RARE PLANTS OF UPLAND HABITATS ON THE SANDPOINT RANGER DISTRICT, IDAHO PANHANDLE NATIONAL FORESTS.

by

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ABSTRACT

Field investigations for Region One Forest Service Sensitive Plant Species known or expected to occur in upland or riparian habitats on the Sandpoint Ranger District, Idaho Panhandle National Forests, were carried out between June and October 1993. Populations of four sensitive species were relocated or discovered during 1993. These include *Blechnum spicant* (deer fern; one population), *Botrychium lanceolatum* ssp. *lanceolatum* (lance-leaved moonwort; one population), *Lycopodium sitchense* (sitka clubmoss; two populations), and *Tellima grandiflora* (fringe cup; two populations).

Moseley (1990) discussed eight sensitive species occurring in wetlands on the Sandpoint Ranger District. I have added notes on one of the wetland sensitive species (*Hypericum majus*) treated by Moseley (1990) because of a population discovered on the Sandpoint RD in 1993. I have added notes on one recent addition to the Region One Sensitive Species List for Idaho, *Scirpus subterminalis*, which occurs in several lakes adjacent to the Sandpoint RD. I also added notes on *Cassiope mertensiana* var. *mertensiana*, which is currently known from only one site in Idaho, the top of Mount Pend Oreille on the Sandpoint RD/Kootenai NF boundary. This species may be recommended for the Region One Sensitive Species List after a more careful review of its distribution can be done.

No additions or deletions from the current Region One Sensitive Species List for Idaho are recommended. Overall, I surveyed much of what I felt was potential sensitive plant habitat on the Sandpoint RD, particularly in creek corridors through mature or old-growth forested stands. Very few sensitive plant populations were found. Most of these surveys were cursory, however, and not necessarily indicative of an overall lack of potential habitat for the species listed above and other sensitive species known from similar habitats on the Bonners Ferry and Priest Lake RDs (see Bursik 1992). Land managers should be aware that much of the Sandpoint RD is potential habitat for the four species listed above as well as those upland and riparian species occurring on the Priest Lake RD (Bursik 1992). Careful surveys should be done in all proposed project areas where ground disturbance and tree removal are to occur to assure protection of sensitive species populations that may occur in the area.

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INTRODUCTION

The National Forest Management Act and Forest Service policy require that Forest Service land be managed to maintain populations of all existing native animal and plant species at or above the minimum viable population level. A minimum viable population consists of the number of individuals, adequately distributed throughout their range, necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

The Forest Service, along with other Federal and State agencies, has recognized the need for special planning considerations in order to protect the flora and fauna on lands in public ownership. Species recognized by the Forest Service as needing such considerations are those that (1) are designated under the Endangered Species Act as endangered or threatened, (2) are under consideration for such designation or (3) appear on a regional Forest Service Sensitive Species List.

This report constitutes a summary of findings of a Challenge Cost-share project on the sensitive species of upland or riparian habitats on the Sandpoint Ranger District of the Idaho Panhandle National Forests. This project is a cooperative effort between the Idaho Department of Fish and Game's Conservation Data Center and the Idaho Panhandle National Forests through the Challenge Cost-share Program. One previous Challenge Cost-share project concerned the Sensitive Plants of wetland habitats on the Sandpoint Ranger District (Moseley 1990). This report is designed as a supplement to the previous work to address Sensitive Species not previously treated for the Sandpoint RD.

The primary objectives of this investigation were to:

1) Survey habitats on the Sandpoint RD for rare plant populations, concentrating on moist forested habitats associated with mature or old-growth stands of trees.

2) Determine the distribution, habitat, and population levels for sensitive species encountered.

3) Assess population trends and threats to existing populations to make management recommendations to the Regional Forester and the Idaho Panhandle National Forests based on these assessments.

RESULTS

Between June and October, 1993, I surveyed numerous moist, forested habitats on the Sandpoint Ranger District looking for sensitive species known to occur in the region and other sensitive species suspected to occur on the district based on their occurrence on the Priest Lake and Bonners Ferry RDs to the north.

Populations of four sensitive species of moist forested habitats were located by my surveys and by the surveys of Betsy Hammet (Sandpoint RD) and Scott Maxwell (contractor for the Sandpoint RD) during 1993. These species include *Blechnum spicant* (deer fern), *Botrychium lanceolatum* ssp. *lanceolatum* (lance-leaved moonwort), *Lycopodium sitchense* (sitka clubmoss), and *Tellima grandiflora* (fringe cup).

Much of the Sandpoint Ranger District is covered by potential habitat for these and other sensitive species known from similar habitats on the Priest Lake and Bonners Ferry RDs (Bursik 1992). Careful survey of all proposed project areas for sensitive species known and suspected to occur on the Sandpoint RD should continue to assure their protection in this area.

This manual is designed as a supplement to the study of Moseley (1990) on the sensitive species of wetland habitats on the Sandpoint RD. I provide some notes on *Hypericum majus*, treated by Moseley (1990), which I found in an additional site on the Sandpoint RD during 1993. Notes are also provided for *Scirpus subterminalis*, an aquatic species known from several lakes adjacent to the Sandpoint RD, which is a recent addition to the Region One Sensitive Species List for Idaho. *Cassiope mertensiana* var. *mertensiana* is currently known from only one site in Idaho, which is partly on the Sandpoint RD. I provide the known information on this species in the notes section as well.

***Blechnum spicant* (L.) Roth**.

CURRENT STATUS USFS - R1 Sensitive
R4 Sensitive
USFWS - None
Idaho Native Plant Society - Sensitive
Idaho CDC - G5 S2

TAXONOMY

Family: Polypodiaceae (fern)

Common Names: Deer fern

Citation: Bot. Arr. Veg. Brit. 3rd ed. 765. 1796.

