaria vivipara</i>	PS										
<i>Ferocactus hamatacanthus</i>	MV										
<i>Ferocactus wislizeni</i>	MV										
<i>Festuca idahoensis</i>	PS	MV			PS						
<i>Fouquieria splendens</i>	HV	HV	MV								
<i>Fraxinus anomala</i>	PS	PS							PS		
<i>Fraxinus velutina</i>	PS	PS						PS			
<i>Gaillardia aristata</i>	PS				PS		PS				
<i>Gaillardia multiceps</i>	MV										
<i>Gaillardia pulchella</i>	PS	PS					PS				
<i>Gutierrezia microcephala</i>	PS	PS	PS								
<i>Gutierrezia sarothrae</i>	IL				IL				PS		
<i>Hedysarum boreale</i>	PS						PS		PS		
<i>Helianthus maximiliani</i>	PS		MV		PS						
<i>Hesperostipa comata</i>	PS	PS		PS							
<i>Ipomopsis aggregata</i>	PS	PS							PS		
<i>Juncus balticus</i>	MV						HV			MV	
<i>Juniperus deppeana</i>	PS	PS					PS				
<i>Juniperus monosperma</i>	PS	PS					PS				
<i>Juniperus osteosperma</i>	PS	PS							PS		
<i>Juniperus pinchotii</i>	MV						MV				
<i>Koeleria macrantha</i>	IL			PS						IL	

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Krascheninnikovia lanata</i>	MV								MV			MV
<i>Larrea tridentata</i>	MV	MV					MV					
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Mahonia aquifolium</i>	PS					PS				PS		
<i>Mahonia fremontii</i>	PS	PS	PS									
<i>Mahonia trifoliolata</i>	PS											
<i>Malacothrix glabrata</i>	PS						MV	PS				
<i>Mammillaria grahamii</i>	PS											
<i>Mammillaria heyderi</i>	PS											
<i>Mammillaria lasiacantha</i>	MV											
<i>Mammillaria viridiflora</i>	HV											
<i>Mammillaria wrightii</i>	MV											
<i>Mentzelia albicaulis</i>	PS			PS			PS					
<i>Mirabilis multiflora</i>	MV			PS				MV				
<i>Nassella viridula</i>	PS					PS		PS				
<i>Oenothera caespitosa</i>	PS								PS	PS		
<i>Opuntia chlorotica</i>	PS											
<i>Opuntia engelmannii</i>	PS											
<i>Opuntia fragilis</i>	IL											
<i>Opuntia macrocentra</i>	PS											
<i>Opuntia macrorhiza</i>	IL											
<i>Opuntia phaeacantha</i>	PS											
<i>Opuntia polyacantha</i>	PS											
<i>Opuntia pottsii</i>	PS											
<i>Packera multilobata</i>	PS							PS		IL		
<i>Pascopyrum smithii</i>	IL			PS							PS	
<i>Pediocactus knowltonii</i>	EV											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Pediocactus simpsonii</i>	MV										
<i>Peniocereus greggii</i>	HV										
<i>Penstemon secundiflorus</i>	MV										
<i>Phlox longifolia</i>	PS					PS	MV				
<i>Pinus edulis</i>	MV	PS					MV				
<i>Pinus flexilis</i>	HV				HV			HV			
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS	
<i>Platanus wrightii</i>	HV										
<i>Pleuraphis jamesii</i>	PS	PS	PS								
<i>Pleuraphis mutica</i>	MV										
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus deltoides</i>	MV					MV					MV
<i>Populus fremontii</i>	PS	MV	MV								
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prosopis pubescens</i>	PS		PS				PS				
<i>Prunus virginiana</i>	IL				IL					IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV					PS				MV	
<i>Psorothamnus scoparius</i>	PS										
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL						IL	
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS				PS		MV				
<i>Purshia stansburiana</i>	PS			MV					PS		
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus gambelii</i>	PS		PS			PS					
<i>Quercus grisea</i>	PS	PS					PS				
<i>Quercus havardii</i>	PS						PS				
<i>Rhus microphylla</i>	PS	PS					PS				

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Rhus trilobata</i>	IL								PS			IL
<i>Ribes aureum</i>	MV											MV
<i>Rosa arkansana</i>	PS					PS		PS				
<i>Rosa woodsii</i>	IL	PS				PS						
<i>Salix amygdaloides</i>	MV					PS		MV				
<i>Salix bebbiana</i>	MV					MV		MV				
<i>Salix boothii</i>	PS	PS			MV							
<i>Salix drummondiana</i>	PS				PS			PS				
<i>Salix exigua</i>		MV						MV			MV	
<i>Salix gooddingii</i>	PS	PS						PS				
<i>Salix lutea</i>	PS		MV		PS							
<i>Sambucus mexicana</i>	PS											
<i>Schizachyrium scoparium</i>	IL	PS		IL								
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV				
<i>Schoenoplectus maritimus</i>	HV									MV	HV	
<i>Schoenoplectus pungens</i>	MV					PS			HV			
<i>Sclerocactus intertextus</i>	HV											
<i>Sclerocactus mesae-verdae</i>	MV											
<i>Sclerocactus papyracanthus</i>	MV											
<i>Sclerocactus parviflorus</i>	MV											
<i>Sclerocactus uncinatus</i>	PS											
<i>Sclerocactus whipplei</i>	MV											
<i>Shepherdia argentea</i>	MV					MV		EV				
<i>Spartina gracilis</i>	PS						MV				PS	
<i>Spartina pectinata</i>	PS					PS		MV				
<i>Sphaeralcea ambigua</i>	PS	PS					PS					
<i>Sphaeralcea coccinea</i>	PS						PS				PS	
<i>Sphaeralcea parvifolia</i>	MV							MV		PS		
<i>Sporobolus airoides</i>	PS							PS	PS			
<i>Sporobolus cryptandrus</i>	IL							PS			IL	

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Sporobolus flexuosus</i>	PS	PS		PS							
<i>Sporobolus giganteus</i>	PS			PS				PS			
<i>Symphoricarpos occidentalis</i>	PS					PS		PS			
<i>Typha latifolia</i>	PS								PS	PS	
<i>Yucca angustissima</i>	MV	MV						MV			
<i>Yucca campestris</i>	MV										
<i>Yucca elata</i>	HV	HV						HV			
<i>Yucca glauca</i>	HV							HV			MV
<i>Yucca torreyi</i>	PS							PS			
<i>Zuckia brandegeei</i>	MV	HV							MV		

