

DUGOUT GULCH FLORISTIC INVENTORY



An unusual moonwort (*Botrychium* sp.) located during the Dugout Gulch Floristic Inventory.

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Dugout Gulch Floristic Inventory Final Report
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Introduction

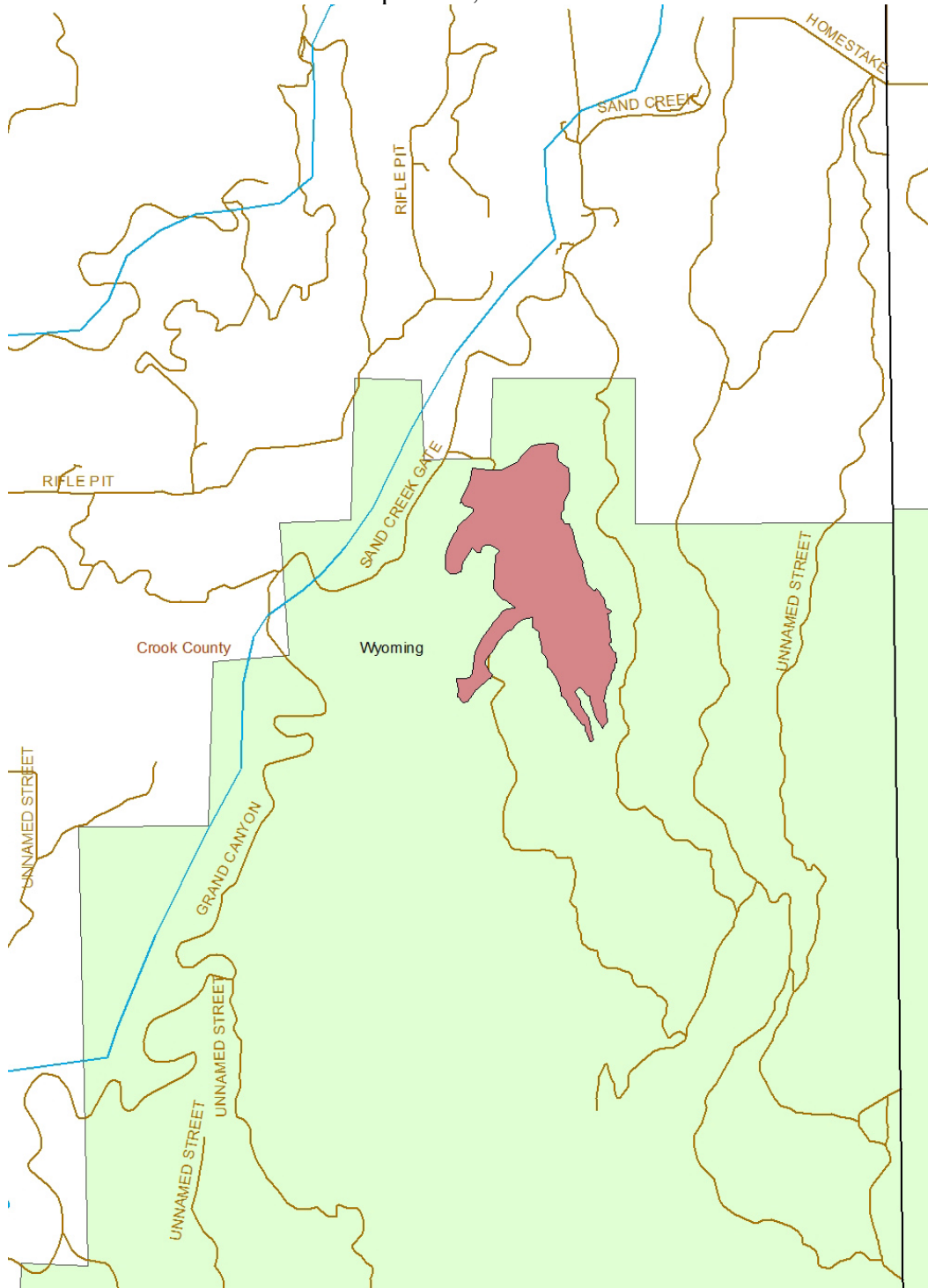
A floristic inventory was initiated during the 2010 field season at Dugout Gulch. This inventory fulfilled several goals. It documents and gives insight on the current vegetation at a botanically unique site on the Black Hills National Forest. In addition to documenting the general flora, many species of concern were also documented, including rare species as well as introduced species and noxious weeds. Five hundred and seventy vouchers (pressed and dried plant specimens) were created as a result of the inventory and these vouchers will be deposited in the Black Hills State University Herbarium in Rapid City, South Dakota, where they will be available for study and reference by botanists from the Black Hills. Duplicates will be deposited in the Rocky Mountain Herbarium in Laramie, Wyoming. These vouchers represent a permanent record of the Dugout Gulch flora as it exists in 2010. They represent a baseline useful for comparisons of vegetation change over time and are thus valuable for future studies. Such information may also be used to inform management decisions affecting vegetation at the site.

Geographic Location

The Dugout Gulch floristic inventory is located in Crook County, Wyoming. The site is approximately 4–11 miles south of Beulah, Wyoming, and approximately 11.5–13.5 miles west-southwest of Spearfish, South Dakota in the low hills south of Interstate 90. Prominent geographic features located adjacent to or within the site include Dugout Gulch, Hospital Gulch, and Sand Creek. The inventory took place on approximately 766 acres. Maps 1 and 2 (below) show an overview and detailed view of the project area boundaries.

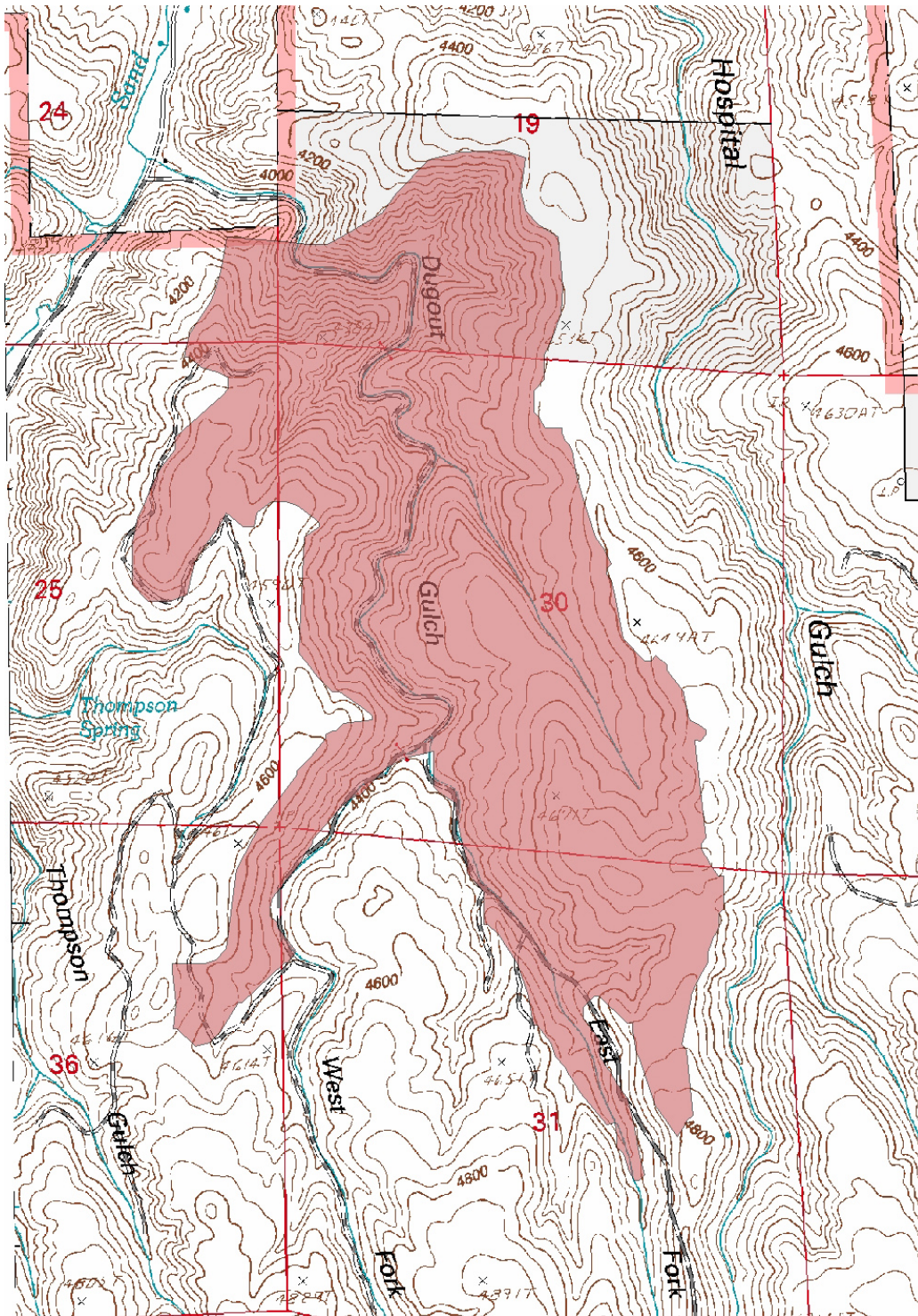
Map 1: General location of Dugout Gulch Floristic Inventory.

