SENSITIVE PLANT SURVEY IN THE HORSE PRAIRIE
CREEK DRAINAGE, BEAVERHEAD COUNTY, MONTANA

BUTTE DISTRICT, BUREAU OF LAND MANAGEMENT

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January 1995

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This document should be cited as follows: Vanderhorst, J. 1995. Sensitive plant survey in the Horse Prairie Creek drainage, Beaverhead County, Montana. Unpublished report to the Bureau of Land Management. Montana Natural Heritage Program, Helena. 42 pp. plus appendices.

SUMMARY

Bureau of Land Management holdings in the Horse Prairie Creek drainage were surveyed for proposed sensitive and watch plant species (USDI Bureau of Land Management 1993), and for prospective sensitive and watch plant species currently tracked as Montana plant species of special concern (Heidel 1994). There are now 17 populations of seven of these taxa known from BLM land in the study area. Of the seven, Bitterroot milkvetch (*Astragalus scaphoides*) and Lemhi beardtongue (*Penstemon lemhiensis*) are currently proposed sensitive species. Railhead milkvetch (*Astragalus terminalis*) and an undescribed bladderpod (*Lesquerella* sp. novum I) are currently proposed watch taxa, however, sensitive status is recommended for railhead milkvetch at this time. Chicken sage (*Sphaeromeria argentea*) has no currently proposed status, but is now recommended to be added to the BLM list of watch plants. Two taxa, limestone larkspur (*Delphinium bicolor* ssp. novum) and rock-tansy (*Sphaeromeria capitata*) have no proposed or recommended BLM status, and will no longer be actively tracked by the Montana Natural Heritage Program but will be retained on lists of state endemics and species of limited distribution. A total of 329 vascular plant taxa in 52 families were identified in the study area. Twenty nine of these species are adventive from Eurasia.

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INTRODUCTION

This report describes a sensitive species botanical survey of Bureau of Land Management (BLM) holdings in the drainage of Horse Prairie Creek. The study area lies in a high intermountain basin in Beaverhead County, in southwestern Montana. The main purpose of this work was to locate and survey populations of sensitive and watch plant species as proposed by the BLM for Montana (USDI Bureau of Land Management 1993) and prospective sensitive and watch species currently tracked by the Montana Natural Heritage Program (MTNHP) as plant species of special concern (Heidel 1994).

Surveys to determine the location and size of populations of rare species are being conducted throughout the west in response to the Endangered Species Act of 1973 and subsequent conservation initiatives by the BLM and other agencies. These surveys represent a botanical baseline to aid in identifying conservation priorities and developing protection and compatible management strategies. Area surveys have recently been conducted by MTNHP on surrounding BLM lands in Beaverhead County in the Tendoy Mountains and upper Big Sheep Creek drainage (Vanderhorst and Lesica 1994), on Dutchman Mountain (Vanderhorst 1994a), and in the vicinity of Lemhi Pass (Vanderhorst 1994b).

THE STUDY AREA

Horse Prairie Creek flows from its headwaters near Deadman Pass on the Continental Divide to Clark Canyon Reservoir, where it joins Red Rock Creek to form the Beaverhead River. The designated study area included, in its western part, all BLM lands in the upper drainage of Horse Prairie Creek, including its tributaries, Bloody Dick and Trail Creeks. The eastern part of the study area was designated as BLM lands within Townships 9 South and 10 South extending east to Interstate Highway 15. Defined as such, the drainage of Medicine Lodge Creek was excluded, and part of the upper drainage of the Beaverhead River was included. Maps of the complete study area are included in the results section (Figures 1 and 2) and in Appendix A.

The study area lies mostly in the broad Horse Prairie Basin and includes foothills of the surrounding Beaverhead, Pioneer, and Tendoy ranges. The geology of most of the area is mapped as Tertiary basin sediments and Quaternary alluvial deposits, but smaller units of Tertiary volcanics and Paleozoic and Precambrian sediments are also included (Ross et al. 1955, Geach 1972). The Paleozoics lie in a belt to the north and south of Clark Canyon Reservoir and include limestones of the Madison Group which support a unique flora. The soils of the study area are broadly mapped as aridisols, inceptisols, and mollisols with ustic-cryic

and aridic-frigid moisture-temperature regimes (USDA Soil Conservation Service 1978). The elevation ranges from ca. 5,300 feet near Dalys on the Beaverhead River to over 8,000 feet near the Continental Divide. The climate of the basin is semi-arid with warm summers and cold winters, becoming somewhat cooler and wetter at the higher elevations in the foothills. Data from nearby stations at Dillon (elevation 5,228 feet) and Lima (elevation 6,265 feet) are taken to approximate the climate of all but the highest elevations in the study area (from Geach 1972). Average annual precipitation was 11.34 inches in Dillon and 9.92 inches in Lima with seasonal peaks in May and June. The average monthly temperature in January was 22.8° F in Dillon and 16.3° F in Lima, and in July was 65.1° F in Dillon and 63.0° F in Lima.

Although extensive productive wetlands occur in Horse Prairie Basin, these valley bottom sites are almost entirely privately owned. Exceptions are the BLM holdings around the inlets and outlet of Clark Canyon Reservoir, narrow riparian zones along tributaries at higher elevations (e.g. Black Canyon Creek, Bloody Dick Creek, Frying Pan Creek), and a few springs and seeps. BLM lands are mostly in upland positions, where the most common vegetation types are grasslands and sagebrush grasslands. Lesser areas of coniferous forest occur at the highest elevations and on northern aspects. The limestone outcrops around Clark Canyon Reservoir are dominated by mountain mahogany communities.

The dominant land use in the study area is cattle grazing. Most of the BLM land is in allotments to local ranches, and much of this is heavily grazed. Forested BLM land on the western edge of the study area has been utilized for commercial timber harvest. Modern mining activity is mostly limited to gravel pits, but historical gold placers are located along Jeff Davis Creek, and other smaller prospects are scattered in the hills. Recreation in the summer is concentrated around Clark Canyon Reservoir, where fishing, power boating, water skiing, and motorized camping are the most popular activities. In the fall, the uplands throughout the basin are visited by large numbers of hunters of antelope, deer, and elk (P. Hansen, pers. commun.).

METHODS

Prior to fieldwork, the Biological Conservation Database maintained by the Montana Natural Heritage Program was queried for occurrences of plant species of special concern known from the study area. This resulted in eleven populations of five species known from BLM land in the study area: *Astragalus scaphoides* (2 populations), *Astragalus terminalis* (1), *Delphinium bicolor* ssp. *novum* (1), *Penstemon lemhiensis* (6), and *Sphaeromeria capitata* (1). In addition to these, plant species of special concern found by surveys of nearby areas with similar habitats (Heidel 1993, Vanderhorst and Lesica 1994, Vanderhorst 1994a and 1994b) were considered primary targets to guide timing and selection of habitats to be searched.

I conducted surveys for proposed and prospective sensitive and watch plant taxa on BLM lands in the study area in June, July, and August of 1994. Specific survey dates were June 13, June 16-22, June 27-July 1, July 5, and August 13. Maps in Appendix A show the principle survey routes. Surveys were made on foot in both known and potential habitats for target species, representing many of the typical and unusual habitat types found in the study area. Attempts were made to relocate most of the populations of species of special state concern previously known from the area, but most time was spent searching for new occurrences.

When populations of Montana plant species of special concern were encountered, standard field survey forms were filled out and the populations were mapped. Information was recorded on habitat (associated vegetation, landscape position, soils), demography (population numbers and area covered), plant biology (phenology, vigor, reproductive success), and potential threats to the populations. Photographs (35 mm slides) were taken of the plants and their habitats.

In order not to overlook prospective sensitive species and to begin compilation of a floristic list for the area, all vascular plants encountered were identified whenever possible. The primary references used to key out plants in the field were Dorn (1984, 1992) and Hitchcock and Cronquist (1973). Specimens were collected when field identification was difficult and to document populations of sensitive and other notable species. A first set of all collections will be deposited at the herbarium of Montana State University (MONT).

RESULTS

Six previously undocumented populations of five Montana plant species of special concern were located on BLM land in the study area. These taxa are *Astragalus scaphoides* (2 new populations), *Delphinium bicolor* ssp. novum (1), *Lesquerella* sp. novum I (1), *Sphaeromeria argentea* (1), and *Sphaeromeria capitata* (1). The *Lesquerella* sp. novum and *Sphaeromeria argentea* were not previously known from the study area. In addition, previously known occurrences of *Astragalus scaphoides* and *Astragalus terminalis* were relocated and new subpopulations of each were documented for the first time. Three of the six known occurrences of *Penstemon lemhiensis* were relocated but attempts to find two others were unsuccessful; no new occurrences of this species were found. Of these species, *Astragalus scaphoides* and *Penstemon lemhiensis* currently have proposed BLM sensitive status and *Astragalus terminalis* and *Lesquerella* sp. novum have proposed watch status (USDI Bureau of Land Management 1993). A total of 17 populations of seven species of special concern are now known from BLM land in the study area. These results are summarized in Table 1, and Figures 1 and 2 are maps of the study area showing the approximate locations of these populations. Element Occurrence Records (EORs) and large scale (1:24,000) topographic maps showing the precise locations are given for each population in Appendix C. Photographic slides of the plants and their habitats are attached at the end of this report.

Table 1. Proposed BLM sensitive and watch plant taxa, and Montana plant species of concern documented on BLM land in the Horse Prairie Creek study area.

Scientific name	MTNHP status GRANK/SRANK	Proposed BLM status	number of populations
<i>Astragalus scaphoides</i>	G3 S1	sensitive	4
<i>Astragalus terminalis</i>	G3G4 S2	watch	1
<i>Delphinium bicolor</i> ssp. novum	G3 S3	-	2
<i>Lesquerella</i> sp. novum I	G2 S2	watch	1
<i>Penstemon lemhiensis</i>	G3 S2	sensitive	6
<i>Sphaeromeria argentea</i>	G5 S1	-	1
<i>Sphaeromeria capitata</i>	G3 S2S3	-	2

Figure 1. Map of the western part of the Horse Prairie Creek study area showing occurrences of plant species of special state concern on BLM land. AS = *Astragalus scaphoides*, PL = *Penstemon lemhiensis*.

Figure 2. Map of the eastern part of the Horse Prairie Creek study area showing occurrences of plant species of special state concern on BLM land. AS = *Astragalus scaphoides*, AT = *Astragalus terminalis*, DN = *Delphinium bicolor* ssp. novum, LN = *Lesquerella* sp. novum I, SA = *Sphaeromeria argentea*, SC = *Sphaeromeria capitata*

A total of 329 taxa of vascular plants in 52 families were identified in the study area (Appendix B). Almost 9% (29 species) are adventive to this continent from Eurasia; many of these are potentially serious weeds. Other species are undoubtedly adventive to the area or to the sites they now inhabit, but this is difficult to determine.

The remainder of this section is devoted to summaries of information on each of the seven proposed or prospective sensitive and watch species in the study area. These summaries provide information for identification and management for conservation of the species, and include recommendations on formal BLM status. Subheadings include description, present legal or other formal status, geographic distribution, habitat, population demography and biology, and management concerns. The information is based on data collected from populations in this study area as well as from other occurrences of the species in Montana which are entered in the Biological Conservation Database and on citations from literature. Throughout these summaries, individual occurrences are referred to by the site name and last three digits of the element occurrence code given on the EORs in Appendix C.

Astragalus scaphoides (Jones) Rydb.
Bitterroot Milkvetch

A. DESCRIPTION

1. **General description:** *Astragalus scaphoides* is a member of an extremely diverse genus in the Fabaceae (Pea or Bean Family). The plants are relatively large herbaceous perennials with pinnately compound leaves borne on the flowering stems. The inflorescence is a compact to somewhat elongate raceme of many relatively large, zygomorphic flowers. The perianth consists of a fused, five lobed calyx and a cream to yellowish corolla which includes a banner (the top segment), two wings (the side segments), and a keel (the boat shaped bottom segment). There are 10 stamens, nine connected in a group and one free, and a single ovary. The mature fruit is a distinctively stalked legume which contains several seeds. Photographic slides of the plant are attached at the end of this report.
2. **Technical species description** (quoted from Hitchcock and Cronquist 1961): Sparsely strigillose perennial with a taproot and branched crown; stems several, stout, ascending to erect, 2-6 dm tall; leaves 10-25 cm long; stipules lanceolate, 1-4 mm long, not connate; leaflets 15-21, lance-oblong to elliptic-oblong, 1.5-3.5 cm long, as much as 13 mm broad, glabrous on the upper surface at least; peduncles

mostly 10-15 cm long; racemes closely 15- to 30-flowered but elongating and open in fruit; pedicels 2-5 mm long; flowers spreading to slightly reflexed, white to ochroleucous, about 2 cm long; calyx usually blackish-hairy, 8-10 mm long, the narrowly lanceolate lower teeth about 2 mm long; banner erect; wings 2-4 mm longer than the keel; pod erect, with a stout upward-arching stipe about twice as long as the calyx, the body 1.5-2 cm long, cartilaginous, glabrous, slightly mottled, corrugate-wrinkled, oblong-ovoid, inflated and slightly obcompressed, 4-6 mm broad, 6-10 mm thick, with both sutures sulcate, the lower intruded to form a 3/4 complete partition.

