U.S. Sheep Experiment Station Grazing and Associated Activities Project 2010

Botany Report

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Introduction

The purpose of this report is to provide analyses of botanical resources in response to the Settlement Agreement (December 2007) reached in the lawsuit Center For Biological Diversity, and Western Watersheds Project v. U.S. Sheep Experiment Station; U.S. Department Of Agriculture; Agricultural Research Service (ARS); and U.S. Forest Service.

Unlike the Forest Service or Bureau of Land Management, ARS is not a land management agency, and is not subject to the Federal Land Management Policy Act or the Forest Service Organic Act. The mission of the United States Sheep Experiment Station (USSES) located in Dubois, Idaho is to develop integrated methods for increasing production efficiency of sheep and to simultaneously improve the sustainability of rangeland ecosystems.

There are no land management guidelines or standards that focus management of specific botanical resources at the agency level. Therefore, the main focus of this report is to comply with federal requirements as set forth within the ESA and to summarize impacts from proposed action to special status botanical resources in a general sense at the USSES.

Overview of Issues Addressed

Endangered Species Act of 1973 (ESA): The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. Under provisions of the ESA, federal agencies are directed to seek to conserve endangered and threatened species and to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of their critical habitats. Whenever an action may affect a species that is listed (or proposed for listing) or its habitat, federal agencies must consult with the U. S. Fish and Wildlife Service.

Although there is no direction from ARS with respect to special status state listed plant species, brief description potential impacts are included within this report.

For complete analysis of range condition and vegetation composition at the USSES see the Range report (Smith 2011).

Affected Environment

Existing Condition

The USSES lands range in elevation from approximately 4,800 feet to nearly 10,000 feet, with average annual precipitation that ranges from approximately 10 inches in the Snake River plain to greater than 21 inches in the Centennial Mountains. Because of its diverse geography, USSES lands contain subalpine meadow, foothill, sagebrush steppe, and desert shrubland ecosystems.

Table 1. Community type and common vegetation species

Community Type	Scientific Name	Common Name
Headquarters: Elevation range: ~5,400-5,800 feet		
Three-tip Sage dominated community along lava plain. Lava ridges have sparse vegetation with sharp increases in production towards swale bottomlands. Bluebunch wheatgrass dominate grass except where crested wheatgrass planted. Swales and roads have western wheatgrass.	*Achnatherum hymenoides*	Indian Rice Grass
	Agropyron cristatum	Crested Wheatgrass
	Artemesia tridentata ssp. vaseyana	Mountain Big Sagebrush
	Artemisia tripartita	Three-Tip Sagebrush
	Artemisia tridentata ssp. tridentata	Basin Big Sagebrush
	Artemisia tridentata ssp. wyomingensis	Wyoming Big Sagebrush
	Chrysothamnus nauseosus subsp. *albicaulis* and subsp. *consimilis*	Rabbit Brush
	Pascopyron smithii	Western Wheat Grass
	Eriogonum sp.	Buckwheat Species
	Hesperostipa comata	Need and Thread Grass
	Gutierrezia sarothae	Broom Snakeweed
	Koeleria macrantha	Prairie June Grass
	Psuedoroegenaria spicata	Bluebunch Wheatgrass
	Poa nevadensis	Nevada Blue Grass
	Poa secunda	Sandberg Bluegrass
	Purshia tridentata	Bitterbrush
Henninger Ranch: Elevation range: ~ 6,300-6,500 feet		
Mixed community where foothills meet basaltic flows. Coniferous areas and aspen stands on hillslopes adjacent to three-tip and mountain big sagebrush plains. Forb rich swale meadows also interspersed along the sage and grass footslopes. Grass dominated low lands with planted pasture grasses	*Agropyron cristatum*	Crested Wheat Grass
	Artemesia tridentata ssp. vaseyana	Mountain Big Sagebrush
	Balsamorhiza sagittata	Arrowleaf Balsamroot
	Bromus inermis	Smooth Brome
	Eriogonum sp.	Buckwheat
	Festuca idahoensis	Idaho Fescue
	Geranium viscosissimum	Sticky Geranium
	Phleum pretense	Timothy
	Pinus contorta	Lodgepole Pine
	Populus tremuloides	Aspen
	Potentilla gracilis	Cinquefoil
	Potentilla fruiticosa	Shrubby Cinquefoil
	Psuedoroegenaria spicata	Bluebunch Wheatgrass
	Pseudotsuga menziesii	Douglas-fir
	Purshia tridentata	Bitterbrush
	Wyethia sp.	Mulesear
	Zigadensis sp.	Death Camas