Appendix 2g. CCVI categories for all taxa that occur in Nevada. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Ambrosia dumosa</i>	HV	HV	HV									
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Anisocoma acaulis</i>	MV	HV	MV									
<i>Apocynum cannabinum</i>	IL		PS								PS	
<i>Arctostaphylos viscida</i>	PS		PS						PS			
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia douglasiana</i>	PS		PS				PS					
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS				IL	IL						
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV						MV		MV			
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS					PS	PS					
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Aspicilia rogeri</i>	EV										
<i>Astragalus utahensis</i>	HV									HV	
<i>Atriplex canescens</i>	IL								PS	IL	
<i>Atriplex confertifolia</i>	PS	PS								IL	
<i>Atriplex nuttallii</i>	PS						PS			PS	
<i>Baccharis salicifolia</i>	PS	PS								MV	
<i>Baccharis salicina</i>	MV										
<i>Baileya multiradiata</i>	PS	PS	PS								
<i>Balsamorhiza sagittata</i>	PS			PS	PS						
<i>Bouteloua curtipendula</i>	IL								PS		IL
<i>Bouteloua eriopoda</i>	PS		PS						MV		
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS			PS		
<i>Bromus vulgaris</i>	PS				PS						PS
<i>Calocedrus decurrens</i>	PS		PS						PS		
<i>Calycoseris parryi</i>	PS	PS								PS	
<i>Camassia quamash</i>	PS							PS			PS
<i>Carex aquatilis</i>	MV							HV			HV
<i>Carex nebrascensis</i>	PS	MV									MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV							HV			MV
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS								
<i>Ceanothus cuneatus</i>	PS		PS						PS		
<i>Cercis canadensis</i> var. <i>orbiculata</i> (= <i>C. orbiculata</i>)	MV	MV	MV								
<i>Cercocarpus ledifolius</i>	PS			PS						PS	
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS								PS		PS
<i>Chaetopappa ericoides</i>	PS		PS					PS			
<i>Chrysanthmnus depressus</i>	PS						PS			IL	
<i>Chrysanthmnus viscidiflorus</i>	IL			IL			PS				
<i>Cleome lutea</i>	PS					PS		PS			
<i>Cleome serrulata</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Coleogyne ramosissima</i>	PS	PS					PS				
<i>Cornus sericea</i>	MV							MV			MV
<i>Corynopuntia parishii</i>	MV										
<i>Corynopuntia pulchella</i>	MV										
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL				PS			PS			
<i>Cylindropuntia acanthocarpa</i>	PS										
<i>Cylindropuntia bigelovii</i>	MV										
<i>Cylindropuntia echinocarpa</i>	PS										
<i>Cylindropuntia ramosissima</i>	HV										
<i>Cylindropuntia whipplei</i>	MV										
<i>Dalea purpurea</i>	PS							MV			PS
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Echinocactus polycephalus</i>	PS										
<i>Echinocereus engelmannii</i>	PS										
<i>Echinocereus triglochidiatus</i>	PS										
<i>Elymus canadensis</i>	HV					HV				HV	
<i>Elymus elymoides</i>	IL						IL			IL	
<i>Elymus glaucus</i>	PS			PS				IL			
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Encelia virginensis</i> var. <i>actonii</i>	MV		MV				MV				
<i>Ephedra nevadensis</i>	PS						PS		PS		
<i>Ephedra viridis</i>	PS			IL			PS				
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS							PS			PS
<i>Eriogonum corymbosum</i>	PS	PS							PS		
<i>Eriogonum fasciculatum</i>	PS	PS							MV		
<i>Eriogonum inflatum</i>	PS	PS	PS								
<i>Eriogonum umbellatum</i>	IL	PS					PS				

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Eriophyllum lanatum</i>	PS								PS	PS		
<i>Escobaria missouriensis</i>	PS											
<i>Escobaria vivipara</i>	PS											
<i>Ferocactus cylindraceus</i>	MV											
<i>Festuca idahoensis</i>	PS	MV			PS							
<i>Fouquieria splendens</i>	HV	HV	MV									
<i>Fraxinus anomala</i>	PS	PS								PS		
<i>Fraxinus velutina</i>	PS	PS							PS			
<i>Gaillardia pulchella</i>	PS	PS							PS			
<i>Grayia spinosa</i>	PS	PS								PS		
<i>Gutierrezia microcephala</i>	PS	PS	PS									
<i>Gutierrezia sarothrae</i>	IL					IL					PS	
<i>Hedysarum boreale</i>	PS							PS		PS		
<i>Hesperostipa comata</i>	PS	PS			PS							
<i>Ipomopsis aggregata</i>	PS	PS								PS		
<i>Juncus balticus</i>	MV							HV			MV	
<i>Juniperus californica</i>	PS	PS	PS									
<i>Juniperus occidentalis</i>	PS				PS				PS			
<i>Juniperus osteosperma</i>	PS	PS								PS		
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV		MV	
<i>Larrea tridentata</i>	MV	MV				MV						
<i>Lewisia rediviva</i>	PS			PS	MV							
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Lupinus excubitus</i>	PS		PS				PS					
<i>Mahonia fremontii</i>	PS	PS	PS									

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Malacothrix glabrata</i>	PS						MV	PS			
<i>Mammillaria tetrancistra</i>	PS										
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Mirabilis multiflora</i>	MV			PS				MV			
<i>Oenothera caespitosa</i>	PS								PS	PS	
<i>Opuntia basilaris</i>	PS										
<i>Opuntia chlorotica</i>	PS										
<i>Opuntia engelmannii</i>	PS										
<i>Opuntia phaeacantha</i>	PS										
<i>Opuntia polyacantha</i>	PS										
<i>Packera multilobata</i>	PS							PS		IL	
<i>Parkinsonia florida</i>	MV										
<i>Pascopyrum smithii</i>	IL			PS						PS	
<i>Pediocactus nigrispinus</i>	PS										
<i>Pediocactus simpsonii</i>	MV										
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV								
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Pinus albicaulis</i>	HV						HV			HV	
<i>Pinus contorta</i> var. <i>murrayana</i>	HV										
<i>Pinus flexilis</i>	HV			HV			HV				
<i>Pinus jeffreyi</i>	EV		EV				HV				
<i>Pinus lambertiana</i>	MV		MV					MV			
<i>Pinus longaeva</i>	EV						EV		EV		
<i>Pinus monophylla</i>	MV	MV					MV				
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS	
<i>Pleuraphis jamesii</i>	PS	PS	PS								
<i>Poa secunda</i>	IL			IL			PS				
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus fremontii</i>	PS	MV	MV	MV							

