

**Identification and Mitigation of Climber Impact on Rare Plants,  
Custer State Park, South Dakota  
(Black Hills Needles Climbing Area)**

prepared by

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November 15, 2001

## Acknowledgements

I am grateful to many people for helping in important ways with this project. Thanks to Cheryl Mayer and Daryl Stisser, climbers from Custer, SD, for all their hard work stabilizing an approach trail in the Outlets, and to Cheryl for turning up new great-spurred violet locations; to the Black Hills Climbing Coalition for their support and suggestions; to Paul Duval for expertise and time in preparing and installing signs; to Mike Lewis of Signworks in Custer for producing great signs; to Gary Brundige of Custer State Park for consultation on trail projects; to Larry Shaffer for including rare plant information in his upcoming guidebook; and finally to Patches for finding the secret gate in Middle Earth.

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## Introduction

During the summer of 2001, climbing areas in Custer State Park, South Dakota, were surveyed for rare plants with the goal of minimizing climber impact on rare plant habitat. The project was funded by a Climbing Preservation Grant from the Access Fund, and a Small Grant from the Wildlife Division of the SD Dept. of Game, Fish and Parks. Other cooperators included Custer State Park and members of the local climbing community.

### *Study Area*

The Black Hills Needles climbing area is located in the southern Black Hills in western South Dakota (Figure 1). "The Needles" have been defined as the assemblage of granite outcrops including and surrounding Harney Peak, high point of the Black Hills (Piana 1971). More recently, specific climbing areas within this region have been recognized, including Mount Rushmore, Raspberry Rocks and Iron Mountain, for example. "The Needles" as defined for the purpose of this study includes the climbing areas in the northwestern part of Custer State Park (Figure 2).

The Needles are in the highest part of the Black Hills, with elevations ranging from 6000 to 6900 feet above sea level. The area is underlain with Precambrian granite, estimated to be 1.7 billion years in age. Rock outcrops of various shapes and sizes are abundant, ranging from small needle-tipped spires and narrow fins to rock masses several hundred feet in height and hundreds of yards long, dissected by narrow gullies.

The vegetation includes ponderosa pine and white spruce forests, with smaller stands of paper birch, aspen and wet meadows. There is a strong boreal or northern component to the flora, plants that are relics of the last ice age when boreal forests extended as far south as Nebraska. White spruce and paper birch are two of the more common examples.

### *Plant Species of Concern*

At least 27 plants in the high granite region are considered species of special concern (Table 1; Marriott 2001a). None are globally rare, but rather are rare within the Black Hills and surrounding region. Most are relic boreal species that have persisted since the last ice age in cool moist habitat, such as north-facing slopes, narrow drainage bottoms and well-shaded sites. Many of the Needles climbing areas contain habitat for rare plants, usually in the bottoms of deep narrow gullies in larger outcrops, or at the base of steep north-facing walls.

Figure 1. The Needles, in the southern Black Hills, South Dakota.

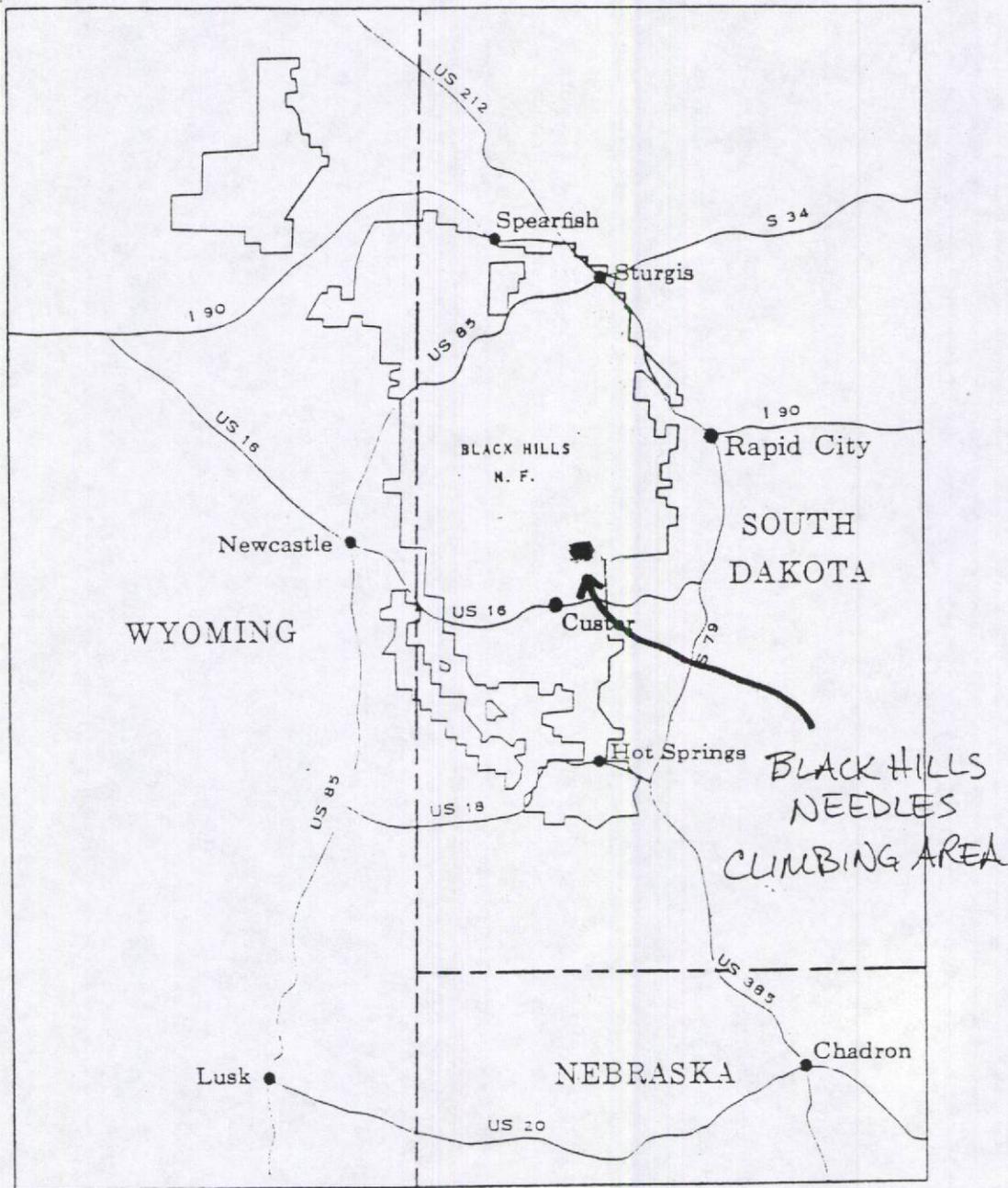


Figure 2. The Needles climbing area, Custer State Park.

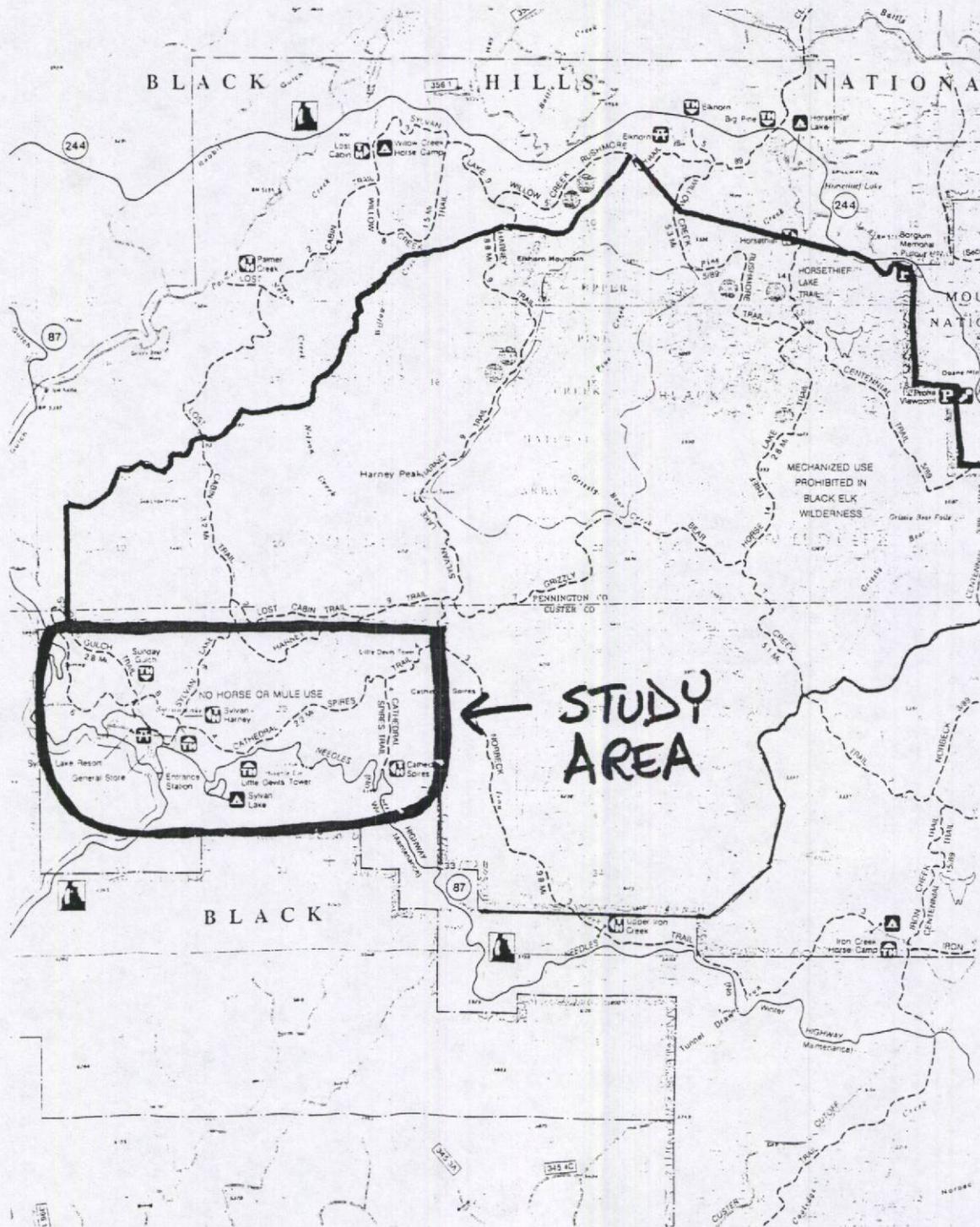


Table 1. Species of special concern, Black Elk Wilderness (adjacent to the Black Hills Needles; Marriott 2001a). South Dakota Natural Heritage ranks follow ranking methodology of the state natural heritage network (Appendix A). Species currently being considered for addition to the Sensitive species list for Black Hills National Forest are marked x?.

<u>NAME</u>	<u>SD_Rank</u>	<u>Forest Sensitive</u>	<u>Comments</u>
<i>Adoxa moschatellina</i>	G5SU		
<i>Arnica lonchophylla</i>	no longer tracked	x	
<i>Asplenium trichomanes</i>	G5S2		
<i>Astragalus americanus</i>	G5S3		1924 collection in general area of BEW
<i>Botrychium minganense</i>	not ranked (new to SD)	x?	new record, 2000
<i>Botrychium multifidum</i>	G5S2		
<i>Calypso bulbosa</i>	G5S3		1927 collection from BEW
<i>Carex bella</i>	G5S1		
<i>Carex brunnescens</i>	G5S2		1975, 1987 collections from BEW
<i>Carex canescens</i>	G5S2		
<i>Carex intumescens</i>	no longer tracked	x	
<i>Carex leptalea</i>	G5S2		
<i>Carex pedunculata</i>	no longer tracked	x	
<i>Corallorrhiza trifida</i>	G5SU		
<i>Cynoglossum boreale</i>	G4QS1		
<i>Eriophorum polystachion</i>	G5S3		1924 collection in general area of BEW
<i>Lomatium nuttallii</i>	G3SH		1926 collection in general area of BEW
<i>Oxyria digyna</i>	G5SU		
<i>Phleum alpinum</i>	G5SU		
<i>Platanthera orbiculata</i>	G5?S1	x	
<i>Poa rupicola</i>	G5T3T4SU		1980 collection from BEW
<i>Saxifraga cernua</i>	G4SU		
<i>Scirpus cyperinus</i>	no longer tracked	x	
<i>Sedum integrifolium</i>	not ranked (new to SD)	x?	new record, 2000
<i>Solidago sparsiflora</i>	G?SU		
<i>Spiraea alba</i>	G5S3		1929 collection in general area of BEW
<i>Viola selkirkii</i>	G5?S1	x	

None of the rare plants of the high granite region are Federally-listed (Threatened, Endangered). Some are designated Sensitive on Black Hills National Forest. Sensitive species are rare, threatened and/or declining, and the Forest must ensure that management does not negatively impact these species. This protection applies only to Federal lands, not to those managed by the State of South Dakota. The other species of concern are tracked by the State of South Dakota (SD Natural Heritage Program 1998; see Appendix A for state ranks and criteria).

Little legal protection is available for rare plants in the Needles, part of Custer State Park. One departmental regulation addresses plant protection on lands managed by the Department of Game, Fish and Parks.

41:03:01:05. Destruction or removal of natural features prohibited --  
Exception. A person may not destroy, damage, or remove a living or dead tree, shrub, or vegetation; disturb any earth, rocks, minerals, natural formations, or historic relics; or destroy, damage, or remove any antlers, skulls or other parts of animal carcass located on lands owned or leased by the department without written permission from the secretary or a designated agent. However, a person participating in religious activities in Bear Butte State Park may use grasses and forbs taken from the park. SL 1975, ch 16 § 1; 6 SDR 96, effective Apr 1, 1980; 10 SDR 76, 10 SDR 102, effective Jul 1, 1984; 23 SDR 142, effective Mar 17, 1997

Application of this rule generally depends on the individual park or land manager (Dept. GFP personal communication). In Custer State Park, recreational uses are not impeded by this regulation.

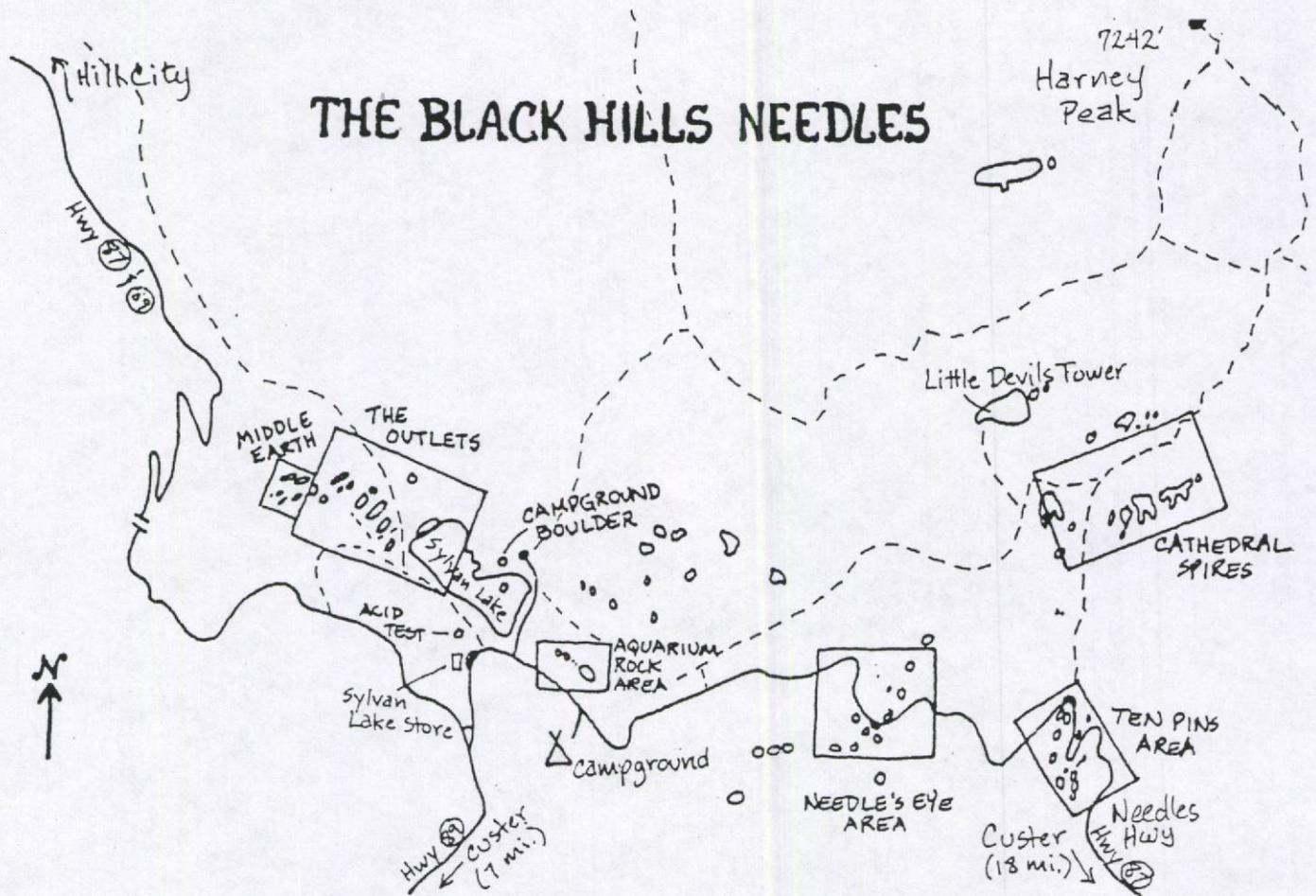
## Methods

The more popular climbing areas in the Needles were surveyed: Needles Eye, Aquarium Rock / Photographer's Peak, Outlets, Middle Earth, north of Little Devils Tower parking area, Ten Pins, Cathedral Spires, Picket Fence and Little Devils Tower (Figure 3). Each was surveyed early and mid-season, with the exception of Aquarium Rock / Photographer's Peak and the Needles Eye, where early survey showed no potential rare plant habitat. Surveys focussed on cool, moist, shaded habitat likely to support rare plants.

Plant locations were mapped on USGS 7.5' topographic maps. Data were collected using forms similar to the rare plant monitoring forms of Black Hills National Forest, modified to include information on current and potential climbing activity (see completed forms in Appendix B). Forms and maps have been sent to the SD Natural Heritage Program for database entry. All populations found were sufficiently large that documentation specimens could be collected. These were deposited in the Rocky Mountain Herbarium, University of Wyoming, Laramie.

Recommendations were developed for reducing climber impact on rare species and habitat. Volunteers (local climbers) completed several remediation projects in 2001, after consultation with Park staff.

Figure 3. Popular climbing areas in the Needles (from McGee and Woman 1996).



## Results

### *Plant Species of Concern*

Seven plant species of concern were found in the climbing areas surveyed (Table 2).

Northern arnica (*Arnica lonchophylla*) and the great-spurred violet (*Viola selkirkii*) are listed Sensitive on Black Hills National Forest. However the northern arnica is now known to be sufficiently common and secure in the area to justify removal from the Sensitive list (e.g. Marriott 2001b). It is no longer tracked by the South Dakota Natural Heritage Program (SD Natural Heritage Program 1998). The great-spurred violet remains quite restricted in overall distribution. All recently-documented populations in the Black Hills occur within less than eight square miles in the high granite region. Its habitat is sensitive to disturbance due to fragile coarse granitic soils.

The other rare species found are tracked by the South Dakota Natural Heritage Program (1998). Both musk-root (*Adoxa moschatellina*) and the maidenhair spleenwort (*Asplenium trichomanes*) are occasional within the high granite region, but are quite restricted in overall distribution in the Black Hills and surrounding area. Mountain sorrel (*Oxyria digyna*) and nodding saxifrage (*Saxifraga cernua*) are rare, found in the Black Hills only at several locations at highest elevations.

Six of the rare species found occupy the same type of habitat - cool moist shaded sites on coarse granitic soil, such as at the base of high north-facing granite walls, in the bottom of narrow shaded gullies in large rock outcrops and in narrow well-shaded drainage bottoms. Only the maidenhair spleenwort grows on the rock itself, in cracks and crevices that are usually well-shaded and occasionally moist from runoff.

These rare plants can be locally abundant. For example, several populations of the great-spurred violet and musk-root were estimated to include at least several thousand plants. Relatively large populations (300-500 individuals) of mountain sorrel and the elegant sedge were found also. The northern arnica, nodding saxifrage and maidenhair spleenwort occur as smaller populations, often consisting of widely scattered small patches of plants.

Detailed information on location, habitat and population size for species of concern is included in the survey forms in Appendix B.

Table 2. Rare plants found in climbing areas.

Species	Status	Climbing Areas
<i>Arnica lonchophylla</i> , northern arnica	Forest Sensitive, recommended for delisting	Little Devils Tower
<i>Viola selkirkii</i> , great-spurred violet	Forest Sensitive	Middle Earth, Outlets, Ten Pins, north of Little Devils Tower parking area, Cathedral Spires, Little Devils Tower, Picket Fence
<i>Adoxa moschatellina</i> , musk-root	State-tracked, SD	Middle Earth, Outlets, north of Little Devils Tower parking area, Cathedral Spires, Little Devils Tower, Picket Fence
<i>Asplenium trichomanes</i> , maidenhair spleenwort	State-tracked, SD	Cathedral Spires
<i>Carex bella</i> , elegant sedge	State-tracked, SD	Middle Earth, Little Devils Tower, Picket Fence
<i>Oxyria digyna</i> , mountain sorrel	State-tracked, SD	Little Devils Tower
<i>Saxifraga cernua</i> , nodding saxifrage	State-tracked, SD	Little Devils Tower

#### *Existing and Potential Conflicts with Climbing*

Of the species of concern found in this survey, only the maidenhair spleenwort grows on the rock itself. Conflicts with climbing appear to be minimal or non-existent. Much of the climbing in the Needles is face-climbing; crack routes are neither common nor popular. Where the spleenwort was found in this survey, the cracks were not climbable.

The other six species of concern occur at the bases of high north-facing granite walls, in the bottoms of narrow shaded gullies in large rock outcrops and in narrow well-shaded drainage bottoms. Trampling is an obvious threat, and from several sources, not just rock climbers. Hikers and sight-seers have removed most or all of the vegetation around the bases of rock outcrops in some areas, such as the Needles Eye scenic stop on the Needles Highway, and along the Sunday Gulch Trail near Sylvan Lake. Mountain goats have established trails and barren scooped out resting

spots in rare plant habitat in the Cathedral Spires and around Harney Peak (Marriott, personal observations).

Rock climbing in the Needles conflicts with rare plants where approach routes and staging areas are located in rare plant habitat. Approach routes are routes used to get to the base of climbs, and generally involve some travel off designated roads and trails. A path or multiple paths to the base of a climb may develop with enough use. Staging areas are "typically at the base of the cliff, where climbers prepare to climb" (Access Fund 2001). Little vegetation remains in some staging areas where there are easily accessible popular climbs, for example in the Outlets near Sylvan Lake.

