FIELD SURVEY FOR PLANT SPECIES OF CONSERVATION CONCERN ON BLM LAND IN THE MEDICINE LODGE CREEK AREA

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Challenge Cost-Share Project
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ABSTRACT

The Bureau of Land Management's (BLM) Idaho Falls District administers large tracts of land in the Medicine Lodge Creek area, in east-central Idaho. In the past, inventories for BLM Special Status plant species in the area have been largely opportunistic or limited to project level clearances. In 2005, the BLM contracted the Idaho Department of Fish and Game's Idaho Conservation Data Center to conduct a systematic, multi-species field inventory in the Medicine Lodge Creek area for Special Status and other plant species of conservation concern. Our inventory included 33 survey areas and totaled approximately 1119 ha (2766 ac). Wetland, sagebrush-steppe, and rock/ash outcrop habitats were surveyed. No new Special Status plant populations were discovered, and overall, suitable habitat for target species was limited within the study area. One species that appears to be new records for Idaho was discovered during the survey. Creeping nailwort (*Paronychia sessiliflora*) was found on sparsely vegetated, light-colored, ash outcrops in two of our survey areas. This species may be worthy of conservation concern in Idaho.

ACKNOWLEDGMENTS

Field assistance for this project was provided by Idaho Conservation Data Center biologists Beth Colket and Gillian Crymes. Wendy Velman, botanist for the BLM, Idaho Falls District Field Office provided project guidance and helped with some of the field work. Thank you.

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INTRODUCTION

The Bureau of Land Management's (BLM) Idaho Falls District administers large tracts of land in the Medicine Lodge Creek area, in east-central Idaho. In the past, inventories for BLM Special Status plant species in this area have been largely opportunistic or limited to project level clearances. These efforts have documented only a few special status plant populations over the years. Gaps in understanding the abundance, distribution, and vulnerability to threats makes it difficult to assess the effects of management actions on Special Status plant species. To help address this information gap the BLM contracted the Idaho Department of Fish and Game's Idaho Conservation Data Center (IDCDC) to conduct a systematic, multi-species field inventory in the Medicine Lodge Creek area for Special Status and other plant species of conservation concern. Obtaining more comprehensive information regarding the conservation status of Special Status plants in the area is essential for the implementation of weed control, pesticide spraying, livestock improvement projects, and other management tools. Information collected during the inventory will help BLM resource managers evaluate and prioritize plant conservation concerns, as well as protect populations and their habitats within a multiple-use framework.

STUDY AREA

The primary study area for this project was the Medicine Lodge Creek drainage in east-central Idaho (Figure 1). This area is located northwest of Dubois, in Clark County, the lowest population density county in the state. The boundary for the study area was Highway 22 in the south, extending north to the Caribou - Targhee National Forest; and east from the Clark-Jefferson county line to Indian Creek. Two outlying areas were also identified for the project, including the upper Beaver Creek drainage, south of Monida, Montana, and the Rock Creek area west of Spencer. Irving, Edie, Rocky, Middle, and Indian creeks are main tributaries to Medicine Lodge Creek, while Warm Springs and Deep creeks are independent drainages in the western part of the study area. Elevations in the study area ranged from 1494 - 2682 m (4900 – 8800 ft).

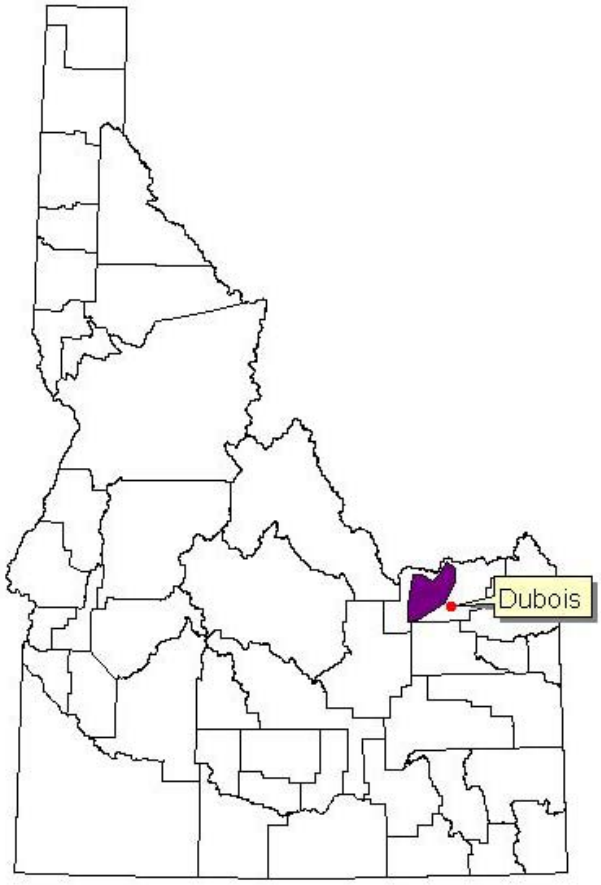
In Dubois, the average annual maximum temperature is 56^0, the minimum 29^0. January is the coldest month, and July the warmest month of the year. Annual precipitation averages 24 cm (10 in), and is relatively evenly distributed throughout the year except for a spike in May and June (Western Regional Climate Center 2006).

Geology in the area is dominated by Cenozoic-age rhyolite, basalt, and limestone parent material. Similarly-aged sedimentary exposures of siltstone, shale, and tuff are less widespread. Within the study area, older, Upper Mesozoic sedimentary rocks of the Beaverhead Conglomerate and Aspen formations are restricted to the Irving and Edie creeks, and Beaver Creek areas respectively (Rember and Bennett 1979).

METHODS

The IDCDC coordinated with BLM botanists to produce a list of Special Status plant species and geographic areas to target for the field inventory project. Eleven target species were chosen based on their (1) known occurrence in or near the study area, (2) known or suspected occurrence of suitable habitat within the study area, and (3) being a high priority Type 1 or 2 Special Status plant species for the Idaho Falls District BLM.

Figure 1. Map location of the Medicine Lodge Creek study area in east-central Idaho.



The target species tend to be restricted to specific habitat conditions within three broad categories - wetland, sagebrush-steppe, and rock outcrop. Table 1 lists the project target species and their conservation ranks, which are defined in Appendix 1. Table 2 provides general habitat information for each species in Idaho. Plant nomenclature follows the PLANTS database (U.S. Department of Agriculture, Natural Resource Conservation Service 2004) in most cases.

