

**REPORT ON THE CONSERVATION STATUS OF
ERIGERON SALMONENSIS, IN IDAHO**

by

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July 1992

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**Status Survey Report prepared for
Idaho Department of Parks and Recreation
through Section 6 funding from
U.S. Fish and Wildlife Service, Region 1**

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ERIGERON SALMONENSIS, IN IDAHO**

Taxon Name: *Erigeron salmonensis* Brunsfeld & Nesom

Common Name: Salmon River fleabane

Family: Asteraceae (Compositae)

States Where Taxon Occurs: U.S.A.; Idaho

Current Federal Status: Category 2 Candidate

Recommended Federal Status: Category 3c

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Original Date of Report: July 31, 1992

Date of Most recent Revision: N/A

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ABSTRACT

A field investigation of *Erigeron salmonensis* (Salmon River fleabane) was conducted during June, 1992, by the Idaho Department of Fish and Game's Conservation Data Center¹. Salmon River fleabane is endemic to the canyons of the lower Middle Fork Salmon River and its tributaries and extending to the main Salmon River downstream from Shoup, in central Idaho. This area is in west-central Lemhi, northeastern Valley, and southeastern Idaho counties. It is presently a Category 2 federal candidate species, and a Forest Service Region 4 sensitive species.

Prior to our 1992 survey, Salmon River fleabane was only known from the type location near Shoup, Idaho. Previous searches along the main Salmon River Canyon in 1989 and 1990 revealed no new populations. Thirteen new populations were discovered during our 1992 field investigation along the Middle Fork Salmon River and its tributaries. All 14 extant populations occur on lands administered by the Salmon National Forest. These populations support an estimated 4100 individuals. Plant density is mostly low, and only one population is known to support over 1000 individuals. Size of populations varied from approximately 0.2 acres to greater than 20 acres. Most populations are probably greater in extent and support additional plants in areas inaccessible to our survey.

Salmon River fleabane has relatively precise habitat requirements. It is restricted to cracks, crevices, and small ledges on very steep to vertical, large, north-facing canyon cliffs and buttresses. Such sites provide relatively shaded and moist conditions in an area otherwise characterized by dry, open to sparsely timbered slopes and canyon walls.

All but the type location occur within the Frank Church River of No Return Wilderness and are at least partially contained within the Middle Fork Salmon River Wild River Corridor. Parts of two populations have been minimally disturbed in the past and could potentially be further impacted in the future. Otherwise, the populations are undisturbed and secure from any foreseeable threats.

Although Salmon River fleabane remains very uncommon and with a limited distribution, its habitat is secure and no identifiable threats to its long-term persistence are foreseen. It is therefore recommended that the federal status of Salmon River fleabane be changed from Category C2 to Category 3c. It is also recommended that it remain a Region 4 sensitive species for the Salmon NF.

¹Formerly the Idaho Natural Heritage Program

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I. Species Information.

1. Classification and nomenclature.

A. Species.

1. Scientific name.

a. **Binomial:** *Erigeron salmonensis* Brunsfeld & Nesom

b. **Full bibliographic citation:** Brunsfeld, S.J., and G.L. Nesom. 1989. *Erigeron salmonensis* (Asteraceae), a rare new species from Idaho. *Brittonia* 41(4):424-428.

c. **Type specimen:** S. & P. Brunsfeld 1711, Salmon River Canyon, 7.6 km (4.7 mi) SW of Shoup, Idaho, north-facing cliffs above road, T23N R18E S16, Lemhi County, Idaho, 16 June, 1981.

2. **Pertinent synonym(s):** None.

3. **Common name(s):** Salmon River fleabane

4. **Taxon codes:** PDAST3M4Q0 (The Nature Conservancy and Idaho Conservation Data Center).

5. **Size of genus:** Nearly 200 species, of North and South America, Europe and Asia; more than 130 species in North America north of Mexico, centering in the western cordillera (Cronquist 1955).

B. Family classification.

1. **Family name:** Asteraceae

2. **Pertinent family synonyms:** Compositae.

3. **Common name(s) for family:** Aster, Sunflower

C. Major plant group: Dicotyledonea (Class Magnoliopsida)

D. History of knowledge of taxon: This taxon is relatively new to science, first collected in 1981, and described in 1989 (Brunsfeld & Nesom 1989). Botanical exploration in the Middle Fork region of the Salmon River has been minimal. This is especially true for the rugged and remote areas further downstream on the Salmon River, and within the main and tributary canyons comprising the Middle Fork Salmon River drainage. In 1989, as part of a Challenge Cost-share project with the Salmon NF, survey work along the main Salmon River, Panther Creek, Camas Creek, and some of their tributaries found no additional populations of Salmon River fleabane (Moseley 1989). Due to the apparently strict habitat requirements for Salmon River fleabane, this left the lower half of the Middle Fork Salmon River canyon and its accessory tributary canyons as the only remaining unsurveyed area that could likely support additional populations. The Conservation Data Center, in 1991, contracted with the U.S. Fish and Wildlife Service to conduct field inventories and prepare a status survey report for the taxon throughout the rest of the species suspected range.