Where species of concern were found, areas were assessed for climbing potential, and for existing and potential threats to rare plants. Results and recommendations are discussed by climbing area in **Discussion and Recommendations** below.

### *Pilot Projects*

Two trail stabilization projects were undertaken by volunteers, after consultation with Park staff. An approach trail through great-spurred violet and musk-root populations in the Outlets was stabilized. In the Ten Pins area, in a gully with great-spurred violets and multiple approach trails, a single trail was defined and others covered with debris. Signs will be installed in 2002.

### **Discussion and Recommendations**

In this survey of climbing areas in Custer State Park, seven rare plant species were found. Two are designated Sensitive for Black Hills National Forest, five others are tracked by the State of South Dakota, and none are Federally listed (Threatened, Endangered). Thus within Custer State Park, there is little legal protection available for these plants. Trampling is the greatest threat currently, and in some areas, hikers, rock climbers and mountain goats have reduced or eliminated rare plant populations.

One of the goals of this project was to identify solutions that could be implemented by climbers to reduce impacts on rare plants. In the following sections, conflicts and possible solutions are discussed for each of the popular climbing areas in the Needles. The first section includes general recommendations and strategies.

## *General Recommendations and Strategies*

### Education Outreach

Both land management agencies and climbing organizations have endorsed education outreach as the most desirable tool for climbing management (Access Fund 2001). Effective programs can reduce the need for regulation in addition to achieving goals. In situations where no regulations are available, education may be the only alternative to bring about change. Outreach also minimizes problems caused by misinformation, misinterpretation and alienation.

The Access Fund has developed guidelines for education outreach (Access Fund 2001). Materials should be developed with all interests involved (Custer State Park, conservation biologists, the climbing community), and partnerships should be emphasized. The education message needs to be identified and clearly stated, and materials effectively distributed.

The education message for minimizing climber impact on rare plants in the Needles is relatively straightforward. Plants of concern occur in a specific habitat type affected by two types of climbing use: approach routes and staging areas. Educational materials should ask climbers to stay on trails and rock, and off vegetation. At staging areas, climbers should be encouraged to minimize trampling of vegetation by staying on rock and existing bare ground. Information should describe habitat of concern rather than individual plant species. These species are recognizable only at certain times in the growing season, but are vulnerable over a longer period. In addition, intact habitat is important to allow for population shifts.

There are several possible avenues for effective outreach. Informational brochures could be posted and distributed at Custer State Park, in local climbing stores and by climbing guide services. The Black Hills Climbing Coalition maintains a web site where information could be posted. The new climbing guidebook being prepared for the area would be an excellent source for educational material, and the author is interested in including such information (Larry Shaffer, pers. comm.).

Signs can be in specific areas, but it is important not to overdo signing and detract from visitor experience. It also is important to keep signs out of the view of non-climber visitors, to avoid generating additional traffic. Signs have been purchased, and will be installed in several of the areas surveyed in 2001. These signs ask climbers to stay on trails ("Rare plant habitat, please stay on trail"), and include logos of the Access Fund and Custer State Park. Signs will be placed where they are clearly visible to approaching climbers, but not visible from roads and hiking trails.

Signs at trailheads are not useful in the Needles, as climbing areas often have multiple approach routes, and even the trailheads are not restricted to one spot.

### Establishing Approach Trails

In several areas where rare plants were found, there is enough climber use that approach trails have become established. Often these trails are poor and

unstable; with time, they become so rough that climbers walk elsewhere, making more paths. In these situations, a single trail can be improved and stabilized, reducing overall impact.

Trails and signing can often be done by volunteers, overseen by Park staff. Climbers and climbing organizations are usually willing to provide assistance in climbing-related projects. The Black Hills Climbing Coalition and individual climbers have contributed many hours of volunteer work in the past.

### Monitoring

Monitoring in the Needles should focus on expansion of climbing. If areas with rare plants become developed and popular for climbing, steps should be taken early to minimize conflicts. This type of monitoring is simple, involving quick resurvey every year or two, but establishing a formal program may be difficult. Success would be most likely if the Park set up and oversaw such a program, perhaps implemented by volunteers.

### *Conflicts and Solutions by Climbing Area*

Areas surveyed ranged widely in terms of climbing / rare plants conflicts. Several have been so severely impacted by recreational use that there is little rare plant habitat remaining. Other areas see only occasional use, and the vegetation shows little evidence of disturbance. Several areas with rare plant populations are in good condition, but are receiving enough climbing use now that conditions could deteriorate without remedial action.

Rare plants found and management needs for each climbing area are shown in Table 3. Conflicts and possible solutions are discussed below by climbing area. Detailed maps showing locations of species of concern, climbing use and potential trail projects are included in Appendix B.

Table 3. Rare plants and management needs by climbing area. For more detail, see text.

Climbing Area	Rare Plants Found	Management Needs
Needles Eye Area	none	none
Aquarium Rock /Photographer's Peak	none	none
Outlets	great-spurred violet, musk-root	stabilize one approach trail (completed), install sign; monitor for climbing expansion into rare plant habitat
Middle Earth	great-spurred violet, musk-root, elegant sedge	establish one approach trail after consultation with local climbers, install sign; monitor for climbing expansion into rare plant habitat
North of Little Devils Tower Parking Area	great-spurred violet, musk-root	none (climbing potential low to none)
Ten Pins	great-spurred violet	stabilize one approach trail (in progress), install sign; add sign to existing approach trail
Cathedral Spires	great-spurred violet, musk-root, maidenhair spleenwort	no conflicts with rare plants currently; monitor for climbing expansion into rare plant habitat
Picket Fence	great-spurred violet, musk-root, elegant sedge	use currently light; monitor for increased use and establish approach trail(s) with sign if needed
Little Devils Tower	great-spurred violet, musk-root, elegant sedge, northern arnica, mountain sorrel, nodding saxifrage	use currently light; monitor for increased use and establish approach trail(s) with sign if needed

### Needles Eye Area

The Needles Eye scenic area on the Needles Highway was the most impacted by recreational use of any area surveyed. Climbers contribute only a small proportion of the damage. Rock outcrops and gullies are heavily used by sightseers. Very little vegetation remains.

### Aquarium Rock/Photographer's Peak

Aquarium Rock and Photographer's Peak are located along the Needles Highway immediately east of Sylvan Lake. The bases of the high rock walls are largely bare of vegetation, due to climber and hiker use. No rare plant populations were found.

### Outlets

The Outlets are the very large rock fins, ridges and pinnacles immediately northwest of Sylvan Lake. This is a popular climbing area, due to easy access and an abundance of established routes. Parts of the Outlets have been heavily impacted by both climbers and hikers, and little vegetation is left in the gully bottoms. Other gullies still support excellent rare plant habitat, and relatively large populations of the great-spurred violet and musk-root were found. One of these gullies sees some climbing use, and a poor eroded path has developed. It has become so eroded that alternate paths are starting to be used. In 2000 and 2001, volunteers stabilized this trail, and a sign will be installed in the spring of 2002. Climbing in the Outlets should be monitored, and if use expands into other gullies with rare plants, paths and signs should be added.

### Middle Earth

Middle Earth includes the set of rock fins, ridges and pinnacles northwest of the Outlets. Like the Outlets, Middle Earth is popular with climbers, due to easy access and an abundance of established routes. Some areas have been heavily impacted with little vegetation left at the base of climbs. However, much of Middle Earth is made up of gullies with rare plant habitat in excellent condition. Large populations of the great-spurred violet, musk-root and the elegant sedge occur in this area. One site was found where a faint approach trail crosses populations of the great-spurred violet and elegant sedge. In 2002, the author will consult with local climbers on where and how to establish an approach route and install a sign. Climbing in Middle Earth should be monitored, as there is potential for expansion into additional rare plant habitat.

### North of Little Devils Tower Parking Area

Little Devils Tower parking area is a trailhead on the Needles Highway about a mile east of Sylvan Lake. North of the trailhead are large rock outcrops occasionally used by climbers, but this area is not currently popular. Populations of the great-spurred violet and musk-root were found in gullies on the north side of this collection of outcrops, but these gullies have low potential for climbing.

### Ten Pins

The Ten Pins are a collection of spires along the Needles Highway about two miles east of Sylvan Lake. This area is popular with climbers as well as with sightseers that like to park and scramble around the rocks. However the vegetation is not nearly as damaged as in the Needles Eye area. If parking is improved and expanded, this situation will change. The great-spurred violet was found in three gullies, two of which provide access to climbs. In one, the climber-established trail is in good condition, and only a sign will be added. In the second, there are multiple approach trails and some trampling of violet habitat. A single approach trail is being established, and a sign will be installed.

### Cathedral Spires

The Cathedral Spires are a collection of large rock fins and pinnacles about a mile north of the Needles Highway about two miles east of Sylvan Lake. They are accessed by a hiking trail. Climber use is not heavy, but some routes are popular. Several small clumps of maidenhair spleenwort were found in the Cathedral Spires, but the cracks where it was growing were not climbable. The great-spurred violet and musk-root were found in several of the gullies between the large rock fins. These gullies are wide enough that these rare plants are restricted to the bases of the rock walls where there is more shade and moisture. The single obvious approach route in this area is located in the gully between Spires Three and Four, and leads to the popular route up Spire Four. This approach route is in the middle of the gully bottom away from rare plant habitat, and appears to be stable and in good condition. Climbing in this area should be monitored, as there is potential for expansion into additional rare plant habitat.

### Picket Fence

The Picket Fence is on the next ridge north of the Cathedral Spires, and also is composed of a series of rock fins and pinnacles, though smaller than those of the Spires. It is accessible by hiking trail (approximately 1.5 miles). Climber use is currently light, but there is evidence of light trampling in some of the gullies on the north side of the ridge; if these are approach routes, they are poorly defined and ambiguous. Hikers have had some impact on gullies on the east end, which are

close to Trail #4 to Harney Peak. Large populations of the great-spurred violet, musk-root and elegant sedge were found in several of the gullies, mainly on the north side of the ridge. The Picket Fence should be monitored for increased climbing use. If it becomes necessary to define and stabilize approach paths, local climbers should be consulted as to the best route(s).

#### Little Devils Tower

Little Devils Tower is a large rock massif located about 1.5 air miles east-northeast of Sylvan Lake. Its summit is accessible by trail (approximately one mile). Some climbing routes have been established on the high steep walls of the north side, but these currently see little use. The north side of Little Devils Tower includes excellent rare plant habitat. Six species of concern were found, including large populations of the great-spurred violet, mountain sorrel and musk-root. Smaller populations of northern arnica, elegant sedge and nodding saxifrage occur in the same area. This rock mass is large and complex, and there remains much unsurveyed potential habitat for these species. The potential for increased climber use on Little Devils Tower appears to be low, due to relatively difficult access, but the area should be should be monitored, as this is an important rare plant site.

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## Appendix A.

### Natural Heritage Ranks, Global/State Rank Definition (applied rangewide for global rank and statewide for state rank)

from Rare, threatened, and endangered plants species tracked by the South Dakota Natural Heritage Program. South Dakota Department Of Game, Fish And Parks, January 29, 1998.

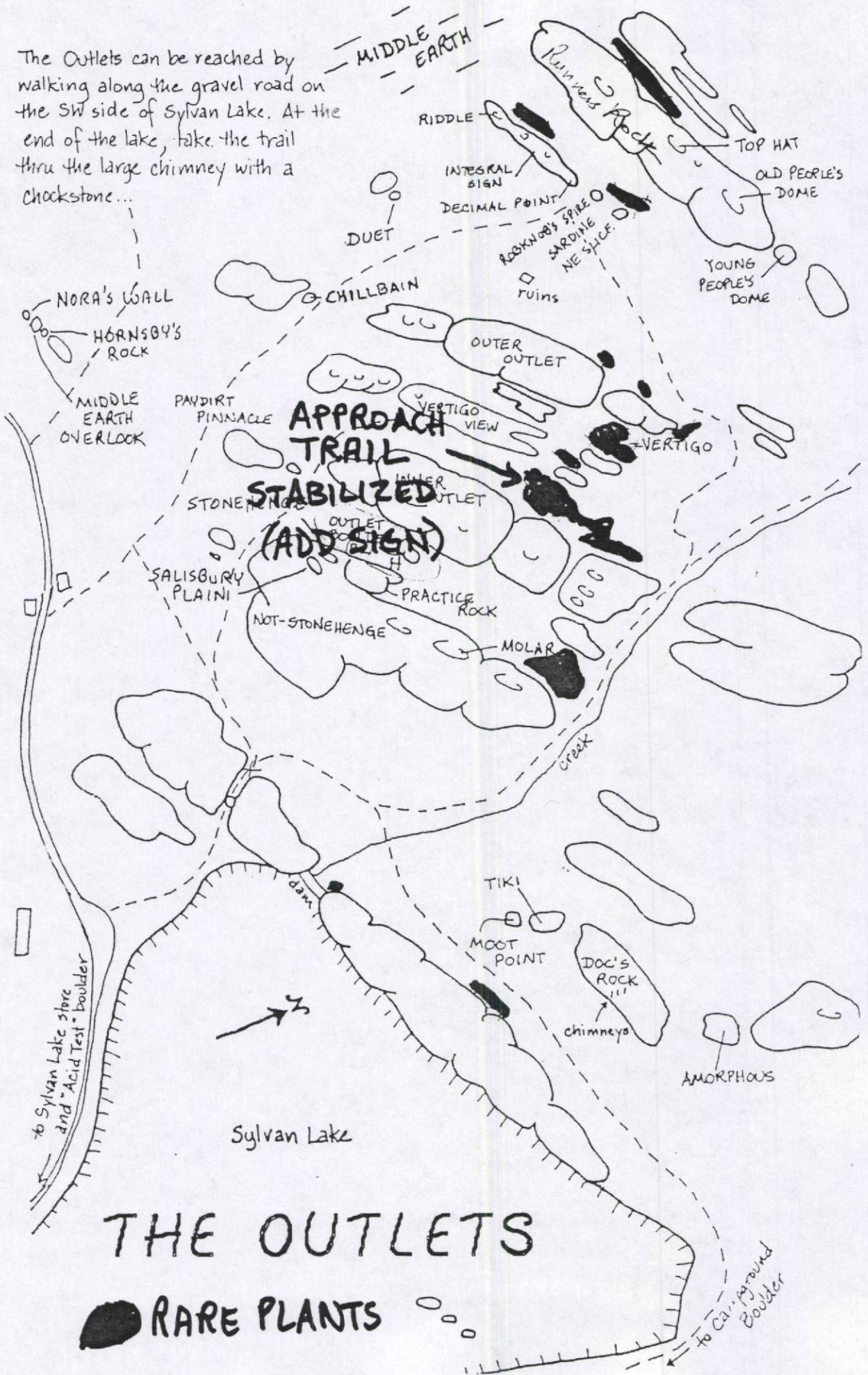
- G1 S1 Critically imperiled because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
- G2 S2 Imperiled because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
- G3 S3 Either very rare and local throughout its range, or found locally (even abundantly at some of its locations) in a restricted range, or vulnerable to extinction throughout its range because of other factors; in the range of 21 of 100 occurrences.
- G4 S4 Apparently secure, though it may be quite rare in parts of its range, especially at the periphery. Cause for long term concern.
- G5 S5 Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery.
- GU SU Possibly in peril, but status uncertain, more information needed.
- GH SH Historically known, may be rediscovered.
- GX SX Believed extinct, historical records only.
- G? S? Not yet ranked
- \_? \_? Inexact rank
- \_T Rank of subspecies or variety
- \_Q Taxonomic status is questionable, rank may change with taxonomy
- SZ No definable occurrences for conservation purposes, usually assigned to migrants
- SP Potential exists for occurrence in the state, but no occurrences
- SR Element reported for the state but no persuasive documentation
- SA Accidental or casual

Appendix B. Plant survey forms and maps.

Maps of climbing areas are from *Selected Free Climbs of the Black Hills Needles*  
by Dingus McGee and the Last Pioneer Woman (1996).

Outlets

The Outlets can be reached by walking along the gravel road on the SW side of Sylvan Lake. At the end of the lake, take the trail thru the large chimney with a chockstone...



# THE OUTLETS

● RARE PLANTS

RARE PLANT SURVEY FORM  
and  
Assessment of Climber Impact

for the Access Fund and the  
South Dakota Dept. of Game, Fish & Parks

2001

Species Found/Monitored: Vida selkirkii Date 06/05/2001  
 Geographic location name: Outlets & Middle Earth ~~climbing areas~~ climbing areas  
 Surveyors: Hollis Marriot  
 Quad Name: Custer 7.5' State SD County Custer  
 Survey Intensity: moderately thorough Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 25 R SE S 30 , 1/4 of NW 1/4 of SE 1/4 \*\* 8 1/2" X 11" topo map must  
 T \_\_\_\_\_ R \_\_\_\_\_ S 30 , SW 1/4 of SW 1/4 of NE 1/4 be attached  
 T \_\_\_\_\_ R \_\_\_\_\_ S 30 , \_\_\_\_\_ 1/4 of SE 1/4 of NW 1/4  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain   
 GPS Reading? Yes  No  If Yes, Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Type of GPS data collected (check one): Point  Line   
 Is this a: New Location  Subsequent visit  Uncertain  (expansion of small site in  
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.) in 2000) Wild Earth survey

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps:

Black Hills, Custer State Park, large rock outcrops immediately NW of Sylvan Lake.

Access via Sylvan Lake Trail from picnic area or from store. East side of area can be approached by scrambling up from the Sunday Gulch trail that goes downstream from the dam. Several climber access trails and old roads and trails cut through the area - see maps.

Gullies vary in terms of ease of access - some require scrambling.

Source of lead: topo maps (appropriate habitat); Cheryl Mauger - local climber + Wilderness Ranger  
 Other individuals knowledgeable about the site and/or population: \_\_\_\_\_

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards etc.):

Huge rock fins, and pinnacles & spires of all sizes; vegetation dominated by Picea glauca, Betula papyrifera, Pinus ponderosa. Creeks drain the area - Sunday Gulch below Sylvan Lake Dam; "Baranguin River" drains from Middle Earth flowing northerly (dry later in season). Plants of interest grow in the bottoms of gullies between fins - with walls to 150' in height... well shaded; also on the N sides of tall walls... also well shaded.

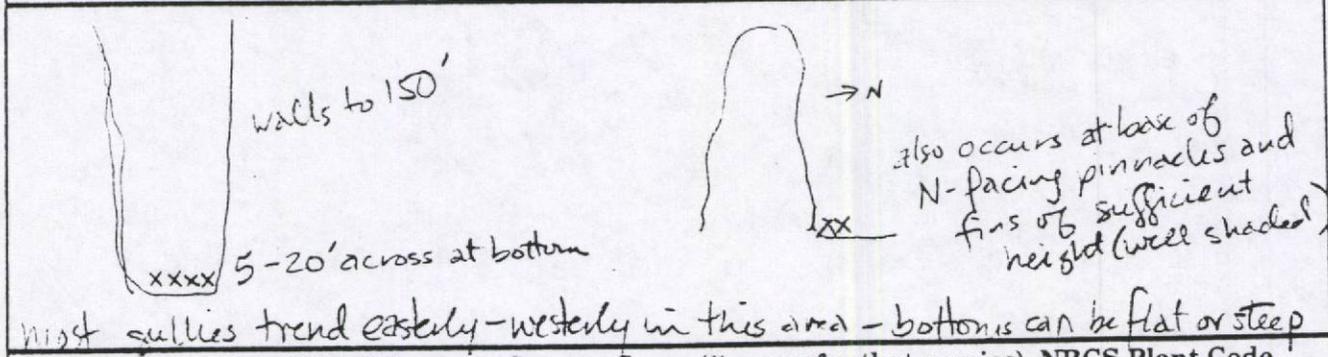
→ This form is modified from the Black Hills National Forest Survey Form (4/2001).

### HABITAT

Light	Topographic Position	Moisture	Slope %	Slope Shape
Open <input type="checkbox"/>	Crest <input type="checkbox"/>	Inundated (Hydrated) <input type="checkbox"/>	0 <input type="checkbox"/>	Flat/Straight <input checked="" type="checkbox"/>
Partial <input checked="" type="checkbox"/>	Upper Slope <input type="checkbox"/>	Intermittently Flooded <input type="checkbox"/>	0 - 10 <input checked="" type="checkbox"/>	Undulating <input type="checkbox"/>
Shade <input checked="" type="checkbox"/>	Mid-Slope <input type="checkbox"/>	Saturated (Wet-Mesic) <input type="checkbox"/>	11 - 20 <input checked="" type="checkbox"/>	Convex <input checked="" type="checkbox"/>
	Lower Slope <input type="checkbox"/>	Moist (Mesic) <input checked="" type="checkbox"/>	21 - 30 <input checked="" type="checkbox"/>	Concave <input type="checkbox"/>
	Bottom <input checked="" type="checkbox"/>	Dry-Mesic <input type="checkbox"/>	31 - 40 <input type="checkbox"/>	
	Other - explain in notes <input type="checkbox"/>	Dry (Xeric) <input type="checkbox"/>	41 - 50 <input type="checkbox"/>	
			51+ <input type="checkbox"/>	
			Actual <input type="checkbox"/>	

Elevation: 6000 to 6200 in ft      Drainage Aspect EWN "Micro Aspect" varies

Cross section of topography (habitat) - include scale, direction, element position



Associated species: Scientific name, Canopy Cover (% cover for that species), NRCS Plant Code

Name	CC	Code	Name	CC	Code	Name	CC	Code
<u>Picea glauca</u>	—	—	—	—	—	—	—	—
<u>Fragaria virginiana</u>	—	—	—	—	—	—	—	—
<u>Adoxa moschatellina</u>	—	—	—	—	—	—	—	—
<u>Aconitum columbianum</u>	—	—	—	—	—	—	—	—
<u>Ribes sp.</u>	—	—	—	—	—	—	—	—
<u>moss</u>	—	—	—	—	—	—	—	—

many others but these are the ones most common only and typically forested

Life Form	% Cover
Tree	—
Tree and Shrub	—
Shrub	—
Forbs	—
Grasses	—
Ferns/Fern Allies	—
Mosses/Lichens	—
Bare Ground	—

Plant Association/Vegetation Type: \_\_\_\_\_

Soil/Geologic Formation: Harney Peak granite - coarse, poor soil

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

Estimated # of acre surveyed of the potential habitat: 75%

### BIOLOGY

Phenology	#		Population	Population area	
		%			
In leaf	<input checked="" type="checkbox"/>		1-10	1m <sup>2</sup>	
In bud	<input checked="" type="checkbox"/>		11-50	1-5m <sup>2</sup>	
In flower	<input checked="" type="checkbox"/>		51-100	5-10m <sup>2</sup>	
Immature fruit			101-500	10-50m <sup>2</sup>	
Mature fruit			501-1000	50-100m <sup>2</sup>	
Seed dispersing			1001-10000	2-5 acres	<input checked="" type="checkbox"/>
Dormant			Actual #	Actual area if known	

Comments on above: many in flower - seems to be peak season

area difficult to estimate - linear intermittent patches

Clarify what is being counted as an individual: Number of clumps?, number of flowering stems?, other?

above-ground individuals; some may be connected underground, but not exclusively

Type of reproduction: Sexual  Asexual  Both  Uncertain - (explain in notes)

Evidence of disease, predation, and/or disturbance: \_\_\_\_\_

hiking trails, old roads?, climbing access + staging areas; gullies heavily used by hikers and climbers have little vegetation

Identification problems - give examples of similar species at same site: \_\_\_\_\_

*Viola canadensis* abundant in some gullies; *V. adunca* on drier sites

List noxious weeds (by scientific name), give abundance: \_\_\_\_\_

none in most gullies surveyed

Photograph Information

Plant? Y N

Habitat? Y N

Slides      Prints      Digital

Taken by: \_\_\_\_\_

Repository: \_\_\_\_\_

Collection Information

Specimen Collected? Y  N

Plant Part(s) collected: \_\_\_\_\_

Collection #: \_\_\_\_\_

Repository: \_\_\_\_\_

Current use of site and surrounding land use (check all that apply)

Logging   
Mining   
Other \_\_\_\_\_

Grazing   
Agriculture

Recreation  
 Wilderness  
 Residential

Multiple use  
 Private Property  
 Commercial

Discuss impacts from land use; existing/potential climbing use; existing/potential conflicts; management needs.