Community Type	Scientific Name	Common Name
Humphrey Ranch: Elevation range: ~6,600-6,900 feet		
Mountain sage community with large aspen grove and willow riparian along perennial drainage.	*Acer glabrum*	Rocky Mountain Maple
	Artemesia tridentata ssp. vaseyana	Mountain Big Sagebrush
	Artemisia ludoviciana	White Sage
	Bromus marginatus	Mountain Brome
	Carex sp.	Sedge
	Festuca idahoensis	Fescue
	Poa fendleriana	Mutton Grass
	Geranium viscosissiumum	Sticky Geranium
	Poa secunda	Sandberg Bluegrass
	Populus tremuloides	Aspen
	Prunus virginiana	Chokecherry
	Salix sp.	Willow
	Symphorocarpos sp	Snowberry
East Summer Range: Elevation range: ~7,380-8,800 feet		
Forb rich dry and wet meadows interspersed with varied conifer and aspen on cool and protected aspects. Mountain sage grassland predominate on dry slopes.	*Abies lasiocarpa*	Subalpine Fir
	Achillea millefolium	Yarrow
	Artemesia vaseyanum	Mountain Sagebrush
	Balsomorhiza sagitatta	Arrowleaf Balsamroot
	Bromus magrinatus	Mountain Brome
	Carex sp.	Sedge
	Delphinium sp.	Larkspur
	Festuca idahoensis	Alpine Fescue
	Geranium viscosissimum	Sticky Purple Geranium
	Juniperus communis	Common Juniper
	Lupinus sp.	Lupine
	Melica spectabilis	Onion Grass
	Picea engelmanii	Engelmann Spruce
	Pinus albicaulis	Whitebark Pine
	Pinus contorta	Lodgepole Pine
	Poa alpina	Alpine Bluegrass
	Potentilla gracilis	Cinquefoil
	Populus tremuloides	Aspen
	Psedutsuga menziesii	Douglas-fir
	Ribes montigenum	Mountain Gooseberry
	Senecio integerriumus	Lambstongue Ragwort

Community Type	Scientific Name	Common Name
West Summer Range: Elevation range: ~7,700-8,550 feet		
Forb rich dry and wet meadows interspersed with varied conifer and aspen on cool and protected aspects. Mountain sage grassland predominate on dry slopes.	*Achillea millefolium*	Yarrow
	Arnica sp.	Arnica
	Artemesia tridentata ssp. vaseyana	Mountain Big Sagebrush
	Aster sp.	Aster Species
	Balsamorhiza sagittata	Arrowleaf Balsamroot
	Bromus marginatus	Mountain Brome
	Calochortus nuttallii	Sego Lily
	Carex sp.	Sedge
	Festuca Idahoensis	Idaho Fescue
	Geranium viscosissimum	Sticky Purple Geranium
	Helianthella quinquenervis	Little Sunflower
	Lupinus argenteus	Silvery Lupine
	Geum triflorum	Pririesmoke
	Melica spectabilis	Onion Grass
	Vaccinium membranaceum	Huckleberry
	Pinus contorta	Lodgepole Pine
	Populus tremuloides	Aspen
	Abies lasiocarpa	Subalpine Fir
	Picea engelmannii	Engelmann Spruce
	Pinus albicaulis	Whitebark Pine

Figure 1. Photo of *Spiranthes diluvialis* from Deer Creek, Utah, by Elaine Kneller

There are four federally-listed plants in the State of Idaho and three federally-listed plants in the State of Montana; and only one species, Ute ladies'-tresses (*Spiranthes diluvialis*), has been documented or has potential habitat near the geographic area of the USSES (http://ecos.fws.gov/tess_public//pub/stateListing.jsp?status=listed&state=ID accessed 10/08, Fertig et al. 2005). Ute ladies'-tresses is a perennial herb with erect, glandular-pubescent stems 12-60 cm tall arising from tuberous-thickened roots. Basal leaves are narrowly linear, up to 1 cm wide and 28 cm long, and persist at the time of flowering. Leaves become progressively smaller up the stem and are alternate. The inflorescence is a sparsely pubescent 3-15 cm long spike of numerous small white or ivory-colored flowers arranged in a gradual spiral. Individual flowers are 7.5-15 mm long and faintly fragrant (with a vanilla-like scent) (Fertig et al. 2005).

Geographic Range: When it was first listed under the ESA in 1992, Ute ladies'-tresses was known only from north-central Colorado, northern and south-central Utah, and southeastern Nevada. Since 1993, Ute ladies'-tresses has been discovered in southeastern Wyoming, southwestern Montana, western Nebraska

eastern Idaho and north-central Washington, and new populations have been documented in northwestern Colorado and northern Utah.