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prosopis pubescens</i>	PS		PS					PS			
<i>Prunus andersonii</i>	PS		PS				PS				
<i>Prunus fasciculata</i>	PS	PS	PS								
<i>Prunus virginiana</i>	IL					IL				IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i>	MV		HV							PS	
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS			MV	
<i>Psorothamnus arborescens</i>	PS	PS	PS								
<i>Psorothamnus spinosus</i>	MV	MV	MV								
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL						IL	
<i>Purshia stansburiana</i>	PS			MV					PS		
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus chrysolepis</i>	PS		PS				PS				
<i>Quercus gambelii</i>	PS			PS			PS				
<i>Rhus trilobata</i>	IL								PS		IL
<i>Ribes aureum</i>	MV										MV
<i>Ribes roezlii</i>	MV		MV			PS					
<i>Rosa californica</i>	PS		PS					PS			
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix bebbiana</i>	MV				MV			MV			
<i>Salix boothii</i>	PS	PS			MV						
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV			PS						
<i>Salix gooddingii</i>	PS	PS						PS			
<i>Salix lutea</i>	PS	MV			PS						
<i>Sambucus mexicana</i>	PS										
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS				HV	
<i>Sclerocactus johnsonii</i>	PS										
<i>Sclerocactus nyensis</i>	PS										
<i>Sclerocactus polyancistrus</i>	MV										
<i>Sclerocactus pubispinus</i>	MV										
<i>Shepherdia argentea</i>	MV				MV		EV				
<i>Spartina gracilis</i>	PS						MV				PS
<i>Sphaeralcea ambigua</i>	PS	PS				PS					
<i>Sphaeralcea coccinea</i>	PS					PS					PS
<i>Sphaeralcea parvifolia</i>	MV						MV		PS		
<i>Sporobolus airoides</i>	PS							PS	PS		
<i>Sporobolus cryptandrus</i>	IL							PS			IL
<i>Sporobolus flexuosus</i>	PS	PS	PS								
<i>Tetradymia axillaris</i>	PS	MV				PS					
<i>Tetradymia glabrata</i>	MV		MV			MV					
<i>Typha latifolia</i>	PS								PS	PS	
<i>Xanthoparmelia norchlorochroa</i>	MV										
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	MV		MV						MV		
<i>Yucca brevifolia</i>	MV	MV	MV								

Appendix 2h. CCVI categories for all taxa that occur in Oregon. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS			PS
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Arbutus menziesii</i>	PS		PS						PS			
<i>Arctostaphylos manzanita</i>	PS		PS									
<i>Arctostaphylos viscida</i>	PS		PS						PS			
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia douglasiana</i>	PS		PS				PS					
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV							EV	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV									MV	
<i>Aspicilia rogeri</i>	EV											

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Atriplex canescens</i>	IL								PS	IL		
<i>Atriplex confertifolia</i>	PS	PS								IL		
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Bromus vulgaris</i>	PS				PS						PS	
<i>Bryoria capillaris</i>	EV											
<i>Calocedrus decurrens</i>	PS		PS						PS			
<i>Camassia quamash</i>	PS								PS		PS	
<i>Carex aquatilis</i>	MV						HV			HV		
<i>Carex barbaeae</i>	PS		PS						PS			
<i>Carex nebrascensis</i>	PS	MV									MV	
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV	
<i>Catapyrenium congestum</i>	MV											
<i>Ceanothus cuneatus</i>	PS		PS						PS			
<i>Cercocarpus ledifolius</i>	PS			PS						PS		
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS								PS		PS	
<i>Chlorogalum pomeridianum</i>	MV		MV						PS			
<i>Chrysanthemum viscidiflorus</i>	IL				IL			PS				
<i>Cleome lutea</i>	PS					PS			PS			
<i>Cleome serrulata</i>	PS											
<i>Cornus sericea</i>	MV						MV			MV		
<i>Crataegus douglasii</i>	PS								PS	PS		
<i>Crepis occidentalis</i>	IL			PS			PS					
<i>Dalea purpurea</i>	PS						MV				PS	
<i>Distichlis spicata</i>	PS				PS	PS						
<i>Elymus canadensis</i>	HV				HV						HV	
<i>Elymus elymoides</i>	IL					IL					IL	
<i>Elymus glaucus</i>	PS		PS						IL			
<i>Elymus lanceolatus</i>	PS	PS									IL	
<i>Elymus trachycaulus</i>	PS			IL	IL							

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Ephedra nevadensis</i>	PS						PS			PS		
<i>Ephedra viridis</i>	PS			IL			PS					
<i>Ericameria nauseosa</i>	PS									PS	PS	
<i>Erigeron pumilus</i>	PS							PS				PS
<i>Eriogonum umbellatum</i>	IL	PS					PS					
<i>Eriophyllum lanatum</i>	PS								PS	PS		
<i>Festuca californica</i>	PS		PS						PS			
<i>Festuca idahoensis</i>	PS	MV		PS								
<i>Festuca roemeri</i>	PS		PS						PS			
<i>Gaillardia aristata</i>	PS					PS		PS				
<i>Gaillardia pulchella</i>	PS	PS						PS				
<i>Grayia spinosa</i>	PS	PS								PS		
<i>Gutierrezia sarothrae</i>	IL					IL					PS	
<i>Hedysarum boreale</i>	PS							PS		PS		
<i>Hesperostipa comata</i>	PS	PS			PS							
<i>Ipomopsis aggregata</i>	PS	PS								PS		
<i>Juncus balticus</i>	MV							HV			MV	
<i>Juniperus occidentalis</i>	PS				PS				PS			
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV		MV	
<i>Larix occidentalis</i>	MV				MV				MV			
<i>Lewisia rediviva</i>	PS		PS	MV								
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lithocarpus densiflorus</i>	PS		PS						PS			
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Mahonia aquifolium</i>	PS				PS						PS	
<i>Malacothrix glabrata</i>	PS						MV	PS				
<i>Mentzelia albicaulis</i>	PS			PS			PS					

