

**UPDATED CONSERVATION INFORMATION FOR
BLM SPECIAL STATUS PLANT OCCURRENCES
IN THE SALMON FIELD OFFICE AREA**



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**Challenge Cost-Share Project
Idaho Falls District BLM
and
Idaho Department of Fish and Game**



ABSTRACT

Updated location, population, habitat, threat, and other conservation information was collected for Lemhi milkvetch (*Astragalus aquilonius*), two-grooved milkvetch (*Astragalus bisulcatus* var. *bisulcatus*), plains milkvetch (*Astragalus gilviflorus*), blue gramma (*Bouteloua gracilis*), and Salmon twin bladderpod (*Physaria didymocarpa* var. *lyrata*) occurrences located on land administered by the Bureau of Land Management's (BLM) Salmon Field Office (FO) in east-central Idaho. The objective of the project was to provide the Salmon FO with a current and accurate accounting of these five special status plant species for conservation planning and management purposes. Updated information was collected at a total of 21 occurrences. Two sites reported to possibly have Salmon twin bladderpod were also investigated. Field mapping and the acquisition of GPS coordinates corrected, refined, or verified the location of each occurrence visited. New subpopulations were discovered at one Lemhi milkvetch and one plains milkvetch occurrence. One two-grooved milkvetch occurrence was found to be erroneous. One opportunistically visited Lemhi penstemon (*Penstemon lemhiensis*) occurrence was found to be extirpated. Five of the six globally known Salmon twin bladderpod occurrences are located within the Salmon FO area. Consequently, the long-term conservation of this species is tightly linked to efforts taken on its behalf by the BLM. Overall, introduced weed species invasion appears to be the most serious threat to the habitat and long-term persistence of special status plant occurrences visited as part of this project.

ACKNOWLEDGMENTS

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INTRODUCTION

Sixteen Bureau of Land Management (BLM) special status plant species are known to occur on lands administered by the BLM, Salmon Field Office (FO; Table 1) in east-central Idaho (Figure 1). Nine of these species occur primarily or exclusively in wetland habitats; the other seven are found in upland habitats. In the Salmon FO area, a majority of the wetland species occurrences are located at Birch Creek fen, or in similar alkaline spring-fed wetland complexes in the upper Lemhi River Valley (Idaho Conservation Data Center 2005). In contrast, occurrences for special status plant species associated with upland habitats are more scattered, occurring on Salmon FO land in the Salmon and Lemhi river valleys, and tributary canyons in the foothills of the Lemhi and Beaverhead mountain ranges. Fifty-seven occurrences for the 16 special status plant species were documented in the IDCDC database for the Salmon FO area when field work for this project commenced in June 2004. Most of these occurrences are located fully on BLM property, but some extend onto adjoining State, private, or U.S. Forest Service (USFS) land.

Table 1. BLM special status plant species occurring in the Salmon Field Office area.

Scientific name	Common name	¹ Habitat	² # EOs	³ Nature Serve rank	³ BLM status	⁴ 2004-5 update targets
<i>Agoseris lackschewitzii</i>	Pink agoseris	W	3	G4 S2	Type 4	
<i>Astragalus aquilonius</i>	Lemhi milkvetch	U	5	G3 S3	Type 2	X
<i>Astragalus bisulcatus</i> var <i>bisulcatus</i>	Two-grooved milkvetch	U	2	G5T5 S2	Type 4	X
<i>Astragalus diversifolius</i>	Meadow milkvetch	W	4	G2 S2	Type 3	
<i>Astragalus gilviflorus</i>	Plains milkvetch	U	3	G5 S2	Type 3	X
<i>Astragalus leptaleus</i>	Park milkvetch	W	3	G4 S3	-	
<i>Bouteloua gracilis</i>	Blue gramma	U	4	G5 S2	Type 3	X
<i>Carex livida</i>	Pale sedge	W	1	G5 S2	Type 4	
<i>Kobresia simpliciuscula</i>	Simple kobresia	W	3	G5 S2	-	
<i>Lomatogonium rotatum</i>	Marsh felwort	W	2	G5 S1	Type 3	
<i>Penstemon lemhiensis</i>	Lemhi penstemon	U	9	G3 S3	Type 3	
<i>Physaria didymocarpa</i> var <i>lyrata</i>	Salmon twin bladderpod	U	5	G5T1 S1	Type 2	X
<i>Primula alcalina</i>	Alkali primrose	W	3	G2 S2	Type 3	
<i>Salix candida</i>	Hoary willow	W	3	G5 S2	Type 4	
<i>Salix pseudomonticola</i>	False mountain willow	W	2	G45 S1	Type 3	
<i>Xanthoparmelia idahoensis</i>	Idaho range lichen	U	5	G1 S1	Type 2	

¹**Habitat:** U = upland; W = wetland

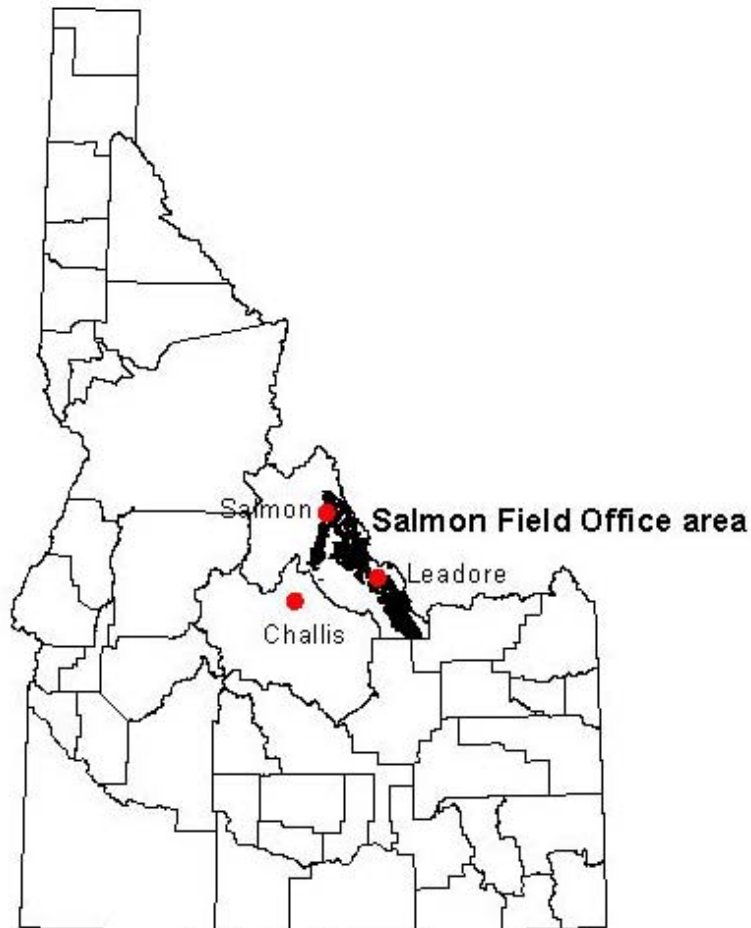
²**# EOs:** number of Element Occurrences in the IDCDC database located on Salmon FO land at start of the project in June, 2004

