

FIELD INVESTIGATION OF CHRYSOTHAMNUS PARRYI ssp. MONTANUS
A REGION 4 SENSITIVE SPECIES
ON THE TARGHEE NATIONAL FOREST

by

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ABSTRACT

A field investigation of Chrysothamnus parryi ssp. montanus (Centennial Rabbitbrush) was conducted on the Targhee National Forest by the Idaho Department of Fish and Game's Natural Heritage Program. The investigation was a cooperative Challenge Cost-share project between the Department and the Targhee NF. Centennial Rabbitbrush is a very local endemic known only from the Red Conglomerate Peaks area of the Centennial Mountains. It is listed as a High Priority species for the Targhee National Forest in Region 4's 1989 Threatened, Endangered, and Sensitive Plant Program Action Plan.

Previous to 1990, only a single population from the type location on Red Conglomerate Peaks was documented. This year's inventory confirmed the very local distribution of Centennial Rabbitbrush. Survey work discovered approximately 3,500 plants distributed among four populations, covering an area less than 150 acres, all within several miles of the original type locale. There is some additional potential habitat in adjacent Montana that was not surveyed and may support additional populations. No clear threats to long-term viability were apparent, but the highly localized nature of the populations make them vulnerable to extirpation from any habitat destroying activities. Centennial Rabbitbrush still meets Sensitive Species criteria and should remain on the Regional List.

TABLE OF CONTENTS

ABSTRACT i
TABLE OF CONTENTS ii
LIST OF APPENDICES ii
INTRODUCTION 1
RESULTS 2
REFERENCES 10

LIST OF APPENDICES

- Appendix 1Line drawings of Chrysothamnus parryi ssp. montanus.
Appendix 2Locations of Chrysothamnus parryi ssp. montanus
on or near the Targhee National Forest.
Appendix 3List of areas searched unsuccessfully for Chrysothamnus parryi ssp.
montanus on the Targhee National Forest in 1990.
Appendix 4Slides of Chrysothamnus parryi ssp. montanus and its habitat on the
Targhee National Forest.
Appendix 5.....Element occurrence records for Chrysothamnus parryi ssp. montanus on
the Targhee NF.

INTRODUCTION

The National Forest Management Act and Forest Service policy require that Forest Service land be managed to maintain populations of all existing native animal and plant species at or above the minimum viable population level. A minimum viable population consists of the number of individuals, adequately distributed throughout their range, necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

The Forest Service, along with other Federal and State agencies, has recognized the need for special planning considerations in order to protect the flora and fauna on the lands in public ownership. Species recognized by the Forest Service as needing such considerations are those that (1) are designated under the Endangered Species Act as endangered or threatened, (2) are under consideration for such designation, or (3) appear on a regional Forest Service sensitive species list.

Chrysothamnus parryi ssp. montanus (Centennial Rabbitbrush) is endemic to a small area of the western Centennial Mountains in the vicinity of the Continental Divide along the Idaho-Montana state line. Centennial Rabbitbrush is on the Intermountain Region Sensitive Species List for the Targhee NF (USDA Forest Service 1986, 1989). It is also a Category 2 candidate for federal listing (U.S. Fish and Wildlife Service 1990). A field investigation for Centennial Rabbitbrush was conducted on the Targhee NF by the Idaho Department of Fish and Game's Natural Heritage Program through the Cooperative Challenge Cost-share Program.

The primary objectives of this investigation was as follows:

- 1) Survey the one known population of Centennial Rabbitbrush and search potential habitats for new populations on the Targhee NF.
- 2) Characterize habitat conditions for the known and any new populations found on the Targhee NF.
- 3) Assess population trends and threats to existing populations and make management recommendations to the forest based on these assessments.

RESULTS

During August 1990, botanists from the Heritage Program surveyed habitat potentially suitable for Centennial Rabbitbrush in high elevation areas of the Centennial Mountains on the Targhee NF. We relocated the one historical collection site on the slopes below Red Conglomerate Peaks and discovered three new populations, each consisting of several subpopulations. All of the populations are relatively small and restricted to a narrow range of habitat conditions. The new populations all occur within four miles of the original Red Conglomerate Peaks discovery site. Part of one population extended across the Continental Divide into adjacent Montana. It appears that a limited amount of additional potential habitat does exist in Montana, but these lands were not surveyed during this inventory. The following is a detailed discussion of the Centennial Rabbitbrush, including information on its taxonomy and identification, range and habitat, conservation status, and recommendations to the Regional Forester, Targhee NF, and U.S. Fish and Wildlife Service, concerning its status in Idaho.

Chrysothamnus parryi (Gray) Greene ssp. montanus L. Anderson

CURRENT STATUS USFS Region 4 Sensitive Species (Targhee NF)
USFWS - C2
Idaho Native Plant Society - None
Heritage Rank - G5T1 S1

TAXONOMY

Family: Asteraceae [Compositae (Aster)]

Common Name: Centennial Rabbitbrush

Citation: Phytologia Vol. 38, no. 4, 1978

Technical Description: Intricately branched, low, spreading shrubs, 1-2 (3) dm tall; leaves green, alternate, entire, linear, 2-3.5 cm long, 1-2 mm wide, viscidulous, upper ones surpassing the few-headed cymose inflorescence; heads 10-11.5 mm long, involucre bracts (11) 13-17 (18), viscidulous, more or less in vertical rows, outer bracts lanceolate-ovate with ciliate margins and long acuminate, herbaceous tips, inner ones broadly lanceolate-elliptic with acuminate tips; disk flowers (4) 5-11 (12), yellow, corollas 9-10 mm long, lobes 1.4-1.7 mm long, broadly lanceolate, styles variable with stigmatic lines much shorter to slightly longer than the style appendages (27-52% of total style branch length); achenes 8 mm long, pubescent; n = 9 (Anderson 1978).

Nontechnical Description: Centennial Rabbitbrush is a low growing, branching shrub with stems mostly covered by compacted, feltlike hairs (not always easy to see). It has linear leaves that are somewhat sticky to the touch and with the uppermost leaves overtopping the heads of yellow flowers. Each flower head usually contains 8-10 individual disc flowers, but no ray flowers. See Appendix 1 for a line drawing of Centennial Rabbitbrush.

Distinguishing Features and Similar Species: Centennial Rabbitbrush is most similar to other subspecies of Chrysothamnus parryi, but none of these are known from the Centennial Mountains area. It is sympatric with the much more common and widespread Chrysothamnus viscidiflorus ssp. lanceolatus (green rabbitbrush), and superficially the two may be confused. Chrysothamnus nauseosus ssp. consimilis (gray rabbitbrush), another common and widespread rabbitbrush, also occurs in the Centennial Mountains, but is readily distinguishable. Several species of the closely related genus Haplopappus can be found sympatric with Centennial Rabbitbrush, but only Haplopappus suffruticosus (shrubby goldenweed) could be considered a similar looking species and it has several distinguishing characteristics. The following key, modified from Anderson (1986) and Cronquist (1955), should help distinguish these similar species.

1. Stems without compacted, feltlike hairs.
 2. Ray flowers presentHaplopappus suffruticosus
 2. Ray flowers absentChrysothamnus viscidiflorus
1. Stems with compacted, feltlike hairs.
 3. Low, or more often tall shrub (up to 2 meters), involucre bracts not green tipped, heads usually with 5 flowers.....Chrysothamnus nauseosus
 3. Low shrub (up to 0.3 meter tall), involucre bracts green tipped, heads usually with more than 5 flowers.....Chrysothamnus parryi ssp. montanus

DISTRIBUTION

Range: In his treatments of Chrysothamnus, Anderson (1978, 1986) notes that the Centennial Rabbitbrush is known only from the Red Conglomerate Peaks in the Centennial Mountains northwest of Dubois, Idaho. Centennial Rabbitbrush was originally discovered by Arthur Cronquist in 1939 (pers. comm.), with later Red Conglomerate Peaks collections in the 1950's by Loran Anderson. No subsequent collections or new populations have been documented. Other botanists such as Brunsfeld (1983), Moseley (1985), Henderson (pers. comm.), Lackschewitz (1986), and most recently Cooper and Lesica (1990) have done floristic work in parts of the Centennial or nearby mountain ranges, but none report finding any Centennial Rabbitbrush. In aggregate with the Heritage Program's more extensive botanical search of 1990 reported below, there is a high confidence that Centennial Rabbitbrush truly has a very local distribution pattern.

Our field inventory of 1990 found three new populations in the Centennial Mountains. All are confined to high elevation, dry, rocky habitats on substrates exclusively of Beaverhead Conglomerate rock.

No new populations were found west of the Red Conglomerate Peaks massif. Three new populations, Knob Mountain (occurrence 003), Peak 9996 (occurrence 002), and The Thumb (occurrence 004) occur to the east. The approximate limits of Centennial Rabbitbrush on the Targhee NF is Red Conglomerate Peaks, east along the Continental Divide to the head of Edie Creek. This core area supports a composite of habitat conditions that appear unique in the Centennial Mountains. There remains a limited amount of potentially suitable habitat in adjacent Montana and perhaps portions of the nearby Beaverhead Mountain Range that was not surveyed.

Below is a summary of the four known populations of Centennial Rabbitbrush, all on the Targhee NF (the number in parenthesis refers to the occurrence number of this species in the Heritage Program data base). See Appendix 5 for the Heritage Program's element occurrence records for Centennial Rabbitbrush on the Targhee NF. These records provide additional detail on location, ownership and population data, among other things.

Red Conglomerate Peaks (001) - Centennial Mountains; on satellite ridges of the Red Conglomerate Peak massif, on Idaho side of the Continental Divide; elevation 8800-9800 feet; 1990 survey revealed this population to be comprised of 5 subpopulations with a total of approximately 2000 plants; first collected by A. Cronquist in 1939.

Peak 9996 (002) - Centennial Mountains; approximately 1.5 miles southeast of Red Conglomerate Peaks, east of the head of Deer Canyon; elevation 8800-9800 feet; this population of approximately 700 plants is comprised of two long, linear subpopulations on the southeast ridge and south face of Peak 9996; first documented by B. Moseley in 1990.

Knob Mountain (003) - Centennial Mountains; south ridge of Knob Mountain, approximately 0.8 mile east of Red Conglomerate Peaks; elevation 9000-9600 feet; approximately 400 plants in a long, linear population; first documented by B. Moseley in 1990.

The Thumb (004) - Centennial Mountains; approximately 3 miles east of Red Conglomerate Peaks, immediately below The Thumb and ridges to southeast and east in vicinity of the Continental Divide; elevation 9100-9750 feet; this population of approximately 300 plants is comprised of 5 subpopulations, one of which extends into Montana; first documented by M. Mancuso in 1990.

In summary, four populations supporting nearly 3500 plants covering an area of approximately 130 acres are known. See Appendix 2 for the mapped locations of known Centennial Rabbitbrush populations on the Targhee NF and Appendix 3 for a list of areas searched unsuccessfully.

All populations occur on the Dubois Ranger District.

Habitat and Associated Species: The composite of habitat conditions required for Centennial Rabbitbrush seems to be narrow in amplitude and restricted in distribution. Without exception, Centennial Rabbitbrush populations occur on

Beaverhead Conglomerate rock outcrops and adjacent slopes where bedrock is exposed or close to the surface, slump gravels and relatively stable talus. Adjacent sites characterized by deeper, more fully developed soils did not support Centennial Rabbitbrush. Populations were found to be the most extensive on rocky, satellite spur ridges descending from the Continental Divide. Predominant slope aspects were southeast to southwest. Centennial Rabbitbrush is a high elevation species, occurring from 8800 feet to nearly 10,000 feet. It can be common in a very local area, but overall, occupied habitat and their associated populations are scattered and cover relatively little acreage.

Except for scattered ridges and crests around the Red Conglomerate Peaks area, no other portions of the Centennial Mountains duplicate these habitat criteria. Our survey work supports earlier evidence that Centennial Rabbitbrush has a very restricted distribution. At least in part, this can be attributed to the restricted nature of suitable habitat. In summary, attributes that characterize Centennial Rabbitbrush habitat sites are as follows:

- 1) Substrate of the Beaverhead Conglomerate formation where bedrock is at or in very close contact with the surface, resulting in minimal if any soil development.
- 2) Sites predominately with some southerly exposure that exhibit a xeric moisture regime at least part of the growing season.
- 3) Rocky crest or upper slope sites that are often windswept.
- 4) Relatively sparsely spaced vegetation that is definitely not gramminoid-dominated.
- 5) Mostly above treeline, but when not, in open areas usually meeting the other conditions.

Finding Centennial Rabbitbrush strictly on Beaverhead Conglomerate, to the exclusion of other rocky, high elevation sites, makes it interesting to speculate whether edaphic factors play a principle role in controlling the distribution of Centennial Rabbitbrush. The extent of this rock type is quite limited. Approximate boundaries are from west of the head of Irving Creek, eastward to an area northwest of Paul Reservoir. It does not surface east of Monida Pass (Rember and Bennet, 1979). If edaphic conditions are limiting, they must be operating in combination with other factors because Centennial Rabbitbrush is not found throughout the entire Conglomerate formation, only around Red Conglomerate Peaks.

The community in which Centennial Rabbitbrush is found is unclassified and has low species richness. The few associated species include Chrysothamnus viscidiflorus ssp. lanceolatus, Haplopappus acaulis, Haplopappus suffruticosus, Astragalus kentrophyta, Phlox pulvinata, Ivesia gordonii, Petrophytum caespitosum, Draba oligosperma, Agropyron scribneri, Leucopoa kingii and Poa secunda.

CONSERVATION STATUS

Conservation Status - Idaho: Centennial Rabbitbrush was not described until 1978 (Anderson 1978). Previous to this date, it was acknowledged as Chrysothamnus parryi var. b. in Flora of the Pacific Northwest. Taxonomic uncertainty was at least partly responsible for its omission from the initial, 1977, Endangered and Threatened Plants of Idaho list (Henderson 1977; Steele pers. comm.). There was a several year lag between the species description and its recognition within the conservation community. This is evidenced by the species still being cited as Chrysothamnus parryi var. b. in the 1981 publication Vascular Plant Species of Concern in Idaho. It was in this publication that the species was placed in the category of taxa considered for Idaho state listing and rejected. Again, the problem of taxonomic uncertainty may have strongly influenced this decision (Steele pers. comm.).

Centennial Rabbitbrush is a Category 2 Candidate species (US Fish and Wildlife Service 1990). Candidate 2 ranking includes taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed

rules. Further biological research and field study may be needed to ascertain their status (Moseley and Groves 1990).

Centennial Rabbitbrush is a Forest Service Region 4 Sensitive Species (USDA-Forest Service 1988) and is currently listed as a High Priority species for the Targhee NF in Region 4's 1989 Threatened, Endangered and Sensitive Plant Program Action Plan. It is on the Sensitive Plant species list for both Region 4 and the Targhee NF.

The Idaho Native Plant Society does not place a ranking on species that are federally listed or candidates for listing. Centennial Rabbitbrush meets the latter criteria and is therefore not ranked by the Idaho Native Plant Society (Moseley and Groves 1990).

The Idaho Natural Heritage Program currently ranks Centennial Rabbitbrush as G5T1S1 (G5 = Chrysothamnus parryi is demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery, T1 = ssp. montanus is critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction, S1 = ssp. montanus is critically imperiled in Idaho, for the same set of reasons).

Conservation Status - Elsewhere:

Montana: Previously unknown in Montana, no state or federal agencies have listed Centennial Rabbitbrush as a conservation concern (Montana Natural Heritage Program 1989). As noted elsewhere in this report, at least part of one population discovered in Idaho this year extends into Montana.

Ownership: All known populations of Centennial Rabbitbrush occur on land administered by the Forest Service. All are found on the Dubois Ranger District of the Targhee NF. Part of one population extends across the state line into the Dillon Ranger District of the Beaverhead NF in Montana.

Threats: There are no clear threats to the apparent long-term viability of Centennial Rabbitbrush on the Targhee NF.

Management Implications: Although no threats to the Targhee NF populations are evident at present, they are all relatively small and localized in a narrow set of habitat conditions. Changes, such as initiation of mining activity in the area could inadvertently destroy a population if the species is not given careful consideration in land-management planning.

ASSESSMENT AND RECOMMENDATIONS

Summary: Results of our field investigation in 1990 revealed Centennial Rabbitbrush to be extremely locally distributed. Four populations are now known from the Targhee NF, three of which were discovered in 1990. This despite considerable searches in other parts of the Centennial Mountains. Approximately 3500 plants are known from all populations. No clear threats to long-term viability were apparent, but the highly localized nature of the populations make them vulnerable to extirpation from habitat destroying activities, such as mining.

Recommendations to the Regional Forester - Region 4: Based on data discussed in this report, Centennial Rabbitbrush meets Sensitive Species criteria and should remain on the Regional List for the Targhee NF.

Recommendations to the Regional Forester - Region 1: Because at least one population (004) of Centennial Rabbitbrush extends into the Beaverhead NF, and the potential for others does exist, this species should also be added to the Beaverhead NF list, where a status inventory should be conducted as soon as practicable.

Recommendations to Targhee National Forest: Centennial Rabbitbrush remains a rare and localized species in Idaho. Although no threats to the Targhee NF populations are evident at present, it should be given careful consideration in land-management planning on the Dubois Ranger District. No monitoring or special management actions are recommended at this time.

Land managers and field personnel on the Targhee NF should be informed of the occurrence of this species in their area. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow 83843) for verification of their identity. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program, using Region 4 TES Plant Forms, for entry into their permanent data base on sensitive species.

Recommendations to the US Fish and Wildlife Service: Based on our 1990 status survey on the Targhee NF, we recommend Centennial Rabbitbrush remain a Category 2 Candidate. If it remains as rare in Montana after a status inventory is done there, it should be made a Category 1 Candidate due to extreme rarity.

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Appendix 1

Line drawings of Chrysothamnus parryi ssp. montanus.
(From Anderson 1978)

Appendix 2

Locations of Chrysothamnus parryi ssp. montanus
on the Targhee NF.

Map 1. Overview of distribution on the Targhee NF. Portion of Targhee NF map (1984)
- Dubois and Island Park Ranger Districts.

Map 2. Red Conglomerate Peaks (001), Peak 9996 (002), Knob
Mountain (003) and The Thumb (004) populations.
Portion of Edie Creek 7.5' USGS quadrangle.

Appendix 3

List of areas searched unsuccessfully for
Chrysothamnus parryi ssp. montanus on the
Targhee National Forest in 1990.

Western Centennial Mountains

1. High ridges and crests to the west of Red Conglomerate Peaks where Beaverhead Conglomerate substrate is present. Thus, west of the Peaks to near the head of Warm Creek in Section 34 of T13 R32E.
2. Vicinity of Monida Pass to upper Modoc Creek.
3. From near the head of Edie Creek, east along Divide, for approximately 1.5 miles.

Eastern Centennial Mountains

1. Sawtell Peak, west to Jefferson Peak area.
2. Taylor Mountain area, from approximately 1.5 miles west of Taylor Mountain, east to near the head of Carrot Canyon.

Appendix 4

Slides of
Chrysothamnus parryi ssp. montanus
and its habitat on the Targhee National Forest.

1. note general plant habit, the relatively sparse nearby vegetation and the conglomerate substrate (003).
2. close-up of plant; note uppermost leaves overtopping the inflorescences (001).
3. ridgeline habitat at timberline (001).
4. bedrock, open habitat below timberline (001).
5. typical spacing pattern and ridgeline habitat (001).