Specific to Idaho, Ute ladies'-tresses was first discovered in Idaho by Mabel Jones in 1996 along the South Fork of the Snake River (Fertig et al. 2005). The species is now known from Bonneville, Fremont, Jefferson, and Madison counties along the Snake River and from wetland sites along the Henry's Fork River (Mancuso 2004, Moseley 1998a, 1998b, 1999, Murphy 2000, Murphy 2001). Idaho populations occur in the Idaho Falls, Palisades, and Lower Henrys watersheds within the Columbia Plateau and Utah Wyoming Rocky Mountains ecoregions (Fertig et al. 2005)

All of the locations identified in Idaho and Montana are between 4,800 and 5,300 feet in elevation. All occurrences have been associated with either flood plain areas, ditches; sub irrigated wet moist areas, wet river terraces and or very wet meadows.

Upon prefield analysis of the elevation of the area, topographic maps, consultations with nearby forest botanists (Lehman, 2008, C. Gibson 2008) USFWS (Arena, 2008) at the Pocatello, ID office, and a field visit to headquarters by Julie Laufmann in May 2009 no habitat for *Spiranthes diluvialis* is present. Therefore, no impacts from any alternative are anticipated.

Special status plants in Idaho (Clark and Freemont Counties) and Montana were derived from the Idaho Conservation Data Center Idaho Fish and Game (http://fishandgame.idaho.gov/cms/tech/CDC/) and Beaverhead County Montana are listed in appendix A. These species are not protected under the Endangered Species Act but are species that are either rare globally or state-wide. Habitat and some species occurrences have been documented within USSES lands (field review and existing occurrence data from Idaho Conservation Data Center, Montana Natural Heritage Program, and Beaver-head Deerlodge National Forest GIS database). ARS does not have management guidelines specifically related to the protection of these species and no comprehensive field surveys have been conducted for these species and mention of potential impacts to these species are included only as reference and will only be briefly summarized.

Operation activities of the USSES, in addition to sheep grazing activities, Animal Unit Months (AUM's), range improvements, grazing by other animals (horses and cattle) and other maintenance activities are described in depth within the body of the EA and the range report and will be referenced within this report to reduce redundancy.

Desired Condition

Under provisions of the ESA, federal agencies are directed to seek to conserve endangered and threatened species and to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of their critical habitats

In general, for special status plants listed for the state, the desired condition is to protect and restore habitats for these species.

Environmental Consequences

Methodology

The method of determination of presence of threatened, endangered or state listed species is thru pre-field review of topographic features, field visits, knowledge of species specific habitat and consultation with botanists on adjacent land ownerships and USFWS personnel. For determination effects on Special Status Plant in Idaho and Montana, presence of potential habitat, previously documented occurrences in combination with range condition reports, forage consumed, and grazing operations at USSES provide the basis of determination of effects.

Incomplete and Unavailable Information

Comprehensive botanical surveys for Special Status Plants have not been completed on USSES lands.

Spatial and Temporal Context for Effects Analysis

The temporal contexts for effects analysis are as follows: short-term includes duration of grazing on an annual basis; long-term includes grazing impacts within a specific area over a 3-10 year time frame. Short-term as represented by an annual grazing time period represents impacts that are relatively minor and easily recoverable. Long-term periods of 3-10 years could impact individual plant species differently due to repetitive impacts and effects on survivability and reproduction. Spatial context include all areas within USSES that are associated with grazing operations as described within the Operations section within the EA. The spatial analysis area was chosen because these areas represent the primary areas of potential impact and land adjacent to USSES lands are managed under different objectives.

Connected Actions, Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Previous grazing activities within the USSES lands as discussed within the EA indicate that USSES lands have not been heavily grazed (historically or present use) and forage used by sheep grazing is well below total available forage.

Alternatives 1 –5

Impacts from activities associated with each alternative within the EA on botanical resources are similar and therefore are discussed together. Because there is no habitat for the endangered plant Ute ladies'-tresses there are no direct, indirect of cumulative effects. No specific management direction exists for Special Status Plants in Idaho or Montana. However, a brief discussion of potential impacts, if species are present, is provided.

Direct, Indirect and Cumulative Effects

Direct and indirect effects to Special Status Plants in Idaho and Montana from operations on USSES may include short-term plant trampling and grazing by sheep, cattle and horses. Additionally, plant trampling around stock watering areas and sheep herding camps is likely. In cases where these stock watering areas and sheep herding camps are temporary (moved to alternate locations) only short-term trampling impacts are expected. Permanent watering areas will likely have longer term trampling impacts to special status plants if they are present in and near the area. Sheep driveways through timbered areas may have longer-term impacts if species are present, because these driveways are used over longer periods of time to move sheep through timbered areas. However, these areas are generally less than ½ mile long, and, if adverse effects are observed, driveways may be re-routed or mitigation measures are implemented to reduce impacts (see EA section Driveways). Ground disturbing activities associated with maintenance of fire breaks may injure or permanently remove special status plants if present within the area. It is possible short-term effects such as plant die-back or loss reproductive capacity of certain species may occur from prescribed fire treatments. However, it is expected long-term beneficial impacts would occur to special status plants if they occur within the prescribed burned areas as they are, in general, fire adapted species. If special status plants occur within areas where noxious weeds are treated potential herbicide drift to these non-target species may kill or injure plants.

