

Floristic Inventory of the Black Elk Wilderness
Black Hills National Forest, South Dakota

prepared by

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Introduction

The Black Elk Wilderness, managed by Black Hills National Forest, is located in the south central Black Hills of western South Dakota (Figure 1). The Wilderness is relatively small, with an area of 9824 acres (USDA Forest Service 1997); it is about seven miles across at the furthest east-west extent and five miles from north to south. It includes Harney Peak, high point of the Black Hills at 7242 ft. Elevations are lowest along Grizzley Bear Creek adjacent to Mount Rushmore National Memorial (4600 ft.), which borders the Wilderness on the northeast side. Perennial streams are common, and include the headwaters of several major streams of the Black Hills (Figure 2).

The Black Elk Wilderness is within the Central Core, the central of five geomorphic regions of the Black Hills uplift (Figure 3; Darton 1909, Froiland 1990). The uplift is a broad-backed anticline that has been truncated by erosion (Darton 1909). The oldest rocks are exposed in the central part, and are surrounded by progressively younger sedimentary rocks moving outwards and down in elevation. The Wilderness, in the heart of the Central Core, is underlain with Precambrian granite and metamorphic rocks (older than 1.7 billion years), with spectacular concentrations of large outcrops. Some are hundreds of feet high and hundreds of yards long, and are dissected by gullies and narrow drainages. Harney Peak is a huge complex rock mass with at least 100 acres of exposed rock, and close to 1500 ft. of overall vertical relief on the west and north sides. In other parts of the Wilderness, smaller pinnacles, fins and rock masses are common.

The Black Elk Wilderness includes some of the most mesic vegetation types found in the Black Hills. Much of the area is covered with ponderosa pine forest, with white spruce, aspen and paper birch locally abundant. The Wilderness is one of eight sites identified as exemplary in the Black Hills Community Inventory (Marriott *et al.* 1999). Sites chosen as exemplary in that study are large relative to other Black Hills sites, and contain high quality occurrences of multiple vegetation types in landscapes that are relatively intact over large areas. In the Black Elk Wilderness, several mesic ponderosa pine and white spruce forest types (including old growth) and high elevation riparian types are well-represented with high-quality occurrences. In addition, the site was ranked higher because it is managed largely for natural values (USDA Forest Service 1997).

The Wilderness is one of two areas in the Black Hills with large concentrations of rare plant species (the other is in the northern Black Hills near Deadwood and Lead, SD). Most Black Hills rare plants are northern or montane species that are widely disjunct from their main ranges in the boreal zone to the north and the Rocky Mountains to the west. These plants find suitable habitat in cool moist sites, which are abundant in the Black Elk Wilderness and adjacent areas. Most of these species are thought to be relics of Pleistocene times (prior to 12,000 years ago), when spruce forests and other boreal (northern) vegetation extended from the southern edge of the ice sheet as far south as Nebraska (Wright 1970).

Figure 1. Location of the Black Hills and the Black Elk Wilderness (USDA Forest Service 1998).

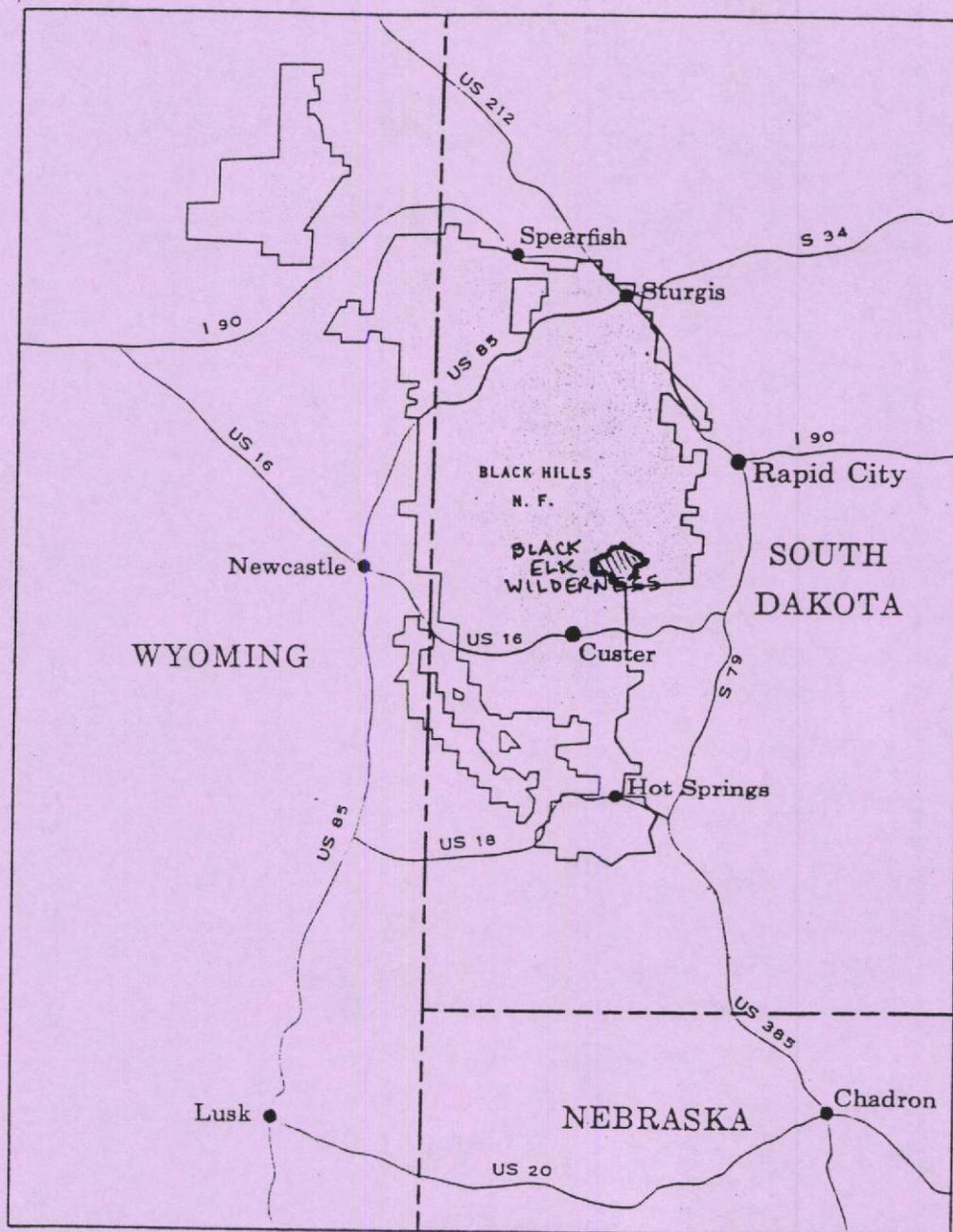


Figure 2. Map of the Black Elk Wilderness.

