REPORT ON THE CONSERVATION STATUS OF
Cirsium longistylum, A CANDIDATE THREATENED SPECIES

Taxon Name: Cirsium longistylum Moore & Frankton
Common Name: long-styled thistle
Family: Asteraceae (=Compositae)

States Where Taxon Occurs: U.S.A., Montana
Current Federal Status: USFWS Notice of Review, Category 2
Recommended Federal Status: USFWS Notice of Review, Category 2
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Original Date of Report: 24 April, 1991
Date of Most Recent Revision: N/A

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Element occurrence printouts and maps

**Appendix B**
Methods and raw data, demographic monitoring study.
I. SPECIES INFORMATION

1. Classification and nomenclature.

A. Species.

1. Scientific name.

a. Binomial: *Cirsium longistylum* Moore & Frankton


c. Type specimens: Senn, Frankton & Gillett 5666, August 23, 1951 Montana, Cascade Co., Little Belt Mtns., 3 mi SE. of Monarch (Holotype, DAO). This collection consists of three sheets, one bearing a rosette only (Moore and Frankton 1963).

2. Pertinent synonyms: None.

3. Common name: long-styled thistle

4. Taxon codes: PDAST2E1P0 (Montana Natural Heritage Program); 3618 CIRLON, (U.S. Forest Service, Region 1).

5. Size of genus: The genus *Cirsium* occurs throughout the northern hemisphere and contains about 200 species, about 50 of which are native to North America (Cronquist 1955). Eleven native species occur in Montana along with two introduced (non-native) species from Eurasia (Dorn 1984).

B. Family classification.

1. Family name: Asteraceae.

2. Pertinent family synonym: Compositae.

3. Common names for the family: Sunflower Family.

C. Major plant group: Dicotyledoneae.

D. History of knowledge of taxon: The earliest known specimen (*Flodman 880* 19 August 1896, Long Baldy,
Little Belt Mountains) is deposited at New York. Other collections reviewed by Moore and Franklin (1963) for the original description include: Senn, Frankton & Gillett 5670, August 23, 1951, Montana, Meagher Co., Kings Hill, 8000 ft (DAO); Senn 6207, July 29, 1953 Montana, Meagher Co., Little Belt Mtns., 20 mi S. of Neihart, Forest Green Resort, 5,600 ft (DAO).

E. Comments on current alternative taxonomic treatments: None, however, after a review of several specimens collected in 1990, Dr. Arthur Cronquist (1991) states, "I included C. longistylum, with some reluctance, in the single-volume flora for the Pacific Northwest, but I was uneasy about it then and I remain so now." Full collections from a wide range of populations at various elevations will be sent to Dr. Cronquist in the fall of 1991.

2. Present legal or other formal status.

A. International: None.

B. National.

1. United States.

a. Present designated or proposed legal protection or regulation: U.S. Fish and Wildlife Service: Currently, the species is included in Category 2 of the U.S. Fish and Wildlife Service Notice of Review (U.S. Department of Interior 1990), under consideration for federal listing as a threatened species. Category 2 taxa are those "...for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules."

b. Other current formal status recommendations: The species is currently listed as "endangered throughout range" (global rank = G2) by the Montana Natural Heritage Program Shelly (1990).
2. State.
   a. Montana.
      i. Present designated or proposed legal protection or regulation: None.
      ii. Other current formal status recommendations: *Cirsium longistylum* has most recently been ranked by the Montana Natural Heritage Program as an S2 species ("imperiled in Montana because of rarity (6-20 occurrences") (Shelly 1990). Although only 20 populations of *C. longistylum* are currently recorded, several contain tens of thousands of individuals and numerous other populations were observed that were not recorded. Thus, the rank will be changed to S3 on the 1991 list of Plant Species of Special Concern.
      iii. Review of past status: Previously listed as "rare in Montana" by the Montana Rare Plant Project (Lesica et al. 1984).

3. Description.
   A. General nontechnical description: *Cirsium longistylum* is a perennial thistle from thick, woody underground stems. The stems are 20-24 inches tall, ribbed, and are lightly hairy with long, cobwebby hairs. The basal rosette leaves are somewhat spiny, shallowly lobed, and are green, hairless above and densely white hairy below. The stem leaves are gray-green with long white cobwebby hairs, narrowly spear-shaped, about 10 times as long as wide (up to 6 inches long and 0.5 inch wide), with lobes about 1/3 the width. Smaller leaves are only shallowly lobed with numerous fine marginal spines to 0.2 inch long. The flower heads are about 1.2 inches high and 1 inch wide, usually in a tight cluster in the top 2/3 of the plant. In young plants, the upper part of the stem may be unexpanded and the flowers clustered at the top of the stem. The flower heads have a few small leaves beneath, the uppermost
resemble the involucral (outer, subtending) bracts of the flower in shape. The involucre is 0.8 inch high with the outer bracts narrowly spear-shaped, 0.06-0.08 inch wide at the base, with a few glands or a dark blotch, the tip is slightly wider and has a slender 0.08 inch spine. The middle and inner involucral bracts are progressively less widened at the tip. Flowers are white, the petals 0.8-0.9 inch long with a basal ring of 30-40 tawny hairs 0.70-0.75 inch long. The anthers are 0.30-0.35 inch long. The style extends to 0.4 inch beyond the corolla tube. The seeds are 0.22-0.26 inch long and 0.08 inch wide, light brown and sometimes flecked with purple (adapted from Moore and Frankton 1963).

B. Technical description: Plant perennial by biennial offsets from stout, woody rhizomes; stems ribbed, lightly arachnoid pubescent with long multicellular hairs, 50-60 cm tall, to 1.5 cm thick at base; rosette leaves moderately spiny, margins with broad, shallow divisions, green and glabrous above, densely white pubescent beneath; cauline leaves gray-green arachnoid, with multicellular hairs above, white villous (long thin hairs with single long terminal cell and 1-several short basal cells) below, linear-lanceolate, base not decurrent, about 10 times as long as wide, to 15 cm long, 1.5 cm wide, lobed less than or equal to 1/3 the width, smaller upper leaves essentially entire, lobes ovate, often irregular with numerous fine marginal spines to 5 mm long; heads 3 cm high, 2.5 cm wide, arrangement variable, usually in a close terminal cluster but also 1-2 on stem apex and lateral branches, usually, many floriferous branches to 15 cm long, on terminal third of main stem; floriferous part of stem may be unexpanded in young plants with less than or equal to 5 heads grouped at the stem apex; heads subtended by a few reduced leaves, the uppermost about the size of the involucral bracts and approaching them in form, with gray multicellular hairs at right angles to the margin; involucre 2 cm high with 5-6 rows of bracts, outer bracts linear-lanceolate, base 1.5-2 mm wide, weakly glandular or with a dark blotch, surface glabrous, apical portion slightly dilated with a yellow lacerate fringe, tipped by a slender 2 mm spine; middle bracts similar but progressively less dilated-lacerate; inner bracts longer, lanceolate, tip not or only slightly lacerate, the lacerate margin varies from a conspicuous yellow fringe to minute irregular serrations and is best seen on young heads but never consists of fine lateral spines; flowers white,
corolla 20-22 mm long, tube 7-9 mm, lobes 3.5-5.5 mm, pappus 18-19 mm, tawny, of 30-40 setae, longer setae clavellate; anthers, including appendages, 7.5-8.5 mm long, free tips usually incurved; style long-exserted to 1 cm beyond the corolla, tip to joint of style 3.5-5 mm; achenes 5.5-6.5 mm long, 2 mm wide, light brown sometimes with purplish flecks (adapted from Moore and Frankton 1963).

C. Local field characters: The dilated, lacerate-fringed tip of the outer involucral bracts are characteristic of Cirsium longistylum, although some plants do not show this character well. It is perhaps best distinguished from C. hookerianum, with which it may hybridize, primarily by the involucral bracts. In C. hookerianum, the bracts are not dilated and fringed, but are moderately to strongly hairy, while those of C. longistylum are glabrous or nearly so. Recent keys separating C. longistylum from other Cirsium species in Montana are in Dorn (1984), and Hitchcock and Cronquist (1973).

D. Identifying characteristics of material which is in interstate or international commerce or trade: No interstate or international commerce or trade known.

E. Photographs and line drawings: Color slides (p. 92) are duplicates of those taken at the sites indicated by the three-digit occurrence codes. Additional slides of C. longistylum are housed at the office of the Montana Natural Heritage Program, Helena, Montana.

4. Significance.

A. Natural: Cirsium longistylum is one of 13 plant species endemic to Montana.

B. Human: None known.

5. Geographical distribution.

A. Geographical range: Cirsium longistylum occurs only in central Montana, primarily in the Little Belt Mountains, with a single recorded occurrence in the Big Belt Mountains to the west. The range of populations is indicated in Figure 1, p. 6.

B. Precise occurrences.

1. Populations currently known to be extant: In 1990, four new populations were mapped, and the
- Mapped Cirsium longistylum populations in (J) Judith Basin, (M) Meagher, and (C) Cascade counties, Montana.

FIGURE 1
range of six populations was extended. Exact locations of the recorded *C. longistylum* populations are provided on USGS quadrangle maps in Appendix A, pp. 57-77, along with element occurrence records (pp. 36-56) for each population. *Cirsium longistylum* is nearly ubiquitous to many of the meadows and roadsides at higher elevations in the Little Belt Mountains, and is common in moist streamside meadows at lower elevations. The populations mapped do not represent all of the populations observed to be present in the Little Belt Mountains.

