THE BIOLOGICAL AND PHYSICAL FEATURES OF BLOOMINGTON LAKE CIRQUE, CARIBOU NATIONAL FOREST

by

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INTRODUCTION

During 1990 and 1991, botanists from the Idaho Department of Fish and Game's Conservation Data Center conducted a botanical inventory of the Bear River Range (Moseley and Mancuso 1990; Moseley 1991). We surveyed extensively throughout the range in Idaho, especially along the high ridges and summits between the Utah border on the south, and Sherman Peak on the north. In all our searching, we never found another area of the range as biologically and physically unique as the Bloomington Lake Cirque, especially the headwall above the lake. Comparison of our data with that of floristic and ecologic inventories of other high elevation areas of southeastern Idaho also reveal the biological importance of the area (for example, see Dieffenbach 1977; Wellner and Moseley 1987a; 1987b). Later sections of this report outline the extraordinary physical features and biological values of the Bloomington Lake Cirque in greater detail.

The headwall and summits around Bloomington Lake were proposed to the Caribou NF as a Research Natural Area (RNA) by the Idaho Natural Areas Coordinating Committee. The Forest rejected the proposal, based largely on a falsely perceived conflict between RNA establishment and Wilderness designation, and it was not included in the Caribou Forest Plan. This area is unique for southeastern Idaho and should be given special recognition commensurate with its ecological significance. While the recreational pressure at Bloomington Lake may conflict with its designation as a RNA, it would not conflict with the Special Interest "Botanical" Area designation, a program housed in the Recreation Branch. This designation would also facilitate the interpretation of the unique ecological phenomena at Bloomington Lake for the public.

SPECIAL INTEREST AREA DESIGNATION

The Bloomington Lake Cirque is of high biological significance in the state of Idaho. The only known Idaho populations of two rare plant species occur in the cirque. One of four known Idaho populations of the Uinta chipmunk occur at Bloomington Lake. In addition, the plant communities occurring on the headwall are unique for this part of Idaho.

The National Environmental Policy Act of 1970, section 101(b) 3 and 4, declares that it is the responsibility of federal agencies to attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable or unintended consequences, and to preserve important historic, cultural, and natural aspects of our national heritage, maintaining, wherever possible, an environment that supports biological diversity. Special Interest Areas (SIAs) are established on National Forests by the Regional Forester to preserve historically, culturally, and biologically significant areas pursuant to 36 CFR 294.1a. SIAs are addressed in section 2360 of the Forest Service Manual (FSM). The objectives of SIAs, as identified in the FSM, are to protect and, where appropriate, foster public use and enjoyment of areas with scenic, historical, geological, botanical, zoological, paleontological, or other special characteristics. The definition of a Botanical Area, found in FSM 2362.43 and 2372.05 is as follows: a unit of land that contains plant specimens, plant groups, or plant communities that are significant because of their occurrence, habitat, location, life history, ecology, rarity, or other features. FSM 2362.43 also states that an inventory of National Forest land and waters that have such characteristics will be maintained. FSM 2670 also gives direction to National Forests to protect and maintain the habitats of Sensitive Species. I believe that the botanical significance of Bloomington Lake Cirque qualifies it for designation as a Special Interest Botanical Area and that the Caribou NF should pursue such a designation

(Hilty and Moseley 1991).

The goal of a Botanical Area designation, which is a recreation designation, is to acknowledge and highlight a special area of the National Forest. The unique botanical features of an area are protected, yet the purpose is also to provide appropriate access and interpretation of these features for public appreciation and enjoyment of the area. The area should have some public access, including a road or trail, and should lend itself to interpretation to the public. The Bloomington Lake Cirque fits these goals well.

PHYSICAL FEATURES

Topography

The proposed Bloomington Lake Cirque SIA (Figure 1.) consists of two small, glaciated basins at the head of the South Fork of Bloomington Creek, ca. 10 miles west of St. Charles, Idaho. The predominant physical feature of the Bloomington Lake Cirque is the north-facing headwall, the steepest in the Idaho portion of the Bear River Range. It holds snow in the chutes and along cliff bases much longer than any other area of the range. For example, snow was still present there in late July, 1990. Bloomington Lake lies at the base of the headwall and is the only glacial lake in the Bear River Range of Idaho. Elevations of the area range from 8,200 feet at the lake, to 9,245 feet on the unnamed summit in the southeastern corner of the area. While the north-facing headwall is very steep, the ridgeline and slopes south of the proposed SIA, in contrast, are relatively rounded and of moderate steepness.

