

**REPORT ON THE CONSERVATION STATUS OF
ERIGERON LATUS IN IDAHO**

by

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Taxon Name: *Erigeron latus* (Nels. & Macbr.) Cronquist

Common Names: Broad Fleabane

Family: Asteraceae (Compositae)

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

Current Federal Status: Category 2 Candidate

Recommended Federal Status: Category 3c Candidate

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ABSTRACT

In Idaho, 41 occurrences of *Erigeron latus* (broad fleabane) are known from Owyhee County and extreme western Twin Falls County. The size of Idaho occurrences range from less than 100 to at least 30,000 individuals, and may occupy less than one acre to several square miles in extent. Most of the area occupied by large populations does not support broad fleabane, instead they are comprised of separated clusters or subpopulations. Data from the various inventories that have been conducted for broad fleabane indicate that it occurs almost everywhere that there is suitable habitat. Density within the populations is generally low but populations appear vigorous. Although we saw no seedlings in 1992, the age structure of the mature component of the population appeared well distributed. Livestock grazing is widespread in the area, but does not directly threaten broad fleabane populations, although habitat destruction by related roads and water developments has occurred to a small degree. The proposed Big Springs Bombing Range may have an impact on the viability of certain populations in the Dickshooter Ridge area. It is locally common, and the populations are well distributed across southwestern Idaho. Based on geographic and biological considerations, the long-term viability of the species in Idaho appears good.

Broad fleabane is presently a Category 2 species with the U.S. Fish and Wildlife Service. Based on recent field surveys conducted by the Conservation Data Center, Science Application International Corporation, and the Boise District BLM, our knowledge of the distribution and conservation status of broad fleabane is relatively well known. Undoubtedly, more populations of broad fleabane will be found as more inventories are conducted. Based on the population, distribution and threat-related information presented in this report, it is our assessment that broad fleabane does not require listing as threatened or endangered for its long-term conservation. We recommend that it be changed from a category 2 to category 3c candidate.

The Boise District, BLM, manages nearly all of the known global distribution of broad fleabane. So, even though we do not feel it should be federally listed, we recommend that it remain a BLM Sensitive Species for Idaho. The BLM should continue sensitive plant clearances in project areas known or suspected to support broad fleabane populations and minimize impacts to populations of this narrowly distributed species.

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I. Species Information.

1. Classification and nomenclature.

A. Species.

1. Scientific name.

a. **Binomial:** *Erigeron latus* (Nels. & Macbr.) Cronquist

b. **Full bibliographic citation:** Cronquist, A. 1947. Revision of the North American species of *Erigeron*, north of Mexico. *Brittonia* 6:121-302.

c. **Type specimen:** United States, Idaho, Owyhee Co.: Lava sands, Three Creek, July 1, 1912, Nelson and Macbride 1861 (MIN, MO, NY, RM, US).

2. **Pertinent synonym(s):** *Erigeron poliospermus* var. *latus* Nels. & Macbr.

3. **Common name(s):** Broad fleabane, Owyhee daisy

4. **Taxon codes:** PDAST3M270 (Natural Heritage Conservation Data Center Network).

5. **Size of genus:** Nearly 200 species of North America, South America, Europe, and Asia, nearly all of temperate or boreal regions, or mountainous areas in tropical America. 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 was first collected by Nelson and Macbride in Owyhee County, and described as a new taxon, *Erigeron poliospermus* var. *latus*, soon afterward (Nelson and Macbride 1913). When Cronquist (1947) published his revision of the North American *Erigeron* in the mid-1940's, and elevated it to a full species, it was still only known from the type locality. The next collections were by Bassett Maguire and Arthur Holmgren in 1946 and John Christ in 1949, all along the Mud Flat Road in Owyhee County, Idaho. The next known collections were made in Owyhee County by Patricia Packard in 1975 and Sara Richards in 1977. Botanical inventory work by the BLM in the mid-1980's further elucidated its distribution in Idaho.

Arnold Tiehm (1984) was the first to document its occurrence in Elko County, Nevada, with three

collection in 1979 and 1980.

E. Comments on current alternative taxonomic treatment(s): Nelson and Macbride (1913) considered this taxon to be a variety of *Erigeron poliospermus*. Cronquist (1947) later stated that Nelson and Macbride were confused, and that the plant they had in mind as *E. poliospermus* was actually *E. nanus*. Cronquist (1947) feels that *E. latus* is most closely related to *E. nanus*, and probably derived from it, but that *E. latus* is separated by enough features to warrant its position as a species.

2. Present legal or other formal status.

A. International: None.

B. National.

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

2. Other current formal status recommendation: Broad fleabane is ranked as "imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction" (global rank = G2) by the Natural Heritage Conservation Data Center Network (Moseley and Groves 1992).