Deep Creek, Lake Hollow, Irving Creek immediately downstream from the U.S. Forest Service (USFS) boundary, the Lidy Hot Springs area, Patelzick Creek, the exclosure in upper Beaver Creek, and the Continental Divide west of Monida Pass were geographic areas targeted for survey based on recommendations made by the BLM (Wendy Velman and Glen Gunther, Idaho Falls District BLM, pers. comm.). Additional survey areas were selected based on their having (1) known or suspected habitat suitable for target species, (2) regionally unique or uncommon edaphic or other habitat characteristics, or (3) no known previous inventory.

Surveys were conducted by walking a meandering transect through the survey area. Most time was spent in portions of the survey area we thought had the best potential to find target species. Our protocol was to collect location, abundance, habitat, disturbance,

threat, and other conservation information for any new Special Status plant species occurrences we discovered. GPS coordinates would also be recorded and the extent of the occurrence mapped on a 7.5' USGS topographic map. In addition, we visited and updated the IDCDC Element Occurrence Records (EOR) for four Special Status plant occurrences previously documented within the study area, and three occurrences on BLM land located a little west of the study area.

Table 1. Special Status plant species target list for the Medicine Lodge Creek study area.

Scientific name	**Common name**	**Conservation rank**	
		Idaho BLM	**NatureServe**
Astragalus bisulcatus var. *bisulcatus*	Two-grooved milkvetch	Type 4	G5T5 S2
Astragalus diversifolius	Meadow milkvetch	Type 3	G2 S2
Astragalus gilviflorus	Plains milkvetch	Type 3	G5 S2
Bouteloua gracilis	Blue grama	Type 3	G5 S2
Camissonia pterosperma	Wing-seeded evening primrose	Type 4	G4 S2
Carex idahoa	Idaho sedge	Type 2	G2 S2
Chrysothamnus parryi spp. *montanus*	Centennial rabbitbrush		G5T1 S1
Cuscuta dendiculata	Sepal-tooth dodder	Type 3	G4G5 S1
Draba incerta	Yellowstone draba		G5 S2
Epilobium palustre	Swamp willow-weed	Type 5	G5 S3
Epipactis gigantea	Giant helleborine	Type 3	G3G4 S3
Nassella viridula	Green needlegrass		G5
Piptatherum micranthum	Small-flowered ricegrass	Type 3	G5 S1
Primula alcalina	Alkali primrose	Type 3	G2 S2
Salix candida	Hoary willow	Type 4	G5 S2
Salix pseudomonticola	False mountain willow	Type 3	G4G5 S1
Silene scaposa	Scapose silene		G4 S3
Spiranthes diluvialis	Ute ladies' tresses	Type 1	G2 S1
Trichophorum pumilum	Roland's bulrush	Type 2	G3 S1

RESULTS

Field work was conducted 12 July – 18 August, 2005. We revisited and collected updated conservation information for five previously known Special Status plant occurrences located within or near the study area. We were unable to relocate two other previously reported occurrences. Updated IDCDC Element Occurrence (EO) records for each of the seven previously documented occurrences are in Appendix 2. Our inventory included 33 survey areas, ranging in size from approximately 2 - 174 ha (5 – 430 ac). Overall, we inventoried approximately 1119 ha (2766 ac) within the study area. The majority of survey areas were wetlands, but sagebrush-steppe comprised the largest aerial extent (49%) of surveyed habitat. Table 3 lists the survey areas and their approximate acreage. Maps showing the location of each survey area are in Appendix 3.

No new Special Status plant populations were discovered during our inventory, and overall, habitat for these species was limited. Several survey areas had inclusions of suitable target species habitat, but none had large, high quality potential. One species

Table 2. Habitat information for Special Status plant species.

Scientific name	**Habitat**
Astragalus bisulcatus var. *bisulcatus*	Sagebrush-steppe – mesic sagebrush bottomlands
Astragalus diversifolius	Wetland – moist alkaline meadows
Astragalus gilviflorus	Rock outcrop – rocky calcareous substrate
Bouteloua gracilis	Sagebrush-steppe
Camissonia pterosperma	Sagebrush-steppe – dry, open, rocky places
Carex idahoa	Wetland – mostly in ecotonal area at border of wet meadow/riparian and shrub-steppe zones
Chrysothamnus parryi spp. *montanus*	Rock outcrop – Beaverhead Conglomerate geology; high elevation
Cuscuta dendiculata	Sagebrush-steppe – parasitic on sagebrush and other desert shrubs
Draba incerta	Rock outcrop – rocky subalpine and alpine ridges and slopes
Epilobium palustre	Wetland - fens and marshes
Epipactis gigantea	Wetland – thermal or cold springs
Nassella viridula	Sagebrush-steppe
Piptatherum micranthum	Rock outcrop – calcareous rock alcoves
Primula alcalina	Wetland - moist alkaline meadows
Salix candida	Wetland – fens and marshes
Salix pseudomonticola	Wetland - moist alkaline meadows
Silene scaposa	Sagebrush-steppe
Spiranthes diluvialis	Wetland - subirrigated alluvial soils along streams, rivers, and associated floodplains
Trichophorum pumilum	Wetland – wet calcareous soils and rich fens

that appears to be new records for Idaho was discovered during our survey. Creeping nailwort (*Paronychia sessiliflora*) was found on sparsely vegetated, light-colored, ashy outcrops in two of the survey areas located in the vicinity of Lidy Hot Springs. These distinctive outcrops appear to be a component of, or related to, the Medicine Lodge beds, a sequence of tuffaceous sandstones, ash beds, paleosols, lacustrine limestones, and conglomerates found in the Medicine Lodge Creek valley (Hodges 2002). No Idaho records for creeping nailwort were found in a search of all the major herbaria in the state (University of Idaho, Idaho State University, Boise State University, Albertson College, U.S. Forest Service-Boise). It is also not reported for Idaho in Flora of North America (Flora of North America Editorial Committee 2005), nor in the PLANTS database (U.S. Department of Agriculture, Natural Resource Conservation Service 2004). Drummond's milkvetch (*Astragalus drummondii*), a former BLM Special Status plant species was widespread within the study area.

One or more digital images were taken to document most survey areas. A total of 58 images have been labeled, placed on CD, and submitted to the BLM with this report. Copies of the images are in Appendix 4.

Table 3. List of survey areas. The legal description is based on the approximate center of the survey area.

