RARE PLANT INVENTORY OF THE OUTSTANDING NATURAL AREAS OF THE ROCKY MOUNTAIN FRONT

Prepared for:

United States Department of Interior
Bureau of Land Management
812 14th Street North
Great Falls, MT 59401

Prepared by:

Lisa Ann Schassberger, Botanist
Montana Natural Heritage Program
State Library Building
1525 E. 6th Avenue
Helena, MT 59620

Summary Report

25 November 1988

Table of Contents

INTRODUCTION

The Blindhorse, Ear Mountain, Chute Mountain and Deep Creek/Battle Creek, Outstanding Natural Areas (ONAs) are located in the Front Range Mountains approximately 32 km. (20 mi.) west of Choteau, Montana. These ONAs are administered by the U.S. Bureau of Land Management (B.L.M.). They encompass 13,087 acres and contain a diversity of habitats representative of the Front Range ecosystem.

The topography varies from streambeds and meadows to steep forested slopes, cliffs and high-elevation peaks. Elevations within the ONAs range from 1524 m (5000 ft.) to 2165 m (8580 ft.) in elevation. The principal geologic features of these areas include: Lower Cretaceous and Jurassic rocks, (sandstone, mudstone, and fissile shale); Upper and Lower Mississippian Rocks (Castle Reef Dolomite), with lesser amounts of Upper and Lower Cretaceous Rocks, (sandstones and shales); and glacial and landslide deposits (Mudge *et al.*, 1983).

Much of the terrain supports stands of *Pinus flexilis* (limber pine), *Pseudotsuga menziesii* (Douglas fir) and *Populus tremuloides* (quaking aspen), although some areas include stands of *Picea engelmannii* (Engelmann spruce) and *Abies lasiocarpa* (supalpine fir). These forested areas are interspersed with foothills prairie and riparian areas around the numerous creeks and streams.

A rare plant inventory of the Blindhorse, Ear Mountain, Chute Mountain, and Deep Creek/Battle Creek ONAs on the Front Range of Montana was conducted between 17-29 June, 1988. The purpose of this investigation was to determine the occurrence, frequency, and distribution of threatened or endangered plant species within these ONAs. The first section of this report includes information pertaining specifically to the rare plant species, *Orchis rotundifolia*, which was found to occur on the Ear Mountain ONA. Additionally, although a comprehensive plant inventory of the resource area was not attempted or part of the purpose of this survey, a partial list of vascular plants was identified. The second section then includes this list and brief habitat descriptions for each species.

SECTION ONE: Orchis rotundifolia Site Report

Methods

Ocular reconnaissance was used to locate potentially rare plant species within the ONAs. Based on information on the geology of the area, several rare plants were thought to potentially occur on the ONAs. These species were:

- Astragalus molybdenus (Leadville milkvetch)
- Cypripedium passerinum (sparrow's-egg lady's-slipper)
- Erigeron flagellaris (trailing fleabane)
- Erigeron lackschewitzii (Lackschewitz's fleabane)
- Orchis rotundifolia (round-leaved orchis)
- Oxytropis lagopus var. conjugens (***)
- Oxytropis podocarpa (stalked-pod crazyweed)
- Saussurea densa (dwarf saw-wort)

Owing to the extent of the area to be covered, the time constraints,the most likely habitats for these species were searched in detail, while other areas were covered in general. Maps in Appendix A (p. 12) show the approximate routes of travel and the extent of the areas covered. Due to access problems, the Chute Mountain ONA and the northern portion of the Deep Creek/Battle Creek ONA were not covered extensively, and further work might reveal rare plant populations in these areas.

Field collections were identified using the Flora of the Pacific Northwest (Hitchcock and Cronquist, 1973), Vascular Plants of Montana (Dorn, ~~R.D.~~, 1984), and Manual of the Grasses of the United States (Hitchcock, ~~A.S.~~, 1971). Voucher specimens of Orchis rotundifolia are deposited at the University of Montana Herbarium (MONTU).

It must be emphasized that the search comprised only 12 consecutive days, and it is possible that some plant species had flowered or had yet to bloom, and so were overlooked.

A population of Orchis rotundifolia was found in the northwest corner of the Ear Mountain ONA along an unnamed creek. See Figure 1, p.3 and Table 1, p.4 for the mapped location and Element Occurrence Record for this population. The following is a status report on this species.

I. SPECIES INFORMATION

A. CLASSIFICATION

1. SCIENTIFIC NAME: Orchis rotundifolia Banks ex Pursh.

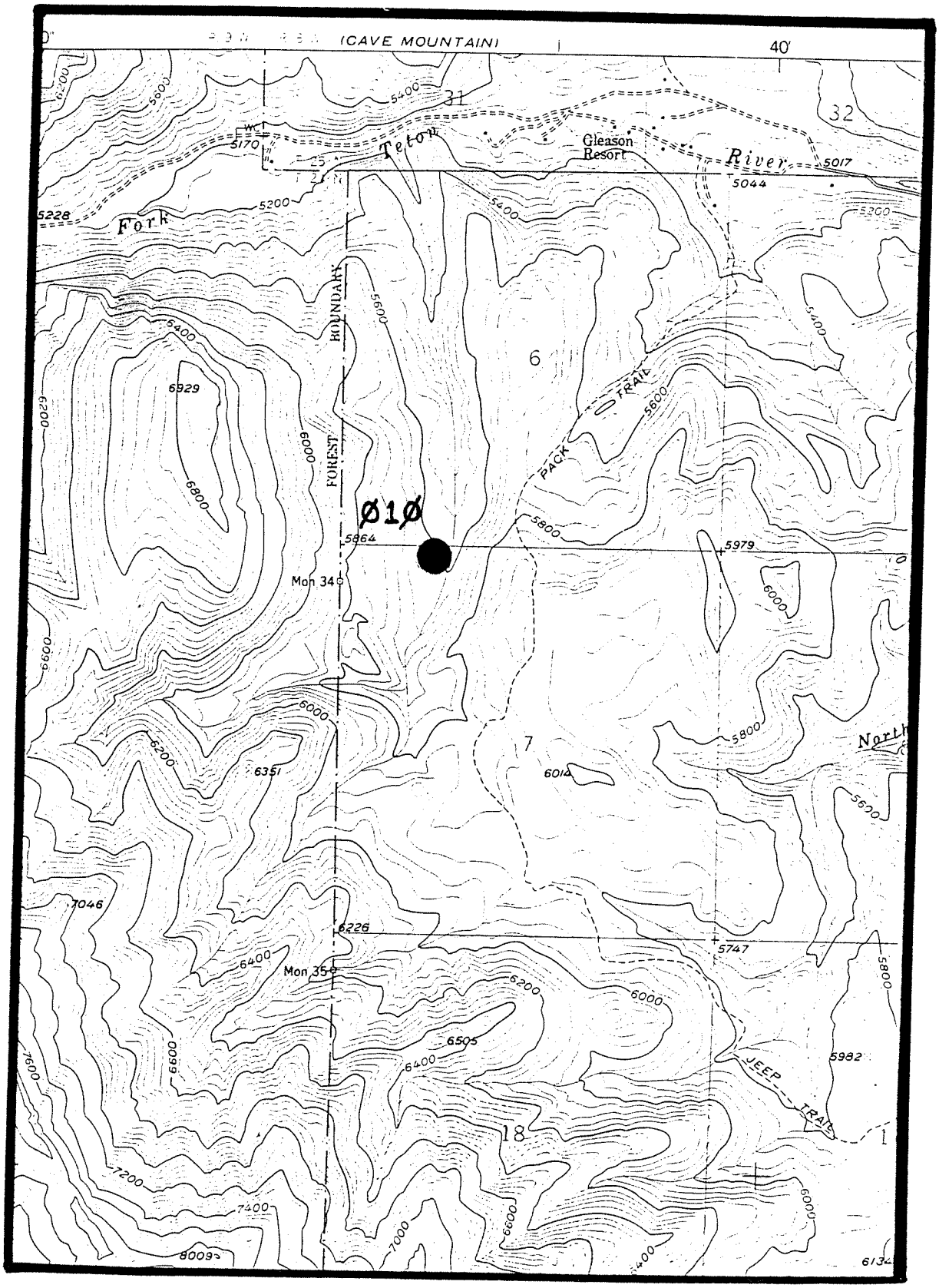


Figure 1. USGS Ear Mountain Quadrangle (7.5'), showing Willow Opening - Ear Mountain ONA *Orchis rotundifolia* site.

ELEMENT OCCURRENCE RECORD

EOCODE: PMORC01010.010
NAME: ORCHIS ROTUNDIFOLIA
COMNAME: ROUND-LEAVED ORCHIS
MARGNUM: 1 TENTEN: 5,2 IDENT: Y EORANK: A
SURVEYSITE: WILLOW OPENING, EAR MOUNTAIN ONA
EORANKCOMM: EXCELLENT LOCATION, LARGE POPULATION.
SURVEYDATE: 1988-06-20 LASTOBS: 1988-06-20 FIRSTOBS: 1988 GRANK: G5
SRANK: S2 STATE: MT COUNTYNAME: MTTETO
QUADCODE: 4711276
QUADNAME: EAR MOUNTAIN PRECISION: SC
LAT: 475123 LONG: 1124107 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: 024N008W SECTION: 07 MERIDIAN: PR TRSCOMM: NW4:S6SW4

PHYSPROV: NR WATERSHED: 10030205 RIVERREACH:
DIRECTIONS: CA. 2.3 MILES NORTH OF EAR MOUNTAIN, CA. 1.1 MILES SOUTH OF SOUTH FORK OF TETON RIVER, NEXT TO MAJOR CREEK.

GENDESC: WILLOW BOG IN CALCAREOUS LOAM; BENEATH PICEA ENGELMANNII, WITH SALIX DRUMMONDIANA, DODECATHEON SPP., FRAGARIA VIRGINIANA, AND PYROLA ASARIFOLIA.
ELEV: 5640 SIZE: 2
EODATA: CA. 800 PLANTS; ALONG EDGES OF BOG, FLOWERING AND WELL-ESTABLISHED. GRAZING LEASE HELD BY THE NATURE CONSERVANCY, HORSES RUN IN JULY-SEPTEMBER.

COMMENTS: VOUCHER - SCHASSBERGER, L.A. (228), 1988, MONTU.

MACODE1: FBLONEARM1MTUS CONTAINED1: Y MACODE2: FBLDOLEWI2MTUS CONTAINED2: Y
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:
MOREMGMT: F SITECODE:
SITENAME:
OWNER: BUREAU OF LAND MANAGEMENT
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SCHASSBERGER, L.A. 1988. BLM FIELD SURVEYS OF DEEP CREEK-BATTLE CREEK, CHUTE MTN, EAR MTN. AND BLINDHORSE O.N.As.
SOURCECODE: F88SCH04MTUS PND5CH02MTUS S88SCHUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 88-08-04 LAS CDREV: Y MAPPER: 88-10-04 LAS QC: Y
UPDATE: 88-11-21 JSS

Table 1. Element Occurrence Record for Willow Opening - Ear Mountain ONA (010) *Orchis rotundifolia* site.

2. COMMON NAME: Round-leaved orchis.

3. FAMILY: Orchidaceae (Orchid Family).

4. Genus: Orchis rotundifolia is one of approximately 80 species in the genus. Most of the species are native to the temperate to cooler areas of the Old World, with 3 or 4 found in North America (Hitchcock et al., 1969). Orchis rotundifolia is the only species known from the Pacific Northwest region.

5. SPECIES: Orchis rotundifolia is the only member of the genus in Montana (Dorn, 1984). In 1968, Eric Hulten created the monotypic genus Amerorchis to accommodate O. rotundifolia (Luer, 1975). This treatment is followed by Luer, and by Williams and Williams (1983). In agreeing with this taxonomic outline Luer (1975) concludes that, in fact, no true representatives of the genus Orchis occur in North America. Orchis is used here in order to match the nomenclature in the readily available state and regional floras, that are likely to be used by Bureau of Land Management personnel and others (Hitchcock et al., 1969; Dorn, 1984).

B. PRESENT LEGAL OR OTHER FORMAL STATUS

1. FEDERAL STATUS

a. U.S. FISH AND WILDLIFE SERVICE: Orchis rotundifolia is not currently listed in the U.S.F.W.S. Notice of Review (U.S. Dpartment of Interior, 1985).

b. U.S. FOREST SERVICE: Orchis rotundifolia is currently included on the list of sensitive species for Region 1 (Northern Region) of the U.S. Forest Service (U. S. Department of Agriculture, 1988).

2. STATE: This species was listed as "recommended threatened" by the Montana Rare Plant Project (Lesica et al., 1984). This category includes "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range in Montana."

Orchis rotundifolia is currently listed by the Montana Natural Heritage Program (Shelly, 1988) as

"demonstrably secure globally, though it may be quite rare in parts of its range": (global rank = G5). In Montana, it is listed as "endangered in state" (6-20 occurrences; state rank = S2).

None of these state ranks currently provide any direct legal protection for O. rotundifolia. Through its inclusion on the Region 1 sensitive plant list, the species has legal protection under U.S. Forest Service agency policies (W. Ruediger, pers. comm.).

C. DESCRIPTION

1. GENERAL NONTECHNICAL DESCRIPTION: Orchis rotundifolia is characterized by a single stem with a solitary, roundish basal leaf. Stems reach only 8 inches in height. The basal leaf may be up to 4 inches long. The 2-8 flowers (to 0.8 inches long), face nearly the same direction in the inflorescence. The flowers have 3 sepals (outer floral leaves) that are white to pinkish in color. Only the upper sepal is distinctly hood-shaped, while the 2 lateral sepals are lance-shaped. All of these have wavy margins. The upper 2 petals of the flower are more lance-shaped while the lower petal forms a broad fringed lip. These petals are also white or pinkish in color and have wavy margins. The lower lip petal is distinctive for its magenta or purple spots (rarely streaked).

   This perennial plant flowers from June to early July (in Montana). It later forms capsules that contain numerous tiny seeds. See color photos of plants and habitat, Appendix B, pp. 17-20.

2. TECHNICAL DESCRIPTION: Plant glabrous, rhizomatous-stoloniferous, mostly 10-20 cm. (8-16 in.) tall, scapose; the base of the stem with 1-3 sheathing bracts and a single sessile to short-petiolate leaf, the blade broadly elliptic to suborbicular 3-9 cm. (1.2-3.6 in.) long; raceme mostly 2-8 (15)-flowered, flowers generally rather crowded, subtended by greenish or purplish, lanceolate bracts about as long as the ovary; sepals 5-nerved, whitish to light pink, the upper one ovate, rounded, 6-10 mm (0.24-0.40 in.) long, erect and with the slightly connivent petals forming a hood over the column; lower sepals spreading, somewhat oblique; petals pink, slightly shorter than the sepals, usually 3-nerved; lip white to pinkish, magenta-purplish spotted (or

rarely streaked), 6-9 mm. (0.24-0.39 in.) long, oblong in outline, usually prominently lobed on either side about midlength, narrowing before flaring to a broad, undulate-crenate and retuse terminal lobe, the basal orifice leading into a slightly curved spur 5-6 mm. (0.19-0.24 in.) long; ovary green to purplish (adapted from Hitchcock et al., 1969)

3. LOCAL FIELD CHARACTERS: Orchis rotundifolia is easily distinguished by its single roundish basal leaf, its scapose flowering stem, and the distinct magenta or purple spots on the flaring, lobed, lip petal. Some species of the genus Habenaria rarely have a single basal leaf, but the lip petal of these plants is never spotted.

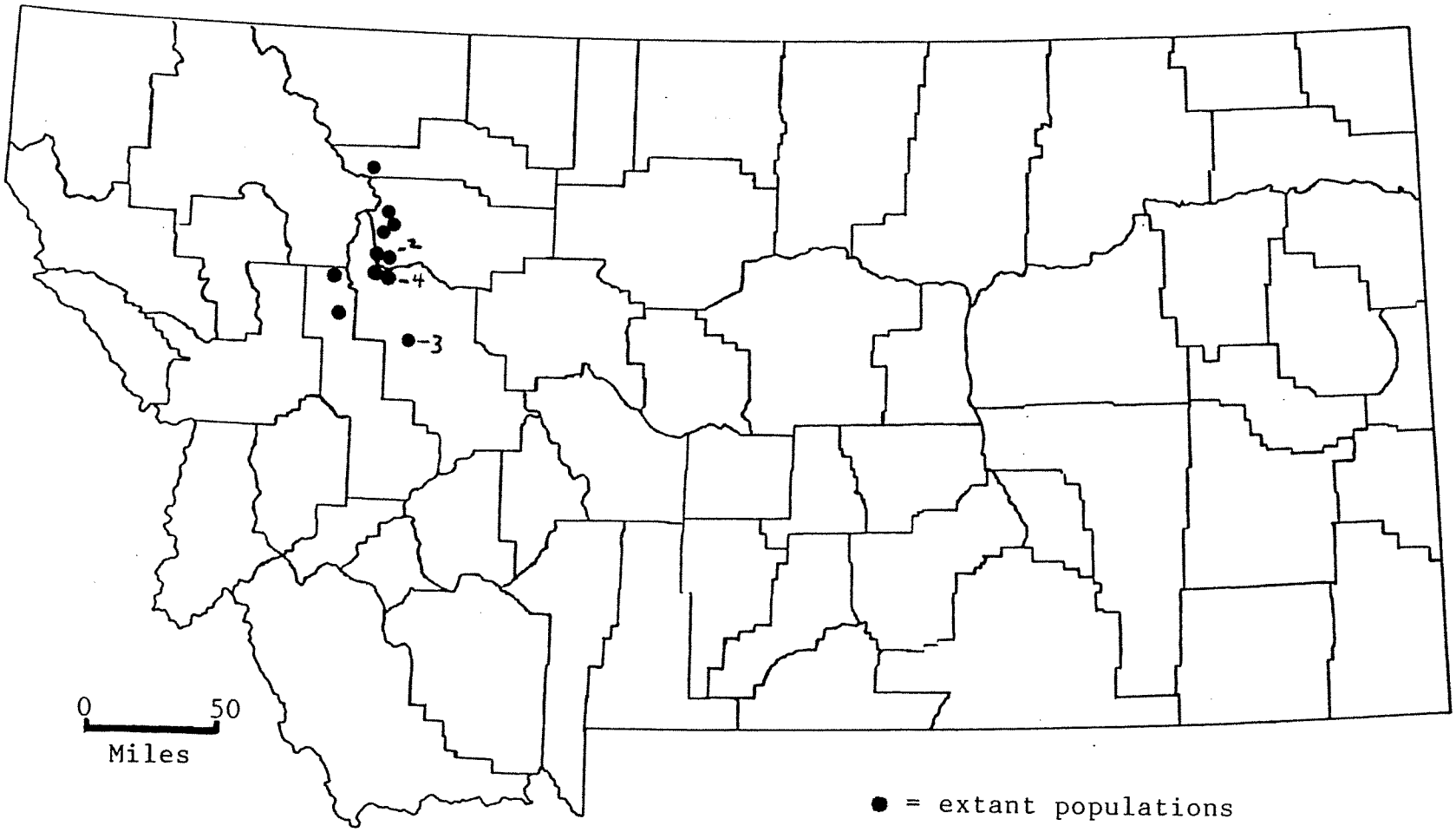
D. GEOGRAPHICAL DISTRIBUTION

1. RANGE: The known range of Orchis rotundifolia includes areas from Alaska to Greenland, south to southern British Columbia, western Montana, northwestern Wyoming, Minnesota, Michigan, Wisconsin, and New York. At the start of the 1988 field season O. rotundifolia was known from only 4 locations in Montana. Extensive field surveys conducted during the summer added a total of 13 new sites. Populations are known to occur in Teton, Lewis and Clark, Pondera, and Powell counties. A map of the distribution of the plant populations within the state is included on p. 8.

E. HABITAT

1. ASSOCIATED VEGETATION: Orchis rotundifolia generally occurs along streams and in bogs or wet woods where drainage is good. It is often associated with limestone substrates (Hitchcock et al., 1969). The population on the Ear Mountain ONA occurs along the edges of a willow bog composed primarily of Salix drummondiana. The overstory is principally Picea engelmannii (Engelmann spruce). Associated plant species include Dodecatheon pulchellum (few-flowered shooting star), Galium boreale (northern bedstraw), Fragaria virginiana (Virginia strawberry), Aquilegia flavescens (yellow columbine), and Pyrola asarifolia (pink wintergreen).

Most of the known sites that contain O. rotundifolia also contain other plants rare in



● = extant populations

Note: Numbers are used where more than one population is represented by a dot.

Figure 1. Distribution of Orchis rotundifolia populations in Montana.

Montana. One species that flowers in May and June, and is likely to also occur at this site is Cypripedium passerinum (sparrow's-egg lady's-slipper). Another possible associate is Antennaria pulcherrima (showy pussytoes). Both of these species are on the U.S. Forest Service Region 1 Sensitive Plant List.

The site is on low-angle slopes (0-3%), at 5,640 feet in elevation. Other sites within Montana have slopes that range from 0-10%, and elevations that range from 4,560 to 5,920 feet.

F. POPULATION DEMOGRAPHY AND BIOLOGY

1. REPRODUCTIVE BIOLOGY: Although Orchis rotundifolia is rhizomatous, it is apparently short-lived and depends upon seed production to maintain population sizes (Luer, 1975).

2. POPULATION SIZE AND CONDITION: The Ear Mountain population contains approximately 800 plants. Other populations in Montana range in size from 100 to 3,000+ plants. The average population size is approximately 760. The total number of plants observed in Montana to date is approximately 13,000-15,000. Luer (1975) has found that population sizes for this species generally fluctuate from year to year.

II. ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

A. THREATS TO THE POPULATION: Currently there appear to be no threats to this population of Orchis rotundifolia. However, any activity that might alter the water regime or overstory at the site would be likely to affect this population.

B. RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS: The following recommendations are made to insure the long-term persistence of the O. rotundifolia population on the Ear Mountain Outstanding Natural Area:

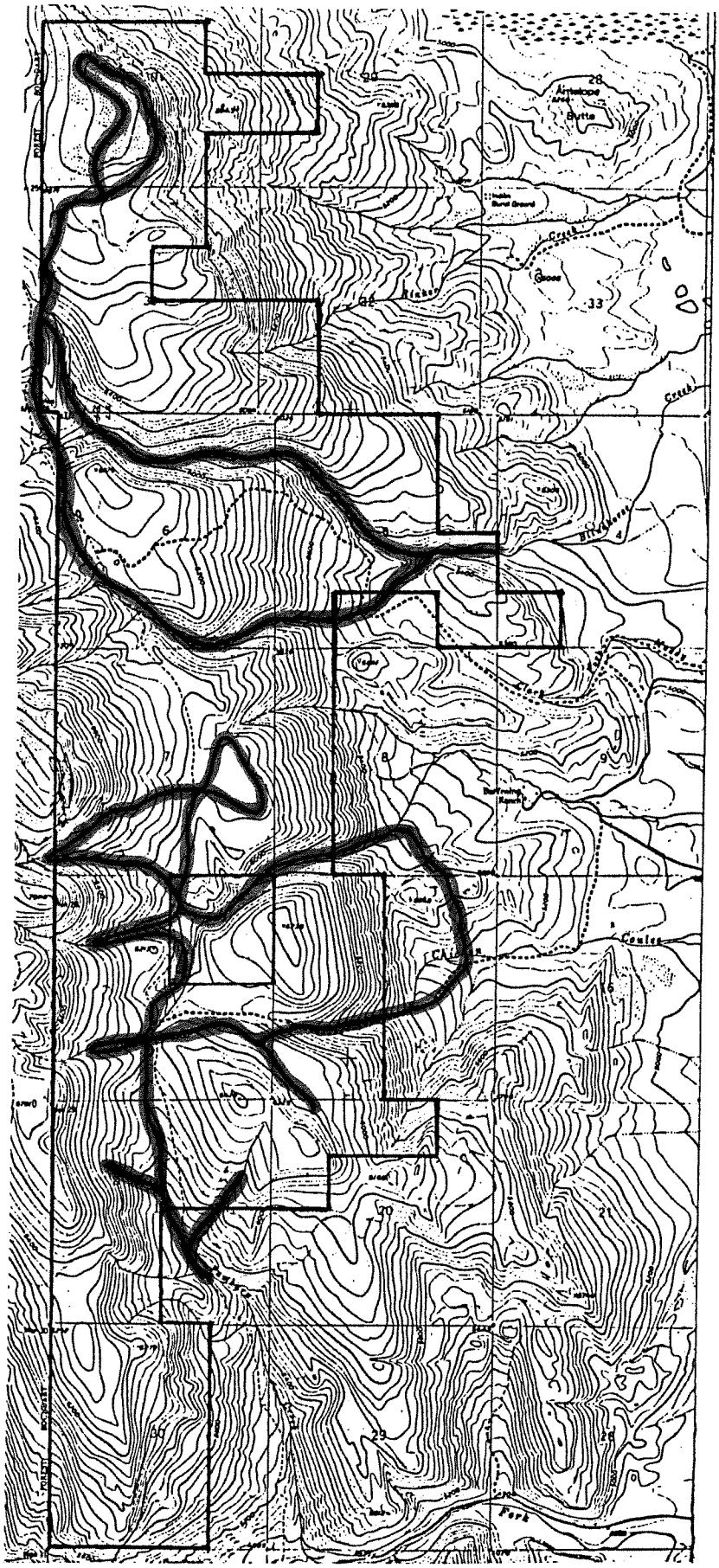
1. Protection of this representative population should be a priority. Monitoring studies would increase information on the long term viability and stability of this population. The grazing allotment is currently held by The Nature Conservancy. The allotment is for 15 horses from July 5-September 5 (39 AUMs) on this piece of land (945 acres). It is currently not grazed to

capacity, and this use should not pose a threat to the rare plant population.

III. SUMMARY

Orchis rotundifolia is an orchid species distributed broadly across boreal North America. Its range extends southward into Montana where it is considered endangered in the state. Although there are now 17 known sites in Montana for this species, these populations are sparsely distributed. It is likely that this species would be affected by minor habitat disturbances that alter the water regime or overstory characteristics of the Ear Mountain site. Future land use activities in the vicinity of this population should include consideration for maintaining its long-term viability.

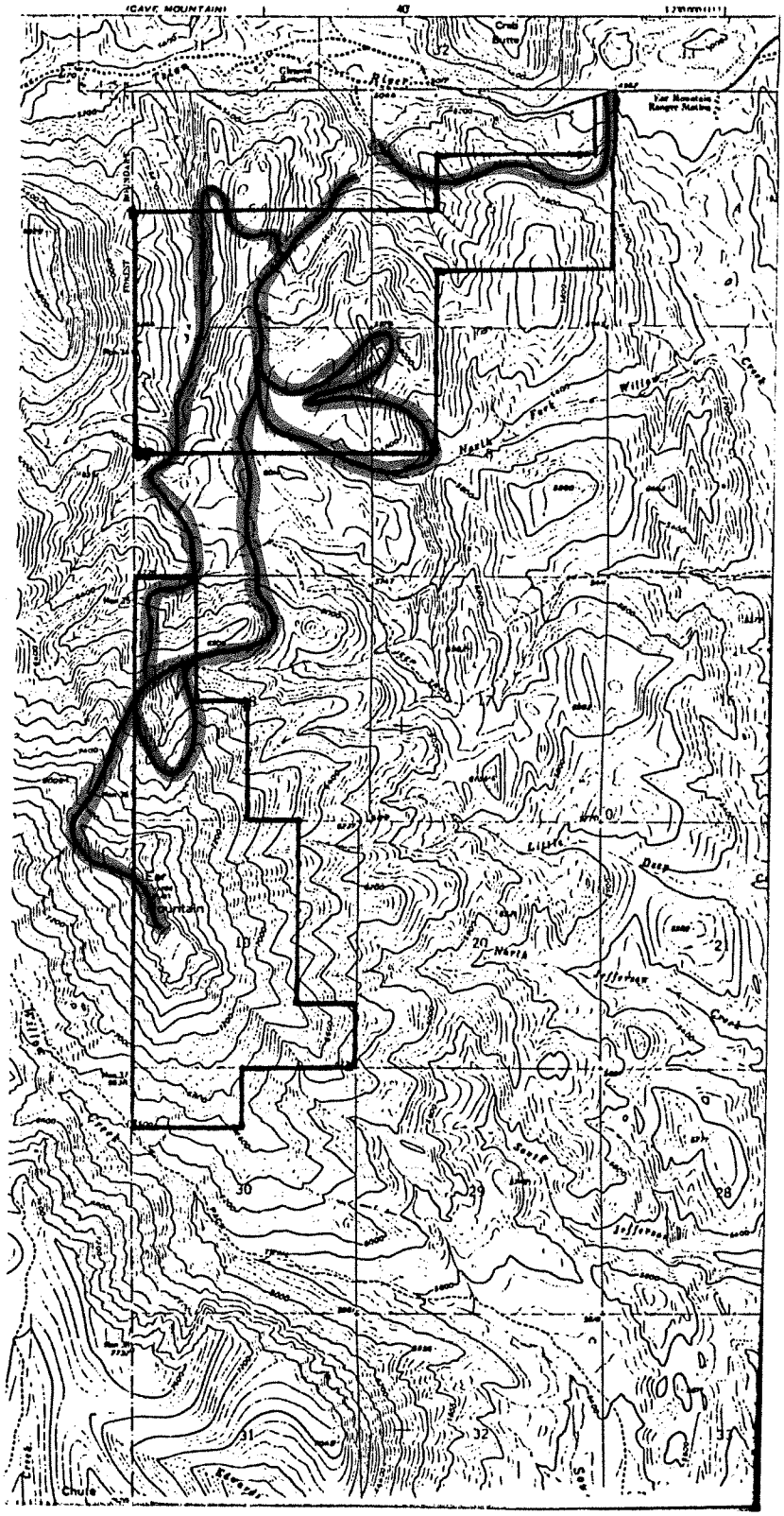
Appendix A **Maps pp. 12-15**



Appendix A. Blindhorse ONA - USGS Cave Mountain Quadrangle.

mile

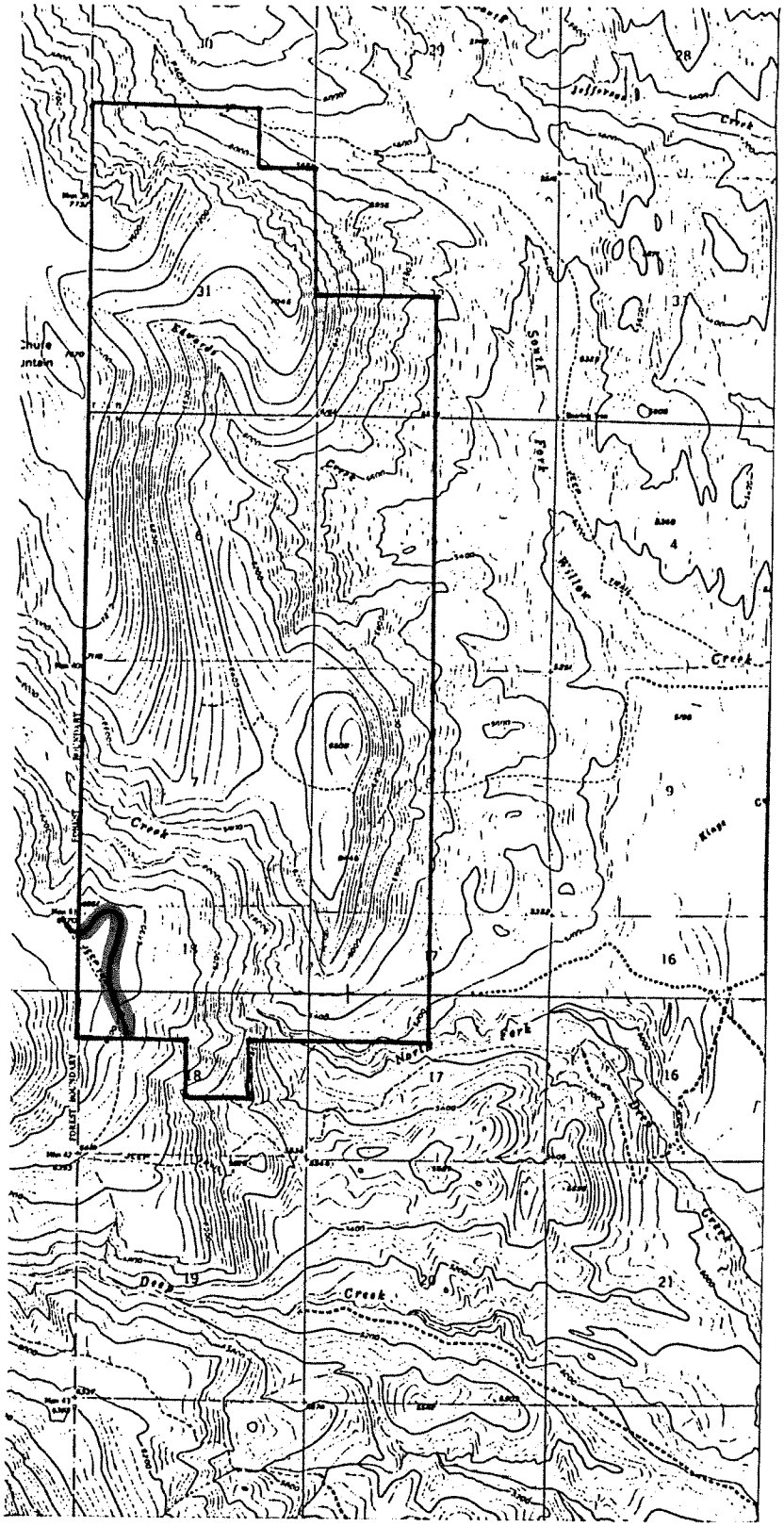
travel routes



Appendix A. Ear Mountain ONA - USGS Ear Mountain Quadrangle.

1 mile

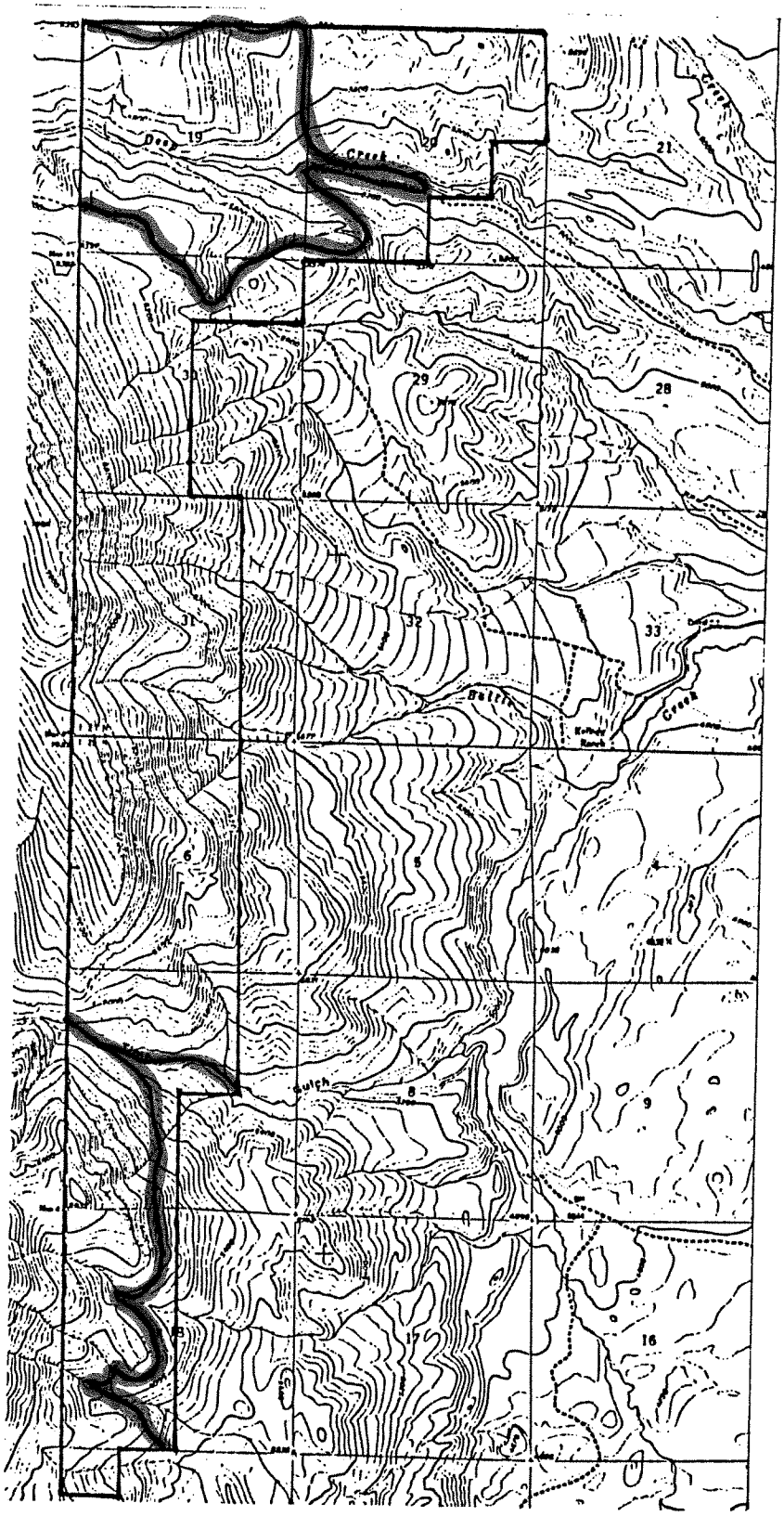
travel routes



Appendix A. Chute Mountain ONA - USGS Ear Mountain (north half) and Castle Reef (south half) quadrangles.

1 mile

travel routes



Appendix A. Deep Creek/Battle Creek ONA USGS Castle Reef Quadrangle.

1 mile

travel routes

APPENDIX B Photographs pp. 17-20

A. Orchis rotundifolia - habit, Ear Mountain BLM ONA.

B. Orchis rotundifolia - inflorescence.

C. Orchis rotundifolia habitat.

SECTION TWO: SPECIES LIST

The following is a list of 146 vascular plants observed on the Front Range B.L.M. ONAs. It is arranged by family, genus and species. Following each species is a description of the general habitat where it is found. Nomenclature follows Dorn (1984).

Aceraceae (Maple Family)

Acer glabrum (mountain maple)
Moist areas in forests or along streambanks.

Apiaceae (Carrot Family)

Heracleum sphondylium (cow parsnip)
Riparian areas.

Asteraceae (Sunflower Family)

Achillea millefolium (common yarrow)
Open or disturbed areas.

Anaphalis margaritacea (common pearly everlasting)
Open or disturbed areas.

Antennaria alpina (alpine pussytoes)
Rocky, alpine slopes.

Antennaria umbrinella (umber pussytoes)
Dry open slopes at low elevations.

Arnica diversifolia (sticky arnica)
Open areas.

Arnica latifolia (broad-leaved arnica)
Moist forest.

Artemisia frigida (fringed sagewort)
Open, windswept ridges and slopes.

Artemisia tridentata (big sagebrush)
Uncommon, open slopes, low elevations.

Balsamorhiza sagittata (arrowleaf balsamroot)
Dry, rocky slopes. Common.

Erigeron caespitosus (tufted fleabane)
Woods and slopes.

Erigeron compositus (cut-leaved daisy)
Open, dry slopes.

Erigeron peregrinus (subalpine daisy)
Open, windswept slopes and dry creek bottoms.

Erigeron rydbergii (Rydberg's daisy)
Open meadows.

Gaillardia aristata (blanket-flower)
Open slopes and flats.

Hymenoxys acaulis (stemless hymenoxys)
Open areas at mid- to high elevations.

Nothocalais cuspidata (toothed false dandelion)
Open slopes and meadows.

Senecio canus (woolly groundsel)
Open slopes.

Senecio foetidus (sweetmarsh butterweed)
Wet meadows.

Solidago nana (baby goldenrod)
Open slopes and meadows.

Townsendia parryi (Parry's townsendia)
Rocky areas at high elevations (Ear Mountain).

BORAGINACEAE (Borage Family)

Cryptantha celosioides (northern cryptantha)
Open dry slopes and flats.

Eritrichium howardii (Howard's alpine forget-me-not)
Open, rocky slopes.

Lithospermum ruderale (wayside gromwell)
Meadows and open areas in forests.

Mertensia viridis (canescent bluebells)
Open slopes.

BRASSICACEAE (Mustard Family)

Arabis confinis (spreading rockcress)
Dry, rocky creek bottoms.

Arabis holboellii (Holboell's rockcress)
Dry meadows and slopes.

Arabis lemmonii var. lemmonii (Lemmon's rockcress)
Rocky slopes at high elevations.

Draba aurea (golden draba)
Open slopes at mid- to high elevations.

Draba paysonii (Payson's draba)
Open slopes at mid- to high elevations.

Erysimum repandum (spreading wallflower)
Dry creek bottoms and open slopes.

Lesquerella alpina (alpine bladderpod)
Rocky, high elevation scree slopes.

CAMPANULACEAE (Bellflower Family)

Campanula rotundifolia (lady's thimble)
Open ares in meadows and slopes.

CAPRIFOLIACEAE (Honeysuckle Family)

Symphoricarpos occidentalis (western snowberry)
Dry wooded slopes at low to mid-elevations.

CARYOPHYLLACEAE (Pink Family)

Arenaria congesta (ballhead sandwort)
Dry, open plateaus.

Paronychia sessiliflora (stemless whitlow-wort)
Open slopes and ridges.

Silene scouleri (Scouler's silene)
Dry rocky areas (non-limestone).

CRASSULACEAE (Stonecrop Family)

Sedum integrifolium (King's crown)
Subalpine, open slopes.

Sedum lanceolatum (lance-leaved stonecrop)
Open, rocky slopes and ridges.

CUPRESSACEAE (Juniper Family)

Juniperus communis (common juniper)
Dry, open, rocky slopes.

Juniperus horizontalis (creeping juniper)
Dry, windswept slopes.

CYPERACEAE (Sedge Family)

Carex filifolia (thread-leaved sedge)
Grasslands.

ELAEAGNACEAE (Oleaster Family)

Elaeagnus commutata (silverberry)
Streambanks and slopes.

Shepherdia canadensis (buffaloberry)
Dry woods and slopes.

ERICACEAE (Heath Family)

Arctostaphylos uva-ursi
Woods and slopes.

FABACEAE (Pea Family)

Astragalus alpinus (alpine milkvetch)
Alpine scree slopes.

Astragalus crassicarpus (groundplum milkvetch)
Open hillsides.

Astragalus eucosmus (elegant milkvetch)
Dry, rocky creek bottoms.

Hedysarum sulphurescens (sulphur hedysarum)
Meadows and slopes.

Lathyrus ochroleucus (cream-flowered peavine)
Moist meadows, often under aspen.

Lupinus wyethii (Wyeth's lupine)
Open slopes.

Oxytropis sericea (white locoweed)
Meadows and slopes.

Oxytropis splendens (showy locoweed)
Moist meadows and streambanks.

Dalea purpurea (purple praire clover)
Dry open slopes.

Trifolium longipes (longstalk clover)
Meadows.

Vicia americana (American vetch)
Slopes and disturbed areas.

GERANIACEAE (Geranium Family)

Geranium richardsonii (white geranium)
Moist and shaded riparian areas, often under aspen.

Geranium viscosissimum (sticky geranium)
Open areas in forests.

GROSSULARIACEAE (Currant Family)

Ribes cereum (wax currant)
Open rocky areas.

Ribes lacustre (prickly currant)
Moist woods and streambanks.

HYDROPHYLLACEAE (Waterleaf Family)

Phacelia hastata (silky phacelia)
Dry creek bottoms.

IRIDACEAE (Iris Family)

Iris missouriensis (Rocky Mountain iris)
Moist meadows.

LAMIACEAE (Mint Family)

Monarda fistulosa (wild bergamot)
Dry, open slopes and sparsely wooded areas.

LILIACEAE (Lily Family)

Allium cernuum (nodding onion)
Dry, open plateaus.

Disporum trachycarpum (wartberry fairy-bell)
Moist woods.

Erythronium grandiflorum (glacier lily)
Meadows and open forests.

Fritillaria pudica (yellow bell)
Open slopes and meadows.

Smilacina racemosa (False Salomon's seal)
Forested moist canyons.

Zigadenus elegans (glaucous zigadenus)
Meadows and slopes.

LINACEAE (Flax Family)

Linum perenne (blue flax)
Dry, open slopes at lower elevations

ONAGRACEAE (Evening Primrose Family)

Oenothera flava (long-tubed evening primrose)
Vernal pools.

ORCHIDACEAE (Orchid Family)

Calypso bulbosa (fairy slipper)
Moist, shady areas under forest canopy.

Corallorhiza striata (striped coral root)
Moist forests.

Cypripedium montanum (mountain lady's-slipper)
Partial shade in moist forests, usually on limestone substrates.

Listera cordata (heart-leaf twayblade)
Moist areas and bogs.

Orchis rotundifolia (round-leaved orchis)
Moist but well drained bogs.

PINACEAE (Pine Family)

Abies lasiocarpa (subalpine fir)
Mid- to high elevation slopes.

Picea engelmannii (Engelmann spruce)
Mid-elevation slopes and moist areas.

Pinus flexilis (limber pine)
Dry, open sites, foothills to subalpine.

Pseudotsuga menziesii (Douglas fir)
Mid-elevation slopes.

PLANTAGINACEAE (Plantain Family)

Plantago canescens
Moist streambanks.

POACEAE (Grass Family)

Agropyron spicatum (Elymus spicatus (Pursh) Gould.)
(bluebunch wheatgrass) Open meadows.

Agrostis variabilis (variant bentgrass)
Vernal pools.

Alopecurus aequalis (shortawn foxtail)
Vernal pools.

Bromus inermis (smooth brome)
Meadows and open areas.

Bromus tectorum (cheatgrass brome)
Open meadows, usually disturbed areas.

Festuca idahoensis (Idaho fescue)
Open meadows.

Festuca scabrella (rough fescue)
Open meadows and slopes.

Koeleria cristata (junegrass)
Open slopes and meadows.

Phleum pratense (common timothy)
Open meadows at low elevations.

Poa nevadensis (Nevada bluegrass)
Meadows and grasslands.

Poa pratensis (Kentucky bluegrass)
Meadows and grasslands.

Stipa occidentalis (Western needlegrass)
Grasslands.

POLEMONIACEAE (Phlox Family)

Phlox hoodii (Hood's phlox)
Dry, open flats and slopes.

Polemonium pulcherrimum (skunk-leaved polemonium)
Dry, rocky slopes and creekbeds.

POLYGONACEAE (Buckwheat Family)

Eriogonum androsaceum (androsace buckwheat)
Subalpine and alpine, open, rocky slopes.

Eriogonum flavum (yellow eriogonum)
Open slopes and level areas.

Eriogonum ovalifolium (oval-leaved buckwheat)
Open, rocky slopes at mid- to high elevations.

Oxyria digyna (mountain sorrel)
Dry creek bottoms.

Polygonum bistortoides (American bistort)
Moist meadows.

PORTULACACEAE (Purslane Family)

Claytonia megarhiza (alpine spring beauty)
Alpine scree slopes.

Lewisia rediviva (Bitterroot)
Dry, open meadows.

PRIMULACEAE (Primrose Family)

Androsace chamaejasme (sweet-flowered androsace)
Open slopes and meadows.

Androsace septentrionalis (northern fairy-candelabra)
Meadows and slopes.

Dodecatheon pulchellum (few-flowered shooting star)
Moist areas.

Douglasia montana (Rocky Mountain douglasia)
Rocky slopes and ridges.

RANUNCULACEAE (Buttercup Family)

Anemone multifida (cliff anemone)
Dry open slopes.

Anemone patens (pasqueflower)
Open slopes and woods.

Aquilegia flavescens (yellow columbine)
Forested moist canyons.

Aquilegia jonesii (limestone columbine)
Limestone talus, alpine.

Clematis columbiana (Columbia virgins-bower)
Forested areas.

Clematis hirsutissima (vaseflower clematis)
Slopes and woods.

Ranunculus aquatilis (hairleaf water buttercup)
Ponds.

Ranunculus flammula (creeping buttercup)
Shallow waters of ponds.

Thalictrum venulosum (veiny meadowrue)
Moist or shaded areas along streams.

ROSACEAE (Rose Family)

Amelanchier alnifolia (alderleaf serviceberry)
Woods and slopes.

Dryas drummondii (yellow mountain-avens)
Dry rocky creekbeds and open areas.

Fragaria vesca (woods strawberry)
Open to shaded slopes.

Geum triflorum (old man's whiskers)
Open meadows.

Physocarpus malvaceus (mallow ninebark)
Dry, open slopes at lower elevations.

Potentilla fruticosa (shrubby cinquefoil)
Moist to dry meadows.

Prunus virginiana (common chokecherry)
Moist streambanks.

Rosa woodsii (Wood's rose)
Woods and slopes.

Spiraea betulifolia (shiny leaf spirea)
Woods and draws.

RUBIACEAE (Madder Family)

Galium boreale (northern bedstraw)
Hills and slopes.

SALICACEAE (Willow Family)

Populus tremuloides (quaking aspen)
Moist slopes and ravines.

Salix drummondiana (Drummond willow)
Riparian areas.

SANTALACEAE (Sandalwood Family)

Comandra umbellata (bastard toad-flax)
Open meadows and flats.

SAXIFRAGACEAE (Saxifrage Family)

Heuchera grossulariifolia (goosseberry-leaved alumroot)
Rocky sites at higher elevations.

Mitella trifida (three-tooth mitrewort)
Stream banks.

Saxifraga bronchialis (spotted saxifrage)
Rocky areas.

Saxifraga cespitosa (tufted saxifrage)
High elevation rocky slopes.

Telesonix jamesii (Jame's saxifrage)
Subalpine open slopes.

SCROPHULARIACEAE (Figwort Family)

Besseya wyomingensis (Wyoming kittentail)
Moist meadows.

Castilleja lutescens (yellowish paintbrush)
Open slopes and meadows.

Castilleja miniata (scarlet paintbrush)
Dry, open rocky areas.

Gratiola ebracteata (bractless hedge-hyssop)
Vernal pool species.

Pedicularis contorta (coiled-beak lousewort)
Moist ravines.

Penstemon confertus (yellow penstemon)
Open rocky slopes and ridges.

Penstemon ellipticus (rockvine penstemon)
Dry, rocky slopes.

Penstemon eriantherus (fuzzytongue penstemon)
Dry rocky slopes.

Penstemon gracilis (slender penstemon)
Dry open slopes.

URTICACEAE (Nettle Family)

Urtica dioica (stinging nettle)
Meadows and open forests.

VALERIANACEAE (Valerian Family)

Valeriana edulis (edible valerian)
Open slopes and meadows.

Valeriana sitchensis (Sitka valerian)
Woods and slopes.

LITERATURE CITED

Dorn, R.D. 1984. Vascular Plants of Montana. Mountain West Publishing, Cheyenne, Wyoming. 276 pp.

Hitchcock, A.S. 1971. Manual of the Grasses of the United States, Dover Publications, New York. 1051 pp.

Hitchcock, C.L., Cronquist, A., Ownbey, M., and J.W. Thompson. 1969. Vascular Plants of the Pacific Northwest, Part One. University of Washington Press, Seattle. 914 pp.

Hitchcock, C.L., and A. Cronquist. 1973. Flora of the Pacific Nothwest. University of Washington Press, Seattle. 730 pp.

Lesica, P., Moore, G., Peterson, K.M., and J.H. Rumely. 1984. Vascular Plants of Limited Distribution in Montana. Monograph No. 2, Montana Academy of Sciences, Supplement to the Proceedings, Vol. 43. 61pp.

Luer, C.A. 1975. The Native Orchids of the United States and Canada. New York Botanical Garden, W.S. Cowell Ltd., Ipswich. 361 pp.

Mudge, M.R., Earhart, R.L., Whipple, J.W. and J.E. Harrison. 1983. Geologic and Structure Maps of Choteau 1° x 2° Quadrangle. Montana Bureau of Mines and Geology.

Shelly, J.S. 1988. Plant Species of Special Concern. Montana Natural Heritage Program, Helena. 12 pp. (mimeo).

U.S. Department of Agriculture. 1988. Sensitive Plant Field Guide to Northern Idaho and Montana. U.S. Forest Service, Northern Region. Range, Air, Watershed, and Ecology. Missoula, Montana.

U.S. Department of Interior, Fish and Wildlife Service. 1985. Endangered and threatened wildlife and plants: Review of plant taxa for listing as endangered or threatened species. Federal Register 50(188): 39526-39584.