FIELD INVESTIGATIONS OF SEVEN RARE ALPINE PLANT SPECIES IN THE SOUTHERN LEMHI RANGE AND BEAVERHEAD MOUNTAINS, DUBOIS RANGER DISTRICT, TARGHEE NATIONAL FOREST.

by

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November 1989

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Purchase Order No. 40-02S2-9-0783

ABSTRACT

Field investigations of rare plant species occurring in the alpine zone of the southern Lemhi Range and Beaverhead Mountains, Dubois RD, Targhee NF, were carried out during July 1989, by the Idaho Department of Fish and Game's Natural Heritage Program. These investigations were a cooperative Challenge Cost-share project between the Department and the Targhee National Forest.

Six rare taxa, including four Region 4 Sensitive Species, were known to occur in the southern Lemhi Range and Beaverhead Mountains, mostly as a result of intensive floristic and rare plant inventories in east-central Idaho, by botanists from the University of Idaho Herbarium.

Five of the six species were not found within the area of investigation, Cymopterus douglassii, Erigeron humilis, Lychnis apetala var. montana, Papaver kluanense, and Saxifraga cernua. Erigeron radicatus, a Regional Sensitive Species, was found to be more abundant than previously thought, and it is recommended that it be removed from the Sensitive Species List. In addition, the first Lemhi Range population of Cymopterus ibapensis was discovered, disjunct by more than 40 miles from previously known populations in the state. It is recommended that it be added to the Regional Sensitive Species List.

A detailed discussion of each species is included, with information on their taxonomy and identification, range and habitat, conservation status, and recommendations concerning their status to the Regional Forester and Targhee NF.

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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 the 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.

Prior to 1989, six rare plant species were known to occur in the alpine zone of the southern Lemhi Range and Beaverhead Mountains of the Targhee and Challis national forests. Four are Forest Service, Region 4, Sensitive Species (Cymopterus douglassii, Erigeron radicatus, Papaver kluanense, and Saxifraga cernua) and two are State-rare (Erigeron humilis and Lychnis apetala var. montana). Field investigations of these six species were conducted on the Targhee NF by the Idaho Department of Fish and Game's Natural Heritage Program through the Cooperative Challenge Cost-share Program.

The primary objectives of these investigations were as follows:

1) Survey known populations of the six species and search potential habitats for new populations on the southern Lemhi Range and Beaverhead Mountains, Dubois RD, Targhee NF.

2) Characterize habitat conditions for known populations on the Dubois RD.

3) Assess population trends and threats to existing populations and make management recommendations to the forest based on these assessments.

RESULTS

During mid-July 1989, I surveyed suitable-appearing habitats for the six rare species in the alpine zone of the southern Lemhi Range and Beaverhead Mountains of the Targhee NF. Nine areas of the two massifs were searched during this period.

After a thorough search, I found no populations of Cymopterus douglassii, Erigeron humilis, Lychnis apetala, Papaver kluanense, or Saxifraga cernua on the Targhee NF. An historically-known population of Erigeron humilis was relocated on the Challis NF side of the Lemhi crest. An historically-known population of Cymopterus douglassii from Sheep Mountain, Salmon and Challis NFs, was also relocated.

Extensive populations of Erigeron radicatus were discovered on the Targhee NF in both massifs. In addition, two large populations of Cymopterus ibapensis were discovered north of Diamond Peak on the Targhee portion of the Lemhi Range. This state-rare species was previously unknown from the Lemhi Range, being known only from the alpine zone of the Lost River Range (Challis NF) and one low elevation site in the Beaverhead Mountains (Salmon NF).

Following is a detailed discussion of each of the seven rare species encountered, including information on their taxonomy and identification, range and habitat, conservation status, and recommendations concerning their status to the Regional Forester and Targhee NF.

Cymopterus douglassii R.L. Hartman & Constance

CURRENT STATUS USFS Region 4 Sensitive Species
(Challis, Salmon, and Targhee NFs)
USFWS - C2
Idaho Native Plant Society - None
Heritage Rank - G2 S2

TAXONOMY

Family: Apiaceae [Umbelliferae (Celery)]

Common Name: Douglass' wavewing

Citation: Brittonia 37(1):88-95. 1985.

Idaho Synonyms: "Cymopterus sp. nov. (yellow flowers)"
"Cymopterus sp. nov./ined. (Custer, Lemhi Cos.)"
mistakenly Cymopterus nivalis S. Wats.

Technical Description: Low, tufted, herbaceous perennial 4-15 cm tall, acaulescent or essentially so, not markedly aromatic unless crushed, with a straight to curved primary root 6-20 cm long, 2-6 mm in diameter at the summit, the crown mostly with few to several branches arising 1-3 cm below the ground, the branches enveloped above by marcescent, papery leafy sheaths which often double the apparent diameter; leaves petiolate, subcoriaceous, oblong in outline, 2-5 cm long, 0.4-1.5 cm wide, once-pinnate with leaflets entire or few to many unequally bilobed to pinnately 3-5 (7) lobed, or twice-pinnate (especially below), green to grayish-green, glabrous or minutely scaberulous on margins; petiole subterete in cross section, glabrous, 0.5-3 cm long, expanded at base into a relatively broad, scarious sheath; blade (0.8) 1.5-2 (4) cm long; lobes or leaflets narrowly to broadly elliptic or sometimes lanceolate; leaflets in 3-5 opposite, distinct pairs, not decurrent on the rachis or petiole, the apices mostly mucronulate. Inflorescence of subcompact, compound umbels 3-8 mm in diameter; peduncle terminal, erect or nearly so, 4-13 cm long, exceeding the leaves, glabrous; involucre wanting; rays 3-6, 2-5 mm long, flattened, spreading, sometimes scariously winged; umbellets andromonoecious, of several pedicellate staminate and 1-5 (or more) subsessile perfect flowers; involucels dimidate, the branchlets 5-12, linear-lanceolate to obovate, entire and acute or few-toothed apically, 1.5-3 mm long and about equalling the flowers, connate for up to 1/3 of their length, sometimes thinly white-margined; pedicels 0.5-1.5 mm long. Flowers yellow (fading to pale yellow to white); sepals ovate to lanceolate, 0.4-0.7 mm long, subequal, not enlarging in fruit; petals 1.6-2 mm long, obovate below with a narrow, inflexed, plicate apex of nearly equal length; anthers yellow, 0.5-0.6 mm long; filaments 0.9-1.1 mm long; styles filiform, terete, 1-1.5 mm long, spreading, not elongating in fruit; stylopodium none; disc present; ovary glabrous; carpophore present, bipartite, persistent. Fruit subterete, broadly ovoid, not constricted at commissure, 3-4 mm long, (1.7) 2-2.5 (3) mm broad, glabrous, dull to somewhat lustrous, light brown, the dorsal rib and pair of intermediate ribs low and rounded but prominent, corky, unwinged, the lateral pair narrowly winged, about as broad as the intervals; oil tubes small, flattened, reddish-brown, 3-5 in the intervals, 6-10 on the concave commissural face; seeds slightly

compressed dorsally in cross section, the face plane (Hartman and Constance 1985).

Nontechnical Description: Small, herbaceous perennial with a stout taproot and numerous pinnately dissected, mostly basal leaves, small flowers arranged in compound umbels, and fruits having prominent longitudinal ridges (Henderson et al. 1979). See Appendix 1 for line drawing of Douglass' wavewing and Appendix 3 for slides of its habit and habitat.

Distinguishing Features and Similar Species: In a vegetative state, Douglass' wavewing has a superficial resemblance to Cymopterus bipinnatus, with which it is sympatric. The leaves in C. bipinnatus are much more finely dissected, and usually more erect than Douglass' wavewing. In addition, Douglass's wavewing has yellow flowers, versus the white flowers of C. bipinnatus.