3. **Diagnostic characters:** The following combination of characters separates this from other Montana species of *Astragalus* (adapted from Dorn 1984):

- Leaflets more than 5, not awl shaped
- Hairs attached at their base
- Stipules not united on side of stem opposite the petiole
- Pods stipitate, glabrous, obcompressed with the lower suture nearly forming a partition within the fruit, 7-20 mm wide, less than 3 times as long as wide
- Calyx 8-12.5 mm long, banner more than 15 mm long

B. PRESENT LEGAL AND OTHER STATUS

1. Federal

- a. **Bureau of Land Management:** *Astragalus scaphoides* is included on the BLM's list of proposed Sensitive species for Montana (USDI Bureau of Land Management 1993).
- b. **U.S. Fish and Wildlife Service:** 3C (UDSI Fish and Wildlife Service 1993); This signifies that the species has "proven to be more abundant or widespread than previously believed and/or....(is) not subject to any identifiable threat."
- b. **U.S. Forest Service:** none; However, Sensitive status has been recommended because the species was found for the first time in a National Forest on the Beaverhead in 1994 (Vanderhorst 1995a).

2. **State:** The Montana Natural Heritage Program ranks the species G3S1 (Heidel 1994). The global ranking (G3) is a reflection of vulnerability due to a restricted range. Within Montana, the species is considered critically imperiled due to extreme rarity (S1).

C. GEOGRAPHIC DISTRIBUTION

1. **Species range:** *Astragalus scaphoides* is a narrow endemic, restricted to the foothills of the Bitterroot Mountains and adjoining valleys in Lemhi County, Idaho and across the mountains in southwestern Beaverhead County, Montana (Barneby 1964).
2. **Distribution in Montana:** The species is known only from southwestern Beaverhead County. There are a total of 14 occurrences now entered in the Biological Conservation Database from the drainages of Grasshopper, Horse Prairie, and Medicine Lodge creeks and the upper Beaverhead River.
3. **Occurrences in the study area:** Prior to 1994, *Astragalus scaphoides* was known from two BLM sites in the Horse Prairie Creek drainage, one at the southern base of Bachelor Mountain (005), and one around the state school section just to the north of Clark Canyon Reservoir (008). During this project, additional subpopulations were found on Bachelor Mountain and to the northeast of the Clark Canyon school section. Two new populations were located along Rawhide Creek (013) and in the northern foothills of the Tendoy Mountains (Garfield Canyon, 011). Element Occurrence Records (EORs) for each of the populations in the study area and maps showing their precise locations are provided in Appendix C.

D. HABITAT

1. **Associated vegetation:** In Montana, *Astragalus scaphoides* grows in sagebrush grasslands usually dominated by *Artemisia tridentata* (big sagebrush) and *Elymus spicatus* (bluebunch wheatgrass). Other shrub species which are subdominant or in some cases replace big sagebrush in these habitats include *Artemisia tripartita*, *Artemisia nova*, and *Chrysothamnus nauseosus*. Other common or subdominant grasses at the sites include *Stipa comata*, *Oryzopsis hymenoides*, *Festuca idahoensis*, and *Poa secunda*. The site at Rawhide Creek has a dominant grass component of seeded crested wheatgrass (*Agropyron cristatum*). Among the most conspicuous forb associates are other species of milkvetches including *Astragalus agrestis*, *A. adsurgens*, *A. atropubescens*, *A. drummundii*, and *A. lentiginosus*. Additional associates are listed in the general site description fields of the individual EORs in Appendix C. Photographic slides showing the habitats of *Astragalus scaphoides* are attached at the end of this report.
2. **Topography:** Barneby (1964) describes the settings of *Astragalus scaphoides* throughout its range as "open valleys, low hills, (and) canyon benches ... from 3,500-6,000 feet."

This describes the landforms where the species occurs in Montana, however, the elevation at some sites is somewhat higher (over 6,800 feet on Bachelor Mountain) and populations are often confined to warm, southerly facing aspects or micro-aspects.

3. **Soil relationships:** In Montana, *Astragalus scaphoides* grows in dry soils ranging from clayey to gravelly and stony loams. The soils are derived from limestones, volcanics, and basin sediments.

E. POPULATION DEMOGRAPHY AND BIOLOGY

1. **Demographic details:** Most populations in the state are small and local, consisting of fewer than 500 plants. The occurrence to the north of Clark Canyon Reservoir (008) is a relatively large, dense, and healthy population with the number of plants estimated between 1,000 and 10,000 in 1994 (1,500-2,000 in 1986). On Bachelor Mountain (005), the subpopulations have a total of over 1,000 plants covering around 100 acres, but most of these were small vegetative plants at both survey dates (1984 and 1994). The newly discovered occurrences in the northern Tendoys (011) and along Rawhide Creek (013) consist of 500 or fewer plants, covering 15 or fewer acres at each site.
2. **Reproductive biology:** Reproduction is by seed. The low numbers of successfully reproducing plants at many sites suggests that seed production may be a major limitation to population size and distribution of *Astragalus scaphoides* in Montana. This conclusion is supported by data from the study area as well as from other Montana populations in other years, where low percentages of flowering plants and high percentages of aborted flowers have been documented. The population north of Clark Canyon Reservoir (008) is an exception where large plants with mature fruit were common; this reproductive success is reflected by the large and dense population. Browsing of flowering heads (and entire plants), probably by cattle, has been observed at several sites. *Astragalus scaphoides* flowers in June and produces fruit from June-July.

F. MANAGEMENT CONSIDERATIONS

Astragalus scaphoides has one of the narrowest global distributions of plant species in Montana. The species is locally plentiful in Idaho (Barneby 1964, Lesica and Elliott 1987) but is uncommon in Montana. Although new populations were discovered in the state in 1994 (this report and Vanderhorst 1995a), most of these were small or otherwise in poor shape. Only three of the currently known populations in the state (including one in this study area) are large and prolific. The

species should be designated sensitive by the BLM in Montana, as proposed.

The major human caused threat to *Astragalus scaphoides* in Montana is cattle grazing. Heavy spring grazing has been shown to damage populations (Lesica and Elliot 1987). Most occurrences on public lands are located within grazing allotments, and most are accessible to cattle. The species has not generally been found in heavily grazed habitat and the larger populations are found in rangeland in excellent condition. Spring grazing of public rangeland with populations of *Astragalus scaphoides* should be kept to a minimum and preferably, these sites should not be grazed until after seeds have dispersed (late July to August).

Astragalus terminalis Wats.
Railhead Milkvetch

A. DESCRIPTION

1. **General description:** *Astragalus terminalis*, in the bean family (Fabaceae), is an attractive herbaceous perennial with pinnately compound leaves borne on its stems. The species shares the basic floral formula of its relative, *Astragalus scaphoides* (see the general description for that species). The flowers, however, are somewhat smaller and are white and distinctly nodding. Vegetative features are also subtly different with the hairs of the leaves attached near their middle, and the leaves with a silvery cast. The bean-like fruits are not stalked. A photographic slide of the plant is attached at the end of this report.
2. **Technical species description** (quoted from Barneby 1989): Potentially but sometimes shortly or obscurely caulescent perennial herbs with superficial root-crown or caudex, densely strigulose throughout with dolabriform hairs, the foliage usually canescent, the inflorescence fuscous-strigulose; stems decumbent or ascending, (2.5)5-20 cm long, with at least (1)2 developed internodes, the cauline axis commonly shorter than the longer inflorescences; stipules submembranous, 2-6 mm long, the lowest ovate, strongly or fully amplexicaul but free, the upper deltate-, triangular-, or lance-acuminate, often reflexed; leaves (3)5-17 cm long; leaflets (11)13-21, either oblong-ovate, emarginate to retuse, or narrowly oblong-elliptic, obtuse to subacute, 3-17 mm long; peduncles incurved-ascending, 6-20(24) cm long; racemes 7-25 flowered, the flowers nodding at full anthesis, the early elongating axis becoming (1.5)3-12(16) cm long; calyx 4-7 mm long, the campanulate teeth 0.6-1.5 mm long; petals white or suffused with palest lilac, the keel-tip deeply maculate, the abruptly recurved banner (11)12-16.5

mm, the wings $\pm 1-4$ mm shorter, the obtuse keel (8)8.5-10.5 mm long; ovary glabrous; ovules 24-36; pod erect, sessile, continuous with receptacle, in profile narrowly oblong or ovate-oblong, 12-17 x 3-6.5 mm, strait or slightly incurved, obtuse at base, abruptly contracted into a short, laterally compressed beak, otherwise dorsoventrally compressed, carinate ventrally by the cordlike suture, flattened or openly sulcate dorsally, the lateral angles rounded, the green, fleshy valves becoming coriaceous, stramineous, inflexed as an almost complete or complete septum ± 1 mm wide; dehiscence through the narrowly gaping beak while pod yet attached to raceme-axis.

3. **Diagnostic characters:** The following combination of features can be used to separate *A. terminalis* from other Montana species of *Astragalus* (adapted from Dorn 1984):

- Leaves on stem, with 11-21 leaflets, these not awl shaped
- Hairs on leaflets attached towards their middle (dolabriform)
- Stipules not united on the side of the stem opposite the petiole
- Calyx tube less than 6.5 mm long, banner 11-16.5 mm long

B. CURRENT LEGAL OR OTHER FORMAL STATUS

1. Federal

- a. **Bureau of Land Management:** *Astragalus terminalis* is on the list of proposed Watch plants for Montana (USDI Bureau of Land Management 1993).
- b. **U.S. Fish and Wildlife Service:** none
- c. **U.S. Forest Service:** none

2. **State:** The Montana Natural Heritage Program ranks *Astragalus terminalis* G3G4 and S2 (Heidel 1994). This means the species is somewhat vulnerable to extinction to apparently secure globally, but is imperiled because of rarity in Montana. The species is ranked S1 in Wyoming (Fertig 1994), indicating extreme rarity there.

C. GEOGRAPHIC DISTRIBUTION

- 1. **Species range:** Central Idaho, southwest Montana, and immediately adjacent Wyoming (Barneby 1989).
- 2. **Montana distribution:** *Astragalus terminalis* is known in the state from 8 sites in Beaverhead and Madison Counties, in the drainages of the Beaverhead, Madison and Red Rock

Rivers. One of the two Madison River occurrences is based on a collection in 1899.

3. **Occurrences in the study area:** One population was previously known from foothills above the Beaverhead River just north of Pipe Organ Rock (002). This occurrence was relocated and resurveyed in 1994, revising population boundaries and adding new subpopulations. Much of the population is not on BLM land. An Element Occurrence Record and map showing the precise location are included in Appendix C.

C. HABITAT

1. **Associated vegetation:** *Astragalus terminalis* grows in grasslands, sagebrush/grasslands, and in stony and rocky habitats (Barneby 1964, and Montana records). The occurrence in the study area is in grasslands dominated by bluebunch wheatgrass (*Elymus spicatus*) and needle and thread (*Stipa comata*), without or with sagebrush (*Artemisia tridentata* and *Artemisia tripartita*). Additional associates at the site include *Arenaria kingii*, *Astragalus adsurgens*, *Astragalus drummundii*, *Astragalus miser*, *Castilleja pallescens*, *Koeleria macrantha*, and on south-facing slopes, *Opuntia polyacantha*. The lower slopes of the main population area are being invaded by weeds, most notably sweetclover (*Melilotus officinalis*) and cheatgrass (*Bromus tectorum*). A photographic slide of the habitat is attached at the end of this report.
2. **Topography:** Railhead milkvetch grows on hillsides, ridgecrests, and river benches (Barneby 1964 and Montana records). The occurrence in the study area is on steep hills above the river bottom at around 5,600 feet. The population is in lower slope positions with both northerly and southerly aspects.
3. **Soil relations:** The soils are usually derived from calcareous parent materials (Barneby 1964). The soil at the site in the study area is stony and probably derived from alluvium, but possibly downhill from a limestone outcrop. The soil is extremely well drained and was dry by the survey date (June 21).

D. POPULATION DEMOGRAPHY AND BIOLOGY

1. **Demographic details:** The population in the study area was originally (1983) estimated to consist of fewer than 50 plants confined to a small area, but, in 1994, additional subpopulations were located on adjacent private land (thought to be BLM at the survey date) and the total numbers were estimated at 1,000-2,000, covering at least 40 acres.

Only a small subpopulation (<100 plants) was found on BLM land. Elsewhere in Montana, the species was considered "common" at one site, but other populations were estimated to consist of fewer than 1,000 individuals or were incompletely surveyed.

2. **Reproductive biology:** Reproduction is by seed. Most plants were flowering with a few having early fruits when the population was surveyed (June 21) but there were also many vegetative plants. Browsed heads were observed in 1994.

E. MANAGEMENT CONSIDERATIONS

Astragalus terminalis has a relatively narrow range and is considered rare in Wyoming (Fertig 1994) and in parts of its range in Idaho (Barneby 1964). Although Barneby (1964) described *Astragalus terminalis* as "locally plentiful in the valleys of the Beaverhead River and Red Rock Creek," it is known from relatively few collections with precise location data, from that locale or elsewhere in Montana. It is possible that the species has undergone decline or that it persists mostly on private or other land which has not been surveyed. Nearly all known Montana populations are subject to livestock grazing; however, the effects of grazing on this species are not known. The population near Pipe Organ Rock is threatened by an infestation of sweet clover (possibly seeded) and other weeds which originates from an excavated stockpond and gravel pile on private land. The BLM subpopulation is in more pristine habitat, but is small, and could be threatened if the weeds spread. BLM Sensitive status is appropriate for this species, rather than the currently proposed Watch status. The occurrences on BLM land probably represent the most defensible remaining populations of this species in Montana, and should be protected from heavy livestock grazing and infestations of exotic plant species.