2. Populations known or assumed extirpated.

   a. Montana: None.

3. Historically known populations where current status is not known:

   a. Montana: Two sites are considered as historic locations for populations of *Cirsium longistylum*. The first known collection for this species at Long Baldy (009) has not been resurveyed. The Forest Green (003) site was resurveyed in 1983 by Ramstetter, but "no plants which could conclusively be identified as *C. longistylum* were located."

4. Locations not yet investigated believed likely to support additional natural populations. Although there are no records for this species in the Snowy Range there is potential habitat in the area.

5. Reports having ambiguous or incomplete locality information:

   a. Montana: The voucher specimen for the Long Baldy (009) site states "Long Baldy, Judith Basin County." Big Baldy Mountain lies in Judith Basin County, while Long Mountain and Neihart Baldy peaks lie to the east in Cascade County. The actual collection site may lie along the ridge between the peaks.
6. Locations known or suspected to be erroneous reports:

a. Montana: None.

C. Biogeographical and phylogenetic history: Details unknown and not yet investigated. The distributional pattern of *C. longistylum* in Montana may be the result of geographical isolation and speciation. The Little Belts escaped glaciation during the ice ages because it was too low to catch the enormous quantity of snow that big glaciers require (Alt and Hyndman 1986).


A. Concise statement of general environment and habitat: *Cirsium longistylum* occurs frequently on disturbed roadsides, and in meadows and openings in forests. Surrounding vegetation cover ranged from 10 to 95 percent depending on the site. Undisturbed habitats include *Pinus contorta/Festuca idahoensis* open forest and mixed meadows, and *Abies lasiocarpa-Pinus albicaulis* open forest and mixed meadows near upper treeline.

B. Physical characteristics.

1. Climate.

a. Koppen climate classification: According to Koppen's classification, the Little Belt Mountains fall within an area where a steppe climate with a winter dry season caused by winter cold prevents appreciable precipitation accumulations (Visher 1954). This steppe climate is probably typical of the surrounding prairies, but it is likely that the mountains receive higher winter precipitation.

b. Regional macroclimate: The regional climate of central Montana is characterized by hot, dry summers and cold, snowy winters. The precipitation peak in central Montana is generally in May and June, and comes in the form of wet snow and rain (U.S. Department of Commerce 1982).
The climatic station closest to the central Montana sites is at Stanford, which at 4710 feet (1413 m), is 2000-3000 feet (600-900 m) lower than most of the sites in the Little Belt Mountains. Thus, precipitation is likely to be higher and temperatures on the average lower at the sites where populations occur. For the period 1951-1980 (U.S. Department of Commerce 1982), the January mean temperature was 20.5°F (-6.4°C), the July mean temperature was 65.2°F (18.5°C), and the annual mean temperature was 44.2°F (6.8°C). The mean annual precipitation was 15.3 in (38.3 cm) with May (3.01 in (7.5 cm)) and June (3.07 (7.7 cm)) being the wettest months.

c. Local microclimate: Populations of Cirsium longistylum occur in open high elevation meadows that remain moist from snow melt into June. Lower elevation populations occur in meadows near creeks where the soils are more moist than the surrounding uplands, but not inundated.

2. Air and water quality requirements: Air and water quality requirements are not known.

3. Physiographic province: Mapped by Hunt (1974) as occurring in the Northern Rocky Mountain physiographic province.

4. Physiographic and topographic characteristics: Cirsium longistylum occurs predominantly at altitudes of 5200-7500 ft (1665-2400 m), with the lowest recorded location at 4680 ft (1475 m) and the highest recorded location at 8040 ft (2575 m).

5. Edaphic factors: The soils under Cirsium longistylum populations in central Montana are developed in parent materials derived from a wide variety of geologic sources. These include hard, coarse-grained metamorphics of Precambrian age, Paleozoic limestones, dolomites and shales, and intrusive igneous rocks (Veseth and Montagne 1980, Weed 1900). Site-specific soil information for the sites is not available, but general information indicates that Cryochrepts, Cryoboralfs, and
Lithic Cryoborolls are most likely (Montagne et al. 1982).

6. Dependence of this taxon on natural disturbance: A number of the *C. longistylum* populations occur in areas which have been lightly disturbed in the past through timber management, grazing or road maintenance, however, other populations occur on sites that are relatively remote and pristine. The plant does not appear to be disturbance dependent.

C. Biological characteristics.

1. Vegetation physiognomy and community structure: *Cirsium longistylum* occurs in open meadow communities that are dominated by grasses and forbs, but often include scattered *Potentilla fruticosa*, indicating moderately mesic conditions.

2. Regional vegetation types: According to Kuchler (1964), the populations in the Little Belt Mountains fall within the Douglas fir forest zone.

3. Frequently associated species: *Cirsium longistylum* populations occur in both disturbed and undisturbed habitats. The disturbed habitats are typically roadsides, trails, meadows and clearings. Species associated with the disturbed sites include:

- *Artemisia* spp. (sagebrushes)
- *Bromus inermis* (smooth brome)
- *Phleum pratense* (timothy)
- *Poa pratensis* (Kentucky bluegrass)
- *Cirsium arvense* (Canada thistle)
- *Taraxacum officinale* (common dandelion)

The undisturbed habitats are native grasslands and grassy openings in open forests. Associated species include:

- *Juniperus communis* (common juniper)
- *Pinus contorta* (lodgepole pine)
- *Pinus ponderosa* (ponderosa pine)
- *Pseudotsuga menziesii* (Douglas fir)
- *Potentilla fruticosa* (shrubby cinquefoil)
- *Achillea millefolium* (yarrow)
- *Agoseris glauca* (pale agoseris)
- *Allium geyeri* (Geyer's onion)
Androsace septentrionalis (northern fairy-candelabra)
Anemone multifida (cliff anemone)
Antennaria microphylla (rosy pussy-toes)
Antennaria racemosa (raceme pussy-toes)
Arenaria congesta (ballhead sandwort)
Aster occidentalis (western aster)
Astragalus alpinus (alpine milk-vetch)
Astragalus miser (weedy milk-vetch)
Campanula rotundifolia (lady's-thimble)
Cerastium arvense (field chickweed)
Claytonia lanceolata var. flava (yellow springbeauty)
Delphinium bicolor (little larkspur)
Equisetum arvense (field horsetail)
Festuca idahoensis (Idaho fescue)
Fragaria vesca (woods strawberry)
Fragaria virginiana (Virginia strawberry)
Frasera speciosa (giant frasera)
Galium boreale (northern bedstraw)
Gentiana calycosa (explorer's gentian)
Geranium richardsonii (white geranium)
Geranium viscosissimum (sticky geranium)
Geum triflorum (old man's whiskers)
Hedysarum sulphurescens (yellow hedysarum)
Heracleum sphondylium (cow-parsnip)
Koeleria macrantha (prairie junegrass)
Linum perenne (blue flax)
Lomatium cous (Cous biscuit-root)
Lupinus argenteus (silvery lupine)
Luzula campestris (field woodrush)
Microseris nigrescens (black-hairy microseris)
Pedicularis contorta (coiled-beak lousewort)
Penstemon procerus (small-flowered penstemon)
Penstemon rydbergii (Rydberg's penstemon)
Poa secunda (Sandberg's bluegrass)
Potentilla diversifolia (diverse-leaved cinquefoil)
Potentilla gracilis (slender cinquefoil)
Potentilla palustris (purple cinquefoil)
Rosa woodsii (woods rose)
Sedum lanceolatum (lance-leaved stonecrop)
Senecio integerrimus (western groundsel)
Senecio streptanthifolius (Rocky Mountain butterweed)
Senecio triangularis (arrowleaf groundsel)
Solidago multiradiata (northern goldenrod)
Spiranthes romanzoffiana (hooded ladies-tresses)
Stipa viridula (green needlegrass)
Thlaspi arvense (field pennycress)
Trifolium repens (white clover)
Vaccinium caespitosum (dwarf huckleberry)
Zigadenus elegans (glaucous zigadenus)
4. Dominance and frequency of the taxon: *Cirsium longistylum* is often present in great abundance, as was noted in 3 sample plots where densities ranged from 0.24 to 2.18 plants/m². In other areas only one or two plants will occur along a roadway.

5. Successional phenomena: *Cirsium longistylum* has been observed in forest habitats, but only along streams, and generally in more open sites. Populations most often occur in meadows and forest openings. This species would probably not tolerate canopy closure.

6. Dependence on dynamic aspects of biotic associations and ecosystem features: This species appears to be dependent on habitats that are moist in early summer through snow melt, or mesic riparian habitats where moisture levels are higher than the surrounding uplands.

7. Other endangered, threatened, rare, or vulnerable species occurring in habitat of this taxon: Two rare plant species have been found in at least two sites where *C. longistylum* occurs. These species include, *Phlox kelseyi var. missoulenensis* (U.S. Fish and Wildlife status 3C, U.S. Forest Service, Region 1 watch list species) and *Claytonia lanceolata var. flava* (U.S. Fish and Wildlife status C2, U.S. Forest Service, Region 1, sensitive list) (U.S. Department of Interior 1990, U.S. Department of Agriculture 1988).


A. General summary: Populations of *C. longistylum* usually contain several hundred to tens of thousands of individuals. This species is a perennial that reproduces both asexually by biennial offsets from a perennial rhizome (Moore and Frankton 1963), and sexually by seeds produced from perfect flowers. Observations of populations indicate a good range of plants at each life history stage, from single whorl rosette, through multiple whorl rosettes, to flowering and fruiting adults. It is not yet certain that this species is a strict biennial.