³**Nature Serve rank and BLM status:** Conservation ranks are defined in Appendix 1

⁴**2004-5 updates:** species targeted for the occurrence information updates project

Many of the occurrence records documenting special status plant populations in the Salmon FO area are a decade or more old. Many contain minimal population, habitat, or threat information. In addition, location information is vague and map locations are imprecise for some occurrences. To address these information gaps, the BLM's Salmon FO contracted the Idaho Department of Fish and Game's Idaho Conservation Data Center (IDCDC) to revisit selected special status plant species occurrences and update location, population, habitat, threat, and other conservation information. The objective of the project was to provide the Salmon FO with

Figure 1. Map location of the Salmon Field Office area in east-central Idaho.



a current and accurate accounting of selected special status plant species for conservation planning and management purposes. Updated occurrence information will allow the Salmon FO to better evaluate proposed project impacts and other management activities and plans; identify any problem areas, conservation concerns, or management needs; and provide guidance in protecting special status plants and their habitats.

METHODS

I coordinated with Salmon FO botanist Alexia Cochrane to produce a priority list of special status plant species to revisit for the purpose of updating old occurrence record information. A decision was made to concentrate on five upland habitat species. Salmon twin bladderpod (*Physaria didymocarpa* var. *lyrata*) and Lemhi milkvetch (*Astragalus aquilonius*) were selected as the primary target species for 2004, and two-grooved milkvetch (*Astragalus bisulcatus* var. *bisulcatus*), plains milkvetch (*Astragalus gilviflorus*), and blue gramma (*Bouteloua gracilis*) for 2005. These species were selected because of the out-dated and general paucity of information for occurrences on the Salmon FO, or because of specific management concern.

Information contained in the IDCDC Element Occurrence Record (EO Record) database and associated maps, and in some cases additional direction information provided by the BLM were used to help relocate the target occurrences in the field. Once relocated, I walked through all or most of the occurrence area to collect population, habitat, disturbance, threat, and other conservation information. This information was used to complete a "Rare Plant Species Element Occurrence Update" form. This form contains a series of fields for population abundance and size, thoroughness of the survey, habitat attributes and condition, landscape condition, conservation needs, and related information. One or more GPS coordinates were obtained to help document the location of each occurrence using a navigation grade unit (Garmin 12 XL). Several target occurrences consisted of multiple, segregate groupings of plants in relatively close proximity to each other, but separated by gaps of unoccupied, and often unsuitable habitat. GPS coordinates were obtained for each of these segregate groupings, or subpopulations. Locations were also mapped onto USGS 7.5' topographic quadrangles in the field. Directions to an occurrence were corrected or clarified when necessary. Digital photographs were taken at most occurrences to document the general habitat, disturbances or threats, and surrounding landscape condition. In a few cases, voucher specimens were collected.

Following the field season, updated occurrence information was entered into the IDCDC EO Records database. GPS and field map information was used to produce GIS-generated maps showing the location of each occurrence and its component subpopulations. Information collected during the project was also used to give each occurrence a preliminary Element Occurrence Rank, reflecting an assessment of estimated viability - the likelihood an occurrence will persist for a defined period of time if current population, habitat, and landscape conditions prevail (NatureServe 2002). This rank is included in the EO Record for each occurrence.

TARGET SPECIAL STATUS PLANT SPECIES

Lemhi milkvetch (*Astragalus aquilonius*) – is a taprooted, herbaceous perennial with numerous, decumbent or trailing stems up to about 35 cm long (Appendix 5, photo 1). Plants are distinguished by their purplish-tinged stems; greenish-gray colored foliage due to short, fine hairs; small, greenish-white flowers; and large, inflated, membranous, green (not mottled), glabrous to minutely hairy fruit pods. Plants are in flower from mid- or late May into July. Lemhi milkvetch occurs on dry, gentle to steep, often unstable talus, washes, alluvial fan debris, and open slopes. It occurs on various aspects, but most often southerly, having gravelly-sandy, to ashly or clayey soils. Shrub-steppe vegetation dominates the surrounding vegetation.

Lemhi milkvetch is endemic to east-central Idaho, where 43 occurrences have been documented in Custer, Butte, and Lemhi counties (Idaho Conservation Data Center 2005). A large majority (>80%) occur on BLM land, especially the Challis FO area. A few others occur on USFS, Idaho National Engineering Laboratory, State, or private land. Approximately 75% of occurrences were discovered prior to 1990, and do not have more recent information. Occurrences range in size from <10 to >1000 Lemhi milkvetch plants, with the majority reported to have <500 individuals. Occurrences in the Salmon FO area are centered around the Lemhi River valley near Lemhi. Lemhi milkvetch is a BLM Type 2 special status species.

Two-grooved milkvetch (*Astragalus bisulcatus* var. *bisulcatus*) – is a stout, erect, leafy, thinly pubescent perennial 15-70 cm tall having a dense inflorescence of relatively large purplish-blue to whitish flowers, basally pouched calyx, and pendulous, narrowly oblong, thick-textured, two-grooved fruit pods (Appendix 5, photo 2). Bagged plants and those drying in a plant press often give off a strong, disagreeable smell of selenium. Plants flower May to August. Rangewide, two-

grooved milkvetch occurs in open grasslands, badlands, irrigated pastures, roadsides, and valley bottoms (Isely 1998). In Idaho, populations occur in relatively moist sagebrush-steppe creek bottom habitats, sometimes in degraded condition. Two-grooved milkvetch is widely distributed in the western United States and adjacent southern Canada, predominately east of the Continental Divide. Populations in east-central Idaho represent the western periphery of its range. In Idaho, two-grooved milkvetch is known from four widely scattered occurrences located in the foothills of the southern Beaverhead and Centennial mountain ranges in Clark County, near Henrys Lake in Fremont County, and in the Salmon FO area, from a tributary to the Lemhi River in Lemhi County (Idaho Conservation Data Center 2005). Two of the Idaho occurrences are at least partly on BLM property, the others on USFS and also possibly private land. Two-grooved milkvetch is a BLM Type 4 special status species.

Plains milkvetch (*Astragalus gilviflorus*) – is a stemless tufted perennial forming small mats up to about 15 cm in diameter (Appendix 5, photo 3). Its palmately tri-foliolate leaves have a steely gray-blue color, and the relatively large yellowish to whitish flowers are tucked within the leaf axils. The small fruit pods are erect and commonly concealed among the persistent sepals and stipules. Plants flower in early May to early June. Throughout most of its range plains milkvetch is most common on dry, rocky eroded slopes, bluffs, buttes, and talus (Isely 1998). In Idaho, it occurs on open, sparsely vegetated, rocky limestone slopes and outcrops with bedrock at or near the surface. It is widely distributed on the high plains from southern Alberta and Manitoba, south to Oklahoma, and west to the Rocky Mountain foothills and northeastern Utah. Plains milkvetch is known from six occurrences in east-central Idaho, the western edge of the species' range. Five of these occurrences are on BLM land, including three within the Salmon FO area on the west slope of the Beaverhead Range in Lemhi County. Other Idaho occurrences are located in the Birch Creek valley in Clark County, and near Henrys Lake in Fremont County (Idaho Conservation Data Center 2005). Plains milkvetch is a BLM Type 3 special status species.