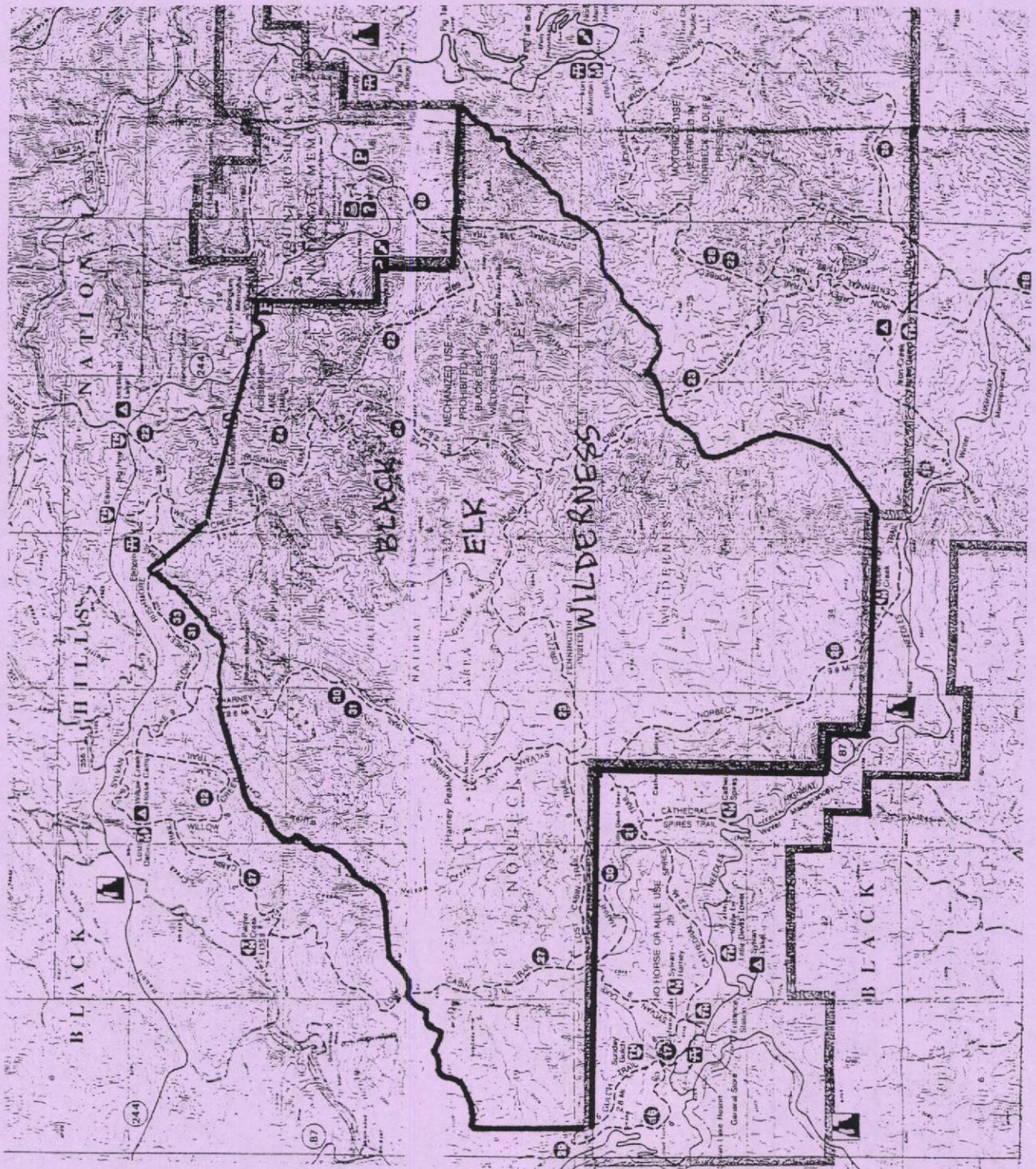
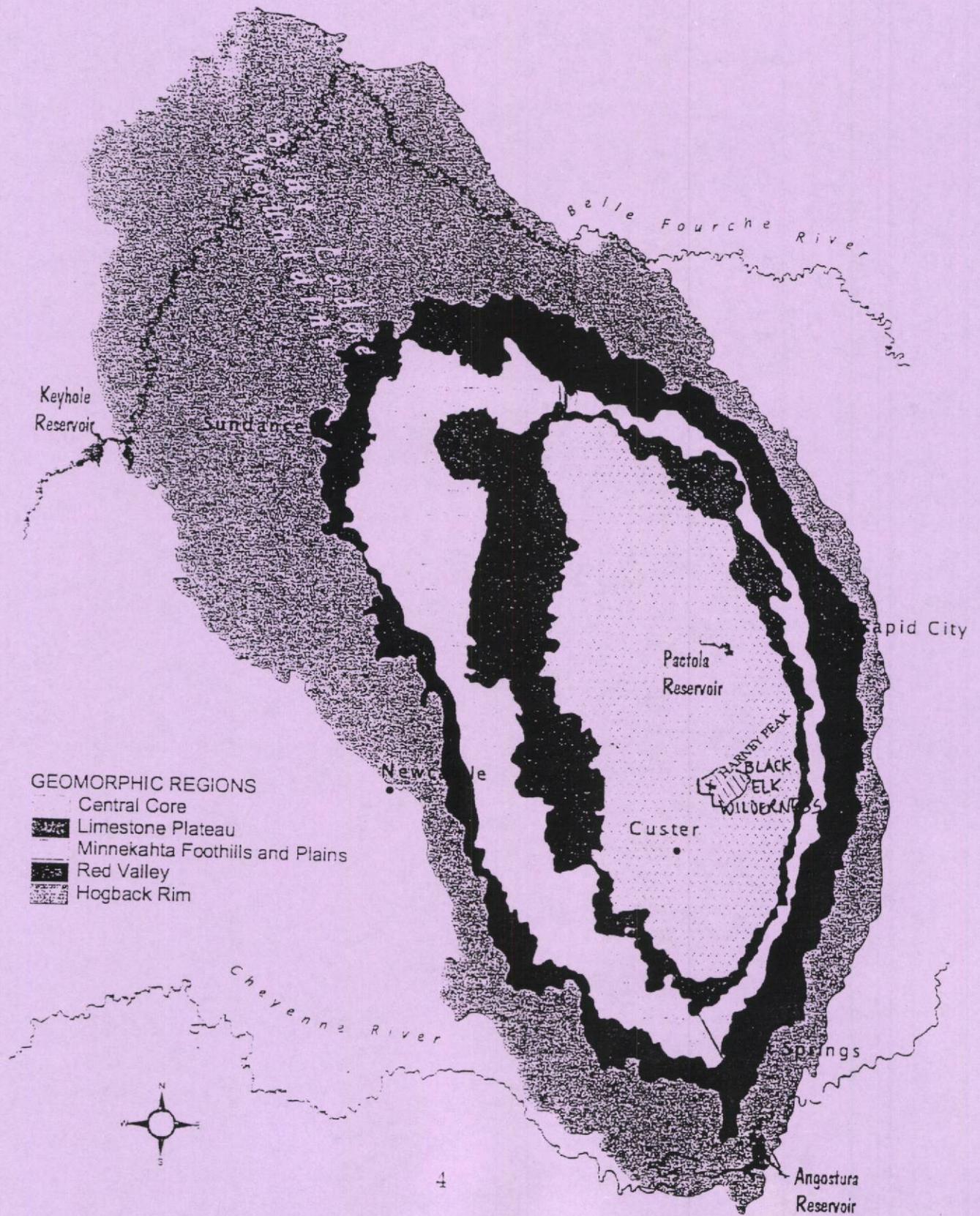


Figure 3. Geomorphic regions of the Black Hills (from Marriott et al. 1999, after DeWitt et al. 1989, Froiland 1990).



