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**STATUS REPORT ON SENSITIVE LADY'S SLIPPER ORCHIDS
(*CYPRIPEDIUM CALCEOLUS* VAR. *PARVIFLORUM*
AND *CYPRIPEDIUM PASSERINUM*)
ON THE
KOOTENAI NATIONAL FOREST**

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Executive Summary

Surveys in 1995 by Montana Natural Heritage Program and Kootenai National Forest botanists located five new occurrences of small yellow lady's slipper (Cypripedium calceolus var. parviflorum) and two new occurrences of sparrow's egg lady's slipper (C. passerinum) on the Kootenai National Forest. There are now 15 occurrences of C. calceolus var. parviflorum and 6 occurrences of C. passerinum known from the Forest. The populations of both species on Kootenai National Forest are potential conservation strategy contributions from a state and regional office perspective in terms of their distribution and/or population sizes. Populations of these sensitive orchid species are restricted to calcareous wetlands on the Fortine and Libby Ranger Districts. The local distribution of these plants appears to be further restricted by grazing; significant numbers were found only in areas where cattle are excluded. This status report summarizes available species' information to date, augmenting guidebook information as a reference and planning tool.

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Introduction

This report reviews the status of Sensitive lady's slipper orchid species (Cypripedium calceolus var. parviflorum and C. passerinum) on the Kootenai National Forest (KNF) as a contribution to rangewide conservation planning and Forest-wide biological evaluations. Significant populations of these rare orchids have only recently been documented on the KNF and have been found to occupy unique habitats which face many potential threats. This project was initiated to determine the full ecological and geographical distribution of these species on the Forest in order to set up a framework for their conservation.

Small yellow lady's slipper (Cypripedium calceolus var. parviflorum) was first documented from the KNF by a 1973 specimen from Dickey Lake. Recent surveys (Chadde 1989, 1991, Hoitsma 1992) have located several more populations. Sparrow's egg lady's slipper (Cypripedium passerinum) was documented from the KNF for the first time in 1991 by Todd Hoitsma (1992). These species often occur together, along with another Sensitive orchid, round-leaved orchid (Amerorchis rotundifolia, syn. Orchis rotundifolia), and usually grow in moist to wet calcareous soils in the ecotones between spruce forest habitats and wetland communities. Known populations of these three orchids are in the Rocky Mountain Trench portion of the KNF on the Fortine District, and additional populations of C. calceolus var. parviflorum alone occur in the vicinity of Libby Dam on the Libby Ranger District. A third species of Sensitive lady's slipper, clustered lady's slipper (Cypripedium fasciculatum), has not been found on the KNF to date although appropriate habitat may exist.

This report compiles known information on Cypripedium calceolus var. parviflorum and C. passerinum from the literature, from the Biological Conservation Database maintained by MTNHP, and from extensive new field surveys and intensive data collection at select sites. Included is information on classification, pending taxonomic changes, morphology, distribution, biology, and ecology, and a discussion of current threats to populations of these plants and conservation management strategies. Consideration of potential for finding C. fasciculatum is included in the Discussion section of this report. Included in appendices are Element Occurrence Records and topographic maps showing the precise locations of populations of sensitive lady's slippers on the KNF, ECODATA from several population sites, and photographic slides of the plants and their habitats.

Methods

Available information was compiled and developed into search lists and habitat search images prior to fieldwork. The Biological Conservation Database maintained by MTNHP was queried for known occurrences of sensitive Cyripedium species on the KNF, resulting in nine occurrences of Cyripedium calceolus var. parviflorum and four occurrences of C. passerinum. Knowledgeable Forest personnel and other local individuals were consulted and provided leads of possible Cyripedium sightings which were not entered in the database.

Land type (Kuennen and Gerhardt 1984) and geological (Harrison et al. 1992) maps were used to identify areas with high potential for hosting populations of C. calceolus var. parviflorum and C. passerinum based on the presence of limestone formations and/or calcareous soils in conjunction with wetland features. Reports on Sensitive lady's slippers in Montana were consulted to gain insight into the species' biology and ecology and to identify and prioritize research needs (Chadde 1989, 1991, Heidel 1992, Hoitsma 1992, Shelly 1988).

Fieldwork was conducted from late May to early July 1995. Most of the known occurrences of sensitive Cyripedium were revisited to determine population trends and habitat conditions and to gain a search image for the plants and their habitats. Areas throughout the Forest identified as having potential for hosting the Sensitive orchids were searched for new occurrences; a list of areas searched is included in section D.3.d. of the status review for C. calceolus var. parviflorum.

When new occurrences were found or known occurrences were relocated, field survey forms were filled out or Element Occurrence Records updated with the new information on habitat, population numbers, and populations distribution. Voucher specimens of C. calceolus var. parviflorum were taken from large populations, following collection guidelines established by the Montana Native Plant Society (1993), and were sent to a specialist of the genus, Dr. Charles Sheviak (NYS), for verification and to determine if hybridization with C. montanum is occurring at one site. The first set of all collections will be deposited at the herbarium at the University of Montana in Missoula (MONTU), and duplicates will be left with Dr. Sheviak at the State Museum of New York in Albany (NYS) and the Intermountain Research Station (MRC). Populations of C. passerinum were all too small to justify collecting (Montana Native Plant Society 1993).

Specimens of associated vascular plants and bryophytes were collected to refine the habitat circumscription. Moss identifications are being determined by Joe Elliott (Conservation Biology Research, Helena, MT). These moss specimens will be donated to the KNF herbarium in Libby. ECODATA macroplot information, including location linkage, general field data, and plant composition (U.S. Forest Service 1992) was sampled from four population sites. Photographs were taken of the plants and their habitats.

Nearest populations of Cyripedium fasciculatum on the Lolo National Forest in the vicinity of St. Regis were visited to gain insight on that species' habitat requirements and a limited amount of time was spent searching for it in appropriate habitat on the KNF.

Results

Range and representative habitats of the two Sensitive lady's slipper species on the KNF were circumscribed, population and habitat trends were documented, and their status was put into a state context augmented by the few new occurrences that were found. I discovered one new population of Cypripedium calceolus var. parviflorum in an unnamed drainage southeast of Libby Dam, and one new occurrence of C. passerinum at Brimstone Creek where C. calceolus var. parviflorum was previously known. Forest botanists from the Fortine Ranger District, Jack Triepke and Tobias Spribille, found four additional populations of C. calceolus var. parviflorum along Lime and Murphy Creeks, near Dickey Lake, and in the foothills of the Whitefish Range above Glen Lake. T. Spribille also found an occurrence of C. passerinum along Magnesia Creek. In addition, one population of C. calceolus var. parviflorum on Army Corps of Engineers land near Libby Dam which was known by local individuals was verified. Several known populations of undetermined Cypripedium species were relocated and were found to be the relatively common C. montanum. There are now fifteen populations of C. calceolus var. parviflorum and six known populations of C. passerinum on the KNF (Table 1). Cypripedium fasciculatum has not been found on the Forest.

Table 1. Occurrences of Cypripedium calceolus var. parviflorum and C. passerinum on the Kootenai National Forest.

	Fortine District	Libby District	Total
<u>Cypripedium calceolus</u> var. <u>parviflorum</u>	12	3	15
<u>Cypripedium passerinum</u>	6	-	6

The Status Reviews for each of the two Sensitive Cypripedium species which follow this section elaborate the results of the surveys and provide pertinent information from other sources. Included are sections on classification, pending taxonomic changes, formal status, description, geographical distribution, habitat, population demography and biology, land ownership, and management considerations. Throughout the remainder of this report occurrences of Sensitive lady's slippers are referred to by their site names and three digit element occurrence numbers assigned in the Biological Conservation Database. Element Occurrence Records and topographic maps showing the precise location of each population are given in Appendix A. ECODATA forms are included in Appendix B and photographic slides of the plants and their habitats are attached as Appendix C.

Cypripedium calceolus var. parviflorum
Small Yellow Lady's Slipper

A. Classification

1. **Family:** Orchidaceae (Orchid Family). The Orchid Family is perhaps the largest family of vascular plants, with over 15,000 species worldwide (Cronquist 1988). Most of these species are in the tropics. Sometimes the genus Cypripedium is segregated from the orchid family and placed in the Cyripediaceae (Correll 1950, Weber and Wittmann 1992).
2. **Genus:** Cypripedium, the lady's slippers, is a genus of about 50 species native to North America and Eurasia (Correll 1950).
3. **Species and Variety:** Yellow lady's slippers in Montana have traditionally been treated as Cypripedium calceolus L. var. parviflorum Salisb., as presented in Flora of the Pacific Northwest (Hitchcock and Cronquist 1976) and this name will be used throughout this report. However, the taxonomy of our plants is uncertain and changes in accepted names seem likely. Dr. Charles Sheviak, who is currently working with yellow lady's slippers, considers North American plants distinct from European C. calceolus at the species level (Sheviak 1992). Under this taxonomic treatment American plants are called C. parviflorum Salisb.. It is uncertain what varieties are present in Montana. Correll (1950) considered C. calceolus in North America to consist of one polymorphic variety, Cypripedium calceolus L. var. pubescens (Willd.) Correll, but his book includes a discussion of ecological "varieties" including a northern "var." parviflorum which is, like Montana plants, adapted to calcareous wetlands. Luer (1976) recognizes C. calceolus var. parviflorum but does not show a western distribution for it, instead showing a northwestern Montana distribution for C. calceolus var. pubescens. Sheviak (1994) contends that C. parviflorum var. parviflorum is a southeastern woodland taxon. He thinks (Sheviak pers. commun.) that Montana yellow lady's slippers include C. parviflorum var. pubescens (Sheviak 1995), the small flowered C. parviflorum var. makasin (Sheviak 1993), and C. X columbianum, a hybrid between C. parviflorum and C. montanum (Sheviak 1992). Specimens from the KNF sent to Sheviak for identification have not been received back as of this writing. Montana specimens at the University of Montana (MONTU) and Montana State University (MONT) are also in need of annotation to variety. Resolution of the taxonomy of Montana yellow lady's slippers is important for considering state and global ranks as well as U.S. Forest Service status.

B. Present legal or other formal status

1. Federal

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

b. **U.S. Forest Service:** Sensitive in Region 1 (U.S. Forest Service 1994).

2. **State:** The Montana Natural Heritage Program ranks the variety G5Q and S2S3 (Heidel 1995). This signifies that it is demonstrably secure globally although there are taxonomic questions which need to be resolved, but is vulnerable to very vulnerable to extinction in Montana.

C. Description

1. **General nontechnical description:** "This species of lady's slipper has leafy stems 15-40 cm tall from a short rhizome. The elliptic leaves are 6-17 cm long, and sheath the stem. The foliage is lightly pubescent and usually glandular. The 1-2 flowers are subtended by an erect leafy bract, often longer than the inflorescence. The narrow sepals are up to 4 cm long, and wavy-margined or slightly twisted. One petal is strongly pouch-shaped and often purple-dotted. The other 2 petals are united into one that is similar to the sepals but slightly longer. The fruit is an elliptic capsule bearing many thousands of tiny seeds" (U.S. Forest Service 1995). Photographic slides of flowering plants are included in Appendix C.
2. **Technical description:** Plant terrestrial, sparsely pubescent, typically slender, up to 35 cm tall, from a short rhizome with fibrous roots. Leaves 3, occasionally 4 or 5, ovate-lanceolate, plicate, bluish green, 5-15 X 2-8 cm in 2 ranks. Inflorescence with 1 or 2 small, showy flowers. Floral bract foliaceous, 3-8 X 1-3 cm. Ovary subsessile, 15 X 3 mm. Dorsal sepal ovate-lanceolate, undulate, from reddish to purplish-brown, 2-4 X 1.5-2.5 cm. Lateral sepals united often to the apex, similar to the dorsal sepal. Petals linear-lanceolate, twisted, similar in color to the sepals, 3-5 cm X 5-8 mm. Lip an ovoid pouch, clear deep yellow, the edges of the aperture rolled in, spotted inside with dark purple, 2-2.5 X 1.2-2 cm. Staminode bluntly triangular, deep yellow with purple spots, 8 X 8 mm. Capsule ellipsoid. (adapted from Luer 1975, for Cypripedium calceolus var. parviflorum; note: See discussion of species classification above; this technical description probably does not apply to Montana plants.)
3. **Local field characters:** As its taxonomy is treated here Cypripedium calceolus var. parviflorum is the only lady's slipper in Montana which has a yellow lip. When they are learned, the genus Cypripedium on the KNF can be recognized vegetatively or in fruit, but plants may be difficult to determine to the species level. Cypripedium montanum is often more robust than C. calceolus var. parviflorum and usually has more flowers (or fruits) and broader leaves. The foliage and stem of C. passerinum is more densely silky, glandular pubescent and the leaves are somewhat lighter colored.

D. Geographical distribution

1. **Range of the species and variety:** Depending on the taxonomic treatment (see above), Cypripedium calceolus is considered either a strictly Eurasian species (Sheviak 1992) or a circumboreal species with varieties ranging across North America (Correll 1950, Luer 1975). In North America, the species (in the broad taxonomic sense) occurs as far north as the Yukon and Newfoundland and as far south as Arizona and Louisiana (Correll 1950, Luer 1975). The taxonomy and distribution of varieties remains controversial. Many authors (Cronquist et al. 1977, Hitchcock and Cronquist 1975, Welsh et al. 1987) consider C. calceolus var. parviflorum to include plants with a northwestern distribution extending at least as far south as Utah, however, Luer (1975) maps its distribution only as far west as Wisconsin, giving a Montana distribution only for the transcontinental C. calceolus var. pubescens. Dorn (1992) recognizes only C. calceolus var. pubescens in Wyoming. Charles Sheviak (pers. commun.) has tentatively recognized C. parviflorum var. pubescens and C. parviflorum var. makasin in Montana, with the former having a transcontinental range and the latter occurring in Michigan, the Pacific Northwest and Western Canada. He contends C. parviflorum var. parviflorum is endemic to the southeastern United States.

2. **Montana distribution:** There are now at least 55 occurrences of Cypripedium calceolus var. parviflorum entered in the Biological Conservation Database (Figure 1 inset). These are all in the western half of the state in Flathead (11 occurrences), Gallatin (4), Granite (1), Judith Basin (1), Lake (8), Lewis and Clark (5), Lincoln (15), Missoula (3), Park (1), Stillwater (1), Sweet Grass (1), and Teton (4) counties (Figure 1 inset). Eleven of these occurrences, including all records from Gallatin, Granite, Park, Stillwater, and Sweet Grass counties, are historical, represented only by pre-1950 collections. The area of the Granite County occurrence has been surveyed and the population is believed to be extirpated (Heidel 1992). These numbers do not include possible 1995 discoveries outside the KNF.

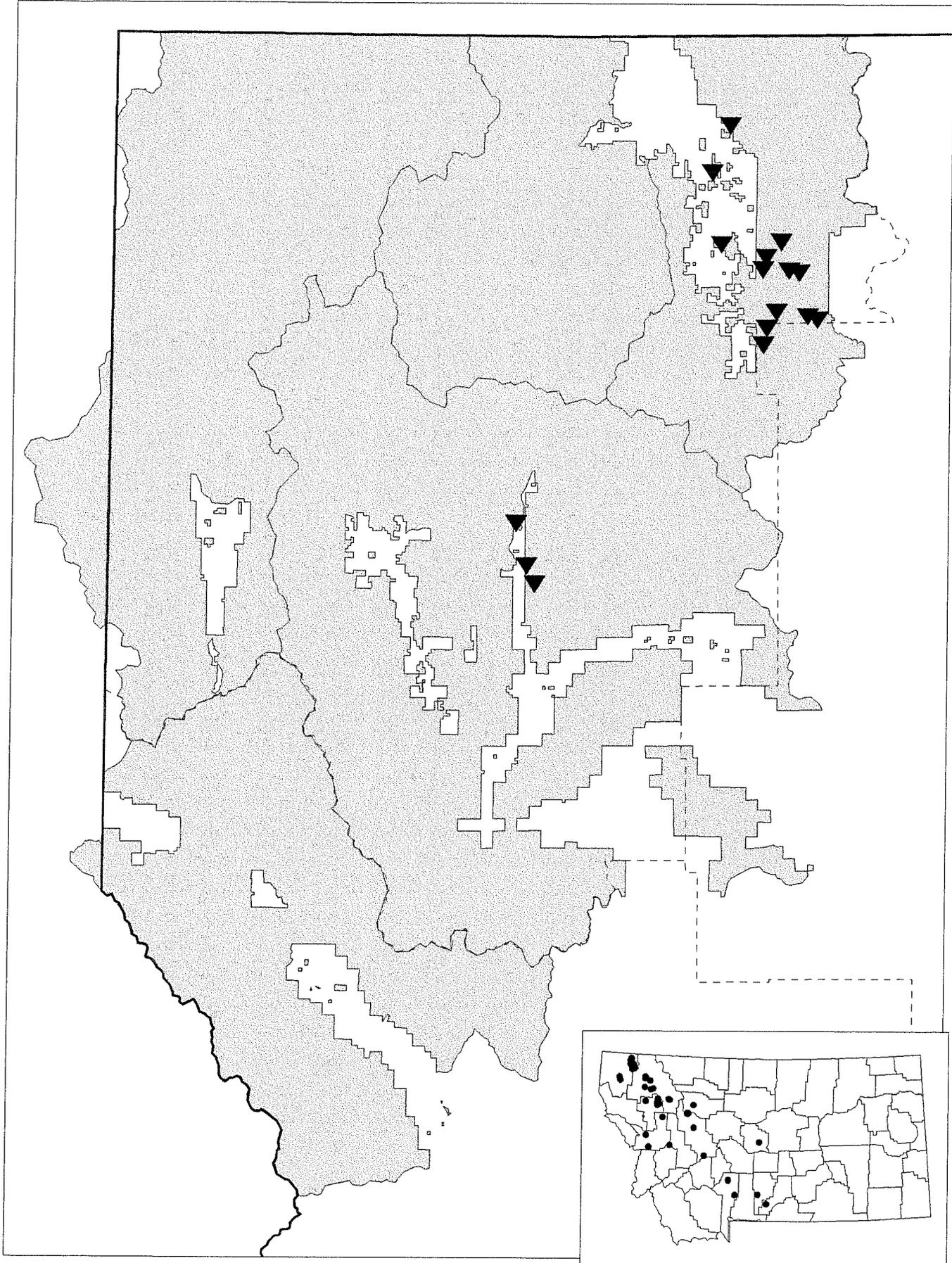
3. **Occurrences on the Kootenai National Forest**
 - a. **Current sites:** There are now 15 populations of Cypripedium calceolus var. parviflorum known on the KNF with subpopulations on adjacent lands which are private or administered by the Army Corps of Engineers. Twelve of these populations are on the Fortine Ranger District in the Rocky Mountain Trench portion of the Forest and three are on the Libby Ranger District near Libby Dam (Figure 1). Five of these occurrences were discovered for the first time in 1995, and one at Libby Dam (040) was previously known but had not been reported to MTNHP and had not been known to extend onto KNF land. Element Occurrence Records and topographic maps showing the precise locations of these populations are provided in Appendix A.

 - b. **Historical sites:** none

 - c. **Unverified/undocumented reports:** Four reports of unidentified Cypripedium species were found by Forest Service personnel (M. Lolly, pers. commun.) or myself to be the relatively common C. montanum. These include plants at Alexander Creek (T31N R30W S24), Elk Creek (T26N R28W S14), Severn Gulch (T30N R30W S22), and in the drainage of Wolf Creek (T29N R28W S28), all on the Libby District. Another unidentified report (G. Heslink, pers. commun.) was surveyed on private land at the base of Yaak Mountain (T33N R33W S31) and may extend upstream onto KNF land. The plants were past flowering at the survey date but the presence of more than two fruits per stem and wide leaves suggest that they are Cypripedium montanum; however, the presence of Cypripedium calceolus var. parviflorum in this vicinity should not be ruled out because the bed of the small stream there is heavily laden with calcium.

 - d. **Areas surveyed but species not located:** The following areas were searched for sensitive Cypripedium species, but none were found. Especially significant is the absence of these orchids over large areas with calcareous soils, indicated by land types 323, 324 and especially 325 (Kuennen and Gerhardt 1984), in creek and draw bottoms and adjacent to wetlands on the Fortine and Rexford Districts; many of these habitats seem appropriate for these orchids but are heavily impacted by cattle grazing. The following list is arranged by Ranger District and site names. The legal description is given to the precision of section. Searches were concentrated in the creek and draw bottoms and around lakeshores and wetlands. When land ownership is other than KNF it is noted.

Figure 1. *Cypripedium calceolus* var. *parviflorum* -- Yellow Lady's Slipper
Occurrences on or near the Kootenai National Forest, Montana



Fisher River Ranger District

Alexander Creek: T31N R29W S32
Buck Creek (Plum Creek Timber): T29N R29W S5
Cow Creek: T28N R28W S11
Doe Creek (Plum Creek Timber): T29N R29W S20
Peace Creek: T31N R29W S20, 21
Souse Creek: T31N R29W S29

Fortine Ranger District

Beaver Creek (State of Montana and KNF): T33N R26W S16, 21
Deep Creek: T35N R25W S20
Graves Creek: T36N R25W S33
Homes Lake: T35N R26W S34
Ivor Creek: T34N R26W S27
Jim Creek: T33N R26W S24
Lime Creek: T34N R26W S36, note: I also checked T33N R25W S5 and 6 in June and found no Cypripedium, but Jack Triepke, Fortine R. D. botanist, found a few stems of C. calceolus var. parviflorum in fruit in each section in August; the entire drainage has a high potential for sensitive orchids but is heavily impacted by cattle.
Lost Lake: T35N R27W S1, T35N R26W S6
Rock Lake: T35N R26W S6
Sink Creek: T34N R25W S14
Stewart Creek: T33N R25W S13, 14
Wigwam River: T37N R25W S14

Libby Ranger District

Doak Creek: T31N R30W S8, 18
Loon Lake: T33N R32W S24, 25
Tubb Gulch: T31N R30W S18, 19, 20

Rexford Ranger District

Melvin Draw: T36N R28W S23, 26
Pinkham Creek/Black Butte: T36N R28W S25, T36N R27W S30, 31
Teepee Lake: T35N R27W S21

Three Rivers Ranger District

Kilbrennon Creek: T33N R33W S29, 30, 31, 32
Little Lime Creek: T29W R29W S32
Lime Creek: T37N R29W S32
O'Brian Creek (unknown private): T32N R34W S12

E. Habitat

1. **Associated vegetation:** Compared to Cypripedium passerinum, discussed later in this report, C. calceolus var. parviflorum grows in a slightly broader range of habitats in Montana. The typical habitat, however, is much the same, and at many sites, the two sensitive lady's slippers, and a third sensitive orchid, Orchis rotundifolia, grow together at the same site. Thus, known occurrences of any of these species should be considered

potential habitat for the others. Typically, in Montana, C. calceolus var. parviflorum grows along ecotonal margins of spruce (Picea engelmannii, P. glauca, or hybrids) habitat types with wetland features such as fens, bogs, streamsides, lakeshores, and springs. The vegetation varies depending on landform, elevation, and geography. Some of the less typical habitats where the species grows in the state include Aspen stands, other coniferous forests such as Douglas fir (Pseudotsuga menziesii) habitat types, brushy river bottoms, willow stringers, and disturbed roadsides with other wet site plants.

On the Kootenai National Forest there is also a range of vegetation types which support Cypripedium calceolus var. parviflorum, but most populations are associated with spruce forest/wetland ecotones. Most sites key to the Picea/Clintonia uniflora, Picea/Equisetum arvense (Pfister et al. 1977) or Picea/Cornus stolonifera (Hansen et al. 1995) habitat types. At two sites, however, the presence of spruce was not noted on field survey forms, but Douglas fir was present; these are at Glen Creek (054) and near the Confluence of the Kootenai and Fisher Rivers (051). The latter is in draw bottoms dominated by aspen (Populus tremuloides) and deciduous shrubs (slide 2 in Appendix C). At a third occurrence, Ant Flat (025), the habitat is also quite different, although the surrounding forest is dominated by spruce; here the orchids grow in willow (Salix bebbiana) thickets and in a moist "meadow" with shrubby cinquefoil (Potentilla fruticosa). The plants at Ant Flat are very small, perhaps due to low vigor resulting from high levels of competition in the relatively sunny, open habitat.

The typical ecotonal habitat of Cypripedium calceolus var. parviflorum on the KNF hosts a unique and characteristic assemblage of plants adapted to calcareous wetlands. Deciduous trees which sometimes occur at the sites include Betula papyrifera and Populus balsamifera. Deciduous shrubs often contribute greater canopy cover at the sites than trees; these include Alnus viridis, Betula glandulosa or Betula occidentalis, Cornus stolonifera, Lonicera involucrata and Rhamnus alnifolia. Graminoid cover, mostly by small sedges such as Carex interior, Carex cappilaris and Carex leptalea may be moderate to high. Cover by forbs is usually high; common associated forbs include Galium triflorum, Mitella nuda, Petasites sagittatus, Rubus pubescens, and other orchids like Habenaria dilatata and Habenaria saccata. Horsetails are also usually conspicuous and include Equisetum arvense, Equisetum hymale, and Equisetum scirpoides. Moss cover is usually very high in these habitats.

ECODATA plots were sampled at Brimstone Creek (026), Magnesia Creek (029) and in the Hidden Lake Area (027). This data is provided in Appendix B, and includes complete lists of vascular plant species in the plots and their aerial coverage. Additional associated plant species are listed in the general site description fields of the Element Occurrence Records in Appendix A. Photographic slides showing the vegetation at several sites are included in Appendix C.

- 2. Topography:** Cypripedium calceolus var. parviflorum grows in glaciated valley or draw bottoms at relatively low elevations on the KNF. Elevations of the population sites range from 2,600 feet at Libby Dam (040) to 3,800 feet at Glen Creek (054) and Magnesia Creek (029). Populations are associated with high watertable features such as wetlands and moist draw bottoms. These are settings of stable ground water discharge, and C. calceolus var. parviflorum is usually restricted to the discharge zone. The sites are usually level but at Libby Dam and Glen Creek the plants grow next to streams on moderate slopes. At the wettest sites the plants grow on hummocks, while in more mesic habitats they have a more scattered distribution across flats and in swales.