Broad fleabane is a sensitive species for the Bureau of Land Management in Idaho (Bureau of Land Management 1991). It is also a sensitive species for the Humboldt National Forest in Region 4 of the Forest Service (Anderson *et al.* 1991; Spahr *et al.* 1991).

3. Review of past status: Broad fleabane was originally proposed for endangered status by the Smithsonian Institution when the first Federal Register list of proposed endangered plants was published on June 16, 1976. It was later considered as a category 1 candidate in the first Federal Register Notice of Review for plants (U.S. Fish and Wildlife Service 1980). It was later changed to a category 2 candidate (U.S. Fish and Wildlife Service 1983), where it remained in subsequent Notices of Review (U.S. Fish and Wildlife Service 1985; 1990). Patricia Packard (1979) prepared a status report for the U.S. Fish and Wildlife Service wherein she recommended that broad fleabane be listed as threatened or possibly endangered.

Patricia Packard reviewed the conservation status of broad fleabane for the Rare and Endangered Plants Technical Committee of the Idaho Natural Areas Council in 1977, and recommended a federal status of endangered due largely to its rarity (Packard 1977). She later changed her recommendation to threatened, because more populations had been discovered in the intervening years (Packard 1981).

In Nevada, it was recommended for federal threatened status (Mozingo and Williams 1980).

C. Idaho.

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

2. Other current formal status recommendation: Broad fleabane is currently listed as "imperiled in Idaho because of rarity or because of some other factors demonstrably making it very vulnerable to extinction" (state rank = S2) by the Idaho Conservation Data Center (Moseley and Groves 1992).

Since it is a federal candidate species, no Idaho Native Plant Society category applies to broad fleabane (Idaho Native Plant Society 1993).

3. Review of Past status: None.

D. Nevada

1. Present designated or proposed legal protection or regulation: None.

2. Other current formal status recommendation: Broad fleabane is currently listed as "critically imperiled due to extreme rarity, imminent threats, or biological factors" (state rank = S1) by the Nevada Natural Heritage Program (Morefield and Knight 1991).

The Northern Nevada Native Plant Society has placed broad fleabane on its 'Watch' list. This category is reserved for "potentially vulnerable taxa in need of monitoring or further data to determine status" (Morefield and Knight 1991).

3. Review of Past status: None.

3. Description.

A. General nontechnical description: Broad fleabane is a finely glandular and sparsely pubescent, perennial herb 1.2 to 3.2 inches high from a stout root-stock. The leaves are coarsely hairy and glandular with the basal leaves being oblanceolate to spatulate and up to 2.4 inches long. The stem leaves are much smaller and linear, or may be absent. The flowering heads are borne singly and are 0.3 to 1 inch broad. The involucre bracts are densely glandular, coarsely hairy, and have a brown midrib and purplish tip. The ray flowers are light purple or pink and number 15 to 25 (Mozingo and Williams 1980). See Appendix 2 for a line drawing of broad fleabane and Appendix 5 for color slides of its habit and habitat.

B. Technical Description: Perennial herb with a taproot and stout branched caudex; stem 3-8 cm high, finely glandular, and sparsely hirsute with coarse spreading hairs; leaf surfaces finely glandular-hirtellous and coarsely hirsute in varying proportions; leaf margins coarsely ciliate toward the base with stiff hairs over 1 mm long; basal leaves oblanceolate to spatulate, rounded to acute at the apex, up to 6 cm long and 6 mm wide; cauline leaves inconspicuous and linear, or absent; heads large, solitary, turbinate, the disk 10-20 mm broad; involucre 8-10 mm high, finely and densely glandular, and sparsely or moderately hispid-hirsute with long coarse hairs well over 1 mm long; phyllaries subequal or slightly imbricate, with brown midrib, yellowish or greenish borders, and

attenuate-acuminate purplish tips; the outermost sometimes like the others, sometimes narrower and shorter; ligules about 15-25, light purple to pink, 7-10 mm long, 1.5-2.2 mm wide; disk-corollas about 4.7-6.0 mm long, the tube 1.1-1.7 mm, the lobes 0.7-0.9 mm; style appendages a little narrower than deltoid, acute, 0.2-0.35 mm long; pappus essentially simple, of about 20-27 coarse firm bristles; achenes 2-nerved, occasionally 3-nerved, hirsute when young, becoming nearly glabrous (Cronquist 1947).