Delphinium bicolor Nuttall ssp. novum
Limestone Larkspur

A. DESCRIPTION

1. **General description:** This larkspur, in the Buttercup Family (Ranunculaceae), has been identified in the past as *Delphinium andersonii* or *Delphinium geyeri*. Herbarium work has shown that Montana plants are not closely aligned with either of these taxa but are more closely related to *Delphinium bicolor*. A specialist in the genus, Michael Warnock (Sam Houston State University, Huntsville, Texas), was consulted and a new taxon will be described as a subspecies of *Delphinium bicolor*. The plants are perennials with relatively strong deep roots. The deeply palmately

cleft leaves are mostly basal and are nearly hairless to fairly densely hairy. The large, showy blue flowers are borne on long, spreading pedicels and form a relatively broad, pyramidal inflorescence. The flowers are strongly irregular, with 5 large sepals which are flared in front; the upper one is prominently spurred in back. There are two pairs of smaller and comparatively inconspicuous petals, the upper are blue tipped (sometimes solid white) without pigmented veins. There are usually 3 pistils, which develop into follicles (dry, many seeded fruits which split down one side).

2. **Technical description:** not yet available.

3. **Diagnostic characters:** These plants are geographically sympatric to *Delphinium bicolor* ssp. *bicolor*, which they resemble. The key distinction in the field is the upper petals, which are blue tipped or solid white, in contrast to the blue veined petals of the nominate subspecies. In addition, the flowers are somewhat larger, the sepals are brighter blue, and the lower petals are more deeply cleft (Warnock, pers. commun.). There also seems to be subtle differences in phenology, *Delphinium bicolor* ssp. *bicolor* being earlier to flower when the two taxa were growing in the same vicinity (observed outside of this study area at Doherty Mountain, Jefferson County). *Delphinium bicolor* ssp. *bicolor* was not seen in the study area, but has a broad distribution in Montana and is likely to occur here as well; other larkspurs seen in the study area are either tall or very short plants which grow in wetter areas.

B. Current legal or other formal status

1. Federal

a. **Bureau of Land Management:** none

b. **U.S. Fish and Wildlife Service:** none

c. **U.S. Forest Service:** none

2. **State:** The Montana Natural Heritage Program ranks *Delphinium bicolor* ssp. *novum* as G3 and S3. This is an indication that the taxon has a restricted range. Global and state rank are the same because the taxon is known only from Montana.

C. Geographic distribution

1. **Species range:** This undescribed taxon is apparently endemic to southwestern and south central Montana.

2. **Montana distribution:** The taxon is now known from the foothills of the Tendoy and Pioneer Mountains (Beaverhead County), the Jefferson River drainage (Broadwater, Jefferson, and Madison Counties), the Rattlesnake Hills (Gallatin County), the Big Belt Mountains (Lewis and Clark County), and the Pryor Mountain desert (Carbon County).
3. **Occurrences in the Tobacco Roots:** *Delphinium bicolor* ssp. novum is documented from two sites in the study area, just to the north and to the south of Clark Canyon Reservoir. An Element Occurrence Record (EOR) and map showing the precise location of the population to the south of Clark Canyon Reservoir (007) are given in Appendix C. This taxon was dropped from tracking by MTNHP in fall of 1994, thus an EOR is not provided for the occurrence to the north of Clark Canyon Reservoir, however, the approximate location is mapped in Figure 2, and is at the same site as an occurrence of *Sphaeromeria capitata* (005) for which an EOR and map are provided in Appendix C.

D. Habitat

1. **Associated vegetation:** Throughout its range, Limestone Larkspur occurs mostly in sparsely vegetated microhabitats within sagebrush grasslands (most commonly *Artemisia tridentata*/*Elymus spicatus* habitat types) and mountain mahogany (*Cercocarpus ledifolius*) communities. Immediate associates are usually other limestone adapted species including at the sites around Clark Canyon Reservoir, *Sphaeromeria capitata*, also treated in this report. Other associated plants are listed in the general site description fields of the EOR in Appendix C.
2. **Topography:** *Delphinium bicolor* ssp. novum grows on unglaciated ridges, slopes, rockslides, and banks in the foothills and basins at low to middle elevations (4,100-6,800 feet).
3. **Soil relations:** The taxon is confined to soils and lithic substrates derived from calcareous parent materials. In the study area these are shallow, gravelly, fine textured soils on top of limestone bedrock. Along the Jefferson River they are loose, rich soils. In the Pryor Mountain Desert they include dry, calcareous sands, and in the Big Belt Mountains the plant grows in loose limestone talus. These soils are usually moist only in the spring and early summer when the plants are actively growing.

E. Population demography and biology

1. **Demographic details:** The occurrences in Montana range from a single plant to thousands of plants covering hundreds of

acres. In 1993, thousands of plants were observed with a more or less continuous distribution for miles on a belt of limestone to the south of Clark Canyon Reservoir (007). In 1994, the population to the north of Clark Canyon Reservoir was estimated to consist of 100 to 500 plants and to cover at least 40 acres.

2. **Reproductive biology:** Reproduction is by seed. The flowering period is May-June. Mature fruit have been noted at only a few sites in the state, however, this is because the taxon has been surveyed only at early dates; without flowers, *Delphinium bicolor* ssp. cannot be distinguished from the nominate subspecies, at least given current knowledge of the taxon. Many populations have a large proportion of vegetative plants (presumably juvenile), which is taken as an indication of successful reproduction and seedling establishment. Although larkspur species are known to hybridize, no intermediates between the subspecies have been seen, even when the two taxa were growing close together.

F. Management concerns:

Recent studies in Montana have shown that what was previously tracked as two separate species (*Delphinium andersonii* and *Delphinium geyeri*) is better treated as one taxon, which will be described as a subspecies of *Delphinium bicolor* (Warnock, in preparation). In addition, many new populations of the taxon have been recently discovered and its distribution in many areas has been found to be more or less continuous over large areas of suitable habitat. The taxon is, thus, now known to be much more common than was thought just a couple of years ago. Populations seem to respond well to grazing; at one site near Doherty Mountain, in Jefferson County, a population which straddled a fenceline was more dense on the heavily grazed side, and flourishing populations have been observed elsewhere in grazed habitat. Other populations, including those in this study area around Clark Canyon Reservoir, occur in secondary range. Species of *Delphinium* are known to be toxic to cattle. It now seems that management for conservation of Limestone larkspur is not necessary and no special BLM status is proposed. The taxon does have special significance because it is a very attractive Montana endemic. Although this species is now known to be too common to warrant continued tracking by the Montana Natural Heritage Program, it is appropriately placed on lists of state endemics and species of limited distribution.

Lesquerella sp. novum I
Undescribed Bladderpod #1

A. Description

1. **General description:** This undescribed *Lesquerella* is a small, low growing perennial in the mustard family (Brassicaceae). The leaves are mostly in a basal rosette and are shaped like spoons, with a broadened blade and a narrowed petiole. The stem leaves are smaller and sessile. The foliage is covered with short, appressed, forked hairs which give the leaves a grayish cast. The flowers are borne on stems which hug the ground, several on each stem. The flowers are typical of the family, with 4 green sepals, 4 bright yellow petals, 6 stamens, and a single pistil. The mature fruit is a silique (a fruit with two chambers separated by a membranous partition) which is not much longer than wide and is flattened at right angles to the plane of the partition. A photographic slide of the plant is attached to the end of this report.
2. **Technical description:** not yet available
3. **Diagnostic characters:** This taxon resembles *Lesquerella carinata* to which it keys out in Dorn (1984). The two taxa have technical differences in their fruits (Heidel 1993), and *Lesquerella carinata* is known in Montana only from a small area in the vicinity of Bearmouth in the Garnet Range in Granite County (Vanderhorst 1995c). The taxonomy of this group of *Lesquerella* with obcompressed fruits is not yet resolved in Montana; the number of taxa and the affinity of individual populations, especially across distances and habitat types is still uncertain. The plants found in this study area closely resemble those found in similar habitat near Bannack, and are thus assumed to be the same taxon; this has been referred to as *Lesquerella* sp. novum I on recent BLM, U.S. Forest Service Region 1, and Montana Natural Heritage Program lists. *Lesquerella alpina* is the only species of the genus which is known to be sympatric with this undescribed taxon; the former is distinguished by its erect flowering stems, narrow leaves without petioles, and fruits which are not flattened (Heidel 1993, Dorn 1984).

2. Current legal or other formal status

1. Federal

- a. **Bureau of Land Management:** proposed Watch status (USDI Bureau of Land Management 1993)
- b. **U. S. Fish and Wildlife Service:** none

c. U. S. Forest Service: Sensitive in Region 1 (USDA Forest Service 1994a).

2. **State:** The Montana Natural Heritage Program ranks *Lesquerella* sp. novum I as G2 and S2 (Heidel 1994), signifying that the taxon is imperilled because of rarity. The global and state ranks are the same because the taxon is found only in Montana.

C. Geographic distribution

1. **Species range:** The taxon appears to be endemic to Montana.
2. **Montana distribution:** This will depend on the ultimate circumscription of the species. Eight populations in Montana have been assigned to this taxon in the past (Heidel 1993) mostly in the foothills of the Pioneer Mountains and just south around Badger Pass and Bannack in Beaverhead County, but single outlying populations have also been identified in the Centennial Mountains (Beaverhead County) and in the foothills of the Sapphire Mountains (Granite County). Plants from the Granite County population (Emerine Gulch) are somewhat different from those in this study area, having longer, narrower fruits, and probably represent a different taxon (personal observation and collections). Four of the Beaverhead County occurrences are on BLM land.
3. **Occurrences in the study area:** One population was located for the first time on BLM land in the "Rocky Hills" (009) between Grant and Bannack. An Element Occurrence Record and map showing the precise location are given in Appendix C.

D. Habitat

1. **Associated vegetation:** *Lesquerella* sp. novum I occurs in both foothill and sub-alpine settings (Heidel 1993). The population in the Rocky Hills, and most others on BLM land, are in the foothills in communities dominated by mountain mahogany (*Cercocarpus ledifolius*) and bluebunch wheatgrass (*Elymus spicatus*). Limber pine (*Pinus flexilis*) and sagebrush (*Artemisia tridentata*) are subdominant at the Rocky Hills and some other BLM sites. The undescribed bladderpod usually grows in open and exposed microhabitats in these communities, rarely close to or in the shade of the dominant canopy species (Heidel 1993). Other forbs in these openings in the Rocky Hills include *Castilleja pallescens*, *Haplopappus acaulis*, *Penstemon aridus*, and *Senecio canus*. A photographic slide of the habitat in the Rocky Hills is attached at the end of this report.
2. **Topography:** The foothills sites in Beaverhead County are on ridges and upper slopes on topography controlled by outcrops

of relatively erosion resistant limestone (Heidel 1993). The elevation of these sites ranges from 5,600 to 7,440 feet. The Rocky Hills site is an upper slope with southwest aspect at around 7,200 feet.

3. **Soil relations:** The soils of most Beaverhead County sites are derived from calcareous formations of the Madison Group, but the high elevation site in the Centennials has soil derived from quartzite (Heidel 1993). The population locations and boundaries in general seem strongly controlled by edaphic substrate; the Centennial Mountain occurrence is an anomaly which deserves further evaluation. The soil at the Rocky Hills site is a shallow, gravelly clay derived from loose limestone scree, and was dry by the survey date (June 29).

E. Population demography and biology

1. **Demographic details:** Numerical estimates of population size range from 50 to thousands of plants, and the taxon was considered "common" at two recently surveyed sites. Populations with lower estimates have not been completely surveyed, and may be underestimated; when the population near Bannack was originally discovered only 9 plants were found (Heidel 1993), but over 1,000 plants were estimated in 1994 (Vanderhorst 1995b). The population in the Rocky Hills was estimated to consist of between 1,000 and 10,000 plants and to cover 15 acres.
2. **Reproductive biology:** *Lesquerella* sp. novum I is a small, probably short-lived perennial which reproduces entirely by seed. Species of *Lesquerella* are generally cross-pollinated and self-incompatible (Rollins and Shaw 1973). The plants generally flower from late May to late June, with flower and fruit stages often overlapping on the same plant and within an inflorescence due to indeterminate growth habit (Heidel 1993). Flowering was completed and seed were dispersing at the survey date (June 29) of the Rocky Hills population. The population structure, habitat, and plant habit of *Lesquerella* sp. novum appear to be very similar to those of *Lesquerella carinata* var. *lanquida*, whose population biology has been studied in depth (Greenlee 1994). These bladderpods seem to have populations which are subject to large fluctuations in numbers which follow climatic cycles, especially at severe (i.e. hot, dry) sites.

E. Management considerations:

The population of *Lesquerella* sp. novum I in the Rocky Hills is in near-pristine habitat which is not threatened by current land uses. Cattle grazing is concentrated on lower, less steep terrain with more productive vegetation types, and the

bladderpod's low stature protects it from browsing. However, the species has a limited range, its local distribution is confined to highly specific substrates, and its populations may be subject to drastic natural fluctuations. Its numbers could be severely impacted by future mining activity or other major disturbances, including weed infestations, in the areas where it grows. To insure that the taxon is considered in future management plans, it should be designated a Watch plant taxa by the BLM, as proposed.