Cumulative effects to special status plants are based only on the presence of habitat for each species and the past, present and foreseeable future activities occurring on USSES lands. Based on the results of the rangeland assessment report concluding that, in general, rangelands on USSES lands are in good condition, USSES lands have not been managed for multiple use, and historically sheep grazing and future sheep grazing associated with all alternatives will be kept below range carry capacity to maintain favorable range conditions. No cumulative effects to specials status plants are anticipated.

Summary of Effects

There will be no impacts to federally listed plant species from any alternatives proposed because no species occur and no habitat is present within USSES lands. Impacts to special status plants in Idaho or Montana, *if species are present within existing habitats* from USSES operations could include:

- Short-term plant trampling impacts from grazing, sheep herding camps, and temporary watering areas
- Short-term plant dieback or temporary loss of reproductive ability due to prescribed fire activities, coupled with potential long-term benefits from prescribed fire treatments providing new habitat
- Short-term and possibly long-term impacts from non-target herbicide treatments along roadways and sheep pens
- Long-term impacts from permanent water developments and sheep driveways

Due to short duration grazing periods in combination with historical and current stocking rates that maintain range carrying capacity well below standard stocking rates, only short-term impacts are anticipated to any existing special status plants. Additionally, because USSES lands have not been managed in the past for multiple use as is the case on National Forest System and Bureau of Land Management lands, previous impacts to species and existing habitats from activities other than those associated with grazing have not likely occurred, leaving existing habitats in good condition overall. Some long-term impacts may occur from permanent water developments, sheep driveways, and maintenance of fire breaks. However, these areas impacted are minor in comparison with availability of other existing habitat.

Compliance with Relevant Laws, Regulations, Policies and Plans

All alternatives proposed within this environmental assessment are in compliance with threatened and endangered plants according to the Endangered Species Act

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Special Status Plants

Table 2. Special status plants

Species	Rank[a]	Habitat
Special Status Plants in Idaho (Clark & Fremont Counties) and Montana; Idaho Conservation Data Center, Idaho Game and Fish http://fishandgame.idaho.gov/cms/tech/CDC/, http://www.efloras.org/index.aspx, http://www.fs.fed.us/database/feis/plants/, http://www.wildflower.org/		
Agoseris lackschewitzii Pink Agoseris	G4S3	Subalpine wet meadows where soil is saturated throughout the growing season.
Aster junciformis Rush Aster	G5S2	Fens, bogs, springs, and wet meadows; typically where the substrate remains saturated year-round
Astragalus bisulcatus var. *bisulcatus* Two-grooved Milkvetch	G5T5S2	Open grasslands, badlands, gullies, roadsides, and valley bottoms. In Idaho, populations occur in relatively moist sagebrush/grassland or creek bottom habitats, sometimes in degraded condition. Associated species include *Artemisia tridentata ssp. tridentata, A. tridentata ssp. wyomingensis, Rosa woodsii, Salix spp., Leymus cinereus, Pascopyrum smithii,* and *Poa pratensis*
Astragalus diversifolius Meadow Milkvetch	G2S2	Moist soils in alkaline meadows with flat or hummocky topography supporting graminoid or medium height shrub vegetation. Associated species may include *Juncus balticus, Poa secunda, Leymus cinereus, Spartina gracilis, Senecio debilis, Phlox kelsyi, Glaux maritima, Sarcobatus vermiculatus,* and *Potentilla fruticosa*
Astragalus drummondii Drummond's Milkvetch	NR	In Idaho, Drummond's milkvetch occurs in sagebrush-bunchgrass habitats on open, gentle to moderately steep, predominately south- to west-facing slopes with gravelly to rocky soils. Associated species include *Artemisia tridentata ssp. vaseyana, Chrysothamnus spp., Tetradymia canescens, Festuca idahoensis,* and *Pseudoroegneria spicata.*
Astragalus gilviflorus Plains Milkvetch	G5S2	Open, more or less sparsely vegetated, rocky, gentle to steeper limestone slopes with little soil development. It occurs on all aspects. Associated species include *Petrophytum caespitosum, Artemisia nova, A. frigida, Cercocarpus ledifolius, Tanacetum nuttallii, Penstemon spp., Hymenopappus filifolius var. idahoensis,* and *Arenaria kingii*
Bouteloua gracilis Blue Gramma	G5S2	Blue grama occurs most commonly from Alberta east to Manitoba and south through the Rocky Mountains, Great Plains, and Midwest States to Mexico. Occurs in numerous habitat types see: http://www.fs.fed.us/database/feis/plants/graminoid/bougra/all.html
Camissonia pterosperma Winged-seed Evening Primrose	G4S2	Dry, open slopes, ridges, and washes in the sagebrush and juniper zones. Most known Idaho populations occur on gravelly-silty soils, on southerly-facing limestone slopes. It is also known from volcanic-derived substrates in a few places. The vegetation is dominated by open *Juniperus osteosperma, Artemisia arbuscula,* or *Artemisia nova* communities. Other associated species in this open habitat include *Pseudoroegneria spicata, Poa secunda, Achnatherum hymenoides, Eriogonum spp., Phlox hoodii,* and *Mentzelia albicaulis*.
Carex buxbaumii Buxbaum's Sedge		Buxbaum's sedge occurs almost always under natural conditions in wetlands but can also inhabit meadows in the elevation range between 20 and 10,702 feet. Associated communities include: coastal prairie, yellow pine forest, red fir forest, lodepole forest, subalpine forest, wetland-riparian.
Carex idahoa Idaho Sedge	G2S2	Idaho sedge inhabits moist alkaline meadows, often along streams (Vanderhorst and Lesica 1994). It most often occupies ecotonal areas between wet meadow and sagebrush steppe (Lesica 1998), and appears to be restricted to nearly level sites in the high valleys of southwest Montana. It is commonly found on terraces of headwaters streams above 6000 feet elevation. Small populations may occur at lower elevations or along larger streams. Soils tend to be silty, with high organic content and little or no coarse material (Lesica 1998). Most documented Montana populations are in areas with calcareous parent material, however a few occupy non-calcareous sites.