The site is approximately 4–11 miles south of Beulah, Wyoming, and approximately 11.5–13.5 miles west-southwest of Spearfish, South Dakota.



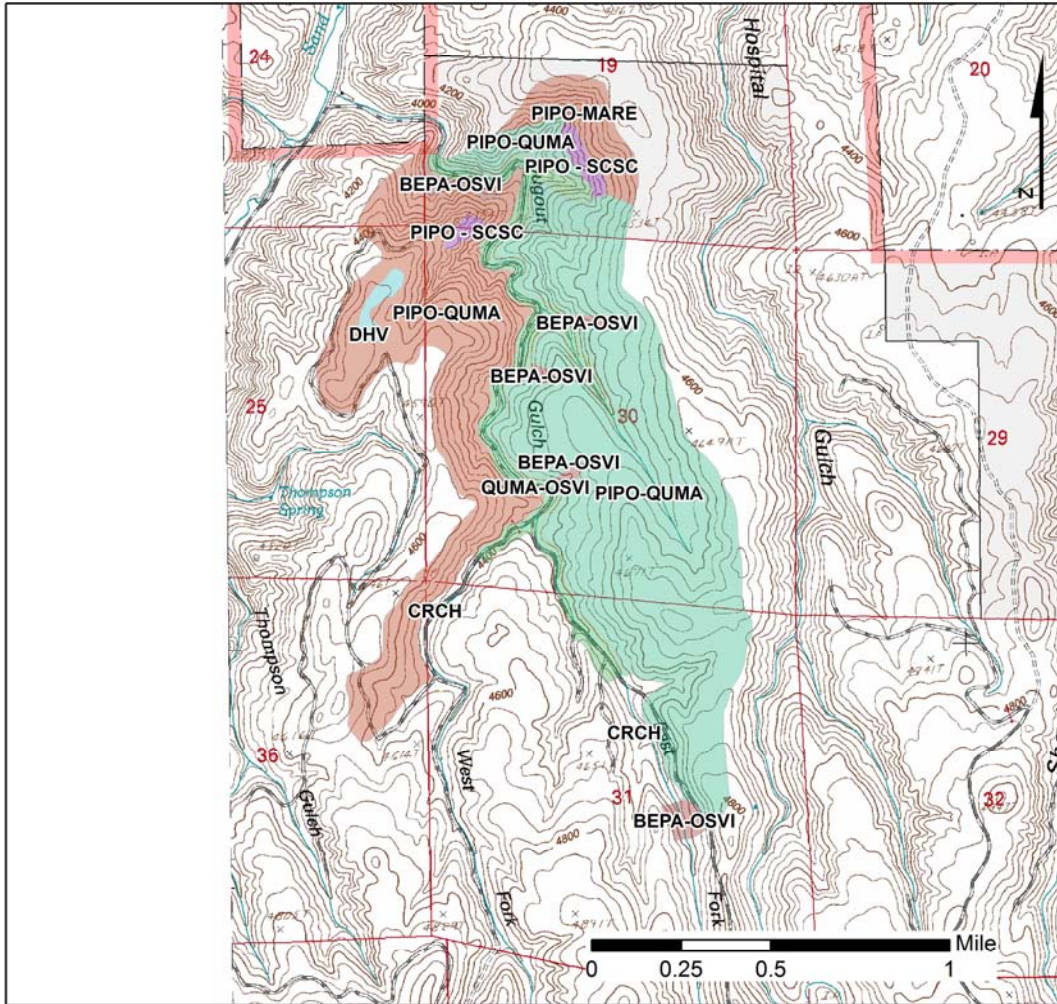
Map 2: Detailed location of Dugout Gulch Floristic Inventory.

The Dugout Gulch floristic inventory is located in the northwestern portion of the Black Hills on the low hills south of Interstate 90.



Map 3: Dugout Gulch Habitats.

Several vegetation types are present within the Dugout Gulch survey area and these habitats are displayed below. Vegetation types follow Marriott and Faber-Langedoen 2000.



Black Hills Vegetation Classification

- | | |
|--|--|
| <i>Betula papyrifera</i> - <i>Corylus cornuta</i> | <i>Pinus ponderosa</i> - <i>Quercus macrocarpa</i> |
| <i>Survey area fera</i> - <i>Ostrya virginiana</i> | <i>Pinus ponderosa</i> - <i>Schizachyrium scoparium</i> |
| <i>Crataegus macrantha</i> shrubland | <i>Pinus ponderosa</i> - <i>Shepherdia canadensis</i> |
| Dry herbaceous vegetation | <i>Pinus ponderosa</i> - <i>Symphoricarpos albus</i> |
| Limestone cliff sparse vegetation | <i>Ponderosa ponderosa</i> - <i>Mahonia repens</i> |
| <i>Picea glauca</i> - <i>Linnea borealis</i> | <i>Populus tremuloides</i> - <i>Picea glauca</i> |
| <i>Pinus ponderosa</i> - <i>Arctostaphylos uva-ursi</i> | <i>Populus tremuloides</i> - <i>Spirea betulifolia</i> |
| <i>Pinus ponderosa</i> - <i>Arctostaphylos uva-ursi</i> | <i>Quercus macrocarpa</i> - <i>Ostrya virginiana</i> |
| <i>Pinus ponderosa</i> - <i>Juniperus communis</i> | <i>Riparian herbaceous vegetation</i> |
| <i>Pinus ponderosa</i> - <i>Mahonia repens</i> | |

Site Description

The Dugout Gulch floristic inventory was located in the northwestern portion of the Black Hills on the low hills south of Interstate 90. Dugout Gulch is the primary riparian system at the site, and at the upper (southern) portion of the site it splits into the East Fork and West Fork of Dugout Gulch. Dugout Gulch drains into Sand Creek shortly after leaving the study area. Dugout Gulch becomes increasingly incised as it travels through the site, and steep limestone cliff bands are present in the northern portion of the site. Although the aspect was variable north and west aspects were most common. Slopes ranged from nearly flat (0–5%) to very steep (70%) or vertical. Elevations ranged from approximately 4,000–4,680 feet.

Several vegetation types (Marriott and Faber-Langedoen 2000) are present, including:

- paper birch / ironwood (*Betula papyrifera* / *Ostrya virginiana*)
- paper birch / hazelnut (*Betula papyrifera* / *Corylus cornuta*)
- bur oak / ironwood (*Quercus macrocarpa* / *Ostrya virginiana*)
- fleshy hawthorn shrubland (*Crataegus macrantha* var. *occidentalis*)
- ponderosa pine / bur oak (*Pinus ponderosa* / *Quercus macrocarpa*)
- ponderosa pine / Oregon grape (*Pinus ponderosa* / *Mahonia repens*)
- ponderosa pine / snowberry (*Pinus ponderosa* / *Symphoricarpos albus*)
- ponderosa pine / little bluestem (*Pinus ponderosa* / *Schizachyrium scoparium*)
note that this vegetation type comprised a tiny fraction of the total.
- limestone rock outcrop sparse vegetation
- mixed forb-grass meadow
- disturbed ground dominated by non-native forbs

Ponderosa pine vegetation types were dominant on dry slopes while paper birch, ironwood, hazelnut, and bur oak habitat types dominated the riparian bottoms and north facing slopes.