Technical Description: Fronds arising from creeping rhizomes Sterile fronds once pinnate with broadly sessile pinnae. Sterile leaves 2-8(10) dm, petioles 3-25 cm, reddish or purplish-brown. Pinnae 35-75 pairs per sterile frond, largest pinnae borne near or above middle of the frond (1.0-5.5 cm x 3-7[10] mm). Fertile leaves surpassing the sterile, petioles up to 50 cm long, pinnae as many and as long as on sterile leaves but only 1.5-2.0 mm wide (Cronquist 1969a). See Appendix 1 for a line drawing of deer fern.

Nontechnical Description: Leaves arising from creeping underground rhizomes. Plants with two types of leaves. Angled to spreading sterile (non-sporangia-bearing) leaves with sessile leaflets 1.0-5.5 cm long x 3-7(10) mm broad. Leaflets 35-75 pairs arranged oppositely along petiole. Petioles reddish to purplish-brown. Fertile (sporangia-bearing) leaves similar to sterile leaves but more erect and with same number of leaflets which are only 1.5-2.0 mm wide.

Distinguishing Features and Similar species: Deer fern is a distinctive fern, unlike any other species of fern in Idaho. The dimorphic fronds are the most distinguishing feature of deer fern. The fertile fronds have narrower leaflets and are more erect than the sterile fronds, which have broader leaflets and are prostrate or nearly parallel with the ground (see Appendix 1 for a line drawing of deer fern).

DISTRIBUTION

Range: Deer fern is a wide ranging northern species that is interruptedly circumboreal and ranges south into northern California. Deer fern is chiefly found west of the Cascades in the Pacific Northwest where it is widespread, but disjunct populations are also known from Bonner, Clearwater, and Idaho counties in Idaho.

Twenty-nine populations of deer fern have been documented in Idaho. Nine of these populations are known from historical collections, which have not been seen recently. Several of these populations are in areas that have been extensively logged and their fate is in doubt. Eighteen of the populations are known from Clearwater and Idaho counties. Six populations are known from Bonner and Boundary counties, all on the Idaho Panhandle National Forest. Five of the populations occur on the Priest Lake Ranger District and one occurs on the Sandpoint Ranger District (Lightning Creek 015) (see Appendix 2 for a mapped location of this population). The other five populations are known from scattered locations in Shoshone, Benewah, Kootenai,

and Latah counties, only one of which has been recently seen (St. Joe River 017 in Shoshone County, 1992). The Bonner and Boundary county deer fern populations have only recently been discovered (since 1988).

Lightning Creek 015 was discovered in 1991, just southeast of the confluence of Cedar Creek with Lightning Creek, nine miles northeast of Clark Fork, Idaho, in one of few remaining low or mid-elevation old-growth cedar/hemlock stands on the Sandpoint Ranger District. Most of this population occurs in higraded portions of the old-growth stand, which were selectively helicopter logged around 1980. More than 250 individuals were observed in scattered patches on steep east and northeast-facing slopes within the stand. Three of the populations on the Priest Lake Ranger District are centered near old logging roads, and one population, Distillery Bay 011 is partly located within a 1990 clearcut (the population was located after the clearcut was complete) (Bursik 1992). This population is being monitored to determine the effects of canopy removal on its long-term viability (Blake 1992).

Habitat and Associated Species: Deer fern is a species of moist coniferous forests throughout its range. On the Idaho Panhandle National Forests, this species is found exclusively in old-growth, or mature *Thuja plicata* (western redcedar) and *Tsuga heterophylla* (hemlock) forests. Understory species associated with deer fern include *Clintonia uniflora, Lycopodium clavatum, Pyrola secunda, P. asarifolia, Smilacina racemosa, Disporum hookeri, Linnaea borealis,* and *Asarum caudatum*.

CONSERVATION STATUS

Conservation Status - Idaho: In his evaluation of deer fern for the Idaho rare plant project of the Idaho Natural Areas Council, Johnson (1981) recommended State Watch List status due to its apparent rarity. It was placed on the Region One FS Sensitive Species List in 1988. Deer fern is a sensitive species in the Intermountain Region (Region 4) of the Forest Service. It is also a BLM sensitive species in Idaho (Moseley and Groves 1992).

The Idaho Native Plant Society considers deer fern a State Priority 2 species (Moseley and Groves 1992). The State Priority 2 category refers to species likely to be classified as a Priority 1 species within the foreseeable future in Idaho, if factors contributing to its population decline or habitat degradation or loss continue. A State Priority 1 species is one which is in danger of becoming extinct or extirpated from Idaho in the foreseeable future if identifiable factors contributing to its decline continue to operate; these are species whose populations are present only at critically low levels or whose habitats have been degraded or depleted to a significant degree.

The Idaho CDC currently ranks deer fern as G5 S2 (G5 = demonstrably secure globally, though it might be quite rare in parts of its range, especially at the periphery, S2 = imperiled in Idaho because of rarity or because of other factors, demonstrably making it very vulnerable to extinction [Moseley and Groves 1992]).

Threats: No apparent threats exist to Lightning Creek 015 on the Sandpoint Ranger District. Although this stand was partially helicopter logged around 1980, ground disturbance was minimal and did not significantly disturb this deer fern population. Three of the five populations on the Priest Lake Ranger District have been wholly or partially disturbed. The long-term monitoring study initiated on Distillery Bay 011 should allow us to ascertain the effects of canopy removal on the survival of deer fern in the area (Blake 1992).

Management Implications: Current management of Lighting Creek 015 seems compatible with its long-term

survival, provided no more logging or other ground-disturbing activities occur in this stand.

Distillery Bay 011 is currently being monitored by Jill Blake, botanist, Idaho Panhandle NFs, and Dennis Reily, Priest Lake RD using timber KV funds. In 1991 and 1992, they used an infrared survey instrument to map and track individuals in seven plots containing deer fern; three in the clear-cut, two in undisturbed control plots, and two on the edges of the clearcut. They will use this information to track individual plants in the following four categories: (1) juveniles (without fertile fronds); (2) vegetative (mature, without fertile fronds); (3) fertile; and (4) fertile with more than three fertile sporophylls. They have established a protocol for future monitoring of the population using these techniques along with ECODATA techniques, which have been applied on the same one-tenth acre circular plots (Blake 1992).