Species	Rank[a]	Habitat
Carex livida	G5S2	Bogs and fens, swampy woods, or sometimes on mineral substrates adjacent to slow moving streams; from low to moderately high elevations.
Castilleja pulchella Beautiful Indian Paintbrush	G3G4S2	Known from the alpine tundra of the middle Rocky Mountains in southwestern Montana, western Wyoming, and northeastern Utah (Scott 1995). Also occurs in Idaho (Kartesz and Meacham 1999).
Chrysothamnus parryi ssp. *montanus* Centennial Rabbitbrush	G5T1S1	*Chrysothamnus parryi ssp. montanus* occurs on high elevation slopes or windswept ridge crests with southerly exposures between 8,800 and 10,000 feet. It is restricted to rocky, calcareous substrates of the Beaverhead Conglomerate Formation. It occurs where bedrock is at or near the surface, resulting in minimal soil development. Adjacent sites characterized by deeper, more fully developed soils do not support *Chrysothamnus parryi ssp. montanus*. Populations are most extensive on rocky spur ridges descending from the Continental Divide. Plants can be locally common, but overall, occupied habitat covers limited acreage
Ciuita bulbifera Bulblet-bearing Water hemlock	G5S2	Cicuta bulbifera is a perennial herb known from most of Canada south to Washington, Idaho, Wyoming, Nebraska, and the mid-Atlantic states. It is rare along the fringes of its very broad range. Found in Wet Meadow/Prairie/Field,Swamp/Marsh
Cuscuta denticulata Sepal-tooth Dodder	G4G5S1	A rootless, leafless, twining, non-green, parasitic herb with slender, pale yellow stems that grows on various desert shrubs especially *Artemisia spp.* and *Chrysothamnus spp*.
Claytonia lanceolata, var. *multiscapa* *Rydberg's* Spring-beauty	G5 S1	Moist to dry grasslands and montane coniferous forests, often in swales with heavy, poorly drained clay soils in the south to wet, rocky tundra in the north; 0-6500ft; B.C.; Alaska, Idaho, Mont., Wash., Wyo.; Eurasia (Russia).
Draba incerta Yellowstone Draba	G5S2	Ranges from Alaska to Washington, Utah and Wyoming growing on ridge crests in subalpine and alpine habitats 9,700-9,900 ft
Eleocharis elliptica Slender Spike-rush	G5S1	Very wet, calcareous (or brackish) shores, pool margins, fens, meadows, prairies; 0–3300 ft; Canada; Conn., Idaho, Ill., Ind., Iowa, Maine, Mass., Mich., Minn., Mont., N.H., N.J., N.Y., N.Dak., Pa., Tenn., Vt., W.Va., Wis. It is difficult to separate *Eleocharis elliptica* from *E. tenuis* and *E. compressa.*
Epilobium palustre Swamp Willow-weed	G5S3	Marshes, fens, wet meadows
Epipactis gigantea Giant Helleborine	G3G4S3	In general, giant helleborine occurs in moist areas along streambanks, lake margins, seeps and springs. In Idaho it is associated with thermal waters at higher elevations, or cold springs at lower elevations such as along the Snake River
Eriophorum viridicarinatum Green Keeled Cotton-grass	G5S2	Bogs, peatlands, and wet meadows
Gentianella propinqua Four-parted Gentian	G5S2	Four-parted gentian grows in forests, meadows, along streambanks, and on dry, open, rocky slopes. It is a calciphile which grows in sedge tussocks in arctic tundra. *G. propinqua* occurs at elevations ranging from 8,000 to 10,00 feet (2,580-3,225 m) in Montana [9] and 2,200 to 2,730 feet (710-880 m) in Alaska. Associates include fescues (Festuca spp.), sedges (Carex spp.), fireweed (Epilobium angustifolium), and shrubby cinquefoil (Potentilla fruticosa)
Lycopodiella inundata Northern Bog Clubmoss	G5S2	Wet organic soil of nutrient-poor fens in the valley and lower montane zones
Kobresia simpliciuscula Simple Kobresia	G5S2	Marshes, river terraces, margins of ponds