DISTRIBUTION

Range: Douglass' wavewing is endemic to the central Lost River Range and central Lemhi Range, Custer and Lemhi counties, Idaho. It is known from eight sites; seven in the Lost River Range, all in the vicinity of Borah Peak, and one in the Lemhi Range on Sheep Mountain. See Appendix 2 for a map showing distribution of Douglass' wavewing. The southern extent of the Douglass' wavewing population on Sheep Mountain comes within 0.75 mile of the Targhee NF boundary, but during a thorough search of the Lemhi crest, between Sheep Mountain and Trail Peak, I was unable to find any on the Targhee. Suitable-appearing habitat (carbonate rocks) extends north from Sheep Mountain along the Lemhi crest, on the Challis and Salmon NFs, for more than one mile.

In addition to my inventories in 1989, Douglass Henderson, and students from the University of Idaho Herbarium, have conducted a thorough floristic inventory of east-central Idaho, beginning in 1973 (e.g., Brunsfeld 1983; Moseley 1985). It is largely their work that has delimited the known range of Douglass' wavewing.

Habitat and Associated Species: In the Lemhi Range, Douglass' wavewing is restricted to carbonate substrates in the vicinity of Sheep Mountain in the proposed Sheep Mountain Research Natural Area. On Sheep Mountain, it occurs on all aspects, from flat, exposed fellfields on the ridgeline to relatively stabilized pockets on steep scree slopes. The substrate is very gravelly, with little soil development, and is characteristically unstable, either through downslope movement or frost heaving and wind deflation. The lower edge of the population begins at timberline, in scattered Pinus albicaulis krummholz, and extends into the alpine zone in Potentilla ovina-Phlox pulvinata fellfields. Associated species include Erigeron radicatus, Linum perenne, Cymopterus bipinnatus, Haplopappus acualis, Calamagrostis purpurascens, Draba oligosperma, and Carex rupestris.

CONSERVATION STATUS

Conservation Status - Idaho: The taxonomic status of Douglass' wavewing

was only recently resolved by Hartman and Constance (1985). Prior to this, it was thought to be an unusual, yellow-flowered form of Cymopterus nivalis, and was, in part, treated as such by Henderson (1977; 1981a), Henderson et al. (1979), and Brunsfeld (1983). After it was recognized as a new species, but before it was formally named by Hartman and Constance (1985), it appeared as "Cymopterus sp. nov. (yellow flowers)" in Henderson (1983a; 1983b) and as "Cymopterus sp. nov./ined. (Custer, Lemhi Cos.)" in the 1985 Federal Register list of Candidate Plant Taxa (U.S. Fish and Wildlife Service 1985). The species was named for Dr. Douglass Henderson "in recognition of his vigorous exploration of the Idaho flora" (Hartman and Constance 1985). It will appear in the soon-to-be-published Federal Register list of candidate plants as Cymopterus douglassii. Douglass' wavewing is on the Region 4 Sensitive Species List (USDA Forest Service 1988).

Since it is a federal candidate species, no Idaho Native Plant Society category applies to Douglass' wavewing (Idaho Native Plant Society 1989).

The Idaho Natural Heritage Program currently ranks Douglass' wavewing as G2 S2 (G2 = imperiled globally because of extreme rarity or because of some factor of its biology making it vulnerable to extinction, S2 = since it is endemic to Idaho, the State (S) rank is the same as the Global (G) rank).

Conservation Status - Elsewhere: Douglass' wavewing is endemic to Idaho.

Ownership: All known Douglass' wavewing populations occur on National Forest Land. The Lost River populations occur on the Challis NF, and the Sheep Mountain population in the Lemhi Range occurs on both the Salmon and Challis Nfs.

Threats: No threats were identified to that portion of the Sheep Mountain population visited in 1989. The population continued north from the summit of Sheep Mountain for an undetermined distance. Possible threats, if any, to that portion of the population are unknown at this time.

Management Implications: This section also does not apply to the Targhee NF, since no populations are known there. See Henderson (1983a) for general recommendations on this species.

ASSESSMENT AND RECOMMENDATIONS

Summary: Results of my field investigation in 1989, failed to locate any populations of Douglass' wavewing on the Targhee NF. I relocated the historically-known population on Sheep Mountain, occurring about 0.75 mile north of the Targhee NF boundary on the Challis and Salmon NFs. Several hundred individuals were seen in the southern portion of the population; the northern part still needs to be surveyed.

Recommendation to the Regional Forester: Distribution data collected by myself and botanists from the University of Idaho Herbarium, indicate that Douglass' wavewing does not occur on the Targhee NF. I recommend that it be taken off the Sensitive Species List for that Forest. It

does, however, occur on the Salmon and Challis NFs, and should remain on the Sensitive Species List for that Forest. Thorough status inventories of Douglass' wavewing should be conducted on the these Forests as soon as practicable.

Recommendation to Targhee National Forest: In light of data gathered during this and other investigations, Douglass' wavewing should be taken off the Sensitive Species List for the Targhee NF.

Cymopterus ibapensis Jones

CURRENT STATUS USFS - None
USFWS - 3c
Idaho Native Plant Society - Sensitive
Heritage Rank - G4? S2

TAXONOMY

Family: Apiaceae [Umbelliferae (Celery)]

Common Name: Ibapah wavewing

Idaho Synonyms: "Cymopterus sp. nov. (white flowers)"
"Cymopterus sp. nov./ined. (Custer Co.)"
mistakenly Cymopterus glaucus Nutt.

Technical Description: Plants 7-25 cm tall, glabrous or granular-scabrous, not or weakly aromatic, from a linear taproot, this hardly if at all swollen, with a simple or occasionally branched crown; pseudoscapes 1 or 2 (5) per root, the aerial portion 3.5-10 cm long, commonly enveloped at the base by scarious dilated bladeless sheaths; leaves whorled atop the pseudoscape, rarely some arising directly from the taproot, tripinnate, with 5-6 opposite or offset pairs of lateral primary leaflets; petioles (1) 1.5-3.5 cm long; blades (2.5) 4-11 cm long, ovate in outline, completely dissected so that the ultimate segments are the widest undivided portions of the blade; lowest pair of primary leaflets 1/2-3/4 as long as the leaf blade, sessile or on petiolules to 2 cm long, with 4-6 (8) opposite or offset pairs of secondary leaflets, the ultimate segments to 2 mm long, to ca 1 mm wide; peduncles (2) 4-8 per pseudoscape, 2-15 cm long; umbels and peduncles occasionally nodding or recurved; involucre lacking; rays 10-18, 5-20 mm long; branchlets of the involucels to 4 mm long, to 0.5 mm wide, distinct or nearly so, green with a purple midrib and narrow scarious margins; pedicels 4-6 mm long; calyx teeth to 1 mm long, greenish; petals white; filaments white, the anthers purple; styles 1-2 mm long; carpophore divided to the base; body of fruit 5-8 mm long, the wings 6-9 mm long, to 2 mm wide, some of the dorsal ones sometimes reduced (Welsh et al. 1987).

Nontechnical Description: Small, herbaceous perennial with a long taproot, a pseudoscape (small, fragile stem above root, mostly below the ground surface in Idaho plants), a whorl of pinnately dissected leaves around a compound umbel of small white
flowers, and fruits having prominent longitudinal ridges. See Appendix 3 for color slides of Ibapah wavewing and its habitat on the Targhee NF.