Unfavorable river flow conditions during the flowering period for Salmon River fleabane prevented a planned 1991 survey of the Middle Fork Salmon River. Favorable river conditions allowed the survey to be conducted in June of 1992, however. Our 1992 survey resulted in the discovery of 13 new Salmon River fleabane populations, all restricted to the canyons of the lower Middle Fork Salmon River and its

tributaries. Together with the previously known type location, this brings to 14, the number of extant populations documented for Salmon River fleabane. This species remains endemic to a relatively small area in central Idaho, in west-central Lemhi, northeast Valley, and southeast Idaho counties.

E. Comments on current alternative taxonomic treatment(s): None.

2. Present legal or other formal status

A. International: None.

B. National.

1. Present designation of proposed legal protection or regulation: Salmon River fleabane is a Category 2 candidate species for federal listing (U.S. Fish and Wildlife Service 1990).

2. Other current formal status recommendation: Salmon River fleabane is currently ranked as "critically imperiled throughout its range because of extreme rarity or because of some other factor of its biology making it especially vulnerable to extinction" (global rank = G1), by The Nature Conservancy.

Salmon River fleabane is also listed as a Sensitive Plant Species for the Salmon National Forest by Region 4 of the U.S. Forest Service (Spahr et al. 1991)

3. Review of past status: Salmon River fleabane is a recently described species (Brunsfeld and Nesom 1989). In 1990 it was listed as a Category 2 candidate species for federal listing by the U.S. Fish and Wildlife Service (1990).

1. Idaho.

a. Present designation or proposed legal protection or regulation: None.

b. Other current formal status recommendation: Salmon River fleabane is currently listed as "critically imperiled in Idaho because of extreme rarity or because of some other factor of its biology making it especially vulnerable to extinction" (state rank = S1) by the Idaho Conservation Data Center and The Nature Conservancy (Moseley and Groves 1992).

Since it is a federal candidate species, no Idaho Native Plant Society category applies to Salmon River fleabane (Idaho Native Plant Society 1992).

c. Review of Past status: None.

3. Description.

A. General nontechnical description: Salmon River fleabane is a perennial herb that has thick branches immediately above its taproot, with old leaf bases persistent on these branches. Stems are thin and lax, with 1-nerved, linear to linear-oblong leaves that are largely glabrous. Involucre bracts are minutely granular-glandular, but otherwise glabrous. Flowering heads are erect in bud. The white rays may age to a lilac-color and stay flat as they mature. See Appendix II for a line drawing of Salmon River fleabane

B. Technical Description: Perennial from a taproot that bears thick (4-7 mm), erect caudex branches with adherent, chaffy leaf bases. Stems glabrous, 15-35 cm long. Basal leaves entire, 1-nerved, linear-oblong, (3) 6-11 cm long, the blade 2-4 mm wide, gradually tapering to a petiolar base, the lamina glabrous or nearly so, the margins sparsely appressed-ciliate with hairs 0.1-0.3 mm long; cauline leaves similar to the basal, not clasping, very gradually diminished in size upwards. Heads terminal, mostly solitary, but occasionally 2 or 3 per stem, hemispheric, 5-6 mm wide (pressed); peduncles 2-7 cm long, naked or minutely bracteate; phyllaries thin, greenish, with scarious margins, densely and minutely

granular-glandular, otherwise glabrous, 2 or 3 seriate, the inner 3-3.5 mm long, the outermost ca half as long. Rays glabrate, 11-15 in 1 series, 8-9 mm long, the ligules 1.5-2 mm wide, white, drying prominently lilac, the color often concentrated in a midstripe on the lower surface, not coiling or reflexing at maturity. Disc corollas glabrate, funnelform, neither indurate nor inflated, 2.1-2.5 mm long, the throat sharply constricted, ca 0.5 mm long. Style branches 0.6-0.7 mm long, including the shallowly deltate to shallowly or very shallowly triangular collecting appendages 0.1-0.2 mm long. Achenes oblong-ovate, 1.5-2.2 mm long, 0.4-0.6 mm wide, compressed with 2 lateral nerves, very sparsely strigose; pappus of 12-15 barbellate bristles 1.8-2 mm long and a few outer setae 0.1-0.2 mm long. Chromosome number, $n = 9$ (Brunsfeld and Nesom 1989).

C. Local field characters: Salmon River fleabane is unlike any other *Erigeron* in central Idaho. The long, linear, dark green leaves, white flowers on thin stems and lax habit are distinctive. These characters, when used in combination with its vertical cliff-face habitat, make Salmon River fleabane readily distinguishable from other members of the Asteraceae found in central Idaho.

D. Identifying characteristics of material which is in interstate or international commerce or trade: No interstate or international trade is known. See above section for differences with closely related genera/species.

E. Photographs and/or line drawings: A line drawing of Salmon River fleabane appears in Brunsfeld and Nesom (1989). Photographs (35 mm slides) of Salmon River fleabane and its habitat in Idaho are in the slide collection of the Idaho Conservation Data Center, Boise, Idaho. Several have been reproduced in Appendix V.

4. Significance.

A. Natural: None known.

B. Human: None known.

5. Geographical distribution.

A. Geographical range: Salmon River fleabane is locally endemic to the lower 25 river miles of the Middle Fork Salmon River and the lower canyons of some of its tributaries, and extending to a population along the main Salmon River upstream from the Middle Fork confluence, in central Idaho. This area encompasses portions of west-central Lemhi, northeastern Valley, and southeastern Idaho counties.