Penstemon lemhiensis (Keck) Keck & Cronquist
Lemhi Beardtongue

A. Description

1. **General description:** *Penstemon lemhiensis* is a large herbaceous perennial in the Figwort Family (Scrophulariaceae). The plants have a basal rosette of large, entire margined leaves and stem leaves which are smaller and arranged oppositely. The flowers are borne on short stalks in whorls at the upper nodes. The flowers are large with a green calyx with 5 sharply pointed segments which are fused at their base and a bright blue corolla which is fused for most of its length but two lipped at its mouth. There are 4 fertile stamens, a fifth sterile "staminode," and a single pistil which develops into a capsule. A photographic slide of the plant and its habitat is attached at the end of this report.
2. **Technical description:** Perennial herb, 3-7 dm (12-28 in) tall, with one-several stout stems from a branched caudex; herbage often finely hirtellous-puberlent at least in part; leaves entire, the basal ones clustered, up to 15-20 cm (6-8 in) long and 1-2.5 (0.4-1 in) wide, with petiolate, oblanceolate to narrowly elliptic blades; cauline leaves sessile, opposite, mostly lanceolate, up to ca. 10-12 cm (4-4.8 in) long and 1-2 cm (0.4-0.8 in) wide; inflorescence glabrous, of several-many loose verticillasters, more or less secund in life; calyx 7-11 mm (0.27-0.43 in) long, the segments lanceolate to narrowly ovate, evidently but not strongly scarious margined below, tapering to a long-acuminate or subcaudate tip; corolla bright blue to purplish, 40-55 mm (1.5-2 in) long, ca. 1.5 cm (0.6 in) wide at the mouth; pollen sacs 1-3 mm (0.04-0.12 in) long, divaricate, evidently dentate-ciliolate along the sutures, pubescent near the connective and on side away from dehiscence; staminode glabrous; capsules ca. 10-15 mm (0.4-0.6 in) long; seeds ca. 2-3 mm (0.08-0.12 in) long (adapted by Shelly 1990, from Hitchcock et al. 1959 and Dorn 1984).

3. **Diagnostic characters:** *Penstemon lemhiensis* can be distinguished from other members of the genus with which it is sympatric, by its large stature, sharp elongated tips of the calyx lobes, and glabrous staminode (Shelly 1990).

B. Current legal or other formal status

1. Federal

- a. **Bureau of Land Management:** proposed Sensitive (USDI Bureau of Land Management 1993).
- b. **U. S. Fish and Wildlife Service:** C2, which means that "information now in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which sufficient data on biological vulnerability and threat are not currently available to support proposed rules" (U. S. D. I. Fish and Wildlife Service 1993).
- c. **U. S. Forest Service:** Sensitive (USDA Forest Service 1994a).

2. **State:** The Montana Natural Heritage Program ranks *Penstemon lemhiensis* G3 and S2 (Heidel 1994), signifying that it is vulnerable to extinction throughout its range and very vulnerable in Montana.

C. Geographic distribution

1. **Species range:** northern Lemhi County, Idaho and adjacent Montana (Hitchcock and Cronquist 1973)
2. **Montana distribution:** As of 1990, *Penstemon lemhiensis* was known from 35 occurrences in the state, 30 in Beaverhead County and five in Ravalli County (Shelly 1990).
3. **Occurrences in the study area:** Prior to this project, Lemhi beardtongue was known from 6 occurrences on BLM land in the study area, and an additional 3 occurrences on private land in the Horse Prairie Creek drainage. All of these are in the western part of the study area. The BLM sites are at Roberts Gulch (015), Frog Creek (024), Horse Prairie Guard Station (027), Bloody Dick Creek (028 and 029), and Dutch Creek (035). Three of the BLM occurrences were relocated by this project or by a survey of the Lemhi Pass area in 1993 (Vanderhorst 1994b), but two populations could not be relocated although they were searched for. No new populations were located by this project. Element Occurrence Records (EORs) and maps showing the precise locations of the BLM populations are given in Appendix C.

D. Habitat

1. **Associated vegetation:** *Penstemon lemhiensis* typically grows in sagebrush steppe (mostly *Artemisia tridentata*/*Festuca idahoensis* and *Artemisia tridentata*/*Elymus spicatus* habitat types) but also occurs in coniferous forests and forest/step ecotones (Shelly 1990). All of the BLM populations in the study area are in steppe habitats usually dominated by *Artemisia tridentata*, but in one case by *Artemisia tripartita*. Common associates in addition to the dominant sagebrush and grass species include *Balsamorhiza sagittata*, *Castilleja pallescens*, *Chrysothamnus viscidiflorus*, *Fragaria vesca*, and *Orthocarpus luteus*. Vegetation at the individual sites is described in the general site description fields of the EORs in Appendix C.
2. **Topography:** In Montana, *Penstemon lemhiensis* grows on steep to gentle slopes (usually with east to southwest aspects) and flats in the basins, foothills, and lower mountains from 4,150 to 8,100 feet (Shelly 1990).
3. **Soil relations:** Lemhi beardtongue grows in a variety of soils, ranging in texture from fine clays to sand (Ramsetter 1983), and derived from granite and sedimentary rocks, including limestone and basin sediments (Shelly 1990). The soils are usually dry and are often gravelly. The species seems to be adapted to some level of soil disturbance, as evidenced by its occurrence on steep, rocky slopes, in eroded areas, and along roadsides.

E. Population demography and biology

1. **Demographic details:** The average number of plants per population in Montana calculated from 35 recently surveyed occurrences was 128, and a total of 4,420-4,525 plants were estimated to have been observed in the state (Shelly 1990). The populations on BLM land in the study area are all quite small, the largest (Roberts Gulch, 015) consisting of 54 plants in 1986. In recent years, when attempts were made to relocate populations in the study area, some could not be found (Frog Creek, 024 and Dutch Creek, 035), and numbers of plants had declined in others (Roberts Gulch, 015 and Bloody Dick Creek 2, 029). Similar declines, in numbers of flowering and vegetative plants, have been documented by demographic monitoring plots in recent years (J. S. Shelly, unpublished data); although the numbers of seedlings increased dramatically in 1993, a cool, wet year, most of these were dead by 1994. A demographic monitoring transect has been established in the study area on a road cut near Horse Prairie Guard Station (027). Additional demographic details for the individual populations in the study area are

given in the element occurrence data fields of the EORs in Appendix C.

2. **Reproductive biology:** Reproduction is by seed. Plants flower from early June to late July, depending on climatic conditions of the site and year (Shelly 1990) and fruits mature in July and August. The species appears to be an obligate outcrosser (Ramstetter 1983) and is insect pollinated, probably most commonly by a species of vespid wasp (Shelly 1990). Pollination and seedling establishment and survival are probably the major factors limiting reproductive success (Shelly 1990). Browsing of inflorescences by game and cattle has been observed, and grazing appears to impact populations, as evidenced by the lack of plants on the grazed side of a fenceline at the Big Hole Battlefield (Shelly 1990).

F. Management considerations

Penstemon lemhiensis is a rare plant with a limited distribution in Idaho and Montana which has apparently undergone a decline in numbers in recent years, probably due to natural climatic fluctuation (drought), but which may also be impacted by human activities. Potential human caused impacts on the species include cattle grazing, road construction and maintenance, herbicide spraying, and mining. Designation as a Sensitive plant by the BLM is strongly recommended, as proposed. Management plans to minimize human impacts to the populations on BLM land should be implemented; a conservation strategy for this species is currently being developed by the Montana Natural Heritage Program (Elzinga, in progress). The populations on BLM land should continue to be monitored; some of these could not been relocated in the past two years, but should be looked for in the future. Additional surveys for this species should be conducted in the study area if and when climatic change results in an increase in numbers of flowering plants. Additional information on this species' occurrences, biology, and conservation is given by Shelly (1990).

Sphaeromeria argentea Nuttall Chicken Sage

A. Description

1. **General description:** Commonly called a "sage", this member of the Asteraceae (sunflower family) resembles some species of *Artemisia* due to its fragrance, three parted leaves, and small heads of flowers. Plants are often somewhat woody near the base. The leaves are mostly basal and the tiny heads of bright yellow tubular flowers are borne on short

pedicels in loose terminal clusters. A photographic slide of the plant is attached at the end of this report.

2. **Technical species description** (for *Tanacetum nuttallii*, a synonym, quoted from Cronquist 1955):

Aromatic perennial with many slender stems 0.5-2 dm. tall, often slightly woody at base, fibrous-rooted, or with a short, deliquescently branched taproot; herbage closely gray-tomentose; leaves appearing clustered at the base because of the numerous short sterile shoots, mostly cuneate and 3-toothed or -lobed at the apex, sometimes 4- to 5-lobed or entire, up to about 1.5 cm long including the slender base; heads several, mostly short-pedunculate in a subcapitate cluster, small, the involucre only 3-4 mm high, the disk 4-7 mm wide; receptacle glabrous, strongly convex; pappus essentially wanting.

3. **Diagnostic characters:** The genus *Sphaeromeria* is distinguished from lowland species of *Artemisia* by the arrangement of its flower heads in capitate clusters vs. racemes or panicles. *S. argentea* differs from *S. capitata* by having leaves which are merely toothed or shallowly lobed rather than deeply lobed and flower heads borne on pedicels in loose clusters rather than sessile in dense clusters.

B. **Current legal or other formal status**

1. **Federal**

a. **Bureau of Land Management:** none

b. **U. S. Fish and Wildlife Service:** none

c. **U. S. Forest Service:** none

2. **State:** The Montana Natural Heritage Program ranks *Sphaeromeria argentea* G? and S1 (Heidel 1994). The undetermined global rank reflects a lack of knowledge on the species distribution and abundance in other states. In Montana, it is considered critically imperiled due to rarity.

C. **Geographic distribution**

1. **Species range:** "central Idaho and adjacent Montana to Wyoming; Nevada (Hitchcock and Cronquist 1973)," also in northwestern Colorado (Weber 1987).

2. **Montana distribution:** southern Beaverhead County; *Sphaeromeria argentea* is now known from 5 sites in Montana, in the drainages of Red Rock Creek (near Dell and Matador

Ranch), upper Big Sheep Creek, Horse Prairie Creek (see below), and Grasshopper Creek (near the townsite of Bannack).

3. **Occurrences in the study area:** One population was found in the "Rocky Hills" (004) between Grant and Bannack. An Element Occurrence Record and map showing the precise location of the occurrence are included in Appendix C.

D. Habitat

1. **Associated vegetation:** In the Rocky Hills, chicken sage grows in openings in a limber pine (*Pinus flexilis*) and mountain mahogany (*Cercocarpus ledifolius*) community. Subdominant grasses in this habitat include *Elymus spicatus* and *Koeleria macrantha*. Associated forbs include *Erigeron compositus*, *Erigeron tweedyi*, *Haplopappus acaulis*, *Ivesia gordonii*, *Penstemon aridus*, and *Penstemon eriantherus*; all of these plants are characteristic of limestone outcrops. The site was in near pristine condition. A photographic slide showing the habitat is attached at the end of this report. The vegetation at the site near Bannack is very similar, and at the site near Dell, at least two of the forb associates are the same. At the occurrence in the drainage of upper Big Sheep Creek, however, the habitat is an unusual alkaline bottomland community dominated by low sagebrush (*Artemisia arbuscula*) and greasewood (*Sarcobatus vermiculatus*).
2. **Topography:** Four of the sites in Montana are in upland positions on slopes and ridges in the foothills, the fifth is in a basin. The elevations range from about 5,900 to 6,900 feet. In the Rocky Hills, *Sphaeromeria argentea* grows in mid-slope positions on rocky, southwest facing slopes at 6,400 to 6,800 feet.
3. **Soil relations:** Soils at the Rocky Hills site are shallow gravelly clays derived from limestone. Chicken sage also grows here in cracks in the limestone pavement. The soil at the Bannack site is similar, and the soil at the upper Big Sheep Creek site is also a calcareous clay, while that near Dell was cited as a gravelly clay.

E. Population demography and biology

1. **Demographic details:** Estimates of population size in Beaverhead County range from about 100 plants at upper Big Sheep Creek, to thousands of plants observed in 1994 at each of the Rocky Hills and Bannack sites. The Rocky Hills occurrence was estimated to consist of between 5,000 and 10,000 plants covering 50 acres in 3 subpopulations.

2. **Reproductive biology:** Reproduction is by seed. The flowering period is in July. All plants seen at the Rocky Hills site were mature reproductive adults; the plants are probably relatively long-lived. Many inflorescences were infected with a fungus, but its effect on reproduction is not known.

F. Management considerations:

In the study area, *Sphaeromeria argentea* seems to be confined to a particular rock type (limestone). The large population here was in near pristine habitat; future disturbance by cattle is not likely either, due to the steep, rocky ground and prostrate growth habit of the plants. The site near Bannack is likewise in well protected and pristine habitat. However, at the bottomland site where the species grows in the upper Big Sheep Creek drainage, the site is impacted by cattle. Chicken sage is rare and peripheral, with a very limited distribution in Montana, and its abundance elsewhere is poorly known at this time. Four of the five Montana occurrences are on BLM land. As a proactive step to insure that this species is considered in future management decisions, designation of Watch status by the BLM in Montana is appropriate. Populations could potentially be impacted by mining, which has often been centered in areas with outcrops of limestone. Preservation of the Rocky Hills site is also important because another plant species of special concern, an undescribed *Lesquerella* (also treated in detail in this report), also occurs there.