3. **Soil relationships:** Cypripedium calceolus var. parviflorum is adapted to cool, moist, calcareous soils. In a discussion of ecological "varieties" of C. calceolus in Correll (1950), "var." parviflorum is considered especially difficult to cultivate due to its strict requirements of soil pH, moisture, and temperature. On the KNF, C. calceolus var. parviflorum is known to occur within seven landtypes (Kuennen and Gerhardt 1984); these are landtypes 105, 108, 321, 323, 324, 325, and 355. The most vigorous populations (Brimstone Creek 026, Hidden Lake Area 027, and Magnesia Creek 029) are within landtype 325, with soils classified as typic calciborolls with a high percentage of reprecipitated calcium carbonate; the parent material is alluvium, with the calcium derived from glacial till scoured from Precambrian Siyeh limestone. Landtypes 321, 323, and 324 have soils derived from calcareous glacial till. Where C. calceolus var. parviflorum occurs on the alluvial landtypes 105 and 108, the sites are adjacent to and downstream from landtype 323, and reprecipitated calcium is usually evident in the soil. One population site (Jumbo Lake .023) occurs within the landtype 355 mapping unit which has soils which are not noted as being calcareous, however, this is thought to be an artifact of the mapping precision because a highly calcareous horizon is noted on the Element Occurrence Record (Appendix A). In fact, it is likely that more precise mapping would result in many of the sites being reclassified as landtype 325, the type which most closely describes the soils where C. calceolus var. parviflorum grows. Nearly all occurrences are in drainages, usually mapped as glacial till, which are downslope from or surrounded by the main body of the Helena formation as mapped by Harrison et al. (1992). This formation, which is differentiated from the traditional Siyeh formation, consists of dolomites and dolomitic siltites.
4. **Climate factors:** Cypripedium calceolus var. parviflorum has a broad distribution both north and south of Montana, and within the state it occurs both east and west of the Continental Divide with climate regimes ranging from humid to semi-arid. Its moisture requirements are generally met by a stable, cool, groundwater discharge which compensates for macroclimate differences. Data from the climatological station at Fortine (National Oceanic and Atmospheric Administration 1982) at 3,000 feet elevation characterize the climate where the taxon is concentrated on the Fortine District. From 1951 to 1980 the mean temperature normals range from 19.8° F in January to 63.8° F in July and the normal annual precipitation was 17.25 inches. The sites near Libby Dam are characterized by data from the closest station in Libby at 2,080 feet. Mean temperature normals ranged from 22.7° F in January to 66.7° F in July and normal annual precipitation was 18.66 inches.

F. Population demography and biology

1. **Phenology:** On the KNF, flowering is in late May to early July and fruit are produced in July through August. Cypripedium calceolus var. parviflorum is reported as flowering somewhat earlier than C. passerinum (Lesica and Shelly 1991), but on the KNF where they grow together they were flowering concurrently in 1995. Flowers are needed for reliable identification, thus, occurrences found late in the season in fruit (e.g. Lime Creek .055) need to be revisited earlier in the season to verify their identity.
2. **Population size and condition:** Evaluation of population numbers is difficult because there has not been consistent distinction between aerial stems, which may be clonal (ramets), and individual plants or clumps of stems, presumably reproduced by seeds (genets). A conservative approach is to consider the following numbers in terms of aerial stems; the number of genets in a population may be considerably less (see discussion of vegetative reproduction below). Estimated population numbers in Montana range from two to over 1,000 stems. Most populations in the state consist of fewer than 200 stems,

and many have fewer than 50. Some of the largest populations are found on the Lewis and Clark National Forest along the Rocky Mountain Front Range. A very large population with as many as 3,000 estimated stems was also reported from private land near Whitefish.

On the Kootenai National Forest, estimated population size ranges from less than 10 stems at Glen Creek (054) and Lime Creek (055), to perhaps more than 1,000 stems in several subpopulations across over 20 acres along Magnesia Creek (029). Relatively large, vigorous populations covering significant areas are also found at Brimstone Creek (026) and in the Hidden Lake Area (027). Evidence of population decline was found by 1995 census numbers, compared to numbers from 1989 and 1991, at Dickey Lake (001) and Therriault Creek (030), both sites which were impacted by highway construction in the last few years (see slides 6, 7, 16, and 17 in Appendix C). The Therriault Creek population is nearly extirpated and remains in grave danger as silt fills the remaining small area of habitat. Fewer stems were also seen in the Homes Lake Area (028) which has received light use by cattle. There is, however, possible evidence of population growth over the same period at Butler (013) and Brimstone (026) Creeks. Estimates of population numbers and area are given, as available, in the element occurrence data and size fields of the Element Occurrence Records in Appendix A.

- 3. Reproductive biology:** The reproductive biology of orchids in general is characterized by complex floral morphologies and mechanisms adapted to cross pollination by insects, and by the production of tiny seeds, potentially in great numbers, which can be dispersed long distances but which are dependent upon fungi for seed germination and seedling development.

Most species of Cypripedium are thought to depend on cross-pollination for sexual reproduction (Bernhardt 1990). In an examination of living material which included C. calceolus var. parviflorum, Catling (1983) found no evidence of self-pollination in the genus except for C. passerinum. High levels of heterozygosity found in populations of C. calceolus var. parviflorum and other varieties of the species are also consistent with an outcrossing breeding system (Case 1993). Flowers of the lady's slippers are thought to be adapted to pollination by a variety of insects, including beetles and flies (Correll 1950), but bees are probably the primary pollinators for the genus (Bernhardt 1990, Catling 1983).

Germination of terrestrial orchid seeds depends on penetration by fungal hyphae, and the plants grow underground as colorless mycorrhizomes for a period of time before producing photosynthetic tissue (Wells 1981). Data from Europe (cited in Wells 1981) indicate that plants of Cypripedium calceolus are very slow to mature, producing their first leaves four years after germination and first flowering after about 16 years.

Cypripedium calceolus var. parviflorum reproduces both vegetatively, by rhizomes, and sexually, by seeds, although the relative degree of each method in a population is difficult to determine. Bernhardt (1990) speculates that large colonies of lady's slippers may be clonal and fail to produce fruit due to low rates of cross-pollination. Poor fruit production has been noted in many Montana populations of C. calceolus var. parviflorum. On the KNF most population surveys have been conducted in June when the plants were flowering, however, fruits have been observed at a few sites at later dates (see the element occurrence data fields on the Element Occurrence Records in Appendix A). The presence of flowers is not necessarily an indication of reproductive success and numbers of aerial stems are not a true indication of population size or condition. Vegetative reproduction allows a population to persist and spread locally, but alone does

not supply genetic variation which allows the population to adapt or seeds for long distance migration.

Species of Cypripedium, like many orchids, are known to hybridize. In British Columbia C. calceolus (C. parviflorum) hybridizes with C. montanum to make Cypripedium X columbianum (Sheviak 1992). There is evidence of hybridization between C. calceolus var. parviflorum and C. montanum from several sites in Montana, notably on the Lewis and Clark National Forest along the Rocky Mountain Front Range. There, populations of yellow lady's slippers have plants with white and cream colored flowers. There is also evidence of hybridization between these two taxa at Libby Dam (040) and a report of plants with off colored flowers at Butler Creek (013) on the KNF (L. Kuennen, pers. commun.). Specimens from Libby Dam were sent to Dr. Charles Sheviak (New York State Museum) to determine if they are hybrids. Sheviak (1992) postulates that hybridization and introgression between C. calceolus (C. parviflorum) and Cypripedium montanum may have played an important role in creating the variation seen in northwestern yellow lady's slippers today. Although C. calceolus var. parviflorum and C. passerinum grow together at several sites on the KNF, no hybrids were seen; this may be partially due to the small size of the latter's lip which adapts it to smaller pollinators (Bernhardt 1990) and its capacity for self pollination (Catling 1983). However, a putative hybrid between these two taxa has been reported from the Rocky Mountain Front Range in Montana on the Lewis and Clark National Forest.

G. Population ecology

- 1. Competition:** Cypripedium calceolus var. parviflorum usually grows in areas with very high plant cover and at some sites displays a degree of dominance in its habitat. Its rhizomatous habitat probably helps it to compete successfully with other plants, especially other forbs. However, plants were not found adjacent to populations in areas dominated by rhizomatous sedges (e.g. Carex utriculata, Carex vesicaria), suggesting it is not competitive with such species. At Ant Flat (025) Cypripedium calceolus var. parviflorum grows in an unusual "meadow" habitat with heavy competition from graminoids and shrubs and the plants are widely scattered and unusually small; part of this area may have been burned in 1992 (see Element Occurrence Record in Appendix A). Canopy cover also seems to effect reproductive success; plants growing in heavy shade are often vegetative and of low vigor. Studies on another species of lady's slipper, Cypripedium candidum, which grows in a rich fen in western New York, showed that large flowering genets were associated with higher levels of light than smaller vegetative genets (Falb and Leopold 1993).
- 2. Positive Interactions:** The orchid family is characterized by strong mycotrophy (Cronquist 1988). Although seeds of Cypripedium calceolus var. parviflorum have been germinated under laboratory conditions without a fungal symbiont (e.g. De Pau and Remphrey 1993) it is unlikely that seeds germinate in nature before penetration by fungal hyphae (Wells 1981). The plants remain colorless underground, dependent on a fungus, for a some years before they produce their first photosynthetic leaf (Wells 1981). The fungal symbiont of orchids is usually a species of Rhizoctonia (Wells 1981), a genus of soil fungi which includes many plant pathogens (Agrios 1978).
- 3. Herbivory:** Herbivory has not been noted on Element Occurrence Records from the KNF or elsewhere in Montana, although at one site "damage" by deer was noted. It is not known if cattle eat Cypripedium calceolus var. parviflorum but the species is absent from heavily grazed areas and little evidence of cattle was observed in the known population areas.

H. Land ownership: All of the known populations in the area of the KNF occur on Forest Service land, but at Libby Dam (040) most of the population is on Army Corps of Engineers land, near the Confluence of the Kootenai and Fisher Rivers (051) a subpopulation is on Plum Creek Timber Co. land, and at Magnesia Creek (029) the population extends onto private land. Additional occurrences are likely on private lands in creek bottoms which have not been surveyed.

I. Assessment and management recommendations

1. Threats to currently known populations: The major threats to Cypripedium calceolus var. parviflorum on the KNF are road building and cattle grazing, but logging may have indirect effects, and there is a potential for populations to be threatened by collection of plants by the general public. Any other activities which impede or reduce groundwater flow at its population sites are also threats.

Two populations, Dickey Lake (001) and Therriault Creek (030), have been impacted by the recent reconstruction of U. S. Highway 93 and remain at risk due to silt runoff and accumulation above the population areas (see slides 6, 7, 16, and 17 in Appendix C); the Therriault Creek population has been nearly extirpated and is likely to become so if protective measures are not taken. It is also likely that road construction has reduced population areas at Brimstone Creek (026) and Butler Creek (013) both of which are bisected by gravel roads. Damage from road construction at these sites, however, seems to be stabilized at this time. Populations of sensitive orchids on the KNF often occupy level topographic positions which are favored for road routes, especially stream crossings.

The threat from cattle grazing is speculative but persuasive, supported by inference on the KNF and the Custer National Forest. Seemingly suitable habitats which are grazed have few or no lady's slippers, and the areas which support the orchids have little or no evidence of cattle use. In the area of Homes Lake (028), where a low level of grazing was noted in 1991, the plants were confined to hummocks protected by brush (Chadde 1991). I revisited this population in 1995 and observed fewer plants than reported in 1991 and these had low vigor (slide 9, Appendix C), but I found little evidence of recent grazing. I searched the drainage of Lime Creek and found heavy grazing but no Cypripedium, however, later in the season Jack Triepke found a few stems in the area (occurrence 055), verifying that the habitat is appropriate for the orchids. Another sensitive orchid, Orchis rotundifolia, occurs in this drainage and was relocated in grazed habitat in 1995, but it is likely that the low growing and non-rhizomatous habit of this plant make it more tolerant of grazing. The fragile rhizomatous habit of C. calceolus var. parviflorum probably makes the plants highly susceptible to trampling, and its succulent, upright foliage may be palatable to cattle. Heavy grazing is also likely to effect the hydrology of riparian zones. Most of the known populations on the KNF are within range allotments. On the Sheyenne District of the Custer National Forest all occurrences of C. calceolus var. parviflorum are within grazing allotments, but three are restricted to exclosures and the others are in very low numbers or otherwise difficult for cattle to access (North Dakota Parks and Recreation Department 1990).

Logging and road building adjacent to population areas may threaten the plants by making the sites more accessible to cattle and by affecting the hydrology of the sites. The riparian areas where Cypripedium calceolus grows on the KNF are generally excluded from logging by management guidelines. Logging of surrounding forests may have effects on the hydrology of the population sites, but these are difficult to predict. Changes to the hydrology can be expected to affect the populations and potential habitat.

Lady's slippers are among the most beautiful flowers known and are coveted as cut flowers and for propagation as ornamentals; the rhizomes were historically in high demand for their reputed medicinal properties (Correll 1950), and continue to be offered by some dealers of native medicinal herbs (Fuller 1991). Historical accounts suggest that species of Cypripedium were once far more plentiful than they are today, and their downfall has been partially attributed to over-collection (Bernhardt 1990). Although collecting was not evident at any of the sites visited in 1995, probably because the wet sites are difficult to access and little visited, collection has been noted at other Montana sites and should be a concern on the KNF. A friend admitted they usually pick a bouquet of yellow lady's slippers every June; they did not realize the plants are rare and may be threatened by this activity. Digging of plants is especially detrimental considering the long time it takes for them to mature. The strict habitat and symbiotic requirements of C. calceolus var. parviflorum make it difficult or impossible to propagate, contrary to directions given in the older literature (e. g. Correll 1950). In a survey of catalogs offering native medicinal plants, 15% offered rhizomes of Cypripedium, most often C. calceolus (Fuller 1990). The resurgence of interest in herbal medicines may increase collection and significantly threaten populations of the species in the future. Collection is a special concern at sites, such as Dickey Lake (001) and Libby Dam (040), which are close to popular recreation areas. The collecting pressures on this species among hobby gardeners and commercial collectors are under review for treating the EOR locations as sensitive, whereupon precise location information is not distributed by MTNHP except as needed by managing agencies and researchers. Input from U.S. Forest Service personnel is solicited.

2. **Management practices and response:** Often populations have been protected from direct effects of logging by riparian guidelines or lack of marketable timber in the riparian corridor. At Butler Creek (013) and Confluence of the Kootenai and Fisher Rivers (051) populations have been disturbed by logging skid trails where they cross the draws, but at both sites plants have begun to recolonize the disturbances.

Most of the population areas on the Fortine District are within grazing allotments and the sites which show some degree of use by cattle (Homes Lake Area .028, and Lime Creek .055) support relatively few plants, especially the heavily grazed Lime Creek site. Studies on another species of lady's slipper, Cypripedium candidum, which occupies a rich fen in western New York, show that the invasion and growth of this species began soon after cessation of grazing at the site (Falb and Leopold 1993). An enclosure is recommended at the Lime Creek (055) site to determine the effects of grazing on C. calceolus var. parviflorum; this will need to be set up as a long term project due to the slow development of the orchids from seed.

3. **Management Summary:** Although a few new populations of Cypripedium calceolus var. parviflorum were found on the KNF in 1995, current Montana Natural Heritage Program state rank of S2S3 and Forest Service Sensitive status remain appropriate. Most of the populations on the KNF and in Montana are small and reproductive success may be limited. Many occurrences and much of the Montana range of the taxon is based only on historical collections. Threats to populations are many and are likely to increase as human populations and rural residences increase.

Revisions in the taxonomy of yellow lady's slippers in Montana will require a reappraisal of state and global ranks. Representative collections are needed to determine which varieties of yellow lady's slippers occur in Montana, however, over collection is a threat to populations. Guidelines for collecting native plants have been established by the Montana Native Plant Society (1993). Widespread and long standing collecting pressures

on lady's slipper orchids (Bernhardt 1990, Fuller 1991) are basis for extra caution in collecting these rare plants. Collecting should be limited to taking few above ground stems from large populations and all specimens should be deposited in established herbaria. A relatively large number of specimens of yellow lady's slippers are housed at the University of Montana (MONTU), and annotation of these to variety is needed before further collection priorities are set.

The priority for conservation of yellow lady's slippers on the KNF should be to insure that all high quality occurrences on the KNF are preserved at their current population levels. This may require perpetuation of existing land uses patterns in which cattle are kept out of the population areas. Currently most large populations are in areas with pristine habitat, but this could change if grazing allotment use patterns change. Especially at risk are the Brimstone Creek (026), Homes Lake Area (028) and Magnesia Creek (029) populations, which are closest to drainages which are currently heavily grazed. At some sites, such as the Homes Lake Area (028), strategically falling a few trees across the draw may be a simple way to restrict cattle access and improve site conditions. Several unique wetlands on the KNF support populations of three Sensitive orchids, Cypripedium calceolus var. parviflorum, C. passerinum, and Orchis rotundifolia, and these sites should be considered for designation as Research Natural Areas or Botanical Special Interest Areas. Such areas include Brimstone Creek (026), the Jumbo Lake Basin (023 and 027), Magnesia Creek (029) and Laughing Water Creek (049). These sites, along with occurrences on the Flathead and Lewis and Clark National Forests, represent the largest populations of C. calceolus var. parviflorum on public lands in Montana.

Cypripedium passerinum
Sparrow's Egg Lady's Slipper

A. Classification

1. **Family:** Orchidaceae (Orchid Family). The Orchid Family is perhaps the largest family of vascular plants, with over 15,000 species worldwide (Cronquist 1988). Most of these species are in the tropics. Sometimes the genus Cypripedium is segregated from the orchid family and placed in the Cyripediaceae (Weber and Wittmann 1992).
2. **Genus:** Cypripedium, the lady's slippers, is a genus of about 50 species native to North America and Eurasia (Correll 1950).
3. **Species:** Cypripedium passerinum Richards

B. Present legal or other formal status

1. Federal status

- a. **U.S. Fish and Wildlife Service:** none
 - b. **U.S. Forest Service:** Sensitive in Region 1 (U.S. Forest Service 1994).
2. **State:** The Montana Natural Heritage Program ranks the species G4G5 and S2 (Heidel 1995). This signifies that it is apparently to demonstrably secure throughout it's global range but is imperilled because of rarity in Montana.

C. Description

1. **General nontechnical description:** Sparrow's egg lady's slipper has leafy stems up to 35 cm high from slender, creeping rhizomes. The 3-5 broadly lance-shaped leaves are up to 35 cm long and clasp the stem. The herbage is covered with long, soft hairs and is usually somewhat sticky. The one or two flowers are subtended by a leafy bract which is longer than the inflorescence. The sepals are green and 10-16 mm long, the upper one longer than the lower two. The petals are white, the lower one is pouchlike with purple spots on the inside, and the other two resemble the sepals but are shorter. The erect capsule is ovoid and bears thousands of tiny seeds (U.S. Forest Service 1995). Slides of flowering plants photographed on the KNF are included in Appendix C.
2. **Technical description:** Plant terrestrial, pubescent, up to 35 cm tall from a short rhizome with fibrous roots. Leaves 3-5, ovate-lanceolate, plicate, light green, 5-15 X 1.5-5 cm, sheathing the stem. Inflorescence with a usually solitary, inconspicuous flower. Floral bract foliaceous, ovate-lanceolate, 3-5 X 1-2 cm, sheathing the ovary. Ovary subsessile, stout, pubescent, 17 X 7 mm. Dorsal sepal suborbicular, concave, yellow green, 1.5-2 X 1-1.5 cm. Lateral sepals united nearly to apex and concave behind the lip, or sometimes free; similar to the dorsal sepal. Petals linear-oblong, spreading, flat, white, 12-20 X 3-4 mm. Lip an obovoid sac, the margins of the orifice folded in, white, suffused with pink near the base, minutely spotted with purple at the orifice and on the inside, 12-20 X 8-13 mm. Staminode ovate, white with yellow apex and spotted with purple, 6 X 5 mm. Capsule ellipsoid, 1.5 X 2.5 cm. (Luer 1975)
3. **Local field characters:** Unlike other lady's slippers on the KNF, Cypripedium passerinum has inconspicuous flowers which are whiteish green and do not have showy

twisted petals. When they are learned, species of Cypripedium on the KNF can be recognized vegetatively or in fruit, but may be difficult to determine to the species level. Cypripedium montanum is often more robust, with wider leaves than C. passerinum or C. calceolus var. parviflorum and usually has more flowers (or fruits) per stem, often more than two. On the KNF Cypripedium passerinum usually has lighter colored leaves, is more densely silky pubescent, and is more strictly single flowered than C. calceolus var. parviflorum.

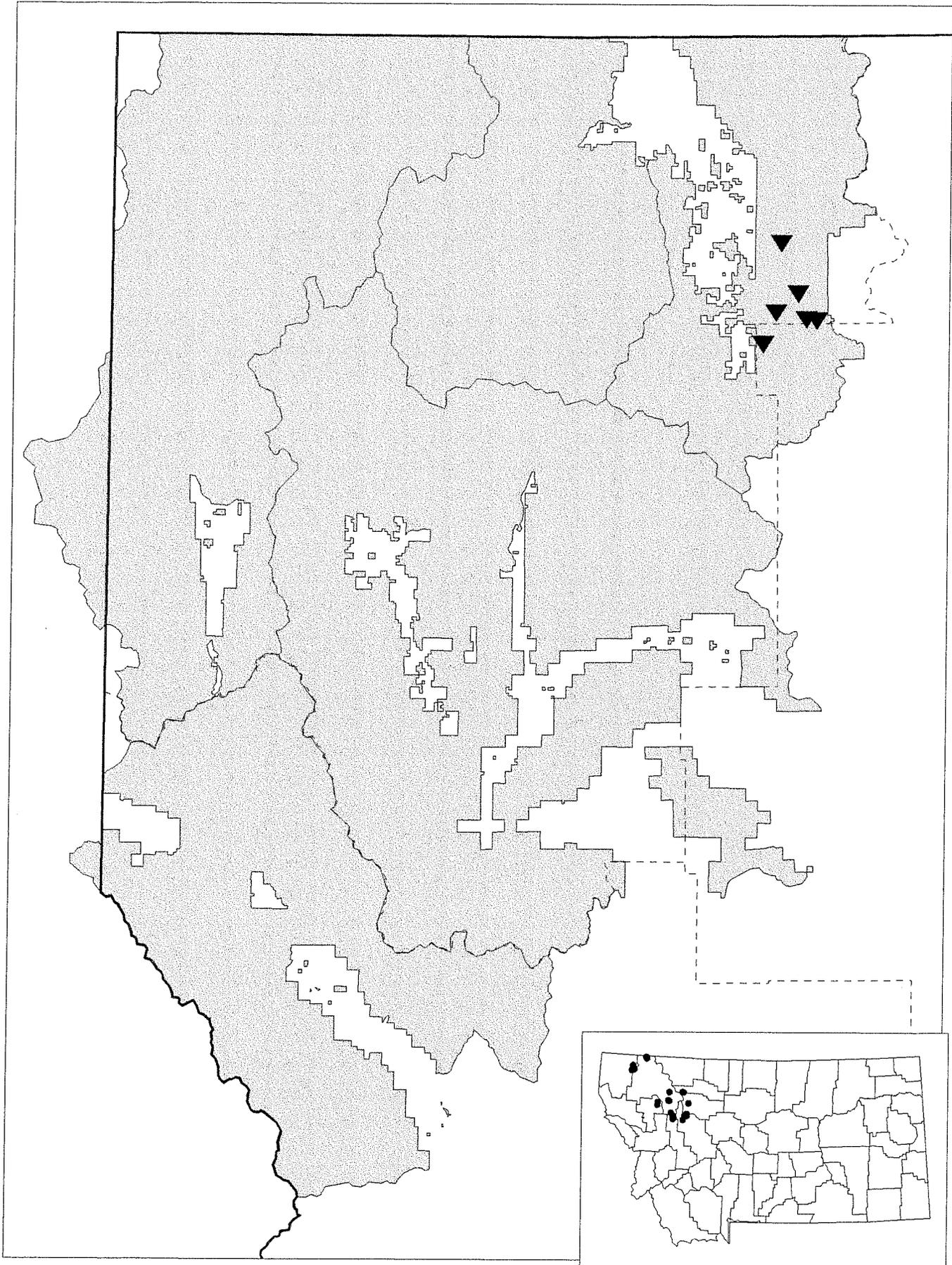
D. Geographical distribution

1. **Range:** Northern North America, from Alaska to Quebec south to southeastern British Columbia, northern Montana, and Lake Superior (Hitchcock and Cronquist 1973). Cypripedium passerinum is one of the few orchids which grows above the Arctic Circle (Luer 1975).
2. **Montana distribution:** Cypripedium passerinum has a peripheral distribution in northwestern Montana, the only place where it grows south of the Canadian border (Luer 1975). There are now 27 occurrences in the state entered in the Biological Conservation Database (Figure 2 inset). These are in Flathead (8 occurrences), Lake (4), Lewis and Clark (3), Lincoln (5), Pondera (2), Powell (3), and Teton (2) counties. One of these occurrences, at Columbia Falls, is historical, represented only by an 1894 collection. These numbers do not include possible 1995 discoveries outside the KNF.
3. **Occurrences on the Kootenai National Forest**
 - a. **Current sites:** Cypripedium passerinum was first found on the KNF in 1992 (Hoitsma 1992) and is now known from six sites, all on the Fortine Ranger District (Figure 2). Two of these occurrences, Brimstone Creek (025) and Magnesia Fen (026), were new discoveries in 1995. Element Occurrence Records and topographic maps showing the precise locations of these populations are provided in Appendix A.
 - b. **Historical sites:** none
 - c. **Unverified/undocumented sites:** none
 - d. **Areas surveyed but species not located:** See listing under this heading for Cypripedium calceolus var. parviflorum.