Blue gramma (*Bouteloua gracilis*) – is a perennial grass, usually <40 cm (15 in) tall, with short rhizomes forming thick, tufted mats (Appendix 5, photo 4). Leaves are mainly basal and persistent. The inflorescence is comprised of 1-3 arcing branches, each having numerous spikelets in a pectinate arrangement. Plants flower in July-August. Blue gramma occurs in the plains and foothills up to moderate elevations in the mountains on gravelly-rocky, sandy, or clay soils, in grassland, shrub-steppe, and woodland habitats. It is an important component of short and mixed prairie associations from Canada to central Mexico (Wipff 2003), mostly east of the Continental Divide. Blue gramma is known from ten occurrences in Clark and Lemhi counties, Idaho, on the western periphery of the species' distribution. The majority of Idaho occurrences are based on relatively vague location data and were last observed before 1990. All are reported to be small and localized (Idaho Conservation Data Center 2005). In the Salmon FO area, blue gramma has been documented from north of Salmon, south to the Lemhi River Valley near Tendoy. Blue gramma is a BLM Type 3 special status species.

Salmon twin bladderpod (*Physaria didymocarpa* var. *lyrata*) - is a thickly taprooted perennial surmounted by a tight rosette of green-silvery, spatula-shaped leaves that taper to a winged petiole (Appendix 5, photo 5). The yellow flowers occur on a thin, generally curving stem, and produce large, inflated, didymous fruits >15 mm long and at least as broad (Hitchcock 1964, Moseley et al. 1990). Plants usually bloom in the spring, but can flower later into the summer with favorable moisture conditions (Craig and Craig 1996). It generally occurs on dry, steep, sparsely-vegetated southerly-facing rocky slopes of loose to fairly stable volcanic scree below approximately 2,130 m (7,000 ft) elevation (Craig 1992, Moseley et al. 1990). The surrounding landscape tends to be dominated by sagebrush-steppe vegetation. Salmon twin bladderpod is

endemic to Lemhi County, Idaho, where it is known from six occurrences (Idaho Conservation Data Center 2005). Five occurrences are within the Salmon FO area and one is located on USFS land. Occurrences are found in the Lemhi Valley area and the type locality west of the town of Salmon. Occurrences range in size from approximately <0.4 - 24 ha (1 - 60 ac), but in all cases Salmon twin bladderpod occupies only a small fraction of the area within an occurrence boundary. The total, rangewide Salmon twin bladderpod population was estimated to be roughly 5,000 plants over a decade ago (US Fish and Wildlife Service 1990). More recent estimates are substantially lower with <1,500 plants (Mancuso 2001). Salmon twin bladderpod is a BLM Type 2 special status species.

Over the years there has been some consternation regarding the identification of Salmon twin bladderpod, especially distinguishing it from the type variety, *Physaria didymocarpa* var. *didymocarpa* (common twin bladderpod). Salmon twin bladderpod often has lyrate basal leaves, but as noted by others (Moseley et al. 1990, Rollins 1993), this is not a consistent enough feature to reliably distinguish the *P. didymocarpa* taxa. Hitchcock (1964) used mature fruit (silique) size to distinguish the two varieties, with var. *didymocarpa* having valves 8-12 (15) mm long, compared to var. *lyrata* having valves (12) 15-20 mm long. Rosentreter (1982) also considered mature fruit size to be the most reliable diagnostic character. Rollins (1993) added features of the trichomes (branched hairs) and texture of the fruit to his key separating the two varieties. In an effort to verify which morphological characters are the most consistent for identifying Salmon twin bladderpod, I looked at the 10 collections for this species deposited at the University of Idaho herbarium. It is my opinion that fruit size is more reliable than features of the trichomes covering the fruits based on this review.

RESULTS

Field work was conducted in June 2004 and June 2005. Updated information was collected at a total of 21 special status plant occurrences (Table 2). Three of these were blue gramma occurrences that could not be relocated. I also investigated two sites reported to possibly have Salmon twin bladderpod. The 21 updated occurrences represent over one-third (37%) of the 57 special status plant species occurrences documented for the Salmon FO when the project began. They also represent nearly two-thirds (64%) of the known occurrences located in upland habitats within the Salmon FO area.

Field visits resulted in corrections or refinement of the location, extent, or persistence of 13 of the occurrences visited. One Lemhi milkvetch occurrence previously known from private land was found to extend onto nearby BLM property, while another occurrence with uncertain land ownership was found to consist of three subpopulations, one each on BLM, State, and private land. One blue gramma and two Lemhi milkvetch occurrences on BLM land were found to be incorrectly mapped due to vague original location information. One two-grooved milkvetch occurrence was found to be erroneous. A new subpopulation was discovered on BLM land at a plains milkvetch occurrence, while another occurrence for this species was found to extend further upslope than previously documented. Boundaries for four Salmon twin bladderpod occurrences were adjusted slightly to reflect new GPS information collected during the project. Although not one of the special status plant species targeted for this project, one Lemhi penstemon occurrence site that had easy road access was visited in both 2004 and 2005. No Lemhi penstemon was found either year, and I consider this roadside occurrence to be extirpated.

Table 2. Element Occurrences included in the special status plant species update project for the BLM, Salmon Field Office, 2004-2005.

EO #	Site name	7.5' topo quad	¹ Year last observed	Results summary
Lemhi milkvetch				
12	Peterson Creek	Lemhi	1990	1 new subpop.
16	Yearian Creek	Lemhi	1986	2 new subpop.
17	Reese Creek	Lemhi	1984	corrected map location
38	Jakes Canyon	Leadore	1990	relocated
39	Muddy Creek	Tendoy	1990	corrected map location
42	N of Agency Creek	Agency Creek	1994	relocated
Two-grooved milkvetch				
3	WF Little Eightmile Ck	Goat Mountain	1990	relocated
4	Buckhorn Mine	Goat Mountain	1990	erroneous
Plains milkvetch				
3	Hawley Creek	Reservoir Creek	1989	improved mapping
4	Railroad Canyon	Leadore	1992	1 new subpop.
6	Buckhorn Mtn	Goat Mountain	1990	relocated
Blue gramma				
7	Cherry Spring	Tendoy	1995	corrected map location
8	S of Lower Freeman Ck	Badger Spring Gulch	1983	not relocated
9	S of Badger Spring Gulch	Badger Spring Gulch	1995	not relocated
10	McDevitt Creek Canyon	Tendoy	2002	not relocated
Lemhi penstemon				
89	McDevitt Creek	Tendoy	1993	extirpated
Salmon twin bladderpod				
1	Pattee Creek	Agency Creek	2000	improved mapping
2	Williams Creek	Williams Lake	2000	relocated
3	Agency Creek	Agency Creek	2000	improved mapping
4	Basin Creek	Hayden Creek	2000	improved mapping
6	Dry Creek	Hayden Creek	1994	improved mapping

¹**Year last observed:** year the occurrence was last observed prior to 2004-2005, according to EO Records in the IDCDC database.