ASSESSMENTS AND RECOMMENDATIONS

Summary: Deer fern is know from 20 recently documented sites in Idaho. Thirteen populations are known from Clearwater and Idaho counties on the Clearwater and Lochsa rivers. One population of deer fern is known from along the St. Joe River in Shoshone County and six populations are known from the Idaho Panhandle National Forests; five on the Priest Lake RD and one on the Sandpoint RD. Lightning Creek 015 is a large population of more than 250 individuals occurring in an old-growth cedar/hemlock forest. Three of the five Priest Lake populations are at risk due to their locations or due to past management activities. Although the stand in which Lightning Creek 015 occurs was higraded around 1980, ground disturbance and canopy removal was minimal and did not appear to considerably degrade the habitat. Based on the health and vigor of the individuals in this population, its long-term survival appears secure.

Recommendations to the Regional Forester: Deer fern is currently on the Region One List of Sensitive Species. Only six small populations are known of this species in northern Idaho, five on the Priest Lake RD, and one on the Sandpoint RD. Three of the Priest Lake RD populations are threatened due to their locations near old roads or due to recent management activities. Although past higrading occurred in the old-growth cedar/hemlock stand that supports Lighting Creek 015 on the Sandpoint RD, this activity appears not to have significantly impacted the deer fern population. This logging activity, however, was recent enough (ca. 1980) that its full effects may not yet be realized. The population appears to be fairly large and vigorous, but periodic checks should be made by the district rare plant coordinator to monitor population trends.

Given the information presented here, I recommend that deer fern remain on the Region One List of Sensitive Species for Idaho.

Recommendations to the Idaho Panhandle NFs: Only six populations of deer fern are known from Bonner and Boundary counties on the Idaho Panhandle National Forests, one of which is located on the Sandpoint RD. Current management of this population appears compatible with its long-term survival. Because selective higrading of the stand that supports Lightning Creek 015 occurred fairly recently (ca. 1980), and the effects of ground disturbance and partial canopy removal may not yet be entirely realized, periodic monitoring of this population should take place to track population trends. Monitoring activities should continue on Distillery Bay 011 to determine the short-term effects of canopy removal on this species. I suggest continuing the monitoring beyond 1995 to ascertain the long-term effects of canopy removal on the viability of individuals of deer fern. This can be done using the same methods (Blake 1992) on a semi-annual basis.

Land managers and field personnel on the Idaho Panhandle NFs should be informed of the occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the

population warrants collecting), and should include both fertile and sterile fronds and rhizomes. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, 83843) for verification of their identity. Confirmed sightings of this species should be reported to the Idaho CDC for entry into their permanent data base on sensitive species.

Botrychium lanceolatum* (Gmel.) Angstr. ssp. *lanceolatum

CURRENT STATUS
USFS R1 - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 2
Idaho CDC - G5T4/S2

TAXONOMY

Family: Ophioglossaceae (Adder's-tongue)

Common Name(s): Lance-leaved moonwort

Citation: Angstrom, Bot. Notiser 1854:58. 1854.

Technical Description: Plants mostly 0.5-3.5 dm tall, glabrous from the first; sterile blade sessile or nearly so, attached near the summit of the plant (the common stalk 3-14 cm long), deltoid in outline, as wide as or wider than long, commonly 1-6 cm long and 1-9 cm wide, rather openly bipinnatifid or subbipinnatifid, the pinnae and pinnules mostly longer than wide, entire margined with acute to round apices; fertile stalk mostly 1.5-8 cm long; sterile blade and fertile spike both completely reflexed in bud; bud glabrous, wholly concealed by the base of the common stalk (Cronquist 1969b; Lellinger 1985; Wagner and Wagner 1983).

Nontechnical Description: A rather fleshy perennial plant growing from 0.5-3.5 dm tall. Plants arise from a single stem that divides into a single fertile and sterile "leaf", both attached near the summit of the plant from a 3-14 cm long common stem. The sterile leaf is attached almost directly to the main stem (without a stalk), twice divided into lateral branches and has sharply pointed or rounded tips and a shiny dark green color. The fertile portion ranges from 1.5-8 cm long (Lorain 1990) (see Appendix 1 for a line drawing of this species).

Distinguishing Features and Similar Species: As with all moonworts, lance-leaved moonwort is a rather inconspicuous species that must be searched for diligently. The species grows on wet to moist grassy slopes, roadsides, edges of lakes and within mature and old-growth cedar and hemlock forests. It can be found from relatively low to high elevations in some of these habitats. Within such habitats search for a small fern with a single fertile and sterile frond portion. The sterile frond is once or twice divided with pointed frond tips and a rather fleshy, shiny green appearance (Lorain 1990).

Lance-leaved moonwort is easier to identify than most moonworts. It frequently grows sympatrically with *B. hesperium*, *B. pinnatum*, and *B. echo* (Wagner and Wagner 1983). Lance-leaved moonwort can be differentiated from these species based on the shape of the sterile portion of frond, which is roughly triangular in outline and nearly sessile. The sterile leaf is ovate to oblong-deltate and subsessile to obviously petiolate in the other three species (Wagner and Wagner 1983; Lorain 1990).

DISTRIBUTION

Range: Lance-leaved moonwort is widely distributed in western North America but is locally rare throughout its range. It is known to occur from Alaska to Oregon and at higher elevations in Colorado, Utah, New Mexico, and Arizona. Thirteen sites of lance-leaved moonwort are now known from Idaho, eleven of which

are found in the Idaho Panhandle National Forests. One population of lance-leaved moonwort is found on the Sandpoint Ranger District (Lightning Creek 013) (see Appendix 2 for a map location of this population). One population is known from the Fernan RD, two populations are known from the Priest Lake RD and seven from the Bonners Ferry RD. The other two populations of lance-leaved moonwort in Idaho are from Clearwater and Idaho counties.

Lightning Creek 013 is located in an old growth cedar/hemlock forest along Lightning Creek, nine air miles north of Clark Fork, Idaho (see Appendix 2 for a map location of this site).