B. Demography.

1. Known populations: *Cirsium longistylum* is a Montana endemic. There are currently twenty
recorded populations of *Cirsium longistylum* in Judith Basin, Cascade, and Meagher counties. All are in the Little Belt Mountains except one, which occurs in the Big Belt Mountains to the west.

2. General demographic details (Montana):

a. site (001)
   1. Area occupied by population: Unknown.
   2. Estimated number of individuals: Unknown.
   6. Evidence of population expansion or decline: Unknown.

b. site (002)
   1. Area occupied by population: ca. 500 acres.
   2. Estimated number of individuals: Tens of thousands of individuals.
   3. Density: Up to 1.7 plants/m².
   5. Evidence of reproduction: Many young rosette-stage plants were observed.
   6. Evidence of population expansion or decline: Unknown.

c. site (003)
   1. Area occupied by population: Unknown.
   2. Estimated number of individuals: Unknown.
   6. Evidence of population expansion or decline: Unknown.

d. site (004)
   1. Area occupied by population: ca. 1 acre.
   2. Estimated number of individuals: Unknown.
6. Evidence of population expansion or decline: Unknown.

e. site (005)
1. Area occupied by population: ca. 1 acre.
2. Estimated number of individuals: 20 plants counted (1986).
6. Evidence of population expansion or decline: Unknown.

f. site (006)
1. Area occupied by population: Unknown. Scattered subpopulations.
2. Estimated number of individuals: Some subpopulations have greater than 100 plants (1983).
6. Evidence of population expansion or decline: Unknown.

g. site (007)
1. Area occupied by population: ca. 5 acres.
2. Estimated number of individuals: Greater than 100 plants.
3. Density: Scattered in meadow areas.
6. Evidence of population expansion or decline: Unknown.

h. site (008)
1. Area occupied by population: ca. 160 acres.
2. Estimated number of individuals: Frequent, 5,000-10,000 individuals (1990).
3. Density: In one area, 2.18 plants/m².
4. **Presence of dispersed seeds:** Unknown.

5. **Evidence of reproduction:** Flowering and fruiting individuals and numerous rosette stage individuals present.

6. **Evidence of population expansion or decline:**

**i. site (009)**

1. **Area occupied by population:** Unknown.
2. **Estimated number of individuals:** Unknown.
3. **Density:** Unknown.
4. **Presence of dispersed seeds:** Unknown.
5. **Evidence of reproduction:** Unknown.
6. **Evidence of population expansion or decline:** Unknown.

**j. site (010)**

1. **Area occupied by population:** 800 acres.
2. **Estimated number of individuals:** Probably hundreds of thousands of plants present (1990).
3. **Density:** Unknown.
4. **Presence of dispersed seeds:** Unknown.
5. **Evidence of reproduction:** Flowering and fruiting individuals and numerous rosette stage individuals present.
6. **Evidence of population expansion or decline:** Unknown.

**k. site (011)**

1. **Area occupied by population:** ca. 600 acres.
2. **Estimated number of individuals:** Frequent, several tens of thousands of plants (1990).
3. **Density:** Unknown.
4. **Presence of dispersed seeds:** Unknown.
5. **Evidence of reproduction:** Flowering and fruiting individuals and numerous rosette stage individuals present.
6. **Evidence of population expansion or decline:** Unknown.
1. **Site (012)**
1. Area occupied by population: ca. 60 acres.
2. Estimated number of individuals:
   Frequent; more than 5,000 individuals.
4. Presence of dispersed seeds:
   Unknown.
5. Evidence of reproduction: Flowering and fruiting individuals and numerous rosette stage individuals present.
6. Evidence of population expansion or decline: Unknown.

m. **Site (013)**
1. Area occupied by population: ca. 1 acre.
2. Estimated number of individuals: 175 plant counted (1986).
4. Presence of dispersed seeds:
   Unknown.
5. Evidence of reproduction: Flowering plants observed.
6. Evidence of population expansion or decline: Unknown.

n. **Site (014)**
1. Area occupied by population: ca. 2 acres.
2. Estimated number of individuals:
   Ca. 11-50 plants counted (1987).
4. Presence of dispersed seeds:
   Unknown.
5. Evidence of reproduction: Flowering plants.
6. Evidence of population expansion or decline: Unknown.

o. **Site (015)**
1. Area occupied by population:
   Unknown.
2. Estimated number of individuals:
   Unknown.
4. Presence of dispersed seeds:
   Unknown.
6. Evidence of population expansion or decline: Unknown.
p. site (016)
1. Area occupied by population: Unknown.
2. Estimated number of individuals: Unknown.
6. Evidence of population expansion or decline: Unknown.

q. site (017)
1. Area occupied by population: ca. 10 acres.
2. Estimated number of individuals: ca. 100 plants (1990).
5. Evidence of reproduction: Flowering individuals present.
6. Evidence of population expansion or decline: Unknown.

r. site (018)
1. Area occupied by population: ca. 60 acres.
2. Estimated number of individuals: Several hundred plants (1990).
5. Evidence of reproduction: Flowering plants observed.
6. Evidence of population expansion or decline: Unknown.

s. site (019)
1. Area occupied by population: ca. 30 acres.
2. Estimated number of individuals: ca. 50 plants (1990).
5. Evidence of reproduction: Flowering plants observed.
6. Evidence of population expansion or decline: Unknown.
t. site (020)
1. Area occupied by population: ca. 80 acres.
5. Evidence of reproduction: Flowering plants observed.
6. Evidence of population expansion or decline: Unknown.

DEMOGRAPHIC MONITORING STUDY: During 1990, three permanent monitoring transects were established in populations of *C. longistylum* on the Lewis and Clark National Forest. The purpose of these transects is to provide more detailed data on the life history and population dynamics of *C. longistylum*. Data on survivorship and reproduction are important for understanding the biology of plants with limited distributions, especially when attempting to ensure their long-term preservation (Massey and Whitson 1980). Data may also indicate whether population sizes are declining, which may be the result of infestation by the weevil *Rhinocyllus conicus*.

Methods including descriptions and maps of the study sites, and the raw data are presented in Appendix B, pp. 78-91. First year results are summarized and presented in Table 1, p. 19.

RESULTS: Density of *C. longistylum* plants varied from 0.24 plants/m² at Russian Creek to 2.1 plants/m² at Neihart. The percentage of flowering plants was highest at Russian Creek (35%), and was lower at Kings Hill and Neihart (28% and 17%, respectively). However, the reverse trend was observed for plants at the rosette stage, with a greater percentage of rosettes occurring at Neihart (83%) and reduced percentages observed at Kings Hill and Russian Creek (71% and 64%, respectively). The highest number of large and medium rosettes were observed at Neihart.

*Cirsium longistylum* plants produced 10 to 16 heads per plant.
<table>
<thead>
<tr>
<th></th>
<th>Russian Creek</th>
<th>Kings Hill</th>
<th>Neihart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevation (ft)</td>
<td>6520</td>
<td>7880</td>
<td>6960</td>
</tr>
<tr>
<td>Date read</td>
<td>27 July</td>
<td>30 July</td>
<td>31 July</td>
</tr>
<tr>
<td>Total # plants of current year plants recorded</td>
<td>107</td>
<td>113</td>
<td>142</td>
</tr>
<tr>
<td>Density (plants/m²)</td>
<td>0.24</td>
<td>1.7</td>
<td>2.18</td>
</tr>
<tr>
<td># plants flowering</td>
<td>37</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>% of plants flowering</td>
<td>35%</td>
<td>28%</td>
<td>17%</td>
</tr>
<tr>
<td># small rosette plants</td>
<td>26</td>
<td>31</td>
<td>42</td>
</tr>
<tr>
<td># medium rosette plants</td>
<td>23</td>
<td>37</td>
<td>54</td>
</tr>
<tr>
<td># large rosette plants</td>
<td>20</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Total # plants at rosette stage</td>
<td>69</td>
<td>81</td>
<td>118</td>
</tr>
<tr>
<td>% of plants at rosette stage</td>
<td>64%</td>
<td>71%</td>
<td>83%</td>
</tr>
<tr>
<td>Mean # of heads (open or unopened) per flowering plant (± SD, n)</td>
<td>16.4 ± 8.4 (n = 37)</td>
<td>10.5 ± 7.7 (n = 32)</td>
<td>14.6 ± 5.8 (n = 24)</td>
</tr>
</tbody>
</table>
C. Phenology.

1. Patterns: In Montana, the flowering period for *C. longistylum* starts near the end of June, peaks in July and extends into August. Flowering occurs basipetally in *C. longistylum*, with the lowermost flowering heads developing last. Seeds mature in August and September, and are primarily wind dispersed. Seeds of this species have been germinated successfully without cold stratification or scarification (Sarah Mathews, pers. comm.), and therefore may germinate in the fall.

2. Relation to climate and microclimate: Plants occurring at lower elevations, and on more southerly slopes begin to flower two to three weeks before plants occurring at the higher elevations. This may be important with respect to weevil infestations, since timing of egg-laying by *Rhinocyllus conicus* is related to temperature, and higher elevation sites have extremes in temperature fluctuations (Dr. Charles Turner, pers. comm.).

D. Reproductive ecology.

1. Types of reproduction: *Cirsium longistylum* reproduces both asexually by biennial offsets from a perennial rhizome (Moore and Frankton 1963), and sexually by seeds produced from perfect flowers. Observations of populations indicate a good range of plants at each life history stage, from single whorl rosette, through larger multiple whorl rosettes, to flowering and fruiting adults. It is not yet certain that this species is a strict biennial; small (single whorl) to large (multiple whorl) rosettes were observed in populations as well as flowering plants. Results of demographic monitoring studies begun in 1990 should give a better indication of these life history traits exhibited by this species.