Updated EO Records incorporating the 2004-5 field data are in Appendix 2. Copies of the 'Rare Plant Species Element Occurrence Update' forms documenting the information collected during my field visits are in Appendix 3. Appendix 4 has maps showing the location of each occurrence included in the project. Photographs taken as part of the project are in Appendix 5. Photo monitor stations were established at two Salmon twin bladderpod occurrences in 2000 (Mancuso 2001). Photo monitoring photographs retaken in 2004 for both occurrences are in Appendix 6. A summary of location, abundance, habitat, and disturbance, information collected for each occurrence follows.

Lemhi milkvetch

Updated location and conservation information was collected for the six Lemhi milkvetch occurrences known from the Salmon FO area. One other occurrence (EO 14, Lemhi South) may be on the Salmon FO, but more likely is on private land south of Yearian Creek. It is based on a

1944 collection from “four miles south of Lemhi”. No attempt was made to try and find this vague location.

Peterson Creek (EO 12; Appendix 4, Map 1) – This occurrence was originally documented to be only on private land. I found a new subpopulation approximately 0.5 mile to the north on nearby BLM property. Approximately 100 individuals were observed over 0.4 ha (1 ac) along the upper to lower slopes of an open, low hill having distinctly less vegetation than the surrounding flats and slopes (Appendix 5, photo 6). Lemhi milkvetch plants were small and a high percentage may have been seedlings. A limited amount of ground disturbance from cattle prints and small animal digging was seen within the new subpopulation. No off-road vehicle (ORV) disturbance or noxious weed species were observed.

Yearian Creek (EO 16; Appendix 4, Map 2) – Original 1986 location information for this occurrence was vague and only a single Lemhi milkvetch plant reported. I discovered two new subpopulations in the Yearian Creek area, one with 100-200 plants on State land (Appendix 5, photo 7), and a smaller site with <10 plants on nearby BLM property. The BLM site was an inclusion of rocky volcanic substrate on a steep slope above the creek bottom (Appendix 5, photos 8, 9). A minor amount of accelerated erosion from cattle trailing was the only disturbance on BLM property. The subpopulation on State land is more vulnerable to livestock disturbance and cheatgrass (*Bromus tectorum*) invasion. No ORV or noxious weed species were observed within the occurrence. The location originally reported in 1986 was found to be on private land and not visited. Updated information was not collected for this subpopulation. The amount of additional Lemhi milkvetch potential habitat on BLM land in the general area appeared limited.

Reese Creek (EO 17; Appendix 4, Map 1) – Original 1984 location information for this occurrence was vague and reported Lemhi milkvetch to be uncommon. I was able to relocate the occurrence and correct its map location. The occurrence contained approximately 200 Lemhi milkvetch plants, most of which were small, including roughly 30% that may have been seedlings. It occupies about 2 ha (5 ac) of a southerly-facing dissected slope with rocky/gravelly-clayey soil and open shrub-steppe vegetation (Appendix 5, photo 10). An irrigation ditch runs along the base of the slope and its construction probably destroyed a strip of suitable Lemhi milkvetch habitat. Cattle traversing the slope to graze on bunchgrasses cause some soil displacement disturbance. Cheatgrass is spotty, but no noxious weed species were observed within the occurrence. ORV disturbance was not observed, although a two-track dirt road along Reese Creek passes nearby.

Jakes Canyon (EO 38; Appendix 4, Map 3) – This occurrence was readily relocated and covers an estimated 3.2 ha (8 ac) along rocky lower and middle slope positions supporting open shrub-steppe vegetation (Appendix 5, photo 11). Most of the occurrence is located on State land, with its up-canyon end extending onto BLM property. In 1990, 200 sparsely distributed, large, flowering Lemhi milkvetch plants were reported. I tallied approximately the same number of plants in 2004, but almost all were small in size and no more than 5% had flowers. A similar number of tiny individuals, likely seedlings, were also observed. A limited number of cattle prints along lower slopes positions were the main disturbance within the occurrence. A foot trail to access the painted letter “L” landmark (for “Leadore”) on the hillside cuts through the western end of the occurrence (Appendix 5, photo 12) on State land. Noxious weed species were not observed, nor was ORV-related disturbance, although a series of two-track roads converge near the mouth of Jakes Canyon.

Muddy Creek (EO 39; Appendix 4, Map 4) – I corrected the map location for this occurrence and found it to be more extensive than originally reported. The occurrence consists of a series of

small plant clusters scattered over approximately 5 ha (12 ac) of dissected clayey and rocky-clay slopes (Appendix 5, photo 13). Sections of unoccupied habitat occur between the plant clusters. An estimated 200 Lemhi milkvetch plants were tallied. Most were small in size and non-reproductive and some may have been seedlings. Seventy-five plants were reported when the occurrence was discovered in 1990. Rill erosion exacerbated by cattle traveling up and down the clayey slopes was observed in portions of the occurrence. Several holes dug within the occurrence were from the removal of petrified tree wood (Appendix 5, photo 14). Cheatgrass formed locally dense patches in a few places within the occurrence, but no noxious weed species were seen. No ORV disturbance was observed, although a dirt road along Muddy Creek passes nearby.

North of Agency Creek (EO 42; Appendix 4, Map 5) – This small occurrence covering approximately 0.08 ha (0.2 ac) was visited in both 2004 and 2005. The first year, <20, mostly vegetative Lemhi milkvetch plants were tallied. Over 40 flowering individuals were observed the second year. This compares to six plants reported in a cursory visit when the occurrence was discovered in 1994. The occurrence is located on a lower slope having clayey soil and open shrub-steppe vegetation near a dry wash bottom (Appendix 5, photo 15). Cattle hoof prints were noted in 2004, but were much more numerous in 2005. Depth of the prints indicated they were made during the wet season both years. Some “filling in” of prints likely made in 2004 was evident in 2005. Several invasive weed species were observed in the occurrence both years, including cheatgrass, Japanese brome (*Bromus japonicus*), clasping pepperweed (*Lepidium perfoliatum*), and prickly lettuce (*Lactuca serriola*). In addition, roughly 10 spotted knapweed (*Centaurea maculosa*) plants were observed on the hillside immediately adjacent to the occurrence. The road to Pattee Creek is located within 100 m, but no ORV disturbance was observed at the occurrence.

Two-grooved milkvetch

Two-grooved milkvetch was reported from two occurrences on the Salmon FO area prior to this project. I relocated and updated information for one occurrence, but the other was found to be erroneous.