Habitat and Associated Species: Lance-leaved moonwort grows in a wide variety of habitats including wet to moist grassy and rocky slopes, meadows, woods, roadsides, and edges of lakes, generally at relatively high elevations (Wagner and Wagner 1983). In Idaho populations have been documented at elevations ranging from 2950 to more than 4500 feet.

On the Sandpoint Ranger District, lance-leaved moonwort was found on deep duff over mixed alluvial substrate in an old-growth cedar/hemlock stand on a terrace above Lightning Creek, just southeast of the confluence with Cedar Creek. Elsewhere on the Idaho Panhandle National Forest, it has been found in a well-drained open meadow and in the *Abies lasiocarpa* zone on well-drained, sandy alluvium along a stream (Lorain 1990).

The old-growth stand supporting lance-leaved moonwort along Lightning Creek was higraded in the past. Associated species include *Gymnocarpium dryopteris, Smilacina stellata, Adenocaulon bicolor*, and *Asarum caudatum*. As with all other known populations of this species, no more than 100 individuals were observed.

CONSERVATION STATUS

Conservation Status - Idaho: The Idaho Native Plant Society considers lance-leaved moonwort a Priority 2 species (Moseley and Groves 1992). The Priority 2 category of the Idaho Native Plant Society list refers to taxa likely to be classified as Priority 1 species within the foreseeable future in Idaho, if factors contributing to its population decline or habitat degradation or loss continue.

The Idaho CDC currently ranks lance-leaved moonwort as G5(T4) S2 (G5 = demonstrably secure globally, though it might be quite rare in parts of its range, especially at the periphery, S2 = imperiled in Idaho because of rarity or because of other factors, demonstrably making it very vulnerable to extinction [Moseley and Groves 1992]).

Threats: No apparent threats exist to Lightning Creek 013. Lorain (1990) reported that three of the four populations known in Idaho as of 1990 could be threatened by grazing, trampling, and road construction, due to the location of one population near an informal, regularly used campsite (Packer Creek West 004); one population along a road (Smith Creek 003); and one population in a former grazing allotment (Boulder Creek 001).

Management Implications: Current management of populations of lance-leaved moonwort on the Idaho Panhandle National Forest appear compatible with the long-term survival of this species. Long-term monitoring studies should be set up for several of these populations to determine population trends and responses over time, particularly those that occur near roads where they could easily be disturbed by

maintenance activities. No threats are apparent to Lightning Creek 013 on the Sandpoint RD.

ASSESSMENTS AND RECOMMENDATIONS

Summary: Thirteen populations of lance-leaved moonwort are known in Idaho. All of these populations occur on lands administered by the U.S. Forest Service. Eleven of these populations are located on the Idaho Panhandle National Forests, including one on the Sandpoint RD (Lightning Creek 013). No apparent threats exist to this population although several populations are threatened due to their proximity to roads, campsites, or within old grazing allotments which could someday be renewed (Lorain 1990). All populations of this species are also very small and localized. Long-term monitoring studies should be established in one or more of the populations located adjacent to roads to ascertain the effects of maintenance activities on their long-term viability.

The habitat of this species is diverse, ranging from low to high elevation and from semi-open meadows to shaded understories of mature and old-growth forests. Consequently, careful survey of any moist habitat slated for tree removal or ground disturbance should be done for this species.

Recommendations to the Regional Forester: Lance-leaved moonwort is currently known from 13 populations in Idaho, including 11 on the Idaho Panhandle National Forests. One population (Lightning Creek 013) is located on the Sandpoint RD. All populations of this species in Idaho are small in size and area covered and several are located in areas that make them potentially susceptible to disturbance from road maintenance or grazing activities. One or more of these populations located along roads should be monitored to determine long-term trends. No threats are apparent to Lightning Creek 013 on the Sandpoint RD.

Given the limited distribution of lance-leaved moonwort in Idaho and the small size of its populations, I recommend that it remain on the Region One List of Sensitive Species for Idaho.

Recommendations to the Idaho Panhandle NFs: Eleven populations of lance-leaved moonwort are known from the Idaho Panhandle National Forests, one of which is located on the Sandpoint RD. Current management of this population appears compatible with its long-term survival. Several populations of lance-leaved moonwort on the Idaho Panhandle National Forests are threatened due to their proximity to roads. One or more of these populations should be monitored to determine long-term effects of maintenance activities (if any) on these populations. Because lance-leaved moonwort occurs in a wide range of moist habitats from sedge or grass-dominated meadows to shady understories of mature or old-growth forests and from low to high elevations, careful survey of moist forested or open project areas for this species is important in assuring its protection from ground-disturbing or canopy-removing activities.

Land managers and field personnel on the Idaho Panhandle NFs should be informed of the occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both fertile and sterile fronds and rhizomes. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, 83843) for verification of their identity. Confirmed sightings of this species should be reported to the Idaho CDC for entry into their permanent data base on sensitive species.

***Lycopodium sitchense* Rupr.**

CURRENT STATUS
USFS R1 - Sensitive
USFWS - None
Idaho Native Plant Society - Sensitive
Idaho CDC - G5/S1

TAXONOMY

Family: Lycopodiaceae (clubmoss)

Common Name: Sitka clubmoss

Citation: Beitr. Pfl. Russ. Reich. 3:30. 1845.

Technical Description: Horizontal stems elongate, slender, and sparsely leafy, or barely subterranean and merely scaly-bracteate, giving rise at frequent intervals to erect, dichotomously branched, slender aerial stems, most of these aerial branches strictly vegetative and arising only 3-10 cm above ground, a few branches longer (as long as 15 cm) and bearing 1 or more terminal cones; leaves of the vegetative branches (4)5-ranked, all about alike, thick and firm, loosely appressed or more commonly incurved-ascending, mostly 2-3.5 mm long (excluding the short, adnate base) and less than 1 mm wide, with a firm, sharp point, commonly somewhat trough-shaped, with evidently convex lower surface and slightly concave upper surface; fertile branches only slightly different from the others, their leaves usually a little less crowded and often in 6 rows; cones small and slender, only 1-2.5 cm long; sporophylls stramineous or greenish-stramineous, broad-based, often short-acuminate, mostly 2-3 mm long and 1.5-2 mm wide, with thin, often erose margins; sporangia reniform, about 1.5 mm wide; spores 32-40 microns in diameter, rounded-triangular or nearly circular in outline, reticulate-ridged except near the commissures, these not in furrows (Cronquist 1969c).