The high granite region including and surrounding the Black Elk Wilderness is predominantly public land managed by Black Hills National Forest, Mount Rushmore National Memorial and Custer State Park. Recreational use is intensive, including sight-seeing, hiking, mountain biking, rock-climbing, fishing and other activities. There are roughly 19 miles of trail within the Wilderness, open to hiking and horseback riding. Most lead to the summit of Harney Peak, and use is heavy in the warmer months. In 1995, recreational load of Wilderness trails was estimated at 33,900 visitor days (USDA Forest Service 1997).

Surprisingly little floristic survey had been done in the Black Elk Wilderness prior to this study. Rare plant occurrences had been documented in some of the more accessible areas, such as Harney Peak, but little information was available as to abundance and habitat. Several species had not been relocated since the 1930s. A thorough floristic inventory was needed as a basis for resource management and protection, as well as to enhance visitors' enjoyment of the area.

Methods

The main goal of the project was general floristic inventory of the Black Elk Wilderness and adjacent areas of Custer State Park that were crossed for access. Additional data were collected for species of special concern. Project objectives were:

1. Document the flora of the study area through survey, and collection where appropriate (floristic inventory).
2. Document occurrences of plant species of special concern, collecting data on population size, extent, habitat and potential threats.
3. Provide checklists of trees, shrubs and wildflowers for visitors to the area.

Floristic Inventory

Survey routes were chosen intuitively, designed to sample across the study area and in all types of habitat. More emphasis was given to areas known to have higher diversity, including drainage bottoms, north-facing slopes and rock outcrops. Unique sites (e.g. unusual habitat or high diversity) were visited several times during the field season.

All survey was conducted on foot by the author, with assistance from Cheryl Mayer, Wilderness Ranger. The Wilderness is sufficiently small that all areas could be accessed and surveyed in a day. Trails into the Wilderness on the southwest side cross through Custer State Park, and these routes were included in the survey. Survey began May 22 and ended September 21. Maps of survey routes are provided in Appendix A.

Specimens were collected for documentation in all cases as no populations were too small to prohibit collecting. Collection data included date, location, habitat and associated vegetation. Specimens have been deposited in the herbarium at the Black Hills National Forest Supervisor's Office in Custer, SD, and at the Rocky Mountain Herbarium (RM) at the University of WY in Laramie. Collections were verified by the author at the RM.

Nomenclature for vascular plant taxa follows a national standardized list (Kartesz 1994) with some exceptions. Priority was given to nomenclature used by the Rocky Mountain Herbarium, recognized as the leading authority for the Rocky Mountain region which includes the Black Hills (Nelson and Hartman 1996). Common names are included in the lists provided with this report, but choosing appropriate common names in the absence of an accepted standard is difficult. Many are taken from Kartesz (1994), but common names generally accepted locally have been given preference (Larson and Johnson 1999).

Species of Special Concern

During survey, more attention was given to areas where rare plants are known or suspected to occur: wetter shadier cooler sites, and rock outcrops. Additional data were collected for state and Federal species of special concern. Locations were mapped on 7.5' USGS topographic quadrangles, which have been sent with Element Occurrence Records to the SD Natural Heritage Program. For Sensitive species (USDA Forest Service 1997), populations were surveyed in more detail to document estimated population size, extent, habitat, and existing and potential threats.

Plant Checklists

Two plant checklists have been compiled for the Black Elk Wilderness for distribution to visitors. The first consists of all trees and shrubs; the second includes 94 of the more commonly encountered herbaceous forbs ("wildflowers"). These checklists are intended to complement plant guidebooks for the area.

Results

Floristic Inventory

A total of 308 species of vascular plants were documented in the floristic inventory the Black Elk Wilderness, in comparison with roughly 1300 species known from the entire Black Hills (Dorn 1977). An additional seven species are represented by records in the database maintained by the SD Natural Heritage Program (Table 1). Of these seven, three had been documented in the Black Elk Wilderness in the past, but were not relocated in 2000. Four more may have been previously collected in the Wilderness, but precise location data are not available. A list of taxa found in the 2000 inventory is included in Appendix B.

Much of the species diversity of the Black Elk Wilderness is found in a small fraction of the study area. Upland ponderosa pine forests and woodlands cover much of the Wilderness, but provide far fewer plant species proportional to area than do several more limited vegetation/habitat types. Mesic/wet drainage bottoms, large rock outcrops dissected by vegetated gullies and northerly slopes at high elevations or in narrow drainages were found to have much higher species diversity proportional to area.

There also are significant geographic differences in the flora of the Wilderness. The eastern part in the vicinity of Mount Rushmore shows the influence of lower elevation, with a group of species not found elsewhere, for example leadplant (*Amorpha canescens*), bigbluestem (*Andropogon gerardii*), groundnut (*Apios americana*), Nuttall's sunflower (*Helianthus nuttallii*), woodbine (*Parthenocissus vitacea*) and narrowleaf goldenrod (*Solidago graminifolia* or *Euthamia* g.). Shaded sites at high elevations also support a set of species not found elsewhere in the study area, including elegant sedge (*Carex bella*), mountain sorrel (*Oxyria digyna*), alpine timothy (*Phleum alpinum*) and nodding saxifrage (*Saxifraga cernuua*).

Species of Special Concern

Thirteen plant species of special concern in South Dakota had been reported from the Black Elk Wilderness prior to this study (SD Natural Heritage Database 1998). Two are designated Sensitive in the Rocky Mountain Region (Region 2) of the Forest Service (USDA Forest Service 1997): *Plantanthera orbiculata* (round-leaved orchid) and *Viola selkirkii* (great-spurred violet). As a result of this survey, an additional eight species from the State list are now known from the area. Three species based on old records (1930, 1932 and 1969) were relocated as well.

Two species new to both the Black Hills and South Dakota were found: *Botrychium minganense* (Mingan grapefern) and *Sedum "rosea"* (roseroot stonecrop; tentative identification). Grapeferns can be difficult to identify, and the Black Elk specimen was sent to specialists, including Peter Root (Denver, CO), Cindy Johnson-Groh (Gustavus Adolphus College, St. Peter, MN) and Peter Zika (Seattle, WA). Johnson-Groh and Zika provided the *B. minganense* determination with confidence. Root, who is less familiar with the species, agreed with their determination, but stated that "*B. minganense* has been confusing in Colorado."