Distinguishing Features and Similar Species: Because they both have white flowers, Ibapah wavewing has a superficial resemblance to Cymopterus bipinnatus, with which it is sympatric. The leaves of Ibapah wavewing are in a whorl on the pseudoscape, originating from a relatively slender taproot. Leaves of C. bipinnatus are much more finely dissected, erect, and tufted from a thick root crown, which are covered with the persistent old leaf bases.

DISTRIBUTION

Range: Welsh et al. (1987) report that Ibapah wavewing is distributed in greasewood, sagebrush, and pinyon-juniper communities from eastern Utah, Nevada, and southeastern Oregon. It was recently found to be disjunct in east-central Idaho, where, with one exception, it occurs on alpine scree slopes.
Prior to 1989, Ibapah wavewing was known in Idaho only from alpine sites in the Lost River Range, from about Leatherman Pass, north to about Grouse Creek Peak (Henderson 1983a). During May 1989, I was surveying for rare plants in the Lemhi Valley, as part of a Challenge Cost-share project with the Salmon NF, and discovered a small population of Ibapah wavewing in carbonate scree near the mouth of Railroad Canyon. This low elevation site east of Leadore in the Beaverhead Mountains, was a range extension in Idaho of about 40 miles north of previously known populations. While conducting this study in July 1989, I discovered two large populations at the head of the North Fork of Pass Creek in the Lemhi Range. This alpine site on the Targhee NF, is about 35 miles east of the Lost River sites and about 40 miles south of the Railroad Canyon site. See Appendix 2 for an overview of the distribution of Ibapah wavewing in Idaho and mapped locations of the Targhee and Salmon NF populations.

The discovery of these new populations is somewhat surprising given the intensive floristic inventory of east-central Idaho conducted by Douglass Henderson, and students from the University of Idaho Herbarium, beginning in 1973. No additional populations were discovered on the Targhee NF despite relatively thorough searches of the southern Lemhi Range and Beaverhead Mountains by myself in 1989 and University of Idaho botanists in previous years.

Habitat and Associated Species: In the Lemhi Range, Ibapah wavewing is restricted to carbonate substrates in two types of landscapes settings: (1) on relatively recent morainal material below the north face of Diamond Peak, and (2) in ridgeline scree on the divide between the Left Fork of Rocky Canyon and the North Fork of Pass Creek. On the moraine, associated species include Cymopterus bipinnatus, Ribes hendersonii, Oxytropis sericea, Arenaria nuttallii, Agropyron scribneri, Erigeron compositus, Physaria didymocarpa, Astragalus kentrophyta, Sitanion hystrix, Crepis nanus. Many of the above species were also present on the ridgeline site, along with Townsendia montanus, T. condensata, Lupinus argenteus, Cryptantha sobolifera, Polemonium viscosum, and Artemisia michauxiana. Both communities are very gravelly and unstable, with considerable bare ground and little soil development. It occurs on all aspects. Several thousand plants were seen in the two populations in 1989, with about 30% in (flower) bud, 40% in flower, and 30% with developing fruit on July 9.

The Railroad Canyon population occurs on south-facing, carbonate scree slopes, between rock outcrops. Cercocarpus ledifolius, Astragalus gilviflorus, and Petrophytum caespitosum occur on the outcrops, while no associated species were observed in the scree with Ibapah wavewing. It was very rare at this site, <200 plants were observed, and they were in flower on May 21.

CONSERVATION STATUS

Conservation Status - Idaho: The taxonomic status of Ibapah wavewing in Idaho was only recently resolved by Ron Hartman and Lincoln Constance (personal communication to Dr. Douglass Henderson, University of Idaho Herbarium). Prior to this, it was thought to be an unusual white-flowered form of Cymopterus glaucus (Brunsfeld 1983; Henderson 1983a). For a short while, it was thought to represent a new taxon, and was treated as "Cymopterus sp. nov. (white flowers)" by Henderson (1983a; 1983c) and as "Cymopterus sp. nov./ined. (Custer Co.)" in the 1985 Federal Register list of Candidate Plant Taxa (U.S. Fish and Wildlife Service 1985). The Idaho plants were later found to be conspecific with Cymopterus ibapensis.

Ibapah wavewing is currently considered a Sensitive species for Idaho by the Idaho Native Plant Society (Idaho Native Plant Society 1989). The Sensitive category of the Idaho Native Plant Society list refers to taxa with "small populations or localized distributions within Idaho that presently do not meet the criteria for classification as Priority 1 or 2, but whose populations and habitats may be jeopardized if current land use practices continue".

The Idaho Natural Heritage Program currently ranks Ibapah wavewing as G4? S2 (G4? = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery, S2 = imperiled in Idaho because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Conservation Status - Elsewhere:

OREGON - Review List = species for which more information is needed before the status in Oregon can be determined, but which may be threatened or endangered in the state or throughout its range (Oregon Natural Heritage Data Base 1989).

Ownership: All known Ibapah wavewing populations in Idaho occur on National Forest Land. The Lost River populations occur on the Challis NF, the Lemhi populations on the Targhee NF, and the Railroad Canyon population on the Salmon NF.

Threats: No threats were identified to the North Fork Pass Creek populations on the Targhee NF in 1989, and no threats are foreseen. No threats were observed to the Railroad Canyon population on the Salmon NF in 1989. This population is, however, in an area where considerable past mining and gravel removal has taken place and could be vulnerable to local extirpation.

Management Implications: Current management of the North Fork Pass Creek populations by the Targhee NF appears compatible with their long term-viability there. A more thorough survey of the Salmon NF population should be conducted to accurately determine its limits. Special consideration should be given to this species when planning development activities in this area.

ASSESSMENT AND RECOMMENDATIONS

Summary: Prior to 1989, Ibapah wavewing was known in Idaho only from four alpine sites in the Lost River Range. During field investigations of rare plants on the Salmon NF in May 1989, and the Targhee NF in July 1989, I discovered three populations in the Lemhi Range and Beaverhead Mountains. These populations are disjunct from the Lost River sites by about 40 miles. No threats are foreseen to the two populations in the alpine zone of the Lemhi Range on the Targhee NF. The Beaverhead population on the Salmon NF is unusual for Idaho in that it occurs at low elevations, and may be vulnerable to development activities in the area.

Recommendation to the Regional Forester: Distribution data collected by myself and botanists from the University of Idaho Herbarium, indicate that Ibapah wavewing has a limited distribution in Idaho. The Targhee NF population is large and appears secure, however, the Salmon NF population is small could be vulnerable to mining and gravel removal activity. Henderson (1983a; 1983c), reviewed the conservation status of the Lost River populations on the Challis NF, and concluded that it is very rare and local there, and that even a few inappropriate development activities could extirpate a significant number of individuals in a short time.

Because of these data, I recommend that Ibapah wavewing be added to the Region 4 Sensitive Species List for Idaho, for the Targhee, Challis and Salmon NFs.

Recommendation to Targhee National Forest: The Ibapah wavewing populations in the Lemhi Range are apparently secure and far removed from human-related disturbances. The populations should be monitored periodically.

Recommendations to Salmon National Forest: The Ibapah wavewing population in the Railroad Canyon is small and vulnerable to inappropriate disturbances. A status inventory should be conducted as soon as practicable to determine the full extent of the Ibapah wavewing distribution in the Railroad Canyon area. It should also be given special consideration when planning and developing development activities in the area. Astragalus gilviflorus, a Region 4 Sensitive Species, occurs with Ibapah wavewing in Railroad Canyon.

Recommendation to Challis National Forest: The Ibapah wavewing populations in the Lost River Range are small and local, and could be easily extirpated by inappropriate development activities (Henderson 1983a). An intensive status survey for this species should be conducted on the Challis NF as soon as practicable to accurately delimit of the distribution and status of Ibapah wavewing in the Lost River Range.