B. Precise occurrences.

1. Populations currently or recently known extant: Salmon River fleabane is endemic to Idaho. Fourteen extant populations of Salmon River fleabane have been documented for Idaho. The type location was discovered in 1981, the other thirteen were discovered in 1992. Note that the number in parentheses refers to the occurrence number for *Erigeron salmonensis* in the Conservation Data Center's data base.

1. Sheepstealer Historical Marker (001)

- a. USA: Idaho, Lemhi County
- d. Shoup 15' U.S.G.S. topographic map quadrangle, 1960.
- e. Type location for taxon. First observed in 1981 by Steven and Pam Brunsfeld.
- f. Most recently observed by Bob Moseley in 1989.

2. Lower Cold Spring Creek (002)

- a. USA: Idaho, Lemhi County
- d. Puddin Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.

- e. First observed in 1992.
 - f. Most recently observed in 1992.
3. Jack Creek Rapids (003)
- a. USA: Idaho, Lemhi County
 - d. Puddin Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
4. Papoose Creek (004)
- a. USA: Idaho, Valley County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
5. Nugget Creek (005)
- a. USA: Idaho, Idaho County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
6. Wall Creek (006)
- a. USA: Idaho, Lemhi and Valley Countys
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
7. Latham Grotto (007)
- a. USA: Idaho, Lemhi and Valley Countys
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
8. Golden Creek (008)
- a. USA: Idaho, Valley County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
9. Mist Falls (009)
- a. USA: Idaho, Lemhi County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
10. Parrot Creek (010)
- a. USA: Idaho, Lemhi County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.
11. Ship Island Creek Mouth (011)
- a. USA: Idaho, Lemhi County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.

12. River Mile 10, Middle Fork Salmon River (012)
 - a. USA: Idaho, Lemhi County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.

13. Goat Creek (013)
 - a. USA: Idaho, Lemhi County
 - d. Long Tom Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.

14. South of Golden Creek (014)
 - a. USA: Idaho, Valley County
 - d. Aggipah Mtn. 7.5' U.S.G.S. topographic map quadrangle, 1962.
 - e. First observed in 1992.
 - f. Most recently observed in 1992.

2. Populations known or assumed extirpated: None.

3. Historically known populations where current status not known: None.

4. Locations not yet investigated believed likely to support additional natural populations: Portions of several of the known populations are contiguous to additional potential habitat that is not readily accessible and may support more plants. Additional populations could possibly occur further upstream along the Middle Fork, or further downstream along the Salmon River than searched, but this is believed to be unlikely due to a lack of suitable-appearing habitat.

5. Reports having ambiguous or incomplete locality information: None.

6. Locations known or suspected to be erroneous reports: None.

C. Biogeographical and phylogenetic history: *Erigeron* is a large genus with nearly 200 species worldwide. It is an especially important group within the western cordillera of North America, where over 130 species are known. Flora of the Pacific Northwest (Hitchcock and Cronquist 1973) list 57 species occurring in the region, with a number of taxa endemic to relatively restricted areas. Salmon River fleabane is similar and probably most closely related to *Erigeron arenarioides*, which is endemic to northern Utah. Salmon River fleabane is also similar and perhaps related to *Erigeron cervinus* which occurs in California and Oregon (Brunsfield and Nesom 1989).

Salmon River fleabane is found in an area of high biogeographic interest. The Salmon River drainage of central Idaho is noted for its rich endemic and disjunct flora, of which Salmon River fleabane is just one component. The areas diverse geology, past climatic regimes and plant migration patterns juxtaposed against current environmental conditions, are all likely factors in the development of this interesting regional flora.

6. General environment and habitat description.

A. Concise statement of general environment: Salmon River fleabane has relatively precise habitat requirements. It is restricted to cracks, crevices, and small ledges on very steep to vertical, large, north-facing cliffs and buttresses. In central Idaho, extensive canyon wall habitat exists along the Salmon and Middle Fork Salmon Rivers and some of their tributaries, but the combination of massive and north-facing is quite localized. Such sites are basically perennially free from direct sunlight and provide moist conditions in an area otherwise characterized by dry, open to sparsely-timbered canyon slopes and walls (Brunsfield and Nesom 1989). It also very occasionally occurs on other aspects where the more moist and shaded attributes of a north aspect are duplicated due to the sites sheltered topographic positioning.

Several Salmon River fleabane sites are similar to described *Cercocarpus ledifolius/Agropyron spicatum* (mountain mahogany/bluebunch wheatgrass) (Tisdale 1986) or *Glossopetalon nevadense/Agropyron spicatum* (spiny green-bush/bluebunch wheatgrass) (Johnson and Simon 1987) communities, but other sites are undescribed in the literature. Commonly associated species include *Petrophytum caespitosum* (rockmat), *Heuchera grossulariifolia* (alumroot), *Sedum leibergii* (stonecrop), *Arabis microphylla* (rockcross), *Hackelia davisii* (Davis's stickseed), *Philadelphus lewisii* (syringa), *Cercocarpus ledifolius* (mountain mahogany), and *Agropyron spicatum* (bluebunch wheatgrass). Salmon River fleabane is also often closely associated with moss. Salmon River fleabane is known from between approximately 3400 to 4600 feet elevation, and in some places along the Middle Fork Salmon River extends down to near the high water mark. Rock outcrops supporting Salmon River fleabane can be from gneiss and schist, gneissic sedimentary, or undifferentiated granites of the Idaho batholith parent material (Mitchell and Bennett 1979).