Nontechnical Description: Creeping stems sparsely leafy, on surface of soil or slightly underground, sometimes only with scaly bracts, giving rise to numerous dichotomously branched slender aerial stems, most of which are vegetative and rise only 3-10 cm above ground, a few branches are longer and bear 1 or more terminal cones; leaves of sterile branches 4 or 5-ranked, all similar, thick and firm, usually facing upward and curving inward toward the stem, 2-3.5 mm long (excluding the short, adnate base) and less than 1 mm wide, with a firm, sharp point, commonly somewhat trough-shaped, with evidently convex lower surface, and concave upper surface; fertile branches slightly different from sterile, leaves less crowded and often in 6 rows; cones small and slender, only 1-2.5 cm long; sporangium-bearing leaves straw-colored, or yellowish-green, broad-based with a short, sharp point, 2-3 mm long and 1.5-2 mm wide, often fringed at margins; sporangia rounded, about 1.5 mm wide; spores 32-40 microns in diameter, rounded-triangular or nearly circular.

Distinguishing Features and Similar Species: Sitka clubmoss is distinctive from other clubmosses in that it has low, creeping, sometimes slightly underground stems from which arise numerous low, sterile stems along with occasional longer fertile stems, generally with more than one cone. The sporophylls are generally non-photosynthetic, making the cone straw-colored. The leaves of the vegetative stems tend to be 5-ranked compared to the 4-ranked leaves of *L. alpinum*, which is not known from our area. The short, narrow leaves of the vegetative stems that are ascending and incurved toward the stem are also distinctive features of Sitka clubmoss (see Appendix 1 for a line drawing of Sitka clubmoss).

DISTRIBUTION

Range: Sitka clubmoss is a circumboreal species known from alpine and subalpine habitats in boreal America and eastern Asia, with its range perhaps interrupted in central Canada. In western North America it occurs from Alaska to southern Washington, central Oregon, and east to northeastern Oregon, and western Montana (Cronquist 1969c).

In Idaho, Sitka clubmoss is known from scattered, recently documented locations in Bonner and Boundary counties in the Selkirk, Cabinet, and Purcell ranges. It is also documented from a lone Idaho County location in the Selway Bitterroot Wilderness Area. Four of the Idaho populations are known from the northern Selkirks near the Canadian border on the Bonners Ferry RD. Two populations were found just east of Northport, Idaho along the Canadian border in the northern U.S. portion of the Purcell Range, also on the Bonners Ferry RD. One historical collection came from the Priest River Valley along Kalispell Creek in the early part of this century. This population has not been relocated. Two populations of Sitka clubmoss were found during 1993 on the Sandpoint RD. One population, Gem Creek 002, located by Betsy Hammet of the Sandpoint RD, represents a relocation of a historical collection made of this species in that vicinity during the 1930s. It occurs along the Gem Lake Trail in the Cabinet Range north of Lake Pend Oreille. The other population located on the Sandpoint RD during 1993, Moose Creek 010 was found by Scott Maxwell, contractor for the Sandpoint RD, along Moose Creek 0.5 mile below Moose Lake (see Appendix 2 for map locations of these two populations).

Habitat and Associated Species: Sitka clubmoss is known from meadows and other open rocky places in mountains, often above treeline, and it occurs less commonly in coniferous woodlands throughout its range (Cronquist 1969c). In Idaho it has been collected from moss-dominated subalpine fens and from semi-open subalpine fir woodlands where it is associated with *Menziesia ferruginea*, *Lycopodium clavatum, L. complanatum*, and *Vaccinium caespitosum.* It is generally known from elevations above 4200 feet on soils ranging from peat to well-drained unconsolidated glacial till. All populations are very small in number of individuals and the area covered.

CONSERVATION STATUS

Conservation Status - Idaho: The Idaho Native Plant Society considers Sitka clubmoss a Sensitive Species in the state. These are species with small populations or localized distribution in Idaho that presently do not meet the criteria for classification as Priority 1 or 2 Species, but whose populations and habitats may be jeopardized without active management or removal of threats (Moseley and Groves 1992).

Sitka clubmoss is currently ranked as G5 S1 by the Idaho CDC. (G5 = demonstrably secure globally, 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 vulnerable to extinction [Moseley and Groves 1992]).

Sitka clubmoss is listed on the Region One Forest Service Sensitive Species List for Idaho.

Threats: There are no apparent threats to seven of the nine known populations of Sitka clubmoss in Idaho, including Moose Creek 010 on the Sandpoint RD. Two populations of Sitka clubmoss, including Gem Creek 002 on the Sandpoint RD, are threatened by trampling due to their proximity to well-used hiking trails. Part

of Gem Creek 003 was apparently destroyed by trampling because of trail deterioration, which rerouted hikers over part of the Sitka clubmoss population. Trail reconstruction has now been done to protect what remains of this population.

Management Implications: Gem Creek 002 should be monitored regularly in the near future to assure that trail maintenance designed to reroute hikers has taken, and that the remaining portion of the population is no longer threatened by trampling. The other known populations of Sitka clubmoss on the Sandpoint and Bonners Ferry RDs should be monitored periodically to determine population trends. Although nine populations are known statewide, and eight populations are known from the Idaho Panhandle NFs, all of the populations are small, making them vulnerable to localized disturbance events that could wipe out an entire population.

ASSESSMENTS AND RECOMMENDATIONS

Summary: Sitka clubmoss is a circumboreal species known from subalpine habitats in Idaho in two broadly disjunct areas. A lone population is known from the Selway Bitterroot Wilderness Area in Idaho County, and eight recently documented populations are known from Bonner and Boundary counties in northern Idaho. Six of these populations occur on the Bonners Ferry RD and two populations occur in the Cabinet Mountains north of Lake Pend Oreille on the Sandpoint RD.