Some parts of area surveyed are heavily used by hikers and/or climbers. In these places, there is very little vegetation aside from trees - bare ground.

There are some large violet patches in gullies not used for climbing. In some not so popular areas there is vegetation and violets, but there are social trails of various degrees of development. In some of these, it would be beneficial to stabilize trails and install signs.

Based on violet populations, trails and signs should be used:

1) Gully between Vertigo View and Inner Outlet dropping E down to Sunday Gulch; this is the access for Sex Never did this to my Hands; *Viola sibirica* grows along the eroded access trail and continues down to Sunday Gulch (very large stand); access below Sex Crack should be discouraged (by rd)

2) in Middle Earth, the gully between Near & Far Downs has a large population that would be easily trampled; use currently is light - trail + sign would prevent future problems

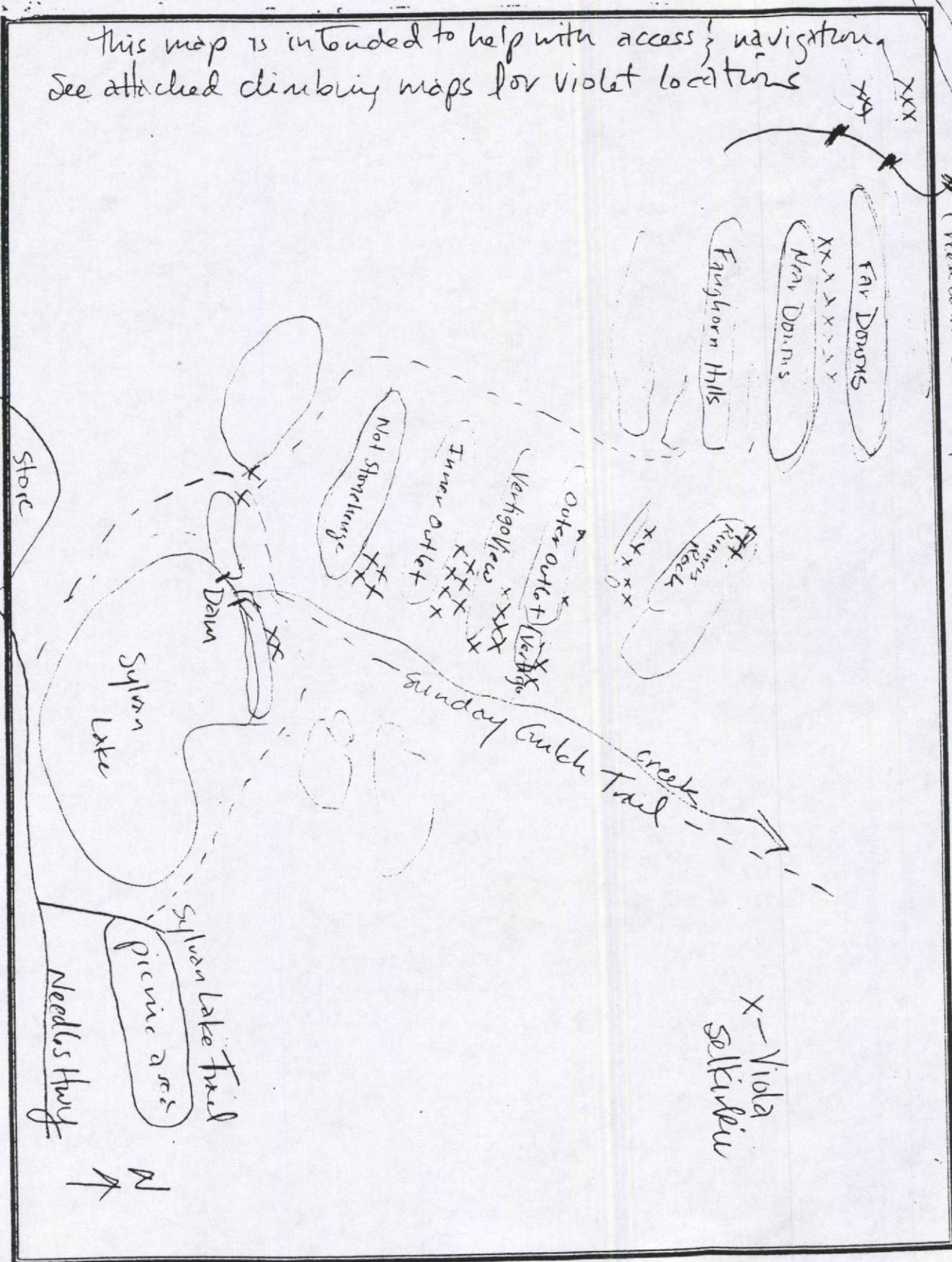
3) gully between Vertigo & Vertigo View - smaller patch, less use. This won't address all stands but rather 2 of the largest with potential for damage. General education needed also

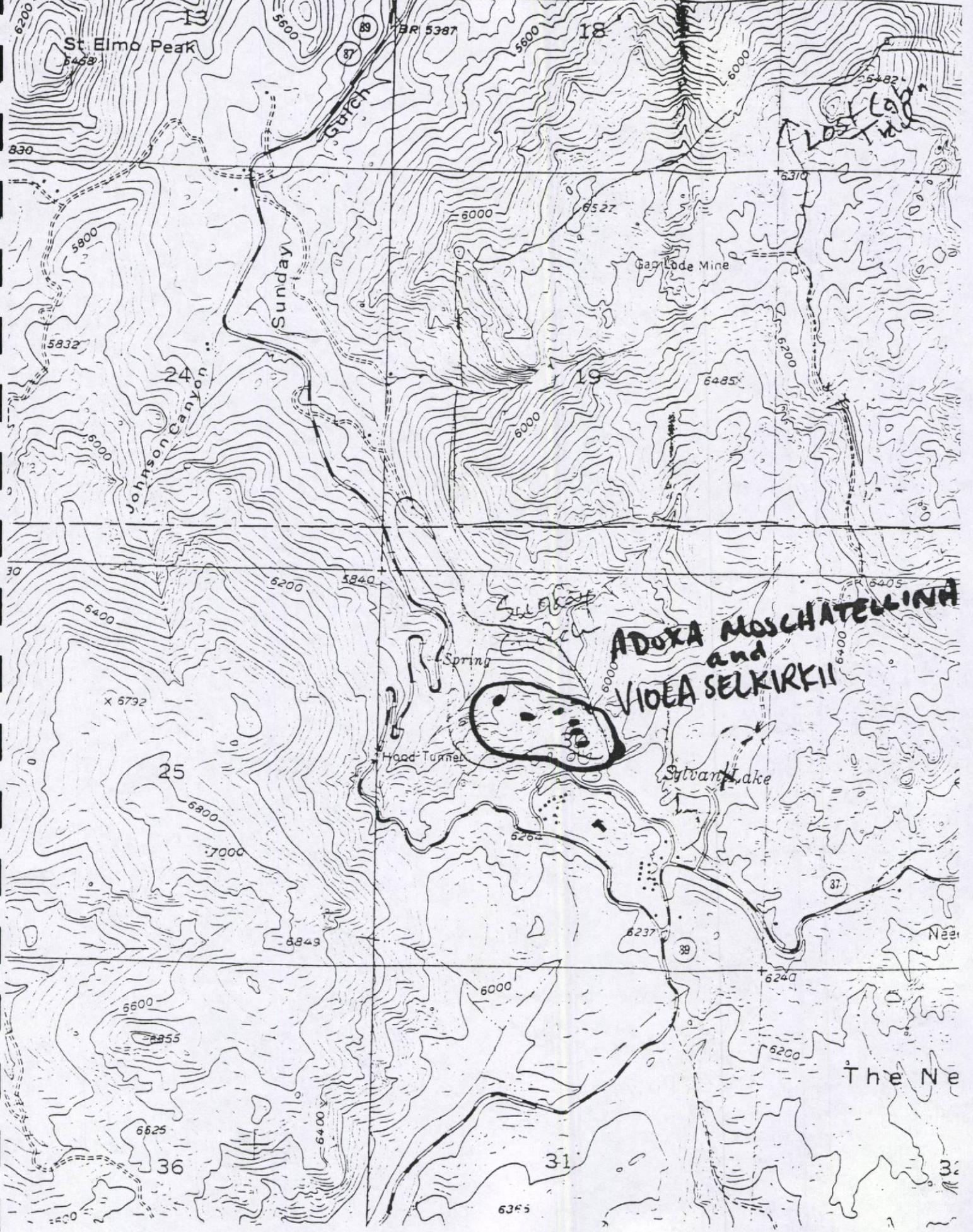
lower priority



Population Map: The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.

This map is intended to help with access & navigation.  
See attached climbing maps for violet locations





South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

Date of Survey 5 June 2001 Observers J. Marriott

Species Name Adoxa moschatellina

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer 7.5' County Custer

Township 2S Range 5E Section 30

1/4 Sec NW4SE4; SW4SW4NE4; SE4NW4

Directions to site Black Hill in Custer State Park, large rock outcrops immediately NW of Sylvan Lake - access via upper part of Sunday Gulch Trail

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g., National Park)

Biology Estimated # of individuals 500-1000; probably more

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type with mosses and *Viola celtica* in wet, rocky bottom

Associated Species \_\_\_\_\_

Aspect (N, S, NW, etc) various % Slope 2-30% Light exposure \_\_\_\_\_  
Soil Moisture WET Shaded

Soil/substrate granite - coarse soil

Elevation 6000-6200 Size \_\_\_\_\_ (acres)

Land use hiking, rock climbing - some areas have been heavily used with lots of vegetation remaining

Documentation Specimen (Collector/coll. #) \_\_\_\_\_

Photograph Taken ? \_\_\_\_\_ Identification confirmed ? Marriott

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)

→ not all potential habitat surveyed

Middle Earth

# RARE PLANTS

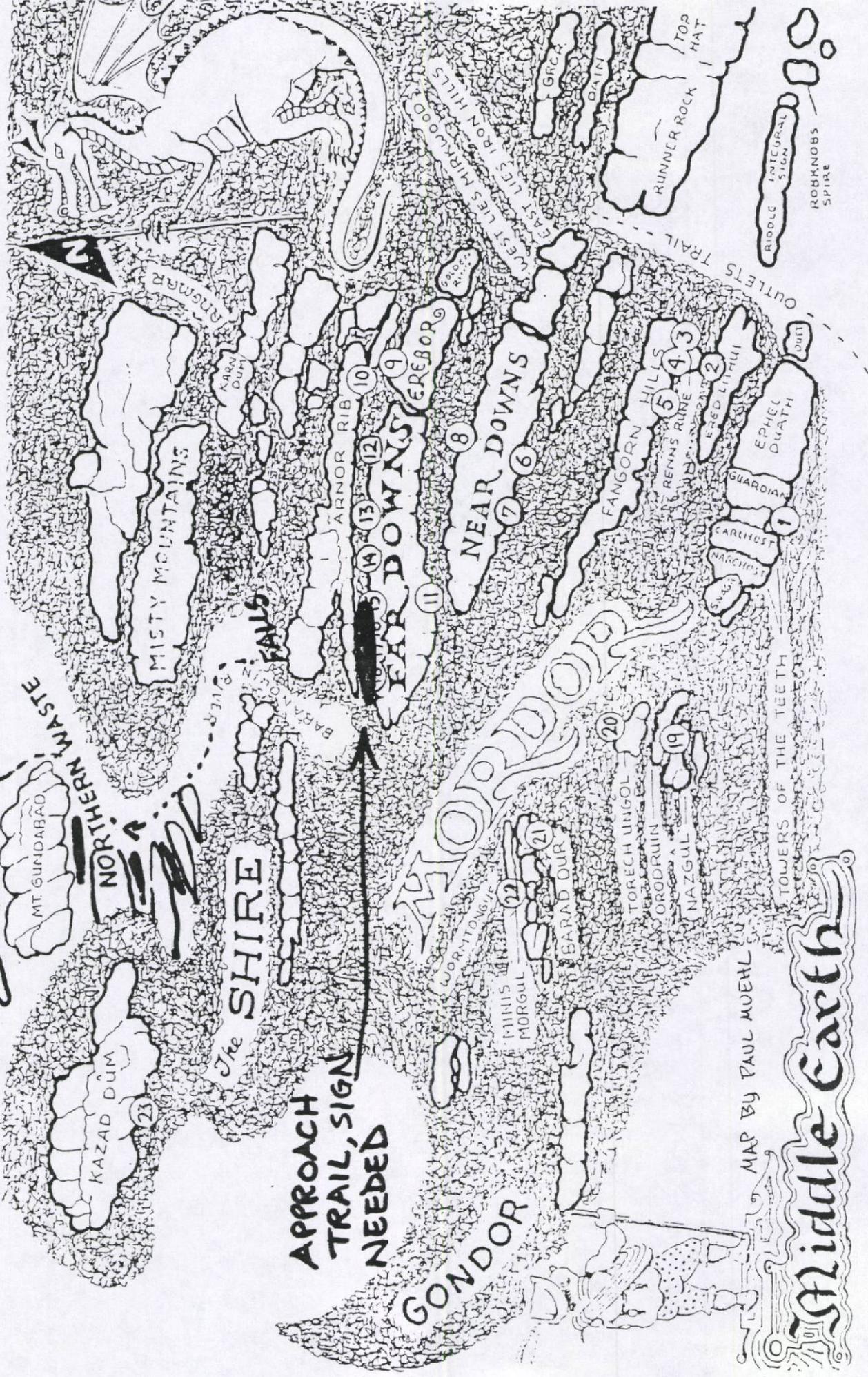


Drainage →

large rock visible from Hwy 87/89

Wetland

3 waterfalls



APPROACH TRAIL, SIGN NEEDED

MAP BY PAUL MUEHL

# Middle Earth

RARE PLANT SURVEY FORM  
and  
Assessment of Climber Impact

for the Access Fund and the  
South Dakota Dept. of Game, Fish & Parks

2001

Species Found/Monitored: Vida solkirkii Date 06/05/2001  
 Geographic location name: Outlets of Middle Earth ~~near~~ climbing areas  
 Surveyors: Hollis Marriot  
 Quad Name: Custer 7.5' State SD County Custer  
 Survey Intensity: moderately thorough Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 25 R SE S 30 , \_\_\_\_\_ 1/4 of NW 1/4 of SE 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S 30 , SW 1/4 of SW 1/4 of NE 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S 30 , \_\_\_\_\_ 1/4 of SE 1/4 of NW 1/4  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain   
 GPS Reading? Yes  No  If Yes, Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Type of GPS data collected (check one): Point  Line   
 Is this a: New Location  Subsequent visit  Uncertain  (expansion of small site in  
 Middle Earth surveyed  
 in 2000)  
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.)

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps:

Black Hills, Custer State Park, large rock outcrops immediately NW of Sylvan Lake.

Access via Sylvan Lake Trail from picnic area or from store. East side of area can be approached by scrambling up from the Sunday Gulch trail that goes downstream from the dam. Several climber access trails and old roads and trails cut through the area - see maps.

Gullies vary in terms of ease of access - some require scrambling.

Source of lead: topo maps (appropriate habitat); Cheryl Mager - local climber + Wilderness Ranger  
 Other individuals knowledgeable about the site and/or population. \_\_\_\_\_

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards etc.):

Huge rock fins, and pinnacles + spires of all sizes; vegetation dominated by Picea glauca, Betula papyrifera, Pinus ponderosa. Creeks drain the area - Sunday Gulch below Sylvan Lake Dam; "Baranquin River" drains from Middle Earth flowing northerly (dry later in season). Plants of interest grow in the bottoms of gullies between fins - with walls to 150' in height... well shaded; also on the N sides of tall walls... also well shaded.

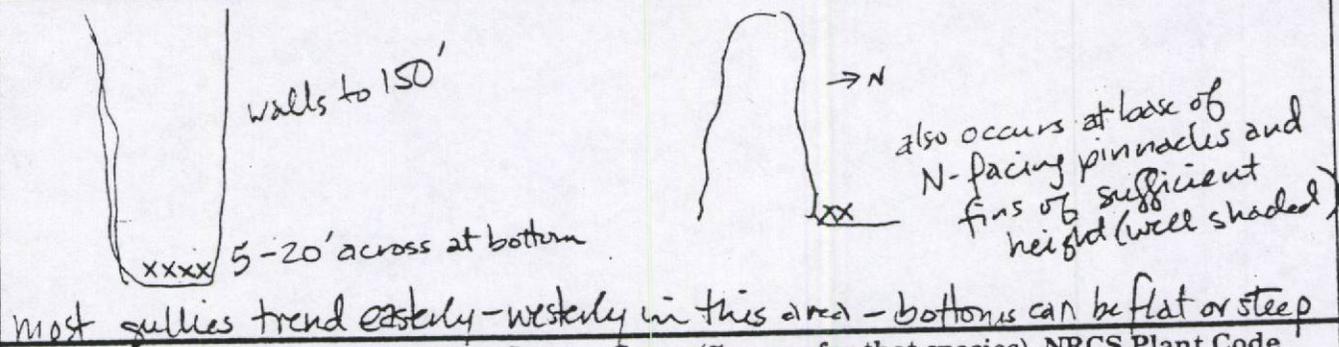
→ This form is modified from the Black Hills National Forest Survey Form (4/2001).

### HABITAT

Light	Topographic Position	Moisture	Slope %	Slope Shape
Open <input type="checkbox"/>	Crest <input type="checkbox"/>	Inundated (Hydrated) <input type="checkbox"/>	0 <input type="checkbox"/>	Flat/Straight <input checked="" type="checkbox"/>
Partial <input checked="" type="checkbox"/>	Upper Slope <input type="checkbox"/>	Intermittently Flooded <input type="checkbox"/>	0 - 10 <input checked="" type="checkbox"/>	Undulating <input type="checkbox"/>
Shade <input checked="" type="checkbox"/>	Mid-Slope <input type="checkbox"/>	Saturated (Wet-Mesic) <input type="checkbox"/>	11 - 20 <input checked="" type="checkbox"/>	Convex <input checked="" type="checkbox"/>
	Lower Slope <input type="checkbox"/>	Moist (Mesic) <input checked="" type="checkbox"/>	21 - 30 <input checked="" type="checkbox"/>	Concave <input type="checkbox"/>
	Bottom <input checked="" type="checkbox"/>	Dry-Mesic <input type="checkbox"/>	31 - 40 <input type="checkbox"/>	
	Other - explain in notes <input type="checkbox"/>	Dry (Xeric) <input type="checkbox"/>	41 - 50 <input type="checkbox"/>	
			51+ <input type="checkbox"/>	
			Actual <input type="checkbox"/>	

Elevation: 6000 to 6200 in ft      Drainage Aspect EWN "Micro Aspect" varies

Cross section of topography (habitat) - include scale, direction, element position



Associated species: Scientific name, Canopy Cover (% cover for that species), NRCS Plant Code

Name	CC	Code	Name	CC	Code	Name	CC	Code
<u>Picea glauca</u>								
<u>Fragaria virginiana</u>								
<u>Adoxa moschatellina</u>								
<u>Aconitum columbianum</u>								
<u>Ribes sp.</u>								
<u>moss</u>								

many others but these are the ones most commonly and typically found

Life Form	% Cover
Tree	
Tree and Shrub	
Shrub	
Forbs	
Grasses	
Ferns/Fern Allies	
Mosses/Lichens	
Bare Ground	

Plant Association/Vegetation Type: \_\_\_\_\_

Soil/Geologic Formation: Harney Peak granite - coarse, poor soil

Estimated # of acres of potential habitat in the immediate area: \_\_\_\_\_

Estimated # of acre surveyed of the potential habitat: 75%

### BIOLOGY

Phenology			Population		Population area	
	#	%				
In leaf	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1-10	<input type="checkbox"/>	1m <sup>2</sup>	<input type="checkbox"/>
In bud	<input checked="" type="checkbox"/>	<input type="checkbox"/>	11-50	<input type="checkbox"/>	1-5m <sup>2</sup>	<input type="checkbox"/>
In flower	<input checked="" type="checkbox"/>	<input type="checkbox"/>	51-100	<input type="checkbox"/>	5-10m <sup>2</sup>	<input type="checkbox"/>
Immature fruit	<input type="checkbox"/>	<input type="checkbox"/>	101-500	<input type="checkbox"/>	10-50m <sup>2</sup>	<input type="checkbox"/>
Mature fruit	<input type="checkbox"/>	<input type="checkbox"/>	501-1000	<input checked="" type="checkbox"/>	50-100m <sup>2</sup>	<input type="checkbox"/>
Seed dispersing	<input type="checkbox"/>	<input type="checkbox"/>	1001-10000	<input type="checkbox"/>	2-5 acres	<input checked="" type="checkbox"/>
Dormant	<input type="checkbox"/>	<input type="checkbox"/>	Actual #	<input type="checkbox"/>	Actual area if known	<input type="checkbox"/>

Comments on above: many in flower - seems to be peak season

area difficult to estimate - linear intervals about patches

Clarify what is being counted as an individual: Number of clumps?, number of flowering stems?, other?

above-ground individuals; some may be connected underground, but not exclusively

Type of reproduction: Sexual  Asexual  Both  Uncertain - (explain in notes)

Evidence of disease, predation, and/or disturbance:

hiking trails, old roads?, climbing access + staging areas; gullies heavily used by hikers and climbers have little vegetation

Identification problems - give examples of similar species at same site:

*Viola canadensis* abundant in some gullies; *V. adunca* on drier sites

List noxious weeds (by scientific name), give abundance:

none in most gullies surveyed

Photograph Information

Plant? Y N

Habitat? Y N

Slides Prints Digital

Taken by: \_\_\_\_\_

Repository: \_\_\_\_\_

Collection Information

Specimen Collected? Y  N

Plant Part(s) collected: \_\_\_\_\_

Collection #: \_\_\_\_\_

Repository: \_\_\_\_\_

Current use of site and surrounding land use (check all that apply)

Logging   
Mining   
Other \_\_\_\_\_

Grazing   
Agriculture

Recreation  
 Wilderness  
 Residential

Multiple use  
 Private Property  
 Commercial

Discuss impacts from land use; existing/potential climbing use; existing/potential conflicts; management needs.

