

REPORT ON THE CONSERVATION STATUS OF
TAUSCHIA TENUISSIMA IN IDAHO

by

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March 1990

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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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Taxon name: Tauschia tenuissima (Geyer ex
Hook.) Math. & Const.

Common name: Leiberg's tauschia

Family: Apiaceae (Umbelliferae)

States where taxon occurs: U.S.A.; Idaho and Washington

Current Federal Status: Category 3c

Recommended Federal Status: Category 3c

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Original date of report: 19 March 1990

Date of most recent revision: N/A

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ABSTRACT

Leiberg's *tauschia* (*Tauschia tenuissima*) is an inconspicuous, early spring perennial and a regional endemic to northern Idaho and possibly northeastern Washington. It is considered extirpated in Washington. In Idaho, Leiberg's *tauschia* occurs in meadows within Benewah, Latah, Shoshone, and Clearwater Counties. The majority of these populations are located in private meadows, often surrounded by National Forest. Five populations occurred on lands administered by the Clearwater National Forest.

A status inventory for Leiberg's *tauschia* in Idaho, was conducted by the Idaho Department of Fish and Game's Natural Heritage Program during the spring of 1989. Presently, a total of 30 populations from 27 sites are documented for Leiberg's *tauschia* in Idaho. During the 1989 field season, 21 new populations were located, one historical site was relocated, and at least five sites are now considered extirpated. Within its limited distributional range the species is abundant. Most populations observed this year consisted of greater than 10,000 individuals and comprised a total coverage of several hundred acres.

Although a range reduction due to land conversion has been documented, no significant threats presently exist to the long-term viability of the species. Moreover, recent data indicates that Leiberg's *tauschia* is extensive and locally abundant within its range. Based on these data, it is recommended that Leiberg's *tauschia* be maintained as a Category 3c by the U.S. Fish and Wildlife Service.

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I. Species Information.

1. Classification and nomenclature.

A. Species.

1. Scientific name.

a. Binomial: Tauschia tenuissima (Geyer ex Hook.)
Math. & Const.

b. Full bibliographic citation: Mathias, M.E. and L. Constance. 1973.
Another look at Leibergia Coult. & Rose
(Umbelliferae). Madrono 22:71-73

c. Type specimen: Leiberg 1027, Santianna Creek
bottoms, Coeur d'Alene Mts., Idaho, 950 m, 24
June 1895.

2. Pertinent synonym(s):

Lomatium orogenioides Mathias
Peucedanum tenuissimum Geyer
Leibergia orogenioides Coult. & Rose
Cogswellia orogenioides M.E. Jones

3. Common name(s): Leiberg's tauschia

4. Taxon codes: PDAPI27090 (Idaho and Washington Natural
Heritage Programs).

5. Size of genus: A fairly small genus of about two dozen species native
to western North America and Central America (Cronquist 1961).
Schlessman and Gilmartin (1979) note that most of the species of
Tauschia are native to the highlands of Mexico, and only three are
found in the Pacific Northwest.

B. Family classification.

1. Family name: Apiaceae

2. Pertinent family synonyms: Umbelliferae

3. Common name(s) for family: Parsley or Carrot

C. Major plant group: Dicotyledonea (Class Magnoliopsida)

D. History of knowledge of taxon: This taxon was
originally described by W.J. Hooker in 1847. After much confusion
about the taxonomy and proper generic placement of Leiberg's tauschia,
Mathias and Constance (1973) placed this taxon into the genus Tauschia
and gave precedence to the specific epithet tenuissimum.

Until recently, Leiberg's tauschia was known in Idaho from ten extant
populations, three sites that were believed to be extirpated, and two
historical sites dating back to the 1930's.

In Washington, it apparently occurred very locally in the northeastern
portion of the state from just south of Spokane to the Pullman area.
Reports indicate that Leiberg's tauschia has not been collected in
Washington since 1916, when Wilhelm Suksdorf found it along Latah Creek
near Spangle, in Spokane County (Schlessman and Gilmartin 1979). It is
now considered extirpated in Washington (Washington Natural Heritage
Program 1990).

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: Leiberg's tauschia is a Category 3c (U.S. Fish and Wildlife Service 1990).
2. Other current formal status recommendation: Since Leiberg's tauschia is considered extirpated in Washington, as are several historically-known populations in Idaho, the taxon was again proposed as a Category 2 Candidate species at the annual Idaho Rare Plant Conference (Idaho Native Plant Society 1989).