Management Issues

Several management issues are apparent in Dugout Gulch. These include livestock grazing, invasive species, and recreation. Cattle grazing was noted within the boundaries of the site, particularly in the uppermost (southern) and lowermost (northern) portions of the site. Little grazing was noted in the central portions of the site. Grazing intensity was high enough to prevent extensive collections of sedges (*Carex* sp.) late in the season since few plants were able to produce the mature seedheads and perigynia necessary for identification. Several invasive plant species were documented and these plants are likely to spread due to the presence of livestock and recreational activities in the site. Treatment and monitoring of invasive plant species will be vital to preserving the unique flora found at Dugout Gulch. Recreation is also evident in the site, and a closed road that runs along Dugout Gulch is attractive to hikers and bicyclists. Several recreationists were seen on each day spent in the field at Dugout Gulch.

Methods

The Dugout Gulch floristic inventory had a dual purpose; to collect a voucher for every plant species present at the site, and to document all populations of target species (see Appendix 1 for lists of target species). To address these dual goals two separate methodologies were used. To document all populations of target species Forest Service guidelines (Forest Service 2005b) were followed for rare plant survey. A meandering transect within the polygons was designed to locate species of concern within the survey area. Plants were identified to species and compared to lists of target species. This technique leads to a relatively complete survey of the area.

Four separate collection trips were made starting in June and ending in September. Multiple visits to the site were made in an attempt to capture all plant species, including both early- and late-blooming species. Vouchers were collected and processed following the methodology of Hartman and Nelson (2008). At each collection site, samples of all vascular plants in flower or fruit not previously collected were obtained. An occasional vegetative collection was included for taxa readily identified in sterile condition (e.g., *Populus*). Roots and perennating organs of herbaceous plants were acquired whenever practical. Collection sites were distributed throughout the area, and each vegetation type was sampled numerous times over the range of elevation. Plant material was placed in plastic bags to prevent wilting and transported on ice in coolers. Specimens were pressed in newspapers following standard procedures and dried for 36-48 hours. Relevant location and ecological data were recorded.

Specimens were identified at the Rocky Mountain Herbarium (RM) using appropriate floras (Dorn 2001, Great Plains Flora Association 1986, Isely 1998, Rollins 1992, Van Bruggen 1985, and all relevant published volumes of the Flora of North America). Nomenclature follows the Rocky Mountain Herbarium Synonymized Checklist of Vascular Plants (2009). Labels were produced using a Microsoft Word form provided by the Black Hills National Forest.

Field Reconnaissance

Field surveys and collections were performed by Brian Elliott and Scott Smith. Scott Smith focused on taxonomic groups he is expert in, particularly the moonworts, ferns, and orchids. Due to the size and terrain at Dugout Gulch, three to four field days were required during each visit to adequately survey the area. Collection dates are summarized below:

Brian Elliott: June 1, 2, 3, 5, 6; July 19, 20, 21; September 1, 2, 3.
Scott Smith: August 2,3.

Results

Forty nine populations of sixteen different target species were documented during the course of the inventory. These species are listed in Table 1, below. One identification remains tentative. Collection number 14971 was identified as *Botrychium lineare* based on morphological characters. The moonworts (*Botrychium* spp.) can be quite difficult to

identify based on morphology, so this unusual specimen was sent to Dr. Don Farrar at Iowa State University where it will be tested using electrophoresis. This technique, using analysis of protein size, shape, and charge has been shown to provide more accurate determinations than morphological characters which are notoriously variable in the group. To date the analysis has not been performed and the identification used in this report remains unconfirmed.

Table 1: Target Rare Plant Species

Forty nine populations of sixteen different target species were documented during the course of the inventory. These species are listed in Table 1, below.

Scientific Name	Common Name	Status ¹ SD/WY	# of Sites
<i>Asclepias ovalifolia</i>	oval-leaved milkweed	SR/S3	3
<i>Botrychium</i> (cf. <i>lineare</i>) ²	cf. narrowleaf grapefern	R2	1
<i>Botrychium virginianum</i>	rattlesnake fern	SR/S2	12
<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	broadleaf enchanter's nightshade	SR/S1	3
<i>Cypripedium parviflorum</i>	lesser ladies yellow slipper	SR/SR	1
<i>Cynoglossum virginianum</i> var. <i>boreale</i>	wild comfrey	SU/NR	1
<i>Dryopteris filix-mas</i>	male fern	S4/S2	1
<i>Microseris nutans</i>	nodding microseris	SH/	2
<i>Orobanche uniflora</i>	one-flowered broomrape	NRUR/S2S3	2
<i>Pellaea gastonyi</i>	Gastony's cliffbrake	NRUR/S1	7
<i>Pellaea glabella</i>	smooth cliffbrake	/S1	1
<i>Phryma leptostachya</i>	American lopseed	SDSOI/WYS1	1
<i>Polygonatum biflorum</i>	smooth solomon's seal	NRUR/S1	2
<i>Prenanthes racemosa</i>	purple rattlesnakeroot	NRUR/S1	1
<i>Viburnum opulus</i> var. <i>americana</i>	American cranberry bush	R2	10
<i>Viola pedatifida</i>	prairie violet	/S1	1

1. Status codes include:

State Conservation Status (NatureServe):

SX: Presumed Extirpated

SH: Possibly Extirpated

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

S4: Apparently Secure

NRUR: Not Ranked Under Review

2. *pending identification by Dr. Don Farrar.

Nine species of noxious weeds were located during the inventory, including:

<i>Carduus nutans</i>	musk thistle
<i>Cirsium arvense</i>	Canada thistle
<i>Cirsium vulgare</i>	bull thistle
<i>Cynoglossum officinale</i>	houndstongue
<i>Hypericum perforatum</i>	St. John's wort
<i>Linaria dalmatica</i>	dalmation toadflax
<i>Nasturtium officinale</i>	watercress
<i>Potentilla recta</i>	sulfur cinquefoil;
<i>Tanacetum vulgare</i>	common tansy

One other species of interest not previously known from the area was located during field surveys. *Dieteria bigelovii* var. *bigelovii* (previously known as *Machaeranthera bigelovii* var. *bigelovii*) was collected on September 3, 2010 (Elliott collection number 16013). The identification was verified by Dr. Ron Hartman, an expert in the group, at the Rocky Mountain Herbarium. This species, also known as Bigelow's tansyaster, is known from New Mexico, Oklahoma, Colorado, and Wyoming. In Wyoming it is only known from Albany County in the southeastern portion of the state. This collection represents a significant range extension and is the northernmost site documented. Since the species has not previously been found on the Black Hills National Forest it is not now on the Black Hills rare plant species list.

Floristic Summary and Comparison

A floristic summary is displayed in Table two. The results of this inventory are compared to the entire flora of the Black Hills as documented in Dorn (1977). This comparisons are not ideal as the floristic summary from Dorn's Black Hills flora is dated.

Table 2: Floristic Summary

Attribute	DGFI-Elliott ¹	FBH-Dorn ²	% of Dorn ³
Collections	570	not applicable	not applicable
Gymnosperms	4	7	57.1
Ferns & Fern Allies	13	42	30.9
Angiosperms	319	1211	26.3
Families	74	102	72.5
Genera	229	479	47.8
Species ⁴	264	not reported	not applicable
Infraspecific Taxa	72	not reported	not applicable
Total Taxa	336	1260	26.7
Species of Concern	16	not reported	not applicable
Noxious Weeds	9	not reported	not applicable

1. Dugout Gulch Floristic Inventory, Brian Elliott, 2010

2. Flora of the Black Hills, Dorn, 1977

3. Percentage of the number in Dorn documented in this study.

4. Species are plants without a variety or subspecies (e.g. *Acer glabrum*) while infraspecific taxa are those with a variety or subspecies (e.g. *Acer negundo* var. *interius*). The total number of taxa is the sum of species and infraspecific taxa.