E. Habitat

1. **Associated vegetation:** In Montana, Cypripedium passerinum is nearly always associated with spruce habitat types, usually on edges and ecotones with wetland features such as fens, swamps, deciduous riparian thickets, lakesides, and springs. On the KNF, the dominant tree species may be Picea engelmannii, P. glauca, or hybrids, and habitats include the Picea/Clintonia uniflora, Picea/Equisetum arvense (Pfister et al. 1977) and Picea/Cornus stolonifera (Hanson et al. 1995) types. Deciduous tree species at some sites include Betula papyrifera and Populus balsamifera. Common shrubs, which may contribute as much or more canopy cover than the dominant trees in these habitats, include Alnus viridis, Betula occidentalis or Betula glandulosa, Cornus stolonifera, Lonicera involucrata, and Rhamnus alnifolia. The sites with Cypripedium passerinum on the KNF have high coverage by a diversity of wet site forbs and the conspicuous presence of other orchids. At or nearby five of the six sites, two other sensitive orchids, Cypripedium calceolus var. parviflorum and Orchis rotundifolia also occur. Thus, known

Figure 2. *Cypripedium passerinum* -- Sparrow`s-egg Lady`s Slipper
Occurrences on or near the Kootenai National Forest, Montana



sites for any of these sensitive orchids should be considered potential habitat for the others. Other common associated forbs are Clintonia uniflora, Cornus canadensis, Petasites sagitata, Rubus pubescens, and species of Viola. Graminoid cover is predominantly by small sedges such as Carex capillaris, C. disperma, and C. leptalea. The most common associated ferns are horsetails (Equisetum arvense, E. fluviatile, E. hymale, and E. scirpoides). Ground cover by mosses in these habitats is usually very high.

ECODATA plots were sampled at two sites with Cypripedium passerinum, at Brimstone Creek (025) and at Rattlebone Lake (020). This data is provided in Appendix B, and includes complete lists of vascular plant species in the plots and their aerial coverage. Additional associated plant species are listed in the general site description fields of the Element Occurrence Records in Appendix A. Photographic slides of the vegetation at three sites are provided in Appendix C.

2. **Topography:** On the KNF, all occurrences of Cypripedium passerinum are at relatively low elevations in glaciated valley bottoms, along low gradient streams or lakeshores in the Rocky Mountain Trench. Elevations range from 3,280 to 3,800 feet. The sites are all nearly level and have various aspects. At wet sites the plants grow on hummocks above the water table.
3. **Soil relationships:** Correll (1950) states that the species "grows in both circumneutral limestone gravels and moderately acid coniferous humus." In Montana, a calcareous parent material is often reported, and on the KNF most of the sites have soils with a high content of reprecipitated calcium. Four of the six known occurrences are on landtype 325 (Kuennen and Gerhardt 1984) with soils classified as typic calciborolls with a high percentage of reprecipitated calcium carbonate; the parent material is alluvium, with the calcium derived from glacial till scoured from Precambrian Siyeh limestone. At Rattlebone Lake (020) the landtype is 105, indicating lacustrine soils, with the surrounding drainage classified as type 355 with associated non-calcareous soils. The absence of Cypripedium calceolus var. parviflorum at this site is unique for occurrences on the KNF, thus C. passerinum may be adapted to a wider range of soil pH. The soils are subirrigated and moist. The species reaches its southernmost limits in Montana and extends north above the Arctic Circle; it is adapted to cool soils.
4. **Climate factors:** Cypripedium passerinum is adapted to growing in cold climates with short growing seasons, its distribution extending above the Arctic Circle. Data from the climatological station at Fortine (National Oceanic and Atmospheric Administration 1982) at 3,000 feet elevation characterizes the climate where the species grows on the KNF. From 1951 to 1980 the mean temperature normals ranged from 19.8° F in January to 63.8° in July and the normal annual precipitation was 17.25 inches. The Rocky Mountain Front Range in Montana, where C. passerinum grows in greater numbers, has a colder climate and shorter growing season than the Rocky Mountain Trench where it grows on the KNF. Climate may be a factor in the low numbers of this species found on the KNF.

F. Population demography and biology

1. **Phenology:** The species flowers in June and produces fruit in late June to July. It is reported as flowering somewhat later than Cypripedium calceolus var. parviflorum (Lesica and Shelly 1991) but at sites hosting both species on the KNF they were flowering concurrently in 1995.

2. **Population demography and condition:** Evaluation of population numbers is difficult because there has not been consistent distinction between aerial stems, which may be clonal (ramets), and individual plants, or clumps of stems, presumably reproduced by seeds (genets). A conservative approach is to consider the following numbers in terms of aerial stems; the number of genets in a population may be considerably less (see discussion of vegetative reproduction below). Throughout Montana, reported population numbers range from 2 to 1,200 aerial stems and areal coverage of the populations ranges from a few square feet up to 15 acres. Relatively large populations are reported from the Rocky Mountain Front, Glacier Park, and the Bob Marshall Wilderness. In contrast, Kootenai National Forest populations are extremely small. The highest number seen (64 "plants") was in 1993 at Laughing Water Creek. Hoitsma (1992) first found Cypripedium passerinum on the Kootenai National Forest and observed between 30 and 50 "plants" in each of three populations. In attempts to relocate two of these occurrences in 1995, I found only a few aerial stems at each site, and was unable to relocate all subpopulations. Also in 1995, Tobias Spribille observed only 15 "plants" at a newly discovered site for the species at Magnesia Creek, and I found just one clump with 3 stems at Brimstone Creek. Census numbers in 1995 may indicate population declines of C. passerinum on the Kootenai National Forest. None of the populations on the Kootenai cover more than one acre. Estimates of population numbers and area are given, as available, for all populations on the KNF in the element occurrence data and size fields of the Element Occurrence Records in Appendix A.

3. **Reproductive biology:** The reproductive biology of orchids in general is characterized by complex floral morphologies and mechanisms adapted to cross pollination by insects, and by the production of tiny seeds, potentially in great numbers, which can be dispersed long distances but which are dependent upon fungi for seed germination and seedling development.

Unlike most orchids and other species of Cypripedium, C. passerinum has been shown to be capable of self pollination (Catling 1983). Tobias Spribille pointed out flowers of C. passerinum at Laughing Water Creek (024) with ovaries beginning to expand before the flower had apparently opened, possible evidence of self pollination or agamospermy (vegetative production of seeds without fertilization), and I observed this condition at other sites on the KNF. Bernhardt (1990) states that the small lip size of C. passerinum makes it dependent on small bees for pollination, but Shelly (1980) observed no pollinator visitation to plants on the Flathead and Lewis and Clark National Forests, again suggesting self pollination. Self pollination, like vegetative reproduction, restricts gene flow leading to adaptation and evolution (Catling 1983), but may be important for the perpetuation of small isolated populations like those of C. passerinum on the KNF. The breeding system of C. passerinum is probably a mixture of self and cross pollination.

Germination of terrestrial orchid seeds depends on penetration by fungal hyphae, and the plants grow underground as colorless mycorrhizomes for a period of time before producing photosynthetic tissue (Wells 1981).

Cypripedium passerinum can also reproduce vegetatively by rhizomes. These have been described as slender and creeping (Correll 1950) or as short (Luer 1975). The distance of potential spread by rhizomes remains unclear; plants which I observed on the KNF in 1995 grew in small compact clumps with just a few stems. Vegetative reproduction allows a population to persist and spread locally, but does not alone supply genetic variation which allows the population to adapt or seeds for long distance migration.

Some species of Cypripedium are known to hybridize, for example C. calceolus var. parviflorum and C. montanum produce apparent hybrids at Libby Dam (see discussion under this heading for C. calceolus var. parviflorum). Although C. calceolus var. parviflorum and C. passerinum grow together at several sites on the KNF, no hybrids were seen; this may be partially due to the small size of the latter's lip which adapts it to smaller pollinators (Bernhardt 1990) and its capacity for self pollination (Catling 1983). A putative hybrid between these two taxa has been reported from the Rocky Mountain Front Range in Montana on the Lewis and Clark National Forest.

G. Population ecology

1. **Competition:** The sites where Cypripedium passerinum are found on the KNF usually have high vegetative cover but the sensitive plant is very scarce, suggesting that it may have poor competitive ability. The habitats are usually shared with C. calceolus var. parviflorum which is always more abundant. The two species of lady's slippers occupy similar microhabitats but were not seen growing in close association, thus C. calceolus var. parviflorum may be a superior competitor, to the exclusion of C. passerinum. Flowers were observed on plants growing in deep shade.
2. **Positive Interactions:** The orchid family is characterized by strong mycotrophy (Cronquist 1988). Although seeds of some species of Cypripedium (De Pau and Remphry 1993) have been germinated under laboratory conditions without a fungal symbiont, it is unlikely that seeds germinate in nature before penetration by fungal hyphae (Wells 1981). The plants remain colorless underground, dependent on a fungus, for a some years before they produce their first photosynthetic leaf (Wells 1981). The fungal symbiont of orchids is usually a species of Rhizoctonia (Wells 1981), a genus of soil fungi which includes many plant pathogens (Agrios 1978).
3. **Herbivory:** On the KNF in past years, light herbivory was noted at Rattlebone Lake (020) and browsing by game was noted at Laughing Water Creek (024). At Brimstone Creek (025), the single clump of Cypripedium passerinum found was growing under brush, a possible indication of vulnerability to herbivores. Severe grazing and trampling by cattle was noted at one site on the Lewis and Clark National Forest along the Rocky Mountain Front Range (Shelly 1988).

H. **Land ownership:** All occurrences are on KNF land on the Fortine District except Jumbo Lake (022) which is on state land but possibly extends onto the KNF Fortine District.

I. Assessment and management recommendations

1. **Threats to currently known populations:** Potential threats to Cypripedium passerinum are essentially the same as for Cypripedium calceolus var. parviflorum; see this heading for that species for a more complete discussion. These threats include grazing, road building, logging, and plant collecting. There are more reports of herbivory to Cypripedium passerinum than to Cypripedium calceolus var. parviflorum, a possible indication that it is more palatable and thus more susceptible to grazing. Its lower numbers on the KNF could be a reflection of extreme susceptibility to grazing and browsing by game, although there is no direct evidence of this. Its extreme rarity on the KNF make it especially vulnerable to extirpation caused not only by human caused disturbances but also due to natural population fluctuations, disease, and herbivory. The flowers of Cypripedium passerinum are quite inconspicuous and not showy, thus collection by people for cut flowers and propagation as ornamentals may be less of a threat to this species.

2. **Management practices and response:** One population of Cypripedium passerinum in the Rocky Mountain Front Range on the Lewis and Clark National Forest was monitored before and after cattle grazed the area in 1988; of 160 stems observed on July 11 only 52 live stems were relocated on August 4 and others were bitten off or trampled (Shelly 1988).
3. **Management summary:** Although two new populations of Cypripedium passerinum were discovered in 1995, current Montana Natural Heritage Program state rank of S2 and Forest Service Sensitive status remain appropriate. All populations of C. passerinum seen on the KNF in 1995 were extremely small and the species is highly vulnerable on the Forest. It is not known if the small population numbers are due to extreme susceptibility to grazing by cattle or browsing by game, or to climatic conditions, or to other causes.

Since Cypripedium passerinum almost always grows on the KNF with two other Sensitive orchids, C. calceolus var. parviflorum and Orchis rotundifolia, preservation of wetlands which host all three species should be a priority for conservation management of the species. Sites with all three orchids are located at Brimstone Creek (025), the Jumbo Lake Basin (021, 022), Laughing Water Creek (024), and Magnesia Fen (026). Although habitat at these sites is currently in near pristine condition, this could change with changes in grazing allotment usage patterns. Cattle should be kept out of these areas. Designation as Research Natural Areas or Botanical Special Interest Areas may be appropriate.

Discussion

In addition to their intrinsic value as elements of biodiversity, the Sensitive lady's slipper orchids on the KNF have significant aesthetic and commercial value, and their preservation should be an important conservation priority. Cypripedium calceolus var. parviflorum, in particular, has potentially enormous commercial value as an ornamental and pharmaceutical. Commercial use of this orchid will depend on scientific advances in cultivation from seed, a subject which is receiving considerable attention (e.g. De Pau and Remphrey 1993). The potential high demand for these rare plants is basis for special data security precautions and public education. Maintenance of genetic diversity necessary for the species to persist and evolve, as well as for commercial germplasm, will depend on prudent habitat conservation and protection of populations from exploitation.

As human population pressures continue to grow, remote occurrences of sensitive orchids on public land, like those on the KNF, will become more important to the perpetuation and evolution of their species. Much of the bottomland habitat which is potential habitat for sensitive orchids in the Rocky Mountain Trench near Fortine is on private lands subject to subdivision and increased residential use. At the same time, use of grazing allotments and recreation on public lands is likely to increase.

The most significant current threat to populations of the two sensitive Cypripedium species on the KNF is probably cattle grazing. Large populations of sensitive orchids seem to be restricted to areas protected by chance from cattle by windfall, heavy brush, and/or swampy soils. Historical and current allotment usage may also be a factor in the distribution of these species. All of the known populations of orchids are within open range allotments and are potentially threatened by changes in current grazing patterns. Populations may be opened up to grazing by adjacent logging and road building. Preservation of large populations of lady's slippers on the KNF will probably require that cattle be kept out of the population areas.

Few of the populations are given administrative protection and most lie in management areas designated as suitable timberland (U.S. Forest Service 1987); two exceptions are Brimstone Creek and Laughing Water Creek which lie just on the downstream edge of designated old growth. Designation of the Jumbo Lake Basin as a Botanical Special Interest Area or Research Natural Area has been suggested (Chadde 1989) and similar designation may be appropriate for significant orchid populations at Brimstone, Laughing Water, and Magnesia Creeks. All three of the sensitive orchids known on the KNF, Cypripedium calceolus var. parviflorum, C. passerinum, and Orchis rotundifolia, are present at each of these sites, with one or more in significant numbers, and these areas have unique soils, geology, and floristic assemblages. Further surveys of these areas are recommended before conservation area boundaries are established, especially in the Jumbo Lake Basin where location discrepancies remain.

Clustered lady's slipper, Cypripedium fasciculatum, has still not been found on the KNF. Throughout its range, C. fasciculatum is found in a variety of habitats (Elliman and Dalton 1995), including Thuja plicata and Pseudotsuga menziesii habitat types which are common on the KNF. In 1995, I spent only a small amount of time looking for this species in the drainage of Big Beaver Creek on the Cabinet Ranger District. The habitat on the lower south facing slopes of this drainage and other east-west oriented drainages on the Cabinet District is similar to where the species is known not far south on the Lolo National Forest near St. Regis. On the Lolo, Cypripedium fasciculatum grows in Douglas fir/ninebark (Pseudotsuga menziesii/Physocarpus malvaceus) communities. In northwestern Montana, unlike more arid parts of the state, these communities occur on southerly aspects (Pfister et al. 1977). The rare lady's slipper grows in cool, shaded microsites with little ground cover, on these relatively warm, open slopes. It thus seems, at this apparent northernmost extent of its range at this longitude, to require the best of all

conditions. In 1995, an extremely cool, wet growing season, flowers were scarce and often aborted, a further indication that the species may be better adapted to a dryer, warmer, more southerly climate. Never the less, there remains potential for the species on the KNF, efforts to locate it should continue, and it should remain a search target for routine project clearances. Prior to 1991, just four years ago, Cypripedium fasciculatum was not known from the Lolo National Forest, but now it is known there in greater concentration than anywhere else in the state (Elliman and Dalton 1995). Kootenai National Forest botanists, especially those on the Cabinet District, are encouraged to visit the sites on the Lolo; Element Occurrence Records for two relatively easy sites to relocate are included at the end of Appendix A. Photographic slides of flowering plants of C fasciculatum are included in Appendix C.

At present, the Kootenai National Forest, especially the Fortine District, hosts a relatively high density of Sensitive orchid occurrences, but these are restricted to small areas of specialized habitat. Many sites host three Sensitive orchids (Cypripedium calceolus var. parviflorum, C. passerinum, and Amerorchis rotundifolia), some with large numbers in pristine habitat settings. They include some of the largest known populations of Cypripedium calceolus var. parviflorum in the state, and populations of both species are geographically significant. But these populations may be threatened in the future by changing, likely increasing, pressures, including the direct and indirect effects of road building, cattle grazing, logging, and collection. Protecting these significant occurrences and unique habitats from these complex and interrelated threats will require a carefully planned conservation strategy.

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MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.023
Element occurrence type:

Survey site name: JUMBO LAKE
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 36 SW4SW4; 35 SE4SE4

Precision: S
Survey date: Elevation: 3360 - 3600
First observation: 1992-06-09 Slope/aspect: 1-2% / N-SE
Last observation: 1992-06-09 Size (acres): 1

Location:

FROM NORTH DICKEY LAKE CAMPGROUND FOLLOW FS RDs 36 TO 857 TO 3755 TO
EXTREME SOUTHEAST CORNER OF SECTION 35 WHERE DRAINAGE APPROACHES
ROAD
AND LIES JUST EAST OF ROAD. DESCEND DENSE CEDAR WOODS ALONG CREEK FOR
SEVERAL HUNDRED FEET. PLANTS ARE LOCATED ADJACENT TO STREAM AND
DISPERSED ALONG SMALL STREAMSIDE TERRACES.

Element occurrence data:

30 CLUMPS ALONG DRAINAGE IN 2 SUBPOPULATIONS, 60% LATE FLOWERING.

General site description:

PARTIALLY OPEN EXPOSURE ON STRAIGHT SLOPE. MOIST TO SATURATED AREA IN
BOTTOM ADJACENT TO SMALL STREAM CHANNEL TO MIDSLOPE ON GLACIATED
SCOURED TROUGH AND GLACIATED MOUNTAIN SLOPE. ORGANIC (MOSS) HORIZON
OVER SILTY, HIGHLY CALCAREOUS MATERIAL IN NUMEROUS COARSE FRAGMENTS.
GLACIALLY SCOURED BELT SERIES ROCK AND PRECIPITATED CALCIUM
CARBONATES
AS PARENT MATERIAL. THUJA PLICATA/CLINTONIA UNIFLORA AND
PICEA/EQUISETUM ARVENSE HABITAT TYPE, WITH BETULA PAPYRIFERA, CORNUS
STOLONIFERA, LONICERA INVOLUCRATA, CORNUS CANADENSIS, EQUISETUM
LAEVIGATUM, HABENARIA DILATATA, GALIUM BOREALE, CYPRIPEDIUM
PASSERINUM, ORCHIS ROTUNDIFOLIA, SMILACINA STELLATA, LINNAEA BOREALIS.

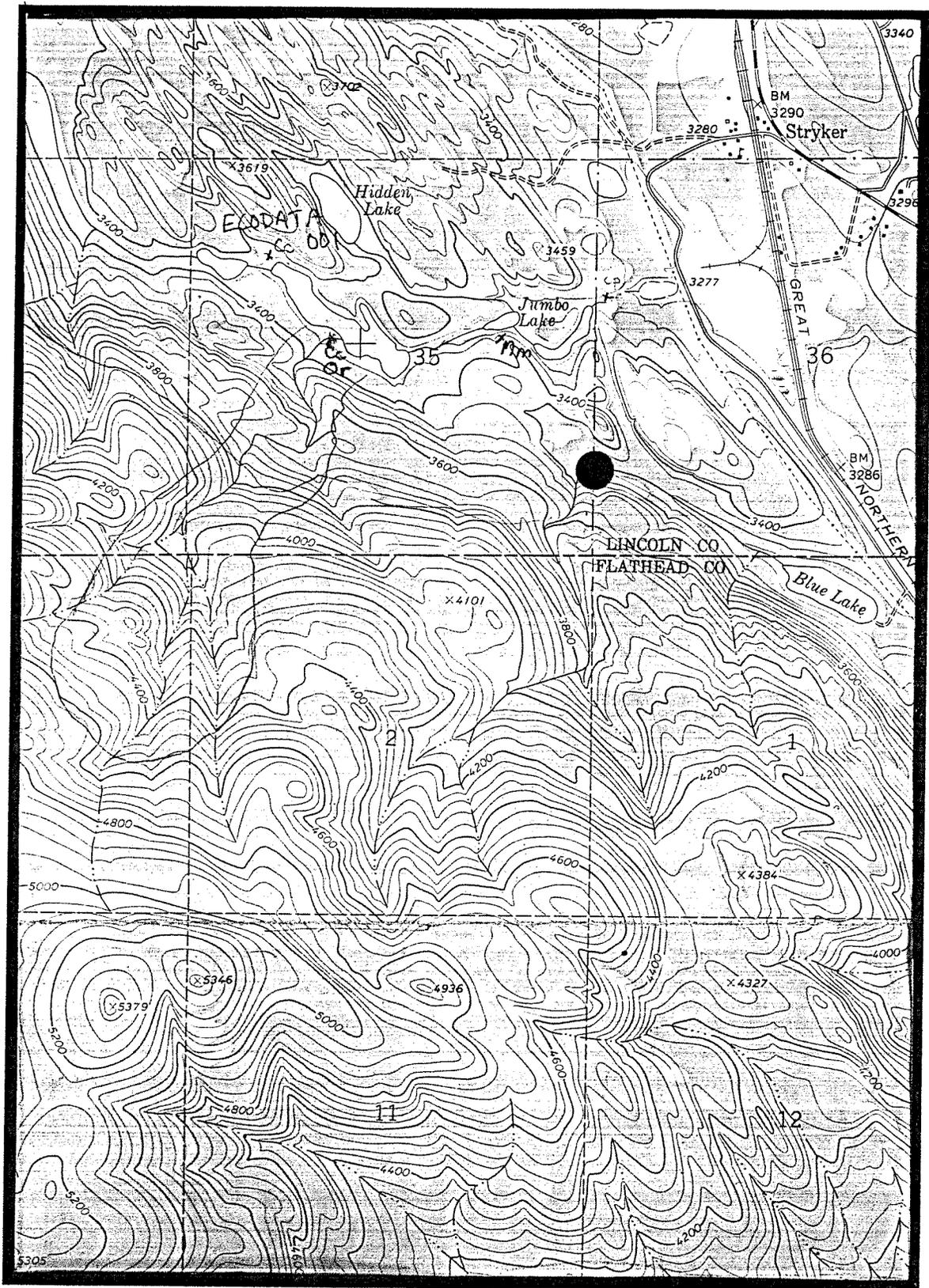
Land owner/manager:

KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT
STATE LAND - UNDESIGNATED

Comments:

SELECTIVE LOGGING OCCURRED IN DRAINAGE CA. 70 YEARS AGO (FOLLOWING
1910-20 FIRES). STREAM DRAINS INTO BLUE LAKE, CA. 0.5 MILE TO THE
SOUTHEAST.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE
RANGER DISTRICT, KOOTENAI NATIONAL FOREST.
[UNPUBLISHED REPORT] 65PP. PLUS APPENDICES.



Cypripedium calceolus var. parviflorum; Jumbo Lake (023)
USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.025
Element occurrence type:

Survey site name: ANT FLAT
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: EDNA MOUNTAIN

Township: Range: Section: TRS comments:
034N 025W 7 SW4

Precision: S
Survey date: 1991-07-10 Elevation: 3000 -
First observation: 1991 Slope/aspect: LEVEL
Last observation: 1995-06-08 Size (acres): 3

Location:
FROM EUREKA, HEAD SSE ON US HWY #93 CA. 12 MILES TO FS RD 36. GO SOUTH
CA. 1 MILE TO ANT FLAT NATURE TRAIL. PLANTS ARE ALONG TRAIL.

Element occurrence data:
1995: SMALL, LOW VIGOR, SCATTERED PLANTS WITH 1 PLANT PER CLUMP, LESS
THAN 50 PLANTS TOTAL. 1991: SUBPOPULATION EAST OF TRAIL HAD 127 STEMS,
50 IN FLOWER. WEST SUBPOPULATION HAD 25 CLUSTERS, WITH FROM 1-10 STEMS
PER CLUSTER.

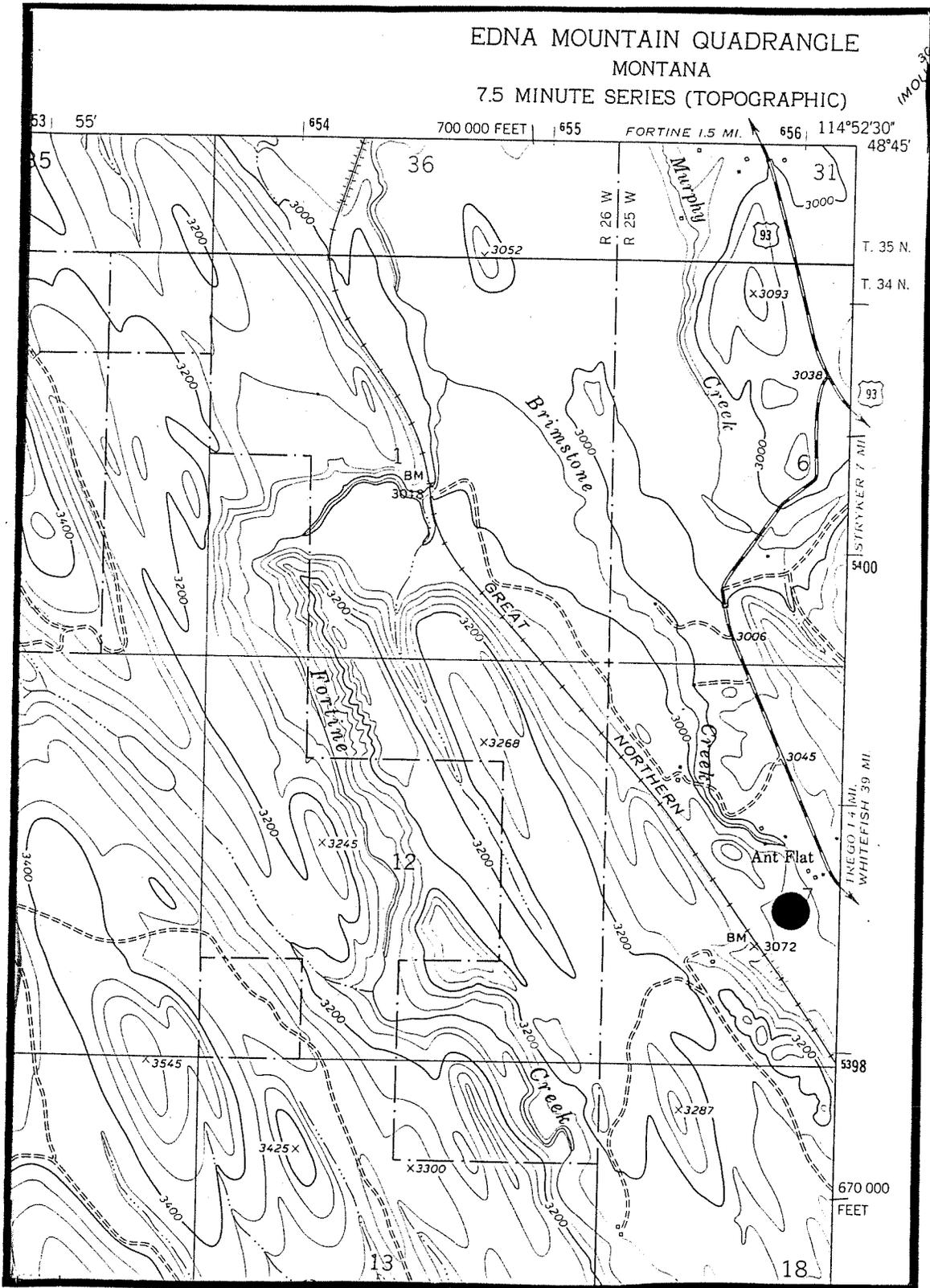
General site description:
OPEN TO PARTIALLY SHADED VALLEY BOTTOM; MOIST. SITE IS ADJACENT TO
PICEA/EQUISETUM ARVENSE HABITAT TYPE WITH OPENINGS DOMINATED BY SALIX
BEBBIANA AND BETULA GLANDULOSA. ASSOCIATED SPECIES INCLUDE POPULUS
TREMULOIDES, CORNUS STOLONIFERA, PRUNUS VIRGINIANA, CALAMAGROSTIS
CANADENSIS, JUNCUS BALTICUS AND ZIGADENUS ELEGANS. LANDTYPE 108.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
EASTERN POPULATION MAY BE A PRESCRIBED-BURN AREA BY THE FOREST SERVICE
IN 1992. DAVID NESBITT, OF THE FORTINE RANGER DISTRICT, WILL MONITOR
THE RESPONSE OF POPULATION TO FIRE. SITE REVISITED IN 1995 BY J.
VANDERHORST AND T. SPRIBILLE.