Sitka clubmoss grows in open, moist meadows and in semi-open subalpine fir woodlands in the region at elevations above 4200 feet. One population (Moose Creek 010) on the Sandpoint RD is not apparently threatened by management activities. Gem Creek 002, however is located along the Gem Creek Trail, where recent trail reconstruction had to be undertake to reroute hikers off of this population. Monitoring of this population and the trail repairs should be done annually over the next several years to assure that this population is protected and that the trail repairs have taken. Monitoring of other known populations of Sitka clubmoss on the Idaho Panhandle NFs is appropriate given the small size of the populations both in terms of numbers of individuals and the area covered.

Recommendations to the Regional Forester: Sitka clubmoss is a circumboreal species whose southern range extension creeps into northern Idaho. It occurs in subalpine fens and in semi-open subalpine fir woodlands above 4200 feet elevation in the region. Nine populations are known to exist in Idaho, including eight on the Idaho Panhandle NFs; six on the Bonners Ferry RD and two on the Sandpoint RD. All of these populations are very small and localized and two are threatened by their location along trails. Regular monitoring of the two threatened populations should be undertaken to assure their protection and to detect any downward trends. It would also be appropriate to establish a periodic monitoring study on the other known populations to assure their protection and to learn more about the autecology of this species in the region.

Given its rarity, the small size of its populations, its limited distribution in Idaho, and potential threats that face two of the nine known populations, I recommend Sitka clubmoss remain on the Region One Sensitive Plant List for Idaho.

Recommendations to the Idaho Panhandle NF: Nine populations of Sitka clubmoss are known in Idaho, eight of which occur on the Idaho Panhandle NFs. Six populations occur in the northern portion of the Bonners Ferry RD near the Canadian border in the Selkirks (four populations) and in the Purcells (two populations). Two populations occur on the Sandpoint RD in the Cabinet Mountains north of Lake Pend Oreille. Gem Creek 002 is threatened by its occurrence adjacent to a trail. Trail reconstruction recently took place to

reroute hikers off of this small population at the site of trail failure. No threats are apparent to the other population of Sitka clubmoss on the Sandpoint RD (Moose Creek 010). One other population of Sitka clubmoss, on the Bonners Ferry RD (Canuck Pass 005) occurs along a trail and could be threatened by trail maintenance activities or trampling.

The two populations along trails should be monitored regularly to assure their protection and to detect any downward trends. It would also be appropriate to establish periodic monitoring of the other known populations due to their small size, both in terms of numbers of individuals and in area covered. Such monitoring studies will also enable us to learn more about the autecology of Sitka clubmoss in the area.

Land managers and field personnel on the Idaho Panhandle NFs should be informed of the occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both fertile and sterile stems and roots. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, 83843) for verification of their identity. Confirmed sightings of this species should be reported to the Idaho CDC for entry into their permanent data base on sensitive species.

***Tellima grandiflora* (Pursh) Dougl.**

CURRENT STATUS
USFS R1 - Sensitive
USFWS - None
Idaho Native Plant Society - Priority 1
Idaho CDC Rank - G5 S1

TAXONOMY

Family: Saxifragaceae (Saxifrage)

Common Name: Fringe-cup

Citation: Lindl. Bot. Reg. 14: pl 1178. 1828.

Technical Description: Flowering stems up to 8 dm tall, from a decumbent and somewhat rhizomatous base, sparingly leafy, copiously hirsute petioles 5-20 cm long, the blades cordate-triangular or cordate-ovate to more nearly reniform, 3-8(10) cm broad and about as long, shallowly (3) 5- to 7-lobed and irregularly once or twice crenate-dentate; cauline leaves 1-3, reduced; racemes loosely 10- to 35-flowered; pedicels much shorter than the flowers; calyx greenish, (5) 6-8 mm long at anthesis and up to 11 mm in fruit; petals greenish-white to deep reddish, often coloring with age; filaments 1-2.5 times as long as the anthers; capsule about equaling the calyx; seeds brown, narrowly ellipsoid-ovoid, 0.8-1.0 mm long, prominently wrinkled, warty in longitudinal rows (Hitchcock 1961).

Nontechnical Description: Flowering stems up to 2.5 ft tall from a short, creeping rhizome, leaves few per stem, petioles hairy, 2-8 inches long, blades heart-shaped, triangular, to somewhat round, 3-8 (10) cm broad and about has long, 5- to 7-lobed and irregularly once to twice toothed, cauline leaves 1-3, reduced, racemes loosely 10-35-flowered, sepals greenish, (5) 6-8 mm long at anthesis, up to 11 mm in fruit, petals greenish-white to reddish, often coloring with age, filaments 1-2.5 times as long as anthers (see Appendix 1 for a line drawing of fringe cup).

Distinguishing Features and Similar Species: Fringe cup is similar to two more common woodland species in northern Idaho, *Mitella breweri* and *Tiarella trifoliata*. Fringe cup is distinguished from *M. breweri* in having more pointed and deeper leaf lobes, and in having cauline leaves versus the strictly basal leaves of *M. breweri*. Fringe cup can be distinguished from *T. trifoliata* which has distinctly three-lobed leaves versus the more obscurely 5- to 7-lobed leaves of fringe cup. Also the flowering stems of *T. trifoliata* tend to be shorter (2-5.5 dm) with fewer flowers than the flowering stems of fringe cup. See Appendix 1 for a line drawing of fringe cup.

DISTRIBUTION

Range: Hitchcock (1961) notes that fringe cup is common along streams and in woods from sea level to moderately high elevations in the mountains from southern Alaska, south along the coast to south of San Francisco Bay. Inland it is found in British Columbia to the Selkirk Mountains and to the Selkirk Mountains (western range) in northern Idaho and northeastern Washington, but it otherwise is restricted to areas west of the Cascades, except in the Columbia River Gorge.