C. Local field characters: The most distinctive features of broad fleabane are the large pink-rayed heads, nearly leafless stems, relatively large basal leaves, and the glandular nature of the rather coarse spreading pubescence (Mozingo and Williams 1980). The leaves of broad fleabane are broader and have coarser, stiffer pubescence than any other *Erigeron* in Owyhee County. The large, pink-rayed head is also distinctive for the area. Other *Erigerons* occurring within the range of broad fleabane in Idaho, include *E. disparipilus*, *E. pumilus*, *E. compositus*, and *E. bloomeri*. Broad fleabane has been confused with *E. nanus*, with which it is closely related. The two species are not sympatric, with *E. nanus* occurring in mesic sagebrush habitats at relatively high elevations in the mountains of eastern Idaho and adjacent portions of Wyoming and Utah. It occurs west to the Albion Mountains in Cassia County, Idaho. In Idaho, broad fleabane is restricted to volcanic scablands of the Owyhee Plateau.

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 related species.

E. Photographs and/or line drawings: An original line drawing of broad fleabane appears in Mozingo and Williams (1980), with reproductions appearing in DeBolt and Rosentreter (1988), Anderson *et al.* (1991), and Spahr *et al.* (1991). See Appendix 2 for a reproduction of the line drawing from Mozingo and Williams (1980). Photographs of broad fleabane and its habitat in Nevada appear in Anderson *et al.* (1991). The slide collection of the Idaho Conservation Data Center contain photographs of broad fleabane and its habitat in Idaho. Several have been reproduced in Appendix 5.

4. Significance.

A. Natural: None known.

B. Human: None known.

5. Geographical distribution.

A. Geographical range: Broad fleabane is endemic to the Owyhee Desert Section of the Great Basin Division (Cronquist *et al.* 1972). It is currently known from Owyhee County, Idaho, and at least three populations in northern Elko County, Nevada (Tiehm 1984). One Idaho population (017) occurs within a few meters of Malheur County, Oregon, and we are confident that it will eventually be found in that state as well. In Idaho, most of the populations occur in western Owyhee County, with three disjunct sites in the southeastern corner of Owyhee County and adjacent Twin Falls County.

B. Precise occurrences in Idaho.

1. Populations currently or recently known extant: Thirty-nine of the 41 occurrences of broad fleabane known from Idaho, have been observed since 1987 (some occurrences contain greater than one population). Nineteen of these occurrences were discovered in 1992. See Appendix 4 for occurrence records from the Conservation Data Center data base for broad fleabane in Idaho. All records, except occurrences 004 and 009, are considered extant. Among other things, these records contain: (1) county of occurrence, (2) latitude and longitude, (2) township, range, and section, and (4) the date the occurrence was first observed and last observed.

APPENDIX 4 IS NOT INCLUDED ON THE CDC HOME PAGE VERSION OF THIS REPORT

2. Populations known or assumed extirpated: None.

3. Historically known populations where current status not known: Broad fleabane occurrences 004 and 009 (see Appendix 4) have vague location information and we were not able to relocate these populations in 1992. Occurrence 004, last seen in 1975, occurs in rugged country on the southern slopes of Juniper Mountain. It is likely that this occurrence still exists. The status of occurrence 009 is unknown.

4. Locations not yet investigated believed likely to support additional natural populations: For the most part, recent survey work has delineated the range of broad fleabane in Idaho. Other populations will undoubtedly be discovered in the future as more floristic inventories are conducted in this rugged and relatively inaccessible area. The west side of the South Fork Owyhee River drainage has not been systematically surveyed for this species, and is a likely place to search for additional populations. Also, there is a large gap between the eastern and western Owyhee County populations of broad fleabane. More populations may be found in this area as well. Occurrence 017 is very close to the Oregon border where abundant suitable habitat occurs. We believe that it will eventually be discovered in that state.

5. Reports having ambiguous or incomplete locality information: Occurrences 004 and 009 (Appendix 4) are based on collections having vague location information. We were not able to find either occurrence in 1992 (see I.5.B.3).

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

C. Biogeographical and phylogenetic history: In their discussion of the plant geography of the Intermountain area, Cronquist *et al.* (1972) specifically mention broad fleabane as one of the strict endemics to the Owyhee Desert Section of the Great Floristic Division. Cronquist (1947) believes that broad fleabane is closely related to and derived from *E. nanus*. Similar to broad fleabane, *E. nanus* is also a regional endemic, occurring in southeastern Idaho and adjacent portions of Utah and Wyoming. The two species are allopatric.

6. General environment and habitat description.

A. Concise statement of general environment: In Idaho, broad fleabane occurs on flat to gently sloping scabland sites, where very shallow, gravelly soil, occurs over volcanic bedrock. These site

have low plant cover and contrast sharply with the denser vegetation of the surrounding *Artemisia arbuscula*, *A. tridentata*, or *Juniperus occidentalis* communities. Precipitation falls almost entirely in late fall, winter, and spring, with summer and early fall being very droughty. Water does perch on broad fleabane habitats, due to the shallow, impermeable bedrock, but dries soon after the rains quit in the spring. Elevations range from 4700 feet to 5800 feet.