Information source: CHADDE, S. 1991. SENSITIVE PLANT SURVEY, PINKHAM
ANALYSIS AREA, FORTINE & REXFORD RANGER DISTRICTS,
KOOTENAI NATIONAL FOREST. UNPUBLISHED REPORT. 26
PP. PLUS APPENDICES.

Specimens: VANDERHORST, J. (5362). 1995. MONTU.



Cypridium calceolus var. parviflorum; Ant Flat (025)
USGS Edna Mountain 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.026
Element occurrence type:

Survey site name: BRIMSTONE CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 32 NE4

Precision: S
Survey date: 1991-07-11 Elevation: 3500 -
First observation: 1991 Slope/aspect: 1% / WEST
Last observation: 1995-06-26 Size (acres): 5

Location:

FROM TREGO, TRAVEL SOUTH ON FS RD #36 TO JUNCTION WITH FS RD #871.
TAKE ROAD #871 TO CROSSING WITH BRIMSTONE CREEK (CULVERT). POPULATION
IS LOCATED CA. 300 FEET DOWNSTREAM FROM CULVERT. ALSO BELOW CULVERT
CROSSING WITH FS RD 865.

Element occurrence data:

1995: CA. 300 PLANTS, FULL FLOWER AND EARLY FRUIT. 1991: CA. 200
PLANTS, SCATTERED, LATE FLOWER TO EARLY FRUIT.

General site description:

PARTIALLY OPEN, SATURATED AREA; PICEA/EQUISETUM ARVENSE HABITAT TYPE,
WITH ALNUS SINUATA, RHAMNUS ALNIFOLIA, BETULA PAPYRIFERA, ROSA SPP.,
CORNUS CANADENSIS, PETASITES SAGITTATUS, ORCHIS ROTUNDIFOLIA, CORNUS
STOLONIFERA, HABENARIA HYPERBOREA, CYPRIPEDIUM PASSERINUM, AND
GLYCERIA STRIATA. LANDTYPE 325.

Land owner/manager:

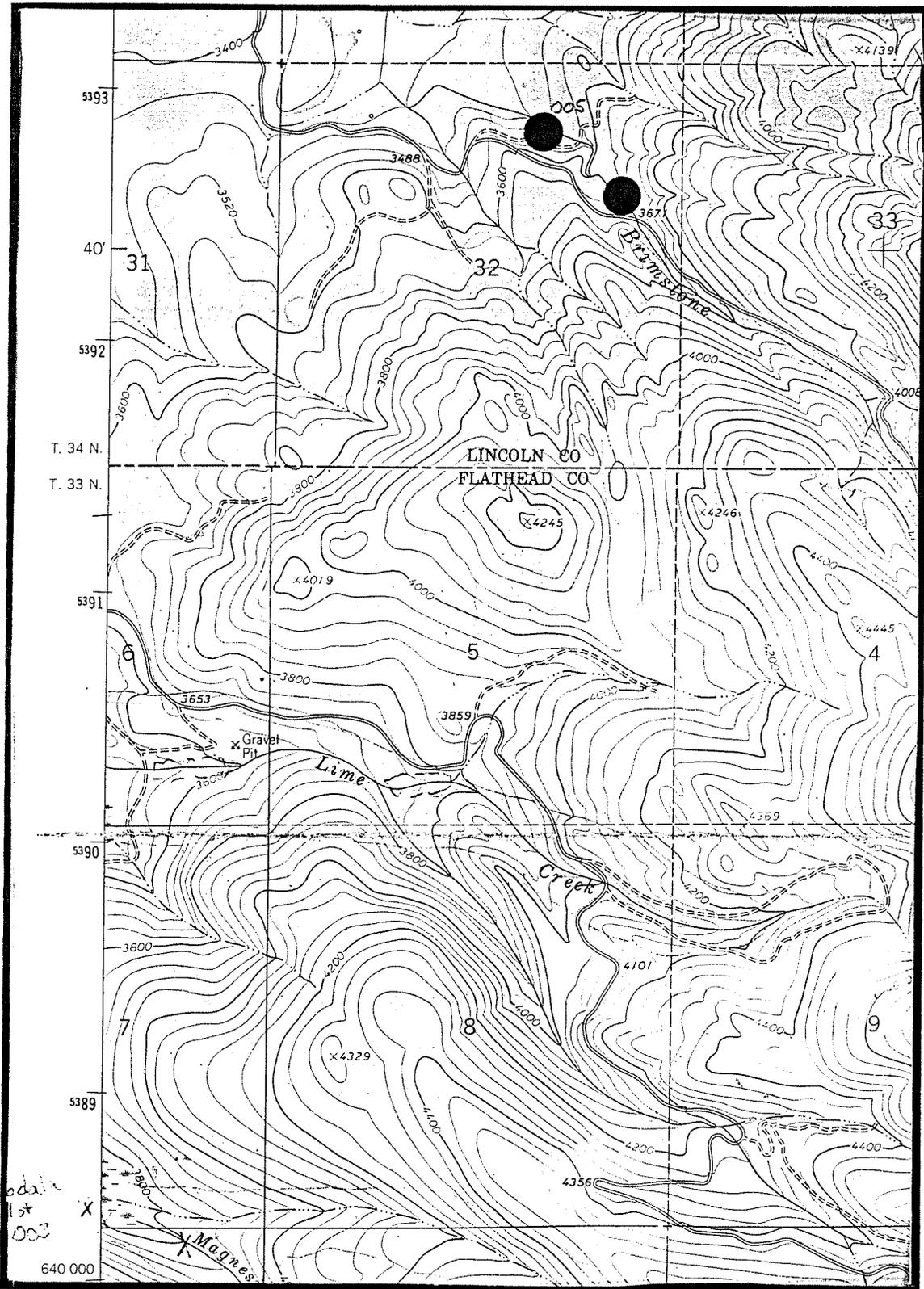
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

SUITABLE HABITAT CONTINUES DOWNSTREAM ONTO ADJACENT PRIVATE LAND.
SITE
REVISITED IN 1995 BY J. VANDERHORST. ECODATA PLOT FS01140395JV005.

Information source: CHADDE, S. 1991. SENSITIVE PLANT SURVEY, PINKHAM
ANALYSIS AREA, FORTINE & REXFORD RANGER DISTRICTS,
KOOTENAI NATIONAL FOREST. UNPUBLISHED REPORT. 26
PP. PLUS APPENDICES.

Specimens: VANDERHORST, J. (5405). 1995. MONTU.



Cyripedium calceolus var. parviflorum; Brimstone Creek (026)
 USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.027
Element occurrence type:

Survey site name: HIDDEN LAKE AREA
EO rank:

EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 35 NW4

Precision: S
Survey date: Elevation: 3360 - 3600
First observation: 1991-07-11 Slope/aspect: LEVEL
Last observation: 1995-06-10 Size (acres): 2

Location:

TRAVEL 0.25 MILE WEST OF STRYKER ON FS RD #315. PARK WHERE ROAD TURNS SHARPLY TO SOUTHEAST AND HIKE ALONG DRAINAGE TO LAKE AREA. PLANTS ARE ADJACENT TO A SMALL CREEK THAT FLOWS INTO THE WETLAND, AND BETWEEN NORTHWEST END OF LARGEST LAKE AND EAST END OF SMALLER LAKE.

Element occurrence data:

1995: CA. 400 FLOWERING STEMS IN FULL FLOWER. 1992: 30 PLANTS IN 3 CLUMPS WITHIN 4-FOOT RADIUS, 2 POST-ANTHESIS, MINIMAL REPRODUCTIVE SUCCESS. 1991: CA. 100 PLANTS IN LATE FLOWER.

General site description:

1992: PLANTS FOUND ON HUMMOCKS IN SHRUBBY WET MEADOW. 1991: PLANTS ARE LOCATED IN PARTIALLY OPEN, SATURATED BOTTOM LAND IN PICEA/CORNUS STOLONIFERA HABITAT TYPE; WITH ALNUS SINUATA, RHAMNUS ALNIFOLIA, BETULA GLANDULOSA, SALIX CANADENSIS, SALIX BEBBIANA, CORNUS CANADENSIS, PETASITES SAGITTATUS, ORCHIS ROTUNDIFOLIA, MITELLA BREWERI, EQUISETUM ARVENSE, MENYANTHES TRIFOLIATA, CAREX LASIOCARPA, TYPHA LATIFOLIA. SILTY LOAM OF CALCAREOUS GLACIAL TILL. LANDTYPE 325.

Land owner/manager:

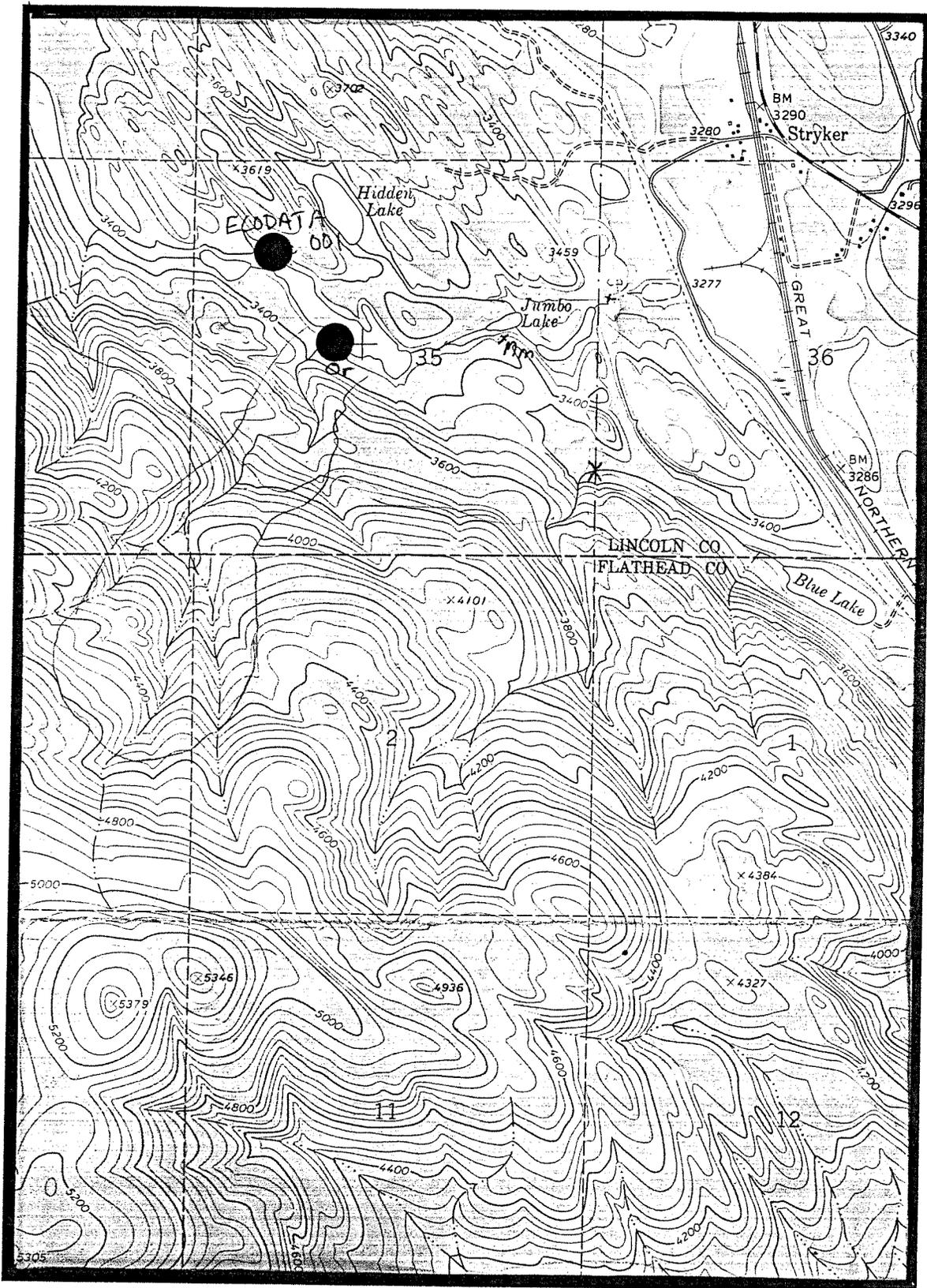
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

DESIGNATION OF AREA AS RESEARCH NATURAL AREA OR SPECIAL BOTANICAL AREA
MAY BE APPROPRIATE. SITE REVISITED IN 1995 BY J. VANDERHORST. ECODATA PLOT FS01140395JV001.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE RANGER DISTRICT, KOOTENAI NATIONAL FOREST.
[UNPUBLISHED REPORT] 65PP. PLUS APPENDICES.

Specimens: VANDERHORST, J. (5370). 1995. MONTU.



Cypridium calceolus var. *parviflorum*; Hidden Lake Area (027)
 USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.028
Element occurrence type:

Survey site name: HOMES LAKE AREA
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: FORTINE

Township: Range: Section: TRS comments:
035N 026W 34 W2

Precision: S
Survey date: 1991-06-03 Elevation: 3220 -
First observation: 1991 Slope/aspect: 1% / WEST
Last observation: 1995-06-16 Size (acres): 2

Location:
FROM FORTINE, TRAVEL WEST ON FS RD #855 TO FS RD #1042. TAKE FS RD
#1042 SOUTH CA. 1 MILE AND PARK AT FORK IN ROAD. HIKE 0.25 MILE
NORTHEAST TO WETLAND.

Element occurrence data:
1995: 35 STEMS, MOST WITH FLOWERS AND EARLY FRUIT, SOME VEGETATIVE.
1991: CA. 100 PLANTS, SCATTERED, MOST WITH VEGETATIVE SHOOTS, SOME
WITH IMMATURE FLOWERS.

General site description:
BROAD RIPARIAN AREA, POORLY-DRAINED ALLUVIAL SOILS; PICEA/CORNUS
STOLONIFERA HABITAT TYPE. ADJACENT DRIER SITES KEY TO PICEA/LINNAEA
BOREALIS AND PICEA/ARALIA NUDICAULIS HABITAT TYPES. ASSOCIATED SPECIES
INCLUDE BETULA PAPYRIFERA, BETULA OCCIDENTALIS, RHAMNUS ALNIFOLIA,
SALIX BEBBIANA, PETASITES SAGITTATUS, EQUISETUM ARVENSE, ROSA
ACICULARIS, CAREX VESICARIA, AND GEOCAULON LIVIDUM. LANDTYPE 324.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
A GAME AND CATTLE TRAIL SKIRTS THE WETLAND AND CATTLE GRAZE THE MOIST
MARGINS, INCLUDING AREAS CONTAINING THIS POPULATION. SITE REVISITED IN
1995 BY J. VANDERHORST. EVIDENCE OF LIGHT CATTLE USE IN AREA, HEAVY
BLOWDOWN AND BRUSH PROBABLY KEEPS MOST CATTLE OUT.

Information source: CHADDE, S. 1991. SENSITIVE PLANT SURVEY, PINKHAM
ANALYSIS AREA, FORTINE & REXFORD RANGER DISTRICTS,
KOOTENAI NATIONAL FOREST. UNPUBLISHED REPORT. 26
PP. PLUS APPENDICES.

Specimens: VANDERHORST, J. (5385). 1995. MONTU.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.029
Element occurrence type:

Survey site name: MAGNESIA CREEK
EO rank:
EO rank comments:

County: FLATHEAD

USGS quadrangle: STRYKER
EDNA MOUNTAIN

Township: Range: Section: TRS comments:
033N 025W 7 NW4; 6 SW4; 18 NE4

Precision: S
Survey date: Elevation: 3550 - 3800
First observation: 1991-07-09 Slope/aspect: 0-2% / NW
Last observation: 1995-08-22 Size (acres): 25

Location:

FROM TREGO, TRAVEL SOUTHWEST ON ROAD 35 TO JUNCTION WITH FS RD 3780.
TRAVEL SOUTHEAST ON 3780 TO JUNCTION WITH FS RD 3770. FOLLOW 3770 FOR
CA. 1.5 MILES TO JUNCTION WITH FS RD 3771. TAKE 3771 TO WHERE THE ROAD
CROSSES THE CREEK. SITE IS IN BROAD RIPARIAN AREA CA. 200 FEET
DOWNSTREAM FROM CULVERT (WHERE 3770 CROSSES CREEK).

Element occurrence data:

22 AUG 1995: NEW SUBPOPULATION WITH 7 STEMS, 100% IN FRUIT FOUND. 25
JUN 1995: OVER 500 STEMS IN CLUMPS OF 1-30. HIGH VIGOR. 21 JUN 1995:
100+ PLANTS, 60% IN FLOWER, 40% VEGETATIVE. 1992: FOUR ADDITIONAL
SUBPOPULATIONS OF CA. 450, 50 8, AND 550 INDIVIDUALS (NORTH TO SOUTH);
30-25% FLOWERING, GOOD TO EXCELLENT REPRODUCTIVE SUCCESS. 1991: CA.
100+ PLANTS IN FLOWER.

General site description:

PLANTS ARE IN A BROAD, FLAT, PARTIALLY OPEN, MOIST VALLEY BOTTOM,
SURROUNDED BY A PICEA/EQUISETUM ARVENSE HABITAT TYPE. WETLAND
CHARACTERIZED BY BRAIDED STREAM, MANY HUMMOCKS, AND PATCHES OF
STANDING WATER. SILT LOAM SOIL OF CALCAREOUS GLACIAL TILL PARENT
MATERIAL. ASSOCIATED SPECIES INCLUDE BETULA GLANDULOSA, RHAMNUS
ALNIFOLIA, CORNUS CANADENSIS, LINNAEA BOREALIS, ORCHIS ROTUNDIFOLIA,
GALIUM BOREALE, EQUISETUM SCIRPOIDES, SMILACINA RACEMOSA, GEOCAULON
LIVIDUM, PETASITES SAGITTATUS, MOSS SPP., CAREX DISPERMA, CORNUS
STOLONIFERA, SMILACINA STELLATA, CAREX ROSTRATA, PYROLA ASARIFOLIA,
GALIUM TRIFLORUM, HABENARIA DILATATA, VIOLA SPP., ROSA SPP., ZIGADENUS
ELEGANS, MITELLA BREWERI, M. NUDA, RUBUS PARVIFLORUS, ALNUS SINUATA,
OSMORHIZA CHILENSIS, EUPHORBIA SPP., CAREX VESICARIA, BETULA
OCCIDENTALIS, GEUM MACROPHYLLUM, ARNICA LATIFOLIA, CYPRIPEDIUM
PASSERINUM, ERIOPHORUM VIRIDICARINATUM, CAREX DIANDRA, C. TALEA, C.
CAPILLARIS, PRENANTHES SAGITTATA. LANDTYPE 325.

Land owner/manager:

KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

MODERATELY HIGH PROPORTION OF MATURE PICEA WINDTHROW IN ADJACENT FOREST. THIS SECTION OF MAGNESIA CREEK WAS APPARENTLY WINTER-LOGGED. SOME CATTLE USE IN RHAMNUS SCRUB. CIRSIUM ARVENSE COMMON DUE TO DISTURBANCE AND OPEN CANOPY. ECODATA PLOT #FS01140395JV005.

Information source: VANDERHORST, J. [BOTANIST]. PO BOX 1026, TROY, MONTANA 59935

Specimens: VANDERHORST, J. (5396). 1995. MONTU.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.030
Element occurrence type:

Survey site name: THERRIAULT CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: FORTINE

Township: Range: Section: TRS comments:
036N 026W 33 SW4

Precision: S
Survey date: 1991-06-13 Elevation: 2720 -
First observation: 1991 Slope/aspect: LEVEL
Last observation: 1995-06-15 Size (acres): 1

Location:
CA. 5 MILES SOUTH OF EUREKA. TURN EAST OFF HWY 93 AT SOUTHERLY ACCESS
ROAD TO GLEN LAKE AND PARK NEAR FIRST DRIVEWAY ON EAST SIDE OF ROAD.
PLANTS OCCUR BETWEEN THIS DRIVEWAY AND HIGHWAY ROADBED, ALONG A
SMALL
TRIBUTARY OF THERRIAULT CREEK.

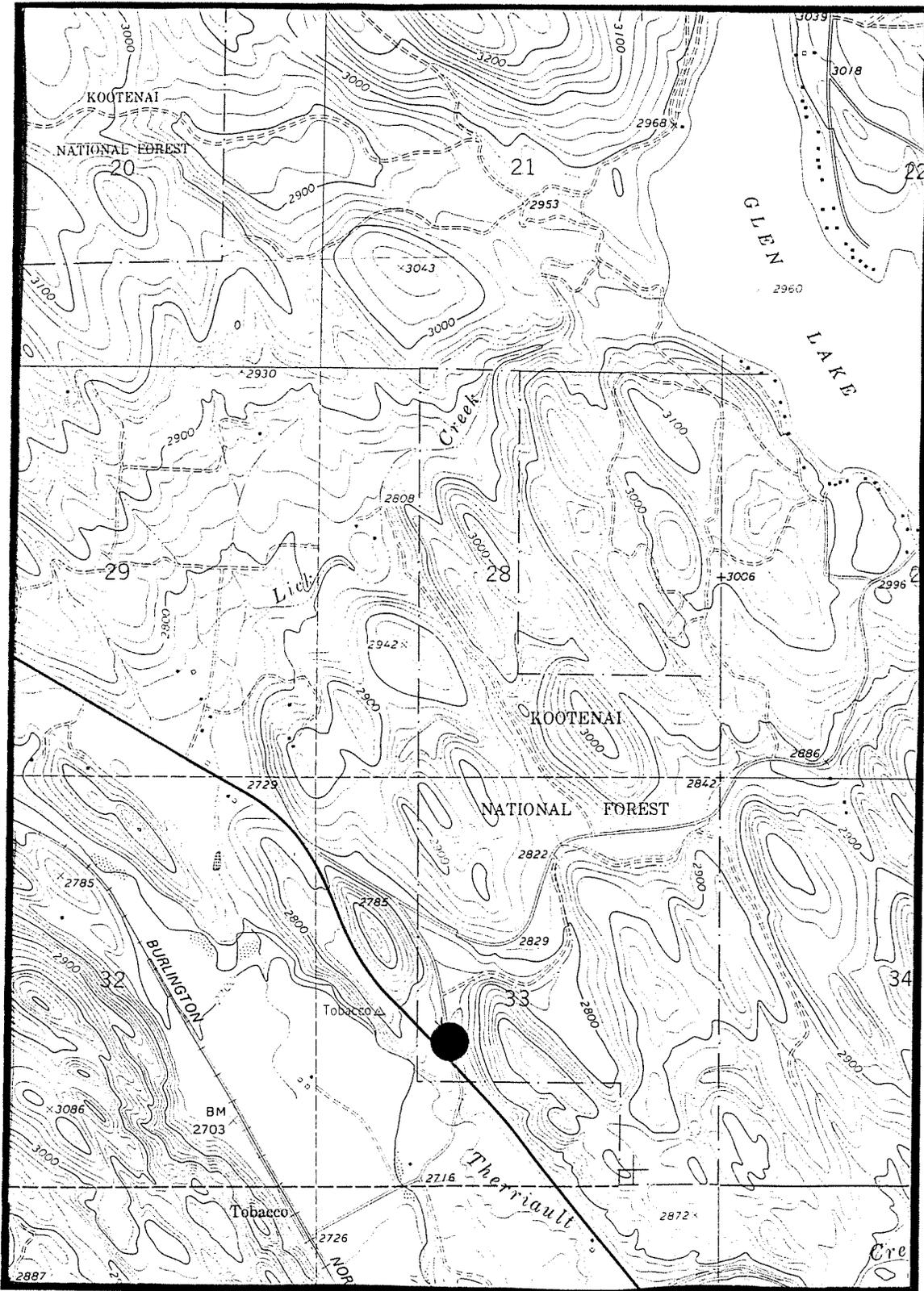
Element occurrence data:
1995: 8 CLUMPS WITH 10 STEMS TOTAL, LOW VIGOR. 1991: 35 CLUMPS, OF 1-4
SHOOTS.

General site description:
PARTIALLY SHADED, BOTTOM SEEP-AREA. PICEA/EQUISETUM ARVENSE HABITAT
TYPE, ALSO PICEA/CALAMAGROSTIS CANADENSIS. ASSOCIATED SPECIES INCLUDE
BETULA OCCIDENTALIS, RHAMNUS ALNIFOLIA, CORNUS STOLONIFERA, ALNUS
SINUATA, SALIX BEBBIANA, CAREX STIPATA, GEUM RIVALE, AND PETASITES
SAGITTATUS. POORLY-DRAINED ALLUVIAL LANDS. LANDTYPE 323.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
THIS SITE BORDERS HWY 93 AND IS THREATENED BY RECONSTRUCTION UNDERWAY
AS OF SUMMER OF 1991, UNLESS PROTECTIVE MEASURES ARE TAKEN. SITE
REVISITED IN 1995 BY J. VANDERHORST. POPULATION HAS BEEN NEARLY
EXTIRPATED BY HIGHWAY CONSTRUCTION. SILT TRAP BLOWOUTS ARE LIKELY TO
KILL REMAINING PLANTS IN NEAR FUTURE.