2. Pollination.

   a. Mechanisms: *Cirsium longistylum* is known to be insect pollinated. Whether self-pollination occurs is not known.
b. **Specific known pollinators:** Bumblebees (*Bombus* sp.) have been observed to visit heads on numerous occasions, and may be the primary pollinators.

c. **Other suspected pollinators:** Not known.

d. **Vulnerability of pollinators:** Not known although bumblebees are ubiquitous and their vulnerability is probably low.

3. **Seed dispersal.**

a. **General mechanisms:** Numerous seeds are produced that are mostly wind dispersed by the prominent pappus that is about 3 times the length of the small achene.

b. **Specific agents:** Primarily wind dispersed.

c. **Vulnerability of dispersal agents and mechanisms:** The heads of some plants in the Little Belt Mountains have been attacked by a weevil, *Rhinocyllus conicus*. This weevil was introduced to North America from Europe as a biological control agent for *Carduus nutans* (Rees 1982, 1987). Weevil infestation rates, and the likely effect on seed production and population viability are unknown, although preliminary studies have begun.

d. **Patterns of propagule dispersal:** 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:** Seeds of *C. longistylum* were germinated successfully without cold stratification or scarification (Sarah Mathews, pers. comm.). It is possible that germination occurs in fall.
e. **Percent germination:** Little difficulty was encountered germinating seed (Sarah Mathews, pers. comm.).

5. **Seedling ecology:** Not known, although both small and large rosettes were observed.

6. **Survival and mortality:** Population sizes were quite large, and most had a good range of plants at each life history stage.

7. **Overall assessment of taxon's reproductive success:** Populations of *C. longistylum* are apparently reproductively successful. Data from monitoring transects should provide more information on this subject.

8. **Population ecology of the taxon.**

   A. **General summary:** Total vegetation cover within *Cirsium longistylum* populations ranges from 10 to 100 percent. Although it is sometimes found beneath an open forest canopy, it is more often in open meadows. This species has been infested by the weevil *Rhinocyllus conicus* introduced as a biological control for *Carduus nutans*. Preliminary information on infestation rates are outlined below.

   B. **Positive and neutral interactions:** None known or observed.

   C. **Negative interactions.**

      1. **Herbivores, predators, pests, parasites and diseases:** The seed heads of some plants in the Little Belt Mountains have been attacked by a weevil, *Rhinocyllus conicus*, which was introduced to North America from Europe as a biological control agent for *Carduus nutans* (Rees 1982, 1987). The weevil was introduced in several locations including Bozeman Montana in the early seventies. Within several years, the weevils had moved out from the original establishment location. Weevil infestation rates, and the likely effect on seed production and population viability are unknown, although preliminary studies have been begun. Dr. Charles Turner (USDA, Albany, California, pers. comm.), a specialist in the fauna of members of the Asteraceae (Sunflower Family), has recently completed a study of the weevil's impact on a rare thistle native to California. Although
the data have not been completely analyzed, it was his opinion that the weevil was having little effect on this rare thistle that is restricted to serpentine warm spring sites. He also made the observation that new world members of the *Cirsium* genus were very depauperate in herbivorous fauna in comparison to old world species. It should be noted that the weevil has infested a number of native species in the genus *Cirsium* (Turner *et al.* 1987).

While the rate of seed predation is not clear in the case of *C. longistylum*, it is a matter of concern because seed predation can have a magnified effect on succeeding life history stages, resulting in greatly reduced seedling establishment and recruitment of new plants (Louda *et al.* 1990). Herbivory of other parts of the plant has not been studied, although thistles generally are not affected much by grazing.

**PRELIMINARY STUDIES OF WEEVIL INFESTATION**

**METHODS:** To get a preliminary estimate of the number of heads per plant of *Cirsium longistylum* infested by *Rhinocyllus conicus*, five plants each were randomly collected from five locations. The total number of heads on each plant were counted and dissected, and then scored as to whether or not they contained weevil larvae. Collection site locations are provided on a map, Figure 2, p. 24.

**RESULTS:** The raw and summarized data from this study are provided in Table 2, p. 25. The twenty-five *C. longistylum* plants sampled contained a total of 366 heads. Two-hundred twenty-five of these heads contained one or more weevils. Thus approximately 60 percent of the heads on plants were infested. The degree of infestation and the impact on the seed production were not measured. This would take an involved study. However, different sites showed different levels of infestation of individual plants, with the lowest rate of infestation occurring at Kings Hill and O'Brien Park. After adult weevils lay eggs on plants in the spring, the eggs hatch and the larvae burrow into the flower heads (Rees 1982). Higher elevation locations may limit weevil survival due to variable temperatures (Dr. Charles Turner, pers. comm.). It is not known how weevil infestation affects
U.S.D.A. Forest Service, Lewis and Clark National Forest, Jefferson Division Map, reduced by 30 percent showing the locations of collection points for *Cirsium longistylum* plants used in the weevil infestation study.
Table 2. Number and percent of heads of *Cirsium longistylum* infested by *Rhinocyllus conicus*.

<table>
<thead>
<tr>
<th>PLOT # (Plot Name)</th>
<th>PLANT #</th>
<th>NUMBER OF HEADS ON PLANT</th>
<th>NUMBER OF INFESTED HEADS</th>
<th>PERCENT OF HEADS INFESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Lower Russian Creek)</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>33</td>
<td>30</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>8</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>24</td>
<td>23</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15</td>
<td>13</td>
<td>86%</td>
</tr>
<tr>
<td>2 (Deadman Creek)</td>
<td>1</td>
<td>11</td>
<td>11</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
<td>13</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>19</td>
<td>19</td>
<td>100%</td>
</tr>
<tr>
<td>3 (O'Brien Park)</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>17</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>21</td>
<td>9</td>
<td>43%</td>
</tr>
<tr>
<td>4 (Kings Hill)</td>
<td>1</td>
<td>15</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>15</td>
<td>5</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9</td>
<td>7</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>5 (Neihart)</td>
<td>1</td>
<td>22</td>
<td>10</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20</td>
<td>13</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>14</td>
<td>11</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>10</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>16</td>
<td>10</td>
<td>62%</td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th></th>
<th>25</th>
<th>366</th>
<th>225</th>
<th>58%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
population size fluctuations. Monitoring data currently indicate that populations contained a good mix of both rosettes and flowering plants. It is possible that infestation rates are not high enough to limit this species, or that the *Cirsium longistylum* populations have very few predatory fauna; a hypothesis put forth by Dr. C. Turner (U.S.D.A., Albany, CA, pers. comm.).

2. Competition.

a. **Intraspecific\Interspecific:** No studies have been done on competitive interactions, either intraspecific or interspecific. However, the frequent occurrence of *C. longistylum* in disturbed sites and in open, unshaded areas suggests that it is not very tolerant of shading.

D. Hybridization.

1. **Naturally occurring:** Variation of some local populations in both leaf and involucral characters has been interpreted to indicate hybridization between *C. longistylum* and perhaps *C. hookerianum*, which has been reported from the area (Ownbey 1987, Shelly 1986). Similarities to *C. scariosum* have also been noted (Moore and Frankton 1963). The incidence of these variant plants seems to be greater in disturbed sites than in undisturbed sites (Shelly 1986), which is a common pattern in many cases of hybridization (Anderson 1953). More recently, Ownbey (1990) has stated that he thinks the variation "can be ascribed to intraspecific genetic variation" rather than hybridization. There is also some question about the identity of the plants from the area that were reported as *C. hookerianum* (Cronquist 1991). Thus, there are currently unresolved questions about the status of this species and further study is needed.

2. **Artificially induced:** None known.

3. **Potential in cultivation:** Not known, although seeds appear to germinate readily, plants are not in cultivation.
9. **Current land ownership and management responsibility.**

   A. **General nature of ownership:** U.S. Forest Service and private lands.

   B. **Specific landowners (Montana):**

      1. Lewis and Clark National Forest
         1101 15th Street North
         Great Falls, MT 59403

      2. Helena National Forest
         301 S. Park, Drawer 10014
         Federal Office Building, Room 334
         Helena, MT 59626

      3. Privately owned (owner not known).

   C. **Management responsibility:** Same as ownership given above.

   D. **Easements, conservation restrictions, etc.:** A population of *C. longistylum* (Paine Gulch 014) is located within the Paine Gulch Proposed Research Natural Area, Lewis and Clark National Forest.

10. **Management practices and experience.**

   A. **Habitat management.**

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

         a. **This taxon:** Much of the habitat for *C. longistylum* is grazed for a portion of the year by cattle or sheep, and several sites have been logged in the past (pers. obs.). Grazing does not appear to limit this species, and may in fact open more potential habitat.

         b. **Related taxa:** *Rhinocyllus conicus* has infested numerous other native thistles across in the U.S., but the extent of the weevils impact on these unintended hosts is not known (Turner et al. 1987).

         c. **Other ecologically similar taxa:** *Rhinocyllus conicus* was introduced as a biological control for musk thistle (*Carduus nutans*), but also infests *Cirsium longistylum*. The impact of the weevil on
the fecundity of *Cirsium longistylum* has not been analyzed. Studies involving *Carduus nutans* have shown that larvae feeding within the receptacle not only consume seed, but also affect the viability of unconsumed seeds (Rees 1977).