Species List

This study was documented through the collection of 570 vouchers. The species list from those collections is displayed below.

Gymnosperms

Family	Species	Collection numbers
Cupressaceae	<i>Juniperus communis</i> var. <i>depressa</i>	14800, 15497, 16023
Cupressaceae	<i>Juniperus horizontalis</i>	15380, 16022
Cupressaceae	<i>Juniperus scopulorum</i>	14867, 15027, 16024
Pinaceae	<i>Pinus ponderosa</i>	14839

Ferns and Fern Allies

Family	Species	Collection numbers
Dryopteridaceae	<i>Cystopteris fragilis</i>	14812, 14920, 14928, 15050
Dryopteridaceae	<i>Dryopteris filix-mas</i>	15051, 15052
Dryopteridaceae	<i>Woodsia oregana</i> var. <i>oregana</i>	14830
Dryopteridaceae	<i>Woodsia scopulina</i>	ss199
Equisetaceae	<i>Equisetum arvense</i>	14816, 14986, 15562
Equisetaceae	<i>Equisetum hyemale</i>	14817, 14973
Equisetaceae	<i>Equisetum laevigatum</i>	14987
Ophioglossaceae	<i>Botrychium</i> (cf. <i>lineare</i>)*	14971
Ophioglossaceae	<i>Botrychium virginianum</i>	14881
Pteridaceae	<i>Cheilanthes feei</i>	16001, 14848, 14907
Pteridaceae	<i>Pellaea gastonyi</i>	14849, 14909, 14960, 15008, 15028, 15551, 15553, 16002, 16003
Pteridaceae	<i>Pellaea glabella</i> ssp. <i>occidentalis</i>	14831, 15028A, 15509
Pteridaceae	<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	15526

*pending identification by Dr. Don Farrar.

Flowering Plants (Monocots and Dicots)

Family	Species	Collection numbers
Aceraceae	<i>Acer negundo</i> var. <i>interius</i>	14822, 14950
Anacardiaceae	<i>Rhus aromatica</i> var. <i>trilobata</i>	14838, 16009
Anacardiaceae	<i>Rhus glabra</i>	15370, 15529, 15926
Anacardiaceae	<i>Toxicodendron rydbergii</i>	14882, 15389, 15983
Apiaceae	<i>Cicuta maculata</i> var. <i>angustifolia</i>	15488
Apiaceae	<i>Heracleum maximum</i>	14821
Apiaceae	<i>Musineon tenuifolium</i>	14866, 14900, 15044
Apiaceae	<i>Osmorhiza chilensis</i>	14966, 14975
Apiaceae	<i>Osmorhiza longistylis</i>	14880, 14925, 15481, 15530
Apiaceae	<i>Perideridia montana</i>	15546

Family	Species	Collection numbers
Apiaceae	<i>Sanicula marilandica</i>	14799
Apiaceae	<i>Zizia aptera</i>	14879
Apocynaceae	<i>Apocynum androsaemifolium</i>	15469
Araliaceae	<i>Aralia nudicaulis</i>	14877, 14964
Asclepiadaceae	<i>Asclepias ovalifolia</i>	15421, 15549, 15995
Asclepiadaceae	<i>Asclepias pumila</i>	15376, 15929
Asclepiadaceae	<i>Asclepias speciosa</i>	15401, 15572
Asclepiadaceae	<i>Asclepias viridiflora</i>	15379, 15518
Asteraceae	<i>Achillea millefolium</i>	15407
Asteraceae	<i>Agoseris glauca</i> var. <i>glauca</i>	15007, 15436
Asteraceae	<i>Ambrosia psilostachya</i>	15958, 15976
Asteraceae	<i>Antennaria howellii</i>	14869, 14957
Asteraceae	<i>Antennaria parvifolia</i>	14954, 14995, 15013, 15042
Asteraceae	<i>Arctium lappa</i>	15955
Asteraceae	<i>Arnica cordifolia</i>	14886
Asteraceae	<i>Arnica sororia</i>	14856, 15015
Asteraceae	<i>Artemisia campestris</i> var. <i>caudata</i>	16012
Asteraceae	<i>Artemisia frigida</i>	15377
Asteraceae	<i>Artemisia ludoviciana</i> var. <i>incompta</i>	15966
Asteraceae	<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>	15996
Asteraceae	<i>Balsamorhiza sagittata</i>	14997
Asteraceae	<i>Carduus nutans</i>	15520
Asteraceae	<i>Cirsium arvense</i>	15496
Asteraceae	<i>Cirsium drummondii</i>	15472
Asteraceae	<i>Cirsium flodmanii</i>	15468, 16014
Asteraceae	<i>Cirsium vulgare</i>	15956, 15969
Asteraceae	<i>Conyza canadensis</i>	15962
Asteraceae	<i>Dieteria bigelovii</i> var. <i>bigelovii</i>	16013
Asteraceae	<i>Echinacea angustifolia</i>	15443, 15938, 15998
Asteraceae	<i>Erigeron philadelphicus</i>	15385
Asteraceae	<i>Erigeron strigosus</i>	15550, 15977
Asteraceae	<i>Erigeron subtrinervis</i>	15411, 15465
Asteraceae	<i>Eutrochium maculatum</i> var. <i>bruneri</i>	15508, 15967
Asteraceae	<i>Gaillardia aristata</i>	15478
Asteraceae	<i>Grindelia squarrosa</i>	15942
Asteraceae	<i>Gutierrezia sarothrae</i>	15930
Asteraceae	<i>Helianthus annuus</i>	15931B
Asteraceae	<i>Helianthus pauciflorus</i> var. <i>subrhomboidea</i>	15422, 15931A, 15997
Asteraceae	<i>Helianthus tuberosus</i>	15980
Asteraceae	<i>Heterotheca villosa</i> var. <i>minor</i>	15470, 15920
Asteraceae	<i>Hieracium umbellatum</i>	15445

Family	Species	Collection numbers
Asteraceae	<i>Lactuca biennis</i>	15394
Asteraceae	<i>Lactuca canadensis</i>	15479, 15547, 15953
Asteraceae	<i>Lactuca serriola</i>	15960, 15981
Asteraceae	<i>Lactuca oblongifolia</i>	15462, 15545, 15555
Asteraceae	<i>Liatris ligulistylis</i>	15434, 15937, 15992
Asteraceae	<i>Liatris punctata</i> var. <i>punctata</i>	15918, 16021
Asteraceae	<i>Matricaria discoidea</i>	15398
Asteraceae	<i>Microseris nutans</i>	15048
Asteraceae	<i>Packera paupercula</i>	15383, 15409
Asteraceae	<i>Prenanthes racemosa</i>	15970
Asteraceae	<i>Pseudognaphalium macounii</i>	15939
Asteraceae	<i>Rudbeckia hirta</i> var. <i>pulcherrima</i>	15405, 15473, 15985
Asteraceae	<i>Rudbeckia laciniata</i> var. <i>ampla</i>	15506, 15965
Asteraceae	<i>Senecio integerrimus</i> var. <i>integerrimus</i>	14854, 14860, 14903, 15014
Asteraceae	<i>Solidago gigantea</i>	15917
Asteraceae	<i>Solidago mollis</i>	15919, 15943
Asteraceae	<i>Solidago ptarmicoides</i>	15921, 15928
Asteraceae	<i>Symphotrichum ciliolatus</i>	15922
Asteraceae	<i>Tanacetum vulgare</i>	14945, 15984
Asteraceae	<i>Taraxacum officinale</i>	14793
Asteraceae	<i>Tetraneuris acaulis</i> var. <i>acaulis</i>	14833, 14996, 15515
Asteraceae	<i>Tragopogon dubius</i>	15493
Berberidaceae	<i>Berberis repens</i>	14788
Betulaceae	<i>Betula papyrifera</i>	14801
Betulaceae	<i>Corylus cornuta</i> var. <i>cornuta</i>	14823, 15484
Betulaceae	<i>Ostrya virginiana</i>	14795, 15534, 15991
Boraginaceae	<i>Cynoglossum officinale</i>	15457, 15535
Boraginaceae	<i>Cynoglossum virginianum</i> var. <i>boreale</i>	15386
Boraginaceae	<i>Hackelia deflexa</i> var. <i>americana</i>	15482
Boraginaceae	<i>Lithospermum incisum</i>	14902, 15021
Boraginaceae	<i>Mertensia lanceolata</i>	14905
Boraginaceae	<i>Onosmodium molle</i> var. <i>occidentale</i>	15521
Brassicaceae	<i>Alyssum alyssoides</i>	14861, 14998
Brassicaceae	<i>Arabis glabra</i>	15045
Brassicaceae	<i>Boechera divaricarpa</i>	14901, 14916
Brassicaceae	<i>Boechera hirsuta</i> var. <i>pyncocarpa</i>	14906, 14967
Brassicaceae	<i>Boechera holboellii</i> var. <i>pinetorum</i>	14962
Brassicaceae	<i>Camelina microcarpa</i>	14915
Brassicaceae	<i>Capsella bursa-pastoris</i>	14942
Brassicaceae	<i>Descurainia sophia</i>	14829, 15006
Brassicaceae	<i>Draba nemorosa</i>	14868
Brassicaceae	<i>Draba reptans</i>	14917