Information source: CHADDE, S. 1991. SENSITIVE PLANT SURVEY, PINKHAM
ANALYSIS AREA, FORTINE & REXFORD RANGER DISTRICTS,
KOOTENAI NATIONAL FOREST. UNPUBLISHED REPORT. 26
PP. PLUS APPENDICES.



Cyripedium calceolus; Therriault Creek (030)
USGS Fortine 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.040
Element occurrence type:

Survey site name: LIBBY DAM

EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: ALEXANDER MOUNTAIN

Township: Range: Section: TRS comments:
031N 029W 28 SW4

Precision: S
Survey date: Elevation: 2520 - 2720
First observation: 1995-05-28 Slope/aspect: 20% / SE
Last observation: 1995-05-28 Size (acres): 1

Location:
LIBBY DAM, SOUSE CREEK. POPULATION EXTENDS ALONG CREEK FROM JUST
BELOW
FS RD 228 DOWNSTREAM TO JUST ABOVE DAM RECREATION AREA ROAD TO BOAT
RAMP.

Element occurrence data:
CA. 200 AERIAL STEMS, 1 SUBPOPULATION. 70% FLOWERING OR IN BUD, 30%
VEGETATIVE. YELLOW AND A FEW WHITE-LIPPED INDIVIDUALS.

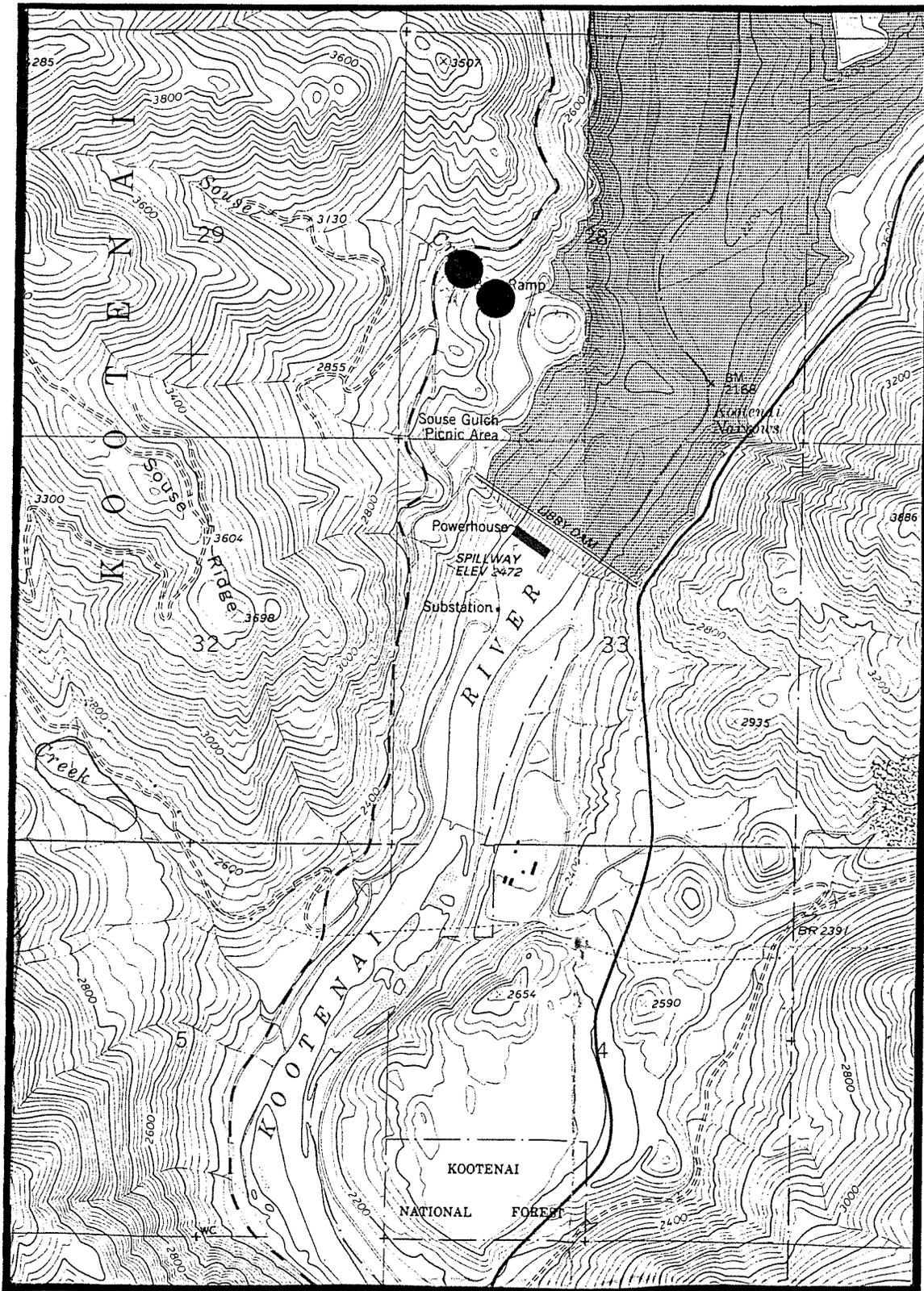
General site description:
SHADED TO OPEN DRAW OF INTERMITTANT STREAM WITH SEASONAL SEEPAGE.
CALCAREOUS GLACIAL TILL PARENT MATERIAL, SILTY CLAY SOIL. ASSOCIATED
SPECIES: PICEA ENGELMANNII, CORNUS STOLONIFERA, BETULA PAPYRIFERA,
ACER GLABRUM, ARALIA NUDICAULIS, SYMPHORICARPOS SP., SMILACINA
STELLATA, TRAUTVETTERIA CAROLINENSIS, LONICERA INVOLUCRATA, EQUISETUM
HYMALE. LANDTYPE 324.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FISHER RIVER RANGER DISTRICT

Comments:
OBSERVED BY J. VANDERHORST. PAST LOGGING IN AREA EVIDENT. SPECIMEN
REPORTED, BUT NUMBERS AND REPOSITORY UNKNOWN.

Information source: VANDERHORST, J. [BOTANIST]. PO BOX 1026, TROY,
MONTANA, 59935.

Specimens: VANDERHORST, J. (5352). MONTU.



Cyripedium calceolus var. parviflorum; Libby Dam (040)
 USGS Alexander Mountain 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.049
Element occurrence type:

Survey site name: LAUGHING WATER CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: MOUNT MARSTON

Township: Range: Section: TRS comments:
035N 025W 33 SW4NW4

Precision: S
Survey date: Elevation: 3280 -
First observation: 1993-07-29 Slope/aspect: 10% / SW
Last observation: 1993-07-29 Size (acres): 1

Location:
FROM HWY 93 SOUTH FROM EUREKA, TAKE LEFT ON FS RD 7007 AND FOLLOW TO
GATE (CA. 2 MILES). PARK AND LOCATE TRAILHEAD NORTH OF ROAD. FOLLOW
TRAIL JUST PAST CREEK AND HEAD ENE FROM TRAIL INTO WOODS. PLANTS
BETWEEN TRAIL AND TOESLOPE.

Element occurrence data:
8 PLANTS, 40% FLOWERING, 60% VEGETATIVE.

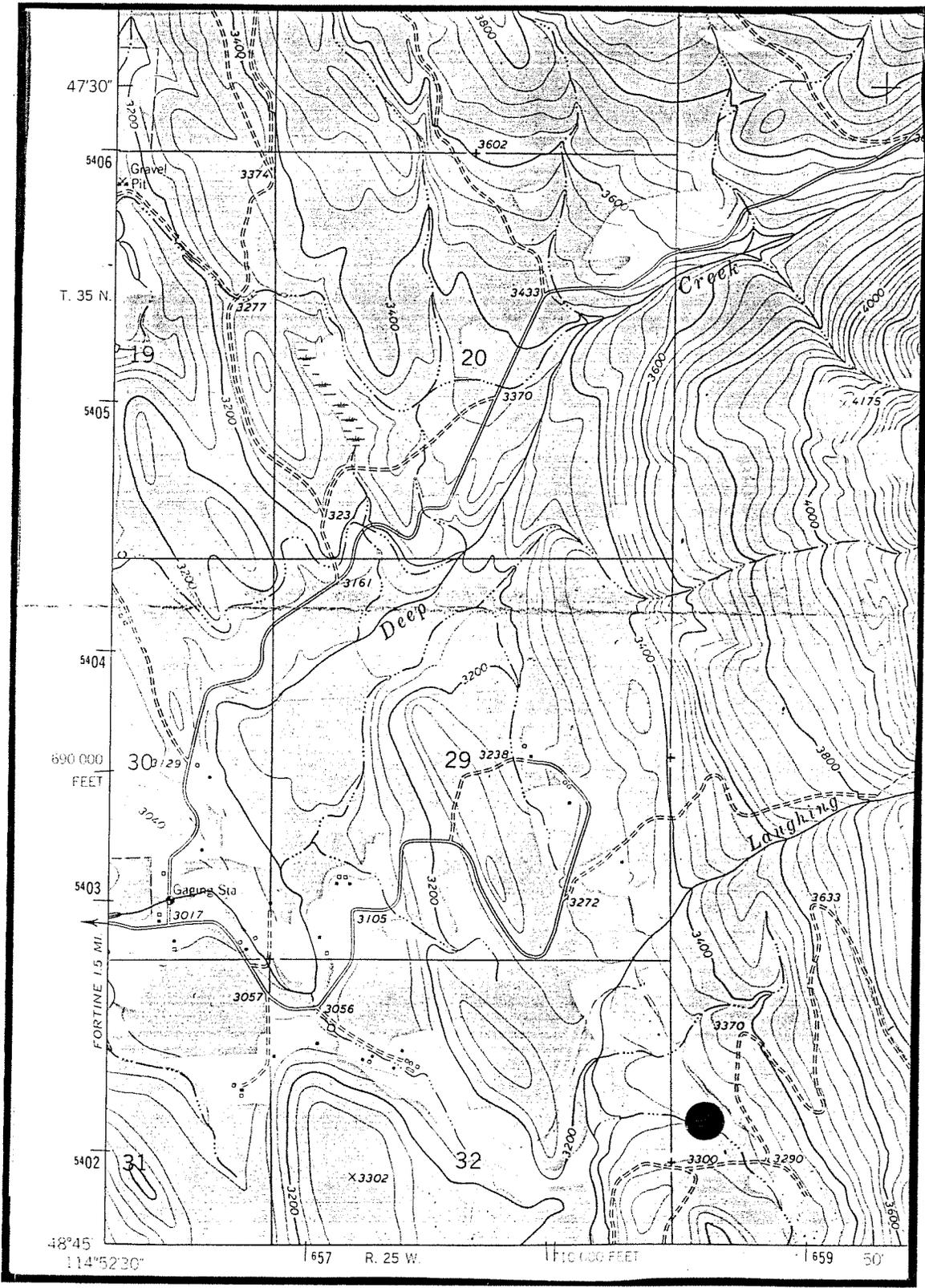
General site description:
MOIST, PARTIALLY SHADED GLACIATED MOUNTAIN FOOTHILL ON OUTER EDGE OF
RIPARIAN COMMUNITY; VALLEY BOTTOM. TYPIC EUTROBORALF SOIL, CALCAREOUS
GLACIAL TILL PARENT MATERIAL. PICEA ENGELMANNII/CLINTONIA
UNIFLORA-CLINTONIA UNIFLORA HABITAT TYPE. ASSOCIATED SPECIES: LARIX
OCCIDENTALIS, PSEUDOTSUGA MENZIESII, ALNUS SINUATA, CORNUS CANADENSIS,
CORNUS STOLONIFERA, SHEPHERDIA CANADENSIS, ELYMUS GLAUCUS, BROMUS
SPP., RUBUS PUBESCENS, BERBERIS REPENS, LINNAEA BOREALIS, ROSA
ACICULARIS, SYMPHORICARPOS ALBUS, SALIX SPP., ACER GLABRUM,
AMELANCHIER ALNIFOLIA (COMPLETE LIST ON FILE AT MTHP). LANDTYPE 323.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
OBSERVED BY D. NESBITT.

Information source: SENSITIVE PLANT COORDINATOR, KOOTENAI NATIONAL
FOREST, 506 U.S. HIGHWAY 2 WEST, LIBBY, MT 59923.

Specimens:



Cypridium calceolus var. parviflorum; Laughing Water Creek (049)
 USGS Mount Marston 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.051
Element occurrence type:

Survey site name: CONFLUENCE KOOTENAI AND FISHER RIVERS
EO rank:

EO rank comments:

County: LINCOLN

USGS quadrangle: TONY PEAK

Township: Range: Section: TRS comments:
030N 029W 15 NW4; 10 SW4

Precision: S
Survey date: Elevation: 2960 - 3120
First observation: 1995-05-29 Slope/aspect: 0-10% / WEST
Last observation: 1995-05-29 Size (acres): 10

Location:

CA. 2.5 AIR MILES SSE OF LIBBY DAM. FROM FS RD 530 (BUTLER CREEK ROAD), DRIVE CA. 1.5 MILES TO SIDE ROAD WITH LOCKED GATE. WALK CA. 1.5 MILES UP ROAD TO WHERE IT CROSSES DRAW. PLANTS ARE IN DRAW ABOVE AND BELOW ROAD. ADDITIONAL SUBPOPULATION ON KNF IN NEXT DRAW TO NORTH IN SECTION 10.

Element occurrence data:

CA. 100 PLANTS IN 3 SUPOPULATIONS. 90% IN EARLY FLOWER, 10% VEGETATIVE. MOST PLANTS WITH SINGLE FLOWER PER STEM, BUT SOME DOUBLES.

General site description:

MOIST, PARTIALLY-SHADED DRAW BOTTOM. CALCAREOUS TILL PARENT MATERIAL, SILT LOAM SOIL. ASSOCIATED SPECIES: BETULA PAPYRIFERA, CORNUS STOLONIFERA, ACER GLABRUM, PSEUDOTSUGA MENZIESII, POPULUS TREMULOIDES, SMILACINA STELLATA, ARALIA NUDICAULIS, DODECATHEON PULCHELLUM, FRAGARIA VESCA, GALIUM BOREALE, ZYGADENUS ELEGANS, PYROLA ASARIFOLIA, ORYZOPSIS ASPERIFOLIA. LANDTYPE 324.

Land owner/manager:

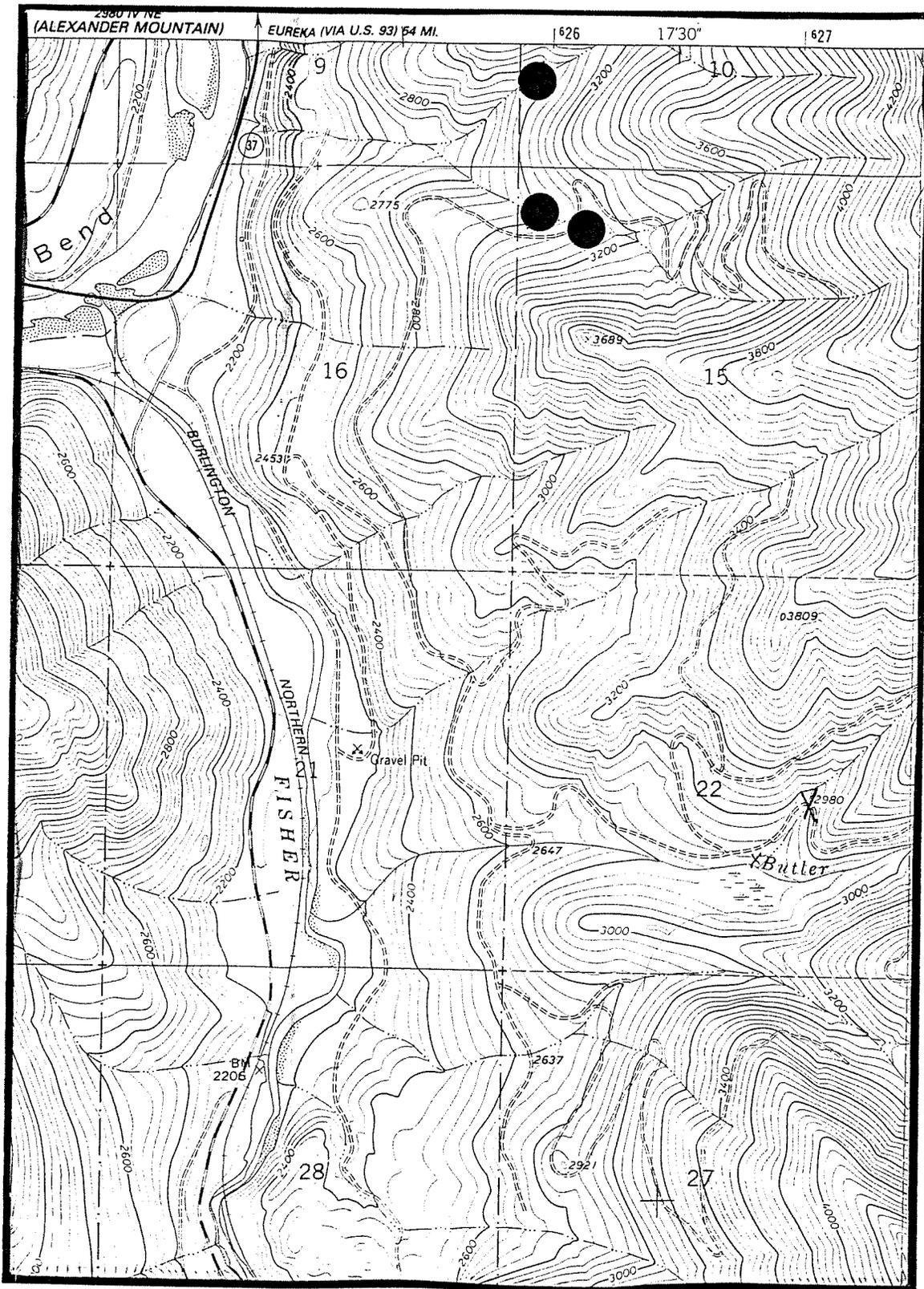
CORPORATE TIMBERLANDS
KOOTENAI NATIONAL FOREST, FISHER RIVER RANGER DISTRICT

Comments:

OBSERVED BY J. VANDERHORST. PAST LOGGING OF SURROUNDING UPLANDS LEFT STREAM CORRIDOR MOSTLY UNDISTURBED.

Information source: VANDERHORST, J. [BOTANIST]. PO BOX 1026, TROY, MONTANA, 59935.

Specimens: VANDERHORST, J. (5355, 5357). MONTU.



Cypridium calceolus var. parviflorum; Confluence Kootenai/Fisher (051)
USGS Tony Peak 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.052
Element occurrence type:

Survey site name: MURPHY LAKE
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 6 SE4

Precision: S
Survey date: Elevation: 3000 -
First observation: 1995-06-07 Slope/aspect:
Last observation: 1995-06-07 Size (acres):

Location:
FROM HWY 93 AT MURPHY LAKE RANGER STATION, CROSS HIGHWAY AND HIKE TO
MURPHY CREEK. PLANTS SCATTERED ALONG CREEK.

Element occurrence data:
30-50 SCATTERED PLANTS, 50% IN FLOWER, 50% VEGETATIVE (23 MAY 1995).
LOCAL AND UNCOMMON, IN FLOWER (7 JUNE 1995).

General site description:
ON MOIST HUMMOCKS. SIYEH LIMESTONE/TILL PARENT MATERIAL. ASSOCIATED
SPECIES: VIOLA RENIFOLIA, MITELLA NUDA, RUBUS PUBESCENS, BETULA
GLANDULOSA. LANDTYPE 323.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
OBSERVED BY T. SPRIBILLE 23 MAY 1995 AND BY J. VANDERHORST 7 JUN 1995.
DISTURBANCE BY HIGHWAY.

Information source: SPRIBILLE, TOBY. BOX 2106, COLUMBIA FALLS, MONTANA
59912.

Specimens:

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.053
Element occurrence type:

Survey site name: DICKEY LAKE 2
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 10 SW4SE4

Precision: S
Survey date: Elevation: 3220 -
First observation: 1995-07-10 Slope/aspect:
Last observation: 1995-07-10 Size (acres): 3

Location:
FROM HWY 93 AT DICKEY LAKE (NEAR MIDDLE OF HIGHWAY AROUND LAKE),
ASCEND DRAW ABOVE HIGHWAY. PLANTS ARE CA. 250 YARDS FROM HIGHWAY,
SCATTERED ALONG SMALL CREEK.

Element occurrence data:
15-20 PLANTS, 33% IN EARLY FRUIT.

General site description:
MOIST AREA ALONG SMALL CREEK. SIYEH LIMESTONE PARENT MATERIAL.
ASSOCIATED SPECIES: ARALIA NUDICAULIS, PICEA ENGELMANNII, RUBUS
PUBESCENS, SYMPHORICARPOS ALBUS, CORNUS CANADENSIS, CAREX CAPILLARIS,
PACKERA SP., LINNAEA SP., MITELLA NUDA, SANICULA MARILANDICA,
EQUISETUM ARVENSE. LANDTYPE 323.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
OBSERVED BY T. SPRIBILLE. POTENTIAL DISTURBANCE BY PROPOSED BURN.

Information source: SPRIBILLE, TOBY. BOX 2106, COLUMBIA FALLS, MONTANA
59912.

Specimens:

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.054
Element occurrence type:

Survey site name: GLEN CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: KSANKA PEAK

Township: Range: Section: TRS comments:
036N 026W 10 SE4

Precision: S
Survey date: Elevation: 3680 -
First observation: 1995-06-01 Slope/aspect: 30-40% / WEST
Last observation: 1995-06-01 Size (acres): 1

Location:
FROM HWY 93, TAKE GLEN LAKE/FOOTHILLS ROAD (FS RD 756) CA. 5 MILES.
TAKE FS RD 7077 NORTH CA. 2 MILES. SITE IS BELOW ROAD IN SMALL BROOK.

Element occurrence data:
8 PLANTS, 50% FLOWERING, 50% VEGETATIVE. RARE. PLANTS APPEAR INJURED
AFTER LATE SPRING SNOW.

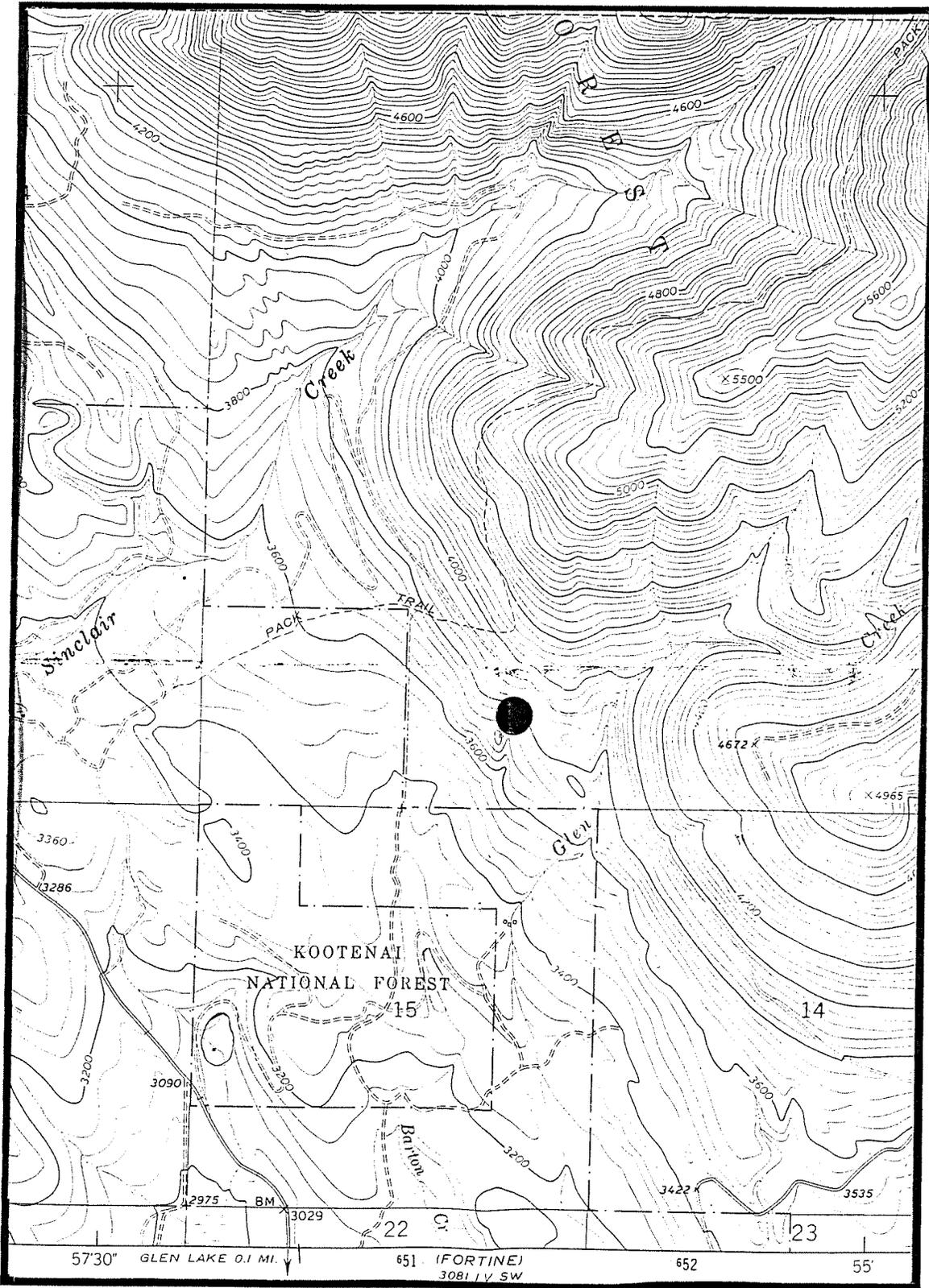
General site description:
MOIST MIDSLOPE WITH CALCAREOUS ARGILLITES, PSEUDOTSUGA MENZIESII,
SYMPHORICARPOS ALBUS, AMELANCHIER SP., OSMORHIZA CHILENSIS, ARALIA
SP., SANICULA MARICANDICA, CRATONEURON FILICINUM, EQUISETUM ARVENSE,
BOTRYCHIUM VIRGINIANUM, VIOLA RENIFOLIA.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
OBSERVED BY T. SPRIBILLE.