Sphaeromeria capitata Nuttall Rock-Tansy

A. Description

1. **General description:** This is similar to *Sphaeromeria argentea* (see previous synopsis). The deeply lobed leaves are mostly at the woody base of the plant and form dense cushions over rocks. The inflorescence is a tight, spherical cluster of heads of yellow, tubular flowers which lack pappuses.
2. **Technical description:** (quoted from Welsh et al. 1987)
Pulvinate-caespitose herbs, herbage canescent with malpighian hairs; stems subscapose, 2-12(20) cm tall; leaves mainly basal, 4-10 mm long. 1- or 2-palmately lobed, the cauline entire and reduced upward; heads few to numerous in a compact head-like cluster; involucre 3-5 mm high, the broad bracts with hyaline margins; corolla 2.5-3 mm long.

3. **Diagnostic characters:** *Sphaeromeria capitata* differs from *Sphaeromeria argentea* by having more dense clusters of flower heads and more deeply lobed leaves.

B. Current legal or other formal status

1. Federal

- a. **Bureau of Land Management:** none
- b. **U. S. Fish and Wildlife Service:** none
- c. **U. S. Forest Service:** none in Region 1; Sensitive in Region 4, the Intermountain Region (U.S.D.A. Forest Service 1994b).

2. **State:** The Montana Natural Heritage Program ranks *Sphaeromeria capitata* G3 and S2S3 (Heidel 1994). This means it is somewhat vulnerable globally and slightly more so in Montana due to its restricted range.

C. Geographic Distribution

1. **Species range:** Widespread in Wyoming (Dorn 1992, Fertig pers. commun.), but peripheral and local in Colorado (Weber 1987) and Montana, and disjunct in southcentral Utah (Welsh 1987).
2. **Montana distribution:** Carbon, Custer, and Beaverhead Counties.
3. **Occurrences in the study area:** One population was surveyed in 1993 in the foothills just south of Clark Canyon Reservoir (004) and in 1994 the species was found in the foothills to the north of the reservoir (005). Element Occurrence Records and maps showing precise locations of the populations are given in Appendix C.

D. Habitat

1. **Associated vegetation:** Other plants which inhabit the mostly barren rock outcrops where *Sphaeromeria capitata* grows around Clark Canyon Reservoir include *Artemisia frigida*, *Erigeron compositus*, *Haplopappus acaulis*, *Koeleria macrantha*, *Lesquerella alpina*, *Petrophyton caespitosum*, and *Delphinium bicolor* ssp. novum (discussed separately in this report). The rock outcrops are in broader settings of sagebrush grasslands and mountain mahogany communities.
2. **Topography:** *Sphaeromeria capitata* grows on sedimentary bedrock outcrops in the foothills around Clark Canyon Reservoir, on ridge crests at around 6,000 feet.

3. **Soil relations:** As its name suggests, rock-tansy grows out of cracks in rock pavement and in shallow, poorly developed lithosols. At least in Montana and Utah (Welsh 1987) the parent material is limestone.

E. Population demography and biology

1. **Demographic details:** The two populations in the study area were estimated to consist of between 100 and 500 plants each.
2. **Reproductive biology:** Plants are probably quite long lived; all observed were mature, reproductive adults. Plants were in a flower bud stage at both survey dates in June.

E. Management considerations:

Sphaeromeria capitata is probably fairly common on limestone outcrops around Clark Canyon Reservoir. It is abundant on the south side of the Pryor Mountains, where 16 populations were discovered in 1991 (Lesica and Achuff 1992), and is common with a wide distribution in Wyoming. The limestone outcrop habitat is not generally threatened except possibly by mining, and the plants tough and low growing habit make it resistant to grazing and trampling. No special BLM status is recommended for this plant. Rock-tansy should be considered a species of limited distribution in Montana, but should not continue to be actively tracked by the Montana Natural Heritage Program.

DISCUSSION

Recommendations for the BLM status of the seven species of special concern found in the study area are summarized in Table 1. In most cases, no change is recommended in the currently proposed status (USDI Bureau of Land Management 1993), but sensitive status is recommended for *Astragalus terminalis* rather than the proposed watch status, and watch status is recommended for *Sphaeromeria argentea*, for which no special status has been proposed. The recommended sensitive species are extremely rare in Montana and/or are demonstrably threatened under current land uses. Watch status is recommended for species which are rare but which do not seem to be threatened at the present; they should be considered if changes in management are proposed (e.g. new roads and mines) in the areas where they occur. No special status is recommended for species which are relatively widespread in Montana and which do not seem to be threatened by current or foreseen land uses.

Table 2. Current and recommended BLM status for Montana plant species of special concern found in the Horse Prairie Creek study area.

Species scientific name	Current proposed BLM status	Recommended BLM status
<i>Astragalus scaphoides</i>	sensitive	sensitive
<i>Astragalus terminalis</i>	watch	sensitive
<i>Delphinium bicolor</i> ssp. novum	none	none
<i>Lesquerella</i> sp. novum I	watch	watch
<i>Penstemon lemhiensis</i>	sensitive	sensitive
<i>Sphaeromeria argentea</i>	none	watch
<i>Sphaeromeria capitata</i>	none	none

The most significant threat to sensitive plants on BLM land in the Horse Prairie Creek drainage is cattle grazing. Grazing has been documented to impact populations of *Astragalus scaphoides* (Lesica and Elliot 1987) and *Penstemon lemhiensis* (Shelly 1990) and most populations of these species are in primary range within allotments. The levels of grazing in the Horse Prairie area are often very high, but populations of sensitive plants were found only in less heavily grazed habitats,

additional indirect evidence of the impact grazing has on these plants. Conservation management for these plants should a) reduce overall levels of grazing on BLM land in the Horse Prairie area (decrease stocking rates, increase rest periods), especially in areas where overgrazing is evident, and b) designate population areas to be preserved. Combining these tactics would be the most effective means of preserving known populations of sensitive plants as well as their potential habitat and overall biodiversity. Occurrences chosen for specific conservation management should include the largest and healthiest populations in the least degraded habitat (e.g. Clark Canyon School Section, 008, for *Astragalus scaphoides*, and Roberts Gulch, 015, for *Penstemon lemhiensis*).

During the early part of the season I tried to identify BLM sites with wetland plant communities in fair to excellent condition which warranted return trips for surveys at the appropriate time later in the season. Most wetland plants mature late in the summer, and often, fruiting material is necessary for reliable identification (e.g. for sedges). Although most wetlands in the study area were heavily degraded by cattle grazing even in June, I identified sites in apparently good shape in the vicinities of Bloody Dick Creek, Frying Pan Creek, Exchange Pasture, and around Clark Canyon Reservoir. I made return trips to all of these sites in August, however, effective surveys for sensitive plants could only be conducted at Bloody Dick Creek and Clark Canyon Reservoir. The other sites were heavily grazed at a late date in the season and few plant species could be identified. For effective surveys of these habitats to be conducted, the sites will need to be rested for at least the entire season prior to the survey. Cattle grazing is concentrated around water sources and within the study area there are virtually no wetlands in native condition.

Noxious weeds are not as well established in Beaverhead County as in other parts of Montana, perhaps due to the relatively high elevation, isolation, and active prevention programs in the county. However, weeds are a threat to sensitive plants and to the native flora in general and they are likely to become more established in Beaverhead County in the future. Sensitive plants may be especially susceptible to weed infestations because they often have poor competitive ability and low levels of reproduction. Currently, the population of *Astragalus terminalis* in the study area is threatened by an invasion of sweetclover (*Melilotus officinalis*) along with other exotic weeds, which originates on private land. Sweetclover was introduced to this continent and is often seeded for erosion control, but increasingly it is becoming invasive in native plant communities in Montana. Management of this problem will require cooperation between the BLM and the private landowners. Revegetation of disturbed areas, especially when they are adjacent to populations of sensitive plants or to intact native

plant communities, should utilize seed mixtures of non-invasive and preferably native species. After weeds become established within populations of sensitive plants, they may be very difficult or impossible to control without harming the sensitive plants. Weed prevention programs are an important part of conservation management for sensitive species. Roadside spraying for noxious weeds should continue, but workers should be familiar with the appearance and known locations of sensitive plants, most notably *Penstemon lemhiensis*, so that they are not inadvertently sprayed. Limiting off-road vehicle use on BLM land would also help to reduce the spread of weeds.

Not all parcels of BLM land in the study area were surveyed for sensitive plants. The results of this study should be considered a sampling of the total area rather than an exhaustive inventory. It is likely that more populations of sensitive and watch plants will be found in the area and possible that prospective sensitive species other than those documented by this project occur in the area, especially in wetland communities. Some species may be found to be more common than now thought, thus requiring reassessment of their official status; the opposite may become apparent for other species. The list of vascular plants (Appendix B) should also be viewed as preliminary. It is intended that this report serve as a baseline and reference for land managers and as a guide for future sensitive plant surveys in the area. Primary range on BLM land in the Horse Prairie Creek drainage is, on the whole, heavily impacted and these rangelands are a center of distribution for two sensitive regional endemic plants, *Astragalus scaphoides* and *Penstemon lemhiensis*. Management for the conservation of these species will be a challenge which will require new approaches and cooperation between environmentalists, ranchers, and government agencies.

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Eastern part of the Horse Prairie Creek study area.

APPENDIX B: Vascular plants identified in the Horse Prairie Creek study area. Taxa in **bold typeface** were collected; specimens will be deposited at the herbarium at Montana State University (MONT). An asterisk (*) following the name designates a taxon which is adventive to this continent (Eurasian weeds). The total number of taxa is 329 in 52 families. Twenty nine species are adventive from Eurasia.

PTERIDOPHYTES

ADIANTACEAE

Chielanthus feei

EQUISETACEAE

Equisetum arvense

SELAGINELLACEAE

Selaginella densa

GYMNOSPERMS

CUPRESSACEAE

Juniperus communis

J. scopulorum

PINACEAE

Picea engelmannii

Pinus contorta

P. flexilis

Pseudotsuga menziesii

ANGIOSPERMS

APIACEAE

Angelica arguta

Cymopterus nivalis

Heracleum sphondylium

Lomatium triternatum

Osmorhiza depauperata

O. occidentalis

Perideridia gairdneri

ASTERACEAE

Achillea millefolium

Agoseris glauca

Anaphalis margaritacea

Antennaria anaphaloides

A. microphylla

A. racemosa

Arnica cordifolia

A. sororia

Artemisia frigida

A. ludoviciana

A. nova

A. tridentata

var. *tridentata*

var. *vaseyana*

A. tripartita

Aster foliaceus

A. modestus

A. scopulorum

Balsamorhiza sagittata

*Carduus nutans**

Chaenactis douglasii

Chrysothamnus nauseosus

C. viscidiflorus

*Cirsium arvense**

C. canovirens

C. hookerianum

C. scariosum

C. undulatum

*C. vulgare**

Crepis acuminata

C. modocensis

C. runcinata

Erigeron caespitosus

E. compositus

E. corymbosus

E. pumilus

E. tweedyi

Gaillardia aristata

Grindelia squarrosa

Gutierrezia sarothrae

Haplopappus acaulis

H. suffruticosus

Helenium autumnale

Helianthella uniflora

Heterotheca villosa

Hymenopappus filifolius

Machaeranthera canescens

Matricaria matricarioides

Microseris nutans

Nothocalais troximoides

Senecio canus
S. integerrimus
S. pseud aureus
S. serra
S. triangularis
Sphaeromeria argentea
S. capitata
*Taraxacum laevigatum**
*T. officinale**
Tetradymia canescens
Townsendia parryi
*Tragopogon dubius**

BERBERIDACEAE

Mahonia repens

BETULACEAE

Alnus incana

BORAGINACEAE

Cryptantha celosioides
*Cynoglossum officinale**
Hackelia floribunda
Lappula redowskii
L. squarrosa
Lithospermum ruderales
Mertensia ciliata
M. oblongifolia

BRASSICACEAE

Arabis drummondii
A. holboellii
A. nuttallii
*Camelina microcarpa**
*Capsella bursa-pastoris**
Cardaria draba
*Descurainia sophia**
Draba nemorosa
D. oligosperma
Erysimum asperum
Lesquerella alpina
L. sp. novum
Rorippa curvisiliqua
*R. nasturtium-aquaticum**
*Sisymbrium altissimum**
*S. loeselii**
Stanleya viridiflora
*Thlaspi arvense**

CACTACEAE

Opuntia polyacantha
Pediocactus simpsonii

CAMPANULACEAE

Campanula rotundifolia

CAPRIFOLIACEAE

Symphoricarpos oreophilus

CARYOPHYLLACEAE

Arenaria congesta
A. kingii
*Silene latifolia**
Stellaria crassifolia

CHENOPODIACEAE

Atriplex gardneri
Krascheninnikovia lanata
Monolepis nuttalliana
Sarcobatus vermiculatus

CRASSULACEAE

Sedum lanceolatum

CYPERACEAE

Carex aquatilis
C. geyeri
C. lanuginosa
C. microptera
C. nebrascensis
C. pachystachya
C. rossii
C. utriculata

ERICACEAE

Chimaphila umbellata
Vaccinium scoparium

FABACEAE

Astragalus adsurgens
A. agrestis
A. argophyllus
A. atropubescens
A. bisulcatus
A. drummondii
A. lentiginosus
A. miser
A. scaphoides
A. terminalis
Lupinus argenteus
L. lepidus
L. leucophyllus
L. polyphyllus
 var. *humicola*
 var. *polyphyllus*