Some parts of area surveyed are heavily used by hikers and/or climbers. In these places, there is very little vegetation aside from trees - bare ground.

There are some large violet patches in gullies not used for climbing. In some not-so-popular areas there is vegetation and violets, but there are social trails of various degrees of development. In some of these, it would be beneficial to stabilize trails and install signs.

Based on violet populations, trails and signs should be used:

1) Gully between Vertigo View and Inner Outlet dropping E down to Sunday Gulch; this is the access for Sex Never did this to my Hands; *Viola elkinkii* grows along the eroded access trail and continues down to Sunday Gulch (very large stand); access below Sex Crack (beyond) should be discouraged

2) in Middle Earth, the gully between Near & Far Downs has a large population that would be easily trampled; use currently is light - trail + signs would prevent future problems

3) gully between Vertigo & Vertigo View - smaller patch, less use. This won't address all stands but rather 2 of the largest with potential for damage. General education needed also

lower priority



South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

Date of Survey 5 June 2001 Observers J. Marnett

Species Name Adoxa moschatellina

Location (Attach copy of pertinent topo map with population location shown if available) wrapped in Viola selkirkii  
USGS Quad Custer 7.5' County Custer

Township 2S Range 5E Section 30  
1/4 Sec NW4SE4; SW4SW4NE4; SE4NW4

Directions to site Black Hill in Custer State Park, have made outcrops immediately NW of Sylvan Lake - access via upper part of Sunday Gulch Trail

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g. National Park)

Biology Estimated # of individuals 500-1000, probably more

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type MTA mosaic of Viola selkirkii in gully bottoms

Associated Species \_\_\_\_\_

Aspect (N, S, NW, etc) various % Slope 2-30% Light exposure \_\_\_\_\_  
Soil Moisture moist \_\_\_\_\_ shaded

Soil/substrate granite - coarse soil

Elevation 6000-6200 Size \_\_\_\_\_ (acres)

Land use hiking rock climbing - some areas have been heavily used with little vegetation remaining

Documentation Specimen (Collector/coll. #) \_\_\_\_\_

Photograph Taken ? \_\_\_\_\_ Identification confirmed ? Marnett

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)  
→ not all potential habitat surveyed

RARE PLANT SURVEY FORM

~~Forest Natural Diversity Database  
1001 Grand Ave., Madison, WI 53706~~

Flows into Sullivan Creek to E

Date of Survey 13 July 2001 Observers Hollis Marriott

Species Name Carex bella

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County \_\_\_\_\_

Township 2S Range 5E Section 30  
1/4 Sec SW4NW4

Directions to site Custer State Park ca. 0.3 air mi. WNW of Sullivan Lake Dam along small creek draining the "Middle East" rock climbing area - below the lowest of 3 small falls (note: this creek runs only part of the summer); in small wetland. Carex bella (small stand) was also found in a rill between two granite outcrops just SW and E of the first "falls" (small dam).

Forest Service District/BLM Resource Area Custer State Park

Biology Estimated # of individuals 50-75 flowering stems in the two sites

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat ~~Vegetation type~~ In small wetland - under Picea alba, Betula papyrifera. Between granite outcrops - on coarse granitic soil with mosses, Viola sibirica

Associated Species \_\_\_\_\_

Aspect (N, S, NW, etc) varies % Slope varies Light exposure \_\_\_\_\_  
Soil Moisture \_\_\_\_\_ partial to well-shaded

Soil/substrate granite

Elevation 6000-6200' Size \_\_\_\_\_ (acres)

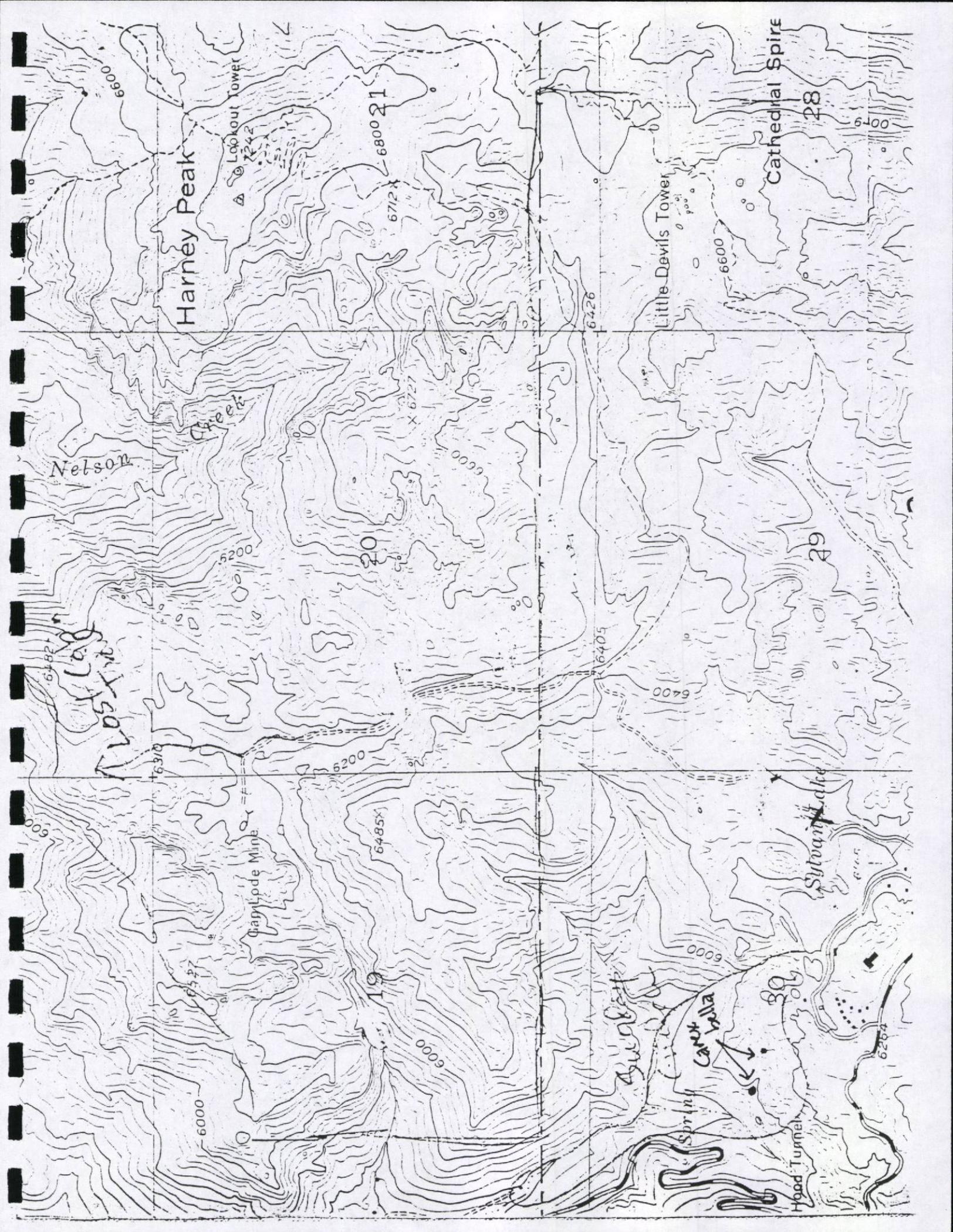
Land use rock climbing

Documentation Specimen (Collector/coll. #) Marriott 12316 (RM)

Photograph Taken ? N Identification confirmed ? yes/Marriott

Additional Comments (continue on back):

some unsurveyed potential habitat remains (outside of climbing area)



Harney Peak

Lookout Tower  
242

6800 21

6712

Nelson

Little Devils Tower

Cathedral Spire

28

20

6405

29

Gap/ode Mine

19

Sylvan

Spring Canyon

Hood Tunnel

6264

North of Little Devils Tower Parking Area

RARE PLANT SURVEY FORM  
and  
Assessment of Climber Impact

for the Access Fund and the  
South Dakota Dept. of Game, Fish & Parks

2001

Species Found/Monitored: Viola selkirkii Date 05/28/2001  
 Geographic location name: NE of Sylvan Lake, Black Hills Needles  
 Surveyors: Hollis Marriot  
 Quad Name: Custer 7.5' State SD County Custer  
 Survey Intensity: moderate Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 2S R 5E S 29 , \_\_\_\_\_ 1/4 of SW 1/4 of NW 1/4 \_\_\_\_\_  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ , \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 \_\_\_\_\_  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ , \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 \_\_\_\_\_  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain  probably more in other gullies  
 GPS Reading? Yes  No  If Yes, Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Type of GPS data collected (check one): Point  Line   
 Is this a: New Location  Subsequent visit  Uncertain   
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.)

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps:

Black Hills, Custer State Park, first large rock outcrops NE of picnic area on E side of Sylvan Lake

From Sylvan Lake Picnic Area, take Trail #9 (to Harney Peak) ca. 1/4 mi. Head E from trail across drainage bottom towards rocks on E side, specifically to drainage that trends NNE and NW out of rock outcrop - this is a prominent vegetated drainage/gully

Viola selkirkii is common in drainage bottom at mouth of gully - continues up steep narrow section above, and also down into main drainage in "ditch"

Source of lead: topo map (appropriate habitat)

Other individuals knowledgeable about the site and/or population. \_\_\_\_\_

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landmarks, natural disturbances, scenic qualities, natural hazards etc.):

Large granite outcrops above drainage bottom. Vegetation dominated by Picea glauca, Pinus ponderosa, Betula papyrifera, Populus tremuloides. A small creeklet drains this gully above but disappears near bottom

→ This form is modified from the Black Hills National Forest Survey Form (4/2001).



Clarify what is being counted as an individual: Number of clumps?, number of flowering stems?, other?

*above ground individuals - some may be connected underground*

Type of reproduction: Sexual  Asexual  Both  Uncertain - (explain in notes)

Evidence of disease, predation, and/or disturbance: *none seen aside from old pieces in upper drainage, "ditch" at bottom*

Identification problems - give examples of similar species at same site: \_\_\_\_\_

List noxious weeds (by scientific name), give abundance: *none seen*

Photograph Information

Plant? Y N

Habitat? Y N

Slides      Prints      Digital

Taken by: \_\_\_\_\_

Repository: \_\_\_\_\_

Collection Information

Specimen Collected? Y N

Plant Part(s) collected: \_\_\_\_\_

Collection #: \_\_\_\_\_

Repository: \_\_\_\_\_

Current use of site and surrounding land use (check all that apply)

Logging

Grazing

Recreation

Multiple use

Mining

Agriculture

Wilderness

Private Property

Other *old aspen*

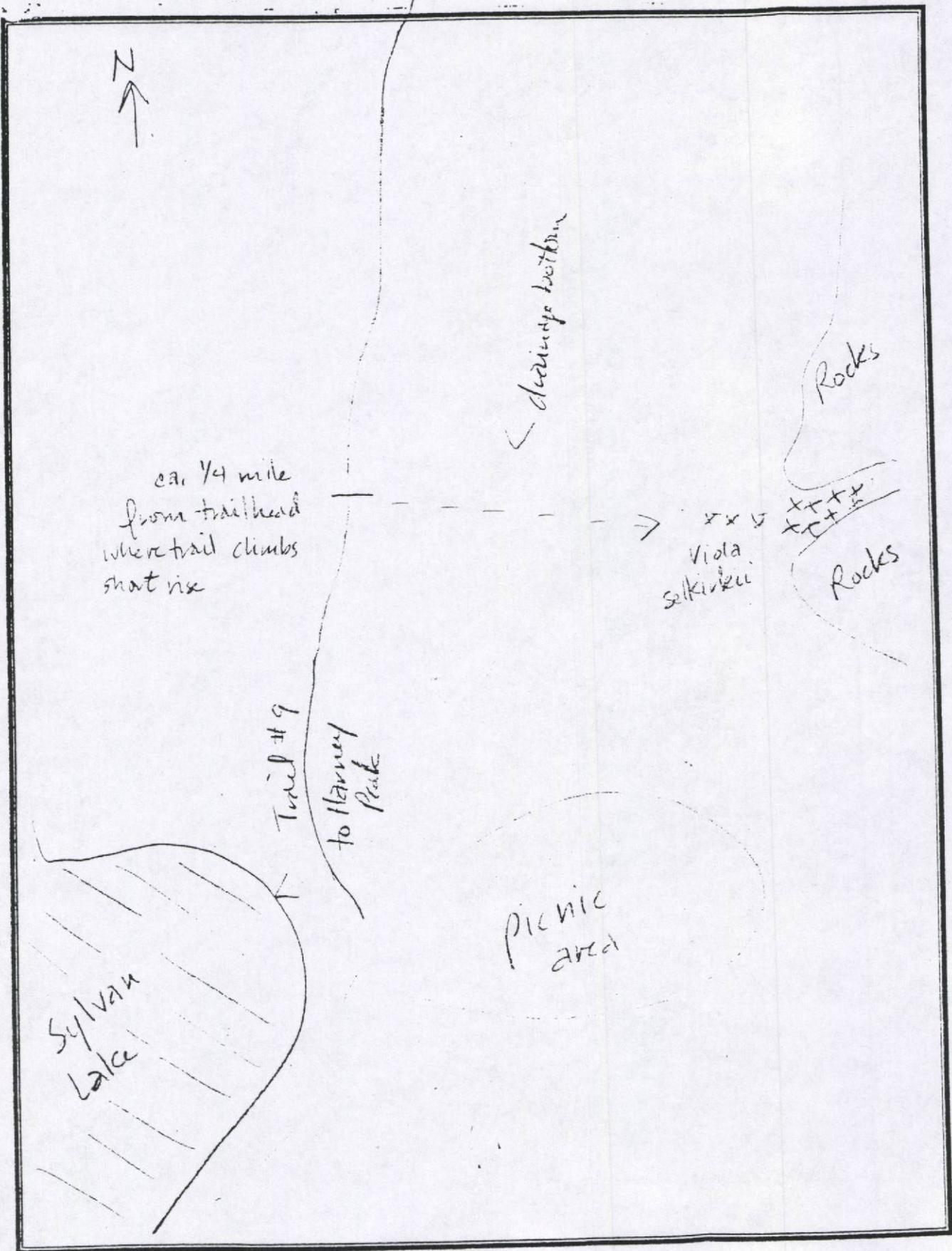
Residential

Commercial

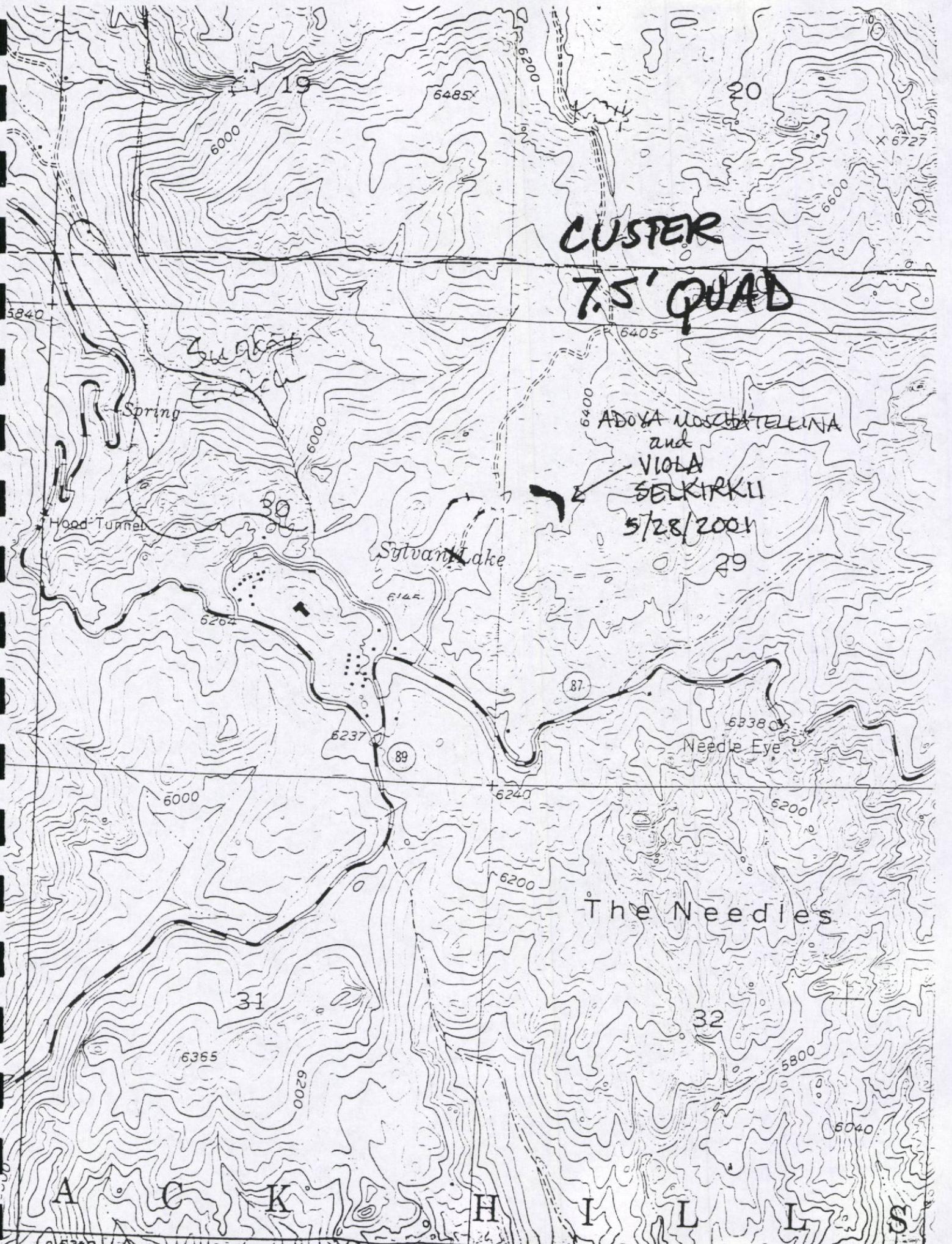
*regeneration project in main drainage bottom*  
Discuss impacts from land use; existing/potential climbing use; existing/potential conflicts; management needs.

*Climbing potential is low - much better rock available in general area. In this gully, walls are shorter, low angle, etc.*

Population Map: The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.



CUSTER  
7.5' QUAD



Suabach  
Spring

ADOXA MOSCHATELLINA  
and  
VIOLA  
SELKIRKII  
5/28/2001

Sylvan Lake

Needle Eye

The Needles

A C K H I L L S

South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

[REDACTED]

Date of Survey May 28, 2001 Observers Hollis Marriott

Species Name *Adoxa moschatellina*

Location (Attach copy of pertinent topo map with location shown if available) population mapped (with *Viola saskatchewana*)

USGS Quad Custer 751 County Custer

Township 2S Range 5E Section 29  
1/4 Sec 2104 NW 4

Directions to site Black Hills, Custer State Park, first large rock outcrops NE of picnic area on E side of Sylvan Lake - from picnic area take trail = 7 towards Hansen Park ca. 1/4 mile - take E from trail across drainage bottom towards large hole outcrops. Most rock is in gully and drainage bottoms

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g., National Park)

Biology Estimated # of individuals at least several hundred

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type \_\_\_\_\_

Associated Species *Betula papyrifera*, *Prunus sp.*, *Viola saskatchewana*

Aspect (N, S, NW, etc) variable % Slope < 5% Light exposure \_\_\_\_\_  
Soil Moisture moist \_\_\_\_\_ shaded

Soil/substrate granite

Elevation 6200-6300' Size \_\_\_\_\_ (acres)

Land use nothing obvious

Documentation Specimen (Collector/coll. #) \_\_\_\_\_

Photograph Taken ? \_\_\_\_\_ Identification confirmed ? Marriott

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)

Ten Pins

# TEN PENS AREA

Sylvan Lake

REUNION ROCK

DWE'S DINGHY

RARE PLANTS

TOTEM POLE

SIGN NEEDED

TRACKS ROCK

PAIR OF NINES

PICTURE ROCK  
S.O.

PHALLUS

FALCON LEANING TOWER

ENERGY CRISIS

SANDBERG PEAK

ROCK

Trail to Spires

MOBY DICK

BUDWEISER SPIRE

Cathedral Spires Parking

FIN

COLD SPOT

PAWN

POPTOP

HAIRY PIN

SAFETY PIN

KINGPIN

TENT PEG

SUPERPIN

TRICOUNT NAIL

QUEENPIN

ENDPIN

HIGH POINT

SOMEBODY ELSE'S PEG

APPROACH TRAIL, SIGN NEEDED

TWISTED FEAT

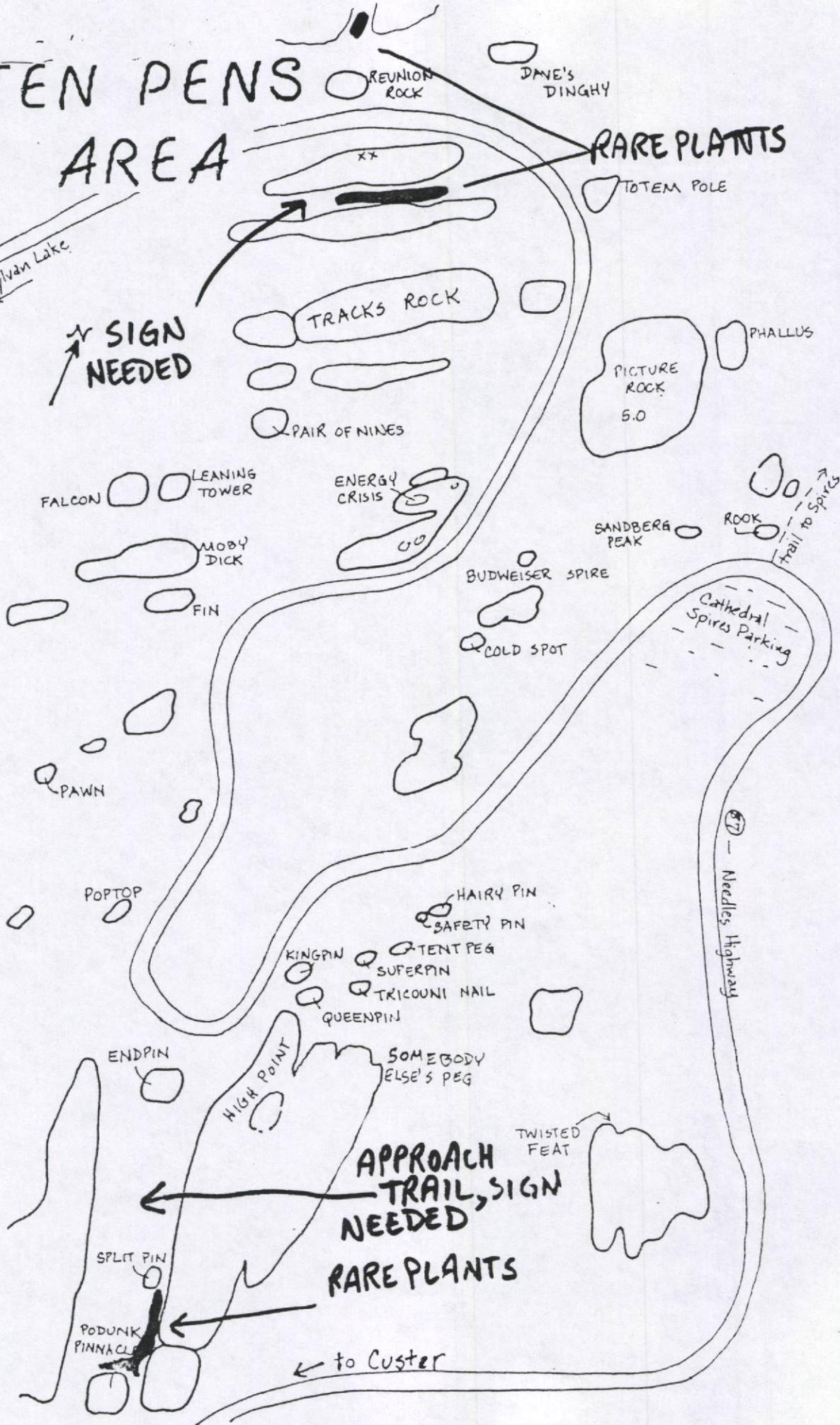
RARE PLANTS

SPLIT PIN

PODUNK PINNACLE

to Custer

Needles Highway



RARE PLANT SURVEY FORM  
and  
Assessment of Climber Impact

for the Access Fund and the  
South Dakota Dept. of Game, Fish & Parks

2001

Species Found/Monitored: Viola selkirkii Date 05/30/2001  
 Geographic location name: Ten Pins climbing area, ~~Project Name~~ Black Hills Needles  
 Surveyors: Hollis Marriott  
 Quad Name: Custer, 7.5' State SD County Custer  
 Survey Intensity: thorough Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 2S R 5E S 28, W2 ~~1/4~~ of SW 1/4 of SW 1/4 \*\* 8 1/2" X 11" topo map must  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 be attached  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain  zone 13  
 GPS Reading? Yes  No  ~~4855188N617719E~~ zone 2 4855074N617706E  
 Type of GPS data collected (check one): Point  Line  (see pts 1; 2 on map)  
 Is this a: New Location  Subsequent visit  Uncertain   
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.)