Fringe cup is currently documented from two areas in northern Idaho. Two populations were discovered on the Sandpoint RD in 1993. One is on Trestle Creek 003, about one-half mile northeast of the mouth on Lake Pend Oreille. This population was previously documented in 1957. I relocated it between FS road 275 and Trestle Creek. It extends for approximately one-quarter mile in the creek bottom along the road. The ownership of this population is a combination of Idaho State Department of Lands and private. Trestle Creek 003 apparently does not extend northeast into Forest Service Land. Lightning Creek 006 occurs along Lightning Creek near the confluence with Cedar Creek, approximately nine miles north of Clark Fork, on the Sandpoint RD where it is found in an old-growth cedar/hemlock forest on a terrace above the creek (see Appendix 2 for the map location of these populations). This stand was higraded by helicopter logging around 1980.

An historical population is known from Strong Creek 005 (from a 1941 herbarium collection) in the vicinity of Hope. I did not attempt to relocate this population in 1993, though there is a good chance it still exists, and it is likely to extend into Forest Service land upstream from Hope (see Appendix 2 for the map location of this population).

Three populations of fringe cup were documented in 1992 on the Priest Lake RD. Two occur in the Beaver Creek drainage on the northwest end of Priest Lake and one is located along the Hughes Fork of Upper Priest River, just south of Hughes Meadows. Several additional populations of fringe cup were apparently located during 1993 on the Priest Lake RD, but these reports were not formally received in time to include in this document.

Habitat and Associated Species: In Idaho, fringe cup is associated with wet, disturbed or undisturbed habitats along creeks, roads, and trails, mostly in mature or old-growth cedar/hemlock riparian forests where it occurs on mixed alluvial soils or disturbed road bed soils with *Oplopanax horridum, Asarum caudatum, Tiarella trifoliata, Ranunculus acris, Alnus incana, Acer glabrum, Cornus stolonifera, Heracleum lanatum, Galium* sp., *Circaea alpina*, and *Viola glabella.* It occurs at elevations ranging from 2400 feet to nearly 3800 feet at the top of Beaver Pass west of the northern end of Priest Lake. Hitchcock (1961) state that fringe cup usually occurs on deep, rich soils. It appears to be more common on unconsolidated, mixed alluvial soils in Idaho.

CONSERVATION STATUS

Conservation Status - Idaho: The Idaho Native Plant Society lists fringe cup as a Priority 1 category species. The Priority 1 category of the Idaho Native Plant Society refers to species in danger of becoming extinct or extirpated from Idaho in the near future if identifiable factors contributing to their decline continue to operate; these are species whose populations are present only at critically low levels or whose habitats have been degraded or depleted to a significant degree (Moseley and Groves 1992).

Fringe cup is currently ranked as G5 S1 by the Idaho CDC. (G5 = demonstrably secure globally, 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 vulnerable to extinction [Moseley and Groves 1992]).

Fringe cup is listed on the Region One Forest Service Sensitive Species List for Idaho.

Threats: Trestle Creek 003 occurs partially adjacent to FS road 275. Much of Beaver Creek 002 occurs along FS road 1341 and Hughes Fork 004 occurs mainly along a well-traveled hiking trail. There are no apparent threats to Beaver Creek 001 or Lightning Creek 006 and the condition of Strong Creek 005, if it still exists, is unknown. Road and trail maintenance activities could threaten the three former populations that are centered along roads or trails. Although this species appears to appreciate ground disturbance activities, given its occurrence along roads, trails, and within stream beds on naturally disturbed soils, massive soil disturbance could deeply bury seeds and prevent regeneration in these areas.

Management Implications: Several populations of fringe cup are known from two separate areas of northern Idaho; near the north end of Priest Lake and north of Lake Pend Oreille in western drainages of the Cabinet range. Two populations were located north of Lake Pend Oreille in 1993, on Trestle Creek 003 and on Lightning Creek 006. Lightning Creek 006 is located entirely on the Sandpoint RD while Trestle Creek 003 is located on state and private land. Management of Lightning Creek 006 appears compatible with the long-term survival of this population. Two of the documented populations of fringe cup occur along roads (Trestle Creek 003 and Beaver Creek 002) and one population is located along a well-used hiking trail (Hughes Fork 004). These populations are threatened by trampling, being run over, and road maintenance activities. Periodic monitoring of these populations can be done to track population trends to assure that the populations are not being adversely impacted by maintenance activities.

ASSESSMENT AND RECOMMENDATIONS

Summary: Fringe cup is known from only five (and perhaps several more) recently documented sites on the north end of Priest Lake and north of Lake Pend Oreille in northern Idaho. It occurs on naturally and human-disturbed, moist soils along creeks, roads, and trails. It is generally found associated with mature or old-growth stands of cedar and hemlock. One population is located on the Sandpoint RD (Lightning Creek 006). Management of this population appears compatible with its long-term survival. Strong Creek 005, which is known from a 1941 herbarium collection likely occurs on the Sandpoint RD, if it still persists. No attempt was made to relocate this population in 1993. Three populations of fringe cup known from Idaho, including Trestle Creek 003, which extends nearly to lands administered by the Sandpoint RD between FS road 275 and Trestle Creek, occur partially along roads and trials. These populations could be seriously threatened by massive ground disturbing maintenance activities.

Recommendations to the Regional Forester: Only five (and perhaps several more) populations of fringe cup have been recently documented in northern Idaho in two areas; near the north end of Priest Lake and north of Lake Pend Oreille. Lightning Creek 006 is the only fringe cup population recently documented from the Sandpoint RD, although a historical collection of fringe cup from Strong Creek 005 indicates that a population may still persist on the Sandpoint RD in the area just north of Hope along the creek. Current management of Lightning Creek 006 appears compatible with its long-term survival. Trestle Creek 003 occurs between FS road 275 and Trestle Creek on private and state land between Hwy 200 and the boundary with Forest Service land. Road maintenance activities could destroy portions of this population which occurs adjacent to the roadbed. Two of the three populations of fringe cup documented during 1992 on the Priest Lake RD occur in areas along a road (Beaver Creek 002) and along a well-traveled hiking trail (Hughes Fork 004). These populations could also be threatened by routine maintenance activities.