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Morella californica</i>	PS		PS						PS		
<i>Oenothera caespitosa</i>	PS								PS	PS	
<i>Opuntia fragilis</i>	IL										
<i>Pascopyrum smithii</i>	IL			PS						PS	
<i>Pediocactus nigrispinus</i>	PS										
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Pinus albicaulis</i>	HV						HV			HV	
<i>Pinus contorta</i> var. <i>murrayana</i>	HV										
<i>Pinus flexilis</i>	HV				HV			HV			
<i>Pinus jeffreyi</i>	EV		EV				HV				
<i>Pinus lambertiana</i>	MV		MV						MV		
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV								PS	
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prunus virginiana</i>	IL					IL					IL
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i>	MV		HV							PS	
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS			MV	
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL						IL	
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus chrysolepis</i>	PS		PS				PS				
<i>Quercus garryana</i>	PS		PS					PS			
<i>Quercus kelloggii</i>	PS		MV					PS			
<i>Rhus trilobata</i>	IL							PS			IL
<i>Ribes aureum</i>	MV										MV
<i>Ribes roezlii</i>	MV		MV				PS				
<i>Rorippa calycina</i>	PS					MV					PS
<i>Rosa californica</i>	PS		PS					PS			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix amygdaloides</i>	MV					PS		MV			
<i>Salix bebbiana</i>	MV				MV			MV			
<i>Salix boothii</i>	PS	PS			MV						
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV			PS						
<i>Salix lutea</i>	PS	MV			PS						
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV			
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV				PS				HV		
<i>Sequoia sempervirens</i>	PS		PS					MV			
<i>Shepherdia argentea</i>	MV				MV		EV				
<i>Spartina gracilis</i>	PS						MV				PS
<i>Spartina pectinata</i>	PS				PS		MV				
<i>Sphaeralcea coccinea</i>	PS					PS					PS
<i>Sporobolus airoides</i>	PS							PS	PS		
<i>Sporobolus cryptandrus</i>	IL							PS			IL
<i>Sulcaria badia</i>	PS										
<i>Symporicarpos occidentalis</i>	PS				PS		PS				
<i>Teloschistes flavicans</i>	HV										
<i>Tetradymia glabrata</i>	MV		MV			MV					
<i>Texosporium sancti-jacobi</i>	HV										
<i>Thuja plicata</i>	MV		PS							MV	
<i>Typha latifolia</i>	PS								PS	PS	
<i>Umbellularia californica</i>	PS		PS					PS			
<i>Vitis californica</i>	PS		PS					PS			
<i>Xanthoparmelia norchlorochroa</i>	MV										

Appendix 2i. CCVI categories for all taxa that occur in Utah. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum speciosum</i>	PS						PS	PS				
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Ambrosia dumosa</i>	HV	HV	HV									
<i>Amelanchier alnifolia</i>	IL			IL								IL
<i>Amelanchier utahensis</i>	PS								PS			PS
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Aristida purpurea</i>	PS			MV				PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV								EV
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV										MV
<i>Aspicilia rogeri</i>	EV											
<i>Astragalus utahensis</i>	HV								HV		HV	

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Atriplex canescens</i>	IL								PS	IL		
<i>Atriplex confertifolia</i>	PS	PS								IL		
<i>Atriplex nuttallii</i>	PS						PS			PS		
<i>Baccharis salicifolia</i>	PS	PS								MV		
<i>Baccharis salicina</i>	MV											
<i>Baileya multiradiata</i>	PS	PS	PS									
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bouteloua curtipendula</i>	IL							PS			IL	
<i>Bouteloua eriopoda</i>	PS		PS						MV			
<i>Bouteloua gracilis</i>	IL			IL	IL							
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Bromus vulgaris</i>	PS				PS						PS	
<i>Buchloe dactyloides</i>	IL	PS		PS								
<i>Calamovilfa longifolia</i>	IL					PS		PS				
<i>Calycoseris parryi</i>	PS	PS								PS		
<i>Camassia quamash</i>	PS								PS		PS	
<i>Carex aquatilis</i>	MV						HV			HV		
<i>Carex nebrascensis</i>	PS	MV									MV	
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV	
<i>Castilleja applegatei</i> ssp. <i>martinii</i>	MV	MV	PS									
<i>Catapryrenium congestum</i>	MV											
<i>Cercis canadensis</i> var. <i>orbiculata</i> (= <i>C. orbiculata</i>)	MV	MV	MV									
<i>Cercocarpus ledifolius</i>	PS		PS						PS			
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS	
<i>Chaetopappa ericoides</i>	PS		PS					PS				
<i>Chrysothamnus depressus</i>	PS						PS			IL		
<i>Chrysothamnus viscidiflorus</i>	IL				IL			PS				
<i>Cleome lutea</i>	PS					PS			PS			
<i>Cleome serrulata</i>	PS											
<i>Coleogyne ramosissima</i>	PS	PS					PS					