The stonecrop specimen was collected in early August, but was already past flower. Dried flowers that were present did not allow determination with confidence. The plant appears to be in the *Sedum rosea* group, but better material collected earlier in the season is needed for identification to species.

Species of special concern found in the Black Elk Wilderness are shown in Table 1. Four of these species currently are on the Forest Sensitive list, but have been shown to be sufficiently common to justify removal. These species are flagged in Table 1. Lands managed by Custer State Park along access routes into the Black Elk Wilderness were included in the survey. Species of special concern found in these areas are flagged as such.

Table 1. Species of special concern, Black Elk Wilderness. SD Natural Heritage ranks follow ranking methodology of the state natural heritage network (Appendix D). Species currently on but to be removed from the Sensitive species list for Black Hills National Forest are marked (x) under Forest Sensitive. Distribution codes are: BEW - Black Elk Wilderness; BEW? - previously found in BEW but not documented in 2000 (see comments); CSP - Custer State Park.

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

In the Wilderness, rare plants are found predominantly in two types of habitat. The first includes lower elevation drainage bottoms with larger perennial streams, such as Grizzly Creek in the vicinity of Mount Rushmore. The majority of species of concern were found in the second type of habitat: cool moist sites at high elevations, and on northerly or otherwise well-shaded lower sites. The largest concentrations were found in shaded habitat on Harney Peak and nearby large outcrops.

Locations of species of special concern were mapped on USGS 7.5' topographic maps, which have been sent with survey forms to the SD Natural Heritage Database. Detailed information can be obtained by contacting that program.

Discussion

The floristic inventory of the Black Elk Wilderness included sufficient survey to produce a fairly complete list of species found in the study area, as well as information on species of concern. However, the abundant large rock outcrops of the high granite region provide a complex system of plant habitat, and access is challenging. The study area is designated Wilderness with travel limited to hiking. For these reasons, it would not be surprising if new botanical discoveries continue to be made. This project should be considered a thorough first step in documenting the flora of the region.

Additional Survey Needs

Generally, the study area was well-covered with survey distributed through the area and the growing season (Appendix A). However, several mesic sites with high species diversity that were discovered later in the growing season may provide additional species of interest if visited earlier. These survey needs are indicated on the site survey forms sent to the SD Natural Heritage Database.

The Black Elk Wilderness includes much of the high granite region of the Black Hills, but adjacent areas contain the same types of habitat with high potential for rare plants. Limited survey in Custer State Park documented several occurrences of plant species of concern. Earlier survey work found rare plant habitat on lands managed by Black Hills National Forest south of the Needles Highway in the vicinity of Sylvan Lake. Comprehensive inventory of these areas is needed.

During the 2000 survey, additional data were collected for species of special concern, and greater emphasis was placed on habitat likely to support rare species. However, this project should not be considered a rare plant survey, as the main focus was floristic inventory. With the information now available, rare plant populations can be surveyed intensively for monitoring purposes, and additional survey can be directed at individual species.

Management Recommendations

Survey of the Black Elk Wilderness in 2000 produced 54 newly-documented or verified occurrences of species listed by the SD Natural Heritage Database or the Forest Service. Several of the State-listed species may be downranked as a result, for example musk-root (*Adoxa moschatellina*) and maidenhair spleenwort (*Asplenium trichomanes*). *Botrychium minganense* and *Sedum "rosea"* (tentative identification) are new records for the Black Hills and South Dakota, and should be added to the State list. The Mingan grapefern is sufficiently common in Region 2 that Sensitive designation probably is not warranted (pers. comm. from W. Fertig, Botanist, WY Natural Diversity Database). With positive identification, the sedum (stonecrop) may be added to the Forest Service Sensitive list.

The Black Elk Wilderness is heavily used by recreationists, and is actively managed by the Forest Service. In the recent past, trails have been improved and re-routed. It is important that all such projects be screened for potential impact to species of concern. Prior to this project, the Wilderness was known to be one of two regions in the Black Hills with large concentrations of rare plants, and survey in 2000 added even more species to the list of botanical rarities.

The greatest concentration of rare plants occurs along the base of the steep north and northeast sides of Harney Peak. The number of species of concern in this limited area is exceptional, including at least eight plants listed by the State or Forest Service. Additional survey earlier in the season may yield more interesting discoveries. The habitat is fragile, consisting of moss and grass mats developed on poor granitic soils. Currently there is little human use, but future management could affect the area. This site should be flagged as unique by Black Hills National Forest, to be managed for botanical values. Improved access must be avoided. All projects considered should avoid use of this zone, even for access. Although there currently is little use of the site, there is potential for future impact. One possibility is historical survey and removal of building materials at the base immediately below the lookout tower. There may also be a decision to remove the trash that has been thrown off the summit. This botanically unique site must be recognized and given management emphasis to avoid harm.

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Appendix A

2000 Survey Routes

Most survey was done by Hollis Marriott. Routes labelled "CM" were surveyed by Cheryl Mayer, Black Elk Wilderness Ranger.

MONTE RUSHMORE
NATIONAL MEMORIAL

4858000 m N.