	Survey area	USGS quadrangle	Legal description	Area (ac)
Wetland				
1	Warm Springs Creek	Lidy Hot Springs	T10N R33E S33	15
2	Deep Creek	Rocky Ck; Lidy HS	T11N R33E S21	429
3	West of Deep Creek	Rocky Creek	T11N R33E S20	5
4	Upper S.F. Deep Creek	Heart Mountain	T11N R32E S12	31
5	Lake Hollow	Rocky Creek	T12N R 33E S32	25
6	Warm Creek	Fritz Peak	T13N R32E S15	43
7	Irving Creek	Edie Creek	T13N R33E S17	70
8	Edie Creek	Edie Creek	T13N R33E S23	54
9	Dry Creek	Edie Creek	T13N R33E S25	139
10	Middle Creek	Edie Ck/Tepee Draw	T12N R34E S6	47
11	W.F. Indian Creek 1	Tepee Draw	T13N R34E S9	12
12	W.F. Indian Creek 2	Tepee Draw	T13N R34E S3	38
13	Rock Creek	Thunder Gulch	T12N R35E S24	10
14	Patelzich Creek	Thunder Gulch	T12N R35E S24	35
15	E.F. Patelzich Creek	Thunder Gulch	T12N R36E S19	8
16	Beaver Creek	Spencer North	T13N R36E S4	22
17	Beaver Creek exclosure	Monida	T14N R35E S23	41
18	Upper Beaver Creek	Monida	T14N R35E S13	52
Sagebrush-steppe				
19	South of Lidy Hot Springs	Lidy Hot Springs	T9N R33E S3	306
20	Juniper Gulch	Snaky Canyon	T9N R31E S33	54
21	Black Canyon	Fritz Peak	T13N R32E S15	141
22	The Bull Pen North	Edie Creek	T13N R33E S15	62
23	The Bull Pen South	Edie Creek	T13N R33E S21	43
24	Deer Canyon	Edie Creek	T13N R33E S17	344
25	Horse Mountain	Edie Creek	T13N R33E S14	176
26	Dry Creek Ridge	Edie Creek	T13N R33E S24	156
27	Indian Creek Road	Indian Creek	T12N R34E S35	24
28	West of Monida	Monida	T14N R35E S15	44
Rock and ash outcrops				
29	North of Lidy Hot Springs	Lidy Hot Springs	T10N R33E S34	217
30	East of Lidy Hot Springs	Lidy HS/Lidy HS SE	T9N R33E S2	11
31	North of Three Springs	Lidy Hot Springs	T10N R33E S1	11
32	Irving Creek outcrop	Edie Creek	T13N R33E S19	80
33	East of Middle Creek	Edie Creek	T12N R34E S6	21
	Total			2766

SURVEY AREA DESCRIPTIONS

The location, vegetation, management concerns, and assessment of Special Status plant species habitat for each survey area is summarized below.

Wetland habitats

1. Warm Springs Creek (Appendix 3, Map 1) – Located along Warm Springs Creek, approximately 2.4 km (1.5 mi) northwest of Lidy Hot Springs. The mesic bottomland habitat supported a basin big sagebrush/bluestem wheatgrass (*Artemisia tridentata* ssp. *tridentata*/*Pascopyrum smithii*) community bisected by a very narrow mesic graminoid-dominated riparian strip immediately adjacent to the creek channel. Common timothy (*Phleum pratense*), redtop (*Agrostis stolonifera*), spike mannagrass (*Glyceria leptostachya*), foxtail barley (*Hordeum jubatum*), rush (*Juncus* sp.), and Canada thistle (*Cirsium arvense*) were common in the riparian strip, along with a few patches of cattail (*Typha latifolia*). Introduced plant species were common and disturbance associated with livestock use evident. Private property occurred to the north. The survey area contained sections of marginal habitat for two-grooved milkvetch.

2. Deep Creek (Appendix 3, Map 3; Appendix 4, photos 4-7) – Located along approximately 4.3 km (2.7 mi) of the Deep Creek bottoms and adjacent upland slopes, approximately 4 km (2.5 mi) east of Antelope Lakes. The low terrace bottoms supported a basin big sagebrush/bluestem wheatgrass community degraded by leafy spurge (*Euphorbia esula*), which was abundant the entire length of the survey and continued further upstream as well. Small patches of coyote willow (*Salix exigua*) occurred intermittently along the creek. Drummond's milkvetch was common along segments of the creek bottom. Uplands habitats were dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) or low sagebrush (*Artemisia arbuscula*) communities, usually with Idaho fescue (*Festuca idahoensis*) in the understory. No Special Status plant habitat was observed.

3. West of Deep Creek (Appendix 3, Map 3) – Located at a spring in a small, unnamed drainage approximately 3.2 km (2 mi) southeast of Antelope Lakes. The spring zone was a mix of willow (*Salix* spp.) and herbaceous vegetation. The uphill end of the exclosure fence was cut and cattle had thoroughly trampled the spring zone. Two noxious weed species, black henbane (*Hyoscyamus niger*) and leafy spurge occurred within the exclosure. No Special Status plant habitat was observed.

4. Upper South Fork Deep Creek (Appendix 3, Map 4) - Located along the upper South Fork Deep Creek just downstream from the U.S. Forest Service (USFS) boundary, approximately 2.4 km (1.5 mi) north of Antelope Lakes. The vegetation was dominated by a willow/mesic graminoid community. Bebb's willow (*Salix bebbiana*) and Geyer's willow (*Salix geyeriana*) appeared to be the most common shrubs present. Kentucky bluegrass (*Poa pratensis*) was the main graminoid in drier sections, and Nebraska sedge (*Carex nebracensis*) in wetter sections. Some black henbane was observed near the creek bottom. Cattle trampling was widespread within the exclosure and no willow regeneration was observed. The riparian exclosure fence was in poor condition and its reconstruction would benefit the riparian vegetation. The survey area contained a few small patches of potential Idaho sedge and two-grooved milkvetch habitat.

5. Lake Hollow (Appendix 3, Map 4; Appendix 4, photo 8) – Located along lower Lake Hollow, a small tributary to Medicine Lodge Creek. Shrub-steppe or conifer woodland

vegetation descended to near the reservoir shoreline, which was lined by a narrow strip of common native, or introduced weedy wetland species. Downstream from the reservoir, a narrow greenstrip paralleled the Lake Hollow ditch channel. It was dominated by Nebraska sedge in most places. Black henbane, Canada thistle, and lesser amounts of musk thistle (*Cardus nutans*) occurred in the area. Drummond's milkvetch was scattered along the route. Mountain big sagebrush communities dominated most of the nearby uplands. No Special Status plant habitat was observed.

6. Warm Creek (Appendix 3, Map 5; Appendix 4, photos 9-12) – Located along lower Warm Creek and its confluent section of Divide Creek. The channel of the upstream segment of Warm Creek was dry and supported a narrow greenline of Kentucky bluegrass and Great Basin wild rye (*Leymus cinereus*). Willow/mesic graminoid vegetation occurred further downstream where the channel bottom had a small amount of surface water flow. Geyer's willow, water sedge, Baltic rush (*Juncus balticus*), brookgrass (*Catabrosa aquatica*), and Kentucky bluegrass were common. The willow band abruptly ended after roughly 150 m (492 ft) as the surface water disappeared. A large thermal springhead re-watered Warm Creek approximately 100 m (328 ft) further downstream. The springhead area supported a diverse suite of aquatic and wetland plant species, including water-cress (*Rorippa nasturium-aquaticum*), cutleaf waterparsnip (*Berula erecta*), yellow monkeyflower (*Mimulus guttatus*), field mint (*Mentha arvensis*), Eaton's aster (*Symphyotrichum eatonii*), rettop, water sedge (*Carex aquatilis*), horned pondweed (*Zannichellia palustris*) and chara (*Chara* spp.). Very lower Warm Creek and its confluent section of Divide Creek supported mesic-graminoid-dominated wetland vegetation with intermixed strips of willow.