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Cornus sericea</i>	MV							MV			MV	
<i>Corynopuntia pulchella</i>	MV											
<i>Crataegus douglasii</i>	PS									PS	PS	
<i>Crepis occidentalis</i>	IL				PS			PS				
<i>Cylindropuntia acanthocarpa</i>	PS											
<i>Cylindropuntia echinocarpa</i>	PS											
<i>Cylindropuntia whipplei</i>	MV											
<i>Dalea candida</i>	PS				PS				PS			
<i>Dalea purpurea</i>	PS							MV			PS	
<i>Distichlis spicata</i>	PS				PS	PS						
<i>Echinocactus polycephalus</i>	PS											
<i>Echinocereus engelmannii</i>	PS											
<i>Echinocereus triglochidiatus</i>	PS											
<i>Elymus canadensis</i>	HV				HV					HV		
<i>Elymus elymoides</i>	IL					IL				IL		
<i>Elymus glaucus</i>	PS			PS					IL			
<i>Elymus lanceolatus</i>	PS	PS									IL	
<i>Elymus trachycaulus</i>	PS			IL	IL							
<i>Ephedra nevadensis</i>	PS					PS			PS			
<i>Ephedra viridis</i>	PS			IL		PS						
<i>Ericameria nauseosa</i>	PS								PS	PS		
<i>Erigeron pumilus</i>	PS						PS				PS	
<i>Eriogonum corymbosum</i>	PS	PS							PS			
<i>Eriogonum fasciculatum</i>	PS	PS								MV		
<i>Eriogonum inflatum</i>	PS	PS	PS									
<i>Eriogonum umbellatum</i>	IL	PS					PS					
<i>Eriophyllum lanatum</i>	PS								PS	PS		
<i>Escobaria missouriensis</i>	PS											
<i>Escobaria vivipara</i>	PS											
<i>Festuca idahoensis</i>	PS		MV		PS							

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Fraxinus anomala</i>	PS	PS								PS		
<i>Fraxinus velutina</i>	PS	PS							PS			
<i>Gaillardia aristata</i>	PS					PS		PS				
<i>Grayia spinosa</i>	PS	PS								PS		
<i>Gutierrezia microcephala</i>	PS	PS	PS									
<i>Gutierrezia sarothrae</i>	IL					IL				PS		
<i>Hedysarum boreale</i>	PS							PS		PS		
<i>Helianthus maximiliani</i>	PS			MV		PS						
<i>Hesperostipa comata</i>	PS	PS			PS							
<i>Ipomopsis aggregata</i>	PS	PS								PS		
<i>Juncus balticus</i>	MV							HV			MV	
<i>Juniperus osteosperma</i>	PS	PS							PS			
<i>Koeleria macrantha</i>	IL			PS							IL	
<i>Krascheninnikovia lanata</i>	MV								MV			MV
<i>Larrea tridentata</i>	MV	MV						MV				
<i>Lewisia rediviva</i>	PS			PS	MV							
<i>Leymus cinereus</i>	IL				IL					IL		
<i>Leymus salinus</i>	IL		PS							PS		
<i>Linum lewisii</i>	IL					IL	PS					
<i>Lomatium dissectum</i>	PS	PS			PS							
<i>Lupinus argenteus</i>	HV					MV		MV				
<i>Mahonia fremontii</i>	PS	PS	PS									
<i>Malacothrix glabrata</i>	PS						MV	PS				
<i>Mammillaria tetrancistra</i>	PS											
<i>Mentzelia albicaulis</i>	PS			PS			PS					
<i>Mirabilis multiflora</i>	MV			PS				MV				
<i>Nassella viridula</i>	PS					PS		PS				
<i>Oenothera caespitosa</i>	PS								PS	PS		
<i>Opuntia aurea</i>	MV											
<i>Opuntia basilaris</i>	PS											

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Opuntia chlorotica</i>	PS										
<i>Opuntia engelmannii</i>	PS										
<i>Opuntia fragilis</i>	IL										
<i>Opuntia macrorhiza</i>	IL										
<i>Opuntia martiniana</i>	MV										
<i>Opuntia phaeacantha</i>	PS										
<i>Opuntia pinkavae</i>	MV										
<i>Opuntia polyacantha</i>	PS										
<i>Packera multilobata</i>	PS						PS		IL		
<i>Pascopyrum smithii</i>	IL			PS						PS	
<i>Pediocactus despainii</i>	MV										
<i>Pediocactus sileri</i>	EV										
<i>Pediocactus simpsonii</i>	MV										
<i>Pediocactus winkleri</i>	HV										
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV								
<i>Penstemon pachyphyllus</i> var. <i>mucronatus</i>	MV										
<i>Phlox longifolia</i>	PS					PS	MV				
<i>Pinus edulis</i>	MV	PS					MV				
<i>Pinus flexilis</i>	HV			HV			HV				
<i>Pinus longaeva</i>	EV				EV				EV		
<i>Pinus monophylla</i>	MV	MV				MV					
<i>Pinus ponderosa</i>	PS				HV			PS			
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV							PS		
<i>Pleuraphis jamesii</i>	PS	PS	PS								
<i>Poa secunda</i>	IL			IL			PS				
<i>Populus angustifolia</i>	MV	MV	MV								
<i>Populus fremontii</i>	PS	MV	MV								
<i>Populus tremuloides</i>	IL			IL			IL				
<i>Prosopis glandulosa</i>	PS	PS	PS								
<i>Prosopis pubescens</i>	PS		PS				PS				

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Prunus fasciculata</i>	PS	PS	PS								
<i>Prunus virginiana</i>	IL					IL					IL
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS			MV	
<i>Psorothamnus arborescens</i>	PS	PS	PS								
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL						IL	
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS					PS		MV			
<i>Purshia stansburiana</i>	PS			MV					PS		
<i>Purshia tridentata</i>	PS				PS			PS			
<i>Quercus gambelii</i>	PS			PS			PS				
<i>Rhus trilobata</i>	IL								PS		IL
<i>Ribes aureum</i>	MV										MV
<i>Rosa woodsii</i>	IL	PS				PS					
<i>Salix amygdaloides</i>	MV					PS		MV			
<i>Salix bebbiana</i>	MV					MV		MV			
<i>Salix boothii</i>	PS	PS			MV						
<i>Salix drummondiana</i>	PS				PS			PS			
<i>Salix exigua</i>	MV							MV			MV
<i>Salix geyeriana</i>	PS	HV		PS							
<i>Salix gooddingii</i>	PS	PS						PS			
<i>Salix lutea</i>	PS	MV			PS						
<i>Schizachyrium scoparium</i>	IL	PS	IL								
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV		MV				HV				
<i>Schoenoplectus maritimus</i>	HV									MV	HV
<i>Schoenoplectus pungens</i>	MV					PS			HV		
<i>Sclerocactus brevispinus</i>	EV										
<i>Sclerocactus glaucus</i>	PS										
<i>Sclerocactus johnsonii</i>	PS										
<i>Sclerocactus parviflorus</i>	MV										
<i>Sclerocactus sileri</i>	PS										