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps:

Black Hills Custer State Park "Ten Pins" climbing area along Needles Hwy  
(Hwy 87) ca. 0.5 air mi. E of Needles Eye, ca. air mi. of Custer, SD.

Park in pullout on N side of road just W of where road turns sharply  
S and downhill. Violet is in gullies between rocks on both sides of  
road. It also occurs in the large SSE trending gully/drainage down from  
the next sharp turn (to N) in highway going E.

Source of lead: topo map (appropriate habitat)  
 Other individuals knowledgeable about the site and/or population: \_\_\_\_\_

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards etc.):

Viola selkirkii was found in gullies trending SE and ESE; narrow  
gullies between rock walls 50 to 100 ft in height in and between the  
many granite rock formations in the area.

This narrow scenic paved road winds among the rocks. Vegetation is  
dominated by Picea glauca and Pinus ponderosa.

→ This form is modified from the Black Hills National Forest Survey Form (4/2001).



Clarify what is being counted as an individual: Number of clumps?, number of flowering stems?, other?

above ground individuals (some maybe connected by short rhizomes)

Type of reproduction: Sexual  Asexual  Both  Uncertain - (explain in notes)

Evidence of disease, predation, and/or disturbance:

gully S of highway has a well-worn trail

Identification problems - give examples of similar species at same site: *Viola adunca* on drier sites;

*Viola pubescens* in larger gully/drainage

List noxious weeds (by scientific name), give abundance: none seen

Photograph Information	Collection Information
Plant? Y N	Specimen Collected? Y N
Habitat? Y N	Plant Part(s) collected: _____
Slides      Prints      Digital	Collection #: _____
Taken by: _____	Repository: _____
Repository: _____	

Current use of site and surrounding land use (check all that apply)

Logging   
Mining   
Other \_\_\_\_\_

Grazing   
Agriculture

Recreation  
 Wilderness  
 Residential

Multiple use  
 Private Property  
 Commercial

Discuss impacts from land use; existing/potential climbing use; existing/potential conflicts; management needs.

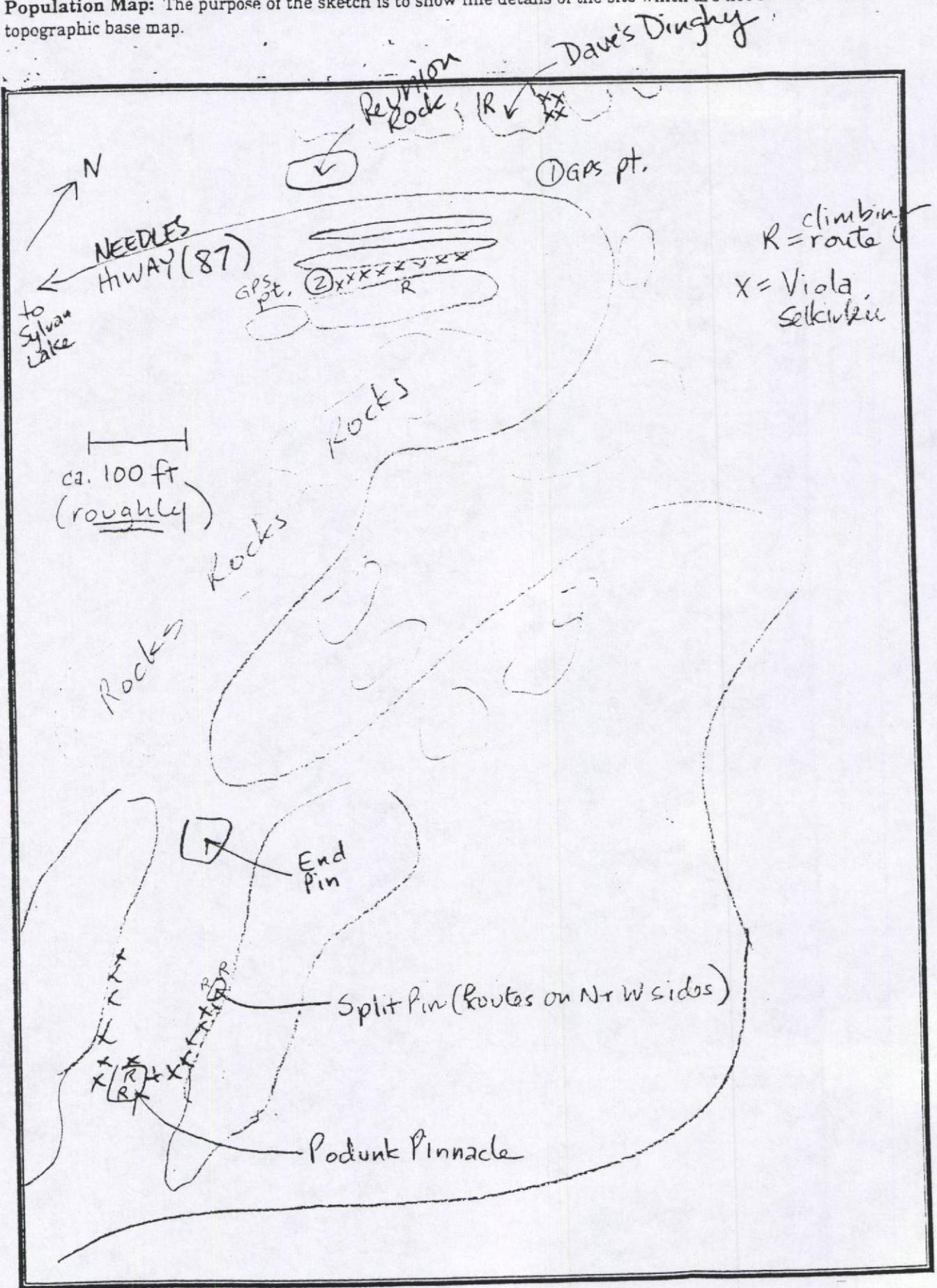
Scenic winding highway passes through area. Use away from road is predominantly by rock climbers. Climbing potential and impact varies for 3 subpopulations found (see sketch on next page).

In the gully E of "Dave's Dinghy" there is climbing potential only at the lower end - walls are too short moving up gully. Route on Dave's D. is accessed from other side (W); there is a very lightly used trail of sorts going up this gully (ie. E of D.D.).

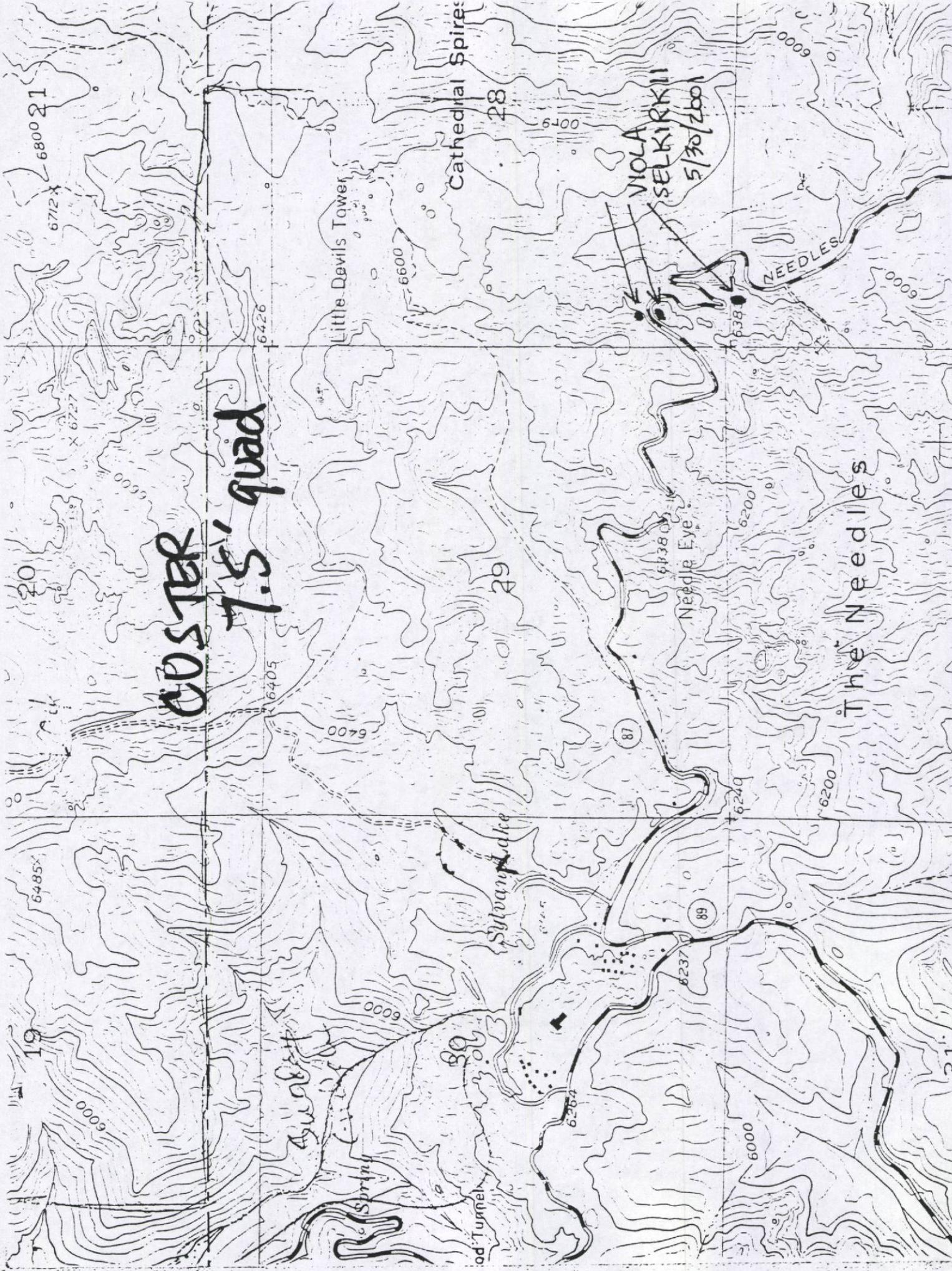
In the gully S of the highway with *Viola selkirkii*, there is a well-defined access trail and a bolted route on the S side. There is no potential on the N side for routes. A sign encouraging climbers to stay on trail would be useful here.

In the gully that runs SSE from End Pin, past Split Pin and Podunk Pinnacle, the bottom is wider with more vegetation. There is some downfall obstructing passage. A poorly defined trail goes down the gully. The area does not appear to be heavily used at this time but there are at least 5 routes and potential for more. A trail and sign would be useful, especially since the vegetation is largely intact (including a spring and creekbed at lower end).

Population Map: The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.

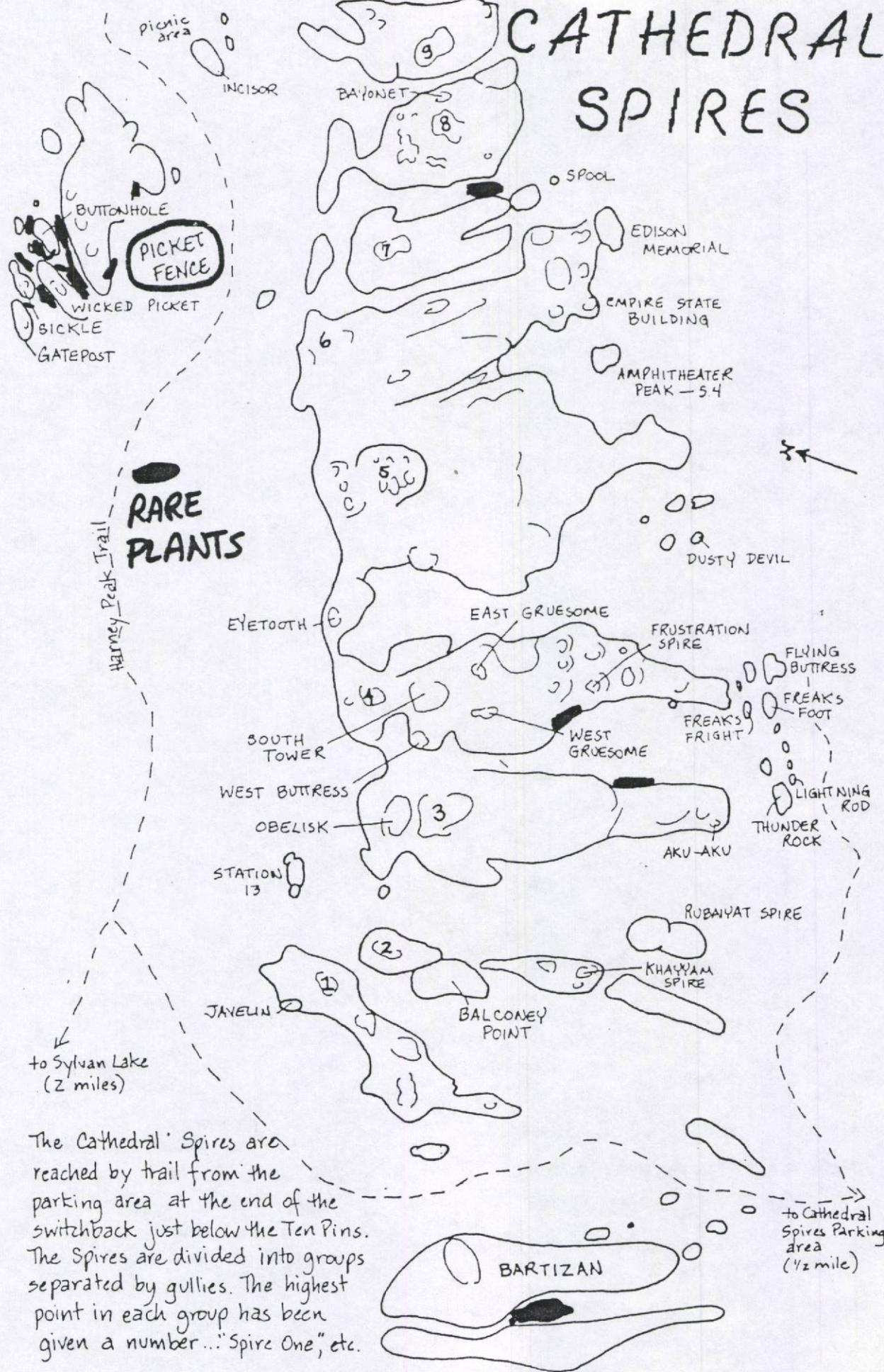


**COSTER**  
**7.5' quad**



Cathedral Spires

# CATHEDRAL SPIRES



The Cathedral Spires are reached by trail from the parking area at the end of the switchback just below the Ten Pins. The Spires are divided into groups separated by gullies. The highest point in each group has been given a number... "Spire One," etc.

2 "populations" on one map

BLACK HILLS NATIONAL FOREST RARE PLANT SURVEY/MONITORING FORM

Species Found/Monitored: Viola sellckirkii Date: 6 JUN 2000 Site # \_\_\_\_\_ Source Code: \_\_\_\_\_  
Site/Project Name: Black Elk Wilderness Floristic Inv. Surveyor(s): M. Harriott  
Quad Name (s): Custer  
State: SD County: Custer

Township/Range/Section(s) of population (down to qtr/qtr):  
T 2S R 5E S 28, SE 1/4 of NW 1/4 \*\* 8 1/2 x 11" topo map must be attached.  
T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4

Full extent of population known and mapped?: \_\_\_\_\_ yes  no \_\_\_\_\_ GPS reading?   
Is this a new location record?   
Is this a subsequent visit? \_\_\_\_\_ If so, attach original site form.

Site location/Direction to site (refer to nearby landmarks to concisely describe the site's location.  
Provide additional directions to describe the location(s) of specific elements within the site,  
especially if these occurrences would be difficult for someone not familiar with the site to relocate  
using only the attached maps: Black Hills, Custer State Park, Cathedral Spires in  
gully near E end, ca. 1.5 air mi. ENE of Sylvan Lake. Hike in from  
Cathedral Spires trailhead; after about 1/2 mile, turn right on unmaintained  
trail that climbs up along S side of Cathedral Spires to E end.

Source of lead: \_\_\_\_\_  
Other individuals knowledgeable about site/population: \_\_\_\_\_

Current use of site: ?  
District/Management Area/Project: Custer State Park

Written Description - Describe the site (vegetation, significant species, aquatic features, notable  
landforms, natural disturbances, scenic qualities, natural hazards, etc.):  
Very large granite outcrops dissected by narrow, steep gullies, some have  
rocky, tilted bottoms.

Surrounding land use - Describe physical structures and land use practice in the surrounding area  
(e.g., residential and commercial buildings; agricultural, recreational, residential, and commercial  
uses): \_\_\_\_\_

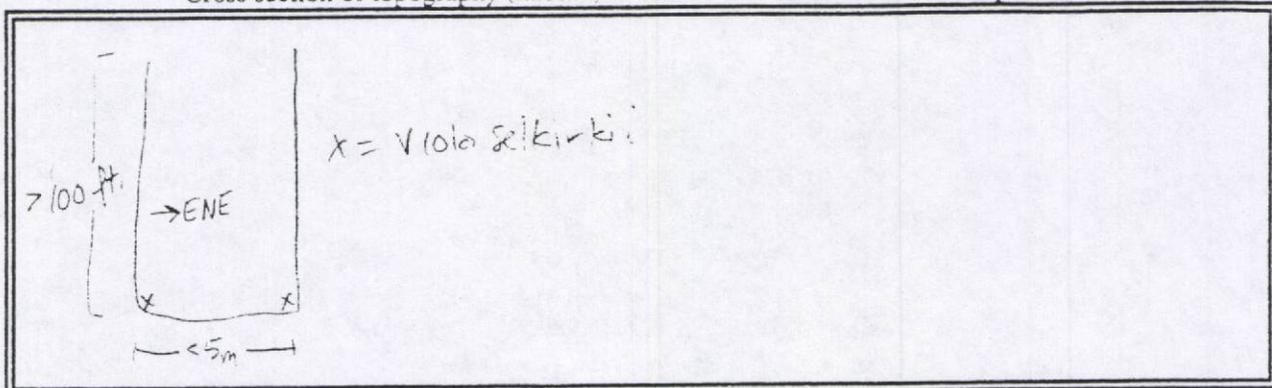
Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

HABITAT

Aspect	Slope	Light	Topographic Position	Moisture
<input type="checkbox"/> N <input type="checkbox"/> NE	<input checked="" type="checkbox"/> Flat	<input type="checkbox"/> Open	<input type="checkbox"/> Crest	<input type="checkbox"/> Inundated (hydrated)
<input type="checkbox"/> E <input type="checkbox"/> NW	<input checked="" type="checkbox"/> 0-10	<input checked="" type="checkbox"/> Partial	<input type="checkbox"/> Upper slope	<input type="checkbox"/> Intermittently flooded
<input type="checkbox"/> S <input checked="" type="checkbox"/> SSE	<input type="checkbox"/> 10-35	<input type="checkbox"/> Filtered	<input type="checkbox"/> Mid-slope	<input type="checkbox"/> Saturated (wet-mesic)
<input type="checkbox"/> W <input type="checkbox"/> SW	<input type="checkbox"/> 35+	<input checked="" type="checkbox"/> Shade	<input type="checkbox"/> Lower slope	<input checked="" type="checkbox"/> Moist (mesic)
<input checked="" type="checkbox"/> flat	<input type="checkbox"/> Vertical		<input checked="" type="checkbox"/> Bottom of gully	<input type="checkbox"/> Dry-mesic
				<input type="checkbox"/> Dry (xeric)

Elevation: 6700' ft/m to \_\_\_\_\_ ft/m Associated natural plant community Moss mats in rock outcrops

Cross section of topography (habitat) - include scale, direction element position.