B. Physical characteristics.

1. Climate.

a. Koppen climate classification: Habitat for Salmon River fleabane is classified as Koppen's unit BSk: middle latitude steppe, with average annual temperature under 64.4° F (Trewartha 1968).

b. Regional macroclimate: The following characterization of the climate of east-central Idaho is adapted from Ross and Savage (1967). During the late fall, winter, and early spring months, the climate of central Idaho, is influenced primarily by Pacific Maritime air, which results in relatively moist winters that are warmer and milder than might be expected for mountainous country. Periodically, the westerly flow of air is interrupted by outbreaks of cold, clear, continental air from Canada. During summer months, the westerly winds weaken, and continental climatic conditions prevail. Rainfall, cloud cover, and relative humidity are at their minimum in summer, and daily temperature variations of 40 to 50 degrees F (22 to 28 degrees C) can occur.

Climate of the Salmon River-Middle Fork Salmon River area is not expressed by any climatic record. However, the record for Cobalt, Idaho, approximately 20 miles to the southeast at T19N, R17E, at least gives an indication of climatic trends. Mean annual temperature for Cobalt is 40.9 °F (4.9°C) and the mean annual precipitation is 17.99 inches (231.5 mm). The annual temperature range for Cobalt averages between 18.3°F (-7.6°C) and 63.4°F (17.4°C), with highest temperatures occurring in July and the lowest in January. Mean annual precipitation peaks in the late spring months (April through June) with approximately 34% of the total annual precipitation (Johnson 1978). Cobalt at an elevation of 5010 feet, which is 500 to 1500 feet higher than the Salmon River fleabane populations has on the average, lower temperatures and higher precipitation than the river canyons.

c. Local microclimate: The small ledges, cracks and often mossy crevices on massive, steep, north-facing canyon walls presents a more favorable moisture regime than adjacent slopes or aspects.

2. Air and water quality requirements: Unknown

3. Physiographic provinces: Populations of Salmon River fleabane lie within the Northern Rocky Mountain Province (Ross and Savage 1967).

4. Physiographic and topographic characteristics: Salmon River fleabane occurs in cracks, crevices and small ledges on massive, very steep to vertical, north-facing canyon walls and buttresses. It also very occasionally occurs on other aspects where the more moist and shaded attributes of a north aspect are duplicated due to the sites sheltered topographic positioning. It is known from elevations ranging between 3400 and 4600 feet. Salmon River fleabane is locally endemic to the lower Middle Fork Salmon River drainage, and extending to a population along the main Salmon River downstream from Shoup.

5. Edaphic factors: Special edaphic factors are apparently not a limiting factor for Salmon River fleabane. It occurs on both metamorphic and granitic substrates.

6. Dependence of this taxon on natural disturbance:

Except for natural erosion processes producing the cracks and crevices of the canyon walls, Salmon River fleabane is apparently not dependent on natural disturbances.

7. Other unusual physical features: Salmon River fleabane is absent from small, north-facing outcrops and cliffs, and apparently requires the fuller shading and associated environmental amelioration that only a massive wall can provide.

C. Biological characteristics.

1. Vegetation physiognomy and community structure: Salmon River fleabane occurs within or in proximity to *Cercocarpus ledifolius*/*Agropyron spicatum* (mountain mahogany/bluebunch wheatgrass) and *Glossopetalon nevadense*/*Agropyron spicatum* (spiny green-bush/bluebunch wheatgrass) communities where topographic features such as ledges and outcrops provide sufficient rooting surface for a relatively substantial vegetation to develop. But even on these sites there is typically a high percentage of bare rock present. Several populations or portions of them occur on more sheer faces supporting a sparse assemblage of lithophilic species and of low diversity.

2. Regional vegetation type: Kuchler (1964) places the lower Middle Fork Salmon River area of Idaho into the potential vegetation type of Douglas-fir forest (*Pseudotsuga*).

3. Frequently associated species: Associate species include *Petrophytum caespitosum* (rockmat), *Heuchera grossulariifolia* (alumroot), *Sedum leibergii* (stonecrop), *Arabis microphylla* (rockcress), *Hackelia davisii* (Davis's stickseed), *Glossopetalon nevadense* (spiny green-bush), *Philadelphus lewisii* (syringa), *Cercocarpus ledifolius* (mountain mahogany), and *Agropyron spicatum* (bluebunch wheatgrass). An unidentified moss species is another common associate.

4. Dominance and frequency: At several locations, characterized by sheer walls and large amounts of unvegetated rock, and where few other species have been able to establish, Salmon River fleabane can be one of the most common species present. At other sites it again may be plentiful, but only on a very localized scale. Several other populations support only a few scattered individuals, at least in places that were accessible for survey.

5. Successional phenomena: Many of the rock cracks and crevices where Salmon River fleabane plants become established are initially colonized by moss species. This initial colonization may be prerequisite for the establishment of Salmon River fleabane at many individual plant sites. It is unknown if a poor competitive ability prevents the establishment or persistence of Salmon River fleabane on ledges supporting a denser vegetation, but it usually did not occur in such situations.

6. Dependence on dynamic biotic features: None known.

7. Other endangered species: The rare plants *Hackelia davisii* (Davis' stickseed) and *Penstemon lemhiensis* (Lemhi penstemon) and as a yet undescribed variety of *Ribes velutinum* (new variety of gooseberry) occur within the range of Salmon River fleabane.