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Sclerocactus spinosior</i>	HV										
<i>Sclerocactus wetlandicus</i>	MV										
<i>Sclerocactus whipplei</i>	MV										
<i>Sclerocactus wrightiae</i>	EV										
<i>Shepherdia argentea</i>	MV					MV			EV		
<i>Simmondsia chinensis</i>	PS	MV	MV								
<i>Spartina gracilis</i>	PS							MV			PS
<i>Spartina pectinata</i>	PS					PS	MV				
<i>Sphaeralcea ambigua</i>	PS	PS					PS				
<i>Sphaeralcea coccinea</i>	PS						PS				PS
<i>Sphaeralcea parvifolia</i>	MV							MV	PS		
<i>Sporobolus airoides</i>	PS								PS	PS	
<i>Sporobolus cryptandrus</i>	IL								PS		IL
<i>Sporobolus flexuosus</i>	PS	PS	PS								
<i>Sporobolus giganteus</i>	PS			PS				PS			
<i>Symphoricarpos occidentalis</i>	PS					PS		PS			
<i>Tetradymia axillaris</i>	PS	MV					PS				
<i>Tetradymia glabrata</i>	MV		MV				MV				
<i>Typha latifolia</i>	PS								PS	PS	
<i>Xylorhiza tortifolia</i> var. <i>tortifolia</i>	MV		MV						MV		
<i>Yucca angustissima</i>	MV	MV						MV			
<i>Yucca brevifolia</i>	MV	MV	MV								
<i>Yucca elata</i>	HV	HV						HV			
<i>Zuckia brandegeei</i>	MV	HV							MV		

Appendix 2j. CCVI categories for all taxa that occur in Washington. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum lemmmonii</i>	PS								PS	PS		
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Achnatherum thurberianum</i>	PS								PS	PS		
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Arbutus menziesii</i>	PS		PS						PS			
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS				MV			MV				
<i>Artemisia douglasiana</i>	PS		PS				PS					
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV								EV
<i>Atriplex canescens</i>	IL								PS	IL		
<i>Balsamorhiza sagittata</i>	PS			PS	PS							
<i>Bromus carinatus</i>	PS					PS			PS			
<i>Bromus vulgaris</i>	PS				PS							PS
<i>Bryoria capillaris</i>	EV											
<i>Camassia quamash</i>	PS							PS			PS	
<i>Carex aquatilis</i>	MV							HV		HV		
<i>Carex nebrascensis</i>	PS	MV									MV	

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV
<i>Cercocarpus ledifolius</i>	PS			PS						PS	
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS
<i>Chrysothamnus viscidiflorus</i>	IL				IL			PS			
<i>Cleome lutea</i>	PS						PS		PS		
<i>Cleome serrulata</i>	PS										
<i>Cornus sericea</i>	MV						MV			MV	
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL				PS			PS			
<i>Distichlis spicata</i>	PS					PS	PS				
<i>Elymus canadensis</i>	HV					HV				HV	
<i>Elymus elymoides</i>	IL						IL			IL	
<i>Elymus glaucus</i>	PS			PS					IL		
<i>Elymus lanceolatus</i>	PS	PS									IL
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS						PS				PS
<i>Eriogonum umbellatum</i>	IL	PS					PS				
<i>Eriophyllum lanatum</i>	PS							PS	PS		
<i>Festuca californica</i>	PS		PS					PS			
<i>Festuca campestris</i>	PS										
<i>Festuca idahoensis</i>	PS	MV		PS							
<i>Festuca roemeri</i>	PS		PS					PS			
<i>Gaillardia aristata</i>	PS					PS		PS			
<i>Grayia spinosa</i>	PS	PS							PS		
<i>Gutierrezia sarothrae</i>	IL					IL				PS	
<i>Hedysarum boreale</i>	PS						PS		PS		
<i>Helianthus maximiliani</i>	PS			MV		PS					
<i>Hesperostipa comata</i>	PS	PS		PS							
<i>Ipomopsis aggregata</i>	PS	PS							PS		

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Juncus balticus</i>	MV						HV			MV	
<i>Juniperus occidentalis</i>	PS				PS				PS		
<i>Koeleria macrantha</i>	IL			PS						IL	
<i>Krascheninnikovia lanata</i>	MV							MV			MV
<i>Larix occidentalis</i>	MV				MV			MV			
<i>Lewisia rediviva</i>	PS			PS	MV						
<i>Leymus cinereus</i>	IL				IL				IL		
<i>Linum lewisii</i>	IL					IL	PS				
<i>Lomatium dissectum</i>	PS	PS			PS						
<i>Lupinus argenteus</i>	HV					MV	MV				
<i>Mahonia aquifolium</i>	PS					PS				PS	
<i>Malacothrix glabrata</i>	PS						MV	PS			
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Morella californica</i>	PS	PS							PS		
<i>Oenothera caespitosa</i>	PS							PS	PS		
<i>Opuntia fragilis</i>	IL										
<i>Opuntia polyacantha</i>	PS										
<i>Pascopyrum smithii</i>	IL		PS							PS	
<i>Pediocactus nigrispinus</i>	PS										
<i>Phlox longifolia</i>	PS						PS	MV			
<i>Pinus albicaulis</i>	HV						HV			HV	
<i>Pinus contorta</i> var. <i>murrayana</i>	HV										
<i>Pinus ponderosa</i>	PS						HV		PS		
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV							PS		
<i>Poa secunda</i>	IL				IL			PS			
<i>Populus tremuloides</i>	IL				IL			IL			
<i>Prunus virginiana</i>	IL					IL				IL	
<i>Pseudoroegneria spicata</i>	IL				IL			PS			
<i>Pseudotsuga menziesii</i>	MV		HV							PS	
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV						PS			MV	