Associated plant species: Arctostaphylos uva-ursi moss

Soil/Geologic Formation: Harney Peak granite

Estimated # of acres of potential habitat in the immediate area: only 3 of the slides have been

Estimated # of acres actually surveyed of the potential habitat: surveyed - similar gullies

### BIOLOGY

in the "Picket Fence" N of Spire

#### Phenology (estimated %)

In leaf  
 In bud  
 <sup>20%</sup> In flower  
 Immature fruit  
 Mature fruit  
 Seed dispersing  
 Dormant

#### Population

1-10  
 11-50  
 51-100  
 101-500  
 501-1000  
 1001-10000  
 actual #

#### Population area

1 yd<sup>2</sup>  
 1-5 yd<sup>2</sup>  
 5-10 yd<sup>2</sup>  
 10-100 yd<sup>2</sup>  
 100 yd<sup>2</sup>  
 2 acres  
 actual area if known

\*Comments on above \_\_\_\_\_

Type of reproduction:  sexual  asexual  both

Evidence of disease, predation, etc.?  yes  no Explain: \_\_\_\_\_

Presence of noxious weeds (identify species and quantity) or disturbance (be specific): W. P. Green

Photograph taken?  yes  no Habitat photo taken?  yes  no Slides? \_\_\_\_\_

Specimen taken?  yes  no If yes, give collector, collection # and repository(s): \_\_\_\_\_

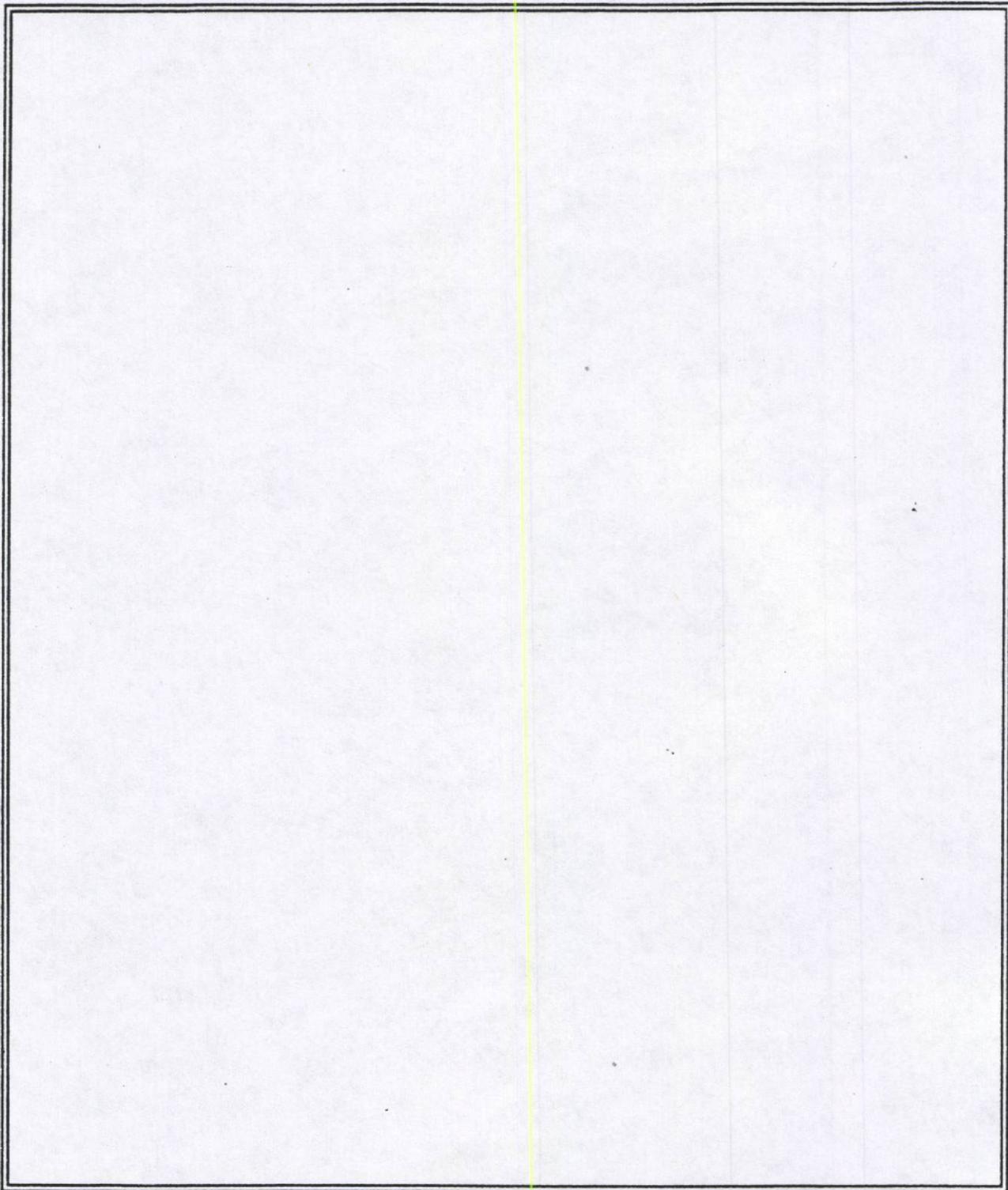
Identification problems (give examples of similar species at same site):

Viola adunca in more open areas in middle of gully bottom

Indicate survey intensity (for all of site looked at for plant/habitat): quick one



**Population Map:** The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map. Include 1) landmarks, 2) evidence of disturbance (e.g. structures, dumps, exotic flora), 3) boundaries of subpopulations. Mark subpopulations (e.g. A, B, C, D, E). Provide information on area and # of individuals for each subpopulation. Include scale and indicate north.  
Approximate amount of time spent recording population information 15'



2 "populations" on one map

BLACK HILLS NATIONAL FOREST RARE PLANT SURVEY/MONITORING FORM

Species Found/Monitored: Viola selkirkii Date: 6 JUN 2000 Site # \_\_\_\_\_ Source Code: \_\_\_\_\_  
Site/Project Name: Black Elk W. Floristic Inv. Surveyor(s): A. Marriett  
Quad Name (s): Custer  
State: SD County: Custer

Township/Range/Section(s) of population (down to qtr/qtr):  
T 2S R 5E S 28, SW 1/4 of NW 1/4 \*\* 8 1/2 x 11" topo map must be attached.  
T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4

Full extent of population known and mapped?: \_\_\_\_\_ yes  no  GPS reading? N  
Is this a new location record?   
Is this a subsequent visit? \_\_\_\_\_ If so, attach original site form.

Site location/Direction to site (refer to nearby landmarks to concisely describe the site's location.

Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps: Custer State Park below Trail #4 (to Harney Peak) west of the Cathedral Spires and SSE of Little Devils Tower, ca. 1.3 air mi. E of Sylvan Lake. From Little D's parking area hike ENE along Tr #4 uphill to crest - rock to E is "Bartizan" formation - scramble down first grassy gully, occasionally

Source of lead: \_\_\_\_\_  
Other individuals knowledgeable about site/population: \_\_\_\_\_ scramble over large boulders

Current use of site: ? goats browse these areas

District/Management Area/Project: Custer State Park

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards, etc.):

Very large granite rock formation split by steep SE-trending gullies - some have grassy/mossy bottoms

Surrounding land use - Describe physical structures and land use practice in the surrounding area (e.g., residential and commercial buildings; agricultural, recreational, residential, and commercial uses):

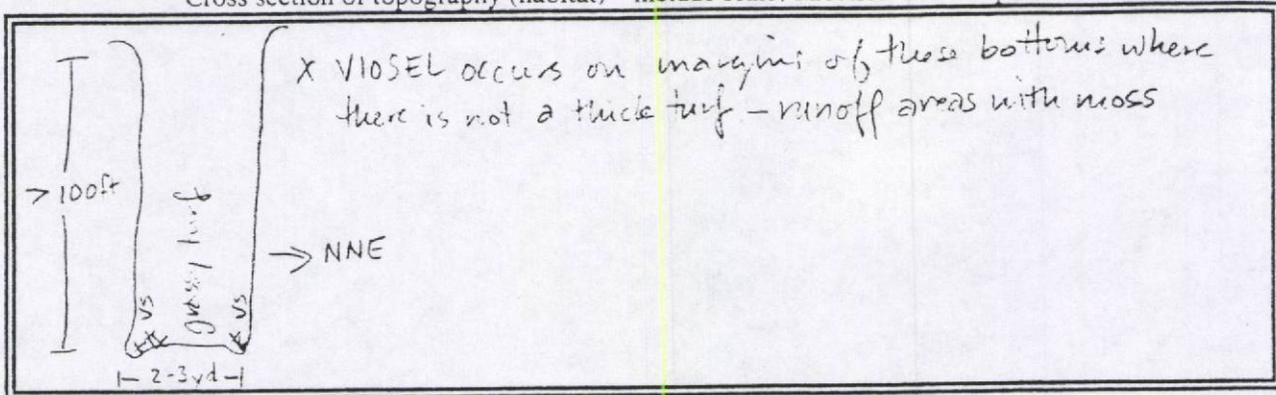
Notes:

HABITAT

Aspect	Slope	Light	Topographic Position	Moisture
<input type="checkbox"/> N <input type="checkbox"/> NE	<input checked="" type="checkbox"/> Flat	<input type="checkbox"/> Open	<input type="checkbox"/> Crest	<input type="checkbox"/> Inundated (hydrated)
<input type="checkbox"/> E <input type="checkbox"/> NW	<input checked="" type="checkbox"/> 0-10	<input checked="" type="checkbox"/> Partial	<input type="checkbox"/> Upper slope	<input type="checkbox"/> Intermittently flooded
<input type="checkbox"/> S <input checked="" type="checkbox"/> SSE	<input type="checkbox"/> 10-35	<input type="checkbox"/> Filtered	<input type="checkbox"/> Mid-slope	<input type="checkbox"/> Saturated (wet-mesic)
<input type="checkbox"/> W <input type="checkbox"/> SW	<input type="checkbox"/> 35+	<input checked="" type="checkbox"/> Shade	<input type="checkbox"/> Lower slope	<input checked="" type="checkbox"/> Moist (mesic)
<input checked="" type="checkbox"/> flat	<input type="checkbox"/> Vertical		<input checked="" type="checkbox"/> Bottom of gully but high on overall slope	<input type="checkbox"/> Dry-mesic
				<input type="checkbox"/> Dry (xeric)

Elevation: 6600 ft/m to \_\_\_\_\_ ft/m Associated natural plant community mossy areas in  
rock outcrops

Cross section of topography (habitat) - include scale, direction element position.



Associated plant species: VIOSL, Adoxa moschatellina

Soil/Geologic Formation: Harrison Peak granite

Estimated # of acres of potential habitat in the immediate area: there are similar gullies in the Cathedral

Estimated # of acres actually surveyed of the potential habitat: spires and "Picket Fence"

N of Spires

### BIOLOGY

Phenology (estimated %)	Population	Population area
<input type="checkbox"/> In leaf	<input type="checkbox"/> 1-10	<input type="checkbox"/> 1 yd <sup>2</sup>
<input type="checkbox"/> In bud	<input type="checkbox"/> 11-50	<input type="checkbox"/> 1-5 yd <sup>2</sup>
<u>25%</u> <input checked="" type="checkbox"/> In flower	<input type="checkbox"/> 51-100	<input type="checkbox"/> 5-10 yd <sup>2</sup>
<input type="checkbox"/> Immature fruit	<input checked="" type="checkbox"/> 101-500	<input checked="" type="checkbox"/> 10-100 yd <sup>2</sup>
<input type="checkbox"/> Mature fruit	<input type="checkbox"/> 501-1000	<input type="checkbox"/> 100 yd <sup>2</sup>
<input type="checkbox"/> Seed dispersing	<input type="checkbox"/> 1001-10000	<input type="checkbox"/> 2 acres
<input type="checkbox"/> Dormant	<input type="checkbox"/> actual #	<input type="checkbox"/> actual area if known

\*Comments on above combined leaf & immature fruit as too hard to distinguish

Type of reproduction:  sexual  asexual  both

Evidence of disease, predation, etc.?  yes  no Explain: \_\_\_\_\_

Presence of noxious weeds (identify species and quantity) or disturbance (be specific): none seen

Photograph taken?  yes  no Habitat photo taken?  yes  no slides I 17, 18

Specimen taken?  yes  no If yes, give collector, collection # and repository(s): \_\_\_\_\_

Marriott 11874

Identification problems (give examples of similar species at same site):

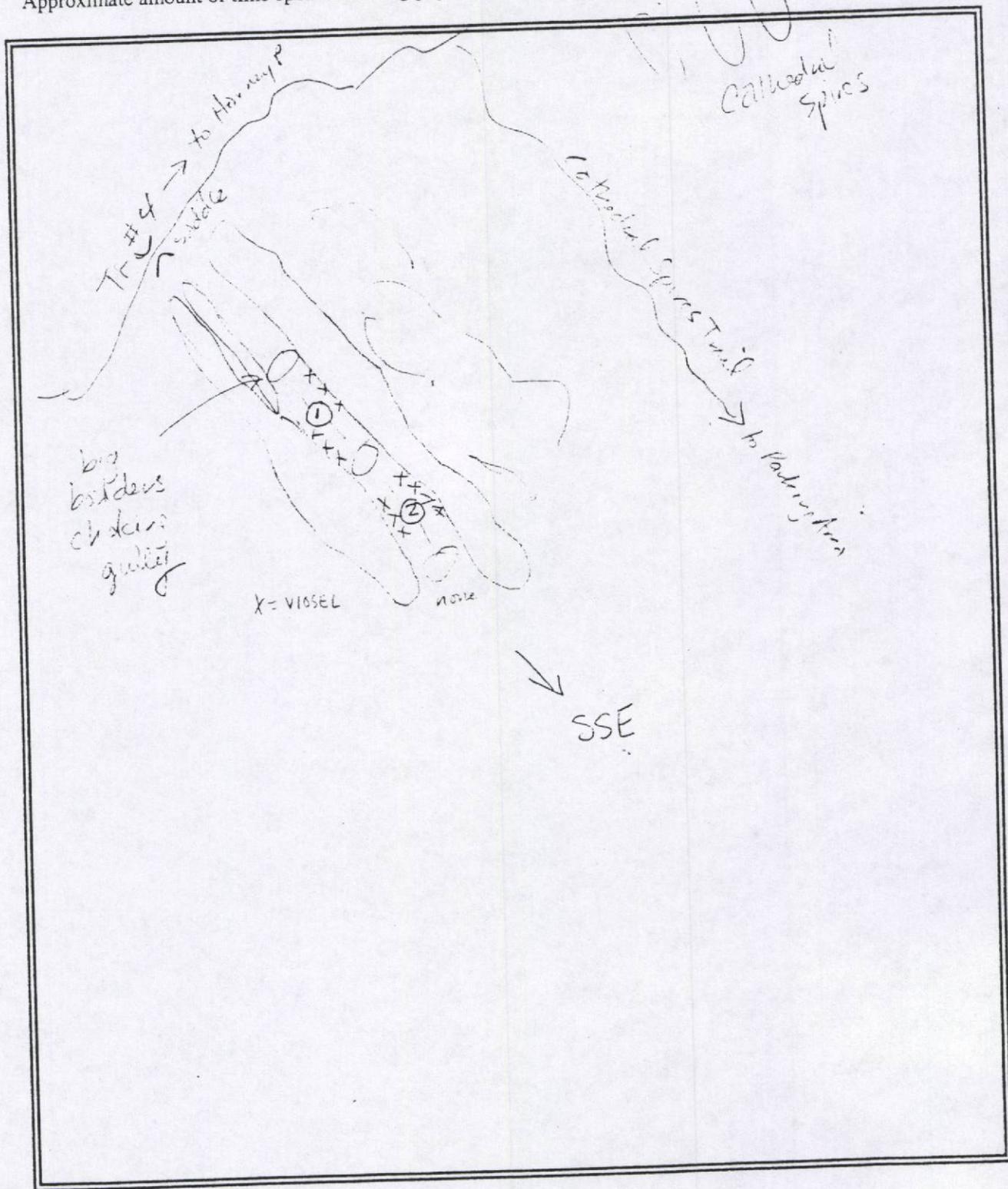
Viola adunca is common in this gully - but occurs in more  
open areas in middle of gully bottom

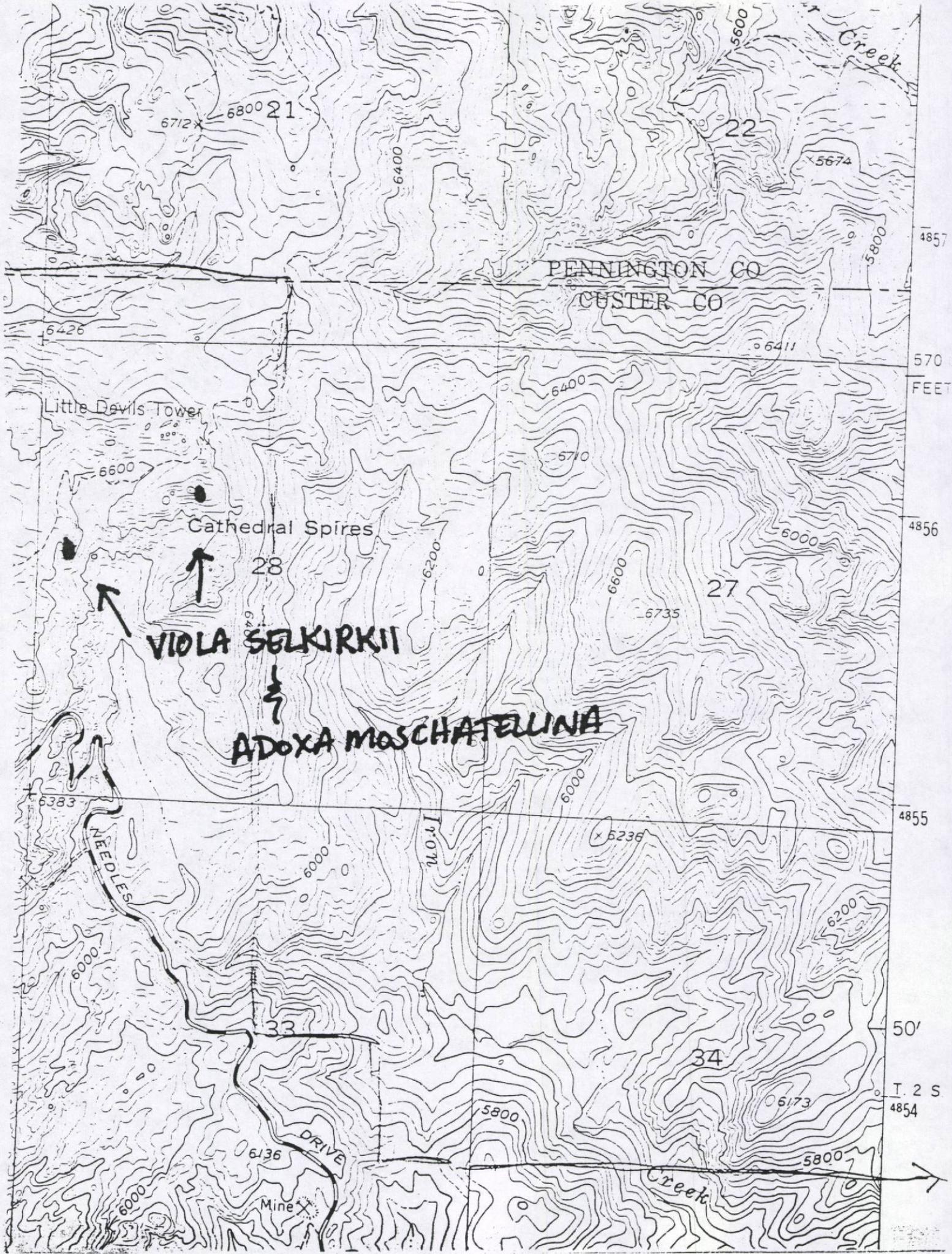
Indicate survey intensity (for all of site looked at for plant/habitat): \_\_\_\_\_

checked this gully - there may be others



**Population Map:** The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map. Include 1) landmarks, 2) evidence of disturbance (e.g. structures, dumps, exotic flora), 3) boundaries of subpopulations. Mark subpopulations (e.g. A, B, C, D, E). Provide information on area and # of individuals for each subpopulation. Include scale and indicate north. Approximate amount of time spent recording population information 30'





6712 x 6800 21

22

x 5674

PENNINGTON CO  
CUSTER CO

6426

6411

4857

570  
FEET

Little Devils Tower

6600

Cathedral Spires

28

6400

6710

6000

4856

**VIOLA SELKIRKII**

6600

27

6735

**ADOXA MOSCHATELLINA**

6383

NEEDLES

Iron

6000

x 6236

4855

6000

6200

50'

33

34

T. 2 S  
4854

6136

DRIVE

5800

5800

Mine

Creek



2 "populations" on one form -  
mapped with *Viola selkirkii*

RARE PLANT SURVEY FORM

~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
Date of Survey 6/1N 2000 Observers Marriott

Species Name *Adoxa moschatellina*

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County Custer

Township 25 Range SE Section 28 SW4 NW4 ①  
1/4 Sec \_\_\_\_\_ 28 SE4 NW4 ②

Directions to site see *Viola selkirkii* forms

Forest Service District/BLM Resource Area Custer State Park

Biology Estimated # of individuals ① 50-100 ② 50-100

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative probably much larger

Habitat ~~Vegetation Type~~

margins of bottoms of narrow gullies in huge granite outcrops - these are gullies with vegetated bottoms

Associated Species moss, *Viola selkirkii*

quick survey of limited area

Aspect (N, S, NW, etc) \_\_\_\_\_ % Slope 0-20 Light exposure partial shade

Soil Moisture Moist

Soil/substrate Harney Peak granite

Elevation 6600-6700 Size \_\_\_\_\_ (acres)

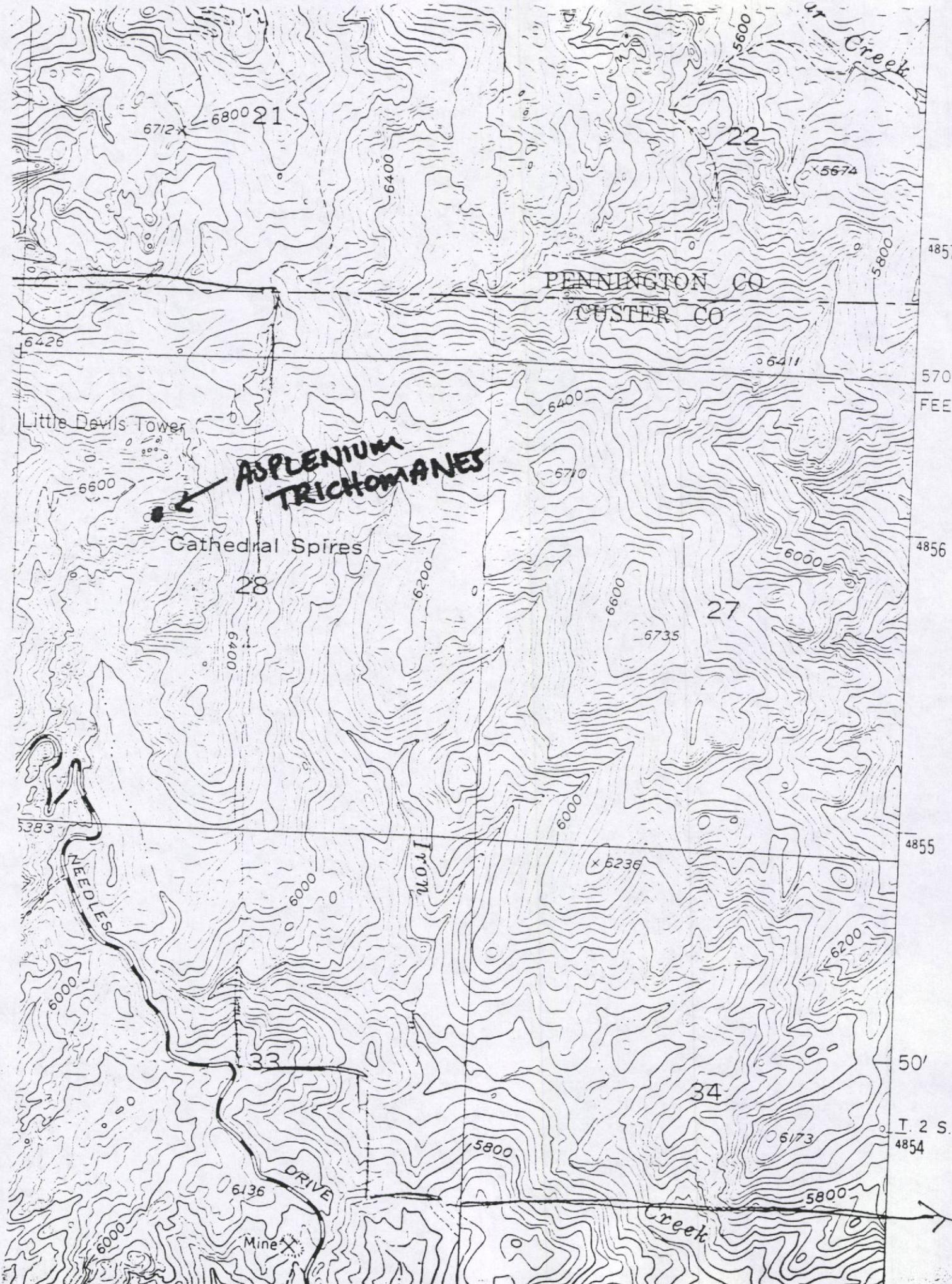
Land use hiking nearby but these gullies are not easy to get to