Climate

The following characterization of the climate of southeastern Idaho is adapted from Wellner and Moseley (1987b). The climate of southeastern Idaho is controlled largely by continental air masses, being outside the influence of Pacific maritime systems that dominate weather patterns north of the Snake River Plain. In general, precipitation is dispersed throughout the year, with a slight precipitation peak in May and June. During the summer, moisture-laden air originating in the Gulf of Mexico is brought in at high levels, producing considerable thundershower activity. During the winter months, this portion of Idaho is under the domination of an anticyclonic subsiding flow, resulting in much less precipitation than the rest of the state.

No climatic data are available from Bloomington Lake Cirque, however, the record for Montpelier, Idaho, 15 miles northeast of the area and 2,400 feet below its lower boundary gives an indication of climatic trends. Precipitation at Bloomington Lake is greater and temperatures lower that at Montpelier. The following NOAA records are from summaries by Johnson (1981):

	Temperature ℉	Precipitation inches
Mean Annual	41.4	14.14
Mean April - September	55.4	6.99
Mean October - March	27.3	7.15

Figure 1. Bloomington Lake Cirque proposed Special Interest Botanical Area

Geology

Bloomington Lake Cirque was formed by localized, alpine glaciation during the Pleistocene. It is this glacial action that formed the dominant topographic features of the area, including Bloomington Lake and the north-facing headwall above the lake. The steep bedrock outcrops of the headwall are composed of two very different types of geologic substrates. The bottom cliff bands, next to the lake, are comprised of a hard, white, crystalline unit known as Swan Peak Quartzite, while the upper face is comprised of two gray-colored carbonates, Fish Haven Dolomite and Laketown Dolomite (Coulter 1956; Mitchell and Bennett 1979). These two types of substrates have very different chemical and physical properties, and in turn present differing edaphic characteristics plants must be adapted to. The Ordovician Swan Peak Quartzite is a fine-grained, well sorted quartzite. The Ordovician Fish Haven Dolomite is a dark gray, fetid, finely crystalline dolomite, while the Silurian Laketown Dolomite is light gray, white-weathering, and finely crystalline (Mitchell and Bennett 1979).

BIOLOGICAL FEATURES

Flora

The headwall of Bloomington Lake Cirque is floristically unique for the Bear River Range in Idaho, obviously controlled by the physical factors discussed above. The presence of two rare plants found nowhere else in Idaho, Rydberg's musineon (*Musineon lineare*) and green spleenwort (*Asplenium viride*), is only one indication of this. Other species occurring there, such as *Oxyria digyna, Draba lonchocarpa, Lloydia serotina,* and *Primula parryi*, were not seen elsewhere in southeastern Idaho, and indicate environmental conditions that normally exist 2000 feet higher than those at Bloomington Lake. The plant communities occurring at Bloomington Lake Cirque have not been formerly classified, but include cliff and ledge vegetation dominated by low-growing forbs and scattered stands of *Abies lasiocarpa*.

Rydberg's musineon and green spleenwort are both rare in Idaho, and a review of their distribution, abundance, conservation status, along with the significance of the Bloomington Lake Cirque populations, were treated in detail in Moseley and Mancuso (1990). Pertinent data on these two species are summarized below:

Rydberg's musineon This member of the parsley family was only recently discovered in Idaho, in 1990, by Moseley and Mancuso (1990). Prior to that it was thought to be endemic to the southern part of the Bear River Range, Cache County, Utah (Goodrich 1987; Franklin 1990). The one small population found by Moseley and Mancuso at Bloomington Lake Cirque is disjunct by approximately 15 miles north of the nearest population in Utah. The population occurs as three small subpopulations in rock outcrops of Laketown Dolomite, and possibly Fish Haven Dolomite, on the upper part of the cirque headwall. In 1990, the three subpopulations consisted of approximately 600 individuals, although the population may extend onto the inaccessible portion of the headwall. The three subpopulations are mapped in Figure 1. Detailed location, population, and habitat data is provided in Appendix 1, which contains occurrence records from the Conservation Data Center's data base for the rare plants and animals occurring at Bloomington Lake Cirque.