Species	Rank[a]	Habitat
Oenothera psammophila St. Anthony Evening Primrose	G3S3	The trailing margins of migrating sand dunes in inter-dunal areas having sand-filled cracks over basalt outcrops and developing primary plant communities. St. Anthony evening-primrose is apparently limited to areas where the sand is less than approximately 50 cm deep. Associated species include *Leymus flavescens, Achnatherum hymenoides, Psoralea lanceolata, Ipomopsis congesta, Oenothera pallida,* and *Lygodesmia juncea*. Plants do not occur on the bodies of sand dunes, nor in surrounding sagebrush-steppe habitats
Picea glauca White Spruce	G5S1	White spruce has a transcontinental distribution. It grows from Newfoundland, Labrador, and northern Quebec west across Canada along the northern limit of trees to northwestern Alaska, south to southwestern Alaska, southern British Columbia, southern Alberta, and northwestern Montana, and east to southern Manitoba, central Minnesota, central Michigan, southern Ontario, northern New York, and Maine. An isolated population also occurs in the Black Hills of South Dakota and Wyoming. In the Black Hills, white spruce habitat types occur at high elevations and in cool canyon bottoms.
Piptatherum micranthum Small-flowered Ricegrass	G5S1	Dry, open, often sandy soil or rocky ridge areas from the sagebrush foothills to open forests at middle elevations. The known Idaho population occurs in cracks and on ledges in a limestone cliff alcove. It has no associates at this site
Primula alcalina Alkali Primrose	G2S2	Alkali primrose occurs in wet, spring-fed, alkaline, intermontane valley meadow systems. The alluvial soils are fine-textured, light-colored, and derived from predominantly calcareous outwash. Plants occur in the lowest topographic position in the meadows, where the subirrigated soil is saturated throughout the growing season. Plants are found on low, relatively level benches immediately adjacent to creeks and spring heads, as well as on low benches with hummocky microtopography, where plants are restricted to the tops and sides of the hummocks. Alkali primrose is not known from creeks having large seasonal or annual flows, or channel scouring from floods. Graminoids dominate the wet meadow habitats supporting alkali primrose, including *Eleocharis pauciflora, Carex scirpoidea, C. simulata, Kobresia simpliciuscula,* and *Juncus balticus*. Associated forbs are diverse, but have relatively low cover, and include *Dodecatheon pulchellum, Triglochin maritimum,* and *Thalictrum alpinum*. Hummocks are sometimes shared with shrubs such as *Betula glandulosa, Potentilla fruticosa*, and several *Salix* species.
Salix candida Hoary Willow	G5S2	Bogs, fens, marshes, pond edges, and seepage areas
Salix glauca Gray Willow	G5S2	In the Rocky Mountains grayleaf willow is restricted to open, alpine and subalpine habitats that commonly have rocky, well-drained soils. Grayleaf willow occurs as scattered individuals in many boreal forests and woodlands. It is seldom an understory dominant, except in early seral stages.
Salix pseudomonticola False Mountain Willow	G4G5S1	Mesic to moist fens, thickets, forest edges and openings and floodplains in the montane to lower subalpine zones; infrequent in BC east of the Coast-Cascade Mountains; N to AK, S YT and S NT, E to Labr. and S to MN, SD, WY, ID and WA.
Sanicula graveolens Sierra Sanicle	G4S1	Distributed on both sides of the Cascades in Washington; British Columbia south to California, east to Montana and Wyoming. Common in open woods at low to mid-elevations in the mountains.
Saxifraga cernua Nodding Saxifrage	G4S2	Cool, wet areas, mossy banks, tundra, shady rock faces, late snowbeds in Alaska, Colo., Idaho, Minn., Mont., Nev., N.H., N.Mex., S.Dak., Utah, Wash., Wyo. *Saxifraga cernua* plants rarely set seed; they bear bulbils among the basal leaves.
Scheuchzeria palustris Pod Grass	G5S2	In bogs, where it is usually associated with Sphagnum, or on lake margins, where often with *Carex* spp
Schoenoplectus subterminalis Water Clubrush	G4G5S3	*Schoenoplectus subterminalis* often forms lawnlike, underwater mats that are entirely vegetative or have only the inflorescences emergent. Submerged to emergent in water to 1 m or sometimes terrestrial, fresh lakes, streams, bogs