Recommendation to the Bureau of Land Management: A population of Ibapah wavewing was discovered just inside the Salmon NF boundary in Railroad Canyon, in the Beaverhead Mountains. It occurs within a few hundred feet of BLM lands, administered by the Salmon District Office. A thorough inventory should be conducted in the Railroad Canyon area as soon as practicable. If it is found on BLM land, Ibapah wavewing should be added to the Idaho BLM Sensitive Species List.

Erigeron humilis Graham

CURRENT STATUS USFS - None
USFWS - None
Idaho Native Plant Society - Monitor
Heritage Rank - G4 S2

TAXONOMY

Family: Asteraceae [Compositae (Aster)]

Common Name: Low fleabane

Citation: New Phil. Journ. 1828:175. 1828.

Technical Description: Perennial, 2-25 cm high, loosely villous, or the leaves glabrate; basal leaves mostly oblanceolate, up to about 8 cm long and 11 cm wide; cauline leaves reduced, linear or lanceolate, acute to attenuate; heads solitary, the disk 10-20 mm wide; involucre 6-9 mm high, wooly-villous, the hairs with dark purple or blackish crosswalls; involucre bracts mostly subequal, generally heavily tinted with blackish purple; rays mostly 5-150, white to purplish, usually 3.5-6 mm long and 0.5-1mm wide; disk corollas 3.4-4.8 mm long; pappus obscurely double, the inner of 20-30 bristles (Cronquist 1955).

Nontechnical Description: Perennial, 2-25 cm high, with a solitary head with many, white (sometimes pink), narrow ray flowers. The upper stem and involucre are densely woolly-villous with reddish black, multicellular hairs. Some of the hairs are colored throughout, but most are colored only on the crosswalls (Brunsfeld 1983). See Appendix 1 for a line drawing of low fleabane.

Distinguishing Features and Similar Species: Low fleabane is similar to Erigeron simplex, which often occurs in the same moist meadows. Erigeron simplex differs in having a woolly involucre that has white hairs. The solitary heads of E. simplex have broad, mostly pink rays (Brunsfeld 1983).

DISTRIBUTION

Range: Cronquist (1955) reported that low fleabane has a circumpolar distribution, extending south in North America to southern British Columbia and Glacier National Park, Montana. Disjunct populations also occur in Wyoming and Colorado. Low fleabane was first discovered in Idaho in 1978, when a small population was found in the Lemhi Range, on a bench north of Bell Mountain, Challis NF. Since that time, six additional small populations have been discovered in Idaho, in the Lost River Range and Pioneer Mountains. All known populations are small and restricted in distribution. See Appendix 2 for an overview of the distribution of low fleabane in Idaho.

Although the population at Bell Mountain is close to the Targhee NF boundary along the Lemhi crest, I found no suitable habitat on the Forest.

Habitat and Associated Species: In Idaho, low fleabane occurs in moist alpine meadows above 9,600 feet. It usually occurs near small rivulets and streams, where the water table keeps the soil moist throughout the growing season. This habitat is rare and restricted in the relatively arid mountain ranges of east-central Idaho. Associated species include, Poa alpina, Geum rossii, Carex nova, Trifolium haydenii, Thalictrum alpinum, Luzula spicata, Salix nivalis, and Erigeron simplex.

CONSERVATION STATUS

Conservation Status - Idaho: Low fleabane was not known in Idaho prior to 1978, when a population was discovered in the Lemhi Range. Six additional populations were discovered in the Lost River Range (Henderson et al. 1979) and the Pioneer Mountains (Caicco and Henderson 1981; Henderson 1983a). In his treatment of low fleabane for the Idaho rare plant project of the Idaho Natural Areas Committee, Brunsfeld (1981a) recommended that it be placed on the Watch List for Idaho, due to its remote habitat.

Low fleabane is currently on the Idaho Native Plant Society's Monitor list for Idaho (Idaho Native Plant Society 1989). The Monitor category of the Idaho Native Plant Society list refers to taxa "that are common within a limited range as well as those taxa which are uncommon, but have no identifiable threats."

The Idaho Natural Heritage Program currently ranks low fleabane as G4 S2 (G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery, S2 = imperiled in Idaho because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Conservation Status - Elsewhere:

COLORADO - Extremely rare on a few high peaks in Gunnison County (Weber 1987).

MONTANA - Considered a rare plant of undetermined status in Montana (Lesica et al. 1984).

WYOMING - Ranked S2 in the state by the Wyoming Natural Heritage Program (S2 = imperiled in Wyoming because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Ownership: All known low fleabane populations in Idaho occur on the Challis NF.

Threats: This section does not apply to the Targhee NF, since no populations are known there. See Henderson (1983a) for general recommendations on this species.

Management Implications: This section also does not apply to the Targhee NF, since no populations are known there. See Henderson (1983a) for general recommendations on this species.

ASSESSMENT AND RECOMMENDATIONS

Summary: Seven known populations of low fleabane occur in Idaho, all on the Challis NF. All populations are relatively small, being restricted to moist alpine meadows. I was unable to find any populations on the Targhee NF in the southern Lemhi Range and Beaverhead Mountains.

Recommendation to the Regional Forester: Distribution and abundance data collected by myself and botanists from the University of Idaho Herbarium, indicate that low fleabane has a limited distribution in Idaho. It is restricted to seven small populations on the Challis NF, in a habitat that is rare in the region and vulnerable to disturbance.

Because of these data, I recommend that low fleabane be added to the Region 4 Sensitive Species List for Idaho, for the Challis NF. A thorough status inventory should be conducted for this species on the Challis NF as soon as practicable.

Erigeron radicatus Hook.

CURRENT STATUS USFS - Region 4 Sensitive Species
(Challis, Payette, Targhee NFs)
USFWS - None
Idaho Native Plant Society - Monitor
Heritage Rank - G3 S3

TAXONOMY

Family: Asteraceae [Compositae (Aster)]

Common Name: Taprooted fleabane

Citation: Fl. Bor. Am. 2:17. 1834.

Technical Description: Perennial with a taproot and compact, much-branched caudex; stem up to 5 cm high, finely pubescent with spreading or sometimes appressed hairs; leaves oblanceolate or linear-oblanceolate, all or nearly all in a basal cluster, up to 2 cm long and 2.5 cm wide, glabrous or sparsely and finely hairy on the surface, finely more or less ciliate on the margin; head solitary, turbinate, the disk about 7-10 mm wide; involucre about 5 mm high, viscid and villosulous; rays mostly 20-50, white, 5-8 mm long, 2 mm wide; disk corollas 2.3-3.0 mm long; pappus of 6-12 fragile bristles and some inconspicuous outer setae or scales (Cronquist 1955).

Nontechnical Description: Taprooted perennial herb with much-branched root crown and a tuft of basal leaves; heads small, solitary, with white rays (Henderson et al. 1979). See Appendix 1 for a line drawing of low fleabane, and Appendix 3 for slides of its habit and habitat.

Distinguishing Features and Similar Species: The basal leaves of taprooted fleabane are single nerved (rather than three-nerved as in many species), linear to narrowly oblanceolate, only sparsely hairy, the hairs, when present, very short; plants scapose or nearly so (stem leaves absent or nearly so); rays white (Henderson et al. 1979).

DISTRIBUTION

Range: Cronquist (1955) reported that taprooted fleabane was restricted to a few sites in southern Alberta and Saskatchewan. Disjunct populations were first collected in Idaho in 1976, and in Montana about the same time (Henderson et al. 1979; Lackschewitz et al. 1983). Prior to 1989, the Idaho distribution of taprooted fleabane was known to include one population in the Lost River Range (Challis NF), three populations in the Lemhi Range (Salmon and Targhee NFs), three populations in the Beaverhead Mountains (Salmon and Targhee NFs), and one population in the Henrys Lake Mountains (Targhee NF).