Rydberg's musineon is currently a Category 2 candidate for listing under the Endangered Species Act (U.S. Fish and Wildlife Service 1990). Because we now have a relatively thorough view of its

distribution and conservation status, it qualifies for Category 1 status (Woodbury 1980; Franklin 1990; Moseley and Mancuso 1990). Such a recommendation has been made by the Idaho Native Plant Society (1992). Rydberg's musineon is a U.S. Forest Service Region 4 Sensitive Species for the Caribou and Wasatch-Cache NFs (Spahr *et al*. 1991). The Idaho Conservation Data Center and The Nature Conservancy currently rank Rydberg's musineon as G2 S1 (G2 = Rydberg's musineon is imperiled globally because of rarity or because of other factors demonstrably making it vulnerable to extinction; S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; Moseley and Groves 1990).

Green spleenwort This diminutive fern was discovered in Idaho at Bloomington Lake Cirque in 1984, by Steve Brunsfeld, University of Idaho. This population is the only one known to be extant in Idaho. One vague sighting in Clearwater County remains unconfirmed. Green spleenwort is largely a boreal species, distributed from Newfoundland to Alaska, south in the northern part of the coterminous United States (Lellinger 1985). In 1990, the Bloomington Lake Cirque population consisted of between 30-40 plants in three small areas of the headwall (Moseley and Mancuso 1990). The population is largely confined to the upper part of the headwall on carbonate rocks, although one plant was found on quartzite. Because much of the headwall is vertical and relatively inaccessible, it is possible that more plants occur there. The population is mapped in Figure 1. Detailed location, population, and habitat data is provided in Appendix 1, which contains occurrence records from the Conservation Data Center's data base for the rare plants and animals occurring at Bloomington Lake Cirque.

Green spleenwort is not a federal candidate for listing. It is currently not a Region 4 Sensitive Species, although Moseley and Mancuso (1990) recommended that it be considered for Sensitive Species status in Region 4 because the Forest Service manages the only population in Idaho. The Idaho Native Plant Society considers green spleenwort a Priority 1 species (Idaho Native Plant Society 1992), which includes species that have very low population levels in Idaho. The Idaho Conservation Data Center and The Nature Conservancy currently rank green spleenwort as G5 S1 (G5 = green spleenwort demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery; S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; Moseley and Groves 1990). In western North America, green spleenwort is considered rare and/or endangered in California (Smith and Berg 1988) and Oregon (Oregon Natural Heritage Data Base 1991). In eastern North America, Hinds (1983) lists green spleenwort as being rare in New Brunswick, Nova Scotia, Northwest Territories, Quebec, Maine, Michigan, New York, Vermont and Wisconsin.

Below is a list of vascular plants collected or observed at Bloomington Lake Cirque by Bob Moseley and Michael Mancuso in 1990. The list is not exhaustive, and other species will certainly be discovered when a systematic inventory of the flora of Bloomington Lake Cirque is undertaken. See Moseley and Mancuso (1990) for an annotated list of plants collected in the Bear River Range. Nomenclature follows the *Intermountain Flora* (Cronquist *et al*. 1972; 1977; 1984; 1989). For those families not covered by these volumes we refer to *A Utah Flora* (Welsh *et al*. 1987).

SPECIES

Apiaceae
Musineon lineare

Asteraceae
Achillea millefolium
Arnica latifolia
Artemisia ludoviciana
Erigeron leiomerus
Erigeron peregrinus ssp. *callianthemus*
Erigeron tener
Erigeron ursinus
Hymenoxys acaulis
Senecio fremontii var. *fremontii*

Brassicaceae
Arabis lemmonii var. *lemmonii*
Draba crassifolia
Draba lonchocarpa
Draba densifolia
Draba oligosperma
Rorripa curvipes var. *integral*
Thlaspi montanum

Caryophyllaceae
Silene menziesii var. *menziesii*

Celastraceae
Pachistima myrsinites

Crassulaceae
Sedum debile

Cupressaceae
Juniperus communis

Grossulariaceae
Ribes montigenum

Liliaceae
Lloydia serotina

Onagraceae
Epilobium alpinum

Pinaceae
Abies lasiocarpa
Picea engelmannii
Pinus flexilis
Pseudotsuga menziesii

Poaceae
Agropyron trachycaulum
Leucopoa kingii
Poa nervosa
Trisetum spicatum

Polygonaceae
Oxyria digyna

Polypodiaceae
Asplenium viride
Cystopteris fragilis
Pellaea breweri
Polystichum lonchitis

Primulaceae
Primula parryi

Ranunculaceae
Anemone multifida
Aquilegia coerulea

Rosaceae
Petrophytum caespitosum
Potentilla diversifolia
Potentilla ovina

Saxifragaceae
Heuchera rubescens

Scrophulariaceae
Castilleja miniata
Penstemon cyananthus
Penstemon wippleanus
Synthyris pinnatifida var. *pinnatifida*

Valerianaceae
Valeriana acutiloba

Fauna

The fauna of Bloomington Lake Cirque have not been intensively inventoried. Keller *et al*. (1986) trapped small mammals in the vicinity of Bloomington Lake and collected four species: Uinta chipmunk (*Tamias umbrinus*), yellow pine chipmunk (*T. amoenus*), deer mice (*Peromyscus* sp.), and Richardson's ground squirrel (*Spermophilus richardsonii*).