BACK ELY

WYLDERNE

PENNINGTON
CLUSTER

B L

6/28

6/21 A

IRON MT.
T.S. QUAD

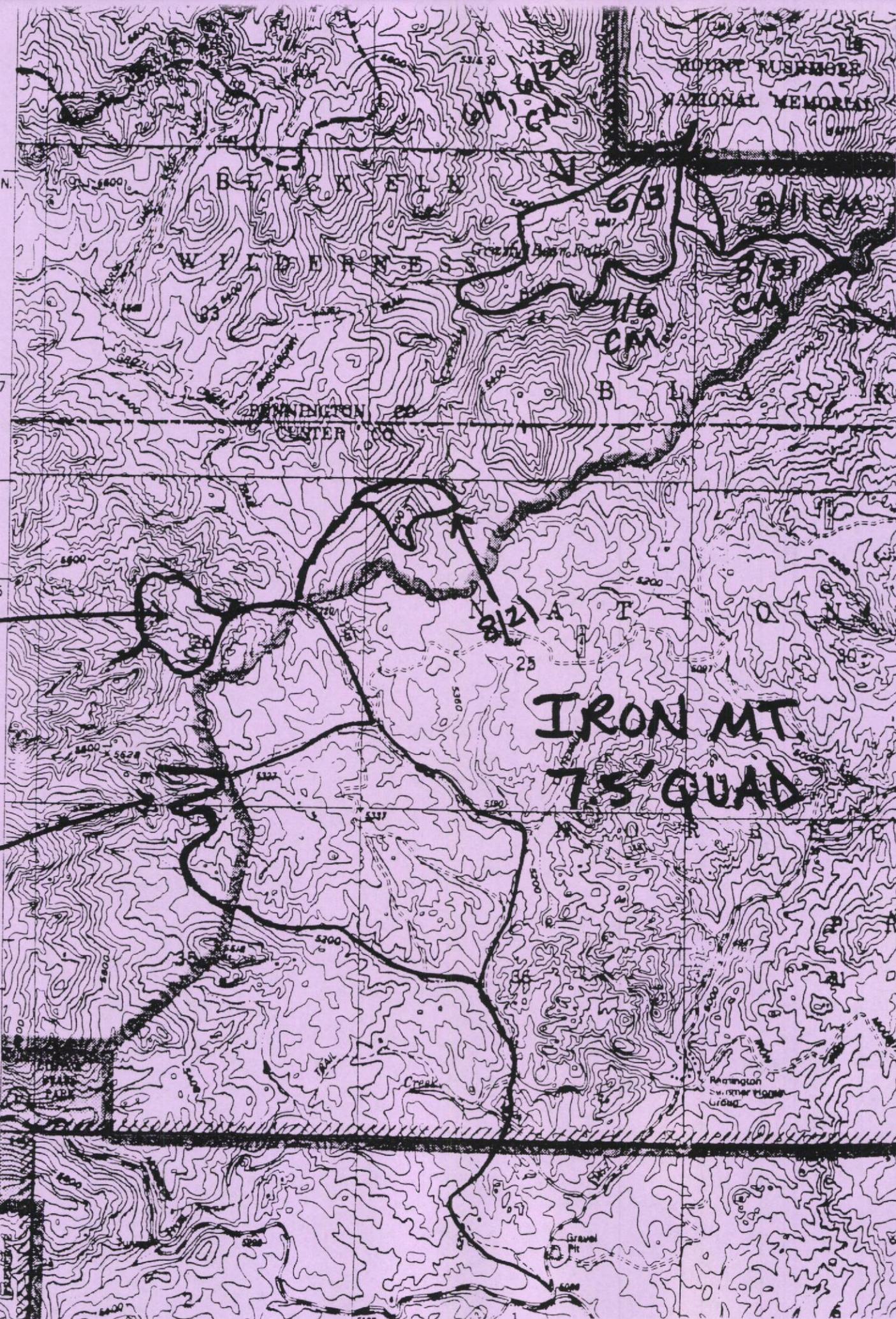
6/21

50'

T. 2 S.

4854

CLUSTER VIA S. DAK. RD. 12 MI.
6.3 MI. W. S. DAK. RD.





**MT RUSHMORE
7.5 QUAD**

126

17

817

6130

Base map prepared by the U.S. Geological Survey

15 MI. (O. S. DAK. 36
CUSTER 30 MI.)
SCALE 1:24000

R. 5 E. 27' 30" R. 6 E.

1170000 FEET 622

52' 30" 103' 30"

1 MILE



181

Appendix B

Vascular Plants of the Black Elk Wilderness

This list includes species documented during survey in 2000. For additional species based on older records, see Table 1 in the main body of this report.

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>FAMILY</u>
<i>Achillea millefolium</i>	common yarrow	Asteraceae
<i>Aconitum columbianum</i>	Columbian monkshood	Ranunculaceae
<i>Actaea rubra</i>	red baneberry	Ranunculaceae
<i>Adoxa moschatellina</i>	muskroot	Adoxaceae
<i>Agastache foeniculum</i>	blue giant hyssop	Lamiaceae
<i>Agoseris glauca</i>	pale agoseris	Asteraceae
<i>Agrimonia striata</i>	roadside agrimony	Rosaceae
<i>Agropyron subsecundum</i>	bearded wheatgrass	Poaceae
<i>Agropyron trachycaulum</i>	slender wheatgrass	Poaceae
<i>Agrostis scabra</i>	rough bentgrass	Poaceae
<i>Agrostis stolonifera</i>	redtop bent	Poaceae
<i>Alisma triviale</i>	northern water plantain	Alismataceae
<i>Allium cernuum</i>	nodding onion	Liliaceae
<i>Alopecurus aequalis</i>	shortawn foxtail	Poaceae
<i>Amelanchier alnifolia</i>	Saskatoon serviceberry	Rosaceae
<i>Amorpha canescens</i>	leadplant	Fabaceae
<i>Anaphalis margaritacea</i>	everlasting	Asteraceae
<i>Andropogon gerardii</i>	big bluestem	Poaceae
<i>Androsace occidentalis</i>	western rockjasmine	Primulaceae
<i>Androsace septentrionalis</i>	pygmyflower rockjasmine	Primulaceae
<i>Anemone cylindrica</i>	candle anemone	Ranunculaceae
<i>Anemone multifida</i>	Pacific anemone	Ranunculaceae
<i>Anemone patens</i>	pasque flower	Ranunculaceae
<i>Antennaria howellii</i>	Howell's pussytoes	Asteraceae
<i>Antennaria microphylla</i>	littleleaf pussytoes	Asteraceae
<i>Antennaria neglecta</i>	field pussytoes	Asteraceae
<i>Antennaria rosea</i>	rosy pussytoes	Asteraceae
<i>Apios americana</i>	groundnut	Fabaceae
<i>Apocynum androsaemifolium</i>	spreading dogbane	Apocynaceae
<i>Arabis glabra</i>	tower rockcress	Brassicaceae
<i>Aralia nudicaulis</i>	wild sarsaparilla	Araliaceae
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	Ericaceae
<i>Arenaria lateriflora</i>	bluntleaf sandwort	Caryophyllaceae
<i>Arenaria rubella</i>	boreal sandwort	Caryophyllaceae
<i>Arnica lonchophylla</i>	northern arnica	Asteraceae
<i>Asplenium septentrionale</i>	forked spleenwort	Aspleniaceae
<i>Asplenium trichomanes</i>	maidenhair spleenwort	Aspleniaceae
<i>Asplenium X alternifolium</i>	alternateleaf spleenwort	Aspleniaceae
<i>Aster ciliolatus</i>	Lindley's aster	Asteraceae
<i>Aster ericoides</i>	heath aster	Asteraceae
<i>Aster hesperius</i>	marsh aster	Asteraceae
<i>Aster laevis</i>	smooth aster	Asteraceae
<i>Astragalus adsurgens</i>	standing milkvetch	Fabaceae
<i>Astragalus alpinus</i>	alpine milkvetch	Fabaceae
<i>Athyrium filix-femina</i>	common ladyfern	Dryopteridaceae
<i>Barbarea orthoceras</i>	American yellowrocket	Brassicaceae
<i>Betula papyrifera</i>	paper birch	Betulaceae
<i>Botrychium minganense</i>	Mingan grapefern	Ophioglossaceae
<i>Botrychium multifidum</i>	leathery grapefern	Ophioglossaceae
<i>Bromus ciliatus</i>	fringed brome	Poaceae
<i>Bromus inermis</i>	pumpelly brome	Poaceae
<i>Calamagrostis canadensis</i>	bluejoint (Canadian reedgrass)	Poaceae
<i>Calamagrostis purpurascens</i>	purple reedgrass	Poaceae