Species	Rank[a]	Habitat
Silene scaposa var. *lobata* Scapose Silene	G4S3	Subalpine grassy
Spiranthes diluvialis Ute Ladies'-Tresses	G2S1	Subirrigated, alluvial soils along streams and rivers and their floodplains, including abandoned river channels, wet meadows, and open seepy areas. In Idaho, Ute ladies tresses is known from several wetland community types, the most common two being the Salix exigua/mesic graminoid and mesic graminoid types. In Idaho: South Fork of the Snake River floodplain in Jefferson, Madison, and Bonneville counties, and the Henrys Fork River near St. Anthony in Fremont County.
Stipa viridula /*Nassella viridula* Green Needlegrass	NR	Grasslands and sagebrush slopes and adapted to a wide range of soil textures. One Idaho population is on dry
Telesonix jamesii James' Saxifrage	G4S1	Found in crevices of granitic rock faces and talus; 9500-11,000ft; Colo., N.Mex.
Thalictrum dasycarpum Purple Meadow-rue	G5S2	Found in deciduous, riparian woods, damp thickets, swamps, wet meadows, and prairies; elev. 200 – 8,000ft
Trichophorum pumilum Rolland Bulrush	G3QS1	Rich fens; wet calcareous soils. Associated species at Idaho populations include *Eleocharis pauciflora, Kobresia simpliciuscula, Deschampsia cespitosa, Triglochin maritima,* and *Primula alcalina*
Species of Concern for Beaverhead County, Montana, derived from Montana Natural Heritage Program and Beaverhead Deerlodge National Forest Lists, April 2008.		
Adoxa moschatellina musk-root	G5S2	vernally mesic, in mtns, undisturbed roskslides, cold air drainage
Agastache cusickii Cusick's horse-mint	G2G3S1	xeric, open, limestone talus slopes oftenw/ARTR or CELE
Allium acuminatum tapertip onion	G5S1	dry, open forests & grasslands in montane zone
Antennaria densifolia dense-leaved antennaria	G3S1	limestone talus near or above timberline
Arabis fecunda Sapphire rockcress	G2S2	open rocky (eroding) slopes of calcareous parent material
Astragalus scaphoides Bitterroot milkvetch	G3S2	silty (stony) soil in ARTR (valley & foothill)
Balsamorhiza macrophylla large-leaved balsamroot	G3G5S1	montane zone sagebrush & grasslands
Botrychium crenulatum wavy moonwort	G3S2	stream btms, seeps, marsh edges, wet swales, often soils of reprecipitated calcium
Botrychium hesperium Western moonwort	G3G4S2	dry-moist gravely & lightly disturbed grasslands, meadow, mid-succession gravel bars
Botrychium paradoxum Peculiar moonwort	G2S2	mesic meadows of spruce & PICO forests (montane & subalpine zones)
Carex idahoa Idaho sedge	G2QS2	Mesic meadows of seeps, ponds, streams usu assoc w/calcareous parent material
Castilleja covilleana Coville Indian paintbrush	G3G4S2	stony soil, slopes & summits in montane & subalpine zones