B. Physical characteristics.

1. Climate.

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

b. Regional macroclimate: Climatic records are available for Grasmere (Station No. 10-3809), for the years 1962 -1972 (Johnson 1978). Grasmere is located in south-central Owyhee County at T12S, R5E, at 5130 feet elevation. It is located nearly at the center of the Idaho populations of broad fleabane. Mean annual temperature for Grasmere is 49.03°F (8.46°C) and the mean annual precipitation is 8.24 inches (209.3 mm). The annual temperature range for Grasmere averages between 27.98°F (-2.23°C) to 68.26°F (20.14°C), with highest temperatures occurring in July and the lowest in December. Mean annual precipitation peaks in late spring (May and June) with approximately 40% of the total annual precipitation. The rest of the year is considerably drier with all mean monthly precipitation averages less than 0.75 inch (190 mm).

c. Local microclimate: Little is known about the microclimate of broad fleabane habitats. Water perches on the impermeable bedrock in the spring, creating saturated soils. The soils have low water holding capacity, however, and dry rapidly after the rain stops in late spring. The habitats are very open and no shade is provided by associated species, so broad fleabane is subjected to full sunlight throughout the day.

2. Air and water quality requirements: Unknown.

3. Physiographic provinces: In Idaho, broad fleabane occurs in the Owyhee Uplands section of the Columbia Intermontane Province (Ross and Savage 1967).

4. Physiographic and topographic characteristics: Broad fleabane occurs on flat to gently sloping sites of all aspects. Its known elevational range is from about 4700 to 5800 feet and is absent from nearby higher elevations in the Owyhee Mountains.

5. Edaphic factors: The Owyhee Upland area consists of a series of undifferentiated silicic volcanic rocks overlying granitic rocks of Cretaceous age. These volcanic rocks were first extruded in the Lower to Middle Miocene. The last stage of volcanism occurred in Pliocene time. Rhyolite, latite and silicic welded ash-flow tuffs comprise most of the upland, with patches of younger basalt distributed irregularly over the surface. The relatively flat surface of the lava plateau, has a number of deeply incised canyons, and is locally interrupted by isolated mountainous ridges such as South Mountain (Asher 1968; Bennett and Galbraith 1975).

Most of the known broad fleabane occurrences occur on rhyolitic tuff. All sites have thin gravelly soil of this rhyolitic bedrock.

6. Dependence of this taxon on natural disturbance: Generally unknown. Broad fleabane occurs in very open sites with shallow, gravelly soils occurring over bedrock. These habitats are naturally open. Natural disturbance, on a short time scale, is not important in keeping these habitats open.

7. Other unusual physical features: None known.

C. Biological characteristics.

1. Vegetation physiognomy and community structure: Nearly all populations of broad fleabane occur in very open, low-growing vegetation, within a matrix of more densely vegetated communities. Surrounding communities include the *Artemisia arbuscula/Festuca idahoensis* and *Artemisia tridentata* ssp. *vaseyana/Festuca idahoensis* habitat types (Hironaka *et al.* 1983) and the undescribed *Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis* association. The vegetation of broad fleabane habitats is very low in stature, nearly as low as broad fleabane itself, although a few low-growing shrubs occasionally occur as widely scattered individuals.

2. Regional vegetation type: Kuchler (1964) places the Owyhee Uplands in the Sagebrush-steppe potential vegetation type.

3. Frequently associated species: Common associates include *Sitanion hystrix*, *Bromus tectorum*, *Ranunculus andersonii*, *Penstemon gairdneri*, *Zigadenus venenosus*, *Poa secunda*, *E. bloomeri*, *Haplopappus stenophyllus*, *Eriogonum caespitosus*, *Antennaria dimorpha*, *Festuca idahoensis*, *Agropyron spicatum*, *Phoenicaulis cheiranthoides*, and *Mimulus nanus*. Shrubs that occasionally occur with broad fleabane, include *Purshia tridentata*, *Artemisia arbuscula*, *Juniperus occidentalis*, and *Chrysothamnus nauseosus*.

4. Dominance and frequency: Broad fleabane can be locally abundant, but is not a dominant species because of its overall scattered distribution and low cover. The frequency of its occurrence in a community is generally variable, from small, dense clusters to very widely separated and scattered individuals.

5. Successional phenomena: Broad fleabane is restricted to very open habitats and is probably a poor competitor. These sites remain open because bedrock is very close to the surface. It is not clear whether or not the more-densely vegetated communities that surround these sites are invading broad fleabane habitat. If this is occurring it is at a very slow rate, and probably not a factor in controlling the distribution and abundance of broad fleabane except over the very long term.