2. **Performance under changed conditions:** Not known.

3. **Current management policies and actions:** Current management is the same as outlined under past management.

4. **Future land use:** Not known.

**B. Cultivation.**

1. **Controlled propagation techniques:** Not known although seeds of *C. longistylum* germinate readily without cold stratification or scarification (Sarah Mathews, pers. comm.).

2. **Ease of transplanting:** Not known.

3. **Pertinent horticultural knowledge:** Not reviewed.

4. **Status and location of presently cultivated material:**
   a. **Specimen plants:** None known.
   b. **Self-sustaining breeding populations:** None known.
   c. **Stored seed:** None known.

11. **Evidence of threats to survival.**

   **A. Present or threatened destruction, modification, or curtailment of habitat or range:** *Cirsium longistylum* is not currently threatened by habitat alteration, however it should be kept in mind that all of the known occurrences of this species are within a 40 mile radius in the Little Belt Mountains, with a single population in the Big Belt Mountains to the west.

   **B. Overutilization for commercial, sporting, scientific, or educational purposes:** No threats known.
C. Disease, predation, or grazing: *Rhinocyllus conicus* was introduced as a biological control for musk thistle (*Carduus nutans*), but also infests *Cirsium longistylum*. The impact of the weevil on the fecundity of *Cirsium longistylum* has not been determined.

D. Inadequacy of existing regulatory mechanisms: None known.

E. Other natural or man-made factors: None known.

II. ASSESSMENT AND RECOMMENDATIONS

12. General assessment of vigor, trends, and status: *Cirsium longistylum* is currently known only from locations in the Little Belt Mountains, with one location in the Big Belt Mountains of Montana. Populations are extensive and appear quite vigorous. A weevil introduced as a biological control for *Carduus nutans* is also infesting *C. longistylum*, but the impacts on the fecundity of the plant are not known.

13. Recommendations for listing or status change.

A. Recommendation to U.S. Fish and Wildlife Service: On the basis of current information summarized in this status report, it is recommended that *Cirsium longistylum* be retained in Category 2. Although population sizes of this Montana endemic are large, the extent of the threat posed by the weevil *Rhinocyllus conicus* is not known. Further work is needed to clarify this threat, and resolve the taxonomic status of this species.

B. Recommendations to other U.S. federal agencies: It is recommended that *Cirsium longistylum* be maintained on the U.S. Forest Service list of sensitive plant species until the taxonomic status and measurement of threat posed by the weevil *Rhinocyllus conicus* are resolved.

C. Other status recommendations.

1. Counties and local areas: No recommendations.

2. States: *Cirsium longistylum* will be listed as S3 (found abundantly in a restricted range) on the 1991 Montana Natural Heritage Program list of plant species of special concern.
3. Other nations: No recommendations.

4. International: No recommendations.

14. Recommended critical habitat: The complete status of Cirsium longistylum is not yet known. Thus, critical habitat is not being recommended at this time.


A. General conservation recommendations.

1. Recommendations regarding present or anticipated activities: None.

2. Areas recommended for protection: No recommendations are being made at this time.

3. Habitat management recommendations: No recommendations are being made at this time.

4. Publicity sensitivity: Low.

5. Other recommendations: None.

B. Monitoring activities and research needs: Three demographic monitoring plots were established in populations in 1990. Results to date are found within the body of the text of this report, p. 18, with methods and raw data located in Appendix B, pp. 78-91. These studies should be continued for at least 3 years. Complete specimen collections are needed for review by experts to enable them to better determine the taxonomic status of this species.

16. Interested parties:

Office of Endangered Species
ATTN: Dr. James Miller
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, CO 80225

U.S. Fish and Wildlife Service
ATTN: Dale Harms
Federal Building, 301 S. Park
P.O. Box 10023
Helena, MT 59626
Office of Endangered Species  
ATTN: Dr. John Fay  
U.S. Fish and Wildlife Service  
Washington, D.C. 20240

U.S. Forest Service, Region One  
ATTN: Angela Evenden  
Federal Building  
P.O. Box 7669  
Missoula, MT 59807

Lewis and Clark National Forest  
ATTN: Wayne Phillips  
1101 15th St. North  
Great Falls, MT 59403

The Nature Conservancy  
ATTN: Dr. Larry Morse  
1815 North Lynn Street  
Arlington, VA 22209

The Nature Conservancy  
ATTN: Bernie Hall  
Big Sky Field Office  
P.O. Box 258  
Helena, MT 59624

Montana Natural Heritage Program  
State Library Building  
1515 E. 6th Ave.  
Helena, MT 59620

III. INFORMATION SOURCES

17. Sources of Information.

A. Publications.

1. References cited in report: See Literature Cited (p. 34).

2. Other publications/sources:

B. Museum collections: Specimens are deposited at the University of Montana Herbarium (MONTU), University of Minnesota (MIN), Department of Agriculture Ontario (DAO), and at the New York Botanical Garden (NY). The following is a list of herbarium specimens reviewed for this report, and is organized by occurrence number:

(002) - Ramstetter (7), MONTU
Schassberger (396), MN

(005) - Ramstetter (2), MONTU
(006) - Ramstetter (11, 13), MONTU
     Dorn (2783), MONTU
(007) - Ramstetter (9), MONTU
     Schassberger (398), MN
(008) - Ramstetter (3), MONTU
(010) - Schassberger (399), MN
(016) - Lackschewitz (11026), MONTU
(017) - Schassberger (416), MN
(018) - Schassberger (412), MN
(019) - Schassberger (397), NY

C. Fieldwork.

1. Surveys conducted:

    22-24 July 1986, Shelly, J.S.
    23-27, 30-31 July 1990, Schassberger, L.

D. Knowledgeable individuals:

Wayne Phillips
Lewis and Clark National Forest
1101 15th St. North
Great Falls, MT 59403

J. Stephen Shelly
U.S. Forest Service, Region 1
Federal Building
P.O. Box 7669
Missoula, MT 59807

Lisa A. Schassberger
Montana Natural Heritage Program
State Library
1515 E. 6th Ave.
Helena, MT 59620

E. Other information sources: Color slides and field forms are on file at the office of the Montana
18. **Summary of materials on file:** All detailed field forms, maps and color slides are on file at the office of the Montana Natural Heritage Program. Herbarium vouchers are deposited as listed in section III.17.B.

IV. **AUTHORSHIP**

19. **Initial authorship:**

Lisa Ann Schassberger  
Montana Natural Heritage Program  
State Library  
1515 E. 6th Ave.  
Helena, MT 59620  
(406) 444-3009

20. **Maintenance of status report:** The Montana Natural Heritage Program will maintain current information and update the status report as needed. Should the taxon be listed as an endangered or threatened species by the U.S. Fish and Wildlife Service, the service, through its Office of Endangered species (Region 6), should maintain the primary file of information, encourage others to provide new information, and distribute new findings, as received, to the interested parties (section II.16).

V. **NEW INFORMATION**

21. **Record of revisions:** Not currently applicable.
Literature Cited


APPENDIX A.
Element Occurrence Record
Cirsium longistylum

Occurrence number: 001

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: MONARCH SE
EO rank:  
EO rank comments:  

County: CASCADE

USGS quadrangle: MONARCH

Township-range: 015N007E Section: 14  Precision: M
Township-range comments:  

Survey date: 1951-08-23  Elevation: 4740
First observation: 1951  Slope/aspect:  
Last observation: 1951-08-23  Size (acres): 0

Location:  
LITTLE BELT MOUNTAINS, 3 MILES SOUTHEAST OF MONARCH (TYPE LOCALITY).

Element occurrence data:  
UNKNOWN; COLLECTION CONSISTS OF THREE SHEETS, ONE BEARING A ROSETTE ONLY; DIRECTIONS GIVEN FOR THIS COLLECTION ARE NOT IN THE TOWNSHIP, RANGE & SECTION GIVEN IN THE BPA RIVERS STUDY.

General site description:  
UNKNOWN.

Land owner/manager:  
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:  
VOUCHER - SENN, FRANKTON & GILLET (5666), 1951, DAO (HOLOTYPE); ALSO RECORDED IN BPA RIVERS STUDY.

Information source:  
Element Occurrence Record
Cirsium longistylum

Occurrence number: 002

Global rank: G2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: C2

Survey site name: KINGS HILL
EO rank: D
EO rank comments: 1986: ADJACENT TO ROADS, SOME EVIDENCE OF POSSIBLE HYBRIDIZATION.

County: MEAGHER
CASCADE

USGS quadrangle: KINGS HILL

Township-range: 012N008E Section: 03 Precision: S
Township-range comments: NE4NE4,2N2,SE4;11N2;12NW4,1NW4;T13NR8W:34SE4,SW4

Survey date: 1987-07-16 Elevation: 7280
First observation: 1951 Slope/aspect:
Last observation: 1990-07-31 Size (acres): 500

Location:
LITTLE BELT MOUNTAINS, ENTRANCE TO SHOWDOWN SKI AREA, 0.4 MILE SOUTH OF KINGS HILL CAMPGROUND ALONG HWY. 89. POPULATION EXTENDS EAST TO THE TOP OF KINGS HILL AND SOUTH AND EAST ALONG RIDGES.

Element occurrence data:
1986: FREQUENT; 41 PLANTS STUDIED, WITH 32 HAVING FEATURES OF C. LONGISTYLUM, AND 9 HAVING FEATURES APPARENTLY INTERMEDIATE BETWEEN C. LONGISTYLUM AND C. HOOKERIANUM. 1990: EXTENDED POPULATION BOUNDARIES, TENS OF THOUSANDS OF PLANTS.