Family	Species	Collection numbers
Brassicaceae	<i>Erysimum asperum</i>	14841
Brassicaceae	<i>Lesquerella arenosa</i> var. <i>arenosa</i>	14834
Brassicaceae	<i>Nasturtium officinale</i>	15531, 15944
Cactaceae	<i>Coryphantha missouriensis</i>	14859
Cactaceae	<i>Opuntia fragilis</i>	15017
Cactaceae	<i>Opuntia polyacantha</i> var. <i>rufispina</i>	14858, 15498
Campanulaceae	<i>Campanula rotundifolia</i>	15439
Cannabiaceae	<i>Humulus lupulus</i> var. <i>neomexicanus</i>	15987
Caprifoliaceae	<i>Lonicera dioica</i> var. <i>glaucescens</i>	15945
Caprifoliaceae	<i>Symphoricarpos albus</i> var. <i>albus</i>	15410, 15979
Caprifoliaceae	<i>Viburnum opulus</i> var. <i>americana</i>	14807, 14941, 15500, 15941
Caryophyllaceae	<i>Cerastium arvense</i>	14826
Caryophyllaceae	<i>Cerastium fontanum</i>	14926
Caryophyllaceae	<i>Moehringia lateriflora</i>	14876
Caryophyllaceae	<i>Paronychia depressa</i>	15517, 16008
Celastraceae	<i>Celastrus scandens</i>	14837
Chenopodiaceae	<i>Chenopodium fremontii</i>	16006
Chenopodiaceae	<i>Chenopodium simplex</i>	15528
Clusiaceae	<i>Hypericum perforatum</i>	14970, 15460, 16000
Commelinaceae	<i>Tradescantia occidentalis</i> var. <i>occidentalis</i>	15420
Cornaceae	<i>Cornus sericea</i> var. <i>sericea</i>	14811, 14965A
Crassulaceae	<i>Sedum lanceolatum</i>	14955
Cyperaceae	<i>Carex athrostachya</i>	15564
Cyperaceae	<i>Carex blanda</i>	14819, 14972
Cyperaceae	<i>Carex eburnea</i>	15538
Cyperaceae	<i>Carex foenea</i>	14870, 15066, 15446
Cyperaceae	<i>Carex hystericina</i>	15450, 15489, 15961
Cyperaceae	<i>Carex interior</i>	14977, 15065A
Cyperaceae	<i>Carex lanuginosa</i>	14936, 15492, 15524
Cyperaceae	<i>Carex peckii</i>	14948, 15063, 15065B
Cyperaceae	<i>Carex retrorsa</i>	15949
Cyperaceae	<i>Carex rossii</i>	14865, 15003, 15026
Cyperaceae	<i>Carex saximontana</i>	14947
Cyperaceae	<i>Carex sprengei</i>	14806, 14888
Cyperaceae	<i>Carex torreyi</i>	14991, 15060
Cyperaceae	<i>Carex utriculata</i>	14934, 15513, 15571, 15968
Cyperaceae	<i>Eleocharis palustris</i>	15510
Cyperaceae	<i>Scirpus microcarpus</i>	14935
Cyperaceae	<i>Scirpus microcarpus</i>	14935, 15486
Cyperaceae	<i>Scirpus pallidus</i>	15948
Elaeagnaceae	<i>Shepherdia canadensis</i>	14898, 15004

Family	Species	Collection numbers
Ericaceae	<i>Arctostaphylos uva-ursi</i>	14894
Ericaceae	<i>Orthilia secunda</i>	15541
Ericaceae	<i>Pterospora andromedea</i>	15388, 15994
Ericaceae	<i>Pyrola asarifolia</i>	14946, 15527
Ericaceae	<i>Pyrola elliptica</i>	15382
Euphorbiaceae	<i>Chamaesyce glyptosperma</i>	15982
Euphorbiaceae	<i>Euphorbia brachycera</i> var. <i>robusta</i>	14871, 14897, 14912
Fabaceae	<i>Amorpha canescens</i>	15371, 15927
Fabaceae	<i>Astragalus australis</i> var. <i>glabriusculus</i>	15025
Fabaceae	<i>Astragalus cicer</i>	15989
Fabaceae	<i>Astragalus crassicaarpus</i> var. <i>crassicaarpus</i>	14893, 15029, 15442, 15471
Fabaceae	<i>Astragalus missouriensis</i> var. <i>missouriensis</i>	14895, 14911, 15020
Fabaceae	<i>Astragalus spatulatus</i>	14896, 14910, 14999
Fabaceae	<i>Coronilla varia</i>	15476
Fabaceae	<i>Dalea candida</i> var. <i>oligophylla</i>	15373, 15456
Fabaceae	<i>Dalea purpurea</i> var. <i>purpurea</i>	15372, 15558
Fabaceae	<i>Glycyrrhiza lepidota</i> var. <i>lepidota</i>	15369, 15560, 16015
Fabaceae	<i>Lathyrus ochroleucus</i>	14818, 15018
Fabaceae	<i>Lupinus argenteus</i> var. <i>argenteus</i>	14892
Fabaceae	<i>Medicago lupulina</i>	14979, 15374, 15403
Fabaceae	<i>Medicago sativa</i>	15464
Fabaceae	<i>Melilotus albus</i>	15944
Fabaceae	<i>Melilotus officinalis</i>	15559
Fabaceae	<i>Pedimelum argophyllum</i>	15438
Fabaceae	<i>Pedimelum esculenta</i>	14913, 15032, 15441
Fabaceae	<i>Trifolium pratense</i>	15392, 15567
Fabaceae	<i>Trifolium repens</i>	15392, 15566
Fabaceae	<i>Vicia americana</i> var. <i>americana</i>	15548
Fagaceae	<i>Quercus macrocarpa</i>	14789
Fumariaceae	<i>Corydalis aurea</i>	14930
Gentianaceae	<i>Halenia deflexa</i>	15501
Geraniaceae	<i>Geranium richardsonii</i>	14974
Grossulariaceae	<i>Ribes americanum</i>	15952, 14796B
Grossulariaceae	<i>Ribes oxycanthoides</i> var. <i>setosum</i>	14927, 14796A
Hydrophyllaceae	<i>Ellisia nyctelea</i>	14994
Hydrophyllaceae	<i>Phacelia linearis</i>	15023
Iridaceae	<i>Sisyrinchium montanum</i>	14878
Juncaceae	<i>Juncus bufonius</i>	15568
Juncaceae	<i>Juncus dudleyi</i>	15525, 15570
Juncaceae	<i>Juncus longistylis</i>	15511