During this investigation of the species on the Targhee NF in the southern Lemhi Range and Beaverhead Mountains, I relocated all three known populations and discovered three more. All six populations were extensive, each consisting of many thousands of individuals. See Appendix 2 for an overview of the distribution of taprooted fleabane in

Idaho, and mapped locations of populations on the Targhee NF in the Lemhi Range and Beaverhead Mountains.

Habitat and Associated Species: In Idaho, taprooted fleabane occurs on dry, rocky ridges and flats near or above timberline. Elevations of the known populations range from 9,600 to 10,400 feet. All Idaho populations occur on carbonate substrates in Potentilla ovina and Phlox pulvinata/Arenaria obtusiloba fellfields. Associated species include, Lesquerella carinata, Erigeron compositus, Cymopterus douglassii, Draba densifolia, Carex rupestris, Carex elynoides, Calamagrostis purpurascens, Townsendia condensata, Eritrichium nanum, Trifolium haydenii, and Lloydia serotina.

CONSERVATION STATUS

Conservation Status - Idaho: Taprooted fleabane was not known in Idaho prior to 1976, when a population was discovered in the Lemhi Range. Several more populations were discovered in the Lost River Range and Beaverhead Mountains (Henderson et al. 1979; Henderson 1983a; Lackschewitz et al. 1983). In his treatment of low fleabane for the Idaho rare plant project of the Idaho Natural Areas Committee, Brunsfeld (1981b) recommended that it be placed on the Watch List for Idaho, due to its remote habitat.
Taprooted fleabane is on the Region 4 Sensitive Species List for the Challis, Payette, and Targhee NFs (USDA Forest Service 1988; where it is misspelled as Erigeron radiatus). Taprooted fleabane is not known to occur within 90 miles of the Payette NF.

Taprooted fleabane is currently on the Idaho Native Plant Society's Monitor list for Idaho (Idaho Native Plant Society 1989). The Monitor category of the Idaho Native Plant Society list refers to taxa "that are common within a limited range as well as those taxa which are uncommon, but have no identifiable threats."

The Idaho Natural Heritage Program currently ranks taprooted fleabane as G3 S3 (G3 = Either very rare and local globally or found locally in a restricted range or because of other factors making it vulnerable to extinction , S3 = Either very rare and local in Idaho or found locally in a restricted range or because of other factors making it vulnerable to extinction).

Conservation Status - Elsewhere:

WYOMING - Ranked S1 by the Wyoming Natural Heritage Program (S1 = Critically imperiled in Wyoming because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Ownership: All known taprooted fleabane populations in Idaho occur on National Forest land (Challis, Salmon, and Targhee NFs).

Threats: The known populations on the Targhee NF are all extensive, and, with one exception, are far removed from human-related disturbances. The large population on Trail and Big Windy peaks has numerous old mining roads, adits and prospects within it. This extensive disturbance to the alpine communities does not appear to be negatively affecting the

taprooted fleabane population there. In fact, it appears to readily invade tailings piles, road cuts, and unused roads.

Management Implications: Current management of taprooted fleabane by the Targhee NF appears to be compatible with the long-term viability of the species.

ASSESSMENT AND RECOMMENDATIONS

Summary: Taprooted fleabane is currently known from 11 sites in Idaho. The six populations located in 1989, in the southern Lemhi Range and Beaverhead Mountains were extensive, each consisting of many thousands of individuals in a habitat that is relatively common. In addition, the alpine setting of these populations precludes any large scale disturbances. The considerable past and ongoing mining activity within the population on Big Windy Peak did not appear to be negatively affecting the species; it readily invades tailings, roadcuts and unused roads.

Recommendation to the Regional Forester: Distribution and abundance data collected by myself and botanists from the University of Idaho Herbarium, indicate that taprooted fleabane has a relatively limited distribution in Idaho, but occurs in extensive populations in a common alpine habitat that is well removed from major disturbances. It also readily invades areas of past mining disturbance. Because of these data, I recommend that taprooted fleabane be removed from the Region 4 Sensitive Species List for Idaho.

Lychnis apetala L. var. montana (S. Wats.) C.L. Hitchcock

CURRENT STATUS USFS - None
USFWS - None
Idaho Native Plant Society - Priority 2
Heritage Rank - G? S1

TAXONOMY

Family: Caryophyllaceae (Pink)

Common Name: Apetalous campion

Citation: Vascular Plants of the Pac. Northw. 2:274. 1964.

Synonym: Silene uralensis (Rupr.) Bocquet
ssp. montana (S.Wats.) McNeill

Technical Description: Low perennial from a branched caudex, often more or less caespitose, finely pubescent throughout and becoming glandular above; stems usually several 5-25 cm tall; leaves mostly in basal tufts, narrowly oblanceolate, 2-4 cm long, 1.5-4 mm broad, narrowed to slender petioles; cauline leaves usually 2-3 (4) pairs, somewhat narrower than the basal leaves, sessile; flowers 1-3, erect (nodding in bud), usually perfect; calyx campanulate, about 1 cm long at anthesis, considerably inflated and up to 17 mm long in fruit, prominently 10-nerved, glandular-pubescent, the hairs mostly purple or purplish -septate; corolla pink to mauve; claw of the petals about equalling or exceeded by the calyx, flared above and usually auriculate, the blade generally narrower than the claw, (2) 3-4 mm long, bilobed 1/4-1/3 of the length and usually with a small lateral tooth on each margin below the level of the sinus; appendages 2, less than 0.5 mm long; styles 5; capsule 1-celled, dehiscent by 5 nonbifid valves; seeds 1-2 mm long, prominently rugose-papillate in concentric rows, usually more or less flattened and wing-margined (Hitchcock 1964).

Nontechnical Description: Short perennial; finely pubescent throughout, becoming glandular above; stems several; leaves mostly in basal tufts, the stem leaves 2-3 pairs (Henderson et al. 1979). See Appendix 1 for a line drawing of apetalous campion.

Distinguishing Features and Similar Species: Apetalous campion could be confused with any of several species of Silene, except that this species has five styles and silenes have three (Henderson et al. 1979). It is also rather distinctive in other respects. It has nodding buds, an inflated calyx that has 10 prominent, dark red nerves. Apetalous campion differs from the somewhat similar appearing Silene repens by the above characters and by having an erect, stout, branched caudex, as opposed to a caudex with long, prostrate branches (Brunsfeld 1983).

DISTRIBUTION

Range: Lychnis apetala is a circumpolar species, that extends south in North America through the Rocky Mountains to Colorado. Variety montana is restricted to the Rocky Mountains from Montana to eastern Utah and Colorado (Hitchcock 1964). Hitchcock and Cronquist (1973) include Idaho in the range of apetalous campion, but the source of the Idaho

location(s) they refer to are unknown (Henderson et al. 1979; Henderson 1983a). Despite an intensive floristic inventory of east-central Idaho by botanists from the University of Idaho Herbarium, only two locations are known in Idaho: (1) from a bench on the north side of Bell Mountain in the Lemhi Range, Meadow Canyon RNA, Challis NF, discovered by Henderson and Brunsfeld (Henderson et al. 1979; Henderson 1983a) and (2) from the southeast ridge of Hyndman Peak, on the Sawtooth NF - Challis NF boundary in the Pioneer Mountains, discovered by myself in 1985. See Appendix 2 for an overview of the distribution of apetalous campion in Idaho.

Although the population on Bell Mountain is close to the Targhee NF boundary along the Lemhi crest, I found no suitable habitat on the Forest.