Leiberg's tauschia is currently ranked as "imperiled throughout its range because of rarity or because of other factors making it vulnerable to extinction" (global rank = G2) by the Nature Conservancy.

Leiberg's tauschia is also listed as a Sensitive Plant Species for the St. Joe National Forest by Region 1 of the U.S. Forest Service (USDA Forest Service 1988).

3. Review of past status: In 1975, Leiberg's tauschia was listed as a proposed Category 2 Candidate species (Federal Register, 1 July 1975). By 1980, it was dropped to the status of Category 3c (Federal Register, 15 December 1980).

C. State.

1. Idaho.

- a. Present designation or proposed legal protection or regulation: None.
- b. Other current formal status recommendation: Leiberg's tauschia is currently listed as "imperiled in Idaho because of rarity or because of other factors making it vulnerable to extirpation" (state rank = S2) by the Idaho Natural Heritage Program.

The Idaho Native Plant Society lists this species as Priority 2, which include taxa "likely to be classified as a Priority 1 species, that is in danger of becoming extinct or extirpated from Idaho (Idaho Native Plant Society 1989).

- c. Review of Past status: Brunsfeld (1981) placed Leiberg's tauschia on the Federal Watch List, mostly because of its rarity in the state.

2. Washington.

- a. Present designated or proposed legal protection or regulation: None.
- b. Other current formal status recommendation: Leiberg's tauschia is considered extirpated from the state by the Washington Natural Heritage Program (1987).
- c. Review of past status: The Washington Natural Heritage Program (1981) listed Leiberg's tauschia as Threatened in Washington.

3. Description.

- A. General nontechnical description: Leiberg's *tauschia* is a rather inconspicuous perennial herb from a roundish root. The flowers are small, white- to cream-colored and arranged in irregular umbels. Flowering occurs in early spring (April) often when the plant is only 3 mm tall. As the season continues (through May) the flower stems eventually elongate up to about 1.5 dm. The leaves are few and dissected into few very narrow, filiform segments. The fruits are somewhat elliptic and lacking side wings (see Appendix II for line drawings).
- B. Technical Description: Slender perennial herb from a subglobose tuber, about 1 cm thick; plants glabrous, acaulescent, blooming when only 3-10 cm tall, then elongating up to 3 dm.; leaves few, ternately or pinnately cleft into 3-13 narrowly linear or filiform segments up to 5 cm long and 1.5 mm wide, very slender petiole; flowers white to creamy; rays of the umbel mostly 4-8, elongating unequally with longer ones 5-15 cm long at maturity; bractlets of the involucre inconspicuous, linear or lanceolate, 1-3 mm long; pedicels very short, 0.5-3 mm. only; each umbellet commonly producing 1-6 fruits; fruits linear, 6-10 mm. long, 1-1.5 mm. thick, quadrangle or subterete, lateral wings obsolete; oil tubes small, solitary in the intervals, 2 on the commissure (Cronquist 1961, Mathias and Constance 1973).
- C. Local field characters: The most distinctive features of this species are its early flowering, preference for meadowy habitats, and irregular umbels. Few other cream-colored, umbellate plants are flowering in the meadows of northern Idaho in early April. Even so, the species is difficult to locate unless it is found in rather dense patches. When growing in this manner, the distinctive creamy-white flowers are possible to identify, even from a fair distance. Once up close, the open, rather diffuse inflorescence of unequal rays is quite distinguishing (see Appendix II for line drawings).

The genus *Tauschia* can easily be confused with the much larger genus *Lomatium*. Within the family Umbelliferae (Apiaceae) many of the genera and species are distinguished on the basis of characters only observable on the mature fruit. Since fruiting material is often not available, especially early in the season, careful observation is necessary to interpret these characters correctly. Fortunately, no *Lomatium* species are found flowering in these same meadowy habitats in the early spring. Later in the season when fruits are available, the mature fruits of *Lomatium* are flattened and winged, while that of *Tauschia* are cylindrical and lacks wings.