West Fork Little Eightmile Creek (EO 3; Appendix 4, Map 6) – This occurrence was first documented in 1990 and reported to have 100-1000 two-grooved milkvetch plants. In 2005, an estimated 200 widely scattered individuals were observed along the same 0.8 km (0.5 mi) stretch of bottomland. Two-grooved milkvetch occurs on a low terrace within a basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) community adjacent to a narrow strip of water birch (*Betula occidentalis*) (Appendix 5, photo 16). Recent cattle use appeared limited within the occurrence. The occurrence is located adjacent to a dirt road and maintenance activities would have the potential to directly impact some two-grooved milkvetch individuals. No ORV disturbance was seen. A few spotted knapweed plants were observed upstream of the occurrence, near an old cabin on BLM property, close to the USFS boundary.

Buckhorn Mine (EO 4; Appendix 4, Map 6) - A thorough search of the slopes in all directions in the general Buckhorn Mine area failed to find any two-grooved milkvetch in 2005. Basin big sagebrush and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) community types occur in the general area, but nothing that appeared to match the mesic sagebrush-steppe or other mesic community types considered potential habitat for two-grooved milkvetch in Idaho. In 1990, two-grooved milkvetch was reported to be “fairly common” in gravelly soils in mesic sagebrush habitat. Several other upright *Astragalus* (milkvetch) species were observed in the Buckhorn Mine vicinity, including Bitterroot milkvetch (*Astragalus scaphoides*), prairie milkvetch

(*A. adsurgens*), and an unidentified species (perhaps *A. eremiticus* [hermit milkvetch] or a similar-looking species). Based on my field survey and the lack of suitable-looking habitat anywhere near Buckhorn Mine, I concluded two-grooved milkvetch does not occur in the area. Several possible explanations can account for this: 1) the occurrence has been extirpated, 2) the occurrence was originally mis-mapped, 3) one of the other milkvetch species in the Buckhorn Mine area was mistaken for two-grooved milkvetch when the occurrence was first reported in 1990. I believe the latter explanation is the most likely and the record for this occurrence will be deleted from the IDCDC database.

Plains milkvetch

Updated location and conservation information was collected for the three plains milkvetch occurrences known from the Salmon FO area.

Hawley Creek (EO 3; Appendix 4, Map 7) – Only one plains milkvetch plant was noted when this occurrence was originally reported in 1989. I found 12 plants along approximately 0.3 km (0.2 mi) of open, steep, rocky limestone ridge spine habitat in 2005 (Appendix 5, photo 17). The rocky outcrop was undisturbed; however, spotted knapweed occurs along the Hawley Creek Road, including immediately below the downslope end of the occurrence. Herbicide spraying along the road and associated lower slopes came within approximately 20 m of the nearest plains milkvetch individual.

Railroad Canyon (EO 4; Appendix 4, Map 8) – This occurrence is comprised of three subpopulations. The largest with >200 plains milkvetch plants was discovered in 1989 in lower Railroad Canyon on USFS land. Another was discovered in 1992 and extends from USFS land onto BLM property along the ridge separating Italian Gulch and Railroad Canyon. It was reported to have 10 – 50 plants. I did not directly revisit either of these two subpopulations; however, the habitat looked intact and undisturbed when viewed from nearby vantage points. In 2005, I surveyed BLM land west of the mouth of Railroad Canyon and discovered one new subpopulation with approximately 90 plains milkvetch plants over a 0.08 ha (0.2 ac) area. The subpopulation is located around the base of prominent rock spire on a steep, southeast-facing lower slope with sparse vegetation and calcareous, gravelly-silty substrate (Appendix 5, photo 18). In 2005 a motorcycle track scar cut across the slope just northeast of the rock spire. The track may have been a single event as no other ORV disturbance was seen. A closed road passes approximately 50 m downslope from the rock spire. A series of old mining prospects dot the slope, but their operation did not impact the subpopulation. A few scattered cattle feces were observed at the site, but the sparse forage seems to preclude more than light use in the general area.

Buckhorn Mine (EO 6; Appendix 4, Map 9) – This occurrence is located on a sparsely vegetated limestone outcrop surrounded by sagebrush-steppe vegetation (Appendix 5, photos 19, 20). Approximately 250 plains milkvetch individuals occur in cracks, crevices, and gravelly rubble on the roughly 0.8 ha (2 ac) outcrop. A range of 100 – 1000 plants were reported when the occurrence was discovered in 1990. The outcrop is undisturbed and no imminent, serious threats were observed. The Buckhorn (Appendix 5, photo 21) and other old mines occur in the general area, but their operation did not impact the occurrence.

Blue gramma

I relocated only one of the four blue gramma occurrences known on Salmon FO lands. In addition, I did not attempt to relocate the Kriley Gulch occurrence (EO 2) north of Salmon. It is

based on a 1963 collection with very vague location information (“Kriley Gulch area, east of Salmon River about 15 miles north of Salmon”). It may be on Salmon FO land, but this is uncertain. My 2005 surveys were conducted too early in the season for blue gramma inflorescences to be present; something I did not realize at the beginning of the survey. This compromised my search image and made looking for this small grass species more difficult and increased the likelihood of overlooking it.

Cherry Spring (EO 7; Appendix 4, Map 10) – The original 1994 occurrence report contained conflicting location and minimal habitat or other information. The occurrence was relocated and its map location corrected. The occurrence consists of a single small patch of 50 -100 blue gramma clumps covering <50 m². It occurs in an opening along a minor two-track road on a gently sloping, rocky-sandy knoll surrounded by sagebrush-steppe vegetation (Appendix 5, photo 22, 23). The road receives little use and poses no clear threat, although improvement or maintenance activities could readily reduce or eliminate the small blue gramma patch. No ORV use was seen in the area. Cattle use is heavy around the occurrence, but adverse impacts to blue gramma were not evident. No noxious weed species were observed in the immediate vicinity of the occurrence, although cheatgrass is present at low cover within the adjacent sagebrush community.

South of Lower Freeman Creek (EO 8; Appendix 4, Map 11) – The original 1983 location information for this occurrence was relatively vague. I failed to relocate the occurrence in 2005 despite a thorough survey covering several acres in the general area where blue gramma was originally reported. I believe not finding the occurrence was due to my failure to recognize vegetative material. I do not consider it extirpated. The occurrence was originally reported to be 0.4 ha (1 ac) or less in size in a hilly area with sagebrush-steppe vegetation. I observed light to locally heavy cattle use in the general area reported for the occurrence. A steep, rocky, jeep road follows a ridgeline passing through/near the occurrence, but no ORV use was seen in the vicinity. The road may be serving as a conduit for introduced weed species spread in the area. Cheatgrass occurs at low cover within the sagebrush vegetation, but is locally dense in patches along the roadway. Scattered individuals or small colonies of leafy spurge (*Euphorbia esula*) occur in the general occurrence area, including along the roadway. The roadway was the only place a few spotted knapweed plants were observed.

South of Badger Spring Gulch (EO 9; Appendix 4, Map 11) – This occurrence was reported to have only a few blue gramma plants when discovered in 1995. I was unable to relocate the occurrence despite good original map information and extensive searching. I still consider the occurrence extant. I observed light to locally heavy cattle use in the general area reported for the occurrence. Leafy spurge was observed in the gully and tributary draw bottoms and adjacent lower slopes and occasionally to mid-slope position in the general area. Spotted knapweed was present in the main draw bottom. It was not observed invading the nearby sagebrush or grassland slopes.