Medicago sativa*
 Melilotus albus*
 M. officinalis*
 Oxytropis besseyi
O. lagopus
 O. sericea
 Thermopsis montana
 Trifolium repens*
T. longipes

GENTIANACEAE

Frasera speciosa

GERANIACEAE

Geranium viscosissimum

GROSSULARIACEAE

Ribes cereum
 R. hudsonianum
 R. lacustre
 R. setosum

HYDROPHYLLACEAE

Hydrophyllum capitatum
 Nemophila breviflora
 Phacelia franklinii
 P. hastata
 P. heterophylla
 P. linearis

IRIDACEAE

Iris missouriensis
 Sisyrinchium idahoense

JUNCACEAE

Juncus balticus
J. confusus
J. ensifolius
 var. ensifolius
J. nevadensis

JUNCAGINACEAE

Triglochin palustre

LAMIACEAE

Agastache urticifolia
 Mentha arvensis

LEMNACEAE

Lemna minor

LILIACEAE

Allium geyeri
 A. textile
 Calochortus eurycarpus
 Camassia quamash
 Erythronium grandiflorum
 Maianthemum stellatum
Zigadenus venenosus

LINACEAE

Linum lewisii

LOASACEAE

Mentzelia dispersa
 M. laevicaulis

MALVACEAE

Sphaeralcea coccinea

ONAGRACEAE

Epilobium brachycarpum
 E. ciliatum
 Gaura coccinea
 Gayophytum racemosum
 Gayophytum ramosissimum
 Oenothera cespitosa
 O. flava

OROBANCHACEAE

Orobanche corymbosa
 O. fasciculata

PLANTAGINACEAE

Plantago patagonica

POACEAE

Agropyron cristatum*
 Alopecurus pratensis*
 Beckmannia syzigachne
 Bromus anomalus
 B. carinatus
 B. ciliatus
 B. tectorum*
 Calamagrostis rubescens
Deschampsia cespitosa
 Elymus cinereus
 E. elymoides
 E. hispidus*
E. spicatus
E. trachycaulus
 Festuca idahoensis
 Glyceria striata

Hordeum brachyantherum
H. jubatum
Koeleria macrantha
Leucopoa kingii
Melica spectabilis
Oryzopsis hymenoides
Phalaris arundinacea
Phleum alpinum
*P. pratense**
*Poa pratensis**
P. secunda
Stipa comata
S. nelsonii
Torreyochloa pallida
 var. pauciflora
Trisetum spicatum

POLEMONIACEAE

Collomia linearis
Ipomopsis congesta
Leptodactylon pungens
Linanthus septentrionalis
Microsteris gracilis
Phlox longifolia
P. muscoides
P. pulvinata
Polemonium occidentale

POLYGONACEAE

Eriogonum flavum
E. mancum
E. microthecum
E. ovalifolium
 var. ovalifolium
 var. purpureum
E. umbellatum
Polygonum bistortoides
*Rumex acetosella**
R. aquaticus
 var. fenestratus
*R. crispus**

PORTULACACEAE

Claytonia lanceolata
Lewisia rediviva
Montiastrum lineare

PRIMULACEAE

Androsace filiformis
A. septentrionalis
Dodecatheon conjugens

RANUNCULACEAE

Actaea rubra
Delphinium bicolor
 ssp. novum
D. depauperatum
D. glaucum
Ranunculus acriformis
R. aquatilis
R. cymbalaria
R. natans
R. unciniatus
Thalictrum occidentale
Trollius laxus

ROSACEAE

Amelanchiar alnifolia
Cercocarpus ledifolius
Fragaria virginiana
Geum aleppicum
G. macrophyllum
G. triflorum
Ivesia gordonii
Petrophyton caespitosum
Potentilla anserina
P. biennis
P. diversifolia
P. fruticosa
P. glandulosa
P. gracilis
P. ovina
Prunus virginiana
Purshia tridentata
Rosa woodsii
Rubus idaeus
Spiraea betulifolia

RUBIACEAE

Galium bifolium
G. boreale

SALICACEAE

Populus angustifolia
P. tremuloides
Salix bebbiana
S. boothii
S. discolor
S. drummondiana
S. exigua
S. geyeriana
S. lasiandra
S. lemmonii

SAXIFRAGACEAE

Heuchera cylindrica
H. parvifolia
Lithophragma parviflorum
Mitella pentandra
Saxifraga integrifolia
S. odontoloma
S. oregana
S. rhomboidea

SCROPHULARIACEAE

Castilleja angustifolia
C. miniata
C. pallescens
C. rustica
Collinsia parviflora
Mimulus guttatus
M. moschatus
Pedicularis contorta
P. groenlandica
Penstemon aridus
P. eriantherus
P. lemhiensis
P. procerus
P. radicosus
Verbascum thapsus
Veronica americana
V. serpyllifolia

SOLANACEAE

Hyoscyamus niger*
Solanum dulcamara*

TYPHACEAE

Typha latifolia

URTICACEAE

Urtica dioica

VALERIANACEAE

Valeriana dioica
V. edulis
V. sitchensis

VIOLACEAE

Viola adunca
V. palustris
V. purpurea

APPENDIX C. Element Occurrence Records (EORs) and maps showing the precise locations of populations of proposed BLM sensitive and watch plant taxa and Montana plant species of special concern on BLM land in the Horse Prairie Creek study area. Throughout the text, these occurrences are referred to (within species) by the last three digits of the element occurrence code and the survey site name.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: ASTRAGALUS SCAPHOIDES
Common Name: BITTERROOT MILKVETCH

Global rank: G3 Forest Service status:
State rank: S1 Federal Status: 3C

Element occurrence code: PDFAB0F7V0.005
Element occurrence type:

Survey site name: BACHELOR MOUNTAIN
EO rank: B
EO rank comments: LARGE POPULATION, MANY VEGETATIVE PLANTS.

County: BEAVERHEAD

USGS quadrangle: BACHELOR MOUNTAIN

Township: Range: Section: TRS comments:
009S 013W 14 N2
009S 013W 11

Precision: S
Survey date: 1984-06-09 Elevation: 6140 - 6840
First observation: 1984 Slope/aspect: 5-20% / SW-SE
Last observation: 1994-06-22 Size (acres): 60

Location:

FROM GRANT GO 2.2 MI. WEST; TURN NORTH AND GO 2.2 MI.; TURN WEST AND
GO 2.5 MI. TO FORK IN ROAD; SITE IS ALONG FENCE ABOVE ROAD.

Element occurrence data:

1984: CA. 100 PLANTS, BUT MANY SMALL AND NOT REPRODUCING. 1994: 1000+
PLANTS IN 2-3 SUBPOPULATIONS. 30% FLOWERING, 70% VEGETATIVE AT UPPER
ELEVATION; PLANTS IN FRUIT AT LOWER ELEVATION.

General site description:

DRY MID AND LOWER SLOPES OF BACHELOR MOUNTAIN; STONY, TERTIARY
SEDIMENTS AND ALLUVIAL PARENT MATERIAL, LIGHT-TEXTURED SOILS.
ASSOCIATED SPECIES: CHRYSOTHAMNUS NAUSEOSUS, ARTEMESIA TRIDENTATA,
ELYMUS SPICATUS, CHRYSOTHAMNUS VISCIDIFLORUS, FESTUCA IDAHOENSIS,
ASTRAGALUS ADSURGENS, PENSTEMON ARIDUS, ARTEMESIA FRIGIDA,
LEPTODACTYLON PUNGENS.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

DISTURBANCE BY CATTLE TRAILS AND GRAZING, MOSTLY CONFINED TO LOWER
SLOPES. ONE OF THE LARGER POPULATIONS OF THIS SPECIES SEEN IN THE
HORSE PRAIRIE AREA, COVERING DIVERSE HABITATS OVER BROAD ELEVATION.

Information source: LESICA, P. 1984. REPORT ON THE CONSERVATION STATUS
OF ASTRAGALUS SCAPHOIDES, A CANDIDATE THREATENED
SPECIES. UNPUBLISHED REPORT TO THE U.S. FISH AND
WILDLIFE SERVICE, DENVER, CO, 20 PP. PLUS
APPENDICES.

Specimens: VANDERHORST, J. (5204). 1994. MONT.
LESICA, P. (2982). 1984. MONTU.

Astragalus scaphoides: Bachelor Mountain (005)
USGS Bachelor Mountain 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: ASTRAGALUS SCAPHOIDES
Common Name: BITTERROOT MILKVETCH

Global rank: G3 Forest Service status:
State rank: S1 Federal Status: 3C

Element occurrence code: PDFAB0F7V0.008
Element occurrence type:

Survey site name: CLARK CANYON SCHOOL SECTION
EO rank: B
EO rank comments: SMALL POPULATION, NO EVIDENCE OF RECENT GRAZING.

County: BEAVERHEAD

USGS quadrangle: ELI SPRING

Township: Range: Section: TRS comments:
009S 011W 25 SW4SW4; 35 NE4NE4; 36 NW4NW4
009S 011W 26 NW4

Precision: S
Survey date: 1986-06-22 Elevation: 5860 - 6280
First observation: 1986 Slope/aspect:
Last observation: 1994-06-20 Size (acres): 37

Location:

CA. 2.25 AIR MILES NORTH OF CLARK CANYON RESERVOIR, ALONG DIRT ROAD
HEADING NORTH TO HENNEBERRY RIDGE; CA. 3 AIR MI. W. OF I-15, CA. 18
MILES SW OF DILLON.

Element occurrence data:

1986: CA. 1500-2000 PLANTS, EARLY TO MATURE FRUIT; CATTLE TRAILS
TRAVERSE A PORTION OF THE HABITAT; A FEW PLANTS HAD BEEN GRAZED; MANY
ACRES OF POTENTIAL HABITAT IN THE AREA; MORE SURVEY WORK NEEDED.
6/13/94: 60% VEGETATIVE, 40% EARLY FRUIT, 1000-10,000 ESTABLISHED
PLANTS, SOME BROWSED HEADS. 6/20/94: 2 SUBPOPULATIONS TO NORTHEAST
WITH CA. 100 PLANTS, 50% FLOWERING, 50% FRUITING.

General site description:

GRAVELLY LOAM SOILS; ARTEMISIA TRIDENTATA/STIPA COMATA, W/ AGROPYRON
SPICATUM, ARTEMISIA FRIGIDA, LEPTODACTYLON PUNGENS, ORYZOPSIS
HYMENOIDES, PHACELIA LINEARIS, OPUNTIA.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA
STATE LAND - UNDESIGNATED

Comments:

Information source: SHELLY, J. S. 1986. [FIELD SURVEYS IN BEAVERHEAD
COUNTY OF 18-22 JUNE.]

Specimens: SHELLY, J. S. (1157) & G. V. KING. 1986. MONTU.
VANDERHORST, J. (5200). 1994. MONT.

Astragalus scaphoides: Clark Canyon School Section (008)
USGS Eli Spring 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: ASTRAGALUS SCAPHOIDES
Common Name: BITTERROOT MILKVETCH

Global rank: G3 Forest Service status:
State rank: S1 Federal Status: 3C

Element occurrence code: PDFAB0F7V0.011
Element occurrence type:

Survey site name: GARFIELD CANYON
EO rank: B
EO rank comments: SMALL POPULATION, MANY VEGETATIVE PLANTS; HAS NOT
BEEN GRAZED FOR 2 YEARS, BUT GRAZING WILL PROBABLY
RESUME AT SOME POINT.

County: BEAVERHEAD

USGS quadrangle: GARFIELD CANYON

Township: Range: Section: TRS comments:
010S 011W 29 SE4

Precision: S
Survey date: 1994-07-01 Elevation: 6720 - 6800
First observation: 1994-07-01 Slope/aspect: 0-20% / SOUTH
Last observation: 1994-07-01 Size (acres): 10

Location:
CA. 1.5 MILES EAST OF MEDICINE LODGE CREEK ROAD, 1.5 MILES NORTH OF
BAKER CANYON. NORTHERN TENDRY Foothills ON A SOUTH-FACING SLOPE ABOVE
DRAW.

Element occurrence data:
200-500 PLANTS, 50% VEGETATIVE, 20% ABORTED FLOWERS, 10% FRUIT, 20%
FLOWER.

General site description:
DRY, OPEN RESIDUAL MIDSLOPE. CLAY SOIL. ASSOCIATED SPECIES: ARTEMISIA
TRIDENTATA, ELYMUS SPICATUS, FESTUCA IDAHOENSIS, GUTIERREZIA
SAROTHRAE, ASTRAGALUS ADSURGENS, ASTRAGALUS DRUMMUNDII, LUPINUS
LEUCOPHYLLUS, CHRYSOTHAMNUS VISCIDIFLORUS, SPHAERALCEA COCCINA,
OPUNTIA POLYACANTHA, KOELERIA MACRANTHA.

Land owner/manager:
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:
A FEW BROWSED HEADS OBSERVED.

Information source: VANDERHORST, J. [BOTANIST]. 1515 LAKE STREET,
OGDEN, UTAH 84401.

Specimens: VANDERHORST, J. (5212). 1994. MONT.