Davis' stickseed has a somewhat larger distribution range than Salmon River fleabane, but is also endemic to the middle reaches of the Salmon River drainage in Lemhi, Custer, Idaho and Valley counties, Idaho. It is a Category 3c federal species. The Idaho Native Plant Society (INPS) considers it a State Monitor species (INPS Monitor species = taxa that are common within a limited range as well as those that are uncommon, but have no identifiable threats). Davis' stickseed is also a US Forest Service Region 4 sensitive species. It is restricted to the same kind of habitat as Salmon River fleabane, and is sympatric with it at most sites.

Lemhi penstemon is an endemic to Lemhi County, Idaho and adjacent portions of Beaverhead and Ravalli counties, Montana. It is a Category 2 candidate for federal listing. It is also a sensitive species for the US Forest Service, Region 4, and the Bureau of Land Management. Although occurring in the same general vicinity as Salmon River fleabane along the Salmon River, the two require different habitats and are not sympatric. Lemhi penstemon is not known from the Middle Fork canyon.

7. Population biology.

A. General summary: Salmon River fleabane was first collected in 1981, and for over a decade was known only from the type location. During our 1992 field investigation, thirteen new populations were discovered. This species is locally endemic to central Idaho, centering around the lower Middle Fork Salmon River drainage. All populations are restricted to large, north-facing cliffs and buttresses. For nearly all populations, additional potential habitat exists, but could not be surveyed due to the inaccessible nature of the canyon topography. Therefore, our estimates concerning population number and extent are likely in error on the conservative side. The fourteen population are estimated to support 4100 individuals, ranging in size from 10 to several thousand individuals.

B. Demography.

1. Known populations: Fourteen extant populations of Salmon River fleabane are known, all from the Salmon River and Middle Fork Salmon River canyons of central Idaho, in west-central Lemhi, very northeastern Valley, and very southeastern Idaho counties. These populations are estimated to support a total of 4100 individuals, with the Goat Creek population (013) accounting for more than half this total. For the other thirteen populations, six contain between 100 and 500 individuals, and seven are estimated at less than 100 plants. Most populations probably support additional plants in areas inaccessible to our survey. The extent of these populations varies from approximately 0.2 acre to at least 20 acres, and typically includes a substantial vertical extent.

2. Demographic details (Idaho): (see also Appendix IV)

1. Sheepeater Historical Marker (001)
 - a. Location:
 - b. Area: 20 acres
 - c. Number and size of plants: ca 300-500 plants in 1989; all age classes apparently represented.
 - d. Density: medium
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown

2. Lower Cold Springs Creek (002)
 - a. Location:
 - b. Area: 1 acre
 - c. Number and size of plants: 1992: ca 15, more plants likely occur on inaccessible portions of cliffs
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown

3. Jack Creek Rapids (003)
 - a. Location:
 - b. Area: ca 0.15 mile
 - c. Number and size of plants: 1992: ca 300, additional plants potentially occur higher up buttress face
 - d. Density: low to medium

- e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
4. Papoose Creek (004)
 - a. Location:
 - b. Area: ca 1 acre
 - c. Number and size of plants: 1992: ca 30, additional plants potentially occur further upstream
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
 5. Nugget Creek (005)
 - a. Location:
 - b. Area: ca 0.5 acre
 - c. Number and size of plants: 1992: ca 100, additional plants potentially occur in areas not accessible
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
 6. Wall Creek (006)
 - a. Location:
 - b. Area: ca 2 acres
 - c. Number and size of plants: 1992: ca 50, additional plants likely occur further upstream
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
 7. Latham Grotto (007)
 - a. Location:
 - b. Area: ca 2 acres
 - c. Number and size of plants: 1992: ca 100, additional plants potentially occur in areas not accessible
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
 8. Golden Creek (008)
 - a. Location:
 - b. Area: ca 2 acres
 - c. Number and size of plants: 1992: ca 15, more plants potentially occur upstream
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
 9. Mist Falls (009)
 - a. Location:
 - b. Area: ca 0.2 acre
 - c. Number and size of plants: 1992: ca 40, more plants potentially occur elsewhere on rock face

- d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
10. Parrot Creek (010)
- a. Location:
 - b. Area: ca 2 acres
 - c. Number and size of plants: 1992: ca 15, more plants probably occur upstream and on higher portions of buttress face
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
11. Ship Island Creek Mouth (011)
- a. Location:
 - b. Area: ca 1 acre
 - c. Number and size of plants: 1992: ca 10, more plants probably occur upstream and on inaccessible portions of extensive walls rock face
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: Unknown
12. River Mile 10, Middle Fork Salmon River (012)
- a. Location:
 - b. Area: ca 4 acres
 - c. Number and size of plants: 1992: ca 300-500
 - d. Density: low to medium
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: several plants currently established below high water mark
13. Goat Creek (013)
- a. Location:
 - b. Area: many acres
 - c. Number and size of plants: 1992: multi-1000
 - d. Density: low to medium
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: No evidence
14. South of Golden Creek (014)
- a. Location:
 - b. Area: ca 1 acre
 - c. Number and size of plants: 1992: ca 100
 - d. Density: low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: No evidence

C. Phenology.

- 1. Patterns:** Flowering occurs in June, although during exceptionally warm, dry years it may begin to

flower in late May. Fruits are dispersed soon after maturation.