6. Dependence on dynamic biotic features: None known and probably not a factor.

7. Other endangered species: In Idaho, no federally listed plants occur in the range of broad fleabane. Several other candidate species are known from Owyhee County, but only one, *Astragalus yoder-williamsii*, has a range overlapping that of broad fleabane.

A number of state rare species occur within the range of broad fleabane, including *Artemisia packardiae*, *Astragalus conjunctus*, *A. salmonis*, *Dimeresia howellii*, *Gymnosteris nudicaulis*, *G. parvula*, *Haplopappus uniflorus* var. *linearis*, and *Lupinus lepidus* var. *sellulus*. Several of these species may occur proximate to broad fleabane, but none were ever observed directly sympatric with it.

7. Population biology.

A. General summary: In Idaho, broad fleabane is known from forty-one occurrences, many comprised of greater than one population. More populations are expected to be discovered as the rugged Owyhee Plateau of Owyhee County is further explored. At least three populations, of unknown size, occur in northern Nevada. The Idaho populations vary from being small and isolated, to groups discontinuous over several miles that can be viewed as a metapopulation (= a system of multiple separate populations, interconnected by a small amount of dispersal; see Murphy *et al.* 1990). Of the 41 occurrences, 39 have been revisited or discovered since 1987. Although population estimates have not been made for every population, many tens of thousands of plants are known. Population sizes range from a less than 100 plants to around 30,000 (Spencer Camp, occurrence 038, Appendix 4).

B. Demography.

1. Known populations: Very little is known of the population demography of broad fleabane. We did not observe any seedlings, but this may be an artifact of our inability to see them or the timing of our survey instead of a reflection on their abundance in the population. Individual plants were generally widely scattered or they occurred in small clumps, which were also well-spaced from each other. We had no way of estimating the age of individuals plants.

2. Demographic details: Demographic information specific to each of the 41 known occurrences appears in Appendix 4. If known, the occurrence records in Appendix 4 contain the following types of demographic information: (1) location, (2) area, (3) number and size of plants, (4) density, (5) presence of dispersed seeds, (6) evidence of reproduction, (7) evidence of expansion or contraction. Please note: in many cases, the "Area" amount given for an occurrence is for the size of the metapopulation and may include habitat unsuitable for broad fleabane, but which connects separate clusters or subpopulations.

C. Phenology.

1. Patterns: Flowering occurs from late April, possibly into early June, depending on spring climatic patterns. Seeds have generally dispersed by early July, and plants are senescent by early August.

2. Relation to climate and microclimate: Details unknown, but during sunny and warm springs, broad fleabane flowers earlier than ones that are cloudy and raining. This in turn affects the timing of seed dispersal.

D. Reproductive ecology.

1. Type of reproduction: Apparently by seed only.

2. Pollination.

a. Mechanisms: Unknown, but probably flying insects.

b. Specific known pollinators: Unknown, we observed butterflies visiting broad fleabane flowers.

c. Other suspected pollinators: Unknown.

d. Vulnerability of pollinators: Unknown.

3. Seed dispersal.

a. General mechanisms: The relatively large achene of broad fleabane has a pappus that remains attached and expands at maturity, providing greater surface area to catch wind currents.

b. Specific agents: Wind and gravity probably play the largest role, although insect, small mammal, and bird agents may also be important.

c. Vulnerability of dispersal agents and mechanisms: Unknown.

d. Dispersal patterns: Specific details are unknown. The pappus facilitates wind transport, but the dispersal distance is not known.

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: No data exists from which to even speculate about the reproductive success of broad fleabane.

8. Population ecology of the taxon.

A. General summary: In Idaho, the majority of populations occur in bare, scabland sites within *Artemisia arbuscula* and *Juniperus occidentalis* habitats. Within these habitats it generally occurs in low densities. Individual population range in size from a few square meters in isolated locations supporting around 100 individuals to groups of populations (a metapopulation) scattered over a few square miles with at least 30,000 individuals. We observed only well established plants, mostly in flower in 1992. The mature plants occurred in a wide range of sizes, possibly indicating a well distributed age class structure. No seedlings were observed.

Most populations have been disturbed to some degree by livestock grazing and to a lesser extent by other activities such as roads and wood cutting operations. It is unknown if these disturbances have caused any population to decline. All populations observed since 1987 appear to be vigorous and stable, although no multi-year monitoring data exist for any populations.

B. Positive and neutral interactions: None known.

C. Negative interactions.

1. Herbivores, predators, pests, parasites and diseases: No quantified information is available, and for the most part these affects are unknown for broad fleabane.

Grazing livestock may trample, uproot, or even occasionally eat broad fleabane plants, but the community is very open with very little forage. Because of this, livestock generally trail through the populations, but do not spend much time grazing the sites. Other activities associated with livestock grazing, such as road and water developments, destroy habitat and has a greater effect on populations than grazing.