Information source: SPRIBILLE, TOBY. BOX 2106, COLUMBIA FALLS, MONTANA
59912.

Specimens:



Cyripedium calceolus var. parviflorum; Glen Creek (054)
 USGS Ksanka Peak 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.055
Element occurrence type:

Survey site name: LIME CREEK

EO rank:
EO rank comments:

County: FLATHEAD

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
033N 025W 5 SE4SW4

Precision: S
Survey date: Elevation: 3760 -
First observation: 1995-08-22 Slope/aspect:
Last observation: 1995-08-22 Size (acres): 1

Location:

FROM HWY 93 SOUTH OF EUREKA, TAKE RIGHT ON TREGO ROAD (36) AND CONTINUE THROUGH TREGO TO LIME CREEK TURNOFF (FS RD 3780). TAKE LIME CREEK ROAD EAST, PAST FS RD 3770 TURNOFF, TO FIRST SHARP BEND HALF WAY THROUGH SECTION 5. PLANTS ARE JUST SOUTHWEST OF BEND ALONG LIME CREEK ON NORTH SIDE.

Element occurrence data:

3 PLANTS, 100% IN FRUIT. SPARSELY DISTRIBUTED IN AMPLE HABITAT.

General site description:

MOIST VALLEY BOTTOM WITH CALCIUM CARBONATE PARENT MATERIAL AND FINE-SILTY, LOAM, CARBONATIC, FRIGID TYPIC UDIFLUVENT SOIL. ASSOCIATED SPECIES: PICEA GLAUCA X ENGELMANNII, ALNUS INCANA, CORNUS CANADENSIS, RUBUS PUBESCENS, RIBES LACUSTRE, CORNUS STOLONIFERA. LANDTYPE 325.

Land owner/manager:

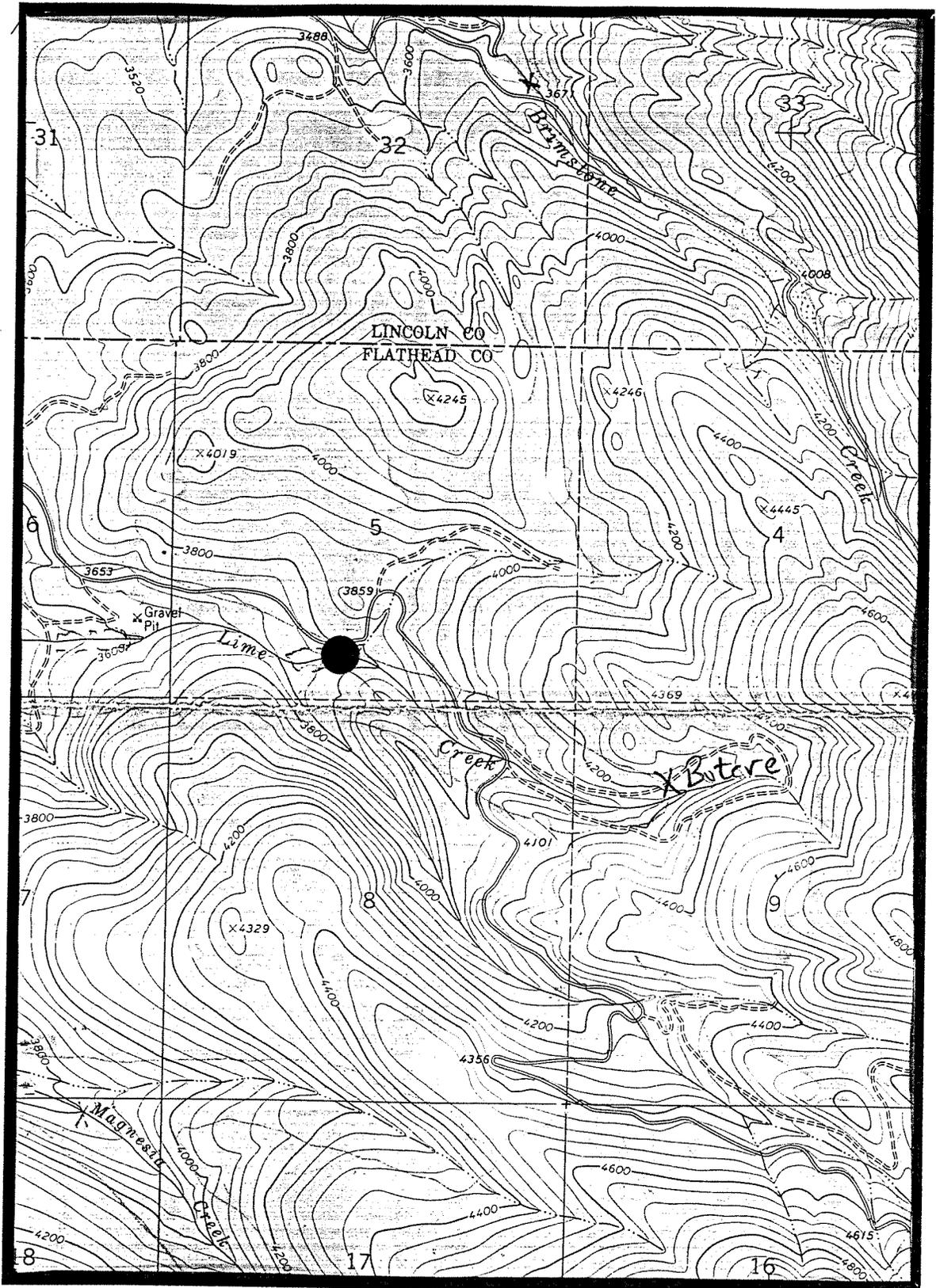
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

OBSERVED BY J. TREIPKE. DISTURANCE BY OCCASIONAL FLOODING. DRAINAGE HEAVILY GRAZED.

Information source: SENSITIVE PLANT COORDINATOR, KOOTENAI NATIONAL FOREST, 506 U.S. HIGHWAY 2 WEST, LIBBY, MT 59923.

Specimens:



Cypridium calceolus var. parviflorum; Lime Creek (055)
USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.020
Element occurrence type:

Survey site name: RATTLEBONE LAKE
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 22 SE4

Precision: S
Survey date: Elevation: 3340 -
First observation: 1992-06-23 Slope/aspect: 10% / SOUTH
Last observation: 1995-06-26 Size (acres):

Location:

FROM NORTH DICKEY LAKE CAMPGROUND FOLLOW FS RD 36 SOUTHWEST TO FS RD 857. TRAVEL ON 857 FOLLOWING SIGNS TO RATTLEBONE LAKE. HIKE AROUND LAKE TO WETLANDS NORTHWEST OF LAKE, SITE IS CA. 150 FEET FROM NORTHERN LIMIT OF WETLANDS ON NORTHEAST ECOTONE BETWEEN FOREST AND MARSH. SMALLER SUBPOPULATION IS CA. 100 YARDS TO THE SOUTHEAST, CLOSE TO THE EDGE OF THE LAKE.

Element occurrence data:

1995: 1 SUBPOPULATION, 3 PLANTS IN LATE FLOWER WITH EXPANDED OVARIES.
1992: 25 INDIVIDUALS (CA. 65% VEGETATIVELY SPREAD) IN AREA 3 FEET IN DIAMETER, 8 POST ANTHESIS, LIGHT HERBIVORY DAMAGE, LOW REPRODUCTIVE SUCCESS, 2 SUBPOPULATIONS.

General site description:

PARTIALLY SHADED EXPOSURE ON CONCAVE SLOPE. MOIST BOTTOM IN GLACIATED MOUNTAIN SLOPES. STREAMSIDE WETLAND AT MOUTH OF SMALL INLET TO LAKE/WETLAND. SILT LOAM SOIL OF STRATIFIED ALLUVIAL DEPOSITS. MAIN POPULATION IN NARROW ECOTONE BETWEEN SCRUBBY PICEA FOREST AND TYPHA LATIFOLIA/CAREX ROSTRATA DOMINATED WETLAND. SMALLER SUBPOPULATION IN

A

1-FOOT WIDE SEMI-MOIST ECOTONE BETWEEN THE LAKE EDGE AND A HIGHER, MUCH DRIER PICEA FOREST. ASSOCIATED SPECIES: PICEA, BETULA OCCIDENTALIS, CORNUS STOLONIFERA, LINNAEA BOREALIS, HABENARIA DILATATA, SALIX BEBBIANA, SILENE SPP., BETULA GLANDULOSA, CAREX ROSTRATA, SHEPERDIA CANADENSIS, MOSS SPP., CAREX AQUATILIS, ARALIA NUDICAULIS, ROSA SPP., GALIUM TRIFLORUM, EQUISETUM ARVENSE, TYPHA LATIFOLIA, SCUTELLARIA GALERICULATA. LANDTYPE 105 BELOW 355.

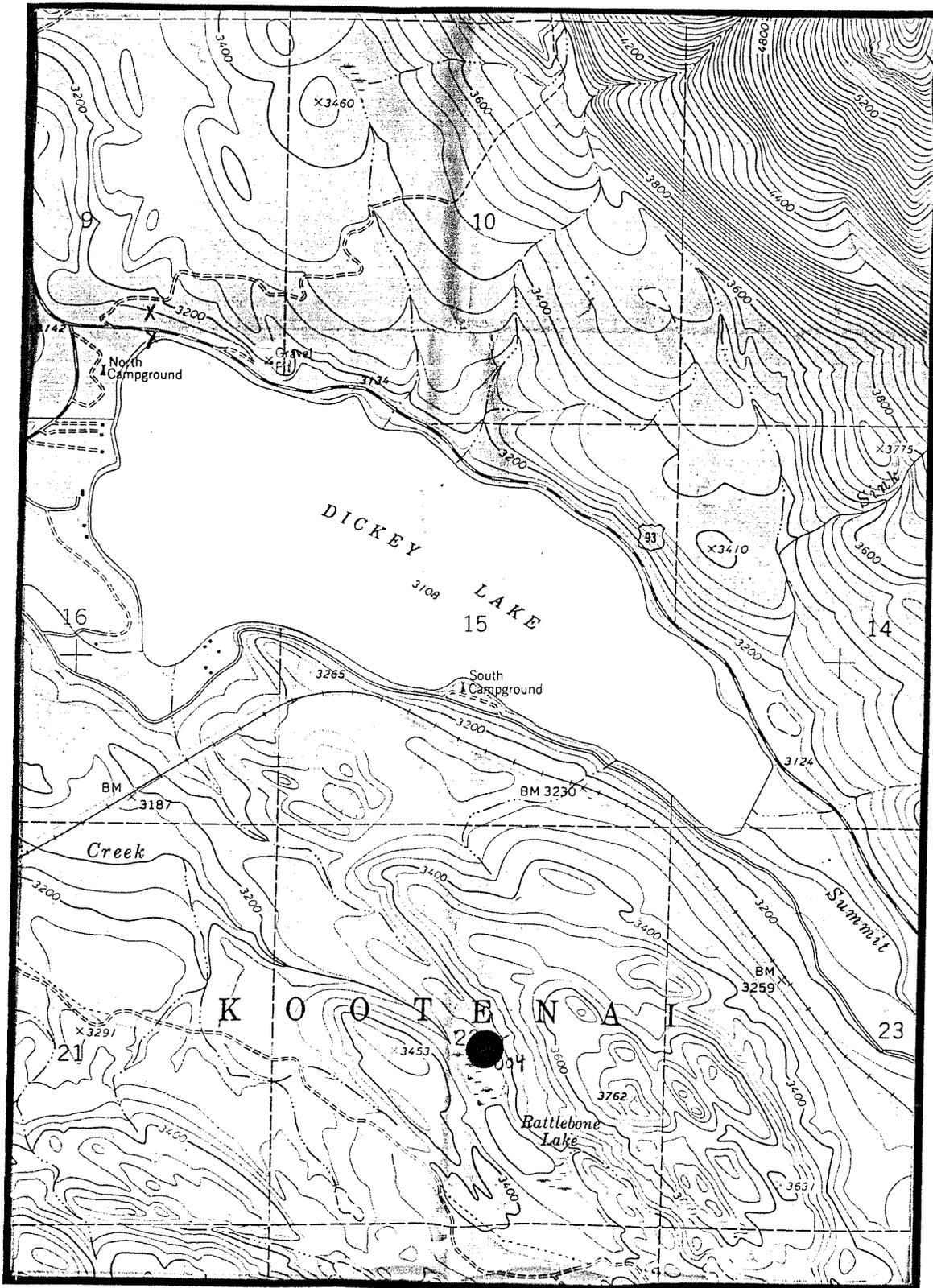
Land owner/manager:

KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

EXCEPTIONALLY BARE GROUND AT THIS SITE. SITE REVISITED IN 1995 BY J. VANDERHORST.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE



Cyripedium passerinum; Rattlebone Lake (020)
 USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.021
Element occurrence type:

Survey site name: HIDDEN LAKE
EO rank:

EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 35 SW4, NW4

Precision: S
Survey date: Elevation: 3360 - 3640
First observation: 1992-07-10 Slope/aspect: 10% / SSE
Last observation: 1992-07-10 Size (acres): 1

Location:

FROM NORTH DICKEY LAKE CAMPGROUND FOLLOW FS RD 36 SOUTHWEST TO FS RD 857. FOLLOW 857 AND FS RD 3755 CA. 6 MILES TO CULVERT CROSSING. HIKE DOWNSTREAM CA. 20 FEET IN DECIDUOUS THICKET ON WEST SIDE OF CREEK AND DOWNSTREAM TO SOUTH EDGE OF SPRUCE-BOG BIRCH COMMUNITY.

Element occurrence data:

IN CENTROID POPULATION, 45 PLANTS, 3 CLUSTERS OF VEGETATIVE SHOOTS WITH CA. 10 NON-FLOWERING PLANTS AND 5 SCATTERED INDIVIDUALS IN A 20-FOOT RADIUS. ONE PLANT WITH IMMATURE FRUIT. EVIDENCE OF MODEST REPRODUCTIVE SUCCESS. 15 STEMS COUNTED IN SECOND SUBPOPULATION.

General site description:

PARTIALLY SHADED EXPOSURE ON CONCAVE SLOPE, MOIST AREA MIDSLOPE AND IN BOTTOM ON GLACIATED MOUNTAIN SLOPE. SILTY LOAM OF CALCAREOUS GLACIAL TILL PARENT MATERIAL. ASSOCIATED SPECIES: ALNUS SINUATA, CORNUS STOLONIFERA, BETULA OCCIDENTALIS, LINNAEA BOREALIS, EQUISETUM ARVENSE, POPULUS TRICHOCARPA, SHEPERDIA CANADENSIS, ROSA SPP., THUJA PLICATA, ARALIA NUDICAULIS, RIBES SPP., RUBUS PARVIFLORUS, SMILACINA STELLATA, SPIRAEA BETULIFOLIA, POPULUS TREMULOIDES, BETULA GLANDULOSA, ACHILLEA MILLEFOLIUM, HABENARIA DILATATA, VIOLA SPP., EPILOBIUM SPP., PICEA SPP., CYPRIPEDIUM CALCEOLUS VAR. PARVIFLORUM, ORCHIS ROTUNDIFOLIA, ANAPHALIS MARGARITACEA. LANDTYPE 325.

Land owner/manager:

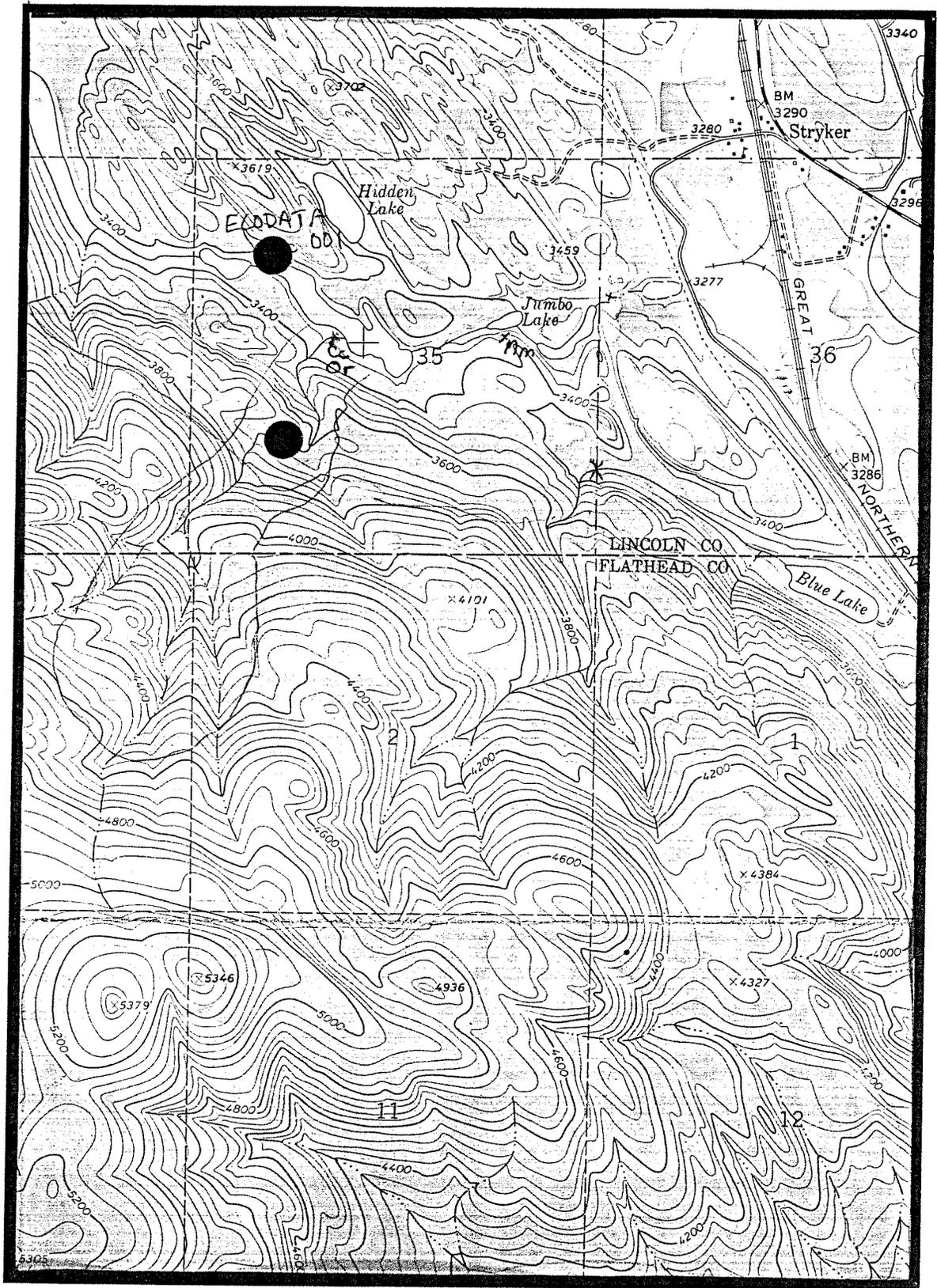
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

MAY HAVE BEEN AN OLD SKID TRAIL CA. 30 YEARS AGO. WILDLIFE TRAILS NEARBY.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE RANGER DISTRICT, KOOTENAI NATIONAL FOREST. [UNPUBLISHED REPORT] 65PP. PLUS APPENDICES.

Specimens:



Cypridium passerinum; Hidden Lake (021)
USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.022
Element occurrence type:

Survey site name: JUMBO LAKE
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 36 SW4SW4, SW4NW4

Precision: S
Survey date: Elevation: 3350 -
First observation: 1992-06-07 Slope/aspect: 1-2% / SOUTHEAST
Last observation: 1995-06-10 Size (acres): 1

Location:
FROM STRYKER, TRAVEL UP DRAINAGE TO JUMBO LAKE. TRAVEL SOUTH CA. 1500 FEET TO HEAD OF SMALL DRAINAGE FLOWING TO SOUTHEAST. PLANTS ARE CA. 100 FEET DOWNSTREAM FROM SPRING.

Element occurrence data:
1995: SUBPOPULATION BELOW OUTLET OF JUMBO LAKE WITH 3 CLUMPS, 6 STEMS TOTAL, IN EARLY FLOWER. 1992: 50 INDIVIDUALS, NEARLY ALL IN FULL FLOWER. ANOTHER POPULATION IS LOCATED CA. 0.75 MILE TO THE NORTHWEST.

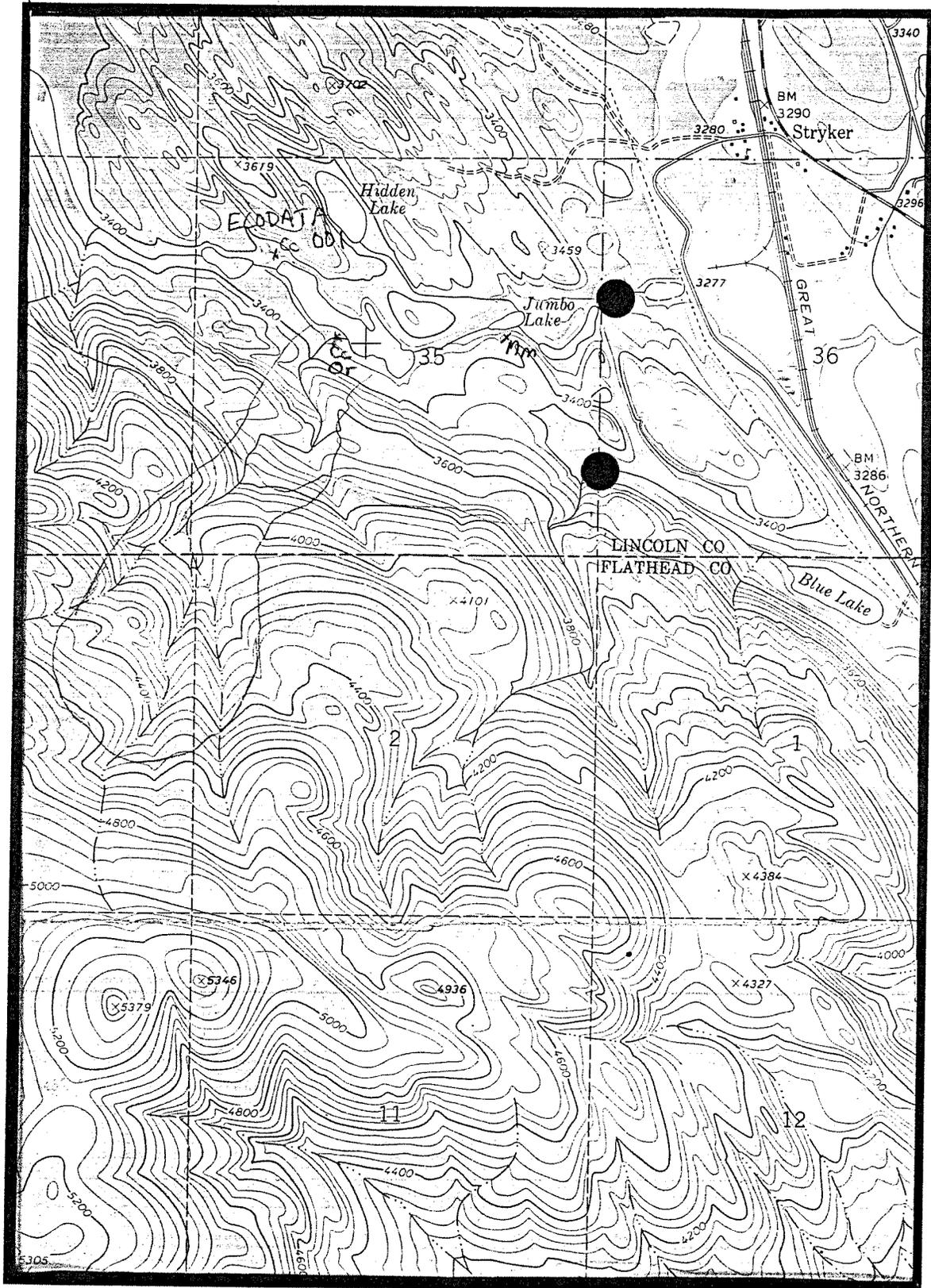
General site description:
PARTIALLY OPEN EXPOSURE ON STRAIGHT SLOPE. SATURATED AREA IN BOTTOM ADJACENT TO STREAM CHANNEL IN GLACIALLY SCOURED TROUGH. SILTY SOIL WITH COARSER FRAGMENTS OF PRECIPITATED CALCIUM CARBONATE DEPOSITS UNDERLYING ORGANIC (MOSS) SURFACE HORIZON. PICEA/EQUISETUM ARVENSE HABITAT TYPE, WITH BETULA PAPYRIFERA, CORNUS STOLONIFERA, LONICERA INVOLUCRATA, CORNUS CANADENSIS, EQUISETUM LAEVIGATUM, HABENARIA DILATATA, ZIGADENUS ELEGANS, GALIUM BOREALE, CYPRIPIEDIUM CALCEOLUS VAR. PARVIFLORUM, ORCHIS ROTUNDIFOLIA. LANDTYPE 325.

Land owner/manager:
STATE LAND - UNDESIGNATED
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
POPULATION IS VERY CLOSE TO NORTH-SOUTH SECTION LINE BETWEEN USFS LAND (TO WEST) AND STATE OF MT LAND (TO EAST). EVIDENCE OF PAST LOGGING IN ADJACENT AREA, FOLLOWING 1910-20 FIRES (NONE SINCE). SITE REVISITED IN 1995 BY J. VANDERHORST.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE RANGER DISTRICT, KOOTENAI NATIONAL FOREST. [UNPUBLISHED REPORT] 65PP. PLUS APPENDICES.