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>FAMILY</u>
Callitriche palustris	vernal waterstarwort	Callitrichaceae
Campanula rotundifolia	harebell	Campanulaceae
Cardamine pensylvanica	Pennsylvania bittercress	Brassicaceae
Carex aquatilis	water sedge	Cyperaceae
Carex backii	Back's sedge	Cyperaceae
Carex bebbii	Bebb's sedge	Cyperaceae
Carex bella	elegant sedge	Cyperaceae
Carex brevior	fescue sedge	Cyperaceae
Carex canescens	gray sedge	Cyperaceae
Carex deweyana	Dewey sedge	Cyperaceae
Carex disperma	softleaf sedge	Cyperaceae
Carex foenea	dryspike sedge	Cyperaceae
Carex gravida	heavy sedge	Cyperaceae
Carex hoodii	Hood's sedge	Cyperaceae
Carex hystericina	bottlebrush sedge	Cyperaceae
Carex intumescens	greater bladder sedge	Cyperaceae
Carex lanuginosa	woolly sedge	Cyperaceae
Carex lasiocarpa	woollyfruit sedge	Cyperaceae
Carex leptalea	delicate sedge	Cyperaceae
Carex microptera (see note 1 at end)	smallwing sedge	Cyperaceae
Carex nebrascensis	Nebraska sedge	Cyperaceae
Carex peckii	Peck's sedge	Cyperaceae
Carex pedunculata	long-stalked sedge	Cyperaceae
Carex praticola	meadow sedge	Cyperaceae
Carex richardsonii	Richardson's sedge	Cyperaceae
Carex rosea	rosy sedge	Cyperaceae
Carex rostrata	beaked sedge	Cyperaceae
Carex sprengei	Sprengel's sedge	Cyperaceae
Carex stipata	owlfruit sedge	Cyperaceae
Carex tenera	quill sedge	Cyperaceae
Castilleja sulphurea	sulphur Indian paintbrush	Scrophulariaceae
Cerastium arvense	field chickweed	Caryophyllaceae
Chenopodium fremontii	Fremont's goosefoot	Chenopodiaceae
Cicuta maculata	spotted water hemlock	Apiaceae
Cinna latifolia	drooping woodreed	Poaceae
Circaea alpina	small enchanter's nightshade	Onagraceae
Cirsium arvense	Canadian thistle	Asteraceae
Cirsium drummondii	Drummond's thistle	Asteraceae
Cirsium vulgare	bull thistle	Asteraceae
Collinsia parviflora	blue eyed Mary	Scrophulariaceae
Collomia linearis	narrowleaf collomia	Polemoniaceae
Corallorrhiza maculata	spotted coralroot	Orchidaceae
Corallorrhiza trifida	pale coralroot	Orchidaceae
Corallorrhiza wisteriana	spring coralroot	Orchidaceae
Cornus canadensis	bunchberry dogwood	Cornaceae
Cornus sericea	redosier dogwood	Cornaceae
Corydalis aurea	golden corydalis	Fumariaceae
Corylus cornuta	beaked hazelnut	Betulaceae
Cryptantha affinis	quill catseye	Boraginaceae
Cynoglossum boreale	northern comfrey	Boraginaceae
Cynoglossum officinale	houndstongue	Boraginaceae
Cystopteris fragilis	brittle fern	Dryopteridaceae
Danthonia spicata	poverty oatgrass	Poaceae

SCIENTIFIC NAME

Dichanthelium lanuginosum
 Dichanthelium leibergii
 Dichanthelium linearifolium
 Disporum trachyandrum
 Dodecatheon pulchellum
 Draba aurea
 Dryopteris filix-mas
 Elymus canadensis
 Elymus innovatus
 Epilobium angustifolium
 Epilobium ciliatum
 Epilobium halleanum
 Equisetum arvense
 Equisetum hyemale
 Equisetum laevigatum
 Equisetum pratense
 Erigeron formosissimus
 Erigeron speciosus
 Erigeron strigosus
 Erigeron subtrinervis
 Eupatorium maculatum
 Festuca ovina
 Festuca pratensis
 Fragaria virginiana
 Galeopsis tetrahit
 Galium boreale
 Galium triflorum
 Gentianella amarella
 Geranium richardsonii
 Geum macrophyllum
 Glyceria grandis
 Glyceria striata
 Gnaphalium viscosum
 Goodyera repens
 Gymnocarpium dryopteris
 Hackelia deflexa
 Halenia deflexa
 Helianthus nuttallii
 Heracleum sphondylium
 Heterotheca villosa
 Heuchera richardsonii
 Hieracium albiflorum
 Hieracium umbellatum
 Humulus lupulus
 Hypericum canadense
 Iris missouriensis
 Juncus balticus
 Juncus ensifolius
 Juncus interior
 Juncus roxosus
 Juncus tenuis
 Juniperus communis
 Lactuca biennis

COMMON NAME

a switchgrass
 Leiberg's panicum
 slimleaf panicum
 fairybells
 darkthroat shootingstar
 golden whitlowgrass
 male fern
 Canada wildrye
 fuzzyspike wildrye
 fireweed
 hairy willowherb
 glandular willowherb
 field horsetail
 scouringrush horsetail
 smooth horsetail
 meadow horsetail
 beautiful fleabane
 aspen fleabane
 daisy fleabane
 threenerve fleabane
 spotted joeyweed
 sheep fescue
 meadow fescue
 Virginia strawberry
 hempnettle
 northern bedstraw
 fragrant bedstraw
 autumn dwarfgentian
 Richardson's geranium
 largeleaf avens
 American mannagrass
 fowl mannagrass
 clammy cudweed
 lesser rattlesnake plantain
 western oakfern
 nodding stickseed
 American spurredgentian
 Nuttall's sunflower
 cow parsnip
 hairy goldenaster
 Richardson's alumroot
 white hawkweed
 narrowleaf hawkweed
 common hop
 lesser Canadian St. Johnswort
 Rocky Mountain iris
 Baltic rush
 swordleaf rush
 inland rush
 jointed rush
 path rush
 common juniper
 tall blue lettuce

FAMILY

Poaceae
 Poaceae
 Poaceae
 Liliaceae
 Primulaceae
 Brassicaceae
 Dryopteridaceae
 Poaceae
 Poaceae
 Onagraceae
 Onagraceae
 Onagraceae
 Equisetaceae
 Equisetaceae
 Equisetaceae
 Asteraceae
 Asteraceae
 Asteraceae
 Asteraceae
 Asteraceae
 Poaceae
 Poaceae
 Rosaceae
 Lamiaceae
 Rubiaceae
 Rubiaceae
 Gentianaceae
 Geraniaceae
 Rosaceae
 Poaceae
 Poaceae
 Asteraceae
 Orchidaceae
 Dryopteridaceae
 Boraginaceae
 Gentianaceae
 Asteraceae
 Apiaceae
 Asteraceae
 Saxifragaceae
 Asteraceae
 Asteraceae
 Cannabaceae
 Clusiaceae
 Iridaceae
 Juncaceae
 Juncaceae
 Juncaceae
 Juncaceae
 Juncaceae
 Cupressaceae
 Asteraceae