Habitat and Associated Species: The Lemhi population occurs in moist, Geum rossii tundra, on a quartzitic substrate at about 10,000 feet. Associated species include Poa alpina, Carex nova, Trifolium haydenii, Thalictrum alpinum, Luzula spicata, Salix nivalis, Erigeron humilis, and E. simplex. The Pioneer population consists of a few plants on a moist ledges on the east face and southeast ridge of Hyndman Peak, at about 11,800 feet. Associated species include Polemonium viscosum, Potentilla glandulosa, Trisetum spicatum, and Haplopappus lyallii.

CONSERVATION STATUS

Conservation Status - Idaho: Although it was reported to occur in Idaho (Hitchcock and Cronquist 1973), rare plant surveys on the Challis NF, conducted by botanists from the University of Idaho Herbarium, discovered only one population (Henderson et al. 1979; Henderson 1983a). In his treatment of apetalous campion for the Idaho rare plant project of the Idaho Natural Areas Committee, Brunsfeld (1981c) recommended that it be placed on the Watch List for Idaho, due to its remote habitat.

Apetalous campion is currently considered a Priority 2 species for Idaho by the Idaho Native Plant Society (Idaho Native Plant Society 1989). The Priority 2 category of the Idaho Native Plant Society list refers to taxa "likely to be classified as Priority 1 within the foreseeable future in Idaho, if factors contributing to their population decline or habitat degradation and loss continue."

The Idaho Natural Heritage Program currently ranks apetalous campion as G? S1 (G? = Global status of taxon unknown to me, S1 = Critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Conservation Status - Elsewhere:

MONTANA - Considered a rare plant of undetermined status in Montana (Lesica et al. 1984).

Ownership: All known low fleabane populations in Idaho occur on National Forest land (Challis and Sawtooth NFs).

Threats: This section does not apply to the Targhee NF, since no

populations are known there. See Henderson (1983a) for general recommendations on this species.

Both known populations on the Challis and Sawtooth NFs are relatively small and local. The Lemhi population appears well removed from major human-related disturbances. The Pioneer population, however, is on the standard summit route along the southeast ridge of Hyndman Peak, a route climbed by many people every summer. It may be vulnerable to extirpation.

Management Implications: This section also does not apply to the Targhee NF, since no populations are known there. See Henderson (1983a) for general recommendations on this species.

ASSESSMENT AND RECOMMENDATIONS

Summary: Two small populations are known in Idaho, one from the Lemhi Range the other from the Pioneer Mountains. The Pioneer population may potentially be impacted by climbers ascending Hyndman Peak, since it occurs along the standard route up the mountain. No populations were found on the Targhee NF in the southern Lemhi Range and Beaverhead Mountains

Recommendation to the Regional Forester: Distribution and abundance data collected by myself and botanists from the University of Idaho Herbarium, indicate that apetalous campion has a limited distribution in Idaho. It is restricted to two small populations on the Challis and Sawtooth NFs. One of the populations is vulnerable to disturbance.

Because of these data, I recommend that apetalous campion be added to the Region 4 Sensitive Species List for Idaho, for the Challis and Sawtooth NFs. A thorough status inventory should be conducted for this species in the Pioneer Mountains, Sawtooth and Challis NFs, as soon as practicable.

Papaver kluanense D. Love

CURRENT STATUS USFS Region 4 Sensitive Species
(Challis, Salmon, and Targhee NFs)
USFWS - None
Idaho Native Plant Society - Priority 1
Heritage Rank - G4 S1

TAXONOMY

Family: Papaveraceae (Poppy)

Common Name: Arctic poppy

Citation: Bot. Notis 109:178. 1956.

Synonyms: Papaver lapponicum (Tomn.) Nordh.
Papaver radicatum Rottb.

Nontechnical Description: Low (7-15 cm tall), densely caespitose plants; white hairs on the leaves and peduncles, particularly dense at the top of the latter; peduncles firm and erect at anthesis; leaves densely hairy, with short petioles and a short blade divided into broad segments; flowers small (2-3 cm), with yellow petals; capsules roundish, about as broad as long, covered with numerous coarse hairs varying in color from light brown to black (Love 1969). See Appendix 3 for a color slide of arctic poppy.

Distinguishing Features and Similar Species: The herbage of arctic poppy has long, spreading hairs; flowers have 4 sulfur-yellow petals, each up to 25 mm long; stamens numerous; plants densely clumped with erect stems (Henderson et al. 1979; Henderson 1983a). It is absolutely distinctive when its large yellow flowers are present. However, vegetatively it strongly resembles Smelowskia calycina (Brunsfeld 1983).

DISTRIBUTION

Range: Arctic poppy is known from the American Arctic, disjunct south to the Canadian Rockies of British Columbia and Alberta, then further disjunct to the central Rockies of Wyoming, Colorado, and northern New Mexico; only recently discovered in Idaho (Henderson 1983a). Arctic poppy was first discovered in Idaho by Doug Henderson and Steve and Pam Brunsfeld, on the west face of Bell Mountain, southern Lemhi Range, Challis NF. The population was discovered on 2 August 1978, where it occupied the upper 200 ft of the summit cap on Bell Mountain. The population consisted of "7 to 10 individuals, if that" and was largely vegetative on this date. A couple of individuals were flowering. A thorough inventory of alpine habitats in east-central Idaho, from 1973 to the present, by botanists from the University of Idaho Herbarium, found only the one population (Henderson 1981b). See Appendix 2 for an overview of the Idaho distribution of arctic poppy.

I was unable to locate the species when I first visited the top of Bell Mountain in July 1984. Duane Atwood, Regional FS Botanist, and personnel from the Challis NF, surveyed the summit of Bell Mountain in 1986 (date unknown) for arctic poppy and also found none. On 10 July

1989, I spent two hours scouring the upper 200 feet of Bell Mountain, and found no evidence of even vegetative material of a Papaver species. I may have been too early.

Habitat and Associated Species: The summit of Bell Mountain consists of a very hard, white quartzite, that weathers into blocks, leaving few sites for plant establishment. Henderson and the Brunsfelds found arctic poppy on rocky ledges and cliffs on near-vertical faces. Associated species include Poa lettermannii, Poa rupicola, Eritrichium nanum, Draba lonchocarpa, Arabis lemmonii, Androsace septentrionalis, Saxifraga caespitosa, and Saxifraga debilis (Henderson et al. 1979). The summit of Bell Mountain is 11,612 feet.

CONSERVATION STATUS

Conservation Status - Idaho: Arctic poppy was first discovered in Idaho in 1978, during rare plant inventories of the Challis NF, by botanists from the University of Idaho Herbarium (Henderson et al. 1979; Henderson 1983a). In his evaluation of the species for the Idaho rare plant project of the Idaho Natural Areas Council, Henderson (1981b) recommended that arctic poppy be given a status of Endangered in Idaho. Arctic poppy is on the Region 4 Sensitive Species List for the Challis, Salmon, and Targhee NFs (USDA Forest Service 1988).

Arctic poppy is currently considered a Priority 1 species for Idaho by the Idaho Native Plant Society (Idaho Native Plant Society 1989). The Priority 1 category of the Idaho Native Plant Society list refers to taxa "in danger of becoming extinct or extirpated from Idaho in the foreseeable future if identifiable factors contributing to their decline continue to operate; these are taxa whose populations are present only at critically low levels or whose habitats have been degraded or depleted to a significant degree."

The Idaho Natural Heritage Program currently ranks arctic poppy as G4 S1 (G4 = Apparently 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).
Conservation Status - Elsewhere:

COLORADO - Arctic poppy is on the Colorado Natural Heritage Program's list of rare plants in the state on List 3, that is, plants suspected to be rare in the state, but about which more information is needed to made a final determination of their status.