2. Relation to climate and microclimate: Specific details are unknown. It is apparent though that Salmon River fleabane occurs only where some strict environmental conditions that ameliorate the regional climate are met.

1. Type of reproduction: Apparently by seed only, as no evidence of asexual reproduction has been documented.

2. Pollination.

a. Mechanisms: Unknown, but probably flying insects.

b. Specific known pollinators: Unknown.

c. Other suspected pollinators: None known.

d. Vulnerability of pollinators: Unknown.

3. Seed dispersal.

a. General mechanisms: Specific details are unknown, but wind dispersal is the most likely.

b. Specific agents: Unknown, but very likely wind.

c. Vulnerability of dispersal agents and mechanisms:

If solely wind than no vulnerability, but it is unknown if other mechanisms may also be important.

d. Dispersal patterns: Unknown.

4. Seed biology.

a. Amount and variation of seed production: Unknown.

b. Seed viability and longevity: Unknown.

c. Dormancy requirements: Unknown.

d. Germination requirements: Unknown.

e. Percent germination: Unknown.

5. Seedling ecology: Unknown.

6. Survival and mortality: Unknown.

7. Overall assessment of reproductive success: Specific details are unknown, however, all populations discovered in 1992 were producing flowers, plants appeared healthy, and various size (age) classes were typically present.

8. Population ecology of the taxon.

A. General summary: Fourteen populations of Salmon River fleabane are known, all from Idaho, and centered around the canyons of the lower Middle Fork Salmon River and its tributaries. All populations

occur on large, north-facing, canyon cliff faces or buttresses. Furthermore, plants are confined to rock cracks, crevices and small ledge microsites, often with moss. This species is restricted to a narrowly defined, uncommon habitat within a limited geographic range.

All populations have a low overall density, although somewhat higher densities may be found where a concentration of suitable microsites occur. No herbivore, parasite, or disease damage was observed. Several exotic plant species are well established within the Middle Fork and Salmon River canyons, but none seem likely to pose a serious threat to Salmon River fleabane.

Although all populations are likely more extensive than currently known, only one population has been verified to support over 1000 individuals. Because of the local and limited extent of available habitat, several populations are probably small, even if somewhat larger than presently estimated. No data exists concerning population trends for this species.

B. Positive and neutral interactions: None known.

C. Negative interactions.

1. Herbivores, predators, pests, parasites and diseases: None known.

2. Competition.

a. Intraspecific: The rock crack, crevice and small ledge microsites that Salmon River fleabane is restricted to are typically very small. Intraspecific competition, especially concerning seedling establishment may be significant on these tiny sites.

b. Interspecific: Salmon River fleabane is much less common or absent on outcrops or ledges where greater soil deposition and development allows a greater diversity of shrubs, grasses and other forbs to establish. Interspecific competition may be an important factor limiting Salmon River fleabane to the smaller rock cracks, crevices and ledges where it is found.

3. Toxic and allelopathic interactions with other organisms: None known.

D. Hybridization.

1. Naturally occurring: Unknown. A number of other *Erigeron* species occur in the Middle Fork and Salmon River canyon areas, but no evidence of hybridization was observed.

2. Artificially induced: Unknown.

3. Potential in cultivation: Unknown.

E. Other factors of population ecology: None known.

9. Current land ownership and management responsibility:

A. General nature of ownership: All known populations of Salmon River fleabane occur on lands administered by the U.S. Department of Agriculture, Salmon National Forest.

B. Specific landowners: Populations west of the Middle Fork Salmon River occur on Payette NF land that is administered by the Cobalt Ranger District of the Salmon NF. Populations east of the river and the one Salmon River population occur on lands administered by the North Fork Ranger District of the Salmon NF.

C. Management responsibility: Same as above.

D. Easements, conservation restrictions, etc.: Salmon River fleabane is presently listed as "Sensitive" for Region 4 of the Forest Service (Spahr et al. 1991). Land supporting Salmon River fleabane populations would be managed according to the regulations for Forest sensitive species.

10. Management practices and experience.

A. Habitat management.

1. Review of past management and land-use experiences.

a. This taxon: In the past, a limited amount of prospecting was done within the range of Salmon River fleabane. The one population along the Salmon River (001) occurs in an area that has also seen livestock grazing in the past as well as some logging in the nearby forest. Recreational use of both the main Salmon and Middle Fork Salmon Rivers continues to be popular. The rugged and inaccessible nature of the Middle Fork Salmon River canyon has precluded much other human endeavor.

b. Related taxa: Unknown

c. Other ecologically similar taxa: Often sympatric with Salmon River fleabane is the rare plant *Hackelia davisii* (Davis' stickseed). It has a similar, but somewhat more widespread distribution. Management activities and decisions effecting Salmon River fleabane will effect Davis' stickseed in a similar manner.

2. Performance under changed conditions: Unknown, but Salmon River fleabane is likely a poor competitor, and sensitive to environmental conditions, that if somehow altered could readily eliminate this species from a site.

3. Current management policies and actions: The thirteen populations that are found in the lower Middle Fork Salmon River canyon are within the Frank Church River of No Return Wilderness Area, and at least partially contained in the Middle Fork Salmon River Wild River Corridor. The single population (001) along the main Salmon River is within the Salmon Recreational River Corridor.