- 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: Line drawings of Leiberg's *tauschia* appear in Mathias and Constance (1973). Drawings are also found in Cronquist (1961), but occur under the name *Lomatium orogenioides*. See Appendix II for a reproduction of the line drawing from Mathias and Constance (1973). Photographs (35 mm slides) of Leiberg's *tauschia* and its habitat in Idaho are in the slide collection of the Idaho Natural Heritage Program. Several have been reproduced in Appendix III.

4. Significance.

- A. Natural: None known.
- B. Human: None known.

5. Geographical distribution.

A. Geographical range: Leiberg's *tauschia* is described as a regional endemic to northern Idaho and adjacent Washington (Cronquist 1961). The majority of the known populations in Idaho are located in meadows and river floodplains along the western edge of the Clearwater Mountains between St. Maries and Bovill, Idaho. Leiberg's *tauschia* is also known from the Palouse and Weippe Prairies of Idaho.

B. Precise occurrences in Idaho.

1. Populations currently or recently known extant: In Idaho, Leiberg's *tauschia* is documented from 30 populations at 27 sites. Included in this number are eight recently-known extant populations and one historical population that were successfully relocated in 1989. Additionally, 21 new populations at 18 sites were located during the 1989 field season (Lorain 1989).
2. Populations known or assumed extirpated: At least 5 populations of Leiberg's *tauschia* are considered to be extirpated from Idaho, by the Idaho Natural Heritage Program. A 1989 search for these populations was unsuccessful (Lorain 1989).

Reports indicate that Leiberg's *tauschia* has not been collected in Washington since 1916, when Wilhelm Suksdorf found it along Latah Creek near Spangle, in Spokane County (Schlessman and Gilmartin 1979). As of 1990 the Washington Natural Heritage Program considers this species to be extirpated from the state (Washington Natural Heritage Program 1990).

3. Historically known populations where current status not known: None.
4. Locations not yet investigated believed likely to support additional natural populations: Suitable habitat for Leiberg's *tauschia* in Idaho occurs around the Weippe Prairie, Clearwater County and perhaps in a few more northerly locations along the western front of the Kaniksu and Coeur d'Alene Mountains in Shoshone, Kootenai and possibly Bonner Counties.
5. Reports having ambiguous or incomplete locality information: The Idaho Natural Heritage Program has been unable to locate the type locality collected by Leiberg in 1895 from the "Santianna Creek bottoms, Coeur d'Alene Mts., Idaho". Nearly a century of name changes has occurred since then, and the name "Santianna Creek" was not retained over the years.
6. Locations known or suspected to be erroneous reports: None.

C. Biogeographical and phylogenetic history: Since most of the species of *Tauschia* are native to the highlands of Mexico, it has been suggested that the three Pacific Northwest species of *Tauschia* represent relics of a time when the range of this genus was wider and consisted of more species (Schlessman and Gilmartin 1979).

6. General environment and habitat description.

A. Concise statement of general environment: Leiberg's *tauschia* occupies grassy openings in moist to wet habitats. This includes meadows, river floodplains, and streambanks. Generally the areas are flat, although a few sites were found on moderate slopes with perched water tables. Elevations range between 2580 to 3200 feet. The substrates tend to be productive silt/loams (loess) or alluvium.

Some sites are known from the Palouse region, however, the best sites are presently known from areas farther east where the meadows are

surrounded by mixed coniferous forests of Abies grandis, Pseudotsuga menziesii, Pinus monticola, Larix occidentalis, and Pinus contorta. The species can even inhabit cold air drainages with scattered Abies lasiocarpa, although this is rare.

B. Physical characteristics.

1. Climate.

- a. Koppen climate classification: Habitat for Leiberg's *tauschia* in Idaho is classified as Koppen's unit BSk: semiarid climate or steppe, with an average annual temperature under 64.4° F (Trewartha and Horn 1980).
- b. Regional macroclimate: The regional macroclimate for areas that support Leiberg's *tauschia* is extrapolated from the St. Maries weather station. Mean annual temperature for St. Maries is 47.4° F (8.5°C) and the mean annual precipitation is 27.69 inches (703.4 mm). The annual temperature range for St. Maries averages between 34.8° F (1.6°C) to 59.9° F (15.5°C), with highest temperatures occurring in July and the lowest occurring in January. Mean annual precipitation peaks in the winter months (November, December, and January) with 40% of the total annual precipitation. Most of this precipitation during the winter is in the form of snow, while another 25% of the total annual precipitation occurs in the spring, mostly as rain. July and August mark the dry season when an average of less than 1 inch of precipitation occurs. The period between the last freeze of the spring and the first freeze of the fall is estimated to be 210 days (Johnson 1978).
- c. Local microclimate: All Idaho populations of Leiberg's *tauschia* occur in moist to wet meadows, river floodplains, and streambanks. These sites all receive ample spring moisture and frequent heavy snow accumulations during the winter.