The population of Uinta chipmunk at Bloomington Lake is one of only four known in Idaho. In Idaho, it is usually found in semi-open forest stands of rugged, mountainous areas, particularly in fallen logs and brush at edges of forests (Larrison and Johnson 1981). Larrison and Johnson (1981) state that the species is common at Bloomington Lake, where it can be easily observed. Additional information can be found in Appendix 1, which contains occurrence records from the Conservation Data Center's data base for the rare plants and animals occurring at Bloomington Lake Cirque. Uinta chipmunk is an Idaho Department of Fish and Game Species of Special Concern, which includes species which are either low in numbers, limited in distribution, or have suffered significant habitat losses (Moseley and Groves 1990). The Idaho Conservation Data Center and The Nature Conservancy currently rank Uinta chipmunk as G5 S1 (G5 = Uinta chipmunk is demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery; S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; Moseley and Groves 1990).

MANAGEMENT RECOMMENDATIONS

Specific recommendations regarding the management of rare plant populations at Bloomington Lake were made by Moseley and Mancuso (1990). By and large, no clear anthropogenic threats to the populations of green spleenwort and Rydberg's musineon at Bloomington Lake Cirque were seen during 1990, however, both populations are extremely small and vulnerable to extirpation. The Forest should give special consideration to these species when formulating plans for development in the Bloomington Lake area.

Following are some suggestions on how the Caribou NF can interpret, promote, and protect the Botanical Area once it is established by the Regional Forester. These ideas have been adapted from those put forth by Barbara Williams, Botanist, Klamath NF.

- A thorough botanical, faunal, and community inventory needs to be completed.

- Upon completion of the biological inventories, the Forest should create brochures for distribution in offices and at the Bloomington Lake trailhead that outline and interpret the unique natural values of Bloomington Lake Cirque. This brochure could be produced cooperatively with interested organizations such as the Idaho Native Plant Society. Although revealing the precise locations of rare species is not recommended, educating the users about the rare plants and habitats of the cirque in a general way, will hopefully foster a sensitivity in their use of the area.

- Make sure the area gets added to the next mapping updates on the Forest, and make sure the trail is correctly placed and labeled.

- Make signs to place at the trailhead describing its values and interest, including rules for protection of the site. Low-impact camping should be specifically mentioned and encouraged.

- Prepare and distribute publicity and educational material for local newspapers and newsletters of interested organizations.

Below is a draft outline for a possible management plan of the Bloomington Lake Cirque Botanical Area (adapted from Barbara Williams, Botanist, Klamath NF):

- Review Forest Service Manual and Forest Plan direction; amend Forest Plan if necessary.

- Description of the area and its botanical values.

- Location of area and description of access.

- Plan for interpretation; signs, brochures, etc.

- Maintenance plan for trails and camping areas.

- Activities allowed and prohibited and under what circumstances.

The following management prescription for SIAs on the Sequoia NF (from their Forest Plan) may be useful to the Caribou NF in developing similar management direction for Bloomington Lake Cirque or other SIAs on the Forest:

> "Timber and firewood harvesting will not occur except where in accord with their establishment. Dispersed recreation, consistent with the emphasis, will be encouraged. ORV use will be allowed on designated trails if such use does not threatened values within the SIA. Developed recreation will not occur. Watershed improvements will occur only to protect special features. Transportation system management will favor the emphasis. Wildlife habitat will be provided by maintaining a natural state, but manipulation strictly for wildlife will not occur. Grazing may be compatible. Consider mineral withdrawal subject to existing claims. Fire suppression will be done with minimum ground disturbance."

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Appendix 1

Element occurrence records for populations of
Asplenium viride, Musineon lineare, and *Tamias umbrinus*
at Bloomington Lake Cirque.

NOT INCLUDED IN CDC HOME PAGE VERSION OF THIS REPORT