4. Future land use: For the thirteen populations along the lower Middle Fork canyon, no land uses inconsistent with Wilderness and Wild River management are expected. Future plans for where the Salmon River population (001) occurs are unknown.

B. Cultivation.

1. Controlled propagation techniques: None known.

2. Ease of transplanting: Unknown.

3. Pertinent horticultural knowledge: None known.

4. Status and location of presently cultivated material: None known to be in cultivation.

11. Evidence of threats to survival.

A. Present or threatened destruction, modification, or curtailment of habitat or range.

1. Past threats: Initial road construction of Forest Service Road # 030 along the Salmon River required blasting of the large buttress which supports the type location (001) of Salmon River fleabane. This blasting likely destroyed some plants and their habitat. Construction of the Middle Fork Salmon River trail (Trail # 044) bisected the Jack Creek Rapids population (003) and also likely destroyed some plants and habitat.

2. Existing threats: All populations appear secure from major threats.

3. Potential threats: Additional road and trail improvements and maintenance potentially threaten small portions of the two populations noted above. Drift from herbicide spraying for noxious weeds may pose a threat to some individuals at the Salmon River population (001). Although not presently legal or foreseen, any dam building in the lower Middle Fork canyon would seriously jeopardize the long-term persistence of Salmon River fleabane. A more subtle and difficult threat to substantiate or control may be artificially induced climate change due to global warming. Salmon River fleabane is confined to relatively cool and moist north-facing canyon walls. This habitat restriction hints that this species may be unable to tolerate much warmer or drier conditions than presently prevail, and could be one species most seriously impacted by warming.

B. Overuse for commercial, sporting, scientific, or educational use.

1. Past threats: Minimal to no past threats.

2. Existing threats: Minimal to no existing threats.

3. Potential threats: Minimal to no potential threats.

C. Disease, predation, or grazing.

1. Past threats: No past threats to the population viability of Salmon River fleabane due to disease, predation, or grazing are known.

2. Existing threats: No direct threats to the viability of Salmon River fleabane due to disease or predation have been documented.

3. Potential threats: No direct potential threats to the population viability of Salmon River fleabane due to disease or predation are known. Impacts associated with heavy grazing, already noted, will continue to be a potential threat, however.

D. Inadequacy of existing regulatory mechanisms.

1. Past threats: None.

2. Existing threats: None.

3. Potential threats: None.

E. Other natural or manmade factors.

1. Past threats: None known.

2. Existing threats: None known.

3. Potential threats: None known.

II. Assessment and Recommendations.

12. General assessment or vigor, trends, and status: Salmon River fleabane has a limited geographic distribution, being confined to the canyons of the lower Middle Fork Salmon River and a nearby section of the main Salmon River. Within this limited range it is further restricted to a relatively uncommon, large, north-facing, canyon wall habitat.

Fourteen populations supporting approximately 4100 individuals have been documented. All populations except the large Goat Creek (013) population are estimated to contain less than 500 individuals each, with seven populations estimated to have less than 100. All populations potentially support more plants in continuous areas that could not be surveyed, however.

Because all but one population were only discovered in 1992, no quantitative population trend information is available. It could be speculated that Salmon River fleabane may have been more widespread in the past when cooler and moister conditions prevailed, and is now persisting on a relatively few outcrops where these ecological conditions are sufficiently met. Presently, the cliff and buttress habitats of this species appear stable, and no changes to this stability are predicted.

Despite its limited distribution and narrow habitat requirements, there does not appear to be any immediate concern for the vigor or conservation status of Salmon River fleabane. Parts of two populations are subject to minor potential threats, however, no significant threats to the long-term viability of the species exists and none are foreseen.

13. Recommendations for listing or status change.

A. Recommendations to the U.S. Fish and Wildlife Service:

Salmon River fleabane is listed presently as a Category C2 species with the U.S. Fish and Wildlife Service (1990). This listing is for taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on the biological vulnerability and threat are not currently available to support proposed rules.

Salmon River fleabane has a limited distribution and narrow habitat requirements. It is known from only 14 populations, most of which are small as far as presently known. All but one population are located within the Frank Church River of No Return Wilderness and all are at least partially contained within the Middle Fork Salmon River Wild River Corridor. The one population (001) located outside the Wilderness is within the Salmon Recreational River Corridor, however. These management designations confer significant protection to the populations. Although all populations are in an area which receives heavy seasonal use by recreationalist, the mostly vertical canyon cliff habitats of Salmon River fleabane are for all practical purposes inaccessible and secure from human interference. Because of this security from significant identifiable threats to its long-term viability, it is recommended that the federal status of Salmon River fleabane be changed to Category 3c.

B. Recommendations to other U.S. Federal Agencies.

1. U.S. Forest Service: All known populations of Salmon River fleabane occur on land administered by the Salmon NF. Based on the distribution and biological information contained in this report, Salmon River fleabane still meets sensitive species criteria and should remain on the Region 4 sensitive species list for the Salmon NF.

Road construction and maintenance, and noxious weed spraying along a short stretch of Forest Service Road # 030 (Salmon River Road), in the vicinity of the Sheepeater Historical Marker population (001), pose a threat to some individuals at this population. Trail improvements along Trail # 044 (Middle Fork Salmon River Trail) could also potentially impact some plants at the Jack Creek Rapids (003) population. Careful consideration should be given to this species during planning of these activities.

