

Natural Heritage Survey
for Plant Species of Special Concern
on Bureau of Land Management Lands,
Jackson County, Colorado



Prepared for:
Bureau of Land Management
Kremmling Resource Area
Kremmling, Colorado

by
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May 1996

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Acknowledgments

This inventory was made possible by a cooperative effort between the Bureau of Land Management, The Nature Conservancy, and Colorado Natural Heritage Program. The authors are grateful to the Bureau of Land Management, Kremmling District for their participation. In particular Chuck Caser and Jerry Jack contributed much time and effort to this project. The Owl Mountain Partnership provided much appreciated advice on plant locations within their study area, and generously shared their facilities in North Park.

Appreciation is expressed to the Colorado Natural Heritage Program's information management staff especially Alison Loar, Celine Donofrio, Liz Phillips, and Kim Fayette who were responsible for integrating the data into the Biological Conservation Database and generating the database reports.

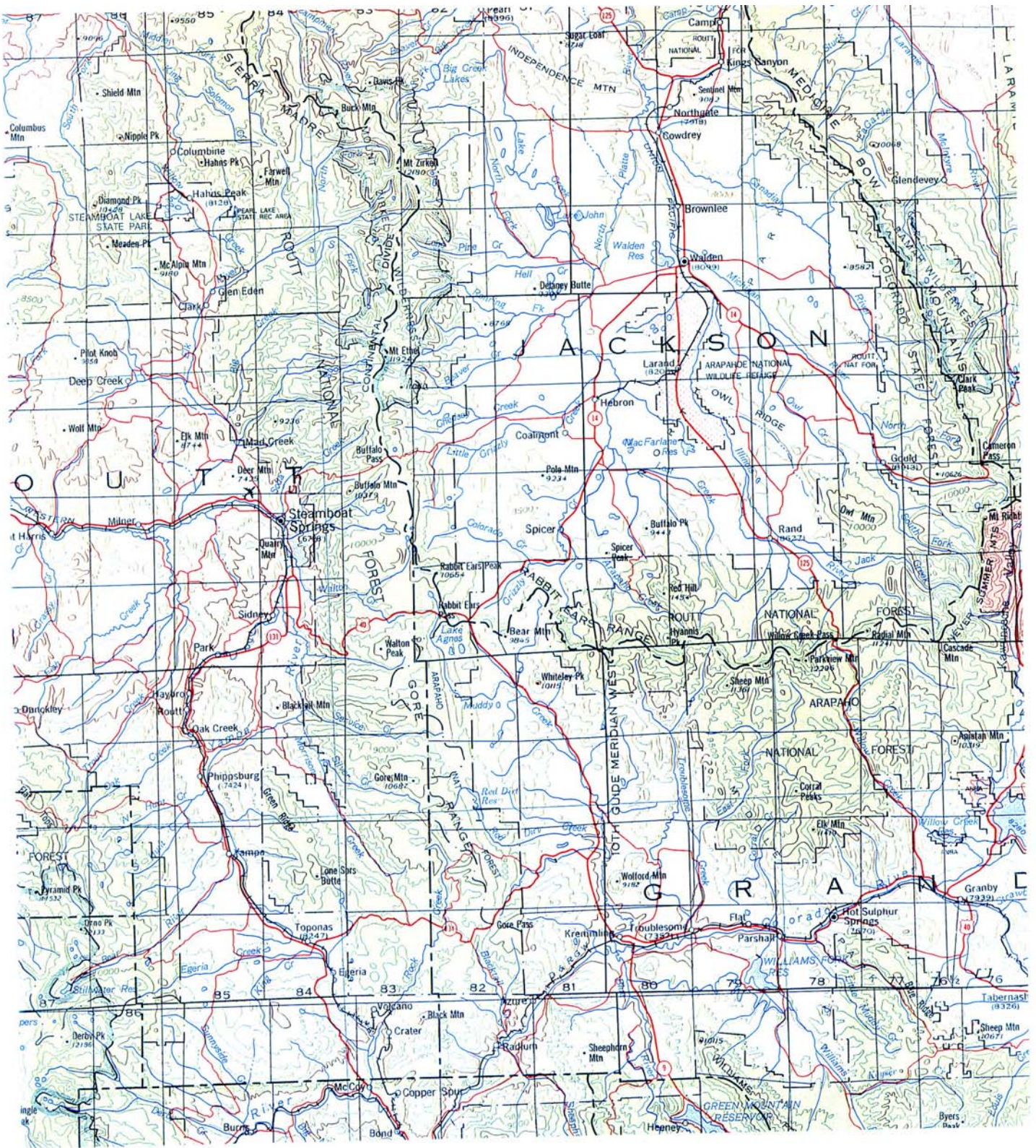
Introduction

The Bureau of Land Management (BLM) lands in Jackson County are a high priority for conservation due primarily to the location of *Phacelia formosula*, North Park phacelia. The sandy bluffs of the Coalmont Formation in Jackson County support the only known populations of *Phacelia formosula* worldwide, as well as several other plant species of concern. Much of this landscape provides habitat for special concern plants that overlaps with areas of oil and gas development, recreational use, and grazing allotments. Consequently, habitat for these species may become fragmented or destroyed.

The purpose of this study was to conduct a rare plant inventory of the BLM lands identified as priority survey areas because of high human impacts. Through this process, The Colorado Natural Heritage Program (CNHP) is able to identify high priority conservation areas. The ten species targeted in the survey were (see Table 1 for definition of Heritage Program ranks):

- *Phacelia formosula*, North Park phacelia (G1\S1\endangered)
- *Botrychium echo*, reflected moonwort (G2\S2).
- *Sisyrinchium pallidum*, pale blue-eyed grass (G2G3\S2)
- *Penstemon cyathophorus*, Middle Park penstemon (G3G4\S2)
- *Carex lasiocarpa*, slender sedge (G5\S1)
- *Allium schoenoprasum* var. *sibiricum*, wild chives (G5\S1)
- *Penstemon radicosus*, matroot penstemon (G5\S1)
- *Carex viridula*, green sedge (G5\S1)
- *Ipomopsis aggregata* ssp. *weberi*, Rabbit Ears gilia (G5T2\S1S2)
- *Lewisia rediviva*, bitterroot (G5\S2)

The information presented in this report can be used by the BLM to develop a conservation plan for the special concern plants occurring in Jackson County. This research is also integral to the mission of the Colorado Natural Heritage Program: to collect, analyze, and disseminate information necessary to protect all plants and animals and the water and lands that they need to survive.



Location of Jackson County, Colorado



The Colorado Natural Heritage Program

To place this report in context it is useful to understand the history and functions of the Colorado Natural Heritage Program (CNHP). CNHP has been extant in Colorado for 16 years. CNHP was relocated from the Division of Parks and Outdoor Recreation to the University of Colorado Museum in the spring of 1992, and more recently to the College of Natural Resources at Colorado State University. This multi-disciplinary team of scientists and information managers gather information and incorporate it into a continually updated database. CNHP is part of an international network of conservation data centers that use the Biological and Conservation Database (BCD) developed by The Nature Conservancy. In addition, CNHP has effective relationships with the Colorado Natural Areas Program, the Colorado Division of Wildlife, and pertinent federal agencies.

Table 1. Definition of Natural Heritage Rarity Ranks.

Global rarity ranks refer to a species' rarity throughout its range. State and Global ranks are denoted, respectively, with an "S" or a "G" followed by a character. **These ranks should not be interpreted as legal designations.**

G/S1	Critically imperiled: usually 5 or fewer occurrences or may be a few remaining individuals; often especially vulnerable to extirpation.
G/S2	Imperiled; usually between 5 and 20 occurrences; or with many individuals in fewer occurrences; often susceptible to becoming endangered.
G/S3	Vulnerable; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G/S4	Common; usually > 100 occurrences, but may be fewer with many large populations; may be restricted to only a portion of its range; usually not susceptible to immediate threats.
G/S5	Very common; demonstrably secure under present conditions.
SH	Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.
G/S?	Indicates uncertainty about an assigned rank.
G/SU	Status uncertain, often because of low search effort or cryptic nature of the element.
G/SX	Apparently extirpated from the state.
T	Trinomial, specifies the rank of sub-species and varieties.

CNHP gathers information on rare species and natural communities, or **elements**. Each element is assigned a rank that indicates its relative degree of imperilment on a five-point scale (1 = extremely rare/imperiled; 5 = abundant/secure; Table 1). The primary criterion for ranking elements is the number of **element occurrences**, i.e. the number of known distinct localities or populations of the species or natural community. Also of great importance is the number of individuals at each locality or, for highly mobile organisms, the total number of individuals. Other considerations include the condition of the occurrences, the number of protected occurrences, population trends, and threats. However, the emphasis remains on the number of occurrences so that the ranks remain an index of known biological rarity. These ranks are assigned both in terms of the element's rarity within Colorado (its State or S-rank) and the element's rarity over its entire range (its Global or G-rank). Taken together, these two ranks give an instant picture of the rarity of the element. Although most species protected under state or federal endangered species laws are extremely rare, not all rare species are listed as Endangered or Threatened. **Natural Heritage imperilment ranks should not be interpreted as legal designations.**

In addition to ranking each element in terms of rarity, Natural Heritage staff scientists rank each element occurrence so that protection efforts can be aimed not only at the rarest elements, but at the best examples of each. Element occurrences are ranked in terms of the **quality** (size, vigor, etc.) of the population or community, the **condition** or naturalness of the habitat, the long-term **viability** of the population or community, and the **defensibility** (ease or difficulty of protecting) of the occurrence. Given the intimate relationship between a natural community and its environment, community occurrences are largely ranked in terms of their quality and condition.

One of the most significant ways that the Colorado Natural Heritage Program uses these element and element occurrence ranks is to design **conservation sites** which include one or many element occurrences and the ecological processes necessary for the elements' continued existence. Based on these ranks, CNHP assesses each site with a **biodiversity** (or B-) **rank** (see Table 2). Furthermore, CNHP ranks the **protection** and **management urgency** of each site on a scale of 1 to 5 based on threats or trends.