2. Competition.

a. Intraspecific: Unknown. Plants are generally well spaced. This hints that intraspecific competition may be limiting population density.

b. Interspecific: The communities are very open and broad fleabane is usually not found growing close to other plants of any species. This indicates to us that it does not tolerate interspecific competition.

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

D. Hybridization.

1. Naturally occurring: Unknown. No other *Erigeron* species occupies the same habitat as broad fleabane. Although several congeneric species occupy adjacent habitats, no hybridization was observed and none has been reported.

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: Populations of broad fleabane in Idaho, occur on Bureau of Land Management (BLM), State, and private land. It occurs on the Owyhee, Jarbidge, and Bruneau Resource Areas of the Boise District, BLM. The state land is managed by the Department of Lands.

B. Specific landowners: The ownership of the 41 occurrences known from Idaho, is as follows (see Appendix 4 for more information on each occurrence):

Occ. #	Ownership
001	Boise District BLM, Bruneau RA.
002	Boise District BLM, Jarbidge RA, and private land.
003	Boise District BLM, Bruneau RA.
004	Boise District BLM, Jarbidge RA, or private land.
005	Boise District BLM, Owyhee RA, and state land.
006	Boise District BLM, Owyhee RA.
007	Boise District BLM, Owyhee RA.
008	Boise District BLM, Owyhee RA.
009	Boise District BLM, Owyhee RA.
010	Boise District BLM, Owyhee RA.
011	Boise District BLM, Owyhee RA.
012	Boise District BLM, Owyhee RA.
013	Boise District BLM, Owyhee RA.
014	Boise District BLM, Owyhee RA.
015	Boise District BLM, Owyhee RA.
016	Boise District BLM, Owyhee RA, or private land.
017	Boise District BLM, Owyhee RA.
018	Boise District BLM, Bruneau RA.
019	Boise District BLM, Bruneau RA; state land; and private land.
020	Boise District BLM, Bruneau RA, and private land.
021	Boise District BLM, Owyhee RA.
022	Boise District BLM, Owyhee RA.

- 023 Boise District BLM, Owyhee RA.
- 024 Boise District BLM, Owyhee RA, possibly extending onto state land.
- 025 Private land.
- 026 State land.
- 027 Boise District BLM, Owyhee RA.
- 028 Boise District BLM, Jarbidge RA.
- 029 Private land.
- 030 Private land.
- 031 Boise District BLM, Owyhee RA.
- 032 Boise District BLM, Owyhee RA.
- 033 Boise District BLM, Bruneau RA.
- 034 Boise District BLM, Bruneau RA; state land; and private land.
- 035 Boise District BLM, Owyhee RA.
- 036 Boise District BLM, Owyhee RA.
- 037 State land.
- 038 Boise District BLM, Bruneau RA.
- 039 Boise District BLM, Owyhee RA.
- 040 Boise District BLM, Owyhee RA.
- 041 Boise District BLM, Owyhee RA.

C. Management responsibility: Same as above.

D. Easements, conservation restrictions, etc.: Six occurrences (006, 007, 011, 019, 039, 040) are entirely or partially within the Owyhee River Bighorn Sheep Habitat Area of Critical Environmental Concern. The Area of Critical Environmental Concern (ACEC) is a long, narrow, specially-designated area along the Owyhee River and tributaries, largely encompassing the canyon. It was designated to protect bighorn sheep habitat and inadvertently included the broad fleabane populations. Two occurrences (011 and 013) occur within a portion of the Owyhee River Bighorn Sheep Habitat ACEC that has also been proposed as The Tules Research Natural Area (RNA; Hilty and Moseley 1991). It has yet to be officially designated as a RNA by the BLM, but eventually will provide somewhat greater protection than that afforded by an ACEC. One occurrence (012) occurs with The Badlands proposed RNA/ACEC (Hilty and Moseley 1991).

10. Management practices and experience.

A. Habitat management.

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

a. This taxon: Livestock grazing has been the dominant land-use practice both past and present for most of the land supporting broad fleabane in Idaho. Roads to support this practice have been constructed through broad fleabane populations in the past.

b. Related taxa: Unknown.

c. Other ecologically similar taxa: Unknown.

2. Performance under changed conditions: The only management practice that clearly is detrimental to broad fleabane populations is the outright destruction of the habitat by road, pipeline, bombing targets and facilities, or other construction activities. Livestock grazing has minimal direct impact on the populations.

3. Current management policies and actions: Livestock grazing occurs throughout the range of broad fleabane in Idaho, including associated activities such as water development projects, fencing and roads. Mining, wood cutting and recreational activities also occur within or near several populations.

4. Future land use: All of the present land uses of areas supporting broad fleabane are expected to continue. In addition, the species range includes an area proposed for an U.S. Air Force bombing range. The ultimate outcome of this proposal is currently uncertain.