Documentation Specimen (Collector/coll. #) N

Photograph Taken? N Identification confirmed? Y

Additional Comments (continue on back):





6712 x 6800 21

22

PENNINGTON CO  
CUSTER CO

4857  
5700  
FEET

Little Devils Tower

**ASPENIUM  
TRICHOMANES**

Cathedral Spire

28

27

4856

5283

NEEDLES

Iron

4855

33

34

50'

DRIVE

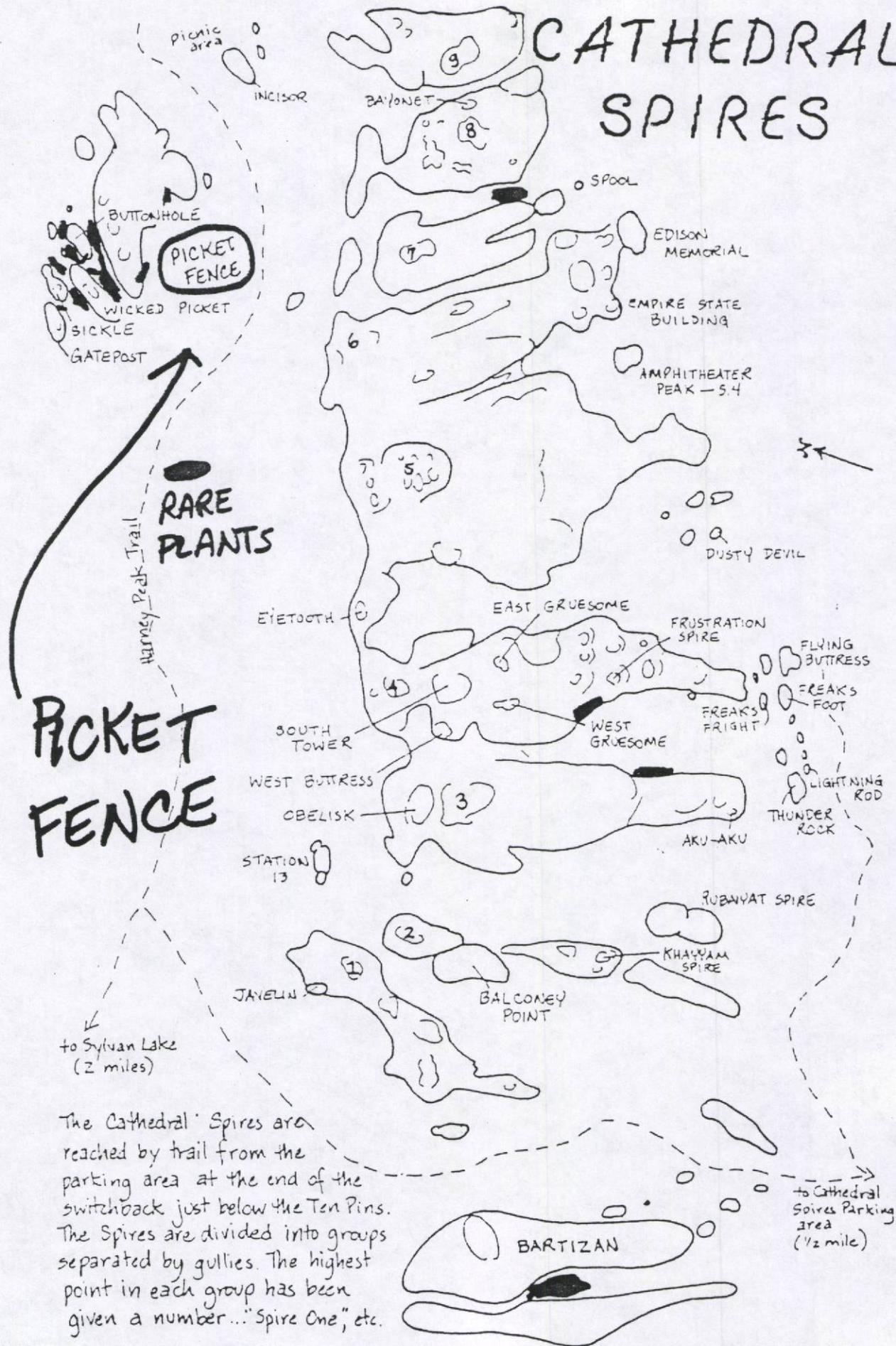
Mine

Creek

T. 2 S.  
4854

Picket Fence

# CATHEDRAL SPIRES



**PICKET FENCE**

**RARE PLANTS**

to Sylvan Lake (2 miles)

to Cathedral Spires Parking area (1/2 mile)

The Cathedral Spires are reached by trail from the parking area at the end of the switchback just below the Ten Pins. The Spires are divided into groups separated by gullies. The highest point in each group has been given a number... "Spire One," etc.

BARTIZAN

RARE PLANT SURVEY FORM  
and  
Assessment of Climber Impact  
for the Access Fund and the  
South Dakota Dept. of Game, Fish & Parks  
2001

Species Found/Monitored: Viola selkirkii Date 06/02/2001  
 Geographic location name: Picket Fence Project Name: \_\_\_\_\_  
 Surveyors: Hollis Marriot  
 Quad Name: Custer 7.5' State SD County Custer  
 Survey Intensity: moderate Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 25 R SE S 28, SW 1/4 of NE 1/4 of NW 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_, \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain   
 GPS Reading? Yes  No  If Yes, Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Type of GPS data collected (check one): Point  Line   
 Is this a: New Location  Subsequent visit  Uncertain   
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.)

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps: \_\_\_\_\_

The Picket Fence is the first rocky ridge NNW of the Cathedral Spires in the NW part of Custer State Park. It is about 1.0 air mi. S of the Harny Peak lookout and about 1.7 air mi. ENE of the Sylvan Lake Dam. Viola selkirkii is in gullies on both sides of the ridge (N & S) on the E part of the rocky ridge.

Take the Cathedral Spires Trail (#4) along the N side of the spires to a saddle. From here the trail drops steeply down. Instead go back W along the base of the Picket Fence - VIOLIN is in gullies. The back side (N) can be accessed by scrambling up and over some of the gullies (not hard).

Source of lead: topo map (appropriate habitat)  
 Other individuals knowledgeable about the site and/or population: \_\_\_\_\_

NOTE: This trail will be rerouted soon to other side (N) of Picket Fence

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards etc.): \_\_\_\_\_

The Picket Fence is a giant E-W trending granite outcrop dissected to produce gullies, fins, pinnacles and other spectacular formations. The area is vegetated with *Picea glauca*, *Pinus ponderosa*, *Betula papyrifera* and *Populus tremuloides*.

→ This form is modified from the Black Hills National Forest Survey Form (4/2001).



Clarify what is being counted as an individual: Number of clumps?, number of flowering stems?, other?

*above ground individuals - some may be linked by short rhizomes or roots*

Type of reproduction: Sexual  Asexual  Both  Uncertain - (explain in notes)

Evidence of disease, predation, and/or disturbance: *some poorly defined trails - light use - near Cathedral Spire trail*

*#4 and low on N side (old trail) of ridge*

Identification problems - give examples of similar species at same site: *Viola adunca on drier sites; one gully had a larger violet in leaf only + pubescens?*

List noxious weeds (by scientific name), give abundance: *none seen*

<b>Photograph Information</b> Plant? Y N Habitat? Y N Slides      Prints      Digital Taken by: _____ Repository: _____			<b>Collection Information</b> Specimen Collected? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Plant Part(s) collected: _____ Collection #: <i>Marriott 12308</i> Repository: <i>Rocky Mt. Herbarium, Lamonia</i>		
--	--	--	---	--	--

Current use of site and surrounding land use (check all that apply)	Logging <input type="checkbox"/>	Grazing <input type="checkbox"/>	<input checked="" type="checkbox"/> Recreation	<input type="checkbox"/> Multiple use
	Mining <input type="checkbox"/>	Agriculture <input type="checkbox"/>	<input checked="" type="checkbox"/> Wilderness	<input type="checkbox"/> Private Property
	Other _____		<input type="checkbox"/> Residential	<input type="checkbox"/> Commercial

Discuss impacts from land use; existing/potential climbing use; existing/potential conflicts; management needs.

*immediately adjacent to Black Elk wilderness; accessible only by trail*

*On S side of Picket Fence, the only sign of use is in gullies (several) at E end close to Cathedral Spire Trail C (#4). On N side there are some social trails running up from what appears to be an old heavily eroded trail running along the base of the rocks on the N side. Some trails may be from climbers accessing routes - all are lightly used.*

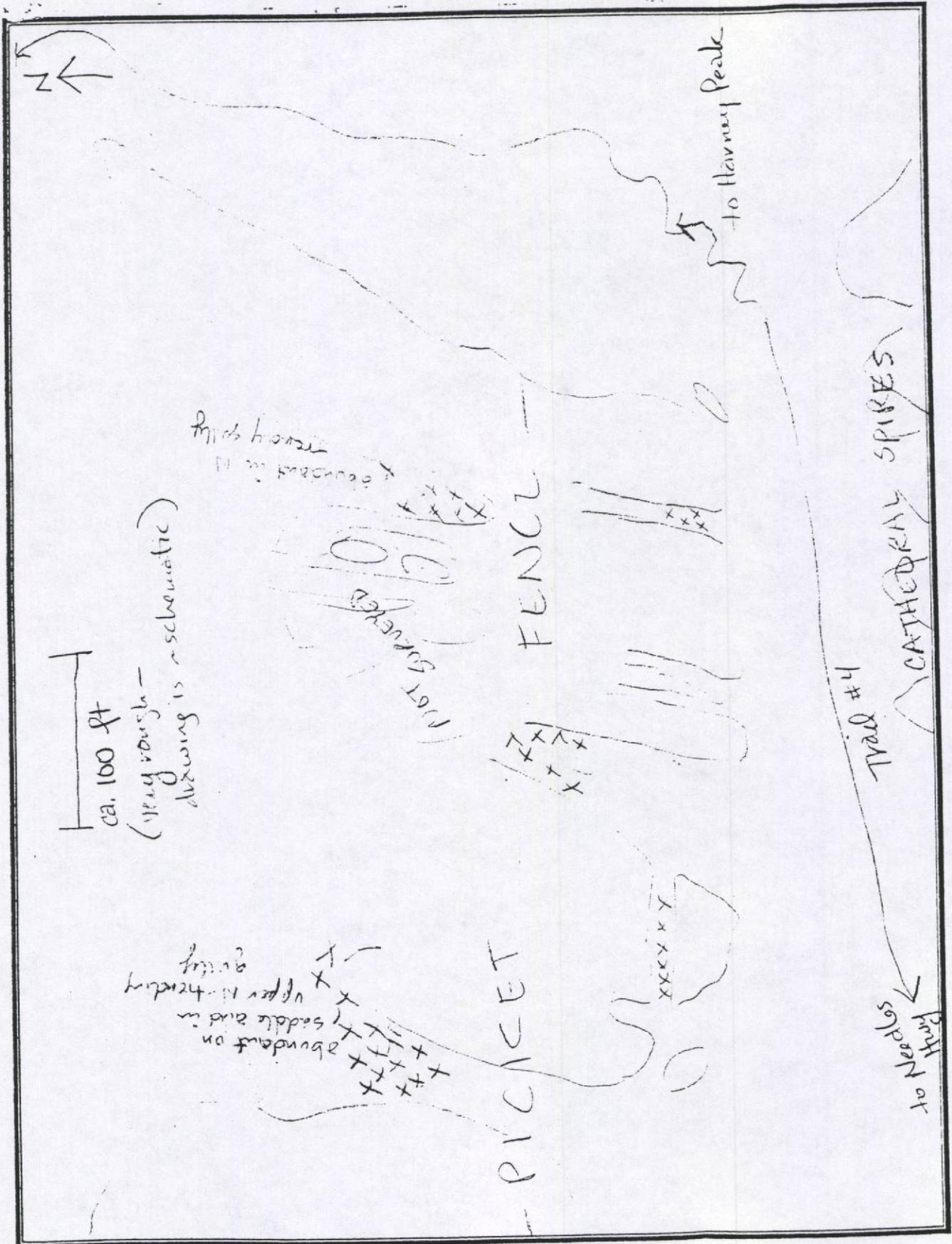
*There is high potential for routes here but perhaps not sufficiently difficult for popular use. The area is one mile from the closest trailhead and is NOT currently used much... no obvious access trails; navigation and finding routes is a bit tricky.*

*If the area were to become more popular - access trails should be defined on the N side and a sign installed.*

*NOTE: Trail #4 will soon be rerouted to the N side of Picket Fence. The trail line is sufficiently below the rocks that hikers should not be tempted to scramble up gullies (view largely obscured by trees; deadfall and boulders on slope)*

*i.e. development*

Population Map: The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.



# CUSTER 7.5' QUAD



South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

[REDACTED]

Date of Survey June 2, 2001 Observers Therese Harms

Species Name Adoxa moschatellina

Location (Attach copy of pertinent topo map with population location shown if available) mapped with  
Viola setubalensis  
USGS Quad Custer 7.5' County Custer

Township 2S Range 5E Section 28  
1/4 Sec 3W4NE4NW4

Directions to site Black Hills Custer State Park "Picket Fence" -  
East ridge NW of Cathedral S.S., ca. 1.0 air mi. S of Harms Park  
Workout. Muskroot is in gutter between large rock fins

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g. National Park)

Biology Estimated # of individuals 500-1000, possibly more  
locally abundant!

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type with mosses & lvs in narrow gully  
bottoms

Associated Species \_\_\_\_\_

Aspect (N, S, NW, etc) variable % Slope 0-10% Light exposure  
Soil Moisture moist shaded

Soil/substrate granite

Elevation 6650-6750' Size \_\_\_\_\_ (acres)

Land use occasional climbers, hikers from Trail #4 to Harms Park  
wander up gutter at E end of ridge and vegetation is obviously trampled

Documentation Specimen (Collector/coll. #) \_\_\_\_\_

Photograph Taken ? \_\_\_\_\_ Identification confirmed ? Harms

Additional Comments (continue on back): (include potential threats,  
protection or management recommendations if appropriate)  
not all potential habitat was surveyed

RARE PLANT SURVEY FORM

~~Western Natural Diversity Database  
1001 Grand Ave., Williams, WI 52070~~

NOTE: Trail #4 is being reworked and will eventually run along the N side of the Picket Fence

Date of Survey July 11, 2001 Observers Hollis Marriott

Species Name Carex bella

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County Custer

Township 2S Range 5E Section 28  
1/4 Sec S104 NE4 NW4

Directions to site Custer State Park - "Picket Fence" - first ridge of rock outcrops N of Cathedral Spire; most easily accessed from Trail #4 Cathedral Spire Trail - where this trail runs E-W along N side of Spire also cross heading a short distance N up into the gullies of the Picket Fence. Carex bella is found in the shallow (adjacent) gullies among the rock outcrops

see map on back

Forest Service District/BLM Resource Area Custer State Park

Biology Estimated # of individuals at least 200 flowering; seeds seen

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type shady moist areas in <sup>narrow</sup> gully between large granite outcrops; with mosses, *Frankia gracillii*, *Viola solkinii*, *Aspidium columbianum*, *Polypodium viviparum*, *Picea*

Associated Species glauca somewhat present

Aspect (N, S, NW, etc) variable % Slope variable Light exposure partially to fully shaded  
Soil Moisture moist

Soil/substrate coarse granitic soil

Elevation 6750' Size \_\_\_\_\_ (acres)

Land use hike scramble up gullies close to trail; some rock climbing but currently not a popular area for this

Documentation Specimen (Collector/coll. #) Marriott 12315 (RM)

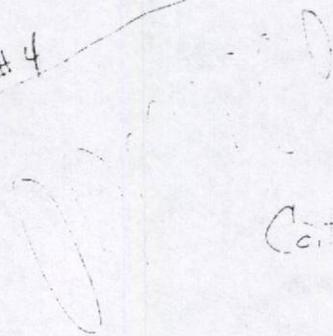
Photograph Taken ? N Identification confirmed ? Y (Marriott)

Additional Comments (continue on back):  
estimated 50-75% of potential habitat surveyed; population is probably larger

N  
↑

Little Devils Tower

Trail #4  
Picket Fence  
to Henry Peak



Cathedral Spire

to Little Devils Tower  
parking area on  
Needles Hwy

to Cathedral Spire Parking Area  
on Needles Hwy



Little Devils Tower

RARE PLANT SURVEY FORM  
 and  
 Assessment of Climber Impact  
 for the Access Fund and the  
 South Dakota Dept. of Game, Fish & Parks  
 2001

Species Found/Monitored: Viola selkirkii Date 06/07/2001  
 Geographic location name: Little Devils Tower Project Name: \_\_\_\_\_  
 Surveyors: Hollis Marriott  
 Quad Name: Custer 7.5' State SD County Custer  
 Survey Intensity: moderate Survey Purpose: \_\_\_\_\_  
 Township/Range/Section(s) of population (down to qtr/qtr/qtr)  
 T 2S R 5E S 29 , \_\_\_\_\_ 1/4 of NE 1/4 of NE 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ , \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
 T \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ , \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4 of \_\_\_\_\_ 1/4  
 Ranger District/Management Area: Custer State Park  
 Full extent of population known and mapped? Yes  No  Uncertain   
 GPS Reading? Yes  No  If Yes, Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
 Type of GPS data collected (check one): Point  Line   
 Is this a: New Location  Subsequent visit  Uncertain   
 (If this is a subsequent visit, please attach a copy of the most recent site survey form.)

Site location/Direction to site - (refer to nearby landmarks to concisely describe the sites location). Provide additional directions to describe the location(s) of specific elements within the site, especially if these occurrences would be difficult for someone not familiar with the site to relocate using only the attached maps:

Black Hills, Custer State Park, "Little Devils Tower" - large rock formation  
1.5 air mi. ENE of Sylvan Lake Dam.

The summit is accessible via trail from the Little Devils Tower parking area off the Needles Highway (87), ca. 0.5 mi. E of Sylvan Lake campground. The base of the north side can be accessed several ways (to see rare plants site):

- 1) From LDT parking lot take Trail #4 to high point before descending to Cathedral Spire area (ca. 364 mi); head N cross country to saddle on ridge just E of LDT; contour W around base.
- 2) From Sylvan Lake take Trail #9 towards Harney Peak, ca. 1/4 mi. beyond high point, as trail descends to West Cabin Cr. head SE up small drainage to NW corner of LDT.

Source of lead: topo map (appropriate habitat)  
 Other individuals knowledgeable about the site and/or population: \_\_\_\_\_

Written Description - Describe the site (vegetation, significant species, aquatic features, notable landforms, natural disturbances, scenic qualities, natural hazards etc.):

Little Devils Tower is a large rock formation with up to 200' of vertical relief - N and NW sides are steepest. It is part of the high granite region - an area of spectacular granite outcrops of all shapes and sizes. Surrounding vegetation is dominated by *Pinus ponderosa*, *Picea glauca*, *Betula papyrifera*.

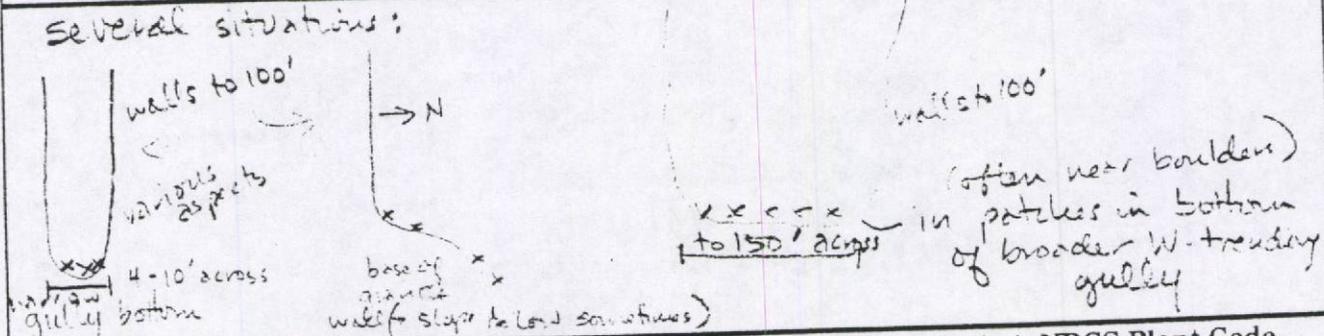
→ This form is modified from the Black Hills National Forest Survey Form (4/2001).

### HABITAT

Light	Topographic Position	Moisture	Slope %	Slope Shape
Open <input type="checkbox"/>	Crest <input type="checkbox"/>	Inundated (Hydrated) <input type="checkbox"/>	0 <input type="checkbox"/>	Flat/Straight <input checked="" type="checkbox"/>
Partial <input checked="" type="checkbox"/>	Upper Slope <input type="checkbox"/>	Intermittently Flooded <input type="checkbox"/>	0 - 10 <input checked="" type="checkbox"/>	Undulating <input type="checkbox"/>
Shade <input checked="" type="checkbox"/>	Mid-Slope <input type="checkbox"/>	Saturated (Wet-Mesic) <input type="checkbox"/>	11 - 20 <input checked="" type="checkbox"/>	Convex <input checked="" type="checkbox"/>
	Lower Slope <input type="checkbox"/>	Moist (Mesic) <input checked="" type="checkbox"/>	21 - 30 <input checked="" type="checkbox"/>	Concave <input type="checkbox"/>
	Bottom <input checked="" type="checkbox"/>	Dry-Mesic <input type="checkbox"/>	31 - 40 <input type="checkbox"/>	
	Other - explain in notes <input type="checkbox"/>	Dry (Xeric) <input type="checkbox"/>	41 - 50 <input type="checkbox"/>	
			51+ <input type="checkbox"/>	
			Actual <input type="checkbox"/>	

Elevation: 6700 to 6800 in ft      Drainage Aspect varies "Micro Aspect" varies.