The bottomland benches extending away from the Warm and Divide creek channels supported a basin big sagebrush/Great Basin wild rye community type (c.t.). Drummond's milkvetch was widespread and common within the benchland habitat above Warm Creek. A series of calcareous rock outcrops with mountain mahogany (*Cercocarpus ledifolius*) rimmed the bottomland in places, but did not appear to be suitable habitat for plains milkvetch. Canada thistle was widespread within or along the wetland fringes. Mining claim markers were observed in the vicinity of the springhead along lower Warm Creek. Small stretches of wetland to upland transitional habitat along Warm Creek appeared to be marginal Idaho sedge habitat. The large springhead along lower Warm Creek looked to be potentially suitable for giant helleborine. Potential two-grooved milkvetch habitat occurred along the Warm Creek bottoms.

7. Irving Creek (Appendix 3, Map 6; Appendix 4, photos 13-16) – Located along Irving Creek, downstream from the USFS boundary, for approximately 1.9 km (1.2 mi) to the private land fenceline. The creek was incised 1 - 3 m along most of its length. Raw banks were common and usually unarmored, making them susceptible to more erosion. Bank sloughing was ongoing in places, but sections of bank healing and stabilization were also evident. The riparian vegetation was dominated by narrow strips to large thickets of willow, often intermixed with water birch (*Betula occidentalis*). Kentucky bluegrass dominated the understory in drier sections, and a mix of mesic graminoids in wetter segments. Forb diversity was greatest in open areas. Subirrigated point bars were a common feature within the channel and tended to be dominated by a mix of mesic graminoid species. An unknown thistle species (*Cirsium* spp., plants vegetative) was common on sections of raw creek bank. A few scattered Drummond's milkvetch were observed. A partial plant list compiled for the survey area is in Appendix 5. No Special Status plant habitat was observed.

8. Edie Creek (Appendix 3, Map 7; Appendix 4, photos 17-18) – Located along the Edie Creek bottoms approximately 1.6 km (1 mi) east of Horse Mountain. A narrow ribbon of herbaceous wetland vegetation was associated with the channel of Edie Creek, although some places lacked any wetland development. In some sections, Louisiana sage (*Artemisia ludoviciana*), nettle-leave horse-mint (*Agastache urticifolia*), stinging nettle (*Urtica dioica*), sticky geranium (*Geranium viscosissimum*), slender cinquefoil *(Potentilla gracilis*), and other forbs were abundant. Common graminoids included Kentucky bluegrass, fowl bluegrass (*Poa palustris*), meadow barley (*Hordeum brachyantherum*), Great Basin wild rye, and several species of sedge, and rush. The low terraces on either side of the channel generally had Great Basin wild rye, while one wet seep had Nebraska sedge, tufted hairgrass (*Deschampsia cespitosa*), and Baltic rush. Parry's sedge (*Carex parryana* var. *parryana*) was encountered in several places. Willows began to appear downstream of approximately the 23/26 section line in an intermittent pattern. They often occurred in a narrow band with several mesic graminoid species, or with beaked sedge (*Carex utriculata*) in the wettest places. We spot checked several small areas of riparian vegetation from the 23/26 section line downstream to the BLM-private land boundary. Many of these downstream segments were grazed to the point where plant identification was very difficult. Idaho sedge and two-grooved milkvetch were the primary target species in this survey area. No Special Status plant habitat was observed.

9. Dry Creek (Appendix 3, Map 7; Appendix 4, photo 19) – Located along upper Dry Creek upstream from Middle Creek Butte. The upper segment was a mesic graminoid-tall forb mix greenline adjacent to the channel. Kentucky bluegrass, fowl bluegrass, meadow barley, and tufted hairgrass were prominent grasses, while Louisiana sage, western coneflower (*Rudbeckia occidentalis*), tall butterweed (*Senecio serra*), nettle-leave horse-mint, and stinging nettle were common forbs. Great Basin wild rye dominated the low bench above the channel. The amount of water in the channel roughly doubled downstream from a spring located 0.5 km (0.3 mi) below the USFS boundary. Downstream of the spring, the riparian vegetation was dominated by a diamondleaf willow (*Salix planifolia*)/mesic graminoid c.t. in most places, with Kentucky bluegrass and common timothy often the main graminoid species.

Drummond's milkvetch was observed on state land approximately 0.6 km (0.4 mi) northwest of Middle Creek Butte. Patches of Canada thistle were scattered along the drainage bottom. A thick patch of leafy spurge approximately 0.04 ha (0.1 ac) in size was observed just upstream of a point where willow density noticeably increased (GPS coordinates = UTM 12T N4920444 E379207, Map Datum NAD 27). No other patches were observed in the survey area and prompt treatment may prevent the spread of leafy spurge within the upper part of the drainage. Idaho sedge and two-grooved milkvetch were the primary target species for this survey area. No Special Status plant habitat was observed.

10. Middle Creek (Appendix 3, Map 8; Appendix 4, photos 20-21) – Located approximately 1.6 km (1 mi) east of Middle Creek Butte, immediately downstream from the USFS boundary within a riparian exclosure along Middle Creek. A mix of willow species and water birch covered most of the bottomland in this survey area. The open to dense shrub thickets had a mesic graminoid-dominated understory with water sedge, Baltic rush and other native species intermixed with Kentucky bluegrass. Wetland forbs such as Canada milkvetch (*Astragalus canadensis*), scarlet paintbrush (*Castilleja minister*), and white bog-orchid (*Platanthera dilatata*) were also common. Kentucky

bluegrass strongly dominated drier areas further from the creek having no shrubs. “Increaser” forbs co-occurred in these drier, more open areas. At least one bull was inside the exclosure fence, which needs some strengthening, especially along its southwestern perimeter. Idaho sedge was the primary target species for this survey area. No Special Status plant habitat was observed.