Specimens:



Cypridium passerinum; Jumbo Lake (022)
USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.024
Element occurrence type:

Survey site name: LAUGHING WATER CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: MOUNT MARSTON

Township: Range: Section: TRS comments:
035N 025W 33 SW4NW4

Precision: S
Survey date: Elevation: 3280 -
First observation: 1993-07-29 Slope/aspect: 10% / SW
Last observation: 1993-07-29 Size (acres): 1

Location:
HEADING SOUTH FROM EUREKA ON HWY 93, TAKE A LEFT ON FS RD 7007 AND FOLLOW TO GATE (CA. 2 MILES). PARK AND LOCATE TRAIL NORTH FROM ROAD. AFTER CROSSING CREEK, HEAD ENE THROUGH WOODS. PLANTS ARE IN ECOTONAL AREA AT BASE OF TOESLOPE.

Element occurrence data:
2 SUBPOPULATIONS. ONE SUBPOPULATION WITH 60 PLANTS: 50% FLOWERING, 20% FRUITING, AND 30% VEGETATIVE. OTHER SUBPOPULATION WITH 4 PLANTS: 50% FLOWERING, 50% VEGETATIVE.

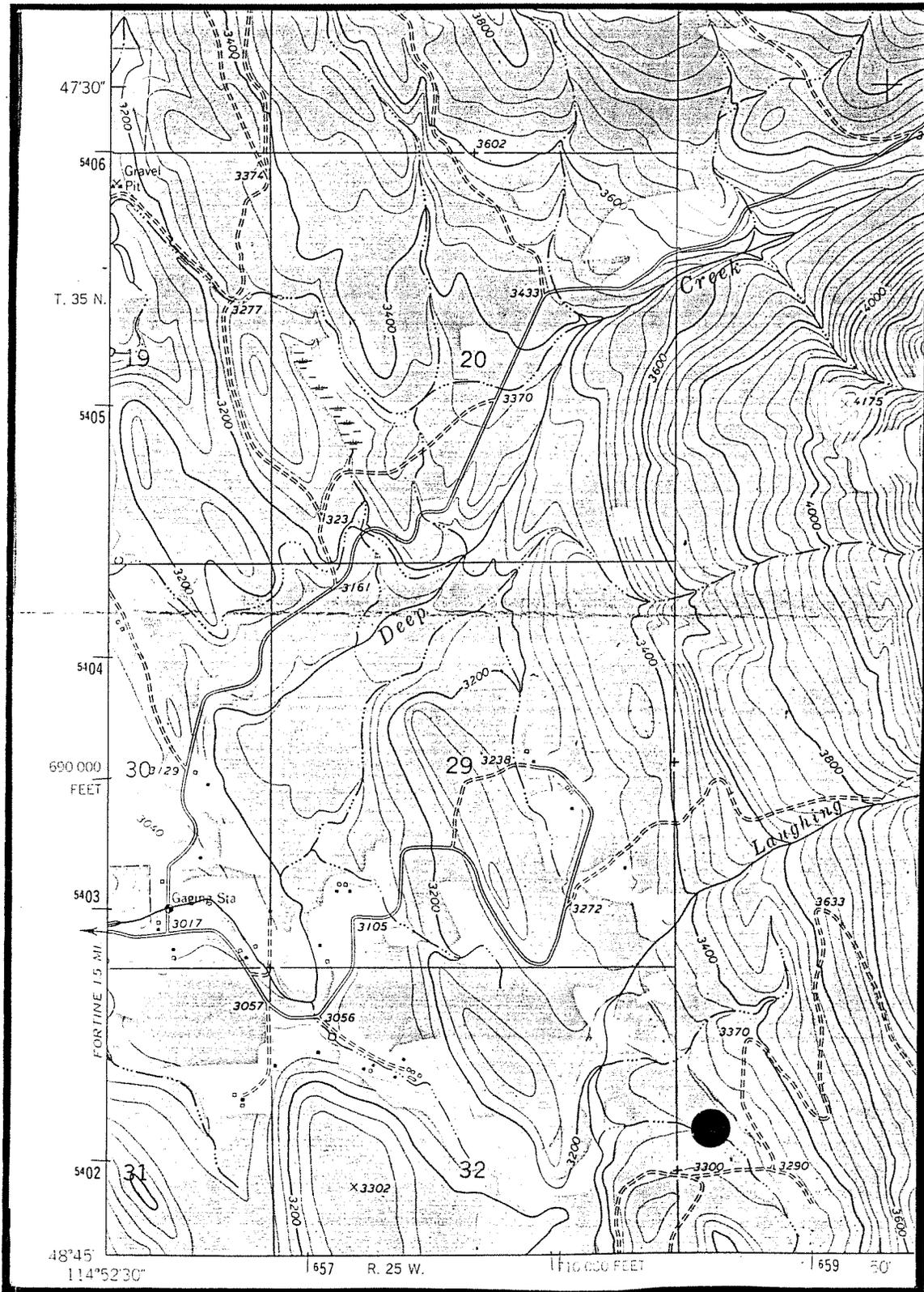
General site description:
MOIST, PARTIALLY SHADED CALCAREOUS GLACIATED TILL MOUNTAIN FOOTHILL ON OUTER EDGE OF RIPARIAN COMMUNITY NEAR UPLAND WOODS. TYPIC EUTROBORALF SOIL. PICEA ENGELMANNII/CLINTONIA UNIFLORA-CLINTONIA UNIFLORA HABITAT TYPE. ASSOCIATED SPECIES: LARIX OCCIDENTALIS, PSEUDOTSUGA MENZIESII, ALNUS SINUATA, CORNUS CANADENSIS, CORNUS STOLONIFERA, SHEPHERDIA CANADENSIS, ELYMUS GLAUCUS, BROMUS SPP., RUBUS PUBESCENS, BERBERIS REPENS, LINNAEA BOREALIS, ROSA ACICULARIS, SYMPHORICARPOS ALBUS, SALIX SPP., ACER GLABRUM, AMELANCHIER ALNIFOLIA (COMPLETE LIST ON FILE AT MTHP). LANDTYPE 323.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
OBSERVED BY D. NESBITT. WILDLIFE BROWSING ON <1% OF POPULATION.

Information source: SENSITIVE PLANT COORDINATOR, KOOTENAI NATIONAL FOREST, 506 U.S. HIGHWAY 2 WEST, LIBBY, MT 59923.

Specimens:



Cyripedium passerinum; Laughing Water Creek (024)
 USGS Mount Marston 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.025
Element occurrence type:

Survey site name: BRIMSTONE CREEK
EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 32 NE4

Precision: S
Survey date: Elevation: 3520 -
First observation: 1995-06-26 Slope/aspect: LEVEL
Last observation: 1995-06-26 Size (acres): 1

Location:
BRIMSTONE CREEK, CA. 2 AIR MILES SSE OF TREGO. FROM TREGO, DRIVE SOUTH ON COUNTY ROUTE 36 CA. 1.5 MILES. TURN EAST ON BRIMSTONE CREEK ROAD AND FOLLOW A COUPLE OF MILES TO FS RD 871. TAKE 871 TO CROSSING OF BRIMSTONE CREEK. PLANTS ARE DOWNSTREAM ON SOUTH SIDE OF CREEK.

Element occurrence data:
1 CLUMP OF 3 STEMS (1 GENET), LATE FLOWER WITH EXPANDING FRUIT.

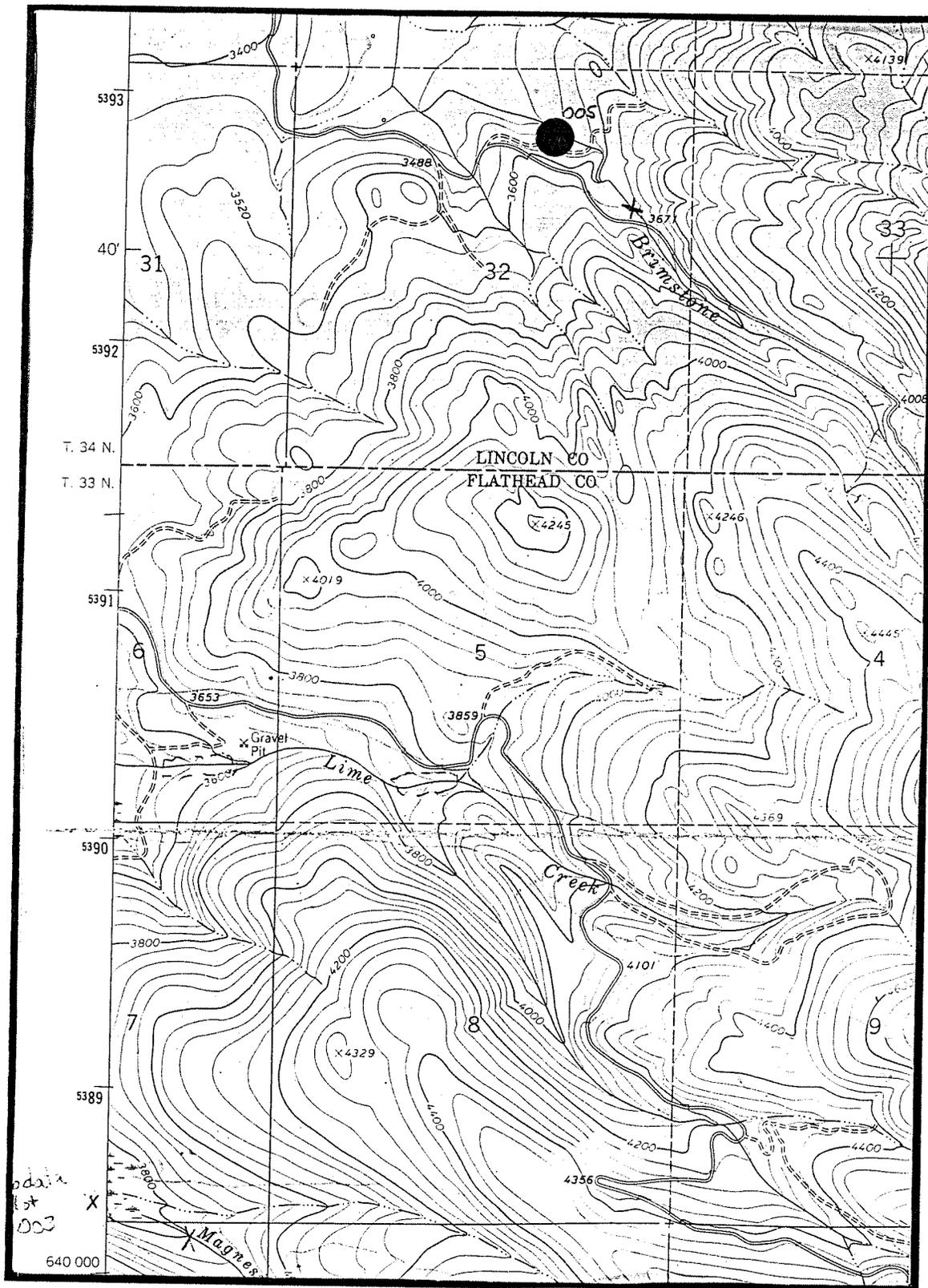
General site description:
SHADY, SATURATED, GLACIATED VALLEY BOTTOM. CALCAREOUS ALLUVIUM PARENT MATERIAL, SILTY SOIL. ASSOCIATED SPECIES: PICEA GLAUCA, POPULUS BALSAMIFERA, RHAMNUS ALNIFOLIA, CORNUS STOLONIFERA, EQUISETUM ARVENSE, ALNUS SINUATA, ORCHIS ROTUNDIFOLIA, CYPRIPEDIUM CALCEOLUS, CORNUS CANADENSIS, EQUISETUM SCIRPOIDES, MITELLA NUDA, PETASITES SAGITTATUS, SALIX SCOULERIANA. LANDTYPE 325.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
OBSERVED BY J. VANDERHORST. CATTLE IN VICINITY, BUT BRUSH AND SLASH KEEP THEM OUT OF POPULATION AREA. ECODATA PLOT FS01140395JV005.

Information source: VANDERHORST, J. [BOTANIST]. PO BOX 1026, TROY, MONTANA, 59935.

Specimens:



Cypridium passerinum; Brimstone Creek (025)
 USGS Stryker 7.5' quadrangle

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.026
Element occurrence type:

Survey site name: MAGNESIA FEN
EO rank:
EO rank comments:

County: FLATHEAD

USGS quadrangle: STRYKER
EDNA MOUNTAIN

Township: Range: Section: TRS comments:
033N 025W 7 SE4

Precision: S
Survey date: Elevation: 3800 -
First observation: 1995-06-21 Slope/aspect: LEVEL
Last observation: 1995-06-21 Size (acres): 1

Location:
FROM FORTINE CREEK ROAD (FS RD 36), GO SOUTHEAST ON LIME CREEK ROAD
(FS RD 3780) CA. 2 MILES, THEN SOUTH ON FS RD 3370 CA. 1 MILE.
POPULATION IS ON EAST SIDE OF MAGNESIA FEN.

Element occurrence data:
3 STEMS, 100% IN FLOWER.

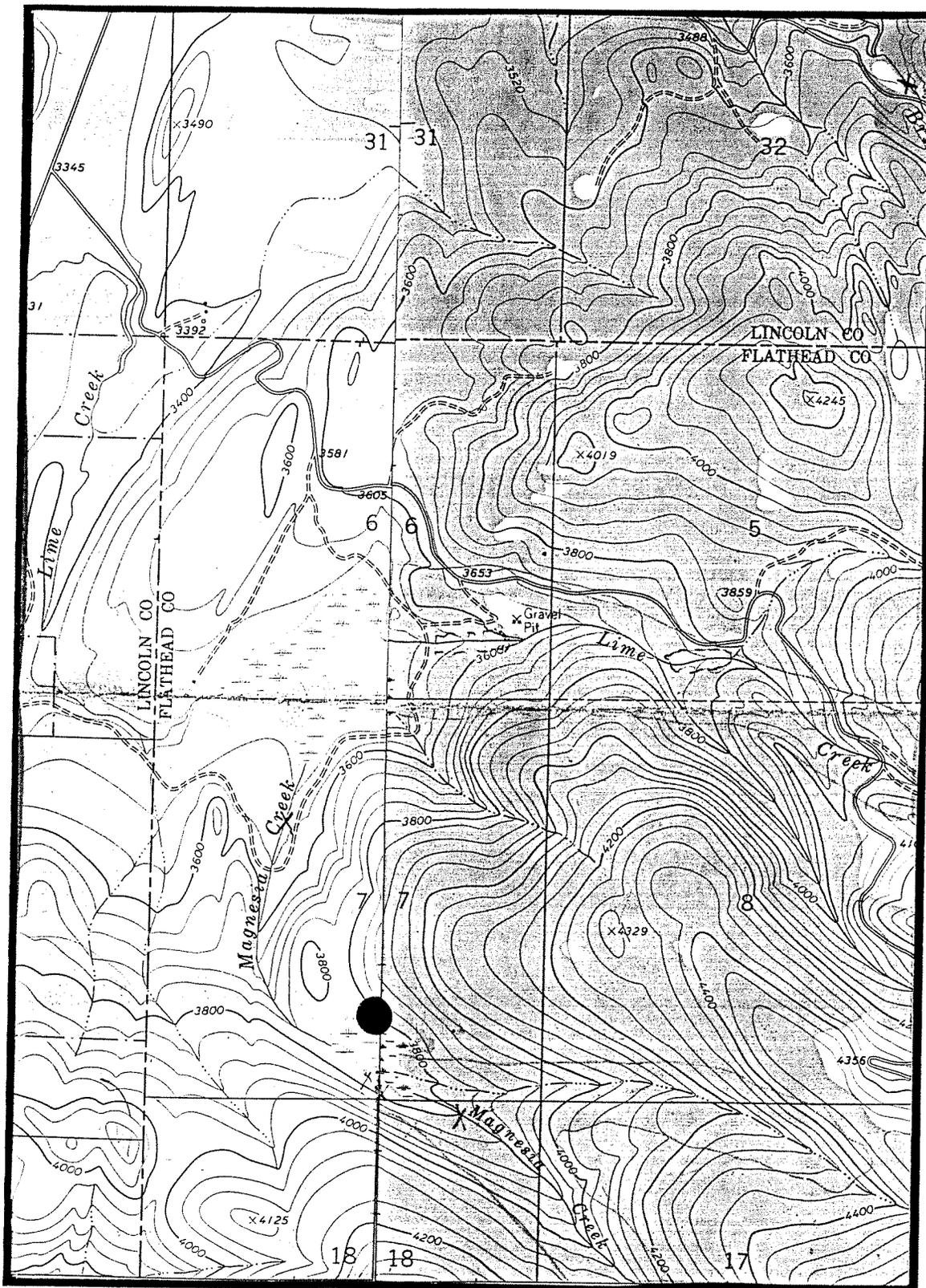
General site description:
MOIST TOE OF WEST-FACING SLOPE ON EDGE OF LARGE FEN COMPLEX. SIYEH
LIMESTONE PARENT MATERIAL. ASSOCIATED SPECIES: CAREX LEPTALEA, PICEA
ENGELMANNII, EQUISETUM ARVENSE, CYPRIPEDIUM CALCEOLUS, AMERORCHIS
ROTUNDIFOLIA, MITELLA NUDA. LANDTYPE 325.

Land owner/manager:
KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:
OBSERVED BY T. SPRIBILLE. PRISTINE SITE, BUT WITHIN OPEN RANGE.

Information source: SPRIBILLE, TOBY. BOX 2106, COLUMBIA FALLS, MONTANA
59912.

Specimens:



Cyripedium passerinum; Magnesia Fen (026)
USGS Stryker and Edna Mountain 7.5' quadrangles

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM FASCICULATUM
Common Name: CLUSTERED LADY'S-SLIPPER

Global rank: G4 Forest Service status: SENSITIVE
State rank: S2 Federal Status: C2

Element occurrence code: PMORC0Q060.012
Element occurrence type:

Survey site name: CABIN CITY CAMPGROUND
EO rank:
EO rank comments:

County: MINERAL

USGS quadrangle: DEBORGIA NORTH

Township: Range: Section: TRS comments:
019N 029W 26 CENTER W2; 27 NE4SE4

Precision: S
Survey date: Elevation: 3320 - 3360
First observation: 1992-8-19 Slope/aspect: 24% / SSW
Last observation: 1992-08-19 Size (acres): 1

Location:
NORTH FROM HAIRPIN TURN AND THE SIGNS ON ROAD INTO CABIN CITY
CAMPGROUND. SITE IS ON SLOPE 30 FEET FROM BASE.

Element occurrence data:
47 PLANTS, FRUITING. PLANTS SCATTERED ABOUT IN CLUSTERS OF 2-10 PLANTS
EACH.

General site description:
DRY, MODERATELY SHADED MIDSLOPE AT THE BASE OF A HOT SOUTHERN SLOPE IN
A COOL POCKET. ANDIC DYSTRIC EUTOCHREPTS OR TYPIC USTOCHREPTS SOILS.
ASSOCIATED SPECIES: PSEUDOTSUGA MENZIESII, PINUS PONDEROSA,
SYMPHORICARPOS ALBUS, PHYSOCARPUS MALVACEUS, AMARANTHUS ALBUS,
CALAMAGROSTIS RUBESCENS, AND OTHERS (COMPLETE LIST ON FILE AT MTNHP).

Land owner/manager:
LOLO NATIONAL FOREST, SUPERIOR RANGER DISTRICT

Comments:
OBSERVED BY K. VARGA. SOME LEAVES NIBBLED.

Information source: SENSITIVE PLANT COORDINATOR, LOLO NATIONAL FOREST,
BUILDING 24, FORT MISSOULA, MISSOULA, MT 59801.

Specimens:

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPEDIUM PASSERINUM
Common Name: SPARROW'S-EGG LADY'S-SLIPPER

Global rank: G4G5 Forest Service status: SENSITIVE
State rank: S2 Federal Status:

Element occurrence code: PMORC0Q0A0.020
Element occurrence type:

Survey site name: RATTLEBONE LAKE

EO rank:
EO rank comments:

County: LINCOLN

USGS quadrangle: STRYKER

Township: Range: Section: TRS comments:
034N 025W 22 SE4

Precision: S
Survey date: Elevation: 3340 -
First observation: 1992-06-23 Slope/aspect: 10% / SOUTH
Last observation: 1995-06-26 Size (acres):

Location:

FROM NORTH DICKEY LAKE CAMPGROUND FOLLOW FS RD 36 SOUTHWEST TO FS RD 857. TRAVEL ON 857 FOLLOWING SIGNS TO RATTLEBONE LAKE. HIKE AROUND LAKE TO WETLANDS NORTHWEST OF LAKE, SITE IS CA. 150 FEET FROM NORTHERN LIMIT OF WETLANDS ON NORTHEAST ECOTONE BETWEEN FOREST AND MARSH. SMALLER SUBPOPULATION IS CA. 100 YARDS TO THE SOUTHEAST, CLOSE TO THE EDGE OF THE LAKE.

Element occurrence data:

1995: 1 SUBPOPULATION, 3 PLANTS IN LATE FLOWER WITH EXPANDED OVARIES.
1992: 25 INDIVIDUALS (CA. 65% VEGETATIVELY SPREAD) IN AREA 3 FEET IN DIAMETER, 8 POST ANTHESIS, LIGHT HERBIVORY DAMAGE, LOW REPRODUCTIVE SUCCESS, 2 SUBPOPULATIONS.

General site description:

PARTIALLY SHADED EXPOSURE ON CONCAVE SLOPE. MOIST BOTTOM IN GLACIATED MOUNTAIN SLOPES. STREAMSIDE WETLAND AT MOUTH OF SMALL INLET TO LAKE/WETLAND. SILT LOAM SOIL OF STRATIFIED ALLUVIAL DEPOSITS. MAIN POPULATION IN NARROW ECOTONE BETWEEN SCRUBBY PICEA FOREST AND TYPHA LATIFOLIA/CAREX ROSTRATA DOMINATED WETLAND. SMALLER SUBPOPULATION IN

A 1-FOOT WIDE SEMI-MOIST ECOTONE BETWEEN THE LAKE EDGE AND A HIGHER, MUCH DRIER PICEA FOREST. ASSOCIATED SPECIES: PICEA, BETULA OCCIDENTALIS, CORNUS STOLONIFERA, LINNAEA BOREALIS, HABENARIA DILATATA, SALIX BEBBIANA, SILENE SPP., BETULA GLANDULOSA, CAREX ROSTRATA, SHEPERDIA CANADENSIS, MOSS SPP., CAREX AQUATILIS, ARALIA NUDICAULIS, ROSA SPP., GALIUM TRIFLORUM, EQUISETUM ARVENSE, TYPHA LATIFOLIA, SCUTELLARIA GALERICULATA. LANDTYPE 105 BELOW 355.

Land owner/manager:

KOOTENAI NATIONAL FOREST, FORTINE RANGER DISTRICT

Comments:

EXCEPTIONALLY BARE GROUND AT THIS SITE. SITE REVISITED IN 1995 BY J. VANDERHORST.