C. Other status recommendations.

1. Counties and local areas: No recommendations.

2. State: Currently, Salmon River fleabane is ranked S1 by the Idaho Conservation Data Center (Moseley and Groves 1992). Based on new data collected in 1992, it is recommended this ranking be

changed to S3. The S3 rank is for taxa that are rare or uncommon, but not imperiled.

3. Other Nations: No recommendations.

4. International: No recommendations.

14. Recommended critical habitat: None recommended.

15. Conservation/recovery recommendations.

A. General conservation recommendations.

1. Recommendations regarding present or anticipated activities:

All but one of the known populations are located in the Frank Church River of No Return Wilderness Area and are all at least partially contained within the Middle Fork Salmon River Wild River Corridor. The exception is the one population occurring along the Salmon River, it is at least partially located within the Salmon Recreational River Corridor. Federal management consistent with these designations will confer adequate protection regarding present or anticipated activities.

2. Areas recommended for protection: None recommended.

3. Habitat management recommendations: Current Wilderness and Wild and Scenic River management designations should provide adequate habitat protection.

4. Publicity sensitivity: Low.

5. Other recommendations: None.

B. Monitoring activities and further studies recommended:

No monitoring studies are recommended. Further survey work along several Middle Fork Salmon River tributaries at elevations higher than could be accomplished in 1992, would help clarify the full extent of many populations.

16. Interested parties:

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III. Information Sources.

17. Sources of information.

A. Publications.

1. References cited in report: See Appendix I.

2. Other pertinent publications.

a. Technical: None.

b. Popular: None.

B. Herbaria consulted: Specimens of Salmon River fleabane are known to be deposited at University of Idaho (ID), the College of Forestry Herbarium at the University of Idaho (IDF), the New York Botanical Garden (NY), the University of Texas (TEX), and Washington State University (WS). The following is a list of known herbarium specimens, indexed by population:

001 - S. & P. Brunsfeld 1711 (HOLOTYPE: ID; ISOTYPE: NY); S. & P. Brunsfeld
1830 (TEX, WS); S. Brunsfeld 2047 (IDF)

002 - M. Mancuso 650 (ID)

003 - M. Mancuso 647 (ID)

005 - M. Mancuso 656 (ID)

007 - M. Mancuso 652 (ID)

009 - R. Moseley 2522 (ID)

011 - R. Moseley 2524 (ID)

C. Fieldwork: In late May, 1989, the Idaho Natural Heritage Program (now the Conservation Data Center) surveyed suitable-appearing habitats for Salmon River fleabane along the main Salmon River, Panther Creek, Camas Creek, and their tributaries on the Salmon NF. In June, 1992, the Idaho Conservation Data Center conducted further field investigations for this species within the lower Middle Fork Salmon River

and its tributaries. The objectives of both of these investigations was to relocate known populations and search potential habitat for new populations, delineate the overall distribution of the taxon, characterize habitat conditions, collect population data, and assess threats.

During the summer of 1992, further survey work along the Salmon River Road (#030) corridor was completed by Caryl Elzinga, botanist for the BLM, Salmon District. She did not locate any new Salmon River fleabane populations.

D. Knowledgeable individuals:

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E. Other information sources: None known.

18. Summary of material on file: Color slides, field forms, maps, and all published and unpublished references pertaining to Salmon River fleabane are on file at the Idaho Conservation Data Center office in Boise, Idaho.

IV. Authorship.

19. Initial authorship:

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20. Maintenance of status report: The Idaho Conservation Data Center will maintain current information and update the status reports as needed.

V. New information.

21. Record of revisions: Not applicable.

APPENDIX I

Literature Cited.

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APPENDIX II

Line drawing of *Erigeron salmonensis*
(From Brunsfeld and Nesom 1989)

APPENDIX III

Maps showing locations of *Erigeron salmonensis*.

Map 1. Overall distribution of known populations of Salmon River fleabane. Portion of Salmon National Forest (Cobalt, North Fork, Leadore and Salmon Ranger Districts) Visitor Map (1979).

Map 2. Sheepeater Historical Marker (001) population. Portion of Shoup 15' USGS quadrangle.

Map 3. Lower Cold Springs Creek (002) and Jack Creek Rapids (003) populations. Portion of Puddin Mtn. 7.5' USGS quadrangle.

Map 4. Papoose Creek (004), Wall Creek (006), Latham Grotto (007), Golden Creek (008), Mist Falls (009), and South of Golden Creek (014) populations. Portion of Aggipah Mtn. 7.5' USGS quadrangle.

Map 5. Nugget Creek (005), Parrot Creek (010), Ship Island Creek Mouth (011), and River Mile 10, Middle Fork Salmon River (012) populations. Portion of Aggipah Mtn. 7.5' USGS quadrangle.

Map 6. Goat Creek (013) population. Portion of Long Tom Mtn. 7.5' USGS quadrangle.

Note, that the number in parentheses refers to the occurrence number for *Erigeron salmonensis* in the Conservation Data Center's data base.

APPENDIX IV

Occurrence records for *Erigeron salmonensis*.

APPENDIX V

Slides of *Erigeron salmonensis* and its habitat.

Slide 1. Close-up of *Erigeron salmonensis* flowers.

Slide 2. Close-up of a *Erigeron salmonensis*; note lax habit of plant.

Slide 3. Habitat for *Erigeron salmonensis*; note mossy substrate.