MONTANA - Ranked G4 S1 by the Montana Natural Heritage Program (S1 = Critically imperiled in Montana because of extreme rarity or because of some factor of its biology making it vulnerable to extinction). It is also considered rare in the state by the Montana Rare Plant Project (Lesica et al. 1984).

Ownership: Apparently the population of arctic poppy on Bell Mountain is largely on the west side of the summit, which is the Challis NF. The Targhee NF manages a small portion of the east face of the mountain, and the species may occur there also.

Threats: Henderson (1983a) reviewed the threats to the only arctic poppy population known in Idaho: "Although the peak is rugged and inaccessible, there are signs of recent human use. The actions of a single individual could significantly reduce the population in a few minutes." Brunsfeld (1983) considered arctic poppy to be "one of the most rare and endangered species in Idaho. It is endangered because one thoughtless hiker could pick a handful of this spectacular alpine windflower, and nearly eliminate the species from Idaho. Therefore, botanists should refrain from collecting anything but photographs of this species."

Management Implications: The population lies within the Meadow Canyon Research Natural Area, and technically is afforded as much protection as possible. Practically however, the site is not readily protected from impacts of the numerous climbers who ascend Bell Mountain each year. Henderson et al. (1979) and Henderson (1983a) advised against publicizing the location of the poppy on Bell Mountain, stating that they thought it would be in the best interest of preservation not to reveal the location to overzealous plant collectors and/or interested but ill-advised hikers and scramblers.

I agree with their recommendation to a point. The Challis and Targhee NFs, should not publicize the location to the general public. I believe, however, that a statement should be placed in the summit register, informing climbers of the presence of the poppy on Bell Mountain, and explaining its rarity and sensitivity to extirpation. This may not prevent all disturbances to the population, but I believe more protection will be afforded with an educated climbing community than with an ignorant one.

ASSESSMENT AND RECOMMENDATIONS

Summary: The one Idaho population of arctic poppy occurs on Bell Mountain on the Challis NF and possibly the Targhee NF. It was first discovered there in 1978, and has not been seen since, despite at least three survey trips in 1984, 1986, and 1989. It is quite possible that all three visits were too early; the originally discovery was in early August, and only a couple of the individuals were in flower. The population consisted of less than 10 individuals in 1978.

Recommendation to the Regional Forester: Arctic poppy remains an extremely rare species in Idaho. The Bell Mountain population occurs on the Challis NF and possibly the Targhee NF. I recommend that it remain on the Region 4 Sensitive Species List for the Challis and Targhee NFs. Intensive floristic inventories of east-central Idaho found no evidence that it occurs on the Salmon NF. I recommend that it be removed from the Sensitive Species list for the Salmon.

Recommendations to Targhee and Challis national forests: It appears that I may have been too early to properly inventory for arctic poppy in 1989. I recommend that Bell Mountain be inventoried in mid- to late August, as soon as practicable to determine whether or not the population is extant.

Saxifraga cernua L.

CURRENT STATUS USFS - Region 4 Sensitive Species
(Challis and Targhee NFs)
USFWS - None
Idaho Native Plant Society - Review
Heritage Rank - G4 S2

TAXONOMY

Family: Saxifragaceae (Saxifrage)

Common Name: Nodding saxifrage

Citation: Sp. Pl. 403. 1753.

Technical Description: Perennial, single stemmed to more usually caespitose and with 2-several simple to branched leafy flowering stems (8) 10-15 (20) cm tall, rather thickly glandular-pubescent to grayish glandular-pilose or rusty-lanate below; basal leaves usually several, slender-petiolate, often bearing numerous ricelike bulblets in their axils, the blades mostly reniform, (5) 10-15 (20) mm broad, with 5-7 (9) rather prominent rounded teeth or shallow lobes; cauline leaves usually several, the lower ones like the basal but with much shorter petioles, the upper ones fewer-lobed to entire; inflorescence falsely racemose to paniculate, the lowermost 1 to 2 (sometimes all) flowers replaced by small reddish-purple bulbils; calyx turbinate to broadly campanulate, 3-4.5 mm long at anthesis, usually purplish or purplish mottled, the ovate to oblong-ovate, erect lobes 2.5-4 times as long as the adnate lower portion, a free hypanthium lacking; petals white, the 3 nerves often purplish near the base; up to 12 mm long, 2-5 times as long as the calyx lobes, obovate to cuneate-obovate, retuse, not clawed, deciduous; stamens usually exceeding the calyx lobes, the filaments not clavate; ovary about 1/4 inferior at anthesis, less so at maturity, the calyx not accrescent; styles 1-1.5 mm long; stigmas slightly decurrent (Hitchcock 1961).

Nontechnical Description: Single-stemmed to somewhat caespitose perennial herb 8-20 cm tall. Basal leaves several with rounded teeth or shallow lobes; stem leaves several. Lowermost flowers replaced by reddish bulbils. When flowers present, petals white (Henderson et al. 1979). See Appendix 1 for a line drawing of nodding saxifrage.

Distinguishing Features and Similar Species: Vegetatively, nodding saxifrage is nearly identical to Saxifraga debilis. Both form bulbils in the basal axils, and are indistinguishable by leaf shape, but nodding saxifrage tends to have denser, more tangled, multicellular hairs on the petioles than S. debilis. This is a quantitative not a qualitative difference. Of course with flowering material differences are more obvious: nodding saxifrage has straighter, taller, more leafy and bracted flowering stems that have dark red bulbils in the upper leaf and lower bract axils, with few normal white petaled flowers above (Brunsfeld 1983).

DISTRIBUTION

Range: Nodding saxifrage is a circumboreal species, found in North America from Alaska to Labrador, southward to the Cascade Mountains of northern Washington, and in the Rocky Mountains to New Mexico, west to central Idaho and Elko County, Nevada, east to South Dakota (Hitchcock 1961). Hitchcock (1961) states that nodding saxifrage is apparently abundant in the Arctic but only rarely collected in the United States and southern Canada. In Idaho, nodding saxifrage is known from six, widely scattered populations: three from the Lost River Range, two from the Lemhi Range, and one from the Henrys Lake Mountains. See Appendix 2 for an overview of the distribution of nodding saxifrage in Idaho.

Both the Lemhi Range populations occur on the west slope of the southern end of the range, on the Challis NF. I found no nodding saxifrage populations on the Targhee NF in the southern Lemhi Range and southern Beaverhead Mountains in 1989. Due to its widely scattered distribution and unpredictability of its habitat, there is still a possibility that nodding saxifrage occurs on the Targhee in this area. The Henrys Lake Mountains population occurs on the Targhee NF in upper Targhee Creek.

Habitat and Associated Species: In Idaho, nodding saxifrage occurs in rock crevices, moist tundra and in soil on slopes and ridges (Brunsfeld 1983). The populations range in elevation from 10,000 to 11,400 feet, and occur on both carbonate and quartzitic substrates. Associated species often include Saxifraga adscendens, S. caespitosa, and S. debilis. Henderson et al. (1979) state that the higher elevation populations, occurring in rock crevices, are small as compared with the lower elevation ones growing on more stable substrates.

CONSERVATION STATUS

Conservation Status - Idaho: Our knowledge of nodding saxifrage in east-central Idaho, is due in large part to the rare plant inventories of the Challis NF, and intensive floristic inventories of east-central Idaho, both conducted by botanists from the University of Idaho (Henderson et al. 1979; Brunsfeld 1983; Henderson 1983a). In his evaluation of nodding saxifrage for the Idaho rare plant project of the Idaho Natural Areas Committee, Brunsfeld (1981d) recommended that it be placed on the Watch List for Idaho, due to its remote habitat. It is a Region 4 Sensitive Species in Idaho, for the Challis and Targhee NFs (USDA Forest Service 1988).