Given its rarity, limited distribution in Idaho, and potential threats that face several of the few known populations, I recommend fringe cup remain on the Region One Sensitive Plant List for Idaho.

Recommendations to the Idaho Panhandle NFs: Only five (and perhaps several more) populations of fringe cup are known from recent collections in northern Idaho. Three populations, including one not seen since 1941 (Strong Creek 005) occur in the area north of Lake Pend Oreille. Trestle Creek 002 occurs on state and private land adjacent to Forest Service land near the mouth at Lake Pend Oreille. Lightning Creek 006 occurs wholly on lands administered by the Sandpoint RD approximately 9 miles north of Clark Fork, Idaho. Current management of this population appears compatible with its long-term survival. Three populations of fringe cup were documented on the Priest Lake RD during 1992. A couple populations were apparently discovered on the Priest Lake RD during 1993, although I received no details of these populations previous to preparation of this document.

Three of the known populations of fringe cup occur along roads and trails (Beaver Creek 002, Trestle Creek 003, and Hughes Fork 004). These populations should be monitored periodically to assure that foot or vehicle traffic is not seriously degrading them. Road maintenance and trail activities in these areas should be done in such a way that the long-term viability of these populations is not threatened. Attempts should be made in the near future to relocate Strong Creek 005, which has not been seen since 1941. If it still persists, this population likely extends into lands administered by the Sandpoint RD.

Land managers and field personnel on the Idaho Panhandle NFs should be informed of the occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both fertile and sterile stems and roots. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, 83843) for verification of their identity. Confirmed sightings of this species should be reported to the Idaho CDC for entry into their permanent data base on sensitive species.

NOTES ON OTHER RARE SPECIES ON THE SANDPOINT RANGER DISTRICT

Cassiope mertensiana* var. *mertensiana - White heather

White heather occurs in subalpine habitats near timberline throughout its range in the western cordillera of North America. Recently, a herbarium specimen from Mount Pend Oreille (SW 1/4 sec. 35, T59N, R2E), collected in the 1930's, was found to be of *Cassiope mertensiana* var. *mertensiana*, the more northern and western variety of white heather, which has puberulent stems and pedicels, entire calyx lobes, and usually glabrous leaves. It's range includes the Cascades from Alaska, south to California and Nevada and in the Canadian Rockies nearly to Montana. The var. *gracilis* ranges from northeastern Oregon, through Idaho and Montana (Hitchcock 1959). Variety *gracilis* has glabrous stems and peduncles and minutely ciliate leaves. It was previously assumed that all white heather in Idaho was of var. *gracilis*.

We relocated the Mount Pend Oreille population in 1993. It occurs at the very top on a northeast facing slope, which lies on the boundary between the Kootenai NF and the Sandpoint RD. More work must be done to determine if this is a lone disjunct population of var. *mertensiana* or if most populations in northern Idaho are of this variety. For now, land managers should be aware of the presence of a potentially rare variety of white heather in the area. If white heather is found in a proposed project area, a collection should be made to determine which variety it is. Any data received on this species from the Selkirk, Cabinet, and Purcell ranges in northern Idaho should be relayed to the CDC in Boise.

***Hypericum majus* (Gray) Britt.** - Large Canadian St. John's wort

Large Canadian St. John's wort is a Region One Forest Service Sensitive Species of marsh and peatland habitats throughout its range (Moseley and Groves 1992). In Idaho it is known from 14 sites in Bonner and Boundary counties. Moseley (1990) reported it from two sites adjacent to the Sandpoint RD (Hoodoo Lake 007 and Sand Lake 008). I found one population of this species on the Sandpoint RD in 1993 in a fen depression at the headwaters of Maiden Creek (T55N, R2W; elevation 3100 feet) where it was growing on wet muck with *Scirpus microcarpus, S. cyperinus, Geum macrophyllum, Carex arcta, C. utriculata, C. vesicaria*, and *C. lenticularis*.

***Scirpus subterminalis* Torr.** - Water clubrush

Water clubrush is a Region One Forest Service Sensitive aquatic species that occurs in circumneutral, mildly eutrophic lakes and ponds in two widely disjunct portions of Idaho (Moseley and Groves 1992). Two populations are known from Fremont County in Yellowstone National Park and fifteen recently documented populations are known from Bonner and Boundary counties in the panhandle region, including several populations on the Priest Lake and Bonners Ferry RDs of the Idaho Panhandle NFs. No populations of water clubrush have been documented on the Sandpoint RD, although several populations are known from lakes adjacent to the Sandpoint RD (Shepherd Lake 012; Mirror Lake 011; Gamble Lake 013; and Kelso Lake). Land managers on the Sandpoint RD should be aware of the presence of this rare species in their area. Careful survey of lakes and ponds potentially affected by management activities should take place to assure protection of this species. For a full description of this species see Bursik (1992).

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Appendix 1

Line drawings of Sensitive Plant Species
of the Sandpoint Ranger District
covered in this report.*

1. *Blechnum spicant*
2. *Botrychium lanceolatum* var. *lanceolatum*
3. *Lycopodium sitchense*
4. *Tellima grandiflora*

*All drawings from: C.L. Hitchcock, A. Cronquist, M. Ownbey, and J.W. Thompson. 1959-1969. Vascular Plants of the Pacific Northwest: Parts 1-4. University of Washington Press, Seattle.

Appendix 2

Mapped locations of Sensitive Plant populations
on the Priest Lake Ranger District.

Map 1. Portion of 1951 Mount Pend Oreille 15' quadrangle - *Blechnum spicant* 015, *Botrychium lanceolatum* 013, *Tellima grandiflora* 006

Map 2. Portion of 1951 Elmira 15' quadrangle - *Tellima grandiflora* 003 along Trestle Creek and *Tellima grandiflora* 005

Map 3. Portion of 1989 Mount Pend Oreille NW 7.5' quadrangle - *Lycopodium sitchense* 002

Map 4. Portion of 1989 Mount Pend Oreille NW 7.5' quadrangle - *Lycopodium sitchense* 010