Table 2. Definition of Biodiversity Ranks.

- B1 Outstanding Significance: only site known for an element or an excellent occurrence of a G1 species.
- B2 Very High Significance: one of the best examples of a community type, good occurrence of a G1 species, or excellent occurrence of a G2 or G3 species.
- B3 High Significance: excellent example of any community type, good occurrence of a G3 species, or a large concentration of good occurrences of state rare species.
- B4 Moderate Significance: good example of a community type, excellent or good occurrence of state-rare species.
- B5 General Biodiversity Significance: good or marginal occurrence of a community type, S1, or S2 species.

Methods

Colorado Natural Heritage Program (CNHP) botanists conducted field surveys for ten plant species of special concern on BLM lands from June 28 to August 10, 1995. The search areas for each of the target species were concentrated on BLM tracts identified as priority survey areas by the BLM because of high human impacts. Within these areas, botanists located potential rare plant habitat by reviewing aerial photographs, geologic maps, soil surveys, and existing records in the CNHP's Biological Conservation Database. Specimens of target species were reviewed at the Colorado State University and the University of Colorado herbaria prior to the field season. Surveys were conducted by hiking through each target area, inspecting typical habitat as well as unusual edaphic or topographic features. A Plant Species of Special Concern Survey Form (Appendix 1) was filled out for each location of a target plant species. Topographic maps were marked with the occurrence location and photographs of the individual species and their habitat were taken. Identification of plants was made following Weber (1990).

The survey results were incorporated with existing information in the Biological Conservation Database (into the Element Occurrence, Plant Characterization Abstract, Element State Ranking, Element Global Ranking, and Site Basic Record databases) to present a complete picture of the total distribution, apparent habitat requirements, and threats to the target plant species occurring on BLM lands. The following plant species of special concern were surveyed for on BLM land in Jackson, County:

- *Phacelia formosula*, North Park phacelia (G1\S1\listed endangered)-found on sandy, clay slopes in North Park (Weber 1990).
- *Botrychium echo*, reflected moonwort (G2\S2)-found in subalpine meadows.
- *Sisyrinchium pallidum*, pale blue-eyed grass (G2G3\S2\former C2¹)-found in slightly alkaline meadows in South Park, but also represented in Rocky Mountain National Park and the upper Laramie River Valley (Weber 1990).
- *Penstemon cyathophorus*, Middle Park penstemon (G3G4\S2)-found in sagebrush meadows in North Park and Middle Park(Weber 1990).
- *Carex lasiocarpa*, slender sedge (G5\S1)-found in subalpine fens on east side of Park Range, Jackson County (Weber 1990).
- *Carex viridula*, green sedge (G5\S1)-found along borders of streams and ponds, east side of Park Range, Jackson County and calcareous fens in South Park (Weber 1990).
- *Allium schoenoprasum* var. *sibiricum*, wild chives (G5\S1)-found in wet meadows in mountain parks (Weber 1990).
- *Ipomopsis aggregata* ssp. *weberi*, Rabbit Ears gilia (G5T2\S1S2\former C2¹)-found on Rabbit Ears Pass.

¹C2-FORMELY: Notice of Review, Category 2: taxa for which current information indicates that proposing to list as endangered or threatened is possible, but appropriate or substantial biological information is not on file to support an immediate rulemaking.

- *Penstemon radicosus*, matroot penstemon (G5\S1)-found in North Park and Moffatt County
- *Lewisia rediviva*, bitterroot (G5\S2)- found on gravely flats in North Park, Middle Park, and Moffatt County.

Results were then analyzed to determine priority conservation sites. Site selection was based on areas that have high concentrations of occurrences of the target plant species in good to excellent condition. In developing site boundaries, CNHP scientists considered a number of factors including specific locations of rare plant occurrences and surrounding habitat needed to protect significant ecological processes at each site.

The delineation of conservation planning boundaries in this report does not confer any regulatory protection on recommended areas. These boundaries are intended to be used to support wise planning and decision-making for the conservation of these significant resources.

Results

Colorado Natural Heritage Program botanists documented nine new occurrences of four plant species of special concern and located several new occurrences for one plant species of special concern (*Penstemon cyathophorus*). The Natural Heritage element ranks (see Table 1) were not changed for any of the species.

Species	CNHP Ranks	1995 New Occurrences	Total State Occurrences
<i>Phacelia formosula</i>	G1\S1\endangered	2	8
<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	G5\S1	2	8
<i>Penstemon radicosus</i>	G5\S1	2	5*
<i>Lewisia rediviva</i>	G5\S2	3	11

* There are two specimens in the Colorado State University herbarium from Moffat County that have not been entered into CNHP's Biological Conservation Database.

For each of the five plant species located during this study we have included the following: 1) a photograph of the species (except for *Penstemon radicosus*), 2) all the known Colorado locations of the species (species scorecard), 3) available natural history information for the species (plant characterization abstracts), 4) overall state imperilment of the species (element state ranking form) and overall global imperilment of *Phacelia formosula* (element global ranking form), and 5) state distribution map.

Colorado Natural Heritage Program botanists observed many new locations for *Penstemon cyathophorus*, Middle Park penstemon. This species appears to occur commonly in North Parks' abundant sagebrush community. It does not occur in highly saline areas such as directly west of Walden Reservoir nor on very thin gravelly soils, such as those atop Peterson Ridge. *Penstemon cyathophorus* is presently a G3G4\S3 species occurring commonly throughout three counties in Colorado and in two counties in Wyoming (Dorn 1992). Because of its ubiquitous nature in North Park, not all occurrences were recorded. However, 1995 was a very wet year, and the plants' abundance was possibly due to exceptional growing conditions.

CNHP botanists discovered two new occurrences of *Penstemon radicosus* (G5\S1), matroot penstemon, a species that occurs only peripherally in Colorado, and so is considered a species of concern. This plant was found along roads in the McCallum Oil Fields in very small groups of about 15 to 35 plants. Additionally, a C-ranked population of 30 plants was also documented at Sudduth Draw which is located on BLM land.

CNHP botanists and biologists from the Owl Mountain Partnership discovered two new locations for *Allium schoenoprasum* var. *sibiricum* (G5\S1), wild chive. This

large, pungent plant occurs in irrigated meadows. Both locations documented were on the Arapaho National Wildlife Refuge.

Lewisia rediviva (G5\S2), bitterroot, the state flower of Montana, is critically imperiled in Colorado and is at the periphery of its range. CNHP botanists discovered three new locations for this species in North Park. The highest quality occurrence is included in the proposed Independence Mountain Conservation Site. Tens of thousands of plants blanketed the roadsides and surrounding pastures for nearly two miles.

The Natural Heritage survey resulted in one new conservation site and the update of three previously established conservation sites ranging in size from 300 to 6,200 acres. All priority conservation sites are presented in a site scorecard and on the map of conservation sites for Jackson County (Map 1). Sites are listed in alphabetical order. Of all the sites surveyed, we recognize two as having very high to outstanding significance (B1): the North Park Natural Area Conservation Site and the California Gulch Conservation Site on account of the location of A-ranked occurrences of *Phacelia formosula*, a G1\S1 species. Presently, there are only 32 B1 sites in Colorado (Colorado Natural Heritage Database 1996). The Case Bluffs Site has very high significance (B2) because of the AB-ranked occurrence of *Phacelia formosula*. The Independence Mountain Conservation Site is of moderate significance (B4) because it contains an A-ranked occurrence of *Lewisia rediviva*, a G5\S2 species.

For each of the four conservation sites we have included: 1) a photograph taken at the site (except for California Gulch), 2) a map of the proposed conservation boundaries delineated on a 7.5 minute quadrangle, 3) a conservation site profile including a written description of the site and a summary of the protection and management concerns, and 4) a detailed description of each of the plants and communities of concern that have been documented within the conservation site.

California Gulch Conservation Site (B1) is the location of one of the two highest quality occurrences of *Phacelia formosula*. This site contains both private and BLM land and is a proposed Area of Critical Environmental Concern (ACEC).

The North Park Natural Area Conservation Site (B1) consists of several occupied patches of *Phacelia formosula* on the ridges north of Peterson Ridge, near the powerline. A vast majority of the known *Phacelia formosula* individuals (over 6,000) are documented for this site. The threat of livestock trampling does not appear to be a concern at this time. The locations should be periodically monitored for signs of impacts by people or cattle. Powerline maintenance crews should be alerted to avoid disturbance. Other plant species of special concern occurring in this site are: *Lewisia rediviva* and *Penstemon cyathophorus*.

Case Reservoir Bluffs Conservation Site (B2) consists of three separate areas on bluffs overlooking a new reservoir. Two of the three areas were on the Wildlife Refuge, the other located on BLM land. While only a small part of the occurrence was on BLM land, there exists a fairly large area of potential habitat nearby on BLM land. This habitat

is included in the conservation site because *P. formosula* is a biennial plant, and may establish new sub-populations in currently unoccupied habitat. Observations suggest that this area is heavily trampled by livestock. It is likely that livestock use will have to be diminished, or areas of potential habitat fenced if there is to be seedling establishment.

The Independence Mountain Conservation Site (B4) contains the highest quality occurrence of *Lewisia rediviva* for Colorado. Disturbance to this site from livestock grazing and recreational use appears minimal.



Photograph of *Allium schoenoprasum* var. *sibiricum*.

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Quality Rank	Comments	Last Seen	Global Rarity	State Rarity	Federal Legal	Element Occurrence Information	Country	Conservation Site or (Survey Site) Name
001	S			1986-06-29	G5T5	S1		ABUNDANT ALONG FENCE AND IN WET MEADOWS. EST #: BUD: % - - FRUIT: % - - FLOWER: % 74-06-22	Jackson	CONDREY SOUTH
002	M			1938-08-13				* EST #: BUD: % - - FRUIT: % - - FLOWER: % - -	Jackson	(LAKE JOHN)
003	M			1985-07-13				* EST #: BUD: % - - FRUIT: % - - FLOWER: % - -	Jackson	(NORTH FORK NORTH PLATTE)
004	S			1985-07-13				* EST #: BUD: % - - FRUIT: % - - FLOWER: % - -	Jackson	VICTOR DITCH
005	G			1914-08-08					Jackson	(NORTH PARK)
007	M			1950 08 16					Jackson	(TELLER CITY)

PRECISION CODES - "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"-MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. ± SQUARE MILE / "S"-ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Quality Rank	Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
008	S	B	<p>VERY LARGE OCCURRENCE IN UNNATURAL WETLAND. AREA IS GRAZED AND SOMEWHAT WEEDY ALTHOUGH PLANTS SEEM TO BE DOING VERY WELL. QUALITY: A, VERY LARGE OCCURRENCE THAT CONTINUES FOR ALMOST A MILE. CONDITION: C, HABITAT WAS CREATED, MANY WEEDS. RESTORATION WOULD LIKELY DESTROY HABITAT. VIABILITY: B, LIKELY TO CONTINUE UNDER CURRENT MGT. DEFENSIBILITY: B, AREA A WILDLIFE REFUGE. SO LONG AS MGMT REMAINS AND THE REFUGE REMAINS THIS OCCURRENCE SHOULD BE DEFENSIBLE.</p>	1995-07-09	<p>OVER 1000 INDIVIDUALS SCATTERED IN THE AREA IN LARGE TO VERY SMALL PATCHES. MOST INDIVIDUALS IN FLOWER. PLANTS COVER 100% IN PATCHES BUT LESS THAN 2% TOTAL COVER IN MEADOWS. ESTIMATED AMOUNT OF POTENTIAL HABITAT (ACRES): 1000. OCCURS SPORADICALLY W/IN [OCCURRENCE BOUNDARY] DOTTED LINE.</p>	Jackson	ARAPAHO WILDLIFE REFUGE H.Q.
009	S	B	<p>DENSE COLONY IN WET IRRIGATED MEADOW. PART OF GRAZING ROTATION CYCLE/STUDY.</p>	1995-07-13	<p>APPROX. 200 INDIVIDUALS IN A DENSE PATCH. ALL IN FLOWER.</p>	Jackson	(ILLINOIS RIVER)

8 Records Processed

PRECISION CODES - "C" - ONLY GENERAL LEVEL DATA PROVIDED / "M" - MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S" - ACTUAL MAPPED LOCATION PROVIDED

Plant Characterization Abstract for Colorado

ALLIUM SCHOENOPRASUM VAR SIBIRICUM
WILD CHIVES

Taxonomy:

TAXCLASS: MONOCOTYLEDONEAE ORDER: LILIALES
FAMILY: LILIACEAE GENUS: ALLIUM

Status:

GLOBAL RANK: G5T5 STATE RANK: S1
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 7500 feet
MAXIMUM ELEV: 8500 feet

HABITAT COMMENTS:

Stream banks, pond margins, lake shores, meadows (Harrington
1954; Welsh 1974).

State Distribution:

COUNTY NAME:
Jackson
Jefferson

RANGE: Very limited distribution in north central Colorado, in
Jackson county. There is one record from Jefferson County,
however this record needs verification. Also in Eurasia.

Phenology:

JAN1:	MAR1:	MAY1:	JUL1:	SEP1:	NOV1:
			Flower		
JAN2:	MAR2:	MAY2:	JUL2:	SEP2:	NOV2:
			Flower		
FEB1:	APR1:	JUN1:	AUG1:	OCT1:	DEC1:
FEB2:	APR2:	JUN2:	AUG2:	OCT2:	DEC2:
		Flower			

PHENOLOGY COMMENTS:

Specimen information from University of Colorado herbarium
indicates that this species flowers from June through late
July.

Look Alikes:

Distinguished from var. schoenoprasum by its more linear
leaves which are more or less terete.

Management:

MANAGEMENT COMMENTS:

Need to develop management plan for the highest quality
occurrence on Arapaho National Wildlife Refuge. Need to
prevent activities that would alter the hydrology and other

necessary habitat.

Global Distribution:

Alaska and the Yukon east to the Atlantic and south to OR, WY and NY. Also in Eurasia.

References:

ABBREVIATED CITATION:

FULL CITATION:

Harrington 1954

Harrington, H.D. 1954. Manual of the Plants of Colorado. Sage Books, Denver, CO.

Hulten 1968

Hulten, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA.

Welsh 1974

Welsh, S.L. 1974. Anderson's Flora of Alaska and Adjacent Canada. Brigham Young University Press, Provo, UT.

Element State Ranking Form as of 09 MAY 1996
ALLIUM SCHOENOPRASUM VAR SIBIRICUM
WILD CHIVES

Descriptors:

STATE EXEMPLARY SITE:

Arapaho National Wildlife Refuge

Ranking Factors:

ESTIMATED

OCCURRENCES: B

There are 10 documented occurrences for this species in CO. There are two historical occurrences (1914,1893) that have not been relocated.

ABUNDANCE: B

Although it is likely that the numbers may be higher, the total number of individuals documented at all extant sites is less than 1,000. During the 1995 field survey, there were over one hundred individuals observed (pers. comm. J. Burt 1996).

SPECIES RANGE: A

This species is known to occur in Jackson and Jefferson Counties.

TREND: B

This species' wetland habitat, e.g. irrigated hay meadows, is moderately threatened. It is likely that populations of this species have been lost to hydrological alterations.

PROTECTED

OCCURRENCES: A

There are no protected occurrences.

THREATS: B

This species' wetland habitat may be moderately threatened by disturbance from overgrazing.

OTHER

CONSIDERATIONS:

Rank and Reasons:

STATE RANK: S1

RANK DATE: 96-03-22

REASONS:

Although there are 8 occurrences for this species, it is found mainly in only one county, Jackson County. Additionally, the hydrology of its wetland habitat is threatened by poor grazing practices, mineral and gas/oil development and recreation uses.

Needs:

INVENTORY NEEDS:

Search potential habitat for additional occurrences especially between Jefferson and Jackson Counties..

PROTECTION NEEDS:

Protect highest quality occurrences especially on Arapaho National Wildlife Refuge.

STEWARDSHIP NEEDS:

Prevent activities that would alter the hydrology and other habitat requirements.

References:

ABBREVIATED CITATION:

FULL CITATION:

Burt 1996

Burt, Julie. 1996. Personal communication with Denise Culver regarding *Penstemon cyathophorus* and *Allium schoenoprasum* in Jackson CO.

Record Maintenance:

EDITION: 96-03-28

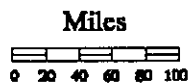
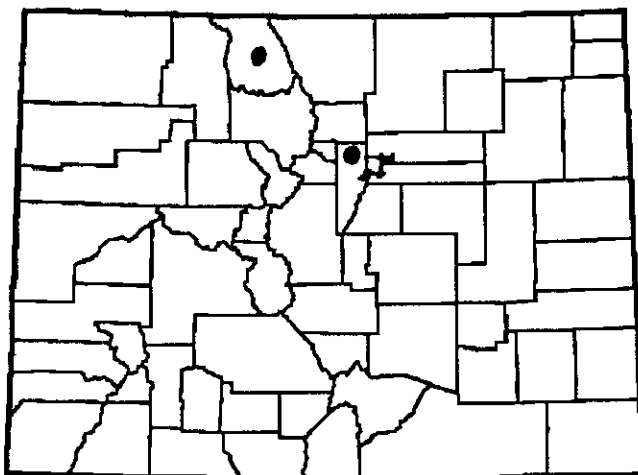
AUTHOR: D. Culver

UPDATE: 96-05-09

Distribution Map - Historical and Extant Occurrences

Allium schoenoprasum

(Wild chives)



Colorado Natural Heritage Program



Photograph of *Lewisia rediviva*.

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Rank	Quality Comments	Global Rarity	State Rarity	Last Seen	Element Occurrence Information	Federal Legal	County	Conservation Site or (Survey Site) Name
***			LEWISIA REDIVIVA () (BITTERROOT)	G5	S2					
001	M					1987-06-14	FLOWERS PINK, PLANTS LOCALLY DISTRIBUTED IN SMALL POPS BUT OTHERWISE RARE.		Moffat	(WEST DOUGLAS MOUNTAIN)
002	M					1988-06-27	[NAUMANN AND KELLEY 1988:] FREQUENT IN LOCALIZED AREA. EST. # INDIVIDUALS: 100+; FRUIT: 95%.		Moffat	(WILD MOUNTAIN)
003	G					1965-06-25			Moffat	(DOUGLAS MOUNTAIN)
004	G					1965-07-10	[ANONYMOUS ND:] FLOWERS ROSE COLORED.		Moffat	(COLD SPRING MOUNTAIN)
005	M					1961-06-29			Grand	(GRANBY)
006	G					1903-07-07			Jackson	(PINKHAM CREEK)
007	S	C:	SMALL OCCURRENCE NEAR ROAD. AREA HEAVILY GRAZED, ROADSIDE GARBAGE, ETC. QUALITY: B, LOCALIZED W/SEVERAL INDIVIDUALS IN GROUP; CONDITION: C, HABITAT NEXT TO ROAD AND AMONG HEAVY GRAZING; VIABILITY: UNKNOWN-POP HEALTHY BY APPEARANCE BUT NO COMPARISONS; DEFENSIBILITY: D, NEXT TO ROAD AND HEAVY GRAZING.			1995-06-29	POPULATION IN TWO DISJUNCT OCCURANCES [OCCURRENCES]; ONE OF 35 PLANTS BY ROADSIDE, ANOTHER OF 4 PLANTS IN SAGEBRUSH. PLANTS ARE CLUMPED INTO GROUPS. BOTH AREAS GRAZED, ONE ADJACENT TO COUNTY ROAD. NO PREDATION EVIDENT. NUMBERS OBSERVED: 39 TOTAL; POP SIZE EST: 39. POPULATIONS WERE SMALL AND IN POOR HABITAT. PLANTS APPEARED HEALTHY. NO SEEDLINGS EVIDENT; 50% IN FLOWER; 50% IN BUD. POPULATION DOCUMENTED VIA SIGHT, SPECIMEN, & PHOTO. NO ID PROBLEMS. NO DISEASE OR PREDATION EVIDENT.		Jackson	(WEST OF WALDEN RESERVOIR)

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec- sion Rank	Occurrence Rank	Quality Rank	Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
008	S	C			1995-06-29	APPROXIMATELY 4 PLANTS IN SAGEBRUSH, POPULATION SMALL AND IN POOR HABITAT. PLANTS APPEARED HEALTHY. NO SEEDLING EVIDENT, 50% IN FLOWER, 50% IN BUD.	Jackson	NORTH PARK NATURAL AREA SITE
009	S	AB		AT LEAST TEN THOUSAND INDIVIDUALS. HABITAT UP ROAD THROUGH PART BUT DOES NOT GET HEAVY USE AND DOES NOT SEEM TO HEAVILY IMPACT OCCURRENCE. QUALITY: A, HUGE OCCURRENCE. CONDITION: B, ROAD THROUGH SITE BUT OTHERWISE SEEMS IN GOOD CONDITION. SOME WEEDS RIGHT ALONG ROAD. VIABILITY: A, UNLESS DISTURBANCE REGIME CHANGES DRASTICALLY, OCCURRENCE SHOULD CONTINUE. DEFENSIBILITY: B, ROAD THROUGH SITE AND FENCE BOTH WILL GET USE AND REQUIRE MAINTENANCE THAT MAY IMPACT OCCURRENCE.	1995-07-10	749 INDIVIDUALS COUNTED, BUT MANY MORE SUBSEQUENTLY OBSERVED. AT LEAST 10,000 ESTIMATED AND LIKELY MANY MORE. PLANTS IN FLOWER. DO NOT APPEAR TO BE IMPACTED BY ANTELOPE OR CATTLE GRAZING ALTHOUGH BOTH OCCUR IN AREA. SOME PLANTS GROWING IN ANTELOPE DROPPINGS. NOT AS MUCH CATTLE EVIDENCE. NO ID PROBLEMS. SPECIMENS TAKEN.	Jackson	INDEPENDENCE MOUNTAIN

PRECISION CODES = "G" = ONLY GENERAL LEVEL DATA PROVIDED / "M" = MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S" = ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Quality Rank Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
010	S B	MANY INDIVIDUALS IN LOCALIZED AREA. SOME TRAMPLING BY CATTLE. QUALITY: A, MANY INDIVIDUALS IN SMALL AREA, ALL REPRODUCING; CONDITION: B, HABITAT TRAMPLED BY COWS, BUT AFFECTS ON SPECIES NOT KNOWN; VIABILITY: C, SEVERE AND HEAVY TRAMPLING. WILL CERTAINLY DESTROY OCCURRENCE. THIS MAY HAPPEN GIVEN TIMING OF CATTLE IN AREA; DEFENSIBILITY: B, AREA ON BLM LAND, MAY BE ABLE TO MANAGE GRAZING SO AS TO LOWER IMPACT (IF ANY IS NOTED).	1995-07-07	98 INDIVIDUALS COUNTED, ABOUT 50 MORE SUBSEQUENTLY OBSERVED. ESTIMATED POPLN SIZE: 350. PLANTS IN FLOWER AND BUD. BEES OBSERVED VISITING FLOWERS. ANTS ALSO IN FLOWERS. POPLN COVERS ABOUT ONE ACRE. THIS SPECIES SEEMS TO TYPICALLY OCCUR VERY LOCALLY. NO DISEASE OR PREDATION NOTED. POPULATION DOCUMENTED VIA SIGHT, SPECIMEN, AND PHOTOS. NO ID PROBLEMS.	Jackson	(EAST OF WALDEN)
011	S D	ONLY ONE INDIVIDUAL OBSERVED. OTHERS MAY BE PRESENT BUT NOT VISIBLE AT THIS TIME. QUALITY: D, ONE INDIVIDUAL, IN FLOWER. CONDITION: B, HABITAT LOOKS GOOD FOR THIS SPECIES ALTHOUGH SOMEWHAT TRAMPLED. VIABILITY: D, ONE INDIVIDUAL NOT LIKELY TO SURVIVE. NEED TO KNOW IF THERE ARE ACTUALLY MORE PLANTS THAT ARE NOT EVIDENT AT THIS TIME. DEFENSIBILITY: B SITE AND HABITAT LOOK GOOD. UNLESS GRAZING INCREASES SIGNIFICANTLY, OCCURRENCE SHOULD BE FINE.	1995-07-08	ONE INDIVIDUAL OBSERVED AND IN FLOWER.	Jackson	(PETERSON RIDGE)

11 Records Processed

PRECISION CODES = "G" = ONLY GENERAL LEVEL DATA PROVIDED / "M" = MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S" = ACTUAL MAPPED LOCATION PROVIDED

Plant Characterization Abstract for Colorado

LEWISIA REDIVIVA
BITTERROOT

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CARYOPHYLLALES
FAMILY: PORTULACACEAE GENUS: LEWISIA

Status:

GLOBAL RANK: G5 STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 7500 feet
MAXIMUM ELEV: 9000 feet

HABITAT COMMENTS:

Gravelly flats and seasonally wet sagebrush benches (Weber 1987). The plant apparently cannot tolerate year-round soil saturation, but occurs in a variety of habitats throughout its range. It requires open habitats where it can get full sunlight.

State Distribution:

COUNTY NAME:

Jackson
Larimer
Moffat
Grand

RANGE: Locally abundant in Middle Park, Moffat, Jackson, and Grand counties (Weber 1987).

Phenology:

JAN1:	MAR1:	MAY1:	JUL1:	SEP1:	NOV1:
		F			
JAN2:	MAR2:	MAY2:	JUL2:	SEP2:	NOV2:
		Flower			
FEB1:	APR1:	JUN1:	AUG1:	OCT1:	DEC1:
		Flower			
FEB2:	APR2:	JUN2:	AUG2:	OCT2:	DEC2:
		Flower			

PHENOLOGY COMMENTS:

Based on records at CNHP, *L. rediviva* flowers in early May through June.

Look Alikes:

This species varies considerably in the color and size of its flowers. Overall, the Rocky Mountain area has plants with more deeply pink flowers than those found near the Cascades (Hitchcock et al. 1964).

Management:

MANAGEMENT COMMENTS:

Effects of poor grazing practices are of concern.

Global Distribution:

British Columbia south to eastern Cascades in WA and OR, to CA, east to MT, CO, and AZ.

References:

ABBREVIATED CITATION:

FULL CITATION:

Daubenmire 1975

Daubenmire, R. 1975. An ecological life history of *Lewisia rediviva* (Portulacaceae). *Syesis*, 8:9-23.

Hitchcock, et al., 1964

Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1964. Vascular Plants of the Pacific Northwest, Part 2. University of Washington Press, Seattle. 597pp.

Weber 1987

Weber, W.A. 1987. Colorado Flora: Western Slope. Colorado Associated University Press, Boulder, CO.

Element State Ranking Form as of 10 MAY 1996
LEWISIA REDIVIVA
BITTERROOT

Descriptors:

STATE EXEMPLARY SITE:
INDEPENDENCE MOUNTAIN

Ranking Factors:

ESTIMATED

OCCURRENCES: B
There are 11 occurrences in Colorado as of March 28, 1996.
One of the occurrences is a general record for Moffat CO
from 1965.

ABUNDANCE: B
The estimated total number of individuals is 10,000, the
numbers fluctuate annually depending on precipitation.

SPECIES RANGE: A
Weber (1990) states that *Lewisia rediviva* is located in
North Park. There are occurrences for Jackson, Moffat, and
Grand Counties.

TREND: C
Presently, this species appears stable. *Lewisia rediviva*
flowers in the early spring before grazing activity begins.

PROTECTED
OCCURRENCES: A
There are no protected populations.

THREATS: C
This species appears tolerant of grazing, however, it cannot
withstand trampling from excessive graging. Research needs
to determine the effects of grazing.

OTHER
CONSIDERATIONS:

Rank and Reasons:

STATE RANK: S2 RANK DATE: 96-03-28
REASONS: There are only 11 occurrences of *Lewisia rediviva* in
Colorado. The majority of the occurrences are on BLM lands
that do allow grazing, those effects are yet to be
determined. There are only 2 high quality occurrences.

Needs:

INVENTORY NEEDS:
Need to search potential habitat for additional occurrences.

PROTECTION NEEDS:
Develop a protection plan for *Lewisia rediviva* in CO.
Conservation efforts should focus on highest quality
occurrences, such as Independence Mountain.

STEWARDSHIP NEEDS:
Protect plants from excessive disturbance and cattle grazing
where necessary. Need to determine the effects of grazing

and better document population numbers and trends. Monitor known occurrences for changes in population size.

References:

ABBREVIATED CITATION: FULL CITATION:

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern Slope. University Press of Colorado, Niwot, CO.

Record Maintenance:

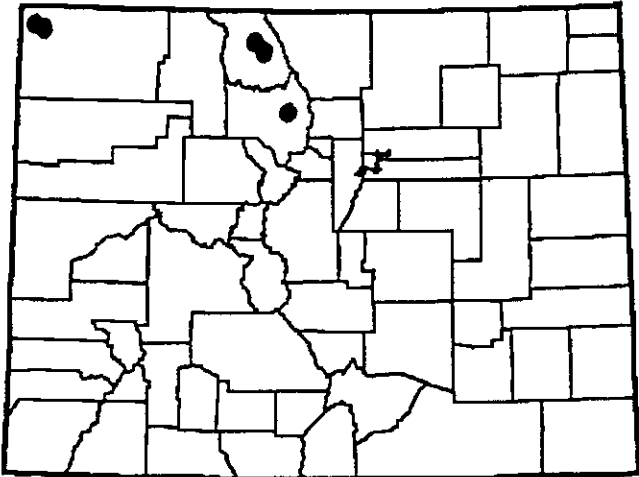
EDITION: 96-03-27
UPDATE: 96-05-10

AUTHOR: D.Culver

Distribution Map - Historical and Extant Occurrences

Lewisia rediviva

(Bitterroot)





Photograph of *Penstemon cyathophorus*.

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Rank	Quality Rank	Comments	Last Seen	Global Rarity	State Rarity	Federal Legal	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
001	G				1973-06-00	G3G4	S2		FIELD SURVEY ON 6/17/90 BY K. CADDIS-BURRELL FAILED TO RELOCATE POPULATION.	Grand	(KREMLING)
002	M				1920-06-00				[1990:] NOT RELOCATED BY K. CADDIS-BURRELL. 90-06-09. [1920:] INFREQUENT AMONG SAGE IN STERILE SOIL. EST #: BUD: % - - FRUIT: % - - FLOWER: %	Jackson	(COWDRY)
003	M	C-		SUBJECT TO DAMAGE BY CARS, CATTLE & HIGHWAY DEPT.	1965-06-00				SAGEBRUSH FLAT. EST #: BUD: % - - FRUIT: % - - FLOWER: % - -	Jackson	(RAND)
004	S	D		USED AS A DUMP	1990-06-09				150+ INDIVIDUALS, SCATTERED, 6-12" TALL. POPULATION MAY EX-TEND N ACROSS FENCELINE. NEED OWNER'S PERMISSION TO CONTINUE SURVEY. EST #:150+ BUD: 99% 90-06-09; 100% 89-05-27 FRUIT: % - - FLOWER: 99% 90-06-09	Jackson	(OWL CREEK)
005	S				1989				ONLY ONE PLANT WAS COLLECTED. NO POPULATION DATA HAVE BEEN COLLECTED YET. EST #: BUD: % - - FRUIT: % - - FLOWER: %	Eagle	
006	S				1990-06-09				LESS THAN 50, VERY SCATTERED (1989). EST #: <50 BUD:100% 89-05-29 FRUIT: % - - FLOWER:100% 90-06-09	Jackson	WILLOW CREEK AT RAND

PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Rank	Quality Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
007	S	B	POPULATION SMALL, ABOUT 50 INDIVIDUALS. QUALITY APPEARS GOOD, DEFENSIBILITY MAY BE DIFFICULT, NEAR DIRT ROAD AND ON SWITCH BACKS.	1990-06-21	POPULATION MIXED WITH AND HYBRIDIZING WITH P. HARRINGTONII. EST #:100- BUD: % - - FRUIT: % - - FLOWER:100% 90-06-17	Grand	SAN TOY MOUNTAIN
008	S	B	POTENTIAL FOR DISTURBANCE-GRAZING, HIGHWAY MAINTENANCE	1990-06-17	POPULATION SCATTERED 50 TO 100 FEET NORTH OF HWY 40. POPULATIONS OF APPROX. 50-100 SCATTERED IN GROUPS FROM SEC. 25 TO 29. EST #:300+ BUD: % - - FRUIT: % - - FLOWER:100% 90-06-17	Grand	WINDY GAP
009	S			1990-06-17	EO LOCATED IN DISTURBED AREA ALONG HIGHWAY RIGHT-OF-WAY AND NEAR POWERLINE CORRIDOR. P.HARRINGTONII ALSO FOUND NEARBY. EST #: BUD: % - - FRUIT: % - - FLOWER: % - -	Grand	BLUE RIVER
010	S			1989-06-24	PLANTS CONCENTRATED ALONG ROAD. OCCURS WITH PENSTEMON HARRINGTONII. EST #:50-75 BUD: % - - FRUIT: % - - FLOWER: % 89-06-24	Grand	BLUE RIVER
011	M			1989-07-29		Jackson	
012	S			1994-06-23	PHENOLOGY: FRUITING.	Jackson	
013	G			1935-06-28	REPRODUCTIVE	Grand	

PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ	Occurrence Quality Rank	Occurrence Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
019	S B	B	MANY INDIVIDUALS IN LARGE AREA THAT DOES NOT APPEAR TOO HEAVILY GRAZED. QUALITY: A, MANY INDIVIDUALS SCATTERED THROUGHOUT AREA. CONDITION: B, AREA GRAZED & TRAMPLED BUT LOOKS PRETTY GOOD FOR THIS AREA. UNDERSTORY NOT COMPLETELY GONE, FEW WEEDS. VIABILITY: B, REALLY DEPENDS ON LONG TERM RESPONSE TO GRAZING. DEFENSIBILITY: C, GRAZING LIKELY TO REMAIN. BLM LAND OPEN TO OIL/GAS DEVELOPMENT & ROAD DEVELOPMENT.	1995-06-29	ABOUT 65 INDIVIDUALS OBSERVED IN FLOWER, ABOUT 35 ROSETTES NOT IN FLOWER. SPARSE THROUGHOUT AREA, AS IS NORMAL FOR THIS SPECIES. PLANTS DO NOT APPEAR GRAZED ALTHOUGH CATTLE & ANTELOPE ARE IN THE AREA. PLANTS NEAR TOP OF SLOPE ONLY 2-3 DM TALL. PLANTS LOWER DOWN, TALLER & MORE ROBUST - PERHAPS MOISTURE RELATED. ESTIMATED NUMBER OF INDIVIDUALS OVER 100. NUMBERS OBSERVED: 65 IN FLOWER, 35 ROSETTES. ESTIMATED AMOUNT OF POTENTIAL HABITAT: THOUSANDS-PERCENT OF POTENTIAL HABITAT OCCUPIED: 1% OR LESS. POPULATION SIZE AND HABITAT AREA COMMENTS: P. CYATHOPHORUS APPEARS TO BE NATURALLY DISPERSED WITHIN THE SAGEBRUSH COMMUNITY. PHENOLOGICAL CONDITION: 2/3 INDIVIDUALS IN FLOWER; 1/3 BASAL ROSETTES.	Jackson	NORTH PARK NATURAL AREA SITE

14 Records Processed

PRECISION CODES = "G" = ONLY GENERAL LEVEL DATA PROVIDED / "M" = MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S" = ACTUAL MAPPED LOCATION PROVIDED

Plant Characterization Abstract for Colorado

**PENSTEMON CYATHOPHORUS
MIDDLE PARK PENSTEMON**

Taxonomy:

TAXCLASS:	DICOTYLEDONEAE	ORDER:	SCROPHULARIALES
FAMILY:	SCROPHULARIACEAE	GENUS:	PENSTEMON

Status:

GLOBAL RANK:	G3G4	STATE RANK:	S2
FED. STATUS:		AGENCY STATUS:	

Habitat:

MINIMUM ELEV:	7000	feet
MAXIMUM ELEV:	8500	feet

HABITAT COMMENTS:

Rocky clay loam soils of sagebrush hills and flats, 7000-8500 ft. (Harrington, 1954). Sagebrush meadows of Middle Park and North Park (Weber 1990).

State Distribution:

COUNTY NAME:
Grand
Jackson

RANGE:

Restricted to Northern Colorado (Harrington 1954). Grand, and Jackson Counties. One population is reported from Eagle County, however this occurrence needs further verification (pers. comm. Jennings 1995).

Phenology:

JAN1:	MAR1:	MAY1:	JUL1:	SEP1:	NOV1:
JAN2:	MAR2:	MAY2:	JUL2:	SEP2:	NOV2:
		Flower			
FEB1:	APR1:	JUN1:	AUG1:	OCT1:	DEC1:
		Flower			
FEB2:	APR2:	JUN2:	AUG2:	OCT2:	DEC2:
		Flower			

PHENOLOGY COMMENTS:

In bud in late May; flowers in early to late June.

Look Alikes:

Resembles most other *Penstemon* species in vegetative condition. Very difficult to distinguish from *Penstemon harringtonii* unless in peak anthesis. *P. harringtonii* however has 2 exserted stamens while *P. cyathophorus* has 4 exserted stamens. The two species often occur together in Grand county. *P. osterhoutii* and *P. lentus* are sympatric, however these species have no exserted stamens and have magenta flowers rather than blue or blue-purple (pers. comm.).

Coles 1994). *P. cyathophorus* may actually be rarer than *P. harringtonii* (pers. comm. Neely 1994).

Management:

MANAGEMENT COMMENTS:

Global Distribution:

Carbon and Sweetwater Counties of southern Wyoming, and Colorado.

References:

ABBREVIATED CITATION:

FULL CITATION:

Coles 1994

Coles, J. 1994. Personal communication about Rare Plant Guide Species.

Cronquist, et al., 1984

Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal, and P.K. Holmgren. 1984. Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A. Volume 4. Subclass Asteride (except Asteraceae). The New York Botanical Garden, Bronx, NY. 573 pp.

Harrington 1954

Harrington, H.D. 1954. Manual of the Plants of Colorado. Sage Books, Denver, CO.

Jennings 1995

Jennings, W.F. 1995. Personal communication about Rare Plant Guide Species.

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern Slope. University Press of Colorado, Niwot, CO.

Element State Ranking Form as of 09 MAY 1996
PENSTEMON CYATHOPHORUS
MIDDLE PARK PENSTEMON

Descriptors:

STATE EXEMPLARY SITE:
WINDY GAP

Ranking Factors:

ESTIMATED

OCCURRENCES: C

There are 13 occurrences documented in the Biological Conservation Database as of March 29, 1996. However, there are at least 40 additional occurrences throughout North Park and Middle Park. This species appears to occur commonly in North Park's sagebrush vegetation (Julie Burt pers. comm 1996). There is one historical (1935) occurrence from Rocky Mountain National Park.

ABUNDANCE: B

Estimated total number of *P. cyathophorus* is 1,000. This species occurs commonly throughout North Park and Middle Park.

SPECIES RANGE: B

P. cyathophorus occurs in 3 counties, Jackson, Grand, and Eagle. Weber (1990) reports this species from the sagebrush meadows in North Park.

TREND: C

Julie Burt (1996) states that this species is common throughout sagebrush areas in North Park, except in the saline areas.

PROTECTED

OCCURRENCES: B

There is one occurrence within the Lake John State Wildlife Area. There are 7 occurrences on private lands. Many occurrences are on BLM land and one historical occurrence (1935) reported from Rocky Mountain National Park. There are occurrences in several conservation sites.

THREATS: C

This species appears tolerant of grazing: there are many occurrences located next to roads and grazed lands. However, it could not withstand excessive trampling or poor grazing practices.

OTHER

CONSIDERATIONS:

Longer term data should be acquired before watchlisting this species.

Rank and Reasons:

STATE RANK: S3

RANK DATE: 96-03-29

REASONS:

Presently, there are 14 documented occurrences for *P. cyathophorus*. However, during the exceptionally wet summer of 1995, CNHP botanists found this species widespread in North Park, except in saline areas. It was found in some of the most heavily grazed sites and on road cuts. North Park

biologists do not recall *P. cyathophorus* being so abundant in other years..

Needs:

INVENTORY NEEDS:

PROTECTION NEEDS:

Protect highest quality occurrences. Need to work with the BLM and Lake John State Wildlife Area to protect occurrences.

STEWARDSHIP NEEDS:

Protect plants from excessive trampling and grazing by cattle. Monitor known occurrences for changes in population sizes.

References:

ABBREVIATED CITATION:

FULL CITATION:

Burt 1996

Burt, Julie. 1996. Personal communication with Denise Culver regarding *Penstemon cyathophorus* and *Allium schoenoprasum* in Jackson CO.

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern Slope. University Press of Colorado, Niwot, CO.

Record Maintenance:

EDITION: 96-03-29

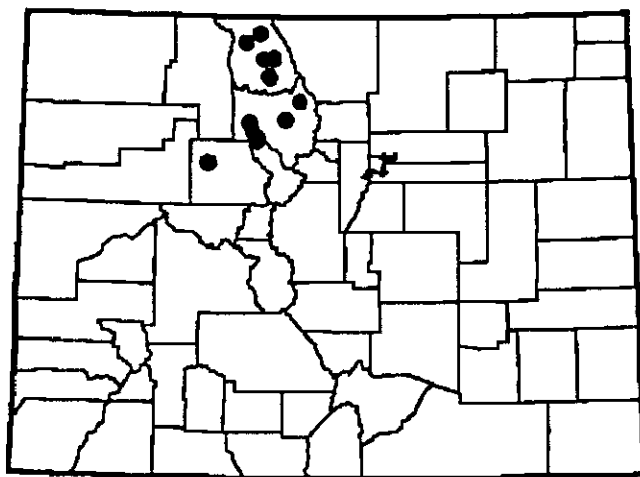
AUTHOR: D. Culver

UPDATE: 96-05-09

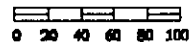
Distribution Map - Historical and Extant Occurrences

Penstemon cyathophorus

(Middle Park penstemon)



Miles



Colorado Natural Heritage Program

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Rank	Quality Comments	Last Seen	Global Rarity	State Rarity	Federal Legal	County	Conservation Site or (Survey Site) Name
001	G			1903-07-07		S1		Jackson	(PINKHAM CREEK)
004	S	D	ABOUT 12 INDIVIDUALS ON ROADSIDE, VERY LOCALIZED AND GRAZED.	1995-06-27				Jackson	(NORTH MCCALLUM OIL FIELD)
005	S	C	{BURT 1996-06-23:} QUALITY: C, SMALL POPULATION W/NO SEEDLINGS OR FRUIT, BUT INDS MOSTLY VIGOROUS. CONDITION: C, FAIRLY TRAMPLED AREA, WITH ROADS, COMPATHS, BEER BOTTLES. VIABILITY: B, INDIVIDUALS APPEAR HEALTHY EXCEPT FOR THE ONE W/HERBIVORY. DEFENSIBILITY: B, ALTHOUGH AREA IS NOT PRISTINE, PLANTS DO NOT SEEM TO BE IMPACTED NEGATIVELY.	1995-06-23				Jackson	(SUDDUTH DRAW)

Global Distribution:

Northcentral NV, northeastern NV, southern ID, northern UT,
southwestern MT, western WY, and northern CO.

References:

ABBREVIATED CITATION:

FULL CITATION:

Cronquist, et al., 1984

Cronquist, A., A.H. Holmgren, N.H. Holmgren,
J.L. Reveal, and P.K. Holmgren. 1984.
Intermountain Flora: Vascular Plants of the
Intermountain West, U.S.A. Volume 4. Subclass
Asteride (except Asteraceae). The New York
Botanical Garden, Bronx, NY. 573 pp.

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern
Slope. University Press of Colorado, Niwot, CO.

Element State Ranking Form as of 09 MAY 1996
PENSTEMON RADICOSUS
MATROOT PENSTEMON

Descriptors:

STATE EXEMPLARY SITE:
SUDDUTH DRAW

Ranking Factors:

ESTIMATED

OCCURRENCES: A
There are 5 occurrences in Colorado as of March 28, 1996.
One of the occurrences is a historical record (1903).

ABUNDANCE: A
Total number of individuals documented is less than 300.

SPECIES RANGE: A
Weber (1990) states that *P. radicosus* occurs in North Park.
Three of the occurrences are in Jackson County and two
occurrences are located in Moffat County.

TREND: C
Presently, this species appears stable.

PROTECTED
OCCURRENCES: A
There are no protected occurrences.

THREATS: C
This species appears to tolerant of disturbances such as,
livestock grazing and subsequent trampling.

OTHER
CONSIDERATIONS:

Rank and Reasons:

STATE RANK: S1 RANK DATE: 96-03-28
REASONS: There are only 5 known occurrences in two counties. One of
the occurrences is a historical record.

Needs:
INVENTORY NEEDS:
Need to search potential habitat for additional occurrences.

PROTECTION NEEDS:
Protect the Sudduth Draw site, presently, the best quality
occurrence of this species.

STEWARDSHIP NEEDS:
Protect plants from excessive anthropogenic disturbance and
cattle grazing where necessary. Determine the effects of
livestock grazing. Monitor known occurrences for changes in
population size.

References:

ABBREVIATED CITATION: FULL CITATION:

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern
Slope. University Press of Colorado, Niwot, CO.

Record Maintenance:

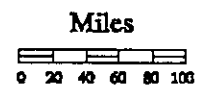
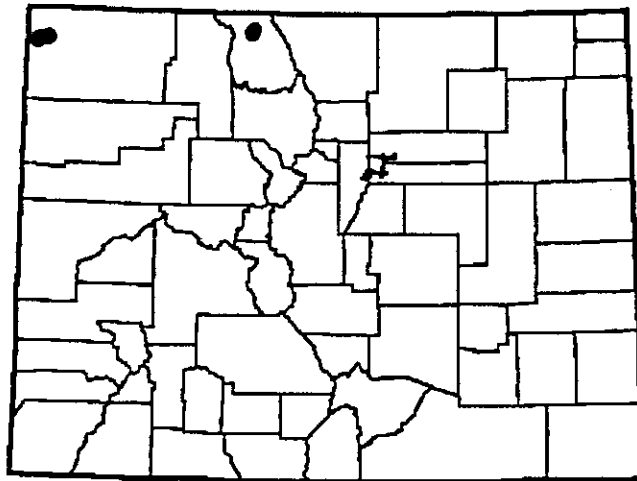
EDITION: 96-03-28
UPDATE: 96-05-09

AUTHOR: D.Culver

Distribution Map - Historical and Extant Occurrence

Penstemon radicosus

(Matroot penstemon)





Photograph of *Phacelia formosula*.

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-ision Rank	Occ. Rank	Quality Rank	Comments	Last Seen	Element Information	County	Conservation Site or (Survey Site) Name
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*** PHACELIA FORMOSULA (NORTH PARK PHACELIA) Global Rarity: G1 ; State Rarity: S1 ; Federal Legal: LE
 001 S D [O'KANE ET AL. 1985-07-01:] EO 1994
 RANK: B-, 1 OF 2 OCCURRENCES, HEAVY ORV & LIVESTOCK USE.

Jackson

WALDEN NORTH SITE

[JENNINGS 1989:] 5 PLANTS SEEN ON SANDSTONE OUTCROPS. [O'KANE ET AL. 1985:] ROSETTES SCARCE ON 1985-07-10. SAW 254 ROSETTES & 13 MATURE. EST NO: 100+. FLOWER: JULY-OCT. [PETERSON ET AL. 1981:] SAW 1000+ ROSETTES & MTR PLANTS. [ALLARD 1980:] SAW 117 MTR PLANTS, 3 SDLNGS. [WEBER AND WILEY 1979:] ONLY RECENTLY SIGHTED POPULATION. ONLY ABOUT 7-10 MATURE PLANTS, 8 YOUNG PLANTS, AND ABOUT A DOZEN ROSETTES. SEEDLINGS (YOUNG PLANTS) WERE OBSERVED, 1-3 PER ADULT PLANT, BUT LOCATED IN CLOSE VICINITY OF THE ADULT PLANT. LOW VIGOR, THE SPECIES DOES NOT SEEM TO BE ABLE TO TOLERATE DISTURBANCE. COROLLA LAVENDER/VIOLET. HERBACEOUS. [WEBER AND WILEY ND:RE:TABAR 1980:] 25 JUL 80 - SUE TABAR FOUND 117 MATURE PLANTS & 3 SEEDLINGS IN FOUR SMALL PATCHES. [CNHP:RE:ATWOOD AND HIGGINS 1973:] SPECIMEN IN FLOWER. [CNHP:RE:RIPLEY AND BARNEY 1947:] SPECIMEN IN FLOWER.

004 S BC [BURT 1995:] OCCURRENCE IS LARGE BUT SPREAD OUT IN AN AREA WITH MUCH CATTLE TRAMPLING, A POWER LINE AND A DIRT ROAD W/SOME HUMAN RECREATIONAL USE (BEER BOTTLES). QUALITY: B, MANY INDIVIDUALS OBSERVED, IN FLOWER, MANY

Jackson

NORTH PARK NATURAL AREA SITE

[BURT 1995:] SUBPOPLN #1: HAS 30 INDIVIDUALS W/MANY SEEDLINGS. ALL PLANTS BEGINNING TO BUD. SUBPOPULATION #2: 1 INDIVIDUAL OBSERVED IN FLOWER (AREA HEAVILY TRAMPLED). SUBPOPULATION #3: ABOUT 10 INDIVIDUALS OBSERVED, 1 IN FLOWER. WASP OBSERVED VISITING FLOWERS.

PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ. Rank	Occurrence Quality Rank	Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
			SEEDLINGS; CONDITION: C, SOME AREAS HEAVILY TRAMPLED BY CATTLE, ALL NEAR DIRT 2 TRACKS & POWERLINE. OTHER AREAS RELATIVELY UNTRAMPLED; VIABILITY: B, PLANT REPRODUCING, APPEAR TO HAVE POLLINATION MECHANISM IN PLACE; DEFENSIBILITY: C, AREA LIKELY TO CONTINUE TO BE GRAZED, & THEREFORE TRAMPLED, POWERLINE MAINTENANCE MAY IMPACT OCCURRENCE. [BURT AND CARSTEN 1995:] EO RANK: B, AREA NEAR ROADS WITH SOME COW TRACKS. POTENTIAL HABITAT EXTENDS ABOUT 1 MILE NE ALONG BLUFF. NEED TO RE-SURVEY WHEN PLANTS IN FULL FLOWER. [PETERSON ET AL 1981:] EO RANK: C-, SMALL OCCURRENCE.		SEVERAL SEEDLINGS. SUBPOPULATION #4: 27 INDIVIDUALS OBSERVED, 3 IN FLOWER, MOST IN BUD. MANY SEEDLINGS. FEW CATTLE TRACKS. SUBPOPULN #5: 8 MORE INDIVIDUALS OBSERVED IN BUD - AREA TRAMPLED. POPULATION DOCUMENTED VIA SIGHT AND PHOTO. NO ID PROBLEMS. NUMBERS OBSERVED: ABOUT 75 ADULTS AND MANY HUNDRED OF SEEDLINGS; POPULATION SIZE ESTIMATE: 300. PLANTS TEND TO OCCUR IN GROUPS THAT ARE RELATIVELY DENSE. [BURT AND CARSTEN 1995:] POPULATION SIZE ESTIMATE: 40-50. ABOUT 25 ADULTS SEEN ONLY 4 IN BUD, THE REST STILL IN ROSETTES. MANY SMALL SEEDLINGS OBSERVED. INDIVIDUALS SCATTERED THROUGHOUT AREA. TWO PLANTS OBSERVED GROWING IN A COW TRACK. POPULATION DOCUMENTED VIA SIGHT, NO ID PROBLEMS. NO DISEASE OR PREDATION OBSERVED. [BORLAND 1987:] # PLANTS: 31-100; AVG # PLANTS/SQ M: 1; MAX # PLANTS/SQ M: 3; MIN # PLANTS/SQ M: 0; # REPRODUCTIVES: 90%; # NON-REPRODUCTIVES: 10%; 100% IN FRUIT; 600 SEEDS COLLECTED. [PETERSON ET AL 1981:] NOT FLOWERING. [POP1:] CA 10 ROSETTES; [POP2:] CA. 15 ROSETTES; [POP3:] ROSETTES, CA. 12 INDIVIDUALS.		

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ Rank	Occurrence Quality Rank Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
006	S A	[NEELY 1994:] BEST KNOWN SITE. [POP2:] QUALITY=A: SMALL POPULATION BUT GOOD REPRODUCTION; CONDITION=A: VEGETATION IN EXCELLENT CONDITION; VIABILITY=A; DEFENSIBILITY=A: SITE FENCED; RIVER ON WEST SIDE. [POP1:] QUALITY=AB: LARGE POPULATION OF 6 SUBOCCURRENCES, LARGE NUMBER OF ROSETTES; CONDITION=B: CATTLE GRAZING, TRAMPLING AR. [?] EXPOSURE, SOME ORV; VIABILITY=B: LARGE POPULATION, GOOD REGENERATION VERY TIED TO PRECIPITATION; DEFENSIBILITY=A: EST. RNA, NEED TO WORK WITH PRIVATE AND BLM GRAZING MANAGERS. [PETERSON 1981:] EO RANK: A+, BEST KNOWN SITE.	1994-08	[NEELY 1994] [POP1:] LARGE POPULATION OF SIX SUBOCCURRENCES, LARGE NUMBER OF ROSETTES. GOOD REGENERATION. MOSTLY ROSETTES AS OF 6/13/94. SMALL % OF LARGER PLANTS FLOWERING. [POP2:] CA. 50 PLANTS, DISCOVERED SEVERAL NEW SUBOCCURRENCES (SMALL). [PETERSON 1982:] COMPRISED OF 10 BOUNDARIED SITES; 8100-8200 FT. EST NO IND: 1200; FLOWER: EARLY AUG. [PETERSON ET AL 1981:] [POP1:] COROLLA BLUE, ABOUT 700 PLANTS ON S TO W FACING SLOPE IN RAVINE, 1 SPECIMEN; [POP2, POP3, POP9:] FEW INDIVIDUALS; [POP7:] COROLLA BLUE, CA. 2000 INDIVIDUALS SCATTERED OVER 20 ACRES, 1 SPECIMEN; [POP8:] CA. 300 INDIVIDUALS; [POP10:] CA. 106 INDIVIDUALS.	Jackson	NORTH PARK NATURAL AREA SITE

PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Precision	Occ. Rank	Occurrence Quality Rank Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
007	S	AB	[NEELY AND KIPPER 1994:] LARGE POPULATION EXTENDING OVER TWO MILES LONG WITH MUCH POTENTIAL HABITAT, PARTICULARLY TO E AND S OF MAPPED OCCURRENCE; PLANTS LIKELY MUCH MORE EXTENSIVE THAN MAPPED. [1992, RANK="B":] LG, MANY INDS, REL UNDISTURBED BUT GRAZING EVIDENCE PRESENT. [NORTHWEST POPULATION IS] ADJACENT TO ROAD, SMALL, SOMEWHAT DISTURBED. [ANONYMOUS 1988:] ONE OF THE LARGEST KNOWN POPULATIONS. THREATENED BY ORV AND MOTORCYCLE USE, OIL AND GAS DEVELOPMENT, DOMESTIC LIVESTOCK TRAMPLING, GRAZING, FRAGILE SOILS VULNERABLE TO EROSION, COAL DEVELOPMENT. [O'KANE ET AL 1986:] [SEC3:] EO RANK: A, LG, MANY INDS, REL UNDISTURBED BUT GRAZE EVID. PRESENT; [SEC4:] EO RANK: C, ADJ TO ROAD, SMALL, SOMEWHAT DISTURBED.	1994-11-15	[NEELY AND KIPPER 1994:] SMALL CLUSTERS OF PLANTS BELOW BLUFFS, CLOSEST TO RIVER ABOVE DITCH. SMALL PLANTS IN FLOWER AND FRUIT; MANY SMALL PLANTS, NOT ROBUST, ONLY HUNDREDS OF INDIVIDUALS, SOME ROSETTES, LARGEST CONCENTRATION OF INDIVIDUALS ABOVE COALMONT BLUFFS; EXTENSIVE POTENTIAL HABITAT, PLANTS IN SCATTERED PATCHES, NOT DENSE. [CESAR 1994:] EST NUMBER IND: IN REPORT. [O'KANE ET AL 1986:] [SEC3:] EO CONSISTS OF 15 SMALL BOUNDARIED AREAS, TENDING TO BE IN LG BUNCHES, PLANTS VERY ROBUST WITH MANY ROSETTES (86-07-20), EST NO IND: 6000+, FRUIT: 30%, FLOWER: 65%; [SEC4:] SMALL POPULATION BUT PLANTS ROBUST, 29 FLOWERING INDS, 54 ROSETTES, FRUIT: 20%, FLOWER: 100% (OF MATURE), EST INDS: 83. [PETERSON ET AL 1981:] COROLLA COLOR: BLUE; SIZE AND BOUNDARY TO POP: FEW. [WAL 1981:] [SEC 3:] EO CONSISTS OF FIVE BOUNDARIED AREAS, EST NO IND UNKNOWN; [SEC4:] EO CONSISTST OF TWO BOUNDARIED AREAS, EST NO IND: 150++.	Jackson	NORTH PARK NATURAL AREA SITE
008	M	UNVERIFIED SITE.		1982	CAROL RUSSELL SIGHTED A PHACELIA ON COALMONT FM. WHILE ON A GEOLOGY FIELD TRIP; COULD BE P. FORMULOSA. EST NO IND: FRUIT: FLOWER:	Jackson	DODGE RANCH SITE

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Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec-Occ. Rank	Occurrence Quality Rank Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
009	S A	[NEELY AND KIPPER 1994:] LARGELY UNDISTURBED, NO SIGN OF ORV USE, CATTLE GRAZING IN AREA ALTHOUGH NOT WITHIN OCCURRENCE, LARGELY INFLUENCED; ASSOCIATED VEGETATION IN EXCELLENT CONDITION. [COLES AND MCLEAN 1993:] EO RANK: A, POPULATION IS SPARSER THAN NORTH PARK RNA, BUT COMMUNITY IS IN BETTER SHAPE AND THERE IS LESS EVIDENCE OF USE BY CATTLE OR ORV'S. QUALITY: A, SMALLER POPULATION, BUT MOST INDIVIDUALS LACK DEAD/DISCOLORED LEAVES COMMON AT N PARK RNA. CONDITION : A, COMMUNITY IS LESS-DISTURBED THAN N PARK RNA - LITTLE GRAZING, NO ORV. VIABILITY: A. DEFENSIBILITY: B, SITE IS IN THE MIDDLE OF LARGE UNFENCED ALLOTMENT, WITH ROAD ACCESS. [O'KANE 1985:] EO RANK: A+, PLANTS ROBUST, LITTLE EVIDENCE OF DISTURB N. MOST LOCAL.	1994-07-29	[NEELY AND KIPPER 1994-07:] CA. 125+ INDIVIDUALS OBSERVED IN 2 HOUR SEARCH SOUTH OF ROAD THAT CROSSES RIDGE. POTENTIAL HABITAT EXTENDS TO SOUTH AND EAST. [NEELY AND KIPPER 1994-06:] PLANTS ROBUST. CA. 70-100 PLANTS OBSERVED IN 2 HOUR FOOT SEARCH NORTH OF COUNTY ROAD [...]. LIKELY MANY MORE; VARIETY OF AGE CLASSES. [COLES AND MCLEAN 1993:] COLONIES OCCUR IN "HANDS" WHICH CORRESPOND TO "OUTCROPS" OF APPROPRIATE SILTY SUBSTRATE. MOST OF POPULATION VEGETATIVE ROSETTES. BUD: 0%; FRUIT: 5%; FLOWER: 1%. HIGHEST DENSITY OF PLANTS (BEST HABITAT) IS IN [...]. A NUMBER OF VERY LARGE PLANTS SET A LOT OF SEED THIS YEAR. A FEW PLANTS STILL IN BLOOM (LATE ANTHESIS IN LOWER FLOWERING BRANCHES PRODUCED DURING LATE SUMMER WET PERIOD). POPULATION DOCUMENTED VIA SIGHT, NO ID PROBLEMS. EST #: 350+. [O'KANE 1985:] 106 PLANTS IN FLOWER, 19 ROSETTES; VEGETATION VERY SPARSE WHERE ELEMENT OCCURS; EST NO IND: 125; FLOWER: 80%, COROLLA BLuish-PURPLE. [PETERSON AND BAKER 1981:] LESS THAN 10 INDIVIDUALS, COROLLA BLUE, NORTHERNMOST LOCALITY AS OF 9 OCT 81. [PETERSON ET AL 1981:] EST NO IND: 10-.	Jackson	CALIFORNIA GULCH
011	G		1930-08-06		Jackson	(NORTH PARK)
014	S AB	[BURT AND CARSTEN 1995-07:] LARGE PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED	1995-08-18	[CARSTEN '1995-08:] OCCURANCE	Jackson	Case Reservoir Bluffs

Colorado Natural Heritage Program

SPECIES SCORECARD

Rec Num	Prec- Occ. Rank	Occurrence Quality Rank	Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
			<p>BUT INTERMITTENT AREA OF POTENTIAL HABITAT. ABOUT 75 INDIV IN FLOWER WITH MANY HUNDREDS TO THOUSANDS OF ROSETTES. RELATIVELY UNDISTURBED BY GRAZING, OHVS, RECREATION, ETC. [CARSTEN 1995-08:] EO RANK: C, THIS PARTICULAR OCCURRENCE] VERY TINY - TWO ADULT PLANTS W/SEVERAL JUVENILES, BUT ENTIRE POP IN AREA FAIRLY GOOD SIZED. QUALITY: C, SMALL GROUP OF PLANTS - ONLY SIX; CONDITION: B, AREA GRAZED, BUT NOT REALLY WHERE PLANTS GROW; VIABILITY: B, PLANTS WELL PROTECTED BY ROCKS, ALTHOUGH FEW PRESENT; DEFENSIBILITY: B, NO IMMEDIATE THREATS DETECTABLE. [CARSTEN 1995-07:] EO RANK: C, OCCURRENCE [OCCURRENCE] IS SMALL, AND REPRODUCING, BUT IN HEAVILY GRAZED AREA W/EVIDENCE OF HERBIVORY. QUALITY: B, SMALL, BUT MOST INDIVIDUALS HEALTHY & SEEDLINGS; CONDITION: C, HEAVY GRAZING & TRAMPLING; VIABILITY: C, POPULATION EXTREMELY SMALL; DEFENSIBILITY: C, POPULATION BEING SUBJECTED TO HERBIVORY. [BURT AND CARSTEN 1995-06:] EO RANK: AB, LARGE BUT INTERMITTENT AREA OF POTENTIAL HABITAT BUT POPLN APPEARS VERY HEALTHY & SEEMS TO BE REPRODUCING VERY WELL. 30 INDIVIDUALS OBSERVED</p>		<p>[OCCURRENCE] OF TWO FLOWERING ADULTS, WITHERED, AND SEVERAL JUVENILES PROTECTED FROM WIND AND OTHER DISTURBANCE BY LARGE ROCKS. NO PREDATION OR DISEASE EVIDENT ON THESE INDIVIDUALS. POPULATION ON OTHER, NEARBY HILLS FAIRLY EXTENSIVE. POPULATION DOCUMENTED VIA SIGHT AND PHOTOS, NO ID PROBLEMS, IDENTIFIABLE ONLY BY LEAVES. NUMBERS OBSERVED AND POP SIZE ESTIMATE: SIX. IN THIS SPOT, VERY FEW PLANTS, BUT THE ENTIRE CASE SPRING AREA CONTAINS A RATHER EXTENSIVE POP. [CARSTEN 1995-07:] TOTAL OF 9 ADULTS SEEN. 95% IN FLOWER, 5% IN BUD. SEEDLINGS PRESENT, ABOUT 30 OR SO. PLANTS ARE ADJACENT TO CATTLE TRACKS AND ONE PLANT (ADULT) HAD SEVERAL FLOWERING STALKS EATEN OFF. POPULATION DOCUMENTED VIA SIGHT AND PHOTO, NO ID PROBLEMS. POP SIZE EST: 15 ADULTS AT MOST. POPULATION SMALL, AND MAY GET SMALLER IF HERBIVORY CONTINUES. HERBIVORY EVIDENT ON 1 OF THE 9 ADULTS. PLANTS UNHEALTHY. NO POLLINATORS. [BURT AND CARSTEN 1995-07:] 75 INDIVIDUALS OBSERVED IN FLOWER W/MANY HUNDREDS TO THOUSANDS OF ROSETTES. POTENTIAL HABITAT EXTENDS NORTH AND WEST INTERMITTENTLY. PLANTS JUST BEGINNING TO FLOWER IN LATE JUNE FULL FLOWER BY JULY 12. [BURT AND CARSTEN 1995-06:] 30 INDIVIDUALS OBSERVED, JUST BEGINNING TO FLOWER IN LATE JUNE. 1 INDIVIDUAL IN FLOWER, 5-10</p>		

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Colorado Natural Heritage Program

SPECIES SCORECARD

Rec- Num	Prec- Occ. Rank	Occurrence Quality Rank	Comments	Last Seen	Element Occurrence Information	County	Conservation Site or (Survey Site) Name
			<p>IN FLOWER SECTION 7, 20 IN SECTION 6. QUALITY: A, 75 ADULT INDIVIDUALS OBSERVED, ONE IN FLOWER, BUT MANY, MANY SEEDLINGS IN AREA; CONDITION: B, HABITAT LOOKS GOOD HOWEVER, THERE ARE 4WD TRACKS NEARBY & COW DUNG IN PART OF POTENTIAL HABITAT; VIABILITY: A, LARGE AREA OF POTENTIAL HABITAT, REPRODUCING WELL; DEFENSIBILITY: B, NEAR AREA THAT IS USED FOR RECREATION & WILDLIFE HABITAT MODIFICATIONS & GRAZING. BUT BLOFFS NOT FAVORED BY CATTLE OR RECREATIONAL USERS OF NOW. [CNHP:] OCCURRENCE RANKED AB PER DENISE CULVER. CARSTEN ONLY VISITED SECTION 1 NOT THE ENTIRE OCCURRENCE.</p>		<p>IN BUD, REST VEGETATIVE. SEVERAL HUNDRED SEEDLINGS THROUGHOUT AREA. AREA OF POTENTIAL HABITAT LESS THAN 5 ACRES. POPULATION DOCUMENTED VIA SIGHT AND PHOTO, NO ID PROBLEMS. NUMBERS OBSERVED: 75 ADULTS, HUNDREDS OF SEEDLINGS; POP SIZE EST: ADULT: 30. SMALL AREA BUT SEEMS TO BE REPRODUCING VERY WELL.</p>		

8 Records Processed

PRECISION CODES = "G"= ONLY GENERAL LEVEL DATA PROVIDED / "M"=MODERATELY PRECISE DATA PROVIDED; MAPPED WITHIN CA. 1 SQUARE MILE / "S"=ACTUAL MAPPED LOCATION PROVIDED

Plant Characterization Abstract for Colorado

PHACELIA FORMOSULA
NORTH PARK PHACELIA

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: SOLANALES
FAMILY: HYDROPHYLLACEAE GENUS: PHACELIA

TAXONOMIC COMMENTS:

P. formosula may be a variety of P. glandulosa, however additional materials and field work are necessary before this can be confirmed (Wiley-Eberle 1979).

Status:

GLOBAL RANK: G1 STATE RANK: S1
FED. STATUS: LE AGENCY STATUS:

Habitat:

MINIMUM ELEV: 7900 feet
MAXIMUM ELEV: 8500 feet

HABITAT COMMENTS:

Poorly vegetated raw exposures of the Coalmont Formation, steep-sided ravines. Grows on sandy bluffs of south-south easterly exposure, steep to moderately steep slopes, open to direct sunlight and winds. Associated plants: Mentzelia nuda, Chrysothamus parryi, Eriogonum cernuum, Oryzopsis hymenoides, Rosa, Penstemon, Salsola iberica, and Tetradymia canescens (Wiley-Eberle 1979). Surface exposures of the Coalmont Formation weather easily to form low sandy hills and bluffs, mostly along the main drainages in North Park (Warren 1990).

State Distribution:

COUNTY NAME:
Jackson

RANGE: Found from Jackson county, North Park west and north of Walden (Wiley-Eberle 1979; Coles pers. comm. 1994).

Phenology:

JAN1:	MAR1:	MAY1:	JUL1:	SEP1:	NOV1:
			Flower	Flower	
			Fruiting		
JAN2:	MAR2:	MAY2:	JUL2:	SEP2:	NOV2:
			Flower	Flower	
			Fruiting		
FEB1:	APR1:	JUN1:	AUG1:	OCT1:	DEC1:
			Flower		
			Fruiting		
FEB2:	APR2:	JUN2:	AUG2:	OCT2:	DEC2:
		Flower	Fruiting		

PHENOLOGY COMMENTS:

Flowering late June occasionally through October in

favorable years. In fruit July through November (Coles pers. comm. 1994). Flowering in July to early August and fruiting in August (Wiley-Eberle 1979). Plants bloom from late June to early October (Warren 1990).