Astragalus scaphoides: Garfield Canyon (011)
USGS Garfield Canyon 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: ASTRAGALUS SCAPHOIDES

Common Name: BITTERROOT MILKVETCH

Global rank: G3 Forest Service status:

State rank: S1 Federal Status: 3C

Element occurrence code: PDFAB0F7V0.013

Element occurrence type:

Survey site name: RAWHIDE CREEK

EO rank: C

EO rank comments: MOSTLY SMALL, VEGETATIVE PLANTS; AREA SEEDED TO
CRESTED WHEAT.

County: BEAVERHEAD

USGS quadrangle: BACHELOR MOUNTAIN

Township: Range: Section: TRS comments:

009S 013W 29 NW4

Precision: S

Survey date: 1994-06-22 Elevation: 6200 -

First observation: 1994-06-22 Slope/aspect: 10% / SOUTH

Last observation: 1994-06-22 Size (acres): 15

Location:

CA. 1 AIR MILE NORTH OF RED BUTTE ON EAST SIDE OF RAWHIDE CREEK.

Element occurrence data:

CA. 500 PLANTS, 80% VEGETATIVE, 20% FLOWERING. SOME ABORTED FLOWERS.

General site description:

DRY, OPEN SEDIMENTARY BASIN, LOWERSLOPE TO BOTTOM. TERTIARY SEDIMENT
PARENT MATERIAL, SILTY SOIL. ASSOCIATED SPECIES: ARTEMISIA TRIDENTATA,
AGROPYRON CRISTATUM, CHRYSOTHAMNUS NAUSEOSUS, ARTEMISIA NOVA,
ARTEMISIA FRIGIDA, ERIOGONUM OVALIFOLIUM.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

NATIVE GRASSES ARE BEING REPLACED BY CRESTED WHEAT. EVIDENCE OF PAST,
BUT NOT RECENT, GRAZING WHICH, IF RENEWED, COULD ADVERSELY AFFECT
POPULATION.

Information source: VANDERHORST, J. [BOTANIST]. 1515 LAKE STREET,
OGDEN, UTAH 84401.

Specimens: VANDERHORST, J. (5202). 1994. MONT.

Astragalus scaphoides: Rawhide Creek (013)
USGS Bachelor Mountain 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: ASTRAGALUS TERMINALIS
Common Name: RAILHEAD MILKVETCH

Global rank: G3G4 Forest Service status:
State rank: S2 Federal Status:

Element occurrence code: PDFAB0F8U0.002
Element occurrence type:

Survey site name: PIPE ORGAN ROCK
EO rank: B
EO rank comments: LARGE, DENSE POPULATION THREATENED BY WEED
INVASION.

County: BEAVERHEAD

USGS quadrangle: DALYS

Township: Range: Section: TRS comments:
009S 010W 03 E2NE4, E2SE4, S2NW4

Precision: S
Survey date: 1994-06-20 Elevation: 5700 -
First observation: 1983 Slope/aspect:
Last observation: 1994-06-20 Size (acres): 10

Location:
CA. 10 MILES SOUTH OF DILLON ON I-15; TAKE FRONTAGE ROAD NEAR
GRASSHOPPER CREEK; SITE IS CA. 1 MILE SOUTH OF GRASSHOPPER CREEK.

Element occurrence data:
1994: >1000 PLANTS IN FLOWER. 1983: SMALL POPULATION (LESS THAN 50
PLANTS); MUCH DISTURBANCE BY LIVESTOCK; THERE IS AN OLD ROAD.

General site description:
SOUTH AND NORTH-FACING SLOPES ABOVE DRY DRAINAGES. STONY TILL SOIL.;
SAGEBRUSH-BUNCHGRASS: ARTEMISIA TRIDENTATA/AGROPYRON SPICATUARTEMISIA
TRIPARTITA.

Land owner/manager:
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
SITE IS IN EXCAVATED AREA AROUND STOCKPOND HEAVILY INFESTED WITH
CHEATGRASS, SWEETCLOVER AND HOUNDSTONGUE; BROWSED HEADS OBSERVED.
SECTION 3 POPULATION NOT RELOCATED IN 1994 BY VANDERHORST. POSSIBILITY
SITE MISMAPPED BY LESICA IN 1983. HABITAT IN NE4 OF SECTION 3 IS
WETTER GRASSLAND WITHOUT SAGEBRUSH.

Information source: LESICA, PETER. DIVISION OF BIOLOGICAL SCIENCES,
UNIVERSITY OF MONTANA, MISSOULA, MT 59812.

Specimens: VANDERHORST, J. (5201). 1994. MONT.

Astragalus terminalis: Pipe Organ Rock (002)
USGS Dalys 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: DELPHINIUM BICOLOR SSP NOVUM
Common Name: UNDESCRIBED LARKSPUR

Global rank: G3 Forest Service status:
State rank: S3 Federal Status:

Element occurrence code: PDRANNOV01.007
Element occurrence type:

Survey site name: CLARK CANYON RESERVOIR
EO rank: B
EO rank comments: LARGE POPULATION; SUBDIVISION NEARBY.

County: BEAVERHEAD

USGS quadrangle: RED ROCK
GARFIELD CANYON

Township: Range: Section: TRS comments:
010S 010W 29 SW4; 30 SE4, NE4; 31 NE4; 32 NW4

Precision: S
Survey date: 1993-06-11 Elevation: 5640 - 5960
First observation: 1993-06-08 Slope/aspect: 10% / SOUTH
Last observation: 1993-06-11 Size (acres): 300

Location:
FROM I-15 TAKE RED ROCK EXIT AND HEAD NORTH ALONG WEST SIDE OF
INTERSTATE FOR 2.5 MILES. TURN LEFT AND PROCEED FOR 0.4 MILE TO
LIMESTONE HILLS.

Element occurrence data:
93-06-11: 2 SUBPOPULATIONS OBSERVED WITH 50 PLANTS, FLOWERING, WITH NO
CAPSULES OF VEGETATIVE PLANTS SEEN. 93-06-08: 1000-10,000 PLANTS, 70%
FLOWERING, 30% IN BUD.

General site description:
DRY, OPEN MID- TO UPPER SLOPE, NON-GLACIATED UPLANDS. LIMESTONE PARENT
MATERIAL, SHALLOW GRAVELLY SOIL. ASSOCIATED SPECIES: AGROPYRON
SPICATUM, POA SECUNDA, PENSTEMON ARIDUS, GUTIERREZIA SAROTHRAE,
OPUNTIA POLYACANTHA, ARTEMISIA FRIGIDA, HAPLOPAPPUS ACAULIS, ALLIUM
TEXTILE, ARENARIA ACULEATA, OXYTROPIS SERICEA, ERIGERON COMPOSITUS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA
CLARK CANYON RESERVOIR

Comments:
LITTLE DISTURBANCE IN AREA. P. LESICA NOTES THAT PLANT IS PROBABLY
COMMON ALL AROUND CLARK CANYON RESERVOIR.

Information source: LESICA, PETER. DIVISION OF BIOLOGICAL SCIENCES,
UNIVERSITY OF MONTANA, MISSOULA, MT 59812.

Specimens: LESICA, P. (5989). 1993. MONTU.
VANDERHORST, J. (4951). 1993. MONT.

Delphinium bicolor ssp. novum: Clark Canyon Reservoir (007)
USGS Red Rock 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: LESQUERELLA SP NOV 1

Common Name: UNDESCRIBED BLADDERPOD

Global rank: G2 Forest Service status: SENSITIVE

State rank: S2 Federal Status:

Element occurrence code: PDBRA1N240.009

Element occurrence type:

Survey site name: ROCKY HILLS

EO rank: A

EO rank comments: LARGE, PRISTINE POPULATION.

County: BEAVERHEAD

USGS quadrangle: GRANT

Township: Range: Section: TRS comments:

009S 012W 1 NE4

Precision: S

Survey date: 1994-06-29

Elevation: 7000 - 7320

First observation: 1994-06-29

Slope/aspect: 20-30% / SW

Last observation: 1994-06-29

Size (acres): 15

Location:

CA. 5 MILES NORTH OF GRANT ON GRAVEL ROAD CONNECTING HWY 91 TO BANNACK
STATE PARK; TURN EAST ON DIRT ROAD, PASS ROCKY WELL, FOLLOW ROUGH
4-WHEEL DRIVE ROAD TO JUST BELOW RIDGETOP OF ROCKY HILLS.

Element occurrence data:

1000-10,000 PLANTS, 100% IN FRUIT. EVIDENCE OF FRUIT DISPERSAL.

General site description:

DRY, OPEN RESIDUAL UPPERSLOPE. LIMESTONE PARENT MATERIAL, GRAVELLY
CLAY SOIL. ASSOCIATED SPECIES: PINUS FLEXILUS, ARTEMISIA TRIDENTATA,
CERCOCARPUS LEDIFOLIUS, ELYMUS SPICATUS, PENSTEMON ARIDUS, CASTILLEJA
PALLESCENS, SENECIO CANUS, HAPLOPAPPUS ACAULIS.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

PRIMITIVE ROAD TO POPULATION.

Information source: VANDERHORST, J. [BOTANIST]. 1515 LAKE STREET,
OGDEN, UTAH 84401.

Specimens: VANDERHORST, J. (5209). 1994. MONT.

Lequerella sp. novum I: Rocky Hills (009)
USGS Grant 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS
Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.015
Element occurrence type:

Survey site name: ROBERTS GULCH
EO rank: B
EO rank comments: SMALL POPULATION, NATIVE HABITAT IN GOOD
CONDITION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township: Range: Section: TRS comments:
009S 014W 33 N2SE4

Precision: S
Survey date: 1986-06-22 Elevation: 6520 -
First observation: 1986 Slope/aspect:
Last observation: 1994-06-28 Size (acres): 5

Location:
MOUTH OF ROBERTS GULCH, CA. 1 AIR MI. NW. OF BLOODY DICK CREEK, CA.
12.5 AIR MI. WEST OF GRANT AND 6.5 AIR MI. ENE. OF LEMHI PASS.

Element occurrence data:
54 PLANTS COUNTED; IN FLOWER. 1994: 9 PLANTS IN FLOWER, EARLY FRUIT, 6
PLANTS VEGETATIVE, SEEDLINGS NOT SEARCHED FOR.

General site description:
EAST-FACING SLOPE ALONG SMALL DRAINAGE, LOAM SOILS. HABITAT RELATIVELY
UNDISTURBED, SOME GRAZING USE. ASSOCIATED SPECIES: ARTEMISIA
TRIDENTATA/AGROPYRON SPICATUM, CHRYSOTHAMNUS VISCIDIFLORUS, ARTEMISIA
FRIGIDA, LUPINUS, ANTENNARIA.

Land owner/manager:
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

Information source: SHELLY, J. S. 1986. [FIELD SURVEYS IN BEAVERHEAD
COUNTY OF 18-22 JUNE.]

Specimens: SHELLY, J. S. (1156) AND G. V. KING. 1986. MONTU.

Penstemon lemhiensis: Roberts Gulch (015)
 USGS Coyote Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS
Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.024
Element occurrence type:

Survey site name: FROG CREEK
EO rank: C
EO rank comments: SMALL POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township: Range: Section: TRS comments:
009S 014W 21 SW4

Precision: S
Survey date: 1989-06-29 Elevation: 7200 - 7280
First observation: 1989 Slope/aspect: 8-15% / EAST
Last observation: 1990-07-10 Size (acres): 1

Location:
HORSE PRAIRIE, CA. 1 MILE NORTHWEST OF HORSE PRAIRIE GUARD STATION,
ALONG FROG CREEK

Element occurrence data:
1990: 17 GENETS; PLANTS MOSTLY BLOOMING OR BROWSED; FEW SEEDLINGS WERE
OBSERVED. 1989: 26 PLANTS.

General site description:
ON ROADSIDE EMBANKMENT WITH BALSAMORHIZA SAGITTATA, ARTEMISIA
TRIDENTATA, AGROPYRON SPICATUM, SEDUM SP., POTENTILL GRACILIS,
ARTEMISIA TRIPARTITA, ACHILLEA MILLEFOLIUM, PENSTEMON ARIDIS,
CASTILLEJA PALLESCENS, FESTUCA IDAHOENSIS AND FRAGARIA VESCA.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:
16 OF 17 PLANTS GROWING IN ROADCUT. POPULATION COULD BE ELIMINATED
THROUGH ROAD MAINTENANCE, SPRAY AND WILDFLOWER PICKERS. 1994-06-28:
JIM VANDERHORST SEARCHED FOR POPULATION BUT NO PLANTS WERE FOUND.

Information source: SCHASSBERGER, L. A. 1989. [MTNHP FIELD SURVEYS OF
SOUTHWEST MONTANA, 26-30 JUNE (PENSTEMON
LEMHIENSIS).]

Specimens:

Penstemon lemhiensis: Frog Creek (024)
 USGS Coyote Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS

Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE

State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.027

Element occurrence type:

Survey site name: HORSE PRAIRIE GUARD STATION

EO rank: D

EO rank comments: VERY SMALL POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township: Range: Section: TRS comments:

009S 014W 27 NW4SW4

Precision: S

Survey date: 1989-06-29 Elevation: 6690 -

First observation: 1989 Slope/aspect: 3-8% / SOUTH

Last observation: 1994-06-28 Size (acres): 1

Location:

HORSE PRAIRIE, CA. 0.5 MILES SE OF HORSE PRAIRIE GUARD STATION.

Element occurrence data:

ONLY 3 PLANTS, ON A ROADCUT.