McDevitt Creek Canyon (EO 10; Appendix 4, Map 10) – Original location information for this occurrence was vague. It was not relocated despite a thorough survey covering several acres in the general, originally reported area. I still consider the occurrence extant. The occurrence was originally estimated to have 20 blue gramma plants in a weedy, roughly 1.6 ha (4 ac) area. The likely occurrence area is near the lower end of a small side-drainage bottom dominated by a degraded basin big sagebrush community (Appendix 5, photo 24). Several noxious and other introduced weed species are present in the area, including spotted knapweed, black henbane (*Hyoscyamus niger*), tumbled mustard (*Sisymbrium altissimum*), and cheatgrass. Cattle use is

heavy in the draw bottom. Land ownership for the occurrence remains unresolved. It most likely is on State land, or perhaps partly on BLM property as well.

Lemhi penstemon

Lemhi penstemon was not one of the BLM special status plant species targeted by this occurrence update project. However, I visited the Lemhi penstemon occurrence at McDevitt Creek (EO 89) because of its ready access near a location having one of the target species.

McDevitt Creek (EO 89; Appendix 4, Map 12) – This occurrence was discovered in 1993 and estimated to have 25 Lemhi penstemon plants in a 50 m² area on a sparsely vegetated roadcut along the McDevitt Creek Road. Habitat conditions were assessed as poor. I visited the reported site in both 2004 and 2005 and failed to find any Lemhi penstemon either year. This occurrence appears to have been extirpated. Herbicide spraying likely occurs along the McDevitt Creek Road to control several noxious weed species. It is unknown if this activity contributed to the loss of the roadside Lemhi penstemon occurrence.

Salmon twin bladderpod

Updated location and conservation information was collected for the five Salmon twin bladderpod occurrences known from the Salmon FO area. Two sites reported to possibly have Salmon twin bladderpod were also visited.

Pattee Creek (EO 1; Appendix 4, Map 13) – Estimates in the 1980s and early 1990s reported several thousand Salmon twin bladderpod for this occurrence (Craig and Craig 1996, U.S. Fish and Wildlife Service 1990). In 2000, 65 plants were tallied in a partial survey of each of three known subpopulations (Mancuso 2001). My 2004 survey resulted in slight adjustments to the perimeters of the two western subpopulations, and correcting the map location and splitting the original eastern subpopulation into two separate subpopulations. A total of 112 Salmon twin bladderpod plants were tallied for the four subpopulations, ranging from 4 to 58 individuals, and <0.4 ha (0.1 ac) to 7 ha (17 ac) in size. Salmon twin bladderpod occupies only a small fraction of the area delineating each subpopulation. The majority of plants occur in small, widely scattered clusters within a mix of unoccupied, seemingly suitable-looking habitat, and non-suitable habitat areas. Plants occur on steep, lower to mid-slope, southerly-facing, sparsely vegetated volcanic scree openings within a mosaic of sagebrush-steppe vegetation (Appendix 5, photos 25, 26, 27). Spotted knapweed extends upslope from Pattee Creek into the occurrence area. It is sympatric with Salmon twin bladderpod in a few places (Appendix 5, photo 28). Other invasive weed species observed within or adjacent to the occurrence include Scotch thistle (*Onopordum acanthium*), berteroa (*Berteroa incana*), black henbane (rare), common mullein (*Verbascum thapsus*), yellow clover (*Melilotus officinalis*), and cheatgrass. Road maintenance activities could potentially adversely impact plants Salmon twin bladderpod close to the roadway. No ORV or livestock grazing disturbances were observed within the occurrence.

Williams Creek (EO 2; Appendix 4, Map 14) – This occurrence at the old Williams Creek community shale quarry was estimated to have approximately 1000 Salmon twin bladderpod plants in the 1980s (U.S. Fish and Wildlife Service 1990). In 2004, only 13 plants in three separate groupings were found. Two additional areas reported to have a few plants each in 2000 (Mancuso 2001) did not have Salmon twin bladderpod in 2004. A large amount of recent slope slumping and associated movement and piling of talus was evident in one of these areas. Salmon twin bladderpod was apparently buried beneath the new talus piles which were nearly devoid of all vegetation. Salmon twin bladderpod now occupies only a small fraction of the

occurrence area - a large, steep, sparsely vegetated southwest-facing exposure of loose volcanic talus with patches of sagebrush-steppe or other vegetation (Appendix 5, photos 29, 30, 31). Most plants occur in smaller diameter substrate. Spotted knapweed is widespread across the occurrence slope, including near each of the Salmon twin bladderpod groupings. Livestock grazing, ORV, rock removal, or other disturbances were not observed within the occurrence. A photo monitoring program was established at the occurrence in 2000 (Mancuso 2001). The series of photo monitor photographs were retaken in 2004 (Appendix 6).

Agency Creek (EO 3; Appendix 4, Map 13) – This occurrence has consistently been estimated to support 100 – 200 Salmon twin bladderpod plants during periodic visits over the years (Craig and Craig 1996, Mancuso 2001, U.S. Fish and Wildlife Service 1990). I counted 105 (and estimated 125-150) individuals scattered over approximately 2.8 ha (7 ac) in 2004. The occurrence is located on a steep, sparsely vegetated, south-facing slope and associated road cut, on loose to semi-stable vesicular scree (Appendix 5, photos 32, 33). Cattle disturbance was evident along the road bank and adjacent lower slopes. Disturbance on middle and upper portions of the slope was limited to a few minor wildlife trails. Several introduced weed species occur along the road or lower slopes at the occurrence including spotted knapweed, common mullein, prickly lettuce, clasping pepperweed, cheatgrass, and possibly musk thistle (*Cardus nutans*; to early in season for positive identification). No ORV use was seen within the occurrence. Maintenance on the Agency Creek Road has the potential to adversely effect Salmon twin bladderpod growing on the roadcut (Appendix 5, photo 34). Photo monitoring for this occurrence was also initiated in 2000 (Mancuso 2001). Photographs were retaken in 2004 (Appendix 6).

Basin Creek (EO 4; Appendix 4, Map 14) – Surveys and monitoring conducted in the 1980s and early 1990s estimated 500 - 1000 Salmon twin bladderpod plants distributed over multiple subpopulations (Craig and Craig 1996, U.S. Fish and Wildlife Service 1990). In 2000, approximately 125 plants were counted and an estimate of 250 individuals made (Mancuso 2001). I tallied a total of 155 plants in two subpopulations in 2004. A third subpopulation, west of the other two was not visited due to the road access being gated and posted. It remains unclear if this third subpopulation is on BLM or private land. The occurrence is located on a southeast-to west-facing exposure of loose volcanic scree and gravels, as well as fine-textured sands, and sandy-ashy substrate embedded with rock fragments (Appendix 5, photos 35, 36). The vegetation is characterized by an mosaic of open, mixed desert shrub and bluebunch wheatgrass (*Agropyron spicatum*) communities. Displacement of surface material and increased erosion associated with cattle trailing are the most evident disturbances within the occurrence (Appendix 5, photo 37). An old jeep trail cuts through one subpopulation. No evidence of ORV use or noxious weed species were observed in the occurrence area.