Cross section of topography (habitat) - include scale, direction, element position



Associated species: Scientific name, Canopy Cover (% cover for that species), NRCS Plant Code

Name	CC	Code	Name	CC	Code	Name	CC	Code
<b>MOSSES</b>								
<u>Adiantum maculatum</u>								
<u>Dodecatheon pulchellum</u>								
<u>Cystopteris fragilis</u>								
<u>Adiantum species</u>								
<u>Picea canadensis</u>								
<u>there are many others - these are among the most common</u>								

Life Form	% Cover
Tree	
Tree and Shrub	
Shrub	
Forbs	
Grasses	
Ferns/Fern Allies	
Mosses/Lichens	
Bare Ground	

Plant Association/Vegetation Type: often in thick moss mats but not always

Soil/Geologic Formation: Harney Peak Granite - poor, coarse soil

Estimated # of acres of potential habitat in the immediate area: 50%

Estimated # of acre surveyed of the potential habitat: 50%

### BIOLOGY

Phenology	#		Population	Population area	
	#	%		Area	%
In leaf	✓		1-10	1m <sup>2</sup>	
In bud	✓		11-50	1-5m <sup>2</sup>	
In flower	✓		51-100	5-10m <sup>2</sup>	
Immature fruit			101-500	10-50m <sup>2</sup>	
Mature fruit			501-1000	50-100m <sup>2</sup>	
Seed dispersing			1001-10000	2 - 5 acres	✓
Dormant			Actual #	Actual area if known	

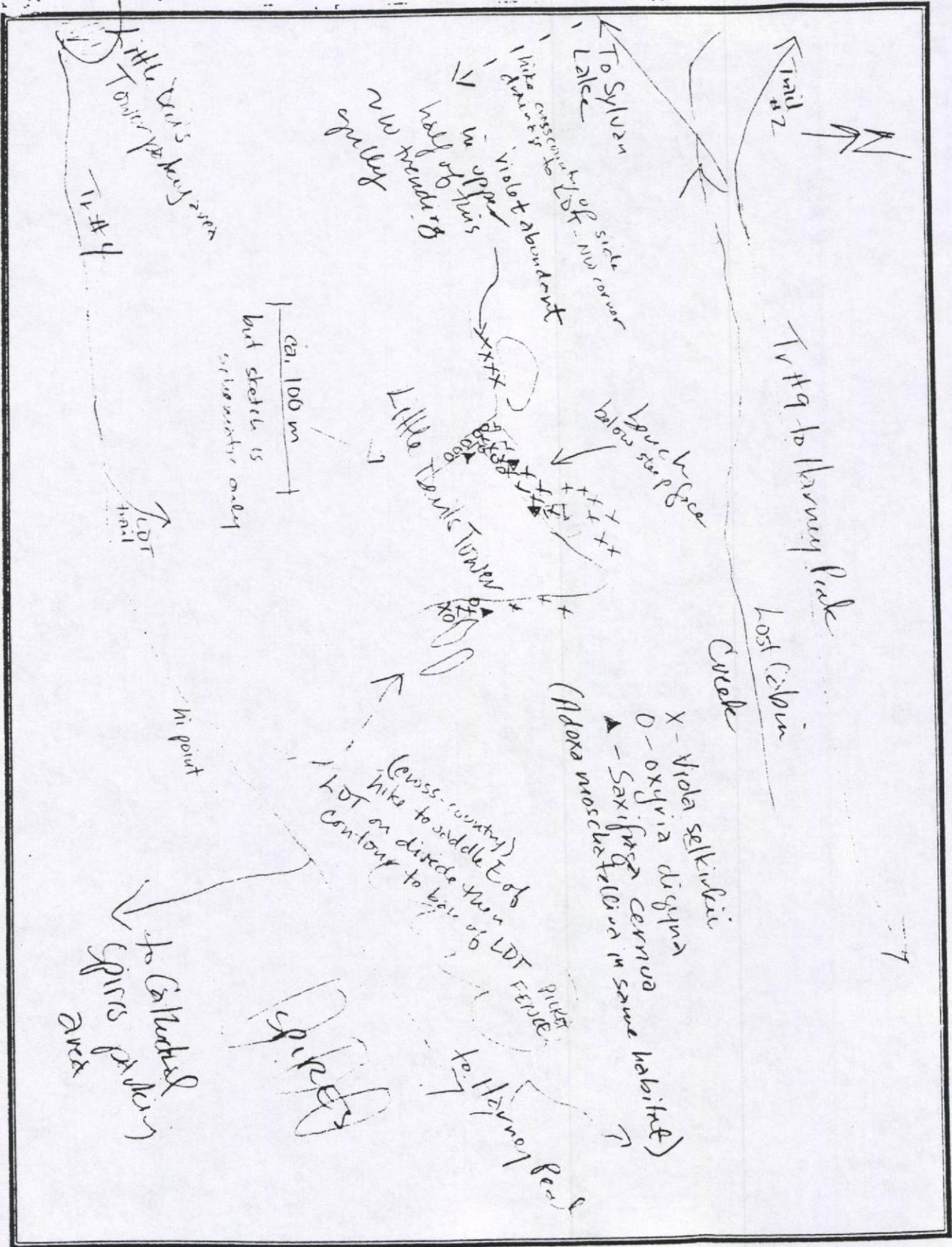
Comments on above: area difficult to estimate - intermittent patches, often linear

Viola selfiken





**Population Map:** The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.



South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

[REDACTED]

Date of Survey July 18, 2001 Observers H. Marriott

Species Name Arnica lonchophylla

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County Custer

Township 2S Range 5E Section 29  
1/4 Sec NE4NE4

Directions to site NE side Little Devils Tower in gully between smaller fins on corner of main outcrop

see 6/7/2001 Viola selkirkii survey form (Marriott) for detailed directions

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g. National Park)

Biology Estimated # of individuals 10-20 above ground

% Flowering 50% % Fruiting \_\_\_\_\_ % Vegetative 50%

Habitat ~~Vegetation type~~ <sup>narrow</sup> gully bottom between granite walls with moss, Polygonum viviparum, Dodonaea pulchellum

Associated Species \_\_\_\_\_

Aspect (N, S, NW, etc) NW % Slope <10% Light exposure shaded for much of the day  
Soil Moisture moist

Soil/substrate granite / coarse soil

Elevation 6700 Size < 10 m<sup>2</sup> (acres)

Land use nothing apparent

Documentation Specimen (Collector/coll. #) Marriott 12318

Photograph Taken ? X Identification confirmed ? Yes; Marriott

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)







South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

Date of Survey July 18, 2001 June 1, 2001 Observers Hollis Marriott

Species Name Oxyria digyna

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County Custer

Township 2S Range 5E Section 29  
1/4 Sec NE4NE4

Directions to site N side of Little Devils Tower - at base of granite walls and in gully bottoms -

for detailed directions see Viola sibirica survey form - Marriott 10/7/2001

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g. National Park)

Biology Estimated # of individuals 300-500 in area surveyed

% Flowering \_\_\_\_\_ % Fruiting may be lower % Vegetative \_\_\_\_\_

Habitat Vegetation Type \_\_\_\_\_

Associated Species MOSS, Polygonum viviparum, Lycopodium obscurum, Viola sibirica, Carex sprengelii

Aspect (N, S, NW, etc) various % Slope 0-20 Light exposure shaded for much of the day  
Soil Moisture moist

Soil/substrate granite, coarse soil

Elevation 6700-6800 Size \_\_\_\_\_ (acres)

Land use some climbing but not a popular area

Documentation Specimen (Collector/coll. #) Marriott 12323 (RM)

Photograph Taken? N Identification confirmed? Y (Marriott)

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)  
L.D.T. is a large complex outcrop with deep gullies, spurs, ridges, etc. - large area of potential habitat

South Dakota Natural Heritage Program  
Dept. Game, Fish & Parks  
523 E. Capitol, Pierre SD 57501  
RARE PLANT SURVEY FORM

[REDACTED]

Date of Survey June 7, 2001 Observers Hollis Marriott

Species Name Adoxa moschatellina

Location (Attach copy of pertinent topo map with population location shown if available)

USGS Quad Custer County Custer

Township 2S Range 5E Section 29  
1/4 Sec 11E411E4

Directions to site N side of Little Devils Tower - at base of granite walls and in gully bottoms.

for detailed directions, see Viola setkirkii survey form - Marriott, 6/7/2001

Forest Service District/BLM Resource Area Custer State Park  
Other Managed Area (e.g. National Park)

Biology Estimated # of individuals 300-500 in limited area surveyed; probably much larger

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type \_\_\_\_\_

Associated Species moss, Viola setkirkii, Polygonum viviparum, Cystopteris fragilis

Aspect (N, S, NW, etc) various % Slope 0-1090 Light exposure shaded for much of the day

Soil Moisture moist

Soil/substrate granite - coarse soil

Elevation 6700-6800 Size \_\_\_\_\_ (acres)

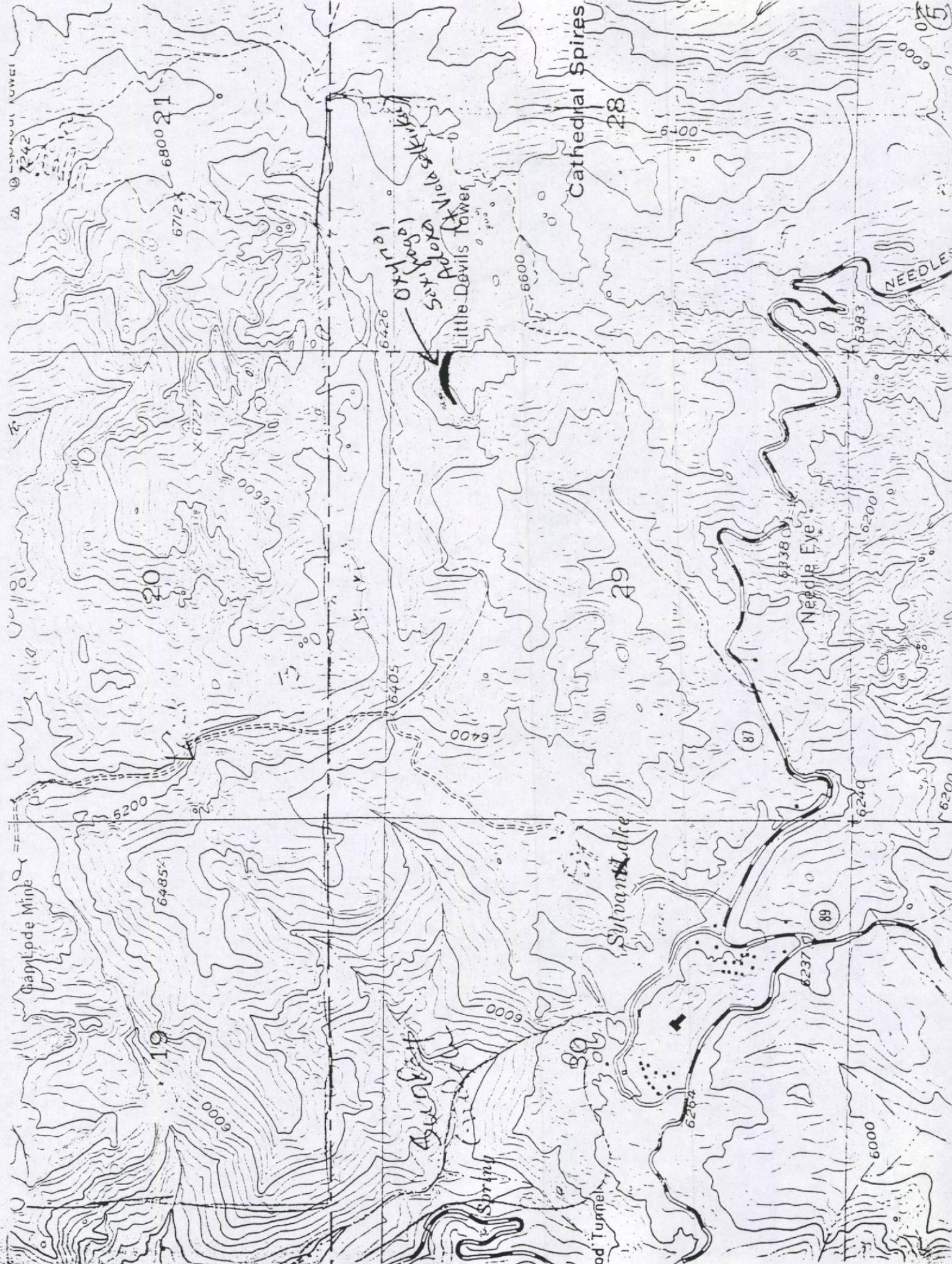
Land use some climbing (not a popular area); hiking trail to summit is on other side

Documentation Specimen (Collector/coll. #) N

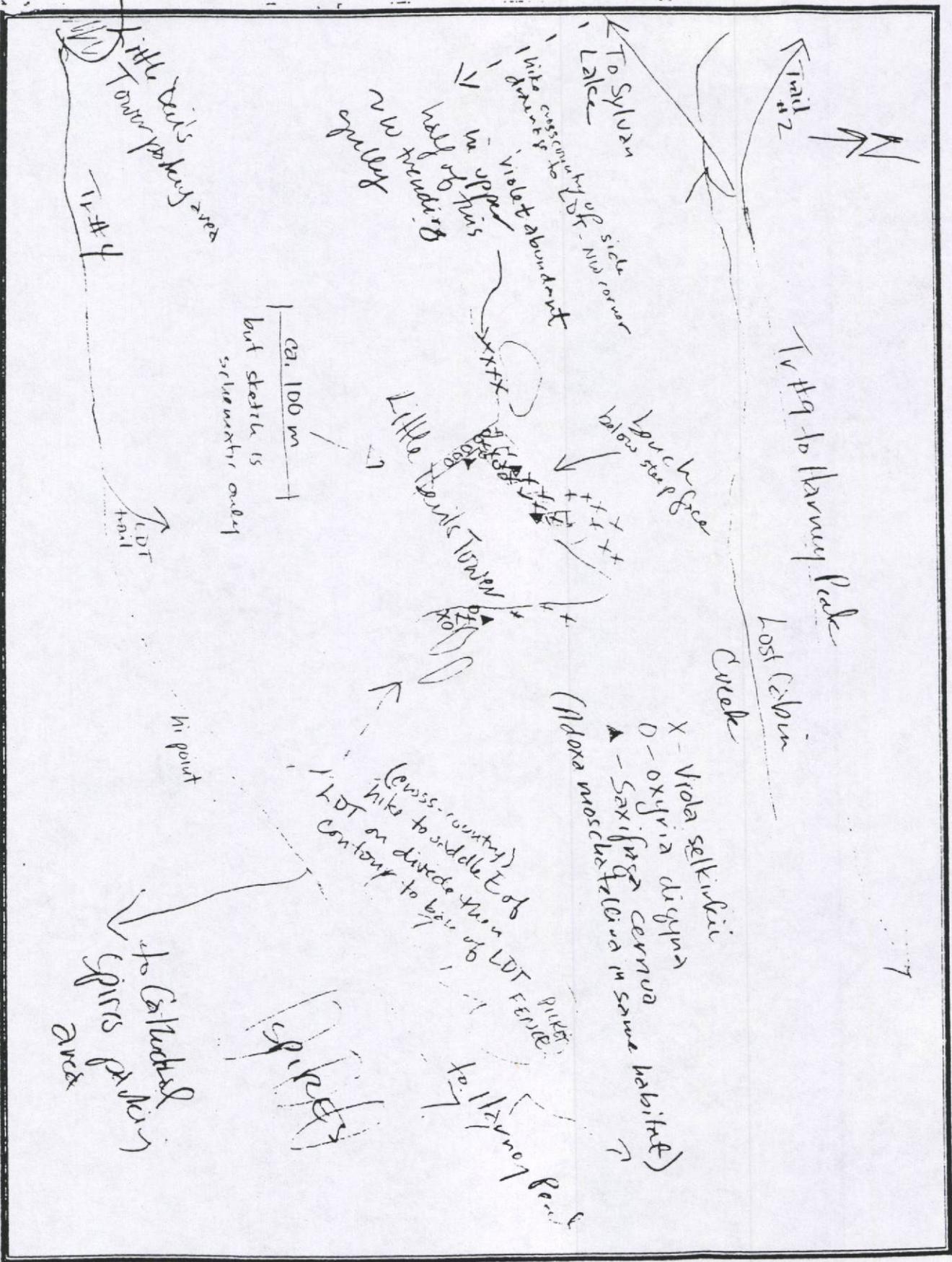
Photograph Taken ? N Identification confirmed ? Y (Marriott)

Additional Comments (continue on back): (include potential threats, protection or management recommendations if appropriate)

Little Devils Tower is complex with gullies, spurs, ridges, etc - large area of potential habitat



**Population Map:** The purpose of the sketch is to show fine details of the site which are not shown on the topographic base map.



RARE PLANT SURVEY FORM

~~Western Natural Diversity Database~~  
~~1001 Grand Ave.,~~ WI 82078

Date of Survey 18 July 2001 Observers Hollis Marriott

Species Name Carex bella

Location (Attach copy of pertinent topo map with population location shown if available)  
USGS Quad Custer County Custer

Township 28 Range 5E Section 29  
1/4 Sec NE 4 NE 4

Directions to site Little Devils Tower in Custer State Park ca. 1.4 air mi. ENE of Sullivan Lake Dam; shortest access is from Little Devils Tower parking area off Needles Highway (#37) roughly 1/2 mi E of Sullivan Lake. Take TR #4 E to Little Devils Tower road - on road NE of Little Devils Tower road - follow road to road junction - turn right (towards Lost Cabin Cr.) to major gully that heads up ENE of main Forest Service District/BLM Resource Area

Use topog map

Biology Estimated # of individuals and pinnales - Carex bella found near S side of this gully near head

% Flowering \_\_\_\_\_ % Fruiting \_\_\_\_\_ % Vegetative \_\_\_\_\_

Habitat Vegetation Type bottom of gully with high granite walls - near base of wall on S side

Associated Species E. fr. var. variegata, Carex sparganii, Cystopteris fragilis

Aspect (N, S, NW, etc) \_\_\_\_\_ % Slope 5-15% Light exposure partially shaded

Soil Moisture \_\_\_\_\_  
Soil/substrate coarse granitic soil gully trends WSW; plants near base of N-facing wall

Elevation 6700' Size \_\_\_\_\_ (acres)

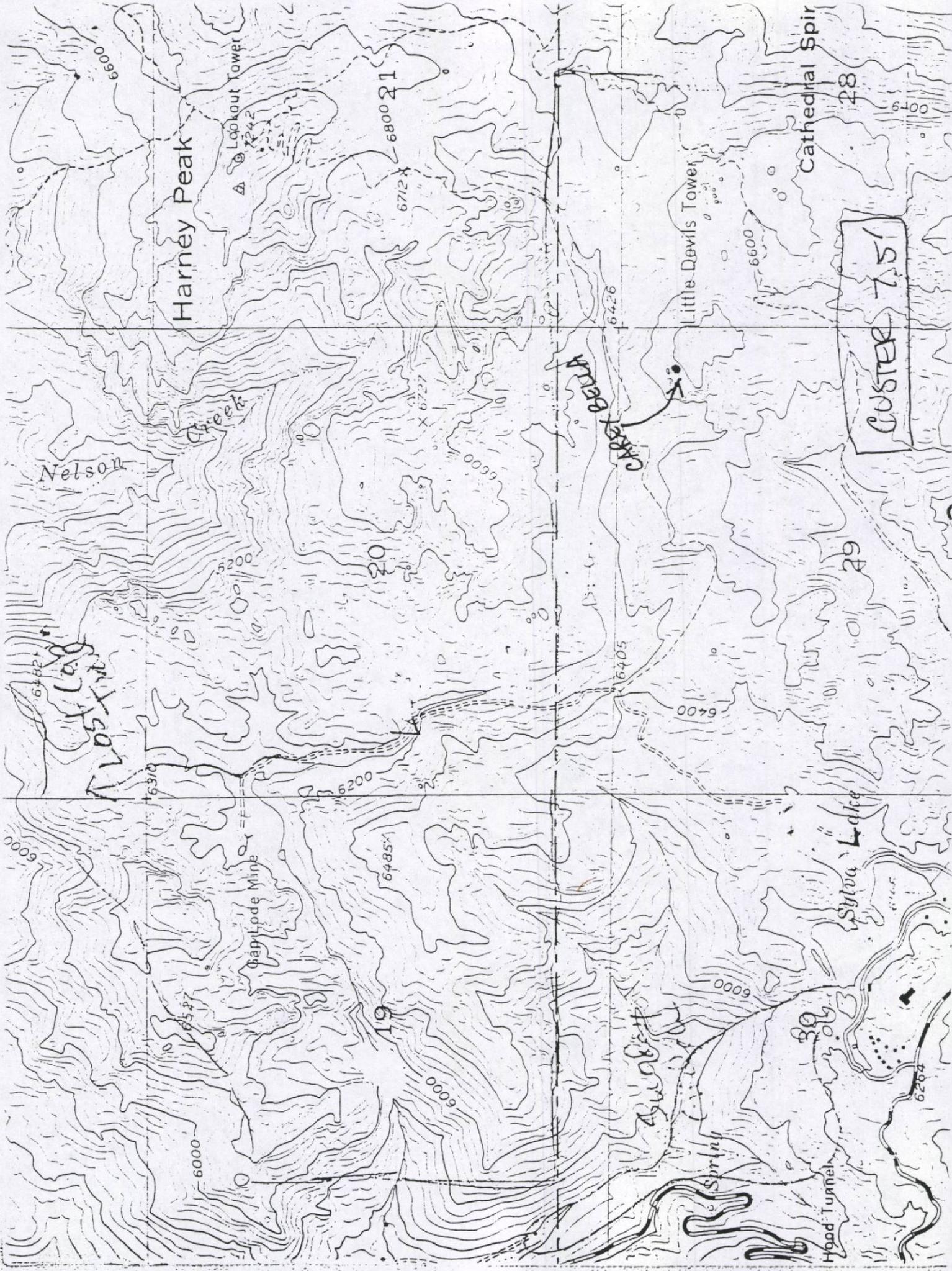
Land use very little

Documentation Specimen (Collector/coll. #) Marriott 12326 (RM)

Photograph Taken ? — Identification confirmed ? yes

Additional Comments (continue on back): (Marriott)

→ ca. 50 flowering stems in this microsite - surely more elsewhere in this long gully



Harney Peak

Lookout Tower

Nelson

Little Devils Tower

Cathedral Spire

28

Custer 751

Arroyo

29

Sylvia Lake

30

Hood Tunnel

6482

6800

20

6426

6405

6310

6200

6200

6400

6000

6000

19

6000

6000

6200

6400

6600

30