General site description:

ON ROADSIDE, WITH ARTEMISIA TRIDENTATA, BALSAMORHIZA SAGITTATA,
CASTILLEJA PALLESCENS, FESTUCA IDAHOENSIS, AND FRAGARIA VESCA. 1994: 6
PLANTS COUNTED ON ROADCUT, 7 PLANTS COUNTED IN SAGEBRUSH HABITAT ABOVE
ROAD.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

SEE BLM MONITORING TRANSECT DATA FOR MORE DETAILED DEMOGRAPHY OF
ROADCUT POPULATION.

Information source: SCHASSBERGER, L. A. 1989. [MTNHP FIELD SURVEYS OF
SOUTHWEST MONTANA, 26-30 JUNE (PENSTEMON
LEMHIENSIS).]

Specimens:

Penstemon lemhiensis: Horse Prairie Guard Station (027)
USGS Coyote Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS

Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE

State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.028

Element occurrence type:

Survey site name: BLOODY DICK CREEK I

EO rank: C

EO rank comments: ROADCUT POPULATION.

County: BEAVERHEAD

USGS quadrangle: COYOTE CREEK

Township: Range: Section: TRS comments:

009S 014W 31 W2, SE4

010S 014W 05 NE4

Precision: S

Survey date: 1989-06-29 Elevation: 6600 -

First observation: 1989 Slope/aspect: 0-3% / SW

Last observation: 1989-06-29 Size (acres): 2

Location:

HORSE PRAIRIE, ALONG BLOODY DICK CREEK, CA. 7.1 MILES WEST OF RED
BUTTE.

Element occurrence data:

34 PLANTS, FOUR SMALL SUBPOPULATIONS (1989).

General site description:

PLANTS ALONG ROADSIDE, WITH ARTEMISIA TRIPARTITA, FESTUCA IDAHOENSIS,
AGROPYRON SPICATUM AND CASTILLEJA PALLESCENS.

Land owner/manager:

PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

AREAS WHICH HAD FEW OR NO PLANTS IN 1988, HAD AS MANY AS 10-15 PLANTS
IN 1989.

Information source: SCHASSBERGER, L. A. 1989. [MTNHP FIELD SURVEYS OF
SOUTHWEST MONTANA, 26-30 JUNE (PENSTEMON
LEMHIENSIS).]

Specimens:

Penstemon lemhiensis: Bloody Dick Creek I (028)
USGS Coyote Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS
Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.029
Element occurrence type:

Survey site name: BLOODY DICK CREEK 2
EO rank: C
EO rank comments: SMALL POPULATION, CLOSE TO ROADWAY.

County: BEAVERHEAD

USGS quadrangle: EVERSON CREEK

Township: Range: Section: TRS comments:
010S 014W 05 NW4;4N2

Precision: S
Survey date: 1989-06-29 Elevation: 6300 - 6400
First observation: 1989-06-29 Slope/aspect: 0-8% / SW
Last observation: 1993-06-28 Size (acres): 2

Location:

HORSE PRAIRIE, CA. 5.1 MILES WEST OF RED BUTTE, ALONG BLOODY DICK
CREEK ROAD.

Element occurrence data:

1993: 3 SUBPOPULATIONS RELOCATED, ONLY 7 PLANTS SEEN IN 2; 19 PLANTS
IN THIRD (EASTERNMOST) SUBPOPULATION; FLOWERING WITH IMMATURE FRUIT.
1989: 22 PLANTS, FOUR SMALL SUBPOPULATIONS.

General site description:

ASSOCIATED SPECIES OBSERVED IN 1993: ERIOGONUM OVALIFOLIUM, CASTILLEJA
PALLESCENS, E. UMBELLATUM, LUPINUS LEUCOPHYLLUS, PENSTEMON ARIDUS,
HAPLOPAPPUS ACAULIS. 1989: ARTEMISIA TRIDENTATA, CASTILLEJA
PALLESCENS, ORTHOCARPUS LUTEUS AND AGROPYRON SPICATUM.

Land owner/manager:

PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

SITE REVISITED IN 1993 BY JIM VANDERHORST. OTHER KNOWN POPULATIONS
ALONG THIS ROAD WERE SEARCHED FOR; SOME WERE FOUND BUT HAD FEWER
PLANTS THAN IN 1989, OTHERS COULD NOT BE RELOCATED, SOME POPULATIONS
INCREASED.

Information source: VANDERHORST, J. 1993. [MTNHP FIELD SURVEYS
CONDUCTED AT LEMHI PASS FOR THE BUREAU OF LAND
MANAGEMENT.]

Specimens:

Penstemon lemhiensis: Bloody Dick Creek II (029)
USGS Everson Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: PENSTEMON LEMHIENSIS
Common Name: LEMHI BEARDTONGUE

Global rank: G3 Forest Service status: SENSITIVE
State rank: S2 Federal Status: C2

Element occurrence code: PDSCR1L3N0.035
Element occurrence type:

Survey site name: DUTCH CREEK
EO rank: C
EO rank comments: SMALL ROADSIDE POPULATION.

County: BEAVERHEAD

USGS quadrangle: KITTY CREEK

Township: Range: Section: TRS comments:
009S 015W 14 SW4; 23 NE4

Precision: S
Survey date: 1989-06-29 Elevation: 6760 -
First observation: 1989-06-29 Slope/aspect: 0-35% / SW
Last observation: 1993-06-28 Size (acres): 12

Location:

BLOODY DICK CREEK RD., CA. 0.25 MILE NORTH AND 0.3 MILE SOUTH OF DUTCH CREEK.

Element occurrence data:

NO PLANTS FOUND IN 1993. CA. 30 PLANTS IN 2 SUBPOPULATIONS IN 1989.

General site description:

ROADSIDE POPULATIONS IN ROCKY LOAM SOILS, WITH ARTEMISIA TRIDENTATA AND FESTUCA IDAHOENSIS.

Land owner/manager:

BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT
BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

NO PLANTS FOUND IN LOCATION BY VANDERHORST, 1993.

Information source: VANDERHORST, J. 1994. SURVEY FOR SENSITIVE PLANT SPECIES ON BLM LANDS IN THE VICINITY OF LEMHI PASS, BEAVERHEAD COUNTY. UNPUBLISHED REPORT TO THE BUTTE DISTRICT, BUREAU OF LAND MANAGEMENT. MONTANA NATURAL HERITAGE PROGRAM, HELENA. 5 PP. PLUS APPENDICES.

Specimens: SCHASSBERGER, L. A. (302). 1989.

Penstemon lemhiensis: Dutch Creek (035)
USGS Kitty Creek 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: SPHAEROMERIA ARGENTEA
Common Name: CHICKEN SAGE

Global rank: G5 Forest Service status:
State rank: S1 Federal Status:

Element occurrence code: PDAST8S010.004
Element occurrence type:

Survey site name: ROCKY HILLS
EO rank: A
EO rank comments: NEAR PRISTINE.

County: BEAVERHEAD

USGS quadrangle: GRANT

Township: Range: Section: TRS comments:
009S 012W 1 S2; 12 NE4

Precision: S
Survey date: 1994-06-29 Elevation: 6400 - 6800
First observation: 1994-06-29 Slope/aspect: 20% / SW
Last observation: 1994-06-29 Size (acres):

Location:

CA. 5 MILES NORTH OF GRANT ON GRAVEL ROAD TO BANNACK STATE PARK, TURN
EAST ON DIRT ROAD AND FOLLOW TO ROCKY WELL. TRAVEL OVERLAND CA. 1.5
AIR MILES WNW. PLANTS ARE ON SOUTHWEST SLOPES OF ROCKY HILLS.

Element occurrence data:

5000-10,000 PLANTS WITH 3 SUBPOPULATIONS, 100% IN EARLY BUD. SOME
INFECTED WITH FUNGUS (RUST?).

General site description:

DRY, OPEN RESIDUAL MIDSLOPE. LIMESTONE PARENT MATERIAL, GRAVELLY CLAY
SOIL. ASSOCIATED SPECIES: PINUS FLEXILIS, CERCOCARPUS LEDIFOLIUS,
ELYMUS SPICATUS, HAPLOPAPPUS ACAULIS, KOELERIA MACRANTHA, ERIGERON
TWEEDYI, ERIGERON COMPOSITUS, PENSTEMON ARIDUS, IVESIA GORDONII,
PENSTEMON ERIANTHERUS, JUNIPERUS SCOPULORUM.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

Information source: VANDERHORST, J. [BOTANIST]. 1515 LAKE STREET,
OGDEN, UTAH 84401.

Specimens: VANDERHORST, J. (5211). 1994. MONT.

Sphaeromeria argentea: Rocky Hills (004)
USGS Grant 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: SPHAEROMERIA CAPITATA
Common Name: ROCK-TANSY

Global rank: G3 Forest Service status:
State rank: S2S3 Federal Status:

Element occurrence code: PDAST8S030.005
Element occurrence type:

Survey site name: CLARK CANYON RESERVOIR
EO rank: A
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: GARFIELD CANYON

Township: Range: Section: TRS comments:
010S 010W 6 NW4

Precision: S
Survey date: 1994-06-13 Elevation: 6000 - 6180
First observation: 1994-06-13 Slope/aspect: 0-10% / SOUTH
Last observation: 1994-06-13 Size (acres): 20

Location:

EXIT I-15/91 AT CLARK CANYON RESERVOIR, FOLLOW PAVED ROAD ACROSS DAM,
PAST MARINA TO CAMP FORTUNATE LOOKOUT. SITE IS ON RIDGE ABOVE TURNOUT.

Element occurrence data:
100-500 PLANTS, 20% FLOWER BUD, 80% VEGETATIVE.

General site description:

DRY, OPEN SEDIMENTARY RIDGE CREST. LIMESTONE PARENT MATERIAL, PLANTS
GROWING IN CRACKS IN ROCK. ASSOCIATED SPECIES: CERCOCARPUS LEDIFOLIUS,
ELYMUS SPICATUS, KOELERIA MACRANTHA, ARTEMISIA FRIGIDA, HYMENOPAPPUS
FILIFOLIUS, LESQUERELLA ALPINA, HAPLOPAPPUS ACAULIS.

Land owner/manager:
CLARK CANYON RESERVOIR

Comments:

Information source: VANDERHORST, J. [BOTANIST]. 1515 LAKE STREET,
OGDEN, UTAH 84401.

Specimens:

Sphaeromeria capitata: Clark Canyon Reservoir (004)
USGS Red Rock 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: SPHAEROMERIA CAPITATA
Common Name: ROCK-TANSY

Global rank: G3 Forest Service status:
State rank: S2S3 Federal Status:

Element occurrence code: PDAST8S030.004
Element occurrence type:

Survey site name: CLARK CANYON RESERVOIR
EO rank: B
EO rank comments: DOMINANT ON ROCK PAVEMENT.

County: BEAVERHEAD

USGS quadrangle: RED ROCK

Township: Range: Section: TRS comments:
010S 010W 31 NE4NE4

Precision: S
Survey date: 1993-06-11 Elevation: 6000 -
First observation: 1993-06-11 Slope/aspect: LEVEL
Last observation: 1993-06-11 Size (acres): 5

Location:

TAKE RED ROCK EXIT OFF I-15 AND GO NORTH ON GRAVEL ROAD TO CLARK
CANYON RESERVOIR. CA. 1.5 MILES PAST RED ROCK FISHING ACCESS TURN LEFT
(SOUTH) ON JEEP TRAIL. KEEP LEFT ON TRAIL AND CONTINUE CA. 1 MILE TO
SADDLE. POPULATION IS ON HILLTOPS ABOVE SADDLE.

Element occurrence data:
100+ PLANTS, ALL IN BUD.

General site description:

DRY, OPEN CREST OF SEDIMENTARY FOOTHILLS. LIMESTONE PARENT MATERIAL.
ASSOCIATED SPECIES: PETROPHYTON CAESPITOSUM, SPHAEROMERIA CAPITATA,
HAPLOPAPPUS ACAULIS, ERIGERON COMPOSITUS, DELPHINIUM SP., KOELERIA
MACRANTHA, SENECIO CANUS, ERYSIMUM ASPERUM.

Land owner/manager:

BLM: BUTTE DISTRICT, DILLON RESOURCE AREA

Comments:

SUBDIVISION BELOW SITE, BUT PLANT COMMUNITY RELATIVELY UNDISTURBED.
COMPLETE SURVEY OF ELEMENT NOT CONDUCTED.

Information source: VANDERHORST, J. 1993. [MTNHP FIELD SURVEYS IN THE
TENDRY MOUNTAINS FOR THE BUREAU OF LAND
MANAGEMENT.]

Specimens: VANDERHORST, J. (4952). 1993. MONT.

ATTACHMENT: Photographic slides.

1. *Astragalus scaphoides* plant
2. Habitat of *Astragalus scaphoides* at base of Bachelor Mountain (005).
3. Habitat of *Astragalus scaphoides* on upper slopes of Bachelor Mountain (005)
4. Habitat of *Astragalus scaphoides* near Spring Gulch (008)
5. Habitat of *Astragalus scaphoides* along Rawhide Creek (013)
6. *Astragalus terminalis* plant
7. Habitat of *Astragalus terminalis* near Pipe Organ Rock (002)
8. *Lesquerella* sp. novum I plant
9. Habitat of *Lesquerella* sp. novum I in the Rocky Hills (009)
10. Plant and Habitat of *Penstemon lemhiensis* at Bloody Dick Creek
11. *Sphaeromeria argenta* plant
12. Habitat of *Sphaeromeria argentea* in the Rocky Hills (004)