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>FAMILY</u>
Lathyrus ochroleucus	yellow vetchling	Fabaceae
Liatris ligulistylis	Rocky Mountain gayfeather	Asteraceae
Lilium philadelphicum	wood lily	Liliaceae
Linnaea borealis	twinflower	Caprifoliaceae
Lithophragma parviflorum	smallflower woodlandstar	Saxifragaceae
Lonicera dioica	limber honeysuckle	Caprifoliaceae
Luzula campestris	field woodrush	Juncaceae
Lycopus americanus	American waterhorehound	Lamiaceae
Lycopus asper	rough bugleweed	Lamiaceae
Lysimachia ciliata	fringed loosestrife	Primulaceae
Maianthemum canadense	mayflower	Liliaceae
Maianthemum stellatum	starry false Solomon's seal	Liliaceae
Matricaria matricarioides	pineapple weed	Asteraceae
Mentha arvensis	wild mint	Lamiaceae
Mimulus floribundus	manyflowered monkeyflower	Scrophulariaceae
Mimulus guttatus	seep monkeyflower	Scrophulariaceae
Mirabilis hirsuta	hairy four o'clock	Nyctaginaceae
Monarda fistulosa	wildbergamot beebalm	Lamiaceae
Muhlenbergia racemosa	marsh muhly	Poaceae
Musineon tenuifolium	slender wildparsley	Apiaceae
Myosotis alpestris	a scorpion grass	Boraginaceae
Oenothera villosa	hairy eveningprimrose	Onagraceae
Onoclea sensibilis	sensitive fern	Dryopteridaceae
Oryzopsis asperifolia	roughleaf ricegrass	Poaceae
Oryzopsis micrantha	littleseed rice-grass	Poaceae
Oryzopsis pungens	mountain ricegrass	Poaceae
Osmorhiza depauperata	bluntseed sweetroot	Apiaceae
Osmorhiza longistylis	longstyle sweetroot	Apiaceae
Oxalis dillenii	Dillen's oxalis	Oxalidaceae
Oxalis stricta	common yellow oxalis	Oxalidaceae
Oxyria digyna	mountain sorrel	Polygonaceae
Oxytropis campestris	cold mountain crazyweed	Fabaceae
Parthenocissus vitacea	woodbine	Vitaceae
Penstemon gracilis	slender beardtongue	Scrophulariaceae
Pentaphylloides floribunda	shrubby cinquefoil	Rosaceae
Phalaris arundinacea	reed canarygrass	Poaceae
Phleum alpinum	alpine timothy	Poaceae
Phleum pratense	timothy	Poaceae
Physocarpus monogynus	mountain ninebark	Rosaceae
Physocarpus opulifolius	common ninebark	Rosaceae
Picea glauca	white spruce	Pinaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Plantago major	common plantain	Plantaginaceae
Platanthera orbiculata	roundleaved orchid	Orchidaceae
Poa compressa	Canada bluegrass	Poaceae
Poa interior	inland bluegrass	Poaceae
Poa nervosa	Wheeler bluegrass	Poaceae
Poa palustris	fowl bluegrass	Poaceae
Poa pratensis	Kentucky bluegrass	Poaceae
Poa trivialis	rough bluegrass	Poaceae
Polygonum aviculare	prostrate knotweed	Polygonaceae
Polygonum douglasii	Douglas' knotweed	Polygonaceae
Polygonum erectum	erect knotweed	Polygonaceae

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>FAMILY</u>
Senecio pauperculus	balsam groundsel	Asteraceae
Senecio rapifolius	openwoods groundsel	Asteraceae
Shepherdia canadensis	russet buffaloberry	Elaeagnaceae
Silene drummondii	Drummond's campion	Caryophyllaceae
Sisyrinchium montanum	mountain blueeyed grass	Iridaceae
Smilax herbacea	smooth carrionflower	Smilacaceae
Solidago canadensis	Canada goldenrod	Asteraceae
Solidago gigantea	giant goldenrod	Asteraceae
Solidago graminifolia	narrowleaf goldenrod	Asteraceae
Solidago missouriensis	Missouri goldenrod	Asteraceae
Solidago nemoralis	Dyersweed goldenrod	Asteraceae
Solidago sparsiflora	three-nerved goldenrod	Asteraceae
Solidago speciosa	showy goldenrod	Asteraceae
Sparganium emersum	simplestem burreed	Sparganiaceae
Sphenopholis obtusata	prairie wedgescale	Poaceae
Spiraea betulifolia	shinyleaf spirea	Rosaceae
Stellaria longifolia	longleaf starwort	Caryophyllaceae
Streptopus amplexifolius	claspleaf twistedstalk	Liliaceae
Talinum parviflorum	sunbright	Portulacaceae
Thalictrum revolutum	waxyleaf meadowrue	Ranunculaceae
Thermopsis rhombifolia	prairie thermopsis	Fabaceae
Tragopogon dubius	yellow salsify	Asteraceae
Trifolium hybridum	alsike clover	Fabaceae
Trifolium pratense	red clover	Fabaceae
Trifolium repens	white clover	Fabaceae
Typha latifolia	broadleaf cattail	Typhaceae
Urtica dioica	stinging nettle	Urticaceae
Verbena hastata	swamp verbena	Verbenaceae
Veronica americana	American speedwell	Scrophulariaceae
Veronica anagallis-aquatica	water speedwell	Scrophulariaceae
Veronica peregrina	neckweed	Scrophulariaceae
Viburnum lentago	nannyberry	Caprifoliaceae
Vicia americana	American vetch	Fabaceae
Viola adunca	longspur violet	Violaceae
Viola canadensis	Canadian white violet	Violaceae
Viola macloskeyi	small white violet	Violaceae
Viola pedatifida	prairie violet	Violaceae
Viola pubescens	downy yellow violet	Violaceae
Viola renifolia	white violet	Violaceae
Viola selkirkii	great-spurred violet	Violaceae
Woodsia scopulina	Rocky Mountain woodsia	Dryopteridaceae
Zigadenus elegans	mountain deathcamas	Liliaceae
Zizia aptera	heartleaf alexanders	Apiaceae

NOTE 1: Several specimens from the Wilderness that are similar to *Carex microptera* key to *C. pachystachya* Cham. ex Steudal, and are closer to *C. pachystachya* material examined at the Rocky Mountain Herbarium, based on pergynium shape and size. This species is not currently known from the Black Hills. More material and study are needed before this name can be assigned with confidence.

NOTE 2: A stonecrop (*Sedum* sp.) was collected in early August, but was already past flower. It appears to be in the *Sedum rosea* group, but better material is needed for identification to species. See text for more discussion (**Results, Species of Special Concern and Discussion, Management Recommendations**).

Appendix C

Plant Checklists for the Black Elk Wilderness

The checklist of trees and shrubs is formatted to produce a 5.5 x 8.5" handout. The checklist of common ferns and wildflowers is formatted to produce a two-sided 8.5 x 11" handout to be folded in thirds.

Trees and Shrubs
of the Black Elk
Wilderness

Hollis Marriott
February 2001

(Note: wildflowers and ferns
are included in a separate
checklist.)

Trees

Saskatoon serviceberry
Amelanchier alnifolia
paper birch
Betula papyrifera
white spruce
Picea glauca
ponderosa pine
Pinus ponderosa
quaking aspen
Populus tremuloides
pin cherry
Prunus pensylvanica
common chokecherry
Prunus virginiana
bur oak
Quercus macrocarpa
yellow willow
Salix lutea
nannyberry
Viburnum lentago

Shrubs

leadplant
Amorpha canescens
redosier dogwood
Cornus sericea
beaked hazel
Corylus cornuta
common juniper
Juniperus communis
shrubby cinquefoil
Pentaphylloides floribunda
mountain ninebark
Physocarpus monogynus
common ninebark
Physocarpus opulifolius
wax currant
Ribes cereum
hairystem gooseberry
Ribes hirtellum
inland gooseberry
Ribes oxycanthoides
prickly rose
Rosa acicularis
Bebb willow
Salix bebbiana
pussy willow
Salix discolor
sandbar willow
Salix exigua
Scouler's willow
Salix scouleriana
scarlet elderberry
Sambucus racemosa
russet buffaloberry
Shepherdia canadensis

Trees and Shrubs
of the Black Elk
Wilderness

Hollis Marriott
February 2001

(Note: wildflowers and ferns
are included in a separate
checklist.)

Trees

Saskatoon serviceberry
Amelanchier alnifolia
paper birch
Betula papyrifera
white spruce
Picea glauca
ponderosa pine
Pinus ponderosa
quaking aspen
Populus tremuloides
pin cherry
Prunus pensylvanica
common chokecherry
Prunus virginiana
bur oak
Quercus macrocarpa
yellow willow
Salix lutea
nannyberry
Viburnum lentago

Shrubs

leadplant
Amorpha canescens
redosier dogwood
Cornus sericea
beaked hazel
Corylus cornuta
common juniper
Juniperus communis
shrubby cinquefoil
Pentaphylloides floribunda
mountain ninebark
Physocarpus monogynus
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Ribes hirtellum
inland gooseberry
Ribes oxycanthoides
prickly rose
Rosa acicularis
Bebb willow
Salix bebbiana
pussy willow
Salix discolor
sandbar willow
Salix exigua
Scouler's willow
Salix scouleriana
scarlet elderberry
Sambucus racemosa
russet buffaloberry
Shepherdia canadensis

Common Ferns and Wildflowers of the Black Elk Wilderness

Hollis Marriott
February 2001

Ninety-four of the more commonly-seen ferns and wildflowers are listed here, grouped by flower color. Trees and shrubs are included in a separate checklist.

Ferns & Fern Allies

forked spleenwort
Asplenium septentrionale
maidenhair spleenwort
Asplenium trichomanes
common ladyfern
Athyrium filix-femina
brittle fern
Cystopteris fragilis
male fern
Dryopteris filix-mas
field horsetail
Equisetum arvense
smooth horsetail
Equisetum laevigatum
Rocky Mountain polypody
Polypodium saximontanum
western brackenfern
Pteridium aquilinum
Rocky Mountain woodsia
Woodsia scopulina

Yellow Flowers

pale agoseris
Agoseris glauca
northern arnica
Arnica lonchophylla

sulphur Indian paintbrush
Castilleja sulphurea
golden corydalis
Corydalis aurea
largeleaf avens
Ceanothophyllum
Richardson's alumroot
Heuchera richardsonii
narrowleaf hawkweed
Hieracium umbellatum
yellow vetchling
Lathyrus ochroleucus
limber honeysuckle
Lonicera dioica
fringed loosestrife
Lysimachia ciliata
seep monkeyflower
Mimulus guttatus
slender wildparsley
Muscineon tenuifolium
hairy eveningprimrose
Oenothera villosa
woodbine
Parthenocissus vitacea
gland cinquefoil
Potentilla glandulosa
northwest cinquefoil
Potentilla gracilis
woodland pinedrops
Pterospora andromedea
littleleaf buttercup
Ranunculus abortivus
Macoun's buttercup
Ranunculus macounii
blackeyed Susan
Rudbeckia hirta
spearleaf stonecrop
Sedum lanceolatum
balsam groundsel
Senecio pauperculus
openwoods groundsel
Senecio rapifolius

smooth carrionflower
Smilax herbacea
Canada goldenrod
Solidago canadensis
giant goldenrod
Solidago gigantea
Dyersweed goldenrod
Solidago nemoralis
prairie thermopsis
Thermopsis rhombifolia
yellow salsify
Tragopogon dubius
downy yellow violet
Viola pubescens
heartleaf alexanders
Zizia aptera

Red, Pink & Orange Flowers

nodding onion
Allium cernuum
rosy pussytoes
Antennaria rosea
spreading dogbane
Apocynum androsaemifolium
kinnikinnick
Arctostaphylos uva-ursi
spotted coralroot
Corallorrhiza maculata
darkthroat shootingstar
Dodecatheon pulchellum
fireweed
Epilobium angustifolium
spotted joepeeweed
Eupatorium maculatum
wood lily
Lilium philadelphicum
twinflower
Linnaea borealis
liverleaf wintergreen
Pyrola asarifolia

Blue & Purple Flowers

Columbian monkshood
Aconitum columbianum
pasque flower
Anemone patens
Lindley's aster
Aster ciliolatus
harebell
Campanula rotundifolia
Drummond's thistle
Cirsium drummondii
beautiful fleabane
Erigeron formosissimus
threeerve fleabane
Erigeron subtrincis
Rocky Mountain iris
Iris missouricensis
wild mint
Mentha arvensis
wildbergamot beebalm
Monarda fistulosa
mountain blueeyed grass
Sisyrinchium montanum
American vetch
Vicia americana
longspur violet
Viola adunca

White Flowers

common yarrow
Achillea millefolium
red baneberry
Actaea rubra
everlasting
Anaphalis margaritacea
littleleaf pussytoes
Antennaria microphylla
field chickweed
Cerastium arvense

Green & Brown Flowers

spotted water hemlock
Cicuta maculata
bunchberry dogwood
Cornus canadensis
fairybells
Disporum trachyandrum
Virginia strawberry
Fragaria virginiana
northern bedstraw
Galium boreale
Richardson's geranium
Geranium richardsonii
lesser rattlesnake plantain
Goodyera repens
cow parsnip
Heracleum sphondylium
smallflower woodlandstar
Lithophragma parviflorum
American waterhorehound
Lycopus americanus
mayflower
Maianthemum canadense
starry false Solomon's seal
Maianthemum stellatum
whitewater crowfoot
Ranunculus aquatilis
dwarf red blackberry
Rubus pubescens
shinyleaf spirea
Spiraea betulifolia
claspleaf twistedstalk
Streptopus amplexifolius
Canadian white violet
Viola canadensis
white violet
Viola renifolia
mountain deathcamas
Zigadenus elegans

Appendix D

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