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: Roger Rosentreter, Botanist for the Idaho State Office, BLM, and Ann Debolt, Botanist for the Boise District, BLM, have a few plants growing at their home in Boise, Idaho.

11. Evidence of threats to survival.

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

1. Past threats: Livestock grazing and associated development activities has occurred throughout the range of broad fleabane in Idaho. Because forage values are low in broad fleabane habitats, trampling is the most serious direct affect of grazing as the livestock trail through the sites. This is not a serious threat, however. Indirect affects of grazing, including roads, fencing, and water development projects have caused some habitat decline.

2. Existing threats: Threats outlined in the above section continue.

3. Potential threats: It is anticipated that livestock grazing and its associated activities will continue as the dominant land use throughout the range of broad fleabane in Idaho. Part of the range of broad fleabane, including some of the largest populations, are in the U.S. Air Force's proposed Big Springs Bombing Range area. The ultimate outcome of the proposal is presently unknown and its effects on broad fleabane are also unknown, but could potentially be serious for certain populations.

B. Overutilization 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:** Several populations contain too few individuals to justify collecting even for scientific purposes.

C. Disease, predation, or grazing.

- 1. Past threats:** No past disease or predation threats are known. Past threats posed by grazing have been discussed in previous sections.
- 2. Existing threats:** No disease or predation problems have been documented for broad fleabane. Threats posed by grazing have been discussed in several previous sections.
- 3. Potential threats:** Disease and predation threats are considered minimal for broad fleabane in Idaho. The potential threats of grazing have been discussed in previous sections.

D. Inadequacy of existing regulatory mechanisms.

- 1. Past threats:** None known.
- 2. Existing threats:** The viability of broad fleabane is not threatened by inadequate regulatory mechanisms.
- 3. Potential threats:** None foreseen.

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 of vigor, trends, and status: In Idaho, 41 occurrences of broad fleabane are known from Owyhee County and extreme western Twin Falls County. The size of Idaho occurrences range from less than 100 to at least 30,000 individuals, and may occupy less than one acre to several square miles in extent. Most of the area occupied by large populations does not support broad fleabane, instead they are comprised of separated clusters or subpopulations. Data from the various inventories that have been conducted for broad fleabane indicate that it occurs almost everywhere that there is suitable habitat. Density within the populations is generally low, but populations appear vigorous. Although we saw no seedlings in 1992, the age structure of the mature

component of the population appeared well distributed (using size of plants as an indication of age).

Livestock grazing does not directly threaten broad fleabane populations, although habitat destruction by related roads and water developments has occurred to a small degree. The proposed Big Springs Bombing Range may have an impact on the viability of certain populations in the Dickshooter Ridge area. Broad fleabane is locally common, and the populations are well distributed across southwestern Idaho. Based on geographic and biological considerations, the long-term viability of the species in Idaho appears good.

13. Recommendations for listing or status change.

A. Recommendations to the U.S. Fish and Wildlife Service: Broad fleabane is presently a Category 2 species with the U.S. Fish and Wildlife Service (1990). Based on recent field surveys conducted by the Conservation Data Center for the U.S. Fish and Wildlife Service, Science Application International Corporation (SAIC) as part of their biological inventory of the proposed Big Springs Bombing Range, and the Boise District BLM's previous and ongoing survey work, our knowledge of the distribution and conservation status of broad fleabane is relatively well known. Undoubtedly, more populations of broad fleabane will be found as more inventories are conducted.

Based on the population, distribution and threat-related information presented in this report, it is our assessment that broad fleabane does not require listing as threatened or endangered for its long-term conservation. We recommend that it be changed from a category 2 to category 3c candidate.

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

1. Bureau of Land Management: The Boise District, BLM, manages nearly all of the known global distribution of broad fleabane. So, even though we do not feel it should be federally listed, we recommend that it remain a BLM Sensitive Species for Idaho. The BLM should continue sensitive plant clearance work in project areas known or suspected to support broad fleabane populations and report those locations to the Conservation Data Center. It should also minimize impacts to populations of this narrowly distributed species.

C. Other status recommendations.

1. Counties and local areas: No recommendations.

2. State: Currently, broad fleabane has a global rank of G2 established by the Natural Heritage Conservation Data Center Network and S2 for Idaho by the Idaho Conservation Data Center (Moseley and Groves 1992). Based on data presented here, the global rank will be changed to G3 and the state rank to S3. The Conservation Data Center of the Idaho Department of Fish and Game will continue to track the distribution and status of broad fleabane populations in order to monitor long-term viability trends.

The Idaho Native Plant Society does not place candidate taxa in any state conservation category. When the status of broad fleabane is changed to 3c, we recommend that it be placed in the Monitor category (Moseley and Groves 1992; Idaho Native Plant Society 1993).