Family	Species	Collection numbers
Juncaceae	<i>Juncus nodosus</i>	15495, 15565, 15946
Lamiaceae	<i>Agastache foeniculum</i>	15395, 15458
Lamiaceae	<i>Hedeoma drummondii</i>	15381
Lamiaceae	<i>Mentha arvensis</i>	15453, 15947
Lamiaceae	<i>Monarda fistulosa</i> var. <i>menthifolia</i>	15455, 15988
Lamiaceae	<i>Nepeta cataria</i>	15959
Lamiaceae	<i>Prunella vulgaris</i>	15404
Lamiaceae	<i>Scutellaria galericulata</i>	15512
Lemnaceae	<i>Lemna minuta</i>	14989
Liliaceae	<i>Allium textile</i>	14836, 14959
Liliaceae	<i>Asparagus officinalis</i>	15971, ss-200
Liliaceae	<i>Calochortus gunnisonii</i>	15387, 15437
Liliaceae	<i>Fritillaria atropurpurea</i>	15040
Liliaceae	<i>Leucocrinum montanum</i>	14824
Liliaceae	<i>Maianthemum canadense</i> var. <i>interius</i>	15035, 15064, 15539
Liliaceae	<i>Maianthemum stellatum</i>	14798
Liliaceae	<i>Polygonatum biflorum</i>	ss-191, 15934
Liliaceae	<i>Prosartes trachycarpa</i>	14982, 15056A
Liliaceae	<i>Smilax herbacea</i>	14872, 15974
Liliaceae	<i>Yucca glauca</i>	14961
Liliaceae	<i>Zigadenus venenosus</i> var. <i>gramineus</i>	14857
Linaceae	<i>Linum lewisii</i>	15043
Loasaceae	<i>Mentzelia oligosperma</i>	16011
Myrsinaceae	<i>Lysimachia ciliata</i>	15397
Nyctaginaceae	<i>Mirabilis linearis</i>	16007
Onagraceae	<i>Circaea lutetiana</i> var. <i>canadensis</i>	15384, 15533
Onagraceae	<i>Epilobium ciliatum</i> var. <i>ciliatum</i>	15454, 15514
Onagraceae	<i>Gaura coccinea</i>	14853
Onagraceae	<i>Oenothera biennis</i>	15522, 15554
Onagraceae	<i>Calylophus serrulata</i>	15519
Orchidaceae	<i>Coeloglossum viride</i> var. <i>virescens</i>	15054, 15058
Orchidaceae	<i>Corallorhiza maculata</i>	15036, 15053A
Orchidaceae	<i>Corallorhiza wisteriana</i>	14922, 14956, 15005, 15031, 15053B
Orchidaceae	<i>Cypripedium parviflora</i>	ss-191
Orchidaceae	<i>Goodyera oblongifolia</i>	ss-192
Orobanchaceae	<i>Orobanche fasciculata</i>	15012
Oxalidaceae	<i>Oxalis stricta</i>	15461
Phrymaceae	<i>Phryma leptostachya</i>	15950
Plantaginaceae	<i>Plantago major</i>	14943, 15477
Poaceae	<i>Achnatherum hymenoides</i>	14899
Poaceae	<i>Achnatherum nelsonii</i> var. <i>nelsonii</i>	15448

Family	Species	Collection numbers
Poaceae	<i>Agropyron cristatum</i> var. <i>cristatum</i>	15415
Poaceae	<i>Agrostis stolonifera</i>	15523, 15569
Poaceae	<i>Andropogon gerardii</i>	15537, 15923, 16018
Poaceae	<i>Bouteloua curtipendula</i> var. <i>curtipendula</i>	15466, 15940
Poaceae	<i>Bouteloua gracilis</i>	16010
Poaceae	<i>Bromus inermis</i>	15417, 15449
Poaceae	<i>Bromus japonicus</i>	15402, 15516
Poaceae	<i>Bromus porteri</i>	15440
Poaceae	<i>Bromus racemosus</i>	15019
Poaceae	<i>Bromus tectorum</i>	14852
Poaceae	<i>Calamovilfa longifolia</i>	16016
Poaceae	<i>Catabrosa aquatica</i>	14988, 15563
Poaceae	<i>Dactylis glomerata</i>	14803
Poaceae	<i>Danthonia spicata</i>	15556
Poaceae	<i>Elymus diversiglumis</i>	15396, 15993
Poaceae	<i>Elymus hispidus</i> var. <i>hispidus</i>	15416, 15963
Poaceae	<i>Elymus hispidus</i> var. <i>ruthenicus</i>	15480
Poaceae	<i>Elymus spicatus</i>	15378, 16017
Poaceae	<i>Elymus trachycaulus</i> ssp. <i>subsecundus</i>	15557
Poaceae	<i>Glyceria striata</i>	15452, 15490
Poaceae	<i>Hesperostipa spartea</i>	15447
Poaceae	<i>Koeleria macrantha</i>	15002
Poaceae	<i>Nassella viridula</i>	15467, 15999
Poaceae	<i>Oryzopsis asperifolia</i>	14804
Poaceae	<i>Phalaris arundinacea</i>	15502
Poaceae	<i>Phleum pratense</i>	15414
Poaceae	<i>Poa annua</i>	14944
Poaceae	<i>Poa arida</i>	14847, 14953
Poaceae	<i>Poa bulbosa</i>	14790, 15009
Poaceae	<i>Poa pratensis</i>	14864, 15418
Poaceae	<i>Piptatherum micranthum</i>	15936
Poaceae	<i>Schizachne purpurascens</i>	15039
Poaceae	<i>Schizachyrium scoparium</i>	15924, 16019
Poaceae	<i>Sorghastrum nutans</i>	16020
Polemoniaceae	<i>Phlox alyssifolia</i>	14863
Polygalaceae	<i>Polygala senega</i>	15540
Polygonaceae	<i>Polygonum aviculare</i>	15399
Polygonaceae	<i>Rumex occidentalis</i>	15532
Primulaceae	<i>Androsace septentrionalis</i>	14990
Primulaceae	<i>Primula pauciflora</i> var. <i>pauciflora</i>	14794, 14883
Ranunculaceae	<i>Actaea rubra</i>	14890, 14976

Family	Species	Collection numbers
Ranunculaceae	<i>Anemone multifida</i> var. <i>multifida</i>	14921, 15038, 15435
Ranunculaceae	<i>Anemone patens</i>	14862, 14887, 14958, 15000, 15049
Ranunculaceae	<i>Anemone virginiana</i>	15536
Ranunculaceae	<i>Clematis columbiana</i> var. <i>tenuifolia</i>	14889
Ranunculaceae	<i>Clematis ligusticifolia</i>	15543
Ranunculaceae	<i>Delphinium bicolor</i>	14855, 14914, 15011
Ranunculaceae	<i>Ranunculus abortivus</i>	14932, 14981
Ranunculaceae	<i>Ranunculus sceleratus</i> var. <i>multifidus</i>	14984, 15474
Ranunculaceae	<i>Thalictrum dasycarpa</i>	15413
Ranunculaceae	<i>Thalictrum venulosum</i>	14791, 14815
Rhamnaceae	<i>Rhamnus cathartica</i>	15412, 15973
Rosaceae	<i>Agrimonia gryposepala</i>	15463, 15485, 15951
Rosaceae	<i>Amelanchier alnifolia</i> var. <i>alnifolia</i>	14820
Rosaceae	<i>Crataegus macrantha</i> var. <i>occidentalis</i>	14802, 14931, 15954
Rosaceae	<i>Fragaria vesca</i>	15024
Rosaceae	<i>Fragaria virginiana</i>	14949
Rosaceae	<i>Geum aleppicum</i>	15390, 15391, 15487
Rosaceae	<i>Geum triflorum</i> var. <i>triflorum</i>	14891
Rosaceae	<i>Potentilla norvegica</i>	15459B
Rosaceae	<i>Potentilla recta</i>	15459, 15990
Rosaceae	<i>Potentilla rubricaulis</i>	15047
Rosaceae	<i>Prunus americana</i>	14874, 15978
Rosaceae	<i>Prunus pensylvanica</i>	15499
Rosaceae	<i>Prunus virginiana</i> var. <i>melanocarpa</i>	14792, 15986
Rosaceae	<i>Rosa acicularis</i> ssp. <i>sayi</i>	14983
Rosaceae	<i>Rosa arkansana</i> var. <i>suffulta</i>	15544
Rosaceae	<i>Rosa woodsii</i> var. <i>woodsii</i>	15972
Rosaceae	<i>Rubus idaeus</i> var. <i>aculeatissimus</i>	15057
Rosaceae	<i>Rubus parviflorus</i>	15056A
Rosaceae	<i>Rubus pubescens</i>	15037
Rosaceae	<i>Spiraea betulifolia</i> var. <i>lucida</i>	15444, 15494
Rubiaceae	<i>Galium aparine</i>	14851
Rubiaceae	<i>Galium boreale</i>	15393B
Rubiaceae	<i>Galium triflorum</i>	15393A
Salicaceae	<i>Populus tremuloides</i>	15483
Salicaceae	<i>Salix bebbiana</i>	14813, 14924, 15507
Santalaceae	<i>Comandra umbellata</i> var. <i>pallida</i>	14828
Saxifragaceae	<i>Heuchera richardsonii</i>	14873
Saxifragaceae	<i>Lithophragma parviflorum</i>	14951, 15055
Scrophulariaceae	<i>Besseyia wyomingensis</i>	14904, 15030
Scrophulariaceae	<i>Castilleja sessiliflora</i>	14835, 15010