Dry Creek (EO 6; Appendix 4, Map 14) – The original map location associated with this occurrence was approximate when discovered in 1994, when only two Salmon twin bladderpod plants were reported. I verified its location in 2004, finding six plants over an approximately 0.2 ha (0.5 ac) area. Plants occur from very lower to mid-slope positions on a steep, sparsely vegetated, northwest-facing slope of volcanic scree atop finer-textured substrate (Appendix 5, photo 38). Sagebrush-steppe vegetation dominates the nearby slopes. Cattle are responsible for a limited amount of ground disturbance within the occurrence. No ORV, noxious weed, or other disturbances were observed in the occurrence area.

I also investigated two additional sites within the Salmon FO area reported to possibly have Salmon twin bladderpod. One of these sites was in the Lake Creek drainage, approximately 10 km (6.2 mi) west of Lemhi, south of Hayden Basin (Appendix 4, Map 15). Approximately 120

plants scattered over <0.4 ha (1 ac) were tentatively identified as Salmon twin bladderpod when collected from a rocky, northwest-facing spur ridge slope above Lake Creek by BLM biologists in 1994. The record was added to the IDCDC database (former EO 7). A collection from this population was apparently sent to Dr. Douglass Henderson at the University of Idaho for his identification. In 1996, he determined the collection from Lake Creek to be *Physaria didymocarpa* var. *didymocarpa*, not var. *lyrata*. The Salmon twin bladderpod record for Lake Creek was deleted from the IDCDC database in 2001 based on this information.

I failed to relocate the Lake Creek site in 2004 even though the original location map information was fairly precise. I encountered habitat on two spur ridges that roughly matched the description in the original record, but one or two other spur ridges in the general area were not surveyed. I was unable to make another collection to confirm Dr. Henderson's identification. I think it is worth collecting additional material from the Lake Creek site because it is located roughly halfway between the Salmon twin bladderpod occurrences at Dry Creek (EO 6) and Bear Valley Creek (EO 5 on USFS land). It is also within approximately 4 km (2.5 mi) of the Basin Creek occurrence (EO 4). It seems a bit suspicious that material from Lake Creek would be a different entity than the other nearby sites.

The other place I investigated was near Leadville, approximately 5 km (3.1 mi) northeast of Leadore, at 1980 m (6,500 ft) elevation (Appendix 4, Map 16). In 2004, BLM botanist Alexia Cochrane reported this possible new Salmon twin bladderpod site. I visited the location in 2005 to determine if Salmon twin bladderpod was present at the site. Between 100 and 150 putative Salmon twin bladderpod plants were scattered over an approximately 0.2 ha (0.5 ac) area in the scree of an old roadbed and cut and adjacent southerly-facing slope openings (Appendix 5, photo 39). The substrate material may have been volcanic in origin, but the presence of mountain mahogany (*Cercocarpus ledifolius*) which typically occurs on calcareous substrate in east-central Idaho made me uncertain. A few bladderpod individuals had fruits large enough to be considered Salmon twin bladderpod, but all the others were smaller plants that better fit the description for common twin bladderpod. I concluded the Leadville site was not Salmon twin bladderpod. The nearest known Salmon twin bladderpod occurrence is located approximately 21 miles to the west-northwest at Bear Valley Creek. Common twin bladderpod has been reported on carbonate substrate north of Leadore in the past (Moseley et al. 1990).

DISCUSSION

The majority of special status plant species occurrences I visited had some level of cattle trailing and trampling ground disturbance. Old mining operations or prospects were located in the vicinity of a few occurrences. ORV disturbance was observed in close proximity to only one occurrence. Maintenance activities have the potential to adversely effect portions of several occurrences located along or near roadways. Several aggressive weed species, most notably spotted knapweed, were present within or near about half of the occurrences visited. Weed abundance and distribution was limited at most of these occurrences and control measures remain a feasible management tool. It is unclear how long the window will remain open for control measures to be reasonable and have a good chance for success. Under certain conditions species such as spotted knapweed are known to spread rapidly once they become established (Roche and Roche 1991). Overall, weed invasion appears to be the most serious threat to the habitat and long-term persistence of upland special status plant occurrences visited within the Salmon FO area.

Lemhi milkvetch

Direct comparison of Lemhi milkvetch census estimates made in 2004-5 cannot be confidently compared to earlier abundance reported estimates for most occurrences because of differences in inventory thoroughness. Original plant number estimates at most occurrences were based on cursory surveys, compared to the more thorough surveys of 2004-5. This probably accounts for the higher tally of plants in 2004-5 compared to the original estimates. The exception was for the occurrence at Jakes Canyon (EO 38) where the number of Lemhi milkvetch plants observed in 2004 was approximately the same number as reported in 1990.

In 2004, occurrences were dominated by small, non-reproductive Lemhi milkvetch plants. A percentage of these plants appeared to be seedlings at all occurrences. No evidence of herbivory or disease on Lemhi milkvetch plants was observed at any of the occurrences. All occurrences except at Peterson Creek are within 0.3 km (0.2 mi) of a secondary dirt road. Although presently not a conservation issue, this increases occurrence vulnerability to future ORV disturbance. Ground disturbance from cattle grazing was evident within all six Lemhi milkvetch occurrences on the Salmon FO. The amount of tracking and trailing disturbance was minor at most occurrences and posed no obvious serious threat to Lemhi milkvetch or its habitat. Cattle disturbance was more prominent at the Muddy Creek (EO 39) and especially the North of Agency Creek (EO 42) occurrences. North of Agency Creek is the only Lemhi milkvetch occurrence threatened by introduced weed species. Spotted knapweed is presently uncommon enough that local control/eradication measures could be successful. This is the only Lemhi milkvetch occurrence where regular visits to monitor weed control and cattle impacts are recommended. Periodic visits to check for weed species invasion and other large scale disturbances would help ensure prompt management response and the long-term conservation of the other five Lemhi milkvetch occurrences on the Salmon FO. Additional unsurveyed potential Lemhi milkvetch habitat exists on Salmon FO land in the vicinity of the Muddy Creek occurrence and would benefit from additional future field inventory.

Two-grooved milkvetch

The only known two-grooved milkvetch occurrence within the Salmon FO area is at West Fork Little Eightmile Creek (EO 3). This occurrence appears to be stable, as the number of plants and habitat conditions in 2005 were similar to the information originally reported in 1990. No evidence of herbivory or disease was observed on two-grooved milkvetch plants. Control of spotted knapweed upstream of the occurrence, near an old cabin on BLM property, close to the USFS boundary is recommended while its abundance and distribution appears to still be limited in the West Fork Eightmile Creek drainage. Periodic visits to check for weed species invasion and other large scale disturbances would help ensure prompt management response and the long-term conservation of this occurrence. Surveys on nearby USFS and private land along Eightmile Creek would clarify and delineate the full extent of this occurrence.