General site description:
DISTURBED AREAS ALONG HIGHWAY AND NEAR LARGE TURNOUT, GRAVELLY SURFACE WITH SANDY SOIL BENEATH, AND IN MEADOWS. ASSOCIATED SPECIES: BROMUS SPP., CAREX SPP., POA PRATENSIS, ARTEMISIA SPP.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Occurrence number: 003

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: FOREST GREEN
EO rank: 
EO rank comments: 

County: MEAGHER

USGS quadrangle: KINGS HILL

Township-range: 012N008E  Section: 32  Precision: M
Township-range comments: NE4

Survey date: 1983-07-14  Elevation: 6000
First observation: 1953  Slope/aspect:
Last observation: 1953-  Size (acres): 0

Location:
LITTLE BELT MOUNTAINS, 20 MILES SOUTH OF NEIHART, FOREST GREEN RESORT.

Element occurrence data:
UNKNOWN; FOREST GREEN AREA WAS SEARCHED IN 1983 BY J. RAMSTETTER, BUT NO PLANTS WHICH COULD BE CONCLUSIVELY IDENTIFIED AS C. LONGISTYLM WERE FOUND.

General site description:
MEADOWS, CLEARINGS, AND GRAVELLY ROADSIDES.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
VOUCHER-SENN (6207), 1953, DAO; MENTIONED WITH JUMPING CREEK CAMPGROUND SITE IN BPA RIVERS STUDY.

Information source:
Occurrence number: 004
Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2
Survey site name: MONARCH
EO rank: D
EO rank comments: VERY SMALL POPULATION, ADJACENT TO ROAD.
County: CASCADE
USGS quadrangle: MONARCH
Township-range: 015N007E Section: 03  Precision: S
Township-range comments: NE4NE4
Survey date: 1983-07-15  Elevation: 4680
First observation: 1983  Slope/aspect: 
Last observation: 1986-07-24  Size (acres): 1
Location:
FROM MONARCH ON HWY. 89, GO EAST 1 MILE ON DRY FORK ROAD (#120); SITE IS ON NORTH SIDE OF ROAD.
Element occurrence data:
2 PLANTS IDENTIFIED AS C. LONGISTYLUM; ANOTHER THISTLE POSSIBLY C. HOOKERIANUM IS ABUNDANT IN THE AREA; ADDITIONAL PLANTS MAY OCCUR ALONG ROAD #120 FOR SEVERAL MILES TO THE EAST; 1 PLANT IDENTIFIED AS C. LONGISTYLUM DURING 1986 SURVEY.
General site description:
ROCKY, GRAVELLY DITCH BOTTOM; ASSOCIATED WITH DISTurbed GRASSLAND: POA PRATENSIS, BROMUS INERMIS, PHLEUM PRATENSE.
Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT
Comments:
NONE.
Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN LEWIS & CLARK, PONDERA, AND MEAGHER COUNTIES OF 22-24 JULY.
Occurrence number: 005

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: BENDER CREEK TRAIL
EO rank: D
EO rank comments: DISTURBED AREA, ADJACENT TO ROAD AND NUCLEAR MISSILE SILO.

County: CASCADE
USGS quadrangle: BARKER
Township-range: 015N008E  Section: 23  Precision: S
Township-range comments: NE4

Survey date: 1986-07-24  Elevation: 5360
First observation: 1983
Last observation: 1990-07-22  Size (acres): 1

Location:
LITTLE BELT MOUNTAINS, CA.9 MILES EAST OF MONARCH, JUNCTION OF TRAIL #318 (BENDER CREEK TRAIL) AND ROAD #120 (DRY FORK BELT CREEK ROAD).

Element occurrence data:
1986: 20 PLANTS COUNTED; EVIDENCE OF POSSIBLE HYBRIDIZATION WITH CIRSIUM HOOKERIANUM. 1990: 10 PLANTS COUNTED.

General site description:
IN GRASSY OPENINGS AND ON ROADSIDE; WITH PINUS PONDEROSA, P. CONTORTA, PSEUDOTSUGA MENZIESII, ACHILLEA MILLEFOLIUM, PHLEUM, LINUM; ADJACENT TO NUCLEAR MISSILE SILO.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620.
Occurrence number: 006

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: THOMPSON GULCH/GIPSY CREEK

EO rank: 
EO rank comments: 

County: MEAGHER
BROADWATER

USGS quadrangle: GIPSY LAKE
BOULDER BALDY
GURNETT CREEK EAST

Township-range: 009N004E Section: 32  Precision: M
Township-range comments: 27,28,33,31,30; T9NR3E: 25,36

Survey date: 1983-07-18  Elevation: 7400
First observation: 1976  Slope/aspect: 
Last observation: 1983-07-18  Size (acres): 0

Location: SCATTERED IN SUBPOPULATIONS ALONG ROAD #139 FOR 6.4 MILES TO THE WEST.

Element occurrence data: SOME SUBPOPULATIONS HAVE >100 PLANTS; ANOTHER THISTLE POSSIBLY C. HOOKERIANUM OCCURS IN ALL AREAS (HYBRIDIZATION?).

General site description:
MOIST FIELDS AND ALONG ROADSIDE; WITH LUPINUS, SOLIDAGO; SPECIES "OCCURS IN MOIST FIELDS AND ALONG ROADSIDES FOR A 6.4 MI. STRETCH OF 139" (RAMSTETTER, 1983).

Land owner/manager:
HELENA NATIONAL FOREST, TOWNSEND RANGER DISTRICT


Information source:
RAMSTETTER, J. 1983. SITE SURVEY AND SPECIAL PLANT SURVEY FORMS (SEE GMF).
Occurrence number: 007

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: JUMPING CREEK CAMPGROUND
EO rank:
EO rank comments:

County: MEAGER

USGS quadrangle: MOOSE MOUNTAIN

Township-range: 012N007E  Section: 36  Precision: S
Township-range comments: NE4

Survey date:  Elevation: 5920
First observation: 1983  Slope/aspect:
Last observation: 1990-07-27  Size (acres): 5

Location:
JUMPING CREEK CAMPGROUND (U.S. HWY 89, CA. 17.5 MILES SOUTH OF NEIHART).

Element occurrence data:
FREQUENT IN MOIST MEADOWS AND IN LIGHTLY-DISTURBED AREAS OF CAMPGROUND.

General site description:
MOIST MEADOWS AND INTO CAMPGROUND.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:  
VOUCHER-RAMSTETTER, J. (9), 1983, MONTU; SCHASSBERGER, L. (398), MN.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Occurrence number: 008

Global rank: G2Q Forest Service status: WATCH LIST
State rank: S2 Federal Status: C2

Survey site name: NEIHART
EO rank:
EO rank comments:

County: CASCADE

USGS quadrangle: BELT PARK BUTTE

Township-range: 014N007E Section: 07 Precision: S
Township-range comments: 22,23,24,25,26;T14NR8E:19,30

Survey date: Elevation: 7000
First observation: 1983 Slope/aspect:
Last observation: 1990-07-27 Size (acres): 160

Location:
NEIHART; POPULATION EXTENDS WEST UP HARLEY CREEK AND NORTH TO UPLAND MEADOWS.

Element occurrence data:
FREQUENT; IN MOIST STREAMSIDE HABITATS AND MOIST MEADOWS OF UPLAND AREAS.

General site description:
IN OPEN AREAS AND ALONG STREAMS, WITH PHLEUM PRATENSE AND CAMPANULA ROTUNDIFOLIA.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Element Occurrence Record
Cirsium longistylum

Occurrence number: 009

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: LONG BALDY
EO rank: EO
EO rank comments: 

County: JUDITH BASIN

USGS quadrangle: YOGO PEAK
NEIHART

Township-range: 014N009E Section: 19  Precision: G
Township-range comments: 

Survey date: 1896-08-19  Elevation: 8000
First observation: 1896  Slope/aspect: 
Last observation: 1896-08-19  Size (acres): 0

Location:
"LONG BALDY, LITTLE BELT MOUNTAINS."

Element occurrence data:
UNKNOWN.

General site description:
UNKNOWN

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
VOUCHER - FLODMAN (880), 1896, NY. MOORE & FRANKTON (1963) STATE THAT THE SITE IS IN JUDITH BASIN COUNTY, I.E., NEAR BIG BALDY MOUNTAIN. LONG MOUNTAIN AND NEIHART BALDY, IN CASCADE COUNTY, LIE JUST TO THE WEST, AND MAY ALSO BE THE AREA OF COLLECTION.

Information source:
MOORE, R.J., AND C. FRANKTON. 1963. CYTOTAXONOMIC NOTES ON SOME CIRSIUM SPECIES OF THE WESTERN U.S. CAN.J. BOT. 41:1553
Occurrence number: 010

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: O'BRIEN CREEK
EO rank:
EO rank comments:

County: CASCADE  MEAGER

USGS quadrangle: KINGS HILL
MOOSE MOUNTAIN
BELT PARK BUTTE

Township-range: 013N008E  Section: 28  Precision: S
Township-range comments: NW4,29NE4,CENTER,30NE4,19SW4,SE4,NE4

Survey date:  First observation: 1990  Elevation: 7200
Last observation: 1990-07-27  Slope/aspect:
Size (acres): 800

Location: LITTLE BELT MOUNTAINS, WEST OF KINGS HILL ALONG F.S. ROAD #839 FROM O'BRIEN PARK TO LONE TREE PARK.