Family	Species	Collection numbers
Scrophulariaceae	<i>Castilleja sulphurea</i>	14885, 14992, 15419
Scrophulariaceae	<i>Collinsia parviflora</i>	14918, 14929
Scrophulariaceae	<i>Linaria dalmatica</i>	14832
Scrophulariaceae	<i>Mimulus guttatus</i>	15067
Scrophulariaceae	<i>Orthocarpus luteus</i>	15375, 15932
Scrophulariaceae	<i>Penstemon albidus</i>	15022
Scrophulariaceae	<i>Penstemon glaber</i> var. <i>glaber</i>	15561
Scrophulariaceae	<i>Verbascum thapsus</i>	15957
Scrophulariaceae	<i>Veronica americana</i>	14938, 15062
Scrophulariaceae	<i>Veronica arvensis</i>	14985
Solanaceae	<i>Physalis heterophylla</i>	15552, 16005, 15433
Typhaceae	<i>Typha latiflora</i>	15505
Ulmaceae	<i>Ulmus americana</i>	15034
Urticaceae	<i>Urtica dioica</i> var. <i>procerus</i>	15491
Verbenaceae	<i>Verbena stricta</i>	15408
Violaceae	<i>Viola adunca</i>	14787, 14827
Violaceae	<i>Viola nuttallii</i>	14843, 15041
Violaceae	<i>Viola pedatifida</i>	14993
Violaceae	<i>Viola pubescens</i>	14797, 14923
Violaceae	<i>Viola sororia</i> var. <i>affinis</i>	14939, 14980
Vitaceae	<i>Vitis riparia</i>	15542, 15935

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Appendix 1

Taxa of Concern

The target rare plant species lists were provided by the Black Hills National Forest. Several different lists were required due to the proximity of the state border. This list reflects revisions of 7-29-2009.

R2 Sensitive Species Relevant to BHNF

Botrychium campestre SDNRUR;WYS1
Botrychium lineare (candidate T&E species) ◆
SDNR;WYNR
Carex alopecoidea SDS2;WYS1
Cypripedium parviflorum SDNRUR;WYNRUR
Eleocharis elliptica WYSNR/SU
Epipactis gigantea SDS1;WYS1
Lycopodium complanatum SDS1;WYS1
Platanthera orbiculata SDS2;WYS1
Salix candida SDS1;WYS2
Salix serissima SDS1;WYS1
Sanguinaria canadensis SDS4;WYNR
Viburnum opulus var. *americana* SDNRUR;WYS1
Viola selkirkii SDS1;WYNR

Species of Local Concern

Adiantum capillus-veneris SDS1;WYNR
Botrychium multifidum SDNRUR;WYS2
Carex bella SDS1;WYNR
Eleocharis rostellata SDS1;WYS2
Gentiana affinis SDS2;WYS4
Listera convallarioides SDS1;WYS1
Lycopodium annotinum SDS1;WYS2
Oxyria digyna SDS1;WY
Petasites sagittatus SDS1;WYS2
Polystichum lonchitis SDS1;WYS2
Salix lucida SDS1;WYNRUR

Insufficient Information (may also be SD/WY tracked)

Adiantum pedatum SDSH;WYNR
Apios americana SDNRUR; WY
Arenaria (Eremogone) hookeri ssp. *pinetorum*
SDNRUR;WYS2S3
Astragalus hyalinus SDNRUR;WYS3
Astragalus miser var. *decumbens* SDSH;WY
Bacopa rotundifolia SDNRUR;WYS1
Botrychium lanceolatum SD;WYS1
Botrychium lunaria SDSH;WYS2
Botrychium matricariifolium SDNRUR;WY
Botrychium michiganense SD;WY
Botrychium simplex SDNRUR;WYS2
Botrychium virginianum SDNRUR; WYS2
(please note if next to old road)
Campanula aparinoides SDNRUR;WYS1
Carex athrostachya SDNRUR;WYS3
Carex concinna SDS3;WYS1
Carex granularis var. *haleana* SDNRUR;WYS1
Carex occidentalis SDNRUR;WYS1
Carex rosea SDNRUR;WYS1
Carex rupestris SDNRUR;WYS2

Carex tribuloides SDNRUR;WY
Carex viridula SDS1;WYS1S2
Centunculus (Anagallis) minimus SDNRUR;WYS1
Circaea lutetiana var. *canadensis* SDNRUR;WYS1
Corallorrhiza odontorhiza NRUR
Corallorrhiza trifida SDS2;WYS3
Cryptantha cana SDS2;WYS3
Cryptogramma acrostichoides SDNRUR;WYS3
Danthonia californica SDNRUR;WYS2
Dicanthelium linearifolium SD;WYS1
Disporum (Prosartes) hookeri SD;WYS1
Elaeagnus commutata SDNRUR;WYS3
Eleocharis ovata SDNRUR;WYS1
Elymus diversiglumis SDNRUR; WYS2
Elymus villosus SD;WYS1
Equisetum variegatum SDS1;WYS2S3
Erigeron acris SDSH;WYNRUR
Eustoma grandiflorum SDS1;WYS1
(*E. exaltatum* var. *russellianum*)
Gentiana puberulenta SDS4?;WY
Habenaria (Platanthera) dilatata SDNRUR;WY
Lechea intermedia SDNRUR;WYS1
Ledum groenlandicum SDSX;WY
Lesquerella arenosa var. *argillosa* SDS3;WYS1
Lithophragma glabrum SDSH;WYNR
Lomatium nuttallii SDSH;WYS3
Luzula acuminata var. *acuminata* SDNRUR;WY
Luzula parviflora SDNRUR;WY
Lycopus uniflorus SDNRUR;WYS1
Menyanthes trifoliata SDS1;WYS2S3
Mitella pentandra SDNRUR;WYS3S4
Moneses uniflora SDNRUR;WYS3
Myosotis verna SDNRUR;WYS1
Orobanche uniflora SDNRUR;WYS2S3
*Pellaea atropurpurea** SDNRUR;*WYS1?
Pellaea gastonyi *SDNRUR;*WYS1
Pellaea suksdorfiana(*P. glabella* var. *simplex*) *SD;*WYS1
NOTE: please collect several *Pellaea* sp. specimens per project area—taxonomic issues
Physalis (Leucophysalis) grandiflora SDSX;WY
Poa rupicola (*Poa glauca* var. *rupicola*) SDNRUR;WYS3S4
Polygala verticillata SDNRUR;WYS1
Polystichum munitum SDSH;WY
Potamogeton diversifolius SDNRUR;WYS1
Prenanthes racemosa var. *multiflora* SDNRUR;WYS1
Rhamnus alnifolia SDSH;WYS2
Selaginella rupestris SDNRUR;WYS1
Sparganium eurycarpum SDNRUR;WYS1
Vaccinium membranaceum SDS2;WYS2
Viburnum edule SDS3;WYS1

Other SD Species

Adoxa moschatellina S3
Allium drummondii NRUR
Agoseris aurantiaca NRUR
Aquilegia brevistyla *NRUR
Asplenium trichomanes S3