2. Air and water quality requirements: Unknown

3. Physiographic provinces: Populations of Leiberg's *tauschia* lie within the Northern Idaho section of the Northern Rocky Mountain Province (Ross and Savage 1967).

4. Physiographic and topographic characteristics: Leiberg's *tauschia* populations most often occur in flat meadows or floodplains, although a few sites were found on moderate slopes with perched water tables. These sites occur on the western front of the Northern Rocky Mountains, specifically the Clearwater Mountains.

5. Edaphic factors: Leiberg's *tauschia* occurs on productive silt/loam (loess) or alluvium substrates.
 6. Dependence of this taxon on natural disturbance: Unknown, but possibly soil saturation or flooding in the early spring.
 7. Other unusual physical features: None known.
- C. Biological characteristics.
1. Vegetation physiognomy and community structure: In Idaho, Leiberg's *tauschia* populations occur within undescribed meadow and riparian communities. These habitats are dominated by various native and introduced grasses and graminoids. Numerous annual and perennial forbs also occur within these mesic communities. The best meadow populations are surrounded by mixed coniferous forest that key to the *Abies grandis* habitat types (Cooper et al. 1988).
 2. Regional vegetation type: Kuchler (1964) places this portion of Idaho in the potential vegetation type of Cedar-hemlock-pine forest (*Thuja-Tsuga-Pinus*).
 3. Frequently associated species: The commonly associated species at flowering time are mosses, *Sisyrinchium inflatum*, *Achillea millefolium*, *Collinsia parviflora*, *Potentilla gracilis*, *Ranunculus glaberrimus*, *R. orthorhynchus*, and *Fragaria virginiana*. The best indicator species of potential habitat, and a species that is easily distinguishable from a distance, is *Sisyrinchium inflatum*. Later in the season, these same habitats are often filled with *Camassia quamash*.
 4. Dominance and frequency: In Idaho, Leiberg's *tauschia* can be locally dominant in non-cultivated meadows and floodplains within the Palouse and leading western front of the Northern Rocky Mountains.
 5. Successional phenomena: The meadow communities in which Leiberg's *tauschia* occurs appear successional stable, possibly due to soil saturation in the early spring, which deters woody trees/shrubs establishment. The river floodplains are also relatively stable except for the event of periodic major flood.
 6. Dependence on dynamic biotic features: None known, but substantial moisture and/or flooding in spring is suspected.
 7. Other endangered species: None known.
7. Population biology.
- A. General summary: Leiberg's *tauschia* is known from 27 sites, consisting of 30 populations in Benewah, Shoshone, Latah and Clearwater Counties, Idaho (Appendix II). In 1989, 21 new populations were documented with 13 of these supporting over 10,000 individuals. Additionally, sizable areas of suitable habitat were located in the immediate vicinity. A single population of Leiberg's *tauschia* from Weippe Prairie (006) was extremely large, consisting of several 100,000 individuals, covering over 500 acres. Little is known about its reproductive biology.
 - B. Demography.
 1. Known populations: Thirty populations, occurring at 27 sites in Benewah, Shoshone, Latah and Clearwater Counties, Idaho: 22 populations occur along the western front of the Clearwater Mountains (007, 009, 011-014, 016, 017, and 022-034) and 5 populations are known from Weippe

Prairie and vicinity (006, 018-021). Population sizes range from less than 10 yds² to over 500 acres.