Element occurrence data:
PROBABLY HUNDREDS OF THOUSANDS OF PLANTS PRESENT.

General site description:
IN OPEN MEADOWS AND FORESTS AND ALONG ROADWAYS, WITH POA PRATENSE, KOELERIA MACRANTHA, ASTRAGALUS ALPINA, GERANIUM VISCOSISSIMUM, ACHILLEA MILLEFOLIUM, ASTER OCCIDENTALIS.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
VOUCHER - SCHASSBERGER, L. (401), 1990. TENTATIVELY IDENTIFIED BY G. OUNBEY.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Occurrence number: 011

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: SOUTH FORK DEADMAN CREEK
EO rank: BC
EO rank comments: 1986: LARGE POPULATION, PARTIALLY OCCURS IN DISTURBED AREAS.

County: MEAGHER

USGS quadrangle: KINGS HILL SAND POINT

Township-range: 012N008E Section: 24 Precision: S
Township-range comments: S2,NW4,25NE4,T12NR9E:19S2,20SW4,30NE4,29N2

Survey date: 1990-07-27  Elevation: 6800
First observation: 1986  Slope/aspect:
Last observation: 1990-07-27  Size (acres): 600

Location:
LITTLE BELT MOUNTAINS, SOUTH FORK DEADMAN CREEK DRAINAGE, ALONG LEWIS & CLARK NF RD. #837, CA. 1 MILE FROM US HWY 89 UP INTO SPUR PARK (ALONG ROAD AND ON ADJACENT, LIGHTLY-DISTURBED SLOPES).

Element occurrence data:
1986: OF 19 PLANTS STUDIED, 3 DISPLAYED FEATURES SUGGESTING HYBRID CONTACT WITH C. HOOKERIANUM. 1990: FREQUENT; SEVERAL TENS OF THOUSANDS OF PLANTS.

General site description:
AT LOWER ELEVATIONS: PINUS CONTORTA FOREST ON NE-FACING SLOPE. AT HIGHER ELEVATIONS (SPUR PARK): ABIES LASIOCARPA/PINUS ALBICAULIS PARKLAND, WITH FESTUCA IDAHOENSIS, GEUM TRIFLORUM, POTENTILLA FRUTICOSA, AND PENSTEMON PROCERUS.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
1986: SIGHT RECORD. 1990: VOUCHER, SCHASSBERGER, L. (399), MN.
ADDITIONAL FIELD SURVEY NEEDED THROUGHOUT REGION.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Element Occurrence Record
Cirsium longistylum

Occurrence number: 012

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: HAY COULEE
EO rank:
EO rank comments:

County: JUDITH BASIN

USGS quadrangle: WOODHURST MOUNTAIN

Township-range: 014N011E  Section: 29  Precision: S
Township-range comments: CENTER

Survey date: Elevation: 5920
First observation: 1990  Slope/aspect: LEVEL / EAST
Last observation: 1990-08-07  Size (acres): 60

Location:
LITTLE BELT MOUNTAINS, SOUTH OF SAGE CREEK UP HAY COULEE, CA. 15 MILES WEST OF UTICA.

Element occurrence data:
FREQUENT; MORE THAN 5,000 INDIVIDUALS.

General site description:
IN OPEN MEADOW, WITH PHLEUM PRATENSE AND GERANIUM VISCOSISSIMUM.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:
HEAVILY-GRAZED MEADOW. AREA MAY HAVE BEEN BURNED IN THE SAGE CREEK FIRE OF 1990.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Occurrence number: 013

Global rank:  G2Q   Forest Service status:  WATCH LIST
State rank:  S2   Federal Status:  C2

Survey site name:  BELT CREEK
EO rank:  B
EO rank comments:  LARGE POPULATION, ADJACENT TO ROAD.

County:  CASCADE

USGS quadrangle:  NEIHART

Township-range:  013N008E Section:  15
Precision:  S

Survey date:  1986-07-24   Elevation:  6080
First observation:  1986   Slope/aspect:  
Last observation:  1986-07-24   Size (acres):  1

Location:
LITTLE BELT MOUNTAINS, BELT CREEK, ALONG US HWY 89, 1 MILE SOUTH OF JEFFERSON CREEK, CA. 4 MILES SOUTHEAST OF NEIHART.

Element occurrence data:
170 PLANTS COUNTED, 85 ON EACH SIDE OF THE CREEK; OF 41 PLANTS STUDIED, 24 WERE IDENTIFIED AS C. LONGISTYLM AND 4 AS C. HOOKERIANUM?; 13 DISPLAYED CHARACTERISTICS INTERMEDIATE BETWEEN THE TWO.

General site description:
GRASSY OPENINGS ALONG CREEK, AND NEAR HIGHWAY.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
SIGHT RECORD, VOUCHER SPECIMEN VOIDED; AREA SURVEYED WITH WAYNE PHILLIPS, USFS, GREAT FALLS.

Information source:
SHELLY, J.S. 1986. FIELD SURVEYS IN LEWIS & CLARK, PONDERA, AND MEAGHER COS. OF 22-24 JULY.
Occurrence number: 014

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: Paine Gulch
EO rank: B
EO rank comments: PLANTS VARIABLE INDICATING POSSIBLE HYBRIDIZATION; DISTURBED MEADOW

County: Cascade
USGS quadrangle: Monarch

Township-range: 015N007E  Section: 12  Precision: S
Township-range comments: W2,11NE4

Survey date: 1987-06-30  Elevation: 5200
First observation: 1987  Slope/aspect:
Last observation: 1987-06-30  Size (acres): 2

Location:
LITTLE BELT MOUNTAINS, PAINE GULCH, CA. 1.5 - 2.2 MILES UPSTREAM FROM CONFLUENCE WITH BELT CREEK.

Element occurrence data:
11-50 PLANTS OBSERVED.

General site description:
DISTURBED MEADOW.

Land owner/manager:
PAINE GULCH PROPOSED RESEARCH NATURAL AREA
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
POSSIBLE HYBRIDIZATION WITH C. HOOKERIANUM.

Information source:
KRATZ, A. 1987. [FIELD WORK IN PAINE GULCH WITH WAYNE PHILLIPS (USFS): 29 JUNE - 2 JULY.]
Occurrence number: 015

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: SERVOSS MOUNTAIN
EO rank:
EO rank comments:

County: CASCADE

USGS quadrangle: BARKER

Township-range: 015N008E  Section: 21  Precision: S
Township-range comments: W2

Survey date: 1987-06-30  Elevation: 6400
First observation: 1987  Slope/aspect:
Last observation: 1987-06-30  Size (acres):

Location:
LITTLE BELT MOUNTAINS, SOUTHEAST SIDE OF SERVOSS MOUNTAIN, NORTH OF DIVIDE BETWEEN RUBY CREEK AND HENN GULCH.

Element occurrence data:
UNKNOWN.

General site description:
FOUND ALONG A MOTORCYCLE TRAIL.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
SITE NOT SURVEYED IN DETAIL; BOUNDARY IS APPROXIMATE.

Information source:
KRATZ, ANDREW. LOLO NATIONAL FOREST, BUILDING 24, FORT MISSOULA, MISSOULA, MT 59801.
Occurrence number: 016

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: LAKE SUTHERLIN
EO rank:
EO rank comments:

County: MEAGHER

USGS quadrangle: VOLCANO BUTTE

Township-range: 010N008E Section: 15  Precision: M
Township-range comments:

Survey date:  Elevation:  5500
First observation:  1986  Slope/aspect:  
Last observation:  1986-07-24  Size (acres):  0

Location:
0.5 MILE EAST OF LAKE SUTHERLIN (CA. 7 MILES NE OF WHITE SULPHUR SPRINGS).

Element occurrence data:
UNKNOWN.

General site description:
IN MOIST MEADOW, WITH ASTER OCCIDENTALIS AND ERIGERON SPP.

Land owner/manager:
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:
NONE.

Information source:
LACKSCHEWITZ, K.H. (11026). 1986. SPECIMEN # 103745. MONTU.
Occurrence number: 017

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: UPPER BEAR GULCH
EO rank:
EO rank comments:

County: JUDITH BASIN

USGS quadrangle: BANDBOX MOUNTAIN

Township-range: 014N010E  Section: 26  Precision: S
Township-range comments: SW4SW4,27SE4SE4,35NW4NW4

Survey date:  
First observation: 1990  Elevation: 6280
Last observation: 1990-03-28  Slope/aspect:
Size (acres): 10

Location:
LITTLE BELT MOUNTAINS, UPPER BEAR GULCH, CA. 20 MILES WEST OF UTICA, MT.

Element occurrence data:
CA. 100 PLANTS.

General site description:
SCATTERED ALONG A MEADOW NEAR STREAMSIDE.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:
VOUCHER - SCHASSBERGER, L. (416), 1990, MN. TENTATIVELY VERIFIED BY G. OWNBEY.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Element Occurrence Record
Cirsium longistylum

Occurrence number: 018

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: SKUNK GULCH
EO rank:
EO rank comments:

County: JUDITH BASIN

USGS quadrangle: BANDBOX MOUNTAIN

Township-range: 014N010E Section: 33 Precision: S
Township-range comments: NW4,SE4

Survey date:  
First observation: 1990  
Last observation: 1990-08-07  
Elevation: 6280  
Slope/aspect:
Size (acres): 60

Location:  
LITTLE BELT MOUNTAINS, SKUNK GULCH, CA. 12 MILES NORTHEAST OF SAPPHIRE VILLAGE.