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL			IL							IL	
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS					PS		MV				
<i>Purshia tridentata</i>	PS				PS			PS				
<i>Quercus garryana</i>	PS		PS						PS			
<i>Ribes aureum</i>	MV										MV	
<i>Rosa woodsii</i>	IL	PS				PS						
<i>Salix amygdaloides</i>	MV					PS		MV				
<i>Salix bebbiana</i>	MV				MV			MV				
<i>Salix boothii</i>	PS	PS			MV							
<i>Salix drummondiana</i>	PS				PS			PS				
<i>Salix exigua</i>	MV							MV			MV	
<i>Salix geyeriana</i>	PS	HV			PS							
<i>Salix lutea</i>	PS	MV			PS							
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV				
<i>Schoenoplectus maritimus</i>	HV									MV	HV	
<i>Schoenoplectus pungens</i>	MV					PS			HV			
<i>Spartina gracilis</i>	PS							MV			PS	
<i>Spartina pectinata</i>	PS					PS		MV				
<i>Sphaeralcea coccinea</i>	PS						PS				PS	
<i>Sporobolus airoides</i>	PS							PS	PS			
<i>Sporobolus cryptandrus</i>	IL							PS			IL	
<i>Symphoricarpos occidentalis</i>	PS				PS		PS					
<i>Thuja plicata</i>	MV		PS							MV		
<i>Typha latifolia</i>	PS								PS	PS		

Appendix 2k. CCVI categories for all taxa that occur in Wyoming. State level assessment categories provided in addition to rangewide CCVI category. CCVI category abbreviations as in Table 2.

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Achillea millefolium</i>	PS							PS				PS
<i>Achnatherum hymenoides</i>	IL							PS				IL
<i>Achnatherum occidentale</i>	IL			PS					IL			
<i>Adenostoma fasciculatum</i>	PS		PS				PS					
<i>Agoseris glauca</i>	PS				PS			PS				
<i>Agrostis stolonifera</i>	IL							PS		PS		
<i>Alnus incana</i>	MV								MV			MV
<i>Amelanchier alnifolia</i>	IL			IL							IL	
<i>Amelanchier utahensis</i>	PS								PS		PS	
<i>Andropogon gerardii</i>	PS					PS		PS				
<i>Andropogon hallii</i>	PS	PS		MV								
<i>Apocynum cannabinum</i>	IL		PS									PS
<i>Aristida purpurea</i>	PS				MV			PS				
<i>Artemisia arbuscula</i>	PS			MV			MV					
<i>Artemisia cana</i>	PS	PS				PS						
<i>Artemisia filifolia</i>	MV						PS	MV				
<i>Artemisia frigida</i>	PS					IL	IL					
<i>Artemisia ludoviciana</i>	IL									PS	IL	
<i>Artemisia nova</i>	MV							MV		MV		
<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	PS						PS	PS				
<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	HV			EV								EV
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	MV	MV										MV
<i>Aspicilia rogeri</i>	EV											
<i>Astragalus utahensis</i>	HV								HV		HV	
<i>Atriplex canescens</i>	IL							PS	IL			
<i>Atriplex confertifolia</i>	PS	PS							IL			
<i>Atriplex nuttallii</i>	PS					PS			PS			

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Balsamorhiza sagittata</i>	PS			PS	PS						
<i>Bouteloua curtipendula</i>	IL							PS			IL
<i>Bouteloua eriopoda</i>	PS		PS					MV			
<i>Bouteloua gracilis</i>	IL			IL	IL						
<i>Bromus carinatus</i>	PS					PS			PS		
<i>Bromus vulgaris</i>	PS				PS						PS
<i>Buchloe dactyloides</i>	IL	PS		PS							
<i>Calamovilfa longifolia</i>	IL					PS		PS			
<i>Camassia quamash</i>	PS							PS			PS
<i>Carex aquatilis</i>	MV						HV			HV	
<i>Carex nebrascensis</i>	PS	MV									MV
<i>Castilleja angustifolia</i> var. <i>dubia</i>	MV						HV				MV
<i>Cercocarpus ledifolius</i>	PS			PS					PS		
<i>Cercocarpus ledifolius</i> var. <i>intercedens</i>	PS							PS			PS
<i>Chaetopappa ericoides</i>	PS		PS				PS				
<i>Chrysothamnus viscidiflorus</i>	IL				IL		PS				
<i>Cleome lutea</i>	PS					PS		PS			
<i>Cleome serrulata</i>	PS										
<i>Cornus sericea</i>	MV						MV			MV	
<i>Crataegus douglasii</i>	PS								PS	PS	
<i>Crepis occidentalis</i>	IL			PS			PS				
<i>Dalea candida</i>	PS				PS				PS		
<i>Dalea purpurea</i>	PS						MV				PS
<i>Distichlis spicata</i>	PS				PS	PS					
<i>Echinocereus triglochidiatus</i>	PS										
<i>Echinocereus viridiflorus</i>	HV										
<i>Elymus canadensis</i>	HV				HV					HV	
<i>Elymus elymoides</i>	IL					IL				IL	
<i>Elymus glaucus</i>	PS		PS						IL		
<i>Elymus lanceolatus</i>	PS	PS									IL

Taxon	Rangewide CCVI Category	State CCVI Category									
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA
<i>Elymus trachycaulus</i>	PS			IL	IL						
<i>Ephedra viridis</i>	PS			IL			PS				
<i>Ericameria nauseosa</i>	PS								PS	PS	
<i>Erigeron pumilus</i>	PS							PS			PS
<i>Eriogonum corymbosum</i>	PS	PS							PS		
<i>Eriogonum umbellatum</i>	IL	PS					PS				
<i>Eriophyllum lanatum</i>	PS								PS	PS	
<i>Escobaria missouriensis</i>	PS										
<i>Escobaria vivipara</i>	PS										
<i>Festuca idahoensis</i>	PS	MV			PS						
<i>Fraxinus pennsylvanica</i>	PS					MV					MV
<i>Gaillardia aristata</i>	PS					PS		PS			
<i>Grayia spinosa</i>	PS	PS							PS		
<i>Gutierrezia sarothrae</i>	IL					IL				PS	
<i>Hedysarum boreale</i>	PS							PS	PS		
<i>Helianthus maximiliani</i>	PS			MV		PS					
<i>Hesperostipa comata</i>	PS	PS			PS						
<i>Ipomopsis aggregata</i>	PS	PS							PS		
<i>Juncus balticus</i>	MV						HV			MV	
<i>Juniperus osteosperma</i>	PS	PS							PS		
<i>Koeleria macrantha</i>	IL			PS						IL	
<i>Krascheninnikovia lanata</i>	MV							MV		MV	
<i>Lewisia rediviva</i>	PS			PS	MV						
<i>Leymus cinereus</i>	IL				IL				IL		
<i>Leymus salinus</i>	IL		PS						PS		
<i>Linum lewisii</i>	IL					IL	PS				
<i>Lomatium dissectum</i>	PS	PS			PS						
<i>Lupinus argenteus</i>	HV					MV		MV			
<i>Mentzelia albicaulis</i>	PS			PS			PS				
<i>Nassella viridula</i>	PS					PS		PS			