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

1. Emida/Santa Creek (024)
 - a. Location:
 - b. Area: 50 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: Moderate to High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

2. Emida/Charlie Creek (025)
 - a. Location:
 - b. Area: 2-5 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

3. St. Maries River/RR tracks (012)
 - a. Location:
 - b. Area: 2-5 acres
 - c. Number and size of plants: 10,000 plants in 1989
 - d. Density: Moderate
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: from <10 yd² to 2-5 acres

4. Santa/Renfro Creek (026)
 - a. Location:
 - b. Area: 10-100 yds²
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: Moderate
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

5. Hatton Creek/Pierce Creek (003)
 - a. Location:
 - b. Area: 50 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

6. Emerald Creek (013)
 - a. Location:
 - b. Area: 10 yds²
 - c. Number and size of plants: 11-50 plants in 1989
 - d. Density: Low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None, presence of horse grazing

7. Clarkia "Main Street" (014)
 - a. Location:
 - b. Area: 200 acres
 - c. Number and size of plants: 10,000+ plants in 1989.
 - d. Density: High

- e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
8. Fossil Bowl Racetrack (027)
- a. Location:
 - b. Area: 2-5 acres
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: Moderate to High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
9. West Fork Potlatch River (028)
- a. Location:
 - b. Area: 5 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
10. Moose Meadow (029)
- a. Location:
 - b. Area: 100 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
11. Bovill (030)
- a. Location:
 - b. Area: 100 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
12. Fry Creek (031)
- a. Location:
 - b. Area: 10-100 yd²
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: Moderate to High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
13. McGary Butte Road (034)
- a. Location:
 - b. Area: 1-2 acres
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
14. Hog Meadow/Hog Meadow Creek (009)
- a. Location:
 - b. Area: 500+ acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: Moderate to High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence

- g. Evidence of expansion/contraction: None
15. Little Boulder Campground (011)
 - a. Location:
 - b. Area: 2-5 acres
 - c. Number and size of plants: 51-100 plants in 1989
 - d. Density: Low
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
 16. FS Road #3332 (033)
 - a. Location:
 - b. Area: 10-100 yds²
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
 17. Erickson Meadows (016)
 - a. Location:
 - b. Area: 100 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
 18. Shea Meadows (032)
 - a. Location:
 - b. Area: 50 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
 19. Tee Meadows (017)
 - a. Location:
 - b. Area: 30 acres
 - c. Number and size of plants: 1001-10,000 plants in 1989
 - d. Density: Moderate to High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
 20. Vassar Meadow/Smith Meadow (023)
 - a. Location:
 - b. Area: 100 acres
 - c. Number and size of plants: 2 populations, each of 10,000 plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

21. Vassar/Stanford/Avon (022)
 - a. Location:
 - b. Area: 30 acres
 - c. Number and size of plants: 3 populations of 10,000 plants (Stanford), 51-100 plants (Vassar, and 1001-10,000 plants (Avon) in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
22. Big Bear Creek (007)
 - a. Location:
 - b. Area: 10 yds²
 - c. Number and size of plants: 1000-10,000 plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
23. Weippe Prairie (006)
 - a. Location:
 - b. Area: 500+ acres
 - c. Number and size of plants: 500,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
24. Grasshopper Creek (021)
 - a. Location:
 - b. Area: 50 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
25. Johnsons Mill (020)
 - a. Location:
 - b. Area: 30 acres
 - c. Number and size of plants: 10,000+ plants in 1989
 - d. Density: High
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
26. Battles Mill (019)
 - a. Location:
 - b. Area: 1 acre
 - c. Number and size of plants: 100-1000 plants in 1989
 - d. Density: Moderate
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None
27. Cook Creek Meadow (018)
 - a. Location:
 - b. Area: 1 acre
 - c. Number and size of plants: 101-1000 plants in 1989
 - d. Density: Moderate
 - e. Presence of dispersed seeds: Unknown
 - f. Evidence of reproduction: No evidence
 - g. Evidence of expansion/contraction: None

C. Phenology.

1. Patterns: Flowering takes place in early April, often when the plant is only 3 cm tall, and continues through May. This probably varies annually with the timing of snow melt, spring temperatures and moisture.
2. Relation to climate and microclimate: Specific details are unknown, but since Leiberg's *tauschia* occurs in areas that frequently have moderately heavy snow accumulations, phenology is probably affected by the temperature patterns and snow melt in the spring.