Species	Rank[a]	Habitat
Eleocharis rostellata beaked spikerush	G5S2	wet often alkaline soils w/warm sprngs or fens (valley & foothill zones)
Epipactis gigantean giant helleborine	G3G4S2	stream bnks, lk margins, fens w/springs & seeps
Erigeron asperugineus Idaho fleabane	G4S1	open soil & scree in alpine zone
Eupatorium occidentale Western Joepye weed	G4S2	rocky outcrops & slopes in montane & lwr subalpine zones
Gentianopsis simplex Hikers gentian	G4S1	fens, meadows, seeps usu areas of crystalline parent material
Haplopappus macronema discoid goldenweed	G4G5S1 T4	rocky, open or sparsley wooded slopes (often coarse talus), in or near alpine zone
Juncus hallii Hall's juncus	G4G5S2	moist - dry meadows & slopes from valley to montane zones
Lesquerella paysonii Payson's bladderpod	G3S1	gravelly, calcareous slopes & ridgetops in montane zone
Lesquerella pulchella beautiful bladderpod	G2S2	gravelly, calcareous foothill soil inCELE & sub to alpine fellfield slopes in sparse PIFL
Mimulus primuloides primrose monkeyflower	G4S2	fens, sphagnum bogs, & wet meadows in montane & subalpine zone
Orogenia fusiformis tapered-root orogenia	G5S2	sparse vegetation of open slopes, ridges, & meadows (lwr foothills - mid-montane}
Oxytropis podocarpa stalked-pod crazyweed	G4S1	gravely ridges & slopes (often on limestone) in alpine zone
Penstemon lemhiensis Lemhi Penstemon	G3S2	open sagebrush & woodland slopes in foothill & lwr montane
Phlox kelseyi Missouls phlox	G2S2	open, exposed, limestone-derived slopes in foothill & montane zones
Polygonum douglasii Austin's knotweed	G5T4S2	gravelly, often shale-derived soil on open slopes & banks in montane zone
Potentilla quinquefolia Five-leaf cinquefoil	G5S2	dry, gravelly soil of exposed ridges & slopes in montane & subalpine zones
Primula alcalina alkali primrose	G2S1	wet alkaline meadows near headwater streams / hummock/ fine soils of carbonate rock
Primula incana mealy primrose	G4G5S2	saturates, calcareous wetlands / hummock / stable water table
Ranunculus jovis Jove's buttercup	G4S2	sagebrush grasslands to open forest slopes in montane & sbualpine zones
Saussurea weberi Weber's sawwort	G2G3S1	moist meadows in the alpine zone
Saxifraga tempestiva storm saxifrage	G2S2	vernally moist, open soil in meadows & on rockledges in subalpine & allpine zones

Species	Rank[a]	Habitat
Scheuchzeria palustris pod grass	G5S2	wet, organic soil of fens in valley & montane zones, us w/sphagnum
Scirpus cespitosus tufted club-rush	G5S2	wet meadows & sphagnum bogs in montane & subalpine zones
Thalictrum alpinum alpine meadowrue	G5S2	moist, alkaline meadows in valley to montane zones
Trifolium eriocephalum musk-root	G5S2	dry meadows, woods & margins in the foothill & lower montane zones
Trifolium gymnocarpon Cusick's horse-mint	G4S2	open woods & slopes, usu dry soils of sagebrush steppe to PIPO in foothills & lwr montane
Veratrum californicum tapertip onion	G5S1	wet meadows & streambanks in montane 7 subalpine zones

a - Global Rank (GRANK) and State Rank (SRANK)
The network of Natural Heritage Programs and Conservation Data Centers--which currently consists of installations in all 50 states, several Canadian provinces, and several Latin American and Carribean countries--ranks the rangewide (GRANK or global rank) and state (SRANK or state rank) status of plants, animals, and plant communities on a scale of 1 to 5. The rank is primarily based on the number of known occurrences, but other factors such as habitat quality, estimated number of individuals, narrowness of range of habitat, trends in populations and habitat, threats to the element, and other factors are also considered. The ranking system is meant to exist alongside national and state rare species lists because these lists often include additional criteria (e.g., recovery potential, depth of knowledge) that go beyond assessing threats to extinction.

Components of Ranks:

G = Global rank indicator; denotes rank based on rangewide status.
T = Trinomial rank indicator; denotes global status of infraspecific taxa.
S = State rank indicator; denotes rank based on status within Idaho.
1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences).
2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).
3 = Rare or uncommon but not imperiled (typically 21 to 100 occurrences).
4 = Not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).
5 = Demonstrably widespread, abundant, and secure.
U = Unrankable.
H = Historical occurrence (i.e., formerly part of the native biota; implied expectation that it might be rediscovered or possibly extinct).
X = Presumed extinct or extirpated.
Q = Indicates uncertainty about taxonomic status.
? = Uncertainty exists about the stated rank.
NR = Not ranked.
NA = Conservation status rank is not applicable.

Examples of Use:
G4T2 = Species is apparently secure rangewide, but this particular subspecies or variety is imperiled.
S2S3= Uncertainty exists whether the species or subspecies should be ranked S2 or S3.