Plains milkvetch

The number of plains milkvetch plants reported for the Buckhorn Mine (EO 6) occurrence in 1990 is similar to the 2005 tally. This occurrence appears to be stable. Comparing original to 2005 plains milkvetch abundance estimates is not possible for the other two occurrences due to differences in inventory thoroughness at Hawley Creek (EO 3) and differences in which subpopulations were visited at Railroad Canyon (EO 4).

The rocky outcrop habitat of plains milkvetch is relatively undisturbed at the three occurrences on Salmon FO land, and none had evidence of herbivory or disease on individual plants. However, each occurrence is potentially vulnerable to one or more threat factors. Herbicide spraying of spotted knapweed is occurring along the Hawley Creek Road. Applicators should be made aware of the location of plains milkvetch to prevent inadvertent spraying of plants. Spotted knapweed has the capacity to readily establish on the adjacent open slopes, but it is unclear if it can also directly invade the bedrock habitat supporting plains milkvetch at Hawley Creek. Spot spraying may become necessary in the future if spotted knapweed establishes directly within the occurrence. Spotted knapweed was also observed < 1.6 km (1 mi) southeast of the plains milkvetch occurrence at Buckhorn Mine (EO 6), near an old cabin on BLM property, close to the USFS boundary. The road leading to the Buckhorn Mine passes approximately 300 m south of the occurrence and is a possible conduit for weed species introduction to the area.

Mining or prospecting activity has taken place in the vicinity of two occurrences (EO 4 and 6) in the past. These activities would have the potential to adversely impact plains milkvetch and its habitat if ever initiated within an occurrence. Management action to discourage ORV use in the vicinity of the Railroad Canyon occurrence (EO 4) may become necessary in the future if this activity increases in the area. Livestock activity does not currently appear to be a conservation concern at any of the occurrences. Periodic visits to all three occurrences to check for weed species invasion and other large scale disturbances would help ensure prompt management response and their long-term conservation. Inventory of the extensive rock outcrops to the east would likely discover additional plains milkvetch plants at the Hawley Creek occurrence.

Blue gramma

Future attempts to relocate blue gramma occurrences should be done in late summer, when the presence of inflorescences would facilitate seeing this small grass species that in Idaho seems to grow only in small patches. Surveys to relocate and better document (GPS) the location of the occurrences would help assess any management needs. Original discoveries of blue gramma on the Salmon FO were all the result of incidental, cursory sightings and have minimal associated conservation information. Despite not knowing the precise location of the South of Lower Freeman Creek occurrence (EO 8), noxious weed control is an important management concern. Weed abundance and distribution is limited enough in the vicinity of the occurrence and also in draws and slopes further downslope toward Carmen Creek to make control efforts feasible and have a chance of success. Although not relocated in 2005, the location of the South of Badger Spring occurrence (EO 9) is well mapped. Weed control efforts, especially for leafy spurge, are recommended for this area as well. Relocating the McDevitt Creek occurrence (EO 10) would verify if it is on State, BLM, or perhaps private land.

Salmon twin bladderpod

The number of Salmon twin bladderpod individuals is substantially less at the Pattee Creek (EO 1) and Williams Creek (EO 2) occurrences compared to estimates made over a decade ago. The reason(s) for the decline at Pattee Creek is not known. Habitat at the occurrence appears intact and relatively stable, although spotted knapweed has become established at low density within portions of the occurrence. Several other weed species are also established in the area, mainly along the Pattee Creek Road or nearby creek bottom. Weed control will be important to prevent habitat degradation and any associated decline in Salmon twin bladderpod within the occurrence.

In the past, large scale slumping episodes were implicated in the mortality of Salmon twin bladderpod at Williams Creek (Craig and Craig 1996). Slumping continues to contribute to the loss of plants at this occurrence. Spotted knapweed is widespread throughout the Williams Creek occurrence, including at all remaining groupings of Salmon twin bladderpod. It is unclear if, or how much, weed invasion has also contributed to the local decline of Salmon twin bladderpod. Herbicide applicators need to be careful not to inadvertently spray Salmon twin bladderpod individuals. Roadside spraying will not be sufficient to control spotted knapweed within the occurrence. Long term control will have to minimize the seed rain from spotted knapweed plants established along middle and upper slopes portions as well.

A population and habitat monitoring study conducted between 1991 and 1995 indicated Williams Creek and Agency Creek (EO 3) were the least stable occurrences. While Salmon twin bladderpod continues to decline at Williams Creek, it seems to be stable at Agency Creek. The number of Salmon twin bladderpod plants tallied in 2005 was similar to earlier estimates at this occurrence. Habitat at Agency Creek is intact and also appears stable, except for some livestock disturbance along the very lower slope and roadcut areas. Spotted knapweed is uncommon in the general occurrence area and control efforts would likely have a good chance of success at the current infestation level.

The number of Salmon twin bladderpod plants at the Basin Creek occurrence (EO 4) appears to have declined, although not nearly as dramatically as at Pattee Creek or Williams Creek. The reason(s) for the decline is unknown. Basin Creek has the most cattle ground disturbance of any occurrence, but is heavy only along a few localized trails. It is not known if this has a direct adverse impact on Salmon twin bladderpod, but it clearly accelerates erosion in places.

The small occurrence at Dry Creek (EO 6) does not appear to have any major management issues. It was not discovered until 1994 and does not have the history of repeated visits or abundance estimates to assess whether Salmon twin bladderpod has declined, or is naturally rare and very local at this occurrence.

The BLM has conducted field surveys intermittently for Salmon twin bladderpod over the years. Other entities have also looked for this species in the past (e.g., Moseley et al. 1990). A population trend and habitat characterization study was conducted during the first half of the 1990s (Craig 1992, Craig and Craig 1996). An early status report and recovery plan was prepared by the BLM when this species was known from only three occurrences (Rosentreter 1982). A Conservation Agreement for Salmon twin bladderpod between the BLM and USFWS (U.S. Fish and Wildlife Service 1990) expired in 1995. An updated agreement would help focus additional conservation concern for Salmon twin bladderpod, one of the rarest elements in the Idaho flora. Five of the six known occurrences are located within the Salmon FO area. Consequently, the long term conservation of Salmon twin bladderpod is tightly linked to efforts taken on its behalf by the Salmon FO. Salmon twin bladderpod is the most globally rare, and worthy of the most conservation activity of the five special status plant species targeted by this project on the Salmon FO.

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Appendix 1

Conservation rank definitions.

Appendix 2

Updated Element Occurrence Records for BLM special status plant species within the Salmon Field Office area.

Appendix 3

Copies of Rare Plant Species Element Occurrence Update forms.

Appendix 4

Map locations of BLM special status plant species occurrences updated in 2004-2005.

Appendix 5

Photographs of BLM special status plant species occurrences visited in 2004-2005.

Appendix 6

Year 2000 and 2004 photo monitor photographs for two Salmon twin bladderpod occurrences.