D. Reproductive ecology.

1. Type of reproduction: Leiberg's *tauschia* reproduces by seed.
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 unknown, but wind, water, and gravity dispersal is suspected.
 - b. Specific agents: Unknown, but probably wind, water, or gravity.
 - c. Vulnerability of dispersal agents and mechanisms: Unknown.
 - d. Dispersal patterns: Specific details unknown, but species tends to follow streams or rivers indicating water dispersal.
4. Seed biology.
 - a. Amount and variation of seed production: Specific details unknown, but Cronquist (1961) states that Leiberg's *tauschia* (listed under *Lomatium orogenioides*) has 4-8 umbel rays and each umbellet commonly producing 1-6 fruits.
 - b. Seed viability and longevity: Unknown.
 - c. Dormancy requirements: Unknown.
 - d. Germination requirements: Unknown.
 - e. Percent germination: Unknown.
5. Seedling ecology: Specific details unknown, but the seeds likely germinate very early in the spring. Since the plants flower shortly after the snow melts, it is possible the seeds actually germinate while still under the snow.
6. Survival and mortality: Unknown.
7. Overall assessment of reproductive success: Specific details unknown, however, established populations appear to be healthy and frequently form dense patches within suitable meadow habitats. Such densities

indicate that seed dispersal of Leiberg's *tauschia* is not very extensive. Effects of grazing on the survival and reproduction are unknown.

8. Population ecology of the taxon.

A. General summary: Thirty populations of Leiberg's *tauschia*, from at 27 sites, are known from Idaho. All populations occur in moist to wet meadows or river floodplains along the western edge of the Clearwater Mountains and the Weippe Prairie vicinity. Within this limited distribution the species is abundant. No herbivore, parasites, or disease damage was observed. Heavy grazing by cattle occurs at most sites, but does not appear to be detrimental to the populations. Cultivation and competition from exotic weeds pose threats to Leiberg's *tauschia* and is responsible for the extirpation of at least 4 sites.

B. Positive and neutral interactions: None known.

C. Negative interactions.

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

2. Competition.

a. Intraspecific: Possibly significant in drought years. Populations of Leiberg's *tauschia* are often quite dense and in years of low precipitation, intraspecific competition may limit recruitment of young age classes into the population.

b. Interspecific: Appears insignificant for native species because Leiberg's *tauschia* flowers so early in the spring that very few other species are present. However, interspecific competition is significant in the case of exotic weeds on disturbed sites. At least 4 sites have been extirpated due to invasion of reed canarygrass (*Phalaris arundinacea*).

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

D. Hybridization.

1. Naturally occurring: Unknown, but Schlessman and Gilmartin (1979) note that the three species of *Tauschia* found in the Pacific Northwest have distinctive habits, habitat preferences, and geographical distributions, making hybridization unlikely. *Tauschia hooveri* occurs in the scablands of central Washington and *Tauschia stricklandii* is endemic to Mt. Rainier.

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: The majority of the Leiberg's *tauschia* populations are located on privately-owned land, often a privately-owned meadow surrounded by National Forest, with Leiberg's *tauschia* more or less confined to the private meadow. Five of the populations occurred on National Forest lands; West Fork Potlatch River (009), Hog Creek (014), Little Boulder Campground (015), plus Vassar and Smith Meadows (020). All of these are on the portion of the St. Joe National Forest that is administered by the Clearwater National Forest.

- B. Specific landowners (Idaho): Meadows owned by numerous private individuals and/or companies (Potlatch Co.). Five populations occurred on National Forest lands. All of these are on the portion of the St. Joe National Forest that is administered by the Clearwater National Forest.
- C. Management responsibility: Same as above.
- D. Easements, conservation restrictions, etc.: Leiberg's *tauschia* is listed presently as "Sensitive" for Region 1 of the U.S. Forest Service. Lands administered by the National Forest that supports Leiberg's *tauschia* populations are managed according to Forest Service regulations for sensitive species.