Element occurrence data:  
SEVERAL HUNDREDS OF PLANTS, IN FLOWER (TOTAL NOT COUNTED).

General site description:  
IN MEADOW ALONG CREEK, WITH FESTUCA SCABRELLA AND GERANIUM VISCOSISSIMUM.

Land owner/manager:  
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:  
VOUCHER — SCHASSBERGER, L. (412), 1990, MN. TENTATIVELY IDENTIFIED BY G. OWNBEY.

Information source:  
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Occurrence number: 019

Global rank: G2Q    Forest Service status: WATCH LIST
State rank:  S2     Federal Status:  C2

Survey site name:  THORNQUIST GULCH
EO rank:            
EO rank comments:  

County: MEAGHER

USGS quadrangle:  COXCOMBE BUTTE

Township-range:  011N007E  Section: 17  Precision:  S
Township-range comments: NW4

Survey date:         Elevation:  5800
First observation:   1990
Last observation:    1990-07-26

Location:
LITTLE BELT MOUNTAINS, THORNQUIST GULCH, CA. 13 MILES NORTH OF WHITE SULPHUR SPRINGS.

Element occurrence data:
CA. 50 PLANTS.

General site description:
NEAR JEEP ROAD, ALONG STREAM.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT

Comments:
VOUCHER - SCHÄSSBERGER, L. (397), 1990, NY. TENTATIVELY IDENTIFIED BY A. CRONQUIST.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Cirsium longistylum

Occurrence number: 020

Global rank: G2Q  Forest Service status: WATCH LIST
State rank: S2  Federal Status: C2

Survey site name: RUSSIAN FLAT
EO rank: 
EO rank comments:

County: JUDITH BASIN

USGS quadrangle: RUSSIAN FLAT

Township-range: 011N010E  Section: 11  Precision: S
Township-range comments: NW4,10NW4SE4,NE4,12SW4

Survey date:  Elevation: 6520
First observation: 1990  Slope/aspect: 5% / EAST
Last observation: 1990-07-24  Size (acres): 80

Location:
LITTLE BELT MOUNTAINS, RUSSIAN CREEK, CA. 18 MILES WEST OF SAPPHIRE VILLAGE.

Element occurrence data:
THOUSANDS OF PLANTS PLUS SCATTERED INDIVIDUALS EXTENDING TO THE EAST CA. 1 MILE.

General site description:
LARGE POPULATION IN OPEN MEADOW, WITH POTENTILLA FRUTICOSA, POTENTILLA DIVERSIFOLIA, ACHILLEA MILLEFOLIUM, ANTENNARIA MICROPHYLLA, FESTUCA IDAHOENSIS, GEUM TRIFLORUM, AND PHLEUM PRATENSE.

Land owner/manager:
LEWIS & CLARK NATIONAL FOREST, JUDITH RANGER DISTRICT

Comments:
NONE.

Information source:
SCHASSBERGER, L.A. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST 6TH AVE., HELENA, MT 59620.
Cirsium longistylum

Monarch SE (001)
Paine Gulch (014)

U.S.G.S. Monarch Quadrangle (7.5')
Cirsium longistylum

Forest Green (003)

U.S.G.S. Kings Hill Quadrangle (7.5')
Cirsium longistylum

Monarch (004)

U.S.G.S. Monarch Quadrangle (7.5')
Cirsium longistylum  Bender Creek Trail (005)

U.S.G.S. Barker Quadrangle (7.5')
Cirsium longistylum

Thompson Gulch/Gipsy Creek (006)

U.S.G.S. Gurnett Creek (bottom left), Boulder Baldy (top left), and Gipsy Lake (top right) Quadrangles (7.5')
Cirsium longistylum

Jumping Creek Campground (007)

U.S.G.S. Moose Mountain Quadrangle (7.5')
Cirsium longistylum

Long Baldy (009)

U.S.G.S. Neihart (left) and Yogo Peak (right) Quadrangles (7.5
Cirsium longistylum

Hay Coulee (012)

U.S.G.S. Woodhurst Mountain Quadrangle (7.5')
Cirsium longistylum

Belt Creek (013)

U.S.G.S. Neihart Quadrangle (7.5')
Cirsium longistylum

Servoss Mountain (015)

U.S.G.S. Barker Quadrangle (7.5')
Cirsium longistylum

Lake Sutherlin (016)

U.S.G.S. Volcano Butte Quadrangle (7.5')
Cirsium longistylum

Upper Bear Gulch (017)

U.S.G.S. Bandbox Mountain Quadrangle (7.5')
Cirsium longistylum

Skunk Gulch (018)

U.S.G.S. Bandbox Mountain Quadrangle (7.5')
Cirsium longistylum

Thornquist Gulch (019)

U.S.G.S. Coxcombe Butte Quadrangle (7.5')
Cirsium longistylum

Russian Flat (020)

U.S.G.S. Russian Flat Quadrangle (7.5')
APPENDIX B.
DEMOGRAPHIC MONITORING TRANSECTS

During 1990, three permanent monitoring transects were established in populations of *C. longistylum* on the Lewis and Clark National Forest. The purpose of these transects is to provide more detailed data on the life history and population dynamics of *C. longistylum*. Data on survivorship and reproduction are important for understanding the biology of plants with limited distributions, especially when attempting to ensure their long-term preservation (Massey and Whitson 1980). Data may also indicate whether population sizes are declining, which may be the result of infestation by the weevil *Rhinocyllus conicus*.

STUDY SITES: The locations and the geographic details for each of the three transect locations, are as follows:

1. Russian Creek: Little Belt Mountains, South Fork of the Judith River drainage, just west of lower Russian Creek, Judith Basin County. Take Forest Rd. # 487 (South Fork of Judith River) ca. 22 miles southwest of Utica, Montana. From Forest Rd. # 487, travel 0.15 mile south on Forest Rd. # 2013; site is just east of road before reaching a small drainage in meadow; T11N, R10E, Section 11, SE\(^1/4\)NW\(^1/4\)NW\(^1/4\). Location is mapped on a U.S.G.S. topographic map Figure A, p. 80.

   From plot center:

   63° and 84 paces to the first tall tree in gully.

   33° and 71 paces to short dead snag (the one to the right).

   198° and 27 paces to post at roadside.

   Elevation: 6520 feet

   Slope: level to 3 percent

   Aspect: ENE
U.S.G.S. Russian Flat Quadrangle (7.5')

Figure A. Location of Russian Creek permanent study plot *Cirsium longistylum*, Judith Basin County, Montana.
2. Kings Hill: Little Belt Mountains, just west of Kings Hill Pass, Meagher County. From the top of Kings Hill Pass, take Forest Rd. # 487 southeast to a point 0.1 mile before it intersects with Forest Rd. # 251. Plot is southwest of the Forest Rd. # 487; T12N, R8E, Section 2, SE\(\frac{1}{4}\)SE\(\frac{1}{4}\)NW\(\frac{1}{4}\). Location is mapped on a U.S.G.S. topographic map Figure B, p. 82.

From plot center:

121° and 22.5 paces to a cluster of stumps (14' high).

174° and 22.5 paces to tree with dead top.

240° and 15 paces to dead tree.

Elevation: 7880 feet

Slope: 15 percent

Aspect: SW
U.S.G.S. Kings Hill Quadrangle (7.5')

Figure B. Location of Kings Hill permanent study plot, *Cirsium longistylum*, Meagher County, Montana.
3. Neihart: Little Belt Mountains, 3 miles northwest of Neihart, Montana, Cascade County. From Neihart, travel south 1.5 miles on Hwy. 89, turn west on Forest Rd. # 834 (Harley Creek Road) and travel ca. 4 miles to intersection with Belt Park Road. Turn left and head south for 0.5 mile. Site is south east of road in small meadow; T14N, R7E, Section 27, NE^4NE^4NE^4. Location is mapped on a U.S.G.S. topographic map Figure C, p. 84.

From plot center:

145° and 25.5 paces to standing dead tree.

55° and 28 paces to a cluster of spruce trees.

227° and 17 paces to a pair of small lodgepole next to road.

Elevation: 6960 feet

Slope: 17 percent

Aspect: NE
Figure C. Location of Neihart permanent study plot, Cirsium longistylum, Cascade County, Montana.
METHODS: At each of the three sites described above, a piece of re-bar approximately four feet long was driven into the center of a plot to a depth of two feet and painted bright orange. Plot radii varied depending on the density of plants at a site, but ranged from 15 (4.6 m) to 39 feet (11.9 m). A measuring tape was hooked over the center pin and held at about 6 inches from the top by a knot. Starting at north, the direction (in degrees) and distance (in feet and inches) to the first plant from the stake was recorded, along with the phenological status of the plant (and hence around in a circle within the specified radius until all plants were recorded). Plants were placed in size classes that appeared to best relate to age. These included:

R = Rosette

Rs = small rosette, 1 whorl of basal leaves
Rm = medium rosette, 2 whorls of basal leaves
Rl = large rosette, > 2 whorls of basal leaves

P = Plant that has bolted.

Ph(x) = Plant with (x) number of open, flowering heads

Pb(x) = Plant with (x) number of closed heads (involucral bracts completely enclosed flowers)

Dead - a dead stem from the previous year

Thus, a plant that had three flowering heads and three unopened heads would be recorded as Ph3b3. Ph(x)b(x)h(x)b(x) indicates a plant with more than one flowering stem per rosette.

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Lower Russian Creek (plot radius = 39')

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24 July 1990
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**Kings Hill (plot radius = 15')**

**30 July 1990**

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MONTANA STATE
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