3. Other Nations: Populations of broad fleabane may occur on the Duck Valley Indian Reservation. The Western Shoshone Tribe should be informed of this possibility and should report all locations to the Conservation Data Center for entry into their comprehensive data base on rare Idaho species.

4. International: No recommendations.

14. Recommended critical habitat:

A. Concise statement of recommended critical habitat. No critical habitat is recommended.

B. Legal Description of boundaries: Not applicable.

C. Latitude and longitude: Not applicable.

D. Publicity/sensitivity of critical habitat area: Not applicable.

15. Conservation/recovery recommendations.

A. General conservation recommendations.

1. Recommendations regarding present or anticipated activities: Because the Boise District BLM manages nearly all broad fleabane habitat, they should continue sensitive plant clearances in project areas known or suspected to support broad fleabane populations and minimize impacts to populations of this narrowly distributed species.

2. Areas recommended for protection: No populations are recommended for protection at this time.

3. Habitat management recommendations: No direct habitat manipulation of habitat containing broad fleabane is recommended.

4. Publicity sensitivity: Moderate.

5. Other recommendations: None.

B. Monitoring activities and further studies recommended: We do not recommend any quantitative monitoring at this time. Populations should occasionally be monitored by the BLM to determine the overall trend of this narrow endemic. The Idaho Conservation Data Center will continue to track location, population, and habitat data for broad fleabane in its data base.

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III. Information Sources.

17. Sources of information.

A. Publications.

- 1. References cited in report:** See Appendix 1.
- 2. Other pertinent publications.**

a. Technical: None.

b. Popular: None.

B. Herbaria consulted: At least four comprehensive herbarium searches have taken place for rare species in the last two decades (Johnson and Steele 1974; Rare and Endangered Plants Technical Committee 1977; 1981; Moseley 1990). Based on data from these searches and from recent field inventories, specimens of broad fleabane from Idaho are known to be deposited in herbaria at the University of Washington (WTU), New York Botanical Garden (NY), Utah State University (UTC), University of Nevada Reno (RENO), University of Idaho (ID), Missouri Botanical Garden (MO), Rocky Mountain Herbarium (RM), University of Minnesota (MIN), U.S. National Herbarium (US), Albertson College of Idaho (CIC), and Boise District, Bureau of Land Management (BOISE BLM) (herbarium abbreviations are from Holmgren *et al.* 1990, and Moseley 1990). Known herbarium specimens for each occurrence are indicated in the "Specimens" field of the occurrence records in Appendix 4.

C. Fieldwork: BLM botanists have periodically searched for broad fleabane in southwestern Idaho since the mid-1970's (Eidemiller 1977; Rosentreter 1980; 1985; 1986). In 1992, botanists for SAIC conducted extensive surveys for this species as part of their biological inventory in the Air Force's proposed Big Springs Bombing Range. During May and June, 1992, botanists from the Idaho Conservation Data Center conducted an extensive field investigation as part of this Section 6 Status Survey.

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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 many unpublished references pertaining to broad fleabane in Idaho are on file at the Idaho Conservation Data Center office in Boise, Idaho.

IV. Authorship.

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20. Maintenance of status report: The Idaho Conservation Data Center and Nevada Natural Heritage Program will maintain current information for their respective states. The Idaho Conservation Data Center will update the status report for Idaho as needed. Should broad fleabane be listed as a threatened or endangered species by the U.S. Fish and Wildlife Service, the Boise Field Office of the Service should maintain the primary file on information, encourage others to provide new information, and distribute new findings to the interested parties (see Section II.16.).

V. New information.

21. Record of revisions: This is a revision of Packard's (1979) original status report.

APPENDIX 1

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Appendix 2

Line drawing of *Erigeron latus*.
(From Mozingo and Williams 1980)

Appendix 3

Locations of *Erigeron latus*
populations in Idaho.

Note: The number in parentheses refers to the occurrence number of *Erigeron latus* in the Conservation Data Center's data base.

NOT INCLUDED IN THE CDC HOME PAGE VERSION OF THIS REPORT

Appendix 4

Occurrence records for *Erigeron latus*
populations in Idaho.

Appendix 5

Slides of *Erigeron latus* and its habitat.

- Slide 1. Close-up of plant. Note relatively large flowering head, sparse pubescence of long, stiff hairs, and folded spatulate leaves.
- Slide 2. Another view of habit.
- Slide 3. Close-up of broad fleabane habitat. Note open, rhyolitic scree on a relatively level area, with few associated species.
- Slide 4. Overview of habitat. Broad fleabane occurs in the barren openings of this *Juniperus occidentalis*/*Artemisia arbuscula*/*Festuca idahoensis* community.