10. Management practices and experience.

A. Habitat management.

- 1. Review of past management and land-use experiences.
 - a. This taxon: Cultivation and/or livestock grazing have been the dominant land-use practices both past and present for sites supporting Leiberg's *tauschia* in Idaho.
 - b. Related taxa: Unknown
 - c. Other ecologically similar taxa: Unknown
- 2. Performance under changed conditions: It appears that Leiberg's *tauschia* is eliminated from a site once cultivation occurs. Fallow fields, even after many years, fail to revegetate with Leiberg's *tauschia*. Grazing seems to have no observable deleterious effects, possibly because this species blooms quite early, generally prior to animals being put out in these fields.
- 3. Current management policies and actions: Cultivation and/or grazing are currently taking place on much of the land inhabited by Leiberg's *tauschia*. One populations (015 - Little Boulder Campground) is managed as a public camping facility.
- 4. Future land use: Future plans 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: Cultivation was the principle threat to Leiberg's *tauschia* in the past. The habitat that this species prefers tends to have rich soils that are desirable for cultivation. Such activity undoubtedly disrupts the tubers and seems to eliminate the plant.

Most of the extirpated sites fall within the Palouse Prairie along railroads or other highly disturbed areas. A combination of

cultivation, herbicides, housing development, and invasion of reed canarygrass (*Phalaris arundinacea*) are the likely causes of extirpation at these locations.

2. Existing threats: Cultivation continues to be the principle threat to Leiberg's *tauschia*. Chemical sprays and exotic weeds are additional threats. Reed canarygrass (*Phalaris arundinacea*) seems to have been responsible for the extirpation of at least 4 populations of Leiberg's *tauschia*.
 3. Potential threats: See above.
- B. Overutilization for commercial, sporting, scientific, or educational use.
1. Past threats: Minimal to no past threats in Idaho.
 2. Existing threats: Minimal to no existing threats in Idaho.
 3. Potential threats: Minimal to no potential threats in Idaho.
- C. Disease, predation, or grazing.
1. Past threats: No direct past threats to population viability of Leiberg's *tauschia* due to disease or predation are known. Although it is unknown if livestock herbivory takes place on Leiberg's *tauschia*, light to heavy grazing has occurred on most of these sites at one time or other. Fortunately, this activity does not seem to be deleterious to Leiberg's *tauschia*.
 2. Existing threats: No direct existing threats to population viability of Leiberg's *tauschia* due to disease, predation, or grazing are known.
 3. Potential threats: No direct potential threats to population viability of Leiberg's *tauschia* due to disease, predation, or grazing are known.
- 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: Coincident with cultivation is the application of chemical sprays and invasion of exotic weeds. It is unknown how many populations may have been lost due to these factors.
 2. Existing threats: See above.
 3. Potential threats: None known.

II. Assessment and Recommendations.

12. General assessment of vigor, trends, and status: As of 1989, 30 populations of Leiberg's *tauschia* are known in Idaho, the majority of these consist of 10,000+ individuals, which cover several hundred acres. Five historically-known populations are considered extirpated in Idaho, as are all populations in Washington.

Suitable habitat supporting Leiberg's *tauschia* occurs in northern Idaho along the western edge of the Clearwater Mountains and along the St. Maries and Potlatch Rivers. A population is also known from Weippe Prairie and vicinity.

Within this range it is an abundant spring perennial of uncultivated moist, meadow habitats.

Despite the apparent relatively narrow distribution of Leiberg's *tauschia*, there does not appear to be any immediate concern for the vigor or conservation status of the species. Cultivation poses a threat to Leiberg's *tauschia*, however, no significant threats to the long-term viability of the species exist now and none are foreseen.

13. Recommendations for listing or status change.

- A. Recommendations to the U.S. Fish and Wildlife Service: Leiberg's *tauschia* is listed presently as a Category 3c species with the U.S. Fish and Wildlife Service (1990). This listing includes former candidate taxa that have proven to be more widespread or abundant than previously believed, or are not subject to identifiable threats. Because of a documented range reduction in Washington and Idaho, it was determined that a reevaluation of its conservation status was desirable. It was proposed that Leiberg's *tauschia* be reconsidered for a Category 2 Candidate status at the annual Idaho Rare Plant Conference (Idaho Native Plant Society 1989).

Although Leiberg's *tauschia* is a regional endemic, current information indicates that it is quite abundant within its local distribution. Many hundreds of thousands of plants were found in 1989. Therefore, it is recommended that this species remain as a Category 3c listing. Should further research or changes in land use indicate significant decline in Leiberg's *tauschia*, the species should be reevaluated.