Information source: HOITSMA, T. 1992. SENSITIVE PLANT SURVEY, FORTINE

APPENDIX B: ECODATA FORMS

Jumbo Lake Basin

Form PC: Plant Composition Data (Chapter 3B-3) - 7/92

Key ID: | A g | R/S | N F | R D | Y r | E x | P l t |
 F1-7: | F S | 0 1 | 1 4 | 0 3 | 9 5 | J V | 0 0 | | F-8-PlantIDL | 0 0 |

F9	F10	F11	F12	F13						F14	F15	F16	F17	Notes
				Size Class										
LF	Plant Name	C C	Mht	1	2	3	4	5	6	SFM	Ph	Ut	Op	
1	I PLCGLA	20	30	01	01	10	01	00	00					
2	S SALBEB	10	10	0	0	10	0	0	0					
3	S ALNSLN	03	15			03								
4	S BETOCC	20	15			20								
5	S PHYMAL	01	05		01									
6	S CORSTO	03	10			03								
7	S ROSWOO	01	3											
8	S RHAAEN	10	3											
9	S LONINV	01	3											
10	S MENEER	03	3											
11	S SALCAN	01	4											
12	S MAHREP	01	0											
13	S CORCAN	01	0											
14	S RIBLAC	01	2											
15	G CABUTR	10	2											
	G CABCAP	01	1											
	G CARAUR	01	1											
	G TYPLAT	01	5											
	G CABLEP	01	0											
20	G ORYASP	01	2											
21	F CYP CAL	03	1											
22	F MENTRI	01	1											
23	F SMLRAC	03	2											
24	F RBUBPB	01	1											
25	F DODPUL	01	1											
26	F FRAVLR	01	0											
27	F ABANUD	01	1											
28	F PYRASA	01	0											
29	F PETSAG	10	0											
30	F ANGELICA	01	1											
31	F GALLIUM	01	0											
32	F VLONER	01	0											
33	F MLINUD	01	0											
34	F GEURLV	01	2											
35	F EQUARV	01	1											
36	E EQUFLU	10	2											
37														
38														
39														

*Optional Fields

Magnesia Creek

Form GF: General Field (Chapter 3B-1) - 7/92

Key ID: Ag R/S NF RD YI EX P I T Mo Day
 F1-7: ES 01 14 03 95 JV 003 F8 J. VANDERHORST F9 06 F10 25

F11-30: Sample Forms 24 PC
 SAMPLE SYSTEM DATA
 F31-Unit E F32-PRL 37.5 F33-PW 000

Permanent Plot ID F34
 PRI F35
 Comparison Plot ID F36

Potential Vegetation Form PVC Ind Spp 1 Ind Spp 2 Ind Spp 3 Site Phase
 F37-42: CW HAOTI 95 PICGLA EQUARV EQUARV PEISAG

EXISTING VEGETATION CLASSIFICATION

EV Strata: LF LSC DSC CC
 F43-46: C MT MS L

Veg Layers: UL Dom Spp1 UL Dom Spp2 ML Dom Spp1 ML Dom Spp2 LL Dom Spp1 LL Dom Spp2
 F47-52: PICGLA AANSLN BHAAN NP EQUARV PEISAG

SITE DATA

SpFea Landform PMat Pos
 F53 SC F54-56 VAISBI F57-59 ALSILE F60-61 WVFP F62-VerPS P F63*-HorPS P
 F64-Elevation 3800 F65-Aspect 000 F66-Slope 000 Horizon: E S W
 F70-EroStat ST F71-EroType NA F72-79 GCov 01+00+00+20+03+60+05+10 F80 05 F81 2.5 F82 12.0
 F83-Dead Wood Cover 02 F84-Down Log Dia 12 F85-Dom. Layer Ht. 180

VEGETATION DATA

Live Tree: BAF BAN BA DBH Height Age Dead Tree: BAF BAN BA DBH Height
 F86-89: 20 2 60 10 80 F90-92: 0 0 0
 TreeCover: Tot Seed Sap Pole Med Large VLarg ShrubCover: Tot Low Mid Tal HerbCov: Gram Forb Fern Moss
 F93-99: 20 01 01 03 20 60 00 F100-103: 60 01 40 20 F104-107: 10 20 30 60

Dry Weight Production (Fields 108-113)*

GrnWt DWF Dry Wght F109-Shrub F110-Gram F111-Forb F112-Fern F113-Moss
 F108-Tree F111-Forb

DISTURBANCE DATA

M F A H F A
 F114-116-Ground Cover Dist N N N F117-122-AnimalEvid UB 1 2 3 4 5 6
 F123* F123* Size Class

40pt Total Fields

Magnesia Creek

Form LL: Location/Linkage Data (Chapter 3B-2) - 7/92

Key ID: A g R/S N F R D Yr D Ex P l t Stand ID: D/Co Sc St SE* TID PID
 F1-7: F S 0 1 1 4 0 3 9 5 N V 0 0 3 F8-11: 0 F13* F19-23*: Rip Reach ID 1 2 3 4 5

F14-18*: Watershed HUC5 HUC6 HUC7 HUC8 HUC9 F24*-ECOCCLASS ID F29-33*: Spectral Info: Date ID# Class 1 Class 2 Class 3

F25-26: 48 11 4 6 8 EDNA MOUNTAIN Photo ID: Date ID#

F34-35: Plt Loc Meth Accuracy Deg Min Sec HSec F40-43: Long (W) Deg Min Sec HSec
 F44-47: UTM Yr N 27 57 88 600 E 656 400 Z F48-53*: Legal ID T R S QS QOS PM
 F54: Purp F55*-Project F56*-Picture F57*-Pic ID F58: Stand/Reach Data

F59: State MI F60: County 029 F61: Range Allot Pas F62*-FCA F63-FMA
 F64: SUK F65*-SU ID F66*-VegType F67*-VegTypeID

F68*-VegType2 F69*-VegType2ID F70*-OtherType1 F71*-OtherType1ID
 F72*-OtherType2 F73*-OtherType2ID

F74-79*-LSI Info: Subsection LT Association Landtype LT?phase VBLT LT Group
 F80*-Weather ID F81*-Century F82*-Avg Precip F83*-Avg Snowpack

--The Following Fields Are Left Blank If You Entered "V S" or "S R" in Field 58--

*Optional Fields

Magnesia Creek

Form PC: Plant Composition Data (Chapter 3B-3) - 7/92

Key ID: | A g | R/S | N F | R D | Y r | E x | P l t | F-8-PlantIDL | 00 |
 F1-7: | F S | 0 1 | 1 4 | 0 3 | 9 5 | J V | 0 0 3 |

F9	F10	F11	F12	F13						F14	F15	F16	F17	Notes
				Size Class										
LF	Plant Name	C C	Mht	1	2	3	4	5	6	SFM	Ph	Ut	Op	
1	TPLCGLA	20	80	01	01	01	20							
2	SALNSLN	20	38											
3	SBHAAALN	20	3											
4	SBLBLAC	01	3											
5	SBLBHWD	03	3											
6	S CORSTO	03	6											
7	S ROSWOOD	01	3											
8	S LONINLV	03	3											
9	S CORCAN	01	2											
10	G CARLINI	10	1											
11	G GLYSTR	01	2											
12	G CARLEP	01	3											
13	G CAREX	01	2											immature ovules
14	E RUBPUB	01	5											
15	E PETSAG	10	1											
	F GALBOR	01	2											
	F CYPCAL	03	1											in clumps on humwood
	F ORCBO	01	5											4 plants
	F SMLSTI	01	2											
20	F PEDLC	01	0											immature
21	F FORB	01	5											
22	F MITNUD	03	5											
23	F LINBOR	01	2											
24	F HABSAC	01	2											
25	F STRAMP	01	2											
26	F PYRASA	01	1											
27	F ANGELICA	01	1											
28	F CIRARV	01	2											
29	F PABEIM	01	5											
30	F VERAME	01	1											
31	F GEURIV	01	2											
32	F EQUARV	30	2											
33														
34														
35														
36														
37														
38														
39														

*Optional Fields

Rattlebone Lake

Form GF: General Field (Chapter 3B-1) - 7/92

Key ID: Ag R/S N F R D Y I E x P I t Mo Day
 F1-7: F S 0 1 14 03 95 JV 004 F8 J. VANDERHORST F9 06 F10 26

F11-30: Sample Forms 44 PC 44
 F31-Unit | E | F32-PRL | 92 | F33-PW | 48 |

Permanent Plot ID | F34 | F35 | PRI | F36 | Comparison Plot ID

Potential Vegetation Form PVC Ind Spp 1 Ind Spp 2 Ind Spp 3 Site Phase
 F37-42: CW HAOT195 PICEA CORSTO X X X

EXISTING VEGETATION CLASSIFICATION

Veg Layers: UL Dom Spp1 UL Dom Spp2 ML Dom Spp1 ML Dom Spp2 LL Dom Spp1 LL Dom Spp2
 F47-52: PICEA ALNSLN CORSTO SHECAN CARCAP COBCAN

SITE DATA

SpFea F53 SC F54-56 VAISB1 Landform F57-59 ALS11 PMat F60-61 MVISC Pos F62-VerPS | D | F63*-HorPS | 5 |
 F64-Elevation 3350' F65-Aspect 270 F66-Slope 07 F67-69*: E 14 S W 18
 F70-EroStat ST F71-EroType NA F72-79: GCov 01+00+00+20+05+60+03+10 F80 05 F81 2.5 F82 12.0
 F83-Dead Wood Cover | | F84-Down Log Dia | | F85-Dom. Layer Ht. | |

VEGETATION DATA

Live Tree: BAF 20 DBH 07 Height 35 Age 57 Dead Tree: BAF BAN BA DBH Height
 F86-89: 20 07 35 57 F90-92: | | |
 TreeCover: Tot Seed Sap Pole Med Large VLarg ShrubCover: Tot Low Mid Tal HerbCov: Gram Forb Fern Moss
 F93-99: 20 01 10 20 00 00 60 F100-103: 30 10 10 10 F104-107: 10 30 01 60

Dry Weight Production (Fields 108-113)*

F108-Tree GrnWt DWF Dry Wght F109-Shrub GrnWt DWF Dry Wght F110-Gram GrnWt DWF Dry Wght
 F111-Forb F112-Fern F113-Moss

DISTURBANCE DATA

F114-116-Ground Cover Dist M F A 1 2 3 4 5 6 Size Class
 F117-122-AnimalEvid | | | | | | F123* | | |

Rattlebone Lake

Form LL: Location/Linkage Data (Chapter 3B-2) - 7/92

Key ID: A 8 R/S N F R D Yr Ex P l t Stand ID: D/Co Sc St SE* TID PID
 F1-7: F S 0 1 14 03 95 JV 004 F8-11: 0 F2*-TGrp F13* | | | | |

F14-18*: Watershed HUC5 HUC6 HUC7 HUC8 HUC9 F19-23*: Rip Reach ID 1 2 3 4 5
 F24*-ECOCCLASS ID | | | | |

Quad ID: 48 11467 STRYKER Photo ID: Date ID#
 F25-26: F27-28*: | | | | |

Spectral Info: Date ID# Class 1 Class 2 Class 3
 F29-33*: | | | | |

Meth Accuracy F34-35: Plt Loc 1 0200 F36-39: Lat (N) Deg Min Sec HSec Deg Min Sec HSec
 F40-43: Long (W) F44-47: UTM Yr N 27 53 95 400 E 6 6 1 100 11 Z F48-53*: Legal ID T R S QS QQS PH
 F48-53*: 134N R25W 22SE NW PM

F54: Purp F55*-Project F56*-Picture F57*-Pic ID F58: Stand/Reach Data
 F59: State MT F60: County 053 F61: Range Allot Pas F62*-FCA F63-FMA

F64: SUK F65*-SU ID F66*-VegType F67*-VegTypeID
 F68*-VegType2 F69*-VegType2ID F70*-OtherType1 F71*-OtherTypeID

F72*-OtherType2 F73*-OtherType2ID
 F74-79*-LSI Info: Subsection LT Association Landtype LTPHase VBLT LT Group

F80*-Weather ID F81*-Century F82*-Avg Precip F83*-Avg Snowpack
 *Optional Fields

--The Following Fields Are Left Blank If You Entered "V S" or "S R" in Field 58--

Rattlebone Lake

Form PC: Plant Composition Data (Chapter 3B-3) - 7/92

Key ID: | A g | R/S | N F | R D | Y r | E x | P l t |
 F1-7: | F S | 0 1 | 1 4 | 0 3 | 9 5 | J V | 0 0 4 | F-8-PlantIDL | 0 0 |

F9 LF	F10 Plant Name	F11 C C	F12 Mht	F13 Size Class						F14 * SFM	F15 * Ph	F16 * Ut	F17 * Op	Notes
				1	2	3	4	5	6					
1	I PLCEA	30	35	01	10	20	-	-	-					
2	S ALNSLN	10	20			10	10							
3	S CORSTO	10	4		5	5								
4	S SHECAN	05	3											
5	S SYMALB	05	2											
6	S ROSA	03												
7	S KLBLAC	01												
8	S RUBPAR	01												
9	S RHAAALN	01												
10	S SPIBET	01												
11	S CORCAN	10												
12	S MAHREP	01												
13	S SALBEB	03												
14	F RUBPUB	01												
15	F ABANUD	01												
	F GALTRL	01												
	F HABSAC	01												
	F LINBOR	10												
	F IARDFE	01												
20	F VALDIO	01												
21	F VLOCAN	01												
22	F SENPAC	01												
23	F GEUMAC	01												
24	F RYZELE	01												
25	F MLINUD	01												
26	F FRAVLR	01												
27	F CYPPAS	01												3 stems at mouth of stream
28	F SMISTL	01												
29	F VILCAM	01												
30	F ANAMAR	01												
31	F EQUARV	01												
32	F EQUHYM	01												
33	G FLYGLA	01												
34	G CARCAP	10												
35														
36														
37														
38														
39														

*Optional Fields

Brimstone Creek

Form GF: General Field (Chapter 3B-1) - 7/92

Key ID: AG R/S N F R D Y I E x P I t Mo Day
 F1-7: F S 0 1 14 03 95 JV 005 F8 J. VANDERHORST F9 06 F10 26

SAMPLE SYSTEM DATA

F11-30: Sample Forms 44 PC F31-Unit E F32-PRL 37.5 F33-PW

F34 Permanent Plot ID F35 PRI F36 Comparison Plot ID

Potential Vegetation Form PVC Ind Spp 1 Ind Spp 2 Ind Spp 3 Site Phase
 F37-42: CW HAOT 95 PICOLA EQUARY

EXISTING VEGETATION CLASSIFICATION

EV Strata: LF LSC DSC GC
 F43-46: ML Dom Spp1 ML Dom Spp2 LL Dom Spp1 LL Dom Spp2
 F47-52: PICOLA POPBAL RHAAFN COBSTO EQUARY COBCAN

SITE DATA

SpFea F54-56 Landform PMat Pos
 F53 SC F54-56 VAISB F57-59 MALI F60-61 WVEP F62-VerPS P F63*-HorPS P
 F64-Elevation 3520 F65-Aspect 00 F66-Slope 00 F67-69*: 20 S 22 W 17
 F70-EroStat F71-EroType F72-79: GCov 00+00+40+05+50+05+05 F80 35 F81 FD F82 18.0
 F83-Dead Wood Cover F84-Down Log Dia F85-Dom. Layer Ht.

VEGETATION DATA

Live Tree: BAF BAN BA DBH Height Age Dead Tree: BAF BAN BA DBH Height
 F86-89: 40 6 240 14 75 140
 TreeCover: Tot Seed Sap Pole Med Large VLarg ShrubCover: Tot Low Mid Tal HerbCov: Gram Forb Fern Moss
 F93-99: 25 01 03 05 15 01 00 F100-103: 30 01 20 10 F104-107: 03 40 50 50
 F108-Tree GrnWt DWF Dry Wght F109-Shrub GrnWt DWF Dry Wght F110-Gram
 F111-Forb F112-Fern F113-Moss

DISTURBANCE DATA

F114-116-Ground Cover Dist M F A 1 2 3 4 5 6 Size Class
 F117-122-AnimalEvid BB

40pt Total Field

Brimstone Creek

Form LL: Location/Linkage Data (Chapter 3B-2) - 7/92

Key ID: AGR/SNFRD|YR|EX|PLT|Stand ID: D/Co|Sc|St|SE*|F12*-TGrp|F13*|TID|PID
 F1-7: FS01|14|03|95|V|005|F8-11: 0|F19-23*: Rip Reach ID|1|2|3|4|5|

F14-18*: Watershed|HUC5|HUC6|HUC7|HUC8|HUC9|F24*-ECOCCLASS ID|

Quad ID: ID|Photo ID: Date|ID#
 F25-26: 4811467|STBYKER|

Spectral Info: F29-33*:|Date|ID#|Class 1|Class 2|Class 3|

Meth|Accuracy|F34-35: Plt Loc|L|0200|F36-39: Lat (N)|Deg|Min|Sec|HSec|F40-43: Long (W)|Deg|Min|Sec|HSec|

F44-47: UTM|Yr|N|E|Z|F48-53*: Legal ID|T34N|R25W|32NE|VW|PM|

F54: Purp|F55*-Project|F56*-Picture|F57*-Pic ID|F58: Stand/Reach Data|

--The Following Fields Are Left Blank If You Entered "V S" or "S R" in Field 58--

F59: State|MT|F60: County|053|F61: Range|Allot|Pas|F62*-FCA|F63-FMA|

F64: SUK|F65*-SU ID|F66*-VegType1|F67*-VegTypeID|

F68*-VegType2|F69*-VegType2ID|F70*-OtherType1|F71*-OtherTypeID|

F72*-OtherType2|F73*-OtherType2ID|

F74-79*-LSI Info: Subsection|LT Association|Landtype|LTPhase|VBLT|LT Group|

F80*-Weather ID|F81*-Century|F82*-Avg Precip|F83*-Avg Snowpack|

*Optional Fields

Brimstone Creek

Form PC: Plant Composition Data (Chapter 3B-3) - 7/92

Key ID: | A g | R/S | N F | R D | Y r | E x | P l t |
 F1-7: | F S | 0 1 | 1 4 | 0 3 | 9 5 | J V | 0 0 5 | F-8-PlantIDL | 0 0 |

F9 LF	F10 Plant Name	F11 C C	F12 Mht	F13 Size Class						F14 * SFM	F15 * Ph	F16 * Ut	F17 * Op	Notes
				1	2	3	4	5	6					
1	T PLCGLA	20	75	01	03	05	15	01						
2	T POPBAL	05	60	01	00	00	05	00						
3	S CORSTO	03	5											
4	S ALNSLN	05	20											
5	S RHAALN	20	3											
6	S SALSCO	03	10											
7	S BOSWOO	01	3											
8	S COBCAN	10												
9	Q CABDIS	03												
10	G OBYASP	01												
11	F PYRASA	01												
12	H ABSAC	01												
13	Q BCROT	01												
14	C YPCAL	03												
15	C YPPAS	01												
	M LNUD	03												
	G ALTRI	01												
	P RESAG	01												
	P ETSAG	03												
20	R UB PUB	10												
21	A BANUD	01												
22	S MLSTIE	01												
23	S TRAMP	01												
24	L LN BOR	01												
25	S EN PAU	01												
26	H AB OBT	01												
27	F EQUARV	20												
28	F EQUUSCL	05												
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														

* 50 plants stems
 ~ 100 plants stems
 1 dump 3 stems

*Optional Fields

APPENDIX C: PHOTOGRAPHIC SLIDES

1. Cypridium calceolus at Souse Creek, including a possible hybrid with a single white flower
2. Habitat of Cypridium calceolus in deciduous riparian corridor at Confluence of Kootenai and Fisher Rivers (051)
3. Large clump of Cypridium calceolus in the Hidden Lake area (027)
4. Close-up of Cypridium calceolus at Hidden Lake area (027)
5. Habitat of Cypridium calceolus at Hidden Lake area (027), ECODATA plot FS01140395JV001
6. Remaining habitat of Cypridium calceolus at Therriault Creek (030) after reconstruction of Highway 93
7. Cypridium calceolus at Therriault Creek (030), showing plants behind overburdened silt trap
8. Small plant of Cypridium calceolus at Therriault Creek (030)
9. Small plants of Cypridium calceolus at Homes Lake area (020)
10. Habitat at Homes Lake area (020)
11. Dense clump of Cypridium calceolus at Magnesia Creek (029)
12. Habitat of Cypridium calceolus at Magnesia Creek (029), ECODATA plot FS01140395JV003
13. Habitat at Magnesia Creek (029), ECODATA plot FS01140395JV003, showing abundance of Cypridium calceolus
14. Robust stems of Cypridium calceolus at Brimstone Creek (026)
15. Habitat of Cypridium calceolus at Brimstone Creek (026), ECODATA plot FS01140395JV005
16. Cypridium calceolus under silt trap at Dickey Lake (001)
17. Threatened habitat at Dickey Lake (001)
18. Habitat of Cypridium calceolus along shore of Dickey Lake (001), below old highway
19. Cypridium passerinum at Jumbo Lake (022)

20. Habitat of Cypridium passerinum at Jumbo Lake (022)
21. Cypridium passerinum at Rattlebone Lake (020)
22. Habitat at Rattlebone Lake (020), ECODATA plot FS01140395JV004
23. Cypridium passerinum at Brimstone Creek
24. Close-up of Cypridium passerinum at Brimstone Creek
25. Habitat of Cypridium passerinum at Brimstone Creek, ECODATA plot FS01140395JV005
26. Cypridium fasciculatum at Cabin City (013) on the Lolo National Forest
27. Cypridium fasciculatum at Tamarack Creek (007) on the Lolo National Forest

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: CYPRIPIEDIUM CALCEOLUS VAR PARVIFLORUM
Common Name: SMALL YELLOW LADY'S-SLIPPER

Global rank: G5Q Forest Service status: SENSITIVE
State rank: S2S3 Federal Status:

Element occurrence code: PMORC0Q090.013
Element occurrence type:

Survey site name: BUTLER CREEK
EO rank: B
EO rank comments:

County: LINCOLN

USGS quadrangle: TONY PEAK

Township: Range: Section: TRS comments:
030N 029W 22 SE4

Precision: S
Survey date: 1989-08-31 Elevation: 3000 -
First observation: 1989 Slope/aspect: 8-15 % / SOUTH
Last observation: 1995-05-26 Size (acres): 2

Location:

CA. 4 MILES EAST OF CANOE GULCH RANGER STATION; 3.2 MILES EAST ON FOREST ROAD 4666 FROM JUNCTION WITH 530, TO DRAINAGE WHERE ROAD BENDS TO SOUTH, PLANTS ON NORTH AND SOUTH SIDES OF ROADWAY.

Element occurrence data:

1995: SOUTH SUBPOPULATION WITH 5 CLUMPS AND 13 STEMS. 1989: 51-100 RAMETS AND 47 GENETS; SOUTH SUBPOPULATION IS A SINGLE CLUMP WITH 4 SHOOTS. MOST PLANTS HAVE FLOWERED AND HAVE DEVELOPING SEED.

General site description:

SOME ASSOCIATION WITH DECAYING LOGS. SOIL: COLLUVIAL FINE SANDY MATERIAL. HABITAT TYPE: PICEA ENGELMANNII/CLINTONIA UNIFLORA. ASSOCIATED SPECIES: PSEUDOTSUGA MENZIESII, POPULUS TREMULOIDES, BETULA PAPYRIFERA, ROSA NUTKANA, CORNUS STOLONIFERA, CORNUS CANADENSIS, SYMPHORICARPOS ALBUS, ACER GLABRUM, PHILADELPHUS LEWISII, AMELANCHIER ALNIFOLIA, EQUISETUM HYEMALE, SMILACINA STELLATA, ARALIA NUDICAULIS, LINNAEA BOREALIS, GALIUM TRIFLORUM. SUBPOPULATION IS IN A SMALL (15 FT. DIAMETER) OPENING SURROUNDED BY ALNUS SINUATA AND SMALL REMNANT SPRUCE STAND. LAND TYPE 324.

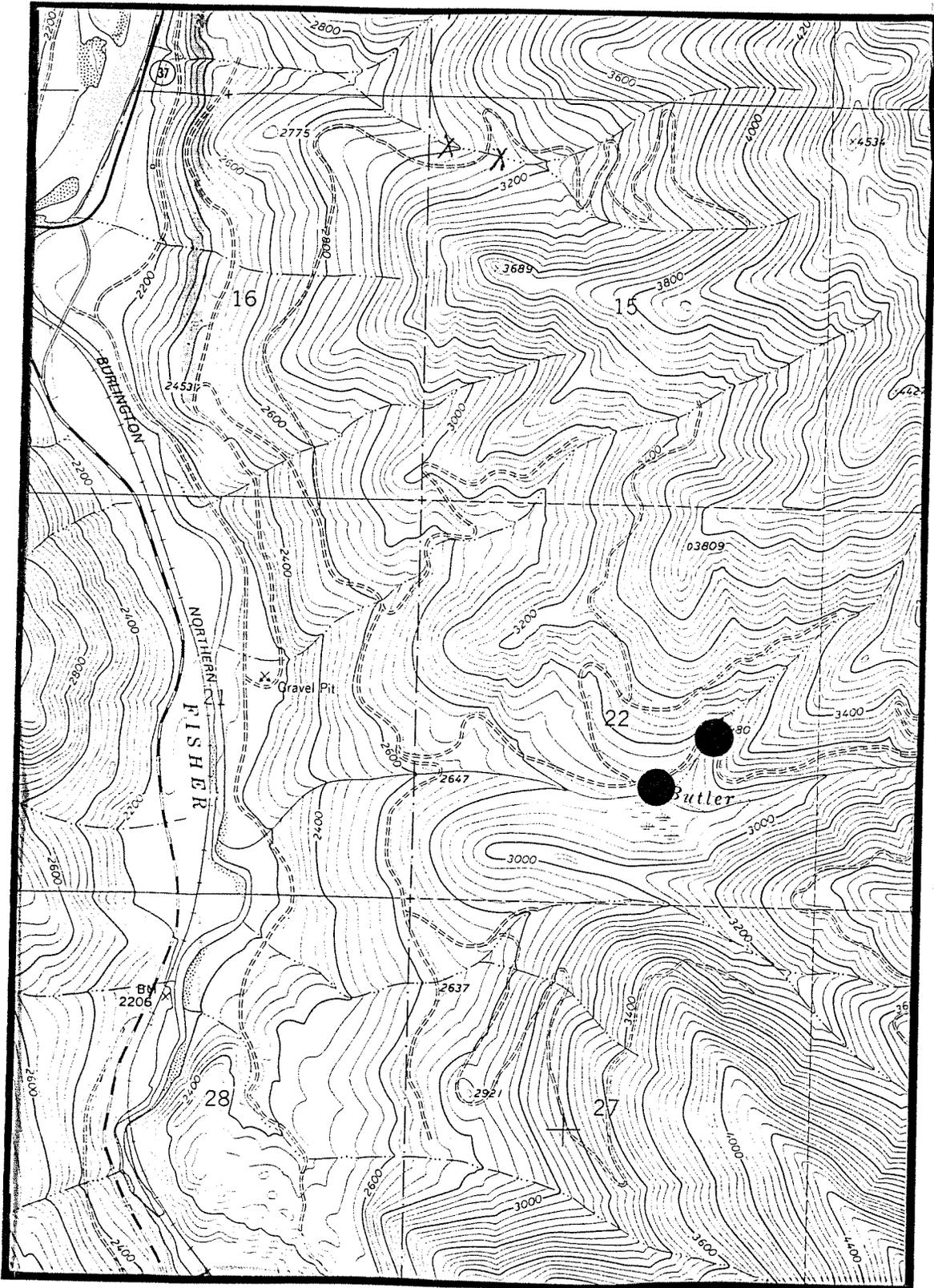
Land owner/manager:

KOOTENAI NATIONAL FOREST, FISHER RIVER RANGER DISTRICT
CORPORATE TIMBERLANDS
STATE LAND - UNDESIGNATED

Comments:

ADJACENT SLOPES HAVE BEEN LOGGED OR THINNED. STATE LAND HAS BEEN MOSTLY CUT OVER. OLD SKID TRAIL PARALLELS SITE AND SWALE CONTAINING PLANTS. SUBPOPULATION SEPARATED FROM REMAINING PLANTS FOLLOWING LOGGING. TO PROTECT POPULATION, NO ACTIVITIES SHOULD TAKE PLACE IN IMMEDIATE AREA. ECODATA PLOT 146C89C009. SITE REVISITED IN 1995 BY J. VANDERHORST.

Information source: CHADDE, STEVE. FORMER NATURAL AREAS ECOLOGIST,
USDA FOREST SERVICE, NORTHERN REGION (RAW), P.O.
BOX 7669, MISSOULA, MT 59807; (406) 329-3141.



Cypridium calceolus var. parviflorum; Butler Creek (013)
USGS Tony Peak 7.5' quadrangle

- U. S. Forest Service. 1987. Forest Plan. Kootenai National Forest, Libby, MT.
- _____. 1992. Ecosystem inventory and analysis guide.
- _____. 1994. Update of Northern Region sensitive plant list. Unpublished list. Missoula, MT. 19 pp.
- _____. 1995. Kootenai National Forest sensitive plant field guide. Northern Region, Kootenai National Forest. Libby, MT.
- Weber, W. A. and R. C. Wittmann. 1992. Catalog of the Colorado flora: a biodiversity baseline. University Press of Colorado, Niwot, CO.
- Wells, T. C. E. 1981. Population ecology of terrestrial orchids. in *The biological aspects of rare plant conservation*, ed. Hugh Synge. John Wiley and Sons LTD.
- Welsh, S. L., N. D. Atwood, L. C. Higgins, and S. Goodrich. 1987. A Utah flora. Great Basin Naturalist Memoir no. 9. Brigham Young University, Provo, Utah, 894 pp.