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Oenothera caespitosa</i>	PS								PS	PS		
<i>Opuntia fragilis</i>	IL											
<i>Opuntia polyacantha</i>	PS											
<i>Packera multilobata</i>	PS							PS		IL		
<i>Pascopyrum smithii</i>	IL			PS							PS	
<i>Pediocactus simpsonii</i>	MV											
<i>Penstemon eatonii</i> ssp. <i>eatonii</i>	MV	MV	MV									
<i>Penstemon pachyphyllus</i> var. <i>mucronatus</i>	MV											
<i>Penstemon secundiflorus</i>	MV											
<i>Phlox longifolia</i>	PS						PS	MV				
<i>Picea glauca</i>	HV				HV						EV	
<i>Pinus albicaulis</i>	HV					HV				HV		
<i>Pinus edulis</i>	MV	PS						MV				
<i>Pinus flexilis</i>	HV			HV			HV					
<i>Pinus ponderosa</i>	PS					HV		PS				
<i>Pinus ponderosa</i> var. <i>scopulorum</i>	PS	MV							PS			
<i>Pleuraphis jamesii</i>	PS	PS	PS									
<i>Poa secunda</i>	IL			IL			PS					
<i>Populus angustifolia</i>	MV	MV	MV									
<i>Populus deltoides</i>	MV				MV						MV	
<i>Populus tremuloides</i>	IL			IL			IL					
<i>Prunus virginiana</i>	IL				IL					IL		
<i>Pseudoroegneria spicata</i>	IL			IL			PS					
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	MV					PS				MV		
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	IL		IL							IL		
<i>Pulsatilla patens</i> ssp. <i>multifida</i>	PS				PS		MV					
<i>Purshia tridentata</i>	PS			PS			PS					
<i>Quercus gambelii</i>	PS		PS		PS							
<i>Quercus macrocarpa</i>	IL											
<i>Rhus trilobata</i>	IL							PS			IL	

Taxon	Rangewide CCVI Category	State CCVI Category										
		AZ	CA	CO	ID	MT	NV	NM	OR	UT	WA	WY
<i>Ribes aureum</i>	MV											MV
<i>Rorippa calycina</i>	PS					MV						PS
<i>Rosa arkansana</i>	PS					PS		PS				
<i>Rosa woodsii</i>	IL	PS				PS						
<i>Salix amygdaloides</i>	MV					PS		MV				
<i>Salix bebbiana</i>	MV					MV		MV				
<i>Salix boothii</i>	PS	PS			MV							
<i>Salix drummondiana</i>	PS				PS			PS				
<i>Salix exigua</i>	MV							MV				MV
<i>Salix geyeriana</i>	PS	HV			PS							
<i>Salix lutea</i>	PS	MV			PS							
<i>Schizachyrium scoparium</i>	IL	PS	IL									
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	HV			MV				HV				
<i>Schoenoplectus maritimus</i>	HV									MV	HV	
<i>Schoenoplectus pungens</i>	MV					PS			HV			
<i>Shepherdia argentea</i>	MV					MV		EV				
<i>Shoshonea pulvinata</i>	HV											
<i>Spartina gracilis</i>	PS						MV				PS	
<i>Spartina pectinata</i>	PS				PS		MV					
<i>Sphaeralcea coccinea</i>	PS					PS					PS	
<i>Sporobolus airoides</i>	PS						PS		PS	PS		
<i>Sporobolus cryptandrus</i>	IL							PS			IL	
<i>Symporicarpos occidentalis</i>	PS				PS		PS					
<i>Typha latifolia</i>	PS								PS	PS		
<i>Ulmus americana</i>	PS				PS						PS	
<i>Xanthoparmelia norchlorochroa</i>	MV											
<i>Yucca glauca</i>	HV						HV				MV	
<i>Zuckia brandegeei</i>	MV	HV							MV			

Appendix 3. Methods for hot spot map using distribution maps created with herbaria records or digitized from literature sources. Method developed by Xuemei Han (NatureServe).

1. Prepare data:

CCVI map:

- Create field “Vulnerable” for all distribution map; Make Vulnerable = 1 for record with value_no_index = MV, HV or EV. Otherwise, Vulnerable = 0.
- Divide all distribution map into two: Herbaria and non-herbaria
- Make buffer for Herbaria with distance = 100km →herbaria100km
- Append herbaria100km with non-herbaria →alldistribution

US lower state map: USlower

2. Calculate spatially explicit number of vulnerable species and number of species assessed

- Intersect alldistribution with USlower →alldistribution_US
- Dissolve based on area, calculate Count of Vulnerable, and Sum of Vulnerable; uncheck “allow multipart” →alldistributionUS_V2
- Add one more field “IntVulProp” to calculate the proportion of vulnerable species to the species accessed inside each polygon, and make all the numbers integers & percentage.
- % of vulnerable species: Dissolve based on IntVulProp, calculate Maximum and Minimum of the Sum of Vulnerable; uncheck “allow multipart” →alldistribution_US_V2_disIntVulProp.

3. Smooth map to proper minimum mapping unit for % vulnerable species assessed

(alldistributionXH_US_V2_disIntVulProp)

- Do the following iteratively 3-4 times: calculate area, select record with Area < 1000 km², eliminate, calculate area, → alldistribution_US_V2_disIntVulProp_el1sqkm3
- Dissolve based on Sum_Vulnerable, calculate Maximum of Maximum of Vulnerable Sum, and Minimum of Minimum of Vulnerable Sum, uncheck “allow multipart” →FinalVulProp1000sqkm