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

1. U.S. Forest Service: Only five populations of Leiberg's tauschia were located on lands within Forest Service jurisdiction, principally on the portion of the St. Joe National Forest administered by the Clearwater National Forest. Because of the apparent abundance of Leiberg's tauschia, it is recommended that the species be dropped from the Region 1 Sensitive Plant Species list for the St. Joe National Forest (Lorain 1989). Present land use (principally grazing) seems to pose no significant threat to the species and appears to be compatible with the long-term viability of this species.

C. Other status recommendations.

1. Counties and local areas: No recommendations.
2. State: Currently Leiberg's tauschia is ranked S2 by the Idaho Natural Heritage Program; based on data collected in 1989, it should be downgraded to S3.

Based on our current knowledge, a status change to the Idaho Native Plant Society's Monitor category will be recommended at the 1990 Rare PLant Conference.

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: For the most part, existing land-use of habitat containing populations of Leiberg's tauschia appears compatible with its long-term viability.
2. Areas recommended for protection: None recommended.
3. Habitat management recommendations: Most of these meadows are presently allocated or used for grazing, which does not appear to be detrimental to Leiberg's tauschia.
4. Publicity sensitivity: None.
5. Other recommendations: None.

B. Monitoring activities and further studies recommended:
None recommended.

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 Leiberg's *tauschia* from Idaho are known to be deposited at University of Washington (WTU), Washington State University (WS), University of Idaho (ID), and the Forest Science Laboratory, Intermountain Research Station (MRC). The following is a list of known herbarium specimens, indexed by population:

001 - M. Ownbey 2745 (WTU)
002 - J.H. Christ 9731 (ID)
003 - P.F. Stickney 2601 (ID)
004 - W.H. Baker 2820 (ID)
005 - W.H. Baker 5714 (ID)
006 - F.G. Meyer 901 (WTU)
007 - Gilmartin 2894 (WS)
008 - M. Schlessman s.n. (WTU)
009 - Moseley 585 (ID)
 Lorain 1861 (ID)
017 - P.F. Stickney 3988 (MRC)

C. Fieldwork: During the spring of 1989, I conducted an inventory of the suitable habitat on the Palouse District of the St. Joe National Forest and the surrounding vicinity for the Idaho Natural Heritage Program. This area covered the western edge of the Clearwater Mountains in Idaho from Plummer (north) to Helmer (south), the eastern portions of the Palouse Prairie, and the Weippe Prairie (see Appendix IV for mapped distribution of species and Appendix V for occurrence records).

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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 Leiberg's *tauschia* in Idaho are on file at the Idaho Natural Heritage Program office.

IV. Authorship.

19. Initial authorship:

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20. Maintenance of status report: The Idaho Natural Heritage Program will maintain current information and update the status report as needed.

V. New information.

21. Record of revisions: Not applicable.

APPENDIX I

Literature Cited.

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Appendix II

Line drawings of Tauschia tenuissima
(from Mathias and Constance 1973)

Appendix III

Slides of Tauschia tenuissima and its habitat in Idaho.

- Slide 1. Excavated plant showing overall habit; plant shown in approximately 1 foot tall from top to bottom.
- Slide 2. Close-up of plants in Big Bear Creek meadow (007).
- Slide 3. Close-up of plants in Hog Meadow (009); note Sisyrinchium inflatum, a commonly associated species.
- Slide 4. Habitat for Leiberg's tauchia in meadow along Santa Creek (024).
- Slide 4. Habitat for Leiberg's tauchia in meadows south of Wieppe (006); cream-yellow hue of meadow in the center of the photo results from the flowering of a large, dense stand of Leiberg's tauchia.

Appendix IV

Maps of Tauschia tenuissima distribution.

- Map 1. Overall distribution of known populations in Idaho
- Map A. Portion of Emida 7.5' quadrangle
- Map B. Portion of Fernwood 15' quadrangle
- Map C. Portion of Fernwood 15' quadrangle
- Map D. Portion of Bovill 15' quadrangle
- Map E. Portion of Bovill 15' quadrangle
- Map F. Portion of Bovill 15' quadrangle
- Map G. Portion of Deary 15' quadrangle
- Map H. Portion of Weippe North 7.5' quadrangle
- Map I. Portion of Pierce 7.5' quadrangle
- Map J. Portion of Weippe South 7.5' quadrangle
- Map K. Portion of Rudo 7.5' quadrangle

Appendix V

Occurrence records for Tauschia tenuissima
populations in Idaho.