Nodding saxifrage is currently on the Review List for Idaho (Idaho Native Plant Society 1989). The Review category of the Idaho Native Plant Society list refers to taxa which "may be of conservation concern, but for which we have insufficient data upon which to base a recommendation regarding their appropriate classification."

The Idaho Natural Heritage Program currently ranks arctic poppy as G4 S1 (G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery, S1 = Imperiled in Idaho because of extreme rarity or because of some factor of its biology making it vulnerable to extinction).

Conservation Status - Elsewhere:

WASHINGTON - Sensitive = a vascular plant that is vulnerable or

declining, and could become endangered or threatened in the state without active management or removal of threats (Washington Natural Heritage Program 1987).

Ownership: All known nodding saxifrage populations in Idaho occur on National Forest land (Challis and Targhee NFs). Brunsfeld (1981d) notes that nodding saxifrage occurs on the Salmon NF, as well as the Challis and Targhee. There is no evidence that it occurs on the Salmon NF.

Threats: This section does not apply to the Targhee NF, since no populations are known to occur on the Forest in the southern Lemhi Range and Beaverhead Mountains. No clear threats were foreseen to the Challis NF populations in east-central Idaho, other than the ever-present increasing mining exploration activity (Henderson 1983a). Recreational developments in upper Targhee Creek, associated with the Continental Divide Trail, could pose a threat to the population in the Henrys Lake Mountains.

Management Implications: This section also does not apply to the Targhee NF, since no populations are known to occur on the Forest in the southern Lemhi Range and Beaverhead Mountains. A status inventory of nodding saxifrage on the eastern portion of the Forest is needed before management implications can be assessed there.

ASSESSMENT AND RECOMMENDATIONS

Summary: Six populations of nodding saxifrage are known in Idaho, from the Lost River and Lemhi ranges and the Henrys Lake Mountains. The status of these populations needs to be assessed. No populations were found on the Targhee NF in the southern Lemhi Range and Beaverhead Mountains in 1989.

Recommendation to the Regional Forester: Distribution and abundance data collected by myself and botanists from the University of Idaho Herbarium, indicate that nodding saxifrage has a limited distribution in Idaho. It is restricted to six populations on the Challis and Targhee NFs.

Because of these data, I recommend that nodding saxifrage remain on the Region 4 Sensitive Species List for Idaho, for the Challis and Targhee NFs.

Recommendations to the Challis and Targhee national forests: No populations were found in the area of investigation in 1989. The conservation status of the six populations known from the Challis and Targhee NFs still needs to be assessed. A thorough status inventory should be conducted for this species on the two Forests as soon as practicable.

DISCUSSION AND OVERALL RECOMMENDATIONS

Results of my 1989 survey, and floristic inventories and research by botanists at the University of Idaho Herbarium, beginning in 1973 and continuing to the present, have provided a relatively complete picture of the distribution, abundance, and habitat relationships of rare alpine plants in the southern Beaverhead Mountains and Lemhi Range of the Targhee NF. Additional populations may be discovered in the more remote habitats of the area, but existing data provide the basis for what I believe are informed recommendations on the status and management of the species and their habitats.

Summary of Conservation Status Recommendations

1. Currently Region 4 Sensitive Species - No (or slight) Change.

    a. Cymopterus douglassii - remain Sensitive for Challis and Salmon NFs; remove from Targhee NF.
    b. Papaver kluanense - remain Sensitive for Challis and Targhee Nfs; remove from Salmon NF.
    c. Saxifraga cernua - no change.

2. Recommended additions to Region 4 Sensitive List.

    a. Cymopterus ibapensis - for Challis, Salmon, and Targhee
    b. Erigeron humilis - for Challis NF

3. Delete from Region 4 Sensitive List for Idaho.

    a. Erigeron radicatus

Need for Additional Data

Land managers and field personnel on the Targhee National Forest should be informed of the occurrence of these species in their areas. Possible sightings of these plants should be documented by specimens (if size of the population warrants collecting), and should include both flowers and roots. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, ID 83843; 208/885-6798) for verification of their identity. Confirmed sightings of these species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Areas Unsuccessfully Searched

After considerable searches by myself in 1989, and by botanists from the University of Idaho Herbarium in previous years, no rare alpine plant populations were found south of Diamond Peak in the Lemhi Range, and in the southern Beaverhead Range, except the taprooted fleabane population near Italian Peak.

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Appendix 1

Line drawings of selected rare alpine plants
in the southern Lemhi Range and Beaverhead Mountains.

1. Cymopterus douglassii (from Hartman and Constance 1985)

2. Erigeron humilis (from Cronquist 1955)

3. Erigeron radicatus (from Cronquist 1955)

4. Lychnis apetala var. montana (from Hitchcock 1964)

5. Saxifraga cernua (from Hitchcock 1961)

Appendix 2

Mapped locations of rare alpine plants found on the Targhee NF in the southern Lemhi Range and Beaverhead Mountains.

Map 1. Cymopterus douglassii - overview of distribution (modified from Henderson 1983a).

Map 2. Cymopterus ibapensis - overview of Idaho distribution (modified from Henderson 1983a).

Map 3. Cymopterus ibapensis - populations in upper North Fork Pass Creek area. Portion of Provisional Edition 1987 Diamond Peak 7.5' quadrangle.

Map 4. Erigeron humilis - overview of Idaho distribution (base map from Henderson 1983a).

Map 5. Erigeron radicatus - overview of distribution in east-central Idaho (base map from Henderson 1983a).

Map 6. Erigeron radicatus - population on Peak 10,858. Portion of Provisional Edition 1987 Bell Mountain 7.5' quadrangle.

Map 7. Erigeron radicatus - population east of Italian Peak. Portions of Provisional Edition 1987 Italian Canyon and Scott Peak 7.5' quadrangles.

Map 8. Erigeron radicatus - population on Big Windy Peak. Portion of Provisional Edition 1987 Big Windy Peak 7.5' quadrangle.

Map 9. Erigeron radicatus - populations near Bell Mountain. Portion of Provisional Edition 1987 Bell Mountain 7.5' quadrangle.

Map 10. Erigeron radicatus - populations above Coal Kiln Canyon. Portion of Provisional Edition 1987 Coal Kiln Canyon 7.5' quadrangle.

Map 11. Lychnis apetala var. montana - overview of Idaho distribution (base map from Henderson 1983a).

Map 12. Papaver kluanense - overview of Idaho distribution (from Henderson 1983a).

Map 13. Saxifraga cernua - overview of distribution in east-central Idaho (from Henderson et al. 1979).

APPENDIX 3

Slides of selected rare alpine plants found in the southern Lemhi Range and Beaverhead Mountains, and their habitats.

1. Cymopterus douglassii - close-up of plant.

2. Cymopterus douglassii - habitat on Sheep Mountain; occurs in moderately unstable scree in foreground.

3. Cymopterus ibapensis - close-up of plant; note white flowers and whorled leaves.

4. Cymopterus ibapensis - habitat on moraine below north face of Diamond Peak; occurs in unstable scree in foreground.

5. Erigeron radicatus - close-up of plants.

6. Erigeron radicatus - habitat near Bell Mountain; Trifolium haydenii fellfield.

7. Erigeron radicatus - habitat near Italian Peak; abundant white flowers in foreground are Erigeron radicatus.

8. Erigeron radicatus - habitat near Bell Mountain; occurs on ridge on left side of photo.

9. Papaver kluanense - close-up of plant taken by S.J. Brunsfeld in August 1978, on summit of Bell Mountain.