Asplenium trichomanes-ramosum S2
Aster pauciflorus SH
Astragalus americanus S3
Bupleurum americanum SDNRUR, WYNRUR
Calypso bulbosa S3
Carex brunnescens NRUR
Carex canescens S2
Carex capillaris S3
Carex leptalea *S2
Ceanothus fendleri S2
Chaenactis douglasii NRUR
Chenopodium subglabrum NRUR
Chrysothamnus parryi S4?
Cinna arundinacea SH
Clematis hirsutissima NRUR
Cryptantha jamesii SH
Deschampsia cespitosa S3
Dryopteris carthusiana NRUR
Echinocereus viridiflorus S3
Equisetum scirpoides S2
Equisetum sylvaticum NRUR
Eragrostis trichodes S4
Eriophorum polystachion S3
Euphorbia fendleri NRUR
Gymnocarpium dryopteris NRUR
Haplopappus multicaulis NRUR
Ipomopsis spicata S4?
Isopyrum biternatum SH
Juncus alpinus S3
Juncus articulatus NRUR
Lesquerella montana NRUR
Lithophragma glabrum SH
Lithospermum carolinense S4?
Lobelia kalmii S1
Lycopodium dendroideum *S4
Mertensia ciliata S1
Microseris nutans SH
Monarda pectinata SH
*Muhlenbergia glomerata** NRUR
Navarretia intertexta var. *propinqua* SH
Oenothera flava NRUR
Parnassia palustris SDS1
Pedicularis procera S2
Penstemon nitidus NRUR
Petrophyton caespitosum *S4?
Phacelia linearis NRUR
Phleum alpinum NRUR
Picradeniopsis woodhousei NRUR
Pinus contorta var. *latifolia* SDS2;WY
Pinus flexilis SDS1;WY
Polygala sanguinea NRUR
Potamogeton vaginatus S2
Prenanthes aspera NRUR
Psoralea linearifolia NRUR
Pyrola picta S2
Saxifraga cernua NRUR
Saxifraga occidentalis S2
Scirpus atrocinctus/cyperinus *S4; collect voucher
Scrophularia marilandica NRUR
Senecio spartioides NRUR
Solidago sparsiflora NRUR
Sparganium chlorocarpum NRUR
Spiraea alba S3
Stipa robusta NRUR
Thelesperma megapotamicum NRUR
Thelypteris palustris S2
Townsendia exscapa S4?
Townsendia grandiflora S4?
Townsendia hookeri NRUR
Triplasis purpurea NRUR

Tripterocalyx micranthus SH
Xylorhiza glabriuscula S4?

Other WY Species

*Adenocaulon bicolor** S2
Adoxa moschatellina S1
Aquilegia brevistyla S1
Astragalus americanus S2
Athyrium filix-femina S2
Botrychium pallidum NA
Calystegia macounii S1
Carex leptalea *S2
Carex richardsonii S1
Ceanothus herbaceous S1
Chenopodium strictum S1
Circaea lutetiana var. *canadensis* S1
Corydalis aurea var. *occidentale* S1
Dicanthelium wilcoxianum S1S2
Dryopteris filix-mas *S2
Equisetum scirpoides S1
Equisetum sylvaticum S1
Erigeron glabellus var. *pubescens* S1
Euphorbia marginata S1
Gymnocarpium dryopteris S1
Helianthemum bicknellii S1
Helianthus tuberosus var. *subcanescens* S1
Hieracium fendleri S1
Hymenopappus tenuifolius SH
Lactuca canadensis S1
Lactuca ludoviciana S1S2
Leersia oryzoides S1S2
Lycopodium dendroideum S1S2
Muhlenbergia glomerata S2
Muhlenbergia mexicana S1?
Onoclea sensibilis S1
Physalis virginiana var. *virginiana* S1
Piptatherum pungens S2
Polygonum bicorne S1
Polygonum scandens S1
Scirpus atrocinctus/cyperinus *S2; collect voucher
Sorghastrum nutans S1
Sparganium eurycarpum S1
Sporobolus heterolepis S1
Symphotrichum novae-angiae S1
Tradescantia bracteata S1
Triodanis leptocarpa S1
Viola pedatifida S1
Viola renifolia var. *brainerdii* S1

Other Species of Interest

Anagallis minima SDNRUR;WYS1
Botrychium gallicomontanum NA
Botrychium minganense SD;WYS1
Calochortus apiculatus NA
Cynoglossum boreale *SDNRUR;WYS2
Erigeron acris SDSH;WYNRUR
Froelichia gracilis SDNRUR;WYSH
Geum rivale SDNRUR;WYS1
Hierochloa odorata NA
Juncus nevadensis var. *badius* SD;WYS2
Lewisia pygmaea SDSNR/SU; WYS4
Lycopus uniflorus SDNRUR;WYS1
Mimulus floribundus SDSH;WYS2
Phryma leptostachya SD;WYS1
Polygonatum biflorum SDNRUR;WYS1
Sanicula graveolens SDNA; WYS2
Sedum integrifolium SD;WYS3

Spiranthes diluvialis T&E; SD;WYS1
Symphotrichum boreale SDS3;WYS2

S2: Imperiled
 S3: Vulnerable
 S4: Apparently Secure
 NRUR: Not Ranked Under Review (may or may not be rare)

State Conservation Status (NatureServe):

SX: Presumed Extirpated
 SH: Possibly Extirpated
 S1: Critically Imperiled

NA- Not Applicable: Not reported/present in that state;
 no rank in NatureServe

Noxious Weeds

The following plant species are considered noxious weeds by the Black Hills National Forest.

Code	Scientific Name	Common Name
ELRER	<i>Agropyron repens</i>	Quackgrass
ARMI2	<i>Arctium minus</i>	Burdock
BUUM	<i>Butomus umbellatus</i>	Flowering rush
CADR	<i>Cardaria spp.</i>	Whitetop
CAAC	<i>Carduus acanthodes</i>	Plumeless thistle
CANU4	<i>Carduus nutans</i>	Musk thistle
CEDI3	<i>Centaurea diffusa</i>	Diffuse knapweed
CEBI2	<i>Centaurea maculosa</i>	Spotted knapweed
ACRE3	<i>Centaurea repens</i>	Russian knapweed
CESO3	<i>Centaurea solstitialis</i>	Yellow star thistle
LEVU	<i>Chrysanthemum leucanthemum</i>	Oxeye daisy
CIAR	<i>Cirsium arvense</i>	Canada thistle
CIVU	<i>Cirsium vulgare</i>	Bull thistle
COAR4	<i>Convolvulus arvensis</i>	Field Bindweed
CYOF	<i>Cynoglossum officinale</i>	Houndstongue
DIFU2	<i>Dipsacus fullonum</i>	Teasel
EUES	<i>Euphorbia esula</i>	Leafy spurge
FAVU	<i>Falcaria vulgaris</i>	Sickleweed
HYNI	<i>Hyoscyamus niger</i>	Henbane
HYPE	<i>Hypericum perforatum</i>	St. Johnswort
IRPS	<i>Iris pseudacorus</i>	Yellow iris
ISTI	<i>Isatis tinctoria</i>	Dyers woad
KOSC	<i>Kochia scoparia</i>	Kochia
LELA2	<i>Lepidium latifolium</i>	Perennial pepperweed
LIGE	<i>Linaria genistifolia</i>	Dalmation toadflax
LIVU2	<i>Linaria vulgaris</i>	Yellow toadflax
LYSA2	<i>Lythrum salicaria</i>	Purple loosestrife
MYSP2	<i>Myriophyllum spicatum</i>	Eurasian water-milfoil
NAOF	<i>Nasturtium officinale</i>	Water-cress
ONAC	<i>Onopordum acanthium</i>	Scotch thistle
POCR3	<i>Potamogeton crispus</i>	Curly pondweed
PORE5	<i>Potentilla recta</i>	Sulfur cinquefoil
SAKA	<i>Salsola kali</i>	Russian thistle
SOCA3	<i>Solanum carolinense</i>	Horsenettle
SOAR2	<i>Sonchus arvensis</i>	Perennial sowthistle
TARA	<i>Tamarix ramosissima</i>	Salt Cedar
TAVU	<i>Tanacetum vulgare</i>	Common tansy
TRTE	<i>Tribulus terrestris</i>	Puncturevine