11. West Fork Indian Creek 1 (Appendix 3, Map 8; Appendix 4, photos 22-23) – Located along the West Fork of Indian Creek approximately 3.2 km (2 mi) downstream from the USFS boundary. The downstream half of the survey area was dominated by a willow/graminoid meadow complex. Booth’s willow (*Salix boothii*) was intermixed with lesser amounts of Bebb’s willow, coyote willow, whiplash willow (*Salix lasiandra*), and water birch. Kentucky bluegrass and common timothy dominated the graminoid layer except in small, wet patches along the creek having beaked sedge, water sedge, tufted hairgrass, Baltic rush, and/or several other native sedges and rushes. “Increaser” type forbs such as yarrow (*Achillea millefolium*), western iris (*Iris missouriensis*), common dandelion (*Taraxacum officinale*), and white clover (*Trifolium repens*) were all common. Canada thistle was spotty. Banks along this downstream section were largely intact. In contrast, banks in the upstream half of the survey area were in poor condition. Sloughing of the raw banks was common on the cutbank side of the creek. Riparian vegetation was largely absent, with sagebrush vegetation coming up to the edge of the bank, incised at least 1 m in most places. Smooth brome (*Bromus inermis*) was common in this area. A few scattered Drummond’s milkvetch plants were observed on the terrace above this section of the creek. A limited amount of potential two-grooved milkvetch habitat occurred in the downstream half of the survey area.

12. West Fork Indian Creek 2 (Appendix 3, Map 8) – Located immediately downstream from the USFS boundary fence along the West Fork of Indian Creek. The creek supported an open to closed canopy mix of willows and water birch in the upper end of the survey area. Kentucky bluegrass dominated the understory except in low, wet spots having sedges and other native graminoids. Further downstream this graded into a narrow band of coyote willow or a willow and water birch mix right along the channel. The shrub band was usually < 10 m wide, although it ranged from 3 m to occasionally >25 m in width. A basin big sagebrush/Great Basin wild rye c.t. occurred on the low bench adjoining the channel. Kentucky bluegrass and several “increaser” forb species were common within this community. A limited amount of potential two-grooved milkvetch habitat occurred in the survey area. Habitat potentially suitable for Idaho sedge or other target species was not observed.

13. Rock Creek (Appendix 3, Map 10; Appendix 4, photo 24) – Located approximately 8.9 km (5.5 mi) west of Spencer and <1.6 km (1 mi) east of Patelzich Creek. The narrow, rocky channel had a small amount of water for roughly 100 m in the upper end of the survey area, but was dry further downstream. Nebraska sedge, Kentucky bluegrass, rush, Louisiana sage, and slender cinquefoil were common along the narrow greenline. Scattered aspen (*Populus tremuloides*) trees were also associated with the channel. Mountain big sagebrush vegetation extended away from the channel. Some cattle use was evident in the area. Idaho sedge was the primary target species for the survey area. No Special Status plant habitat was observed.

14. Patelzich Creek (Appendix 3, Map 10; Appendix 4, photo 25) – Located along Patelzich Creek, east of Rock Creek and approximately 8 km (5 mi) west of Spencer. Moist meadow habitat in the upper end of the survey area soon gave way to a narrow

riparian strip immediately adjacent to the creek dominated by Nebraska sedge, with Kentucky bluegrass and smallwing sedge (*Carex microptera*) being common associates. Shrubs such as thimbleberry (*Rubus parviflorus*) and Wood's rose (*Rosa woodsii*) became common as the creek gradient steepened. Much of the creek was lined by Douglas-fir (*Pseudotsuga menziesii*) and/or aspen. Canopy cover increased as the gradient steepened downstream. The riparian zone was undisturbed except for a limited amount of cattle use in the upper end. Canada thistle was well established in the section below the road. Idaho sedge was the primary target species. No Special Status plant habitat was observed.

15. East Fork Patelzich Creek (Appendix 3, Map 10) – Located approximately 0.8 km (0.5 mi) east of Patelzich Creek. A mesic meadow with Nebraska sedge, Kentucky bluegrass, rush, and meadow barley occurred downstream from the road crossing. This narrowed to a patch of Booth's willow/mesic graminoid vegetation associated with a series of small springs. Mountain big sagebrush-steppe or Douglas-fir forest dominated the adjacent uplands. Cattle trampling was evident throughout the spring zone. An exclosure would benefit the wetland vegetation around the springs. The survey area contained small patches of marginal Idaho sedge habitat.

16. Beaver Creek (Appendix 3, Map 11; Appendix 4, photos 26-27) – Located along and above Beaver Creek on an isolated BLM tract approximately 1.6 km (1 mi) south of Humphrey. The creek cuts between basalt cliffs roughly 30 m (100 ft) high in this area. A dense willow thicket dominated the riparian bottomland, with railroad tracks running along one edge between the creek and cliff. A mountain big sagebrush community occupied the gently rolling uplands extending away from the cliff edge. Scattered Drummond's milkvetch occurred between the cliff edge and the road accessing this area. A few small patches of Idaho sedge habitat may have been present in willow openings towards near the upstream end of the survey area.

17. Beaver Creek exclosure (Appendix 3, Map 12; Appendix 4, photos 28-29) – Located in a BLM exclosure in upper Beaver Creek approximately 3.2 km (2 mi) south of Monida Pass. The exclosure contained a mix of graminoid-dominated meadow, willow, and shrubby cinquefoil (*Dasiphora floribunda*) wetland communities. A plant list compiled for the exclosure is included in Appendix 5. Potential Idaho sedge habitat occurred with shrubby cinquefoil. Parry's sedge, but not Idaho sedge was found.

18. Upper Beaver Creek (Appendix 3, Map 12; Appendix 4, photo 30) – Located within the Beaver Creek headwater complex approximately 2.4 km (1.5 mi) southeast of Monida Pass. The wetland contained a series of low gradient channels that may have surface water in the early summer, but the graminoid-dominated meadow vegetation depends on subirrigation later in the season. Nebraska sedge, Kentucky bluegrass, tufted hairgrass, and meadow barley were common graminoids in most places. Areas with a white-gray crusting at the surface and some low hummocking had species such as alkali cordgrass (*Spartina gracilis*), saltgrass (*Distichlis stricta*), and plantain goldenweed (*Pyrrocoma uniflora* var. *uniflora*), indicating more alkaline conditions. Three-tip sagebrush (*Artemisia tripartita*)/Idaho fescue vegetation dominated most of the adjoining uplands. Much of the survey area appeared to be potential Idaho sedge. The similar-looking Parry's sedge was encountered in several places.

Shrub-steppe habitats

19. South of Lidy Hot Springs (Appendix 3, Map 1; Appendix 4, photos 31-32) – Located along the ridge that extends north from Highway 22, just east of Warm Spring Creek. Most of the area contained a high quality black sagebrush (*Artemisia nova*)/bluebunch wheatgrass (*Pseudoregneria spicata*) community. A series of white, calcareous rock inclusions occurred in the northern portion of the survey area. The largest outcrop at topographic point 5625 supported a mountain mahogany woodland. A dense, small (10 x 10 m) patch of the introduced weed German madwort (*Aspergo procumbens*) was observed in the saddle area north of topographic point 5435. This area also had numerous old cattle feces and may have served as a salt block or other loafing area. Rock grottos along the rim of the ridge appeared to be habitat similar to the known occurrence of small-flowered ricegrass in the Birch Creek valley, except for the substrate being rhyolite instead of limestone. Blue grama was reported from this general area nearly 50 years ago (EO #4), but we could not relocate it.

20. Juniper Gulch (Appendix 3, Map 2) – Located in the southwestern part of the study area near Juniper Gulch, approximately 3.2 km (2 mi) north of Highway 22. Mountain big sagebrush vegetation occurred throughout the survey area. Good views of the north face of Rattlesnake Point and down Juniper Gulch revealed sagebrush-steppe habitat typical for the general area. The BLM-USFS boundary tends to occur near the mouths of the various small to large canyons coming off the east side of the southern Lemhi Range. The gently sloping, alluvial fan topography leading west from Warm Springs Creek to the canyons was dominated by sagebrush-steppe vegetation, limiting the diversity of habitats found on BLM land in the area. No Special Status plant habitat was observed.

21. Black Canyon (Appendix 3, Map 5; Appendix 4, photo 33) – Located on the uplands immediately east of lower Warm Creek and lower Black Canyon. Vegetation within most of the survey area was dominated by a mountain big sagebrush/Idaho fescue c.t. The steep, northwest-facing, calcareous slope above the confluence of Warm Creek and Black Canyon supported a woodland mix of limber pine (*Pinus flexilis*) and Douglas-fir, with mountain big sagebrush and bluebunch wheatgrass. Drummond's milkvetch was observed in several places as scattered individuals. No Special Status plant habitat was observed.

22. The Bull Pen North (Appendix 3, Map 6; Appendix 4, photos 34-36) – Located approximately 2.4 km (1.5 mi) northwest of Horse Mountain on south-facing slopes above The Bull Pen, a tributary to Irving Creek. Mountain big sagebrush vegetation dominated most of the survey area with rocky openings along the ridgeline and elsewhere supporting an open low sagebrush community. The parent material was calcareous, with rocky ridgecrests of Beaverhead Conglomerate geology occurring further upslope on USFS land. Habitat for Centennial rabbitbrush does not occur on BLM property in the general area. Calcareous ledges and cliffs near the base of a ravine in the survey area contained a small amount of possible plains milkvetch habitat.

23. The Bull Pen South (Appendix 3, Map 6; Appendix 4, photos 37-39) – Located approximately 1.6 km (1 mi) west of Horse Mountain, along and upslope from The Bull Pen. Mountain big sagebrush vegetation dominated uplands within the survey area. A strip of willows with water birch, several species of currant (*Ribes* spp.) and Kentucky bluegrass occurred along The Bull Pen channel. No Special Status plant habitat was observed.

24. Deer Canyon (Appendix 3, Map 6; Appendix 4, photos 40-41) – Located between Irving Creek and Deer Canyon, approximately 4 km (2.5 mi) south of Red Conglomerate Peaks. Vegetation in this survey area was dominated by a mountain big sagebrush/ Idaho fescue c.t., with narrow ribbons of willow-water birch in the draw bottoms, low sagebrush on shallow soil, rocky sites, and scattered patches of aspen or Douglas-fir. Extensive exposures of Beaverhead Conglomerate substrate occurred to the north, but did not extend downslope onto BLM land. No Special Status plant habitat was observed.

25. Horse Mountain (Appendix 3, Map 7; Appendix 4, photos 42-46) – Located west of Edie Creek, approximately 3.2 km (2 mi) south of the Continental Divide. The ridges and upper slopes within this survey area were dominated by either mountain big sagebrush or grassland vegetation. Frigid sagebrush (*Artemisia frigida*) inclusions occurred near the summit of Horse Mountain and intermittently along the crest of the high ridge complex. Green rabbitbrush (*Ericameria viscidiflora*) and shrubby goldenweed (*Ericameria suffructicosa*) were common near the top of Horse Mountain. Both are low-growing shrubs with yellow heads that can superficially look like Centennial rabbitbrush. Conglomerate substrate was exposed along the ridge complex extending northwest from Horse Mountain, but bedrock was not at the surface and none had the reddish color typifying Centennial rabbitbrush habitat. Wild ungulate and cattle feces were present at Horse Mountain and along many stretches of the adjoining high ridges. No Special Status plant habitat was observed.

26. Dry Creek Ridge (Appendix 3, Map 7; Appendix 4, photos 47-49) – Located along the ridge dividing Edie and Dry creeks, northwest of Middle Creek Butte. Vegetation along the ridgecrest was an open mix of native bunchgrass and forb species, or frigid sagebrush-dominated patches. Adjacent upper slopes were dominated by either mountain big sagebrush or grassland vegetation. Some conglomerate substrate was exposed along the ridge, but bedrock was not at the surface. Cattle feces were present along the entire ridge route, although they appeared old in places. No Special Status plant habitat was observed.

27. Indian Creek Road (Appendix 3, Map 9) – Located just west of the Indian Creek Road approximately 2.4 km (1.5 mi) southwest of Indian Creek Butte. Sagebrush-steppe vegetation dominated the rolling topography in this area, mostly mountain big sagebrush/Idaho fescue c.t. Common associates included bluestem wheatgrass, needle-and-thread (*Hesperostipa comata*), arrowleaf balsamroot (*Balsamorhiza sagittata*), bushy birdbeak (*Cordylanthus ramosus*), and Hood's phlox (*Phlox hoo*dii). Livestock use was evident in the area. No Special Status plant habitat was observed.

28. West of Monida (Appendix 3, Map 12; Appendix 4, photos 50-52) – Located along the Continental Divide approximately 3.2 km (2 mi) southwest of Monida Pass. Herbaceous vegetation dominated the gentle divide crest, with mountain big sagebrush interfingering from the adjacent upper slopes. Some common species along the crest included green rabbitbrush, frigid sagebrush, cutleaf daisy (*Erigeron compositus*), cushion goldenweed (*Stenotus acaulis*), spearleaf stonecrop (*Sedum lanceolatum*), Hood's phlox, silvery lupine (*Lupinus argenteus*), weedy milkvetch (*Astragalus miser*), standing milkvetch (*Astragalus adsurgens*), rabbit-foot crazyweed (*Oxytropis lagopus*), Sandberg's bluegrass (*Poa secunda*), bluebunch wheatgrass, and Idaho fescue. Fresh off-road-vehicle tracks were present along the crest, with some plants being crushed. A few old cattle feces were also present. No Special Status plant habitat was observed.

Rock/ash outcrop habitats

29. North of Lidy Hot Springs (Appendix 3, Map 1; Appendix 4, photo 53) – Located approximately 1.6 km (1 mi) north of Lidy Hot Springs. The survey targeted relatively sparsely vegetated, light-colored, ash/shale outcrops in the area. Vegetation on the outcrops was characterized by scattered Utah juniper (*Juniperus osteosperma*), open cover of low sagebrush, several bunchgrass species, and a diverse suite of forbs. A portion of the survey area approached the edge of a mining operation zone. No Special Status plant habitat was observed. Low sagebrush and mountain big sagebrush communities dominated the surrounding slopes and benches.

30. East of Lidy Hot Springs (Appendix 3, Map 1; Appendix 4, photo 54) – Located approximately 1.6 km (1 mi) east of Lidy Hot Springs. The survey area encompassed a large white to gray rock outcrop and its adjacent slopes. Most of the outcrop supported an open mountain mahogany woodland with rock rose (*Petrophytum caespitosum*) and low cover of many of the same bunchgrass and forb species found in Survey Area 29. The outcrop abruptly gave way to a black sagebrush/bluebunch wheatgrass community further upslope. An edaphic inclusion near the outcrop had a population of creeping nailwort (*Paronychia sessiliflora*; Appendix 3, photos 1-3). This survey area on BLM property was located immediately east of a private land boundary fence.

31. North of Three Springs (Appendix 3, Map 3; Appendix 4, photos 55-56) – Located east of Deep Creek, near Three Springs approximately 9.7 km (6 mi) north of Lidy Hot Springs. This area contained a large ash exposure on a moderately steep west-facing slope. The open, herbaceous community had several forb species not seen on other ash outcrops surveyed, including Nuttall's sandwort (*Minuartia nuttallii*), glandular phacelia (*Phacelia glandulosa*), and sheep cinquefoil (*Potentilla ovina*). The outcrop was undisturbed except for a few cattle prints and feces. A band of calcareous rimrock along the top of the slope was also searched. Low sagebrush occurred on the slopes near the ash exposure and dominated the vegetation on the extensive tableland extending east from the survey area.

32. Irving Creek outcrop (Appendix 3, Map 6; Appendix 4, photo 57) – Located immediately west of the confluence of The Bull Pen and Irving Creek. This area contained a large calcareous rock outcrop complex that appeared to be potential habitat for plains milkvetch. The geology looked similar to the plains milkvetch population at Reno Point, west of the study area. Rock rose commonly co-occurs with plains milkvetch and was fairly common on the outcrop.

33. East of Middle Creek (Appendix 3, Map 8; Appendix 4, photo 58) – Located approximately 1.6 km (1 mi) southeast of Middle Creek Butte, just east of Middle Creek. This survey area included a calcareous rock outcrop and rocky ridgecrest that appeared to be potential habitat for plains milkvetch. Elk use along the ridge and associated upper slopes was evident, including very hedged mountain mahogany plants.

DISCUSSION

Habitat for BLM Special Status plant species appeared to be very limited within the study area. Sagebrush-steppe communities dominating upland habitats throughout the study area are regionally common and generally lacked microsite conditions that may favor rare plant species. Most wetland habitats had communities altered by many years of livestock use. No fens and only a few moist alkaline meadows were encountered in the

study area. Large calcareous rock outcrops were uncommon, and rocky, high elevation ridges largely absent from the study area.

Basin big sagebrush communities dominated many of the valley creek bottoms, but only a few such as Warm Creek, upper South Fork Deep Creek, and the West Fork Indian Creek had sections that looked superficially similar to habitat occupied by two-grooved milkvetch along Warm Springs Creek (EO 1). Factors controlling the distribution of blue grama, green needlegrass, and sepal-tooth dodder in sagebrush-steppe habitats of eastern Idaho have not been investigated. This made it difficult to judge whether the large tracts of mountain big sagebrush and to a lesser extent, low sagebrush, which dominated much of the study area, provided potential habitat for these species. Black sagebrush and three-tip sagebrush communities occupied smaller areas and were less widespread.

A thermal spring area in lower Warm Creek, just upstream of its confluence with Divide Creek (Warm Creek survey area) appeared to have a small amount of giant helleborine habitat. Patches of shrubby cinquefoil occurring within the upper Beaver Creek exclosure had the best potential Idaho sedge habitat encountered in the study area. These patches looked similar to habitat supporting Idaho sedge on USFS land south of the study area. Small patches of additional potential Idaho sedge habitat were encountered in the other Beaver Creek survey areas as well. Small alkaline meadows in the upper Beaver Creek survey area did not have sufficient season-long moisture for alkali primrose or Roland's bulrush, but perhaps were potentially suitable for meadow milkvetch. Medicine Lodge Creek had sections of well-developed floodplain, but these areas were all private property and often cultivated for hay. It appeared extremely unlikely that Ute ladies' tresses could occur along Medicine Lodge Creek. Wetland community types that support Ute ladies' tresses elsewhere in Idaho (Moseley 1998) were not observed during the inventory.

A large calcareous rock outcrop in the Irving Creek drainage appeared superficially similar to exposures supporting plains milkvetch at lower elevations west of the study area. A smaller exposure of potential habitat was encountered a few miles away in The Bull Pen North survey area. Centennial rabbitbrush is restricted to open, windswept, high elevation exposures of reddish Beaverhead Conglomerate substrate with bedrock at or very close to the surface (Mancuso and Moseley 1990). Habitat matching this description simply does not exist on BLM land, even though it is locally common <1.6 km (1 mi) to the north on USFS land. Yellowstone draba is not restricted to conglomerate rock, but its typical rocky, high elevation ridge habitat also does not extend downslope far enough from the Continental Divide area to reach BLM land.

The North of Lidy Hot Springs, East of Lidy Hot Springs, and North of Three Springs survey areas included exposures of light-colored, ash-shale having high bare ground cover and sparse vegetation compared to adjacent sagebrush-steppe slopes. Edaphic outcrops with these characteristics are habitat for rare plant species elsewhere in Idaho. Some of the outcrops had scattered trees or tall shrubs, and typically open cover of low-growing shrubs, several bunchgrass species, and a diverse suite of low forbs. Common species included needle-and-thread, Indian ricegrass (*Achnatherum hymenoides*), bluebunch wheatgrass, hymenopappus (*Hymenopappus filifolius*), cushion goldenweed, wooly groundsel (*Senecio canus*), rayless tansyaster (*Machaeranthera grindelioides*), Tweedy's fleabane (*Erigeron tweedyi*), northern sweetvetch (*Hedysarum boreale*), Gordon's ivesia (*Ivesia gordonii*), fuzzytounge penstemon (*Penstemon eriantherus*),

white frasera (*Frasera montana*), blue flax (*Linum perenne*), Snake River cryptantha (*Cryptantha spiculifera*), perennial princesplume (*Stanleya viridiflora*), alpine bladderpod (*Lesquerella alpina*), bastard toadflax (Comandra umbellata), King's sandwort (*Arenaria kingii*), Hood's phlox, and imperfect buckwheat (*Eriogonum mancum*).

Drummond's milkvetch, a former BLM Special Status plant species was encountered in several survey areas. It appeared to be widespread and at least locally common in places within the study area. Our survey substantiated the BLM dropping Drummond's milkvetch from their Special Status list a few years ago.

The collection of creeping nailwort in two of the ash outcrop survey areas has special interest because this species had not been previously documented to occur in Idaho. Creeping nailwort was locally common, but it occupied small areas in only two of the survey areas. The distribution of creeping nailwort is largely east of the Continental Divide, extending from Alberta to North Dakota, and south to New Mexico and Texas (Flora North America 2005). It is reported to occur on dry, stony hillsides, summits, and sandstone mesas elsewhere in its range. Creeping nailwort is common in portions of its range and has a NatureServe conservation rank of G5 (NatureServe 2006). The apparent rarity of this species in Idaho, and its unusual ash exposure habitat suggests creeping nailwort may be worthy of conservation concern in the state.

Our survey indicates the Medicine Lodge Creek drainage is not a "hotspot" for BLM Special Status plant species. Warm Springs Creek is the only BLM area in the drainage known to support a cluster of Special Status plant occurrences. Updated information we collected for these occurrences at Warm Springs Creek will help the BLM be pro-active in their conservation efforts on behalf of these species in the area. Information collected during our field inventory should also be useful for the implementation of management tools such as weed control, pesticide spraying, and livestock improvement projects in the context of Special Status plant species conservation.

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Appendix 1

Conservation rank definitions.

NatureServe conservation ranks

Global Rank (GRANK) and State Rank (SRANK)

The network of Natural Heritage Programs and Conservation Data Centers 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.

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.

Bureau of Land Management conservation ranks

Special status species protocols, established by the Idaho BLM in 2003, consist of 5 categories. Definitions for plants are:

Type 1. Threatened, Endangered, Proposed, and Candidate species. These species are listed by the U. S. Fish and Wildlife Service (USFWS) as Threatened or Endangered, or they are Proposed or Candidates for listing under the Endangered Species Act.

Type 2. Rangewide/Globally Imperiled Species - High Endangerment. These are species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors. Species ranked by the network of Conservation Data Centers and Natural Heritage Programs with Global ranks of G1-G3 or T1-T3 with a threat priority of 1-9 using the USFWS Listing Priority Criteria.

Type 3. Rangewide/Globally Imperiled Species - Moderate Endangerment. These are species that are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species. Idaho BLM sensitive species that are ranked by the network of Conservation Data Centers and Natural Heritage Programs with Global Ranks of G1-G3 or T1-T3 with (a) a threat priority of 10-12 using the USFWS Listing Priority Criteria or (b) an Idaho Native Plant Society ranking of Priority 1-2 or Sensitive--i.e., Sensitive with the majority of the population on BLM-administered lands.

Type 4. Species of Concern. These are species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species. This includes sensitive species that are not Type 3.

Type 5. Watch List. Watch list species are not considered BLM sensitive species, and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats and species biology or statewide trends. This includes (a) Idaho Native Plant Society Monitor and Review species a (b) Idaho Native Plant Society Sensitive species (Types 2, 3, or 4) that are only suspected to occur in a BLM resource area.

Appendix 2

Updated Element Occurrence Records for BLM special status plant species within the Medicine Lodge Creek study area.

Appendix 3

Map locations of survey areas in the Medicine Lodge Creek study area.

Appendix 4

Photographs of survey areas in the Medicine Lodge Creek study area.

Appendix 5

Plant lists for the Irving Creek and Beaver Creek exclosure survey areas.

A partial list of plant species for the Irving Creek survey area.

Shrubs and trees
Betula occidentalis
Populus tremuloides
Pseudotsuga menziesii
Rosa woodsii
Salix bebbiana
Salix boothii
Salix geyeriana

Graminoids
Carex lasiocarpa
Carex microptera
Carex nebrascensis
Carex utriculata
Catabrosa aquatica
Deschampsia cespitosa
Glyceria spp.
Juncus balticus
Koelaria macrantha
Phleum pratense
Poa pratensis

Forbs
Allium brevistylum
Anenome multifida
Antennaria microphylla
Agoseris glauca
Aster spp.
Cerastium spp.
Cirsium scariosum
Cirsium spp.
Equisetum arvense
Equisetum hyemale
Geum macrophyllum
Geranium viscosissimum
Frasera virginiana
Iris missouriensis
Mimulus guttatus
Oxytropis deflexa
Platanthera dilatata
Ranunculus pensylvanicus
Senecio pauperculus
Sisyrinchium idahoense
Smilacina stellata
Trifolium repens

A partial list of plant species for the Beaver Creek exclosure survey area.

Shrubs
Artemisia cana
Dasiphora floribunda
Lonicera involucrata
Salix boothii
Salix geyeriana
Salix wolfii

Graminoids
Alopecurus alpinus
Calamagrostis canadensis
Calamagrostis stricta
Carex athrostachya
Carex lanuginosa
Carex microptera
Carex parryana
Carex utriculata
Catabrosa aquatica
Deschampsia cespitosa
Festuca idahoensis
Hordeum brachyantherum
Juncus balticus
Juncus ensifolius
Lolium arundinaceum
Poa pratensis

Forbs
Achillea millefolium
Allium brevistylum
Anenome multifida
Aster spp.
Barbarea orthoceras
Camassia quamash
Castilleja minor
Cerastium spp.
Cirsium arvense
Cirsium scariosum
Epilobium ciliatum ssp. *glandulosum*
Equisetum hyemale
Galium boreale
Frasera virginiana
Geum macrophyllum
Geranium viscosissimum
Iris missouriensis
Mimulus guttatus
Pedicularis greonlandica
Perideridia montana
Platanthera dilatata
Pyrola spp.
Polemonium occidentale
Potentilla gracilis
Ranunculus aquatilis
Ranunculus spp.
Rumex spp.
Senecio pauperculus
Senecio sphaerocephalus
Sisyrinchium idahoense
Smilacina stellata
Symphyotrichum spathulatum
Taraxacum officinale
Thlaspi arvense
Trifolium longipes
Trifolium repens
Triglochin maritimum
Valeriana edulis
Veronica americana
Wyethia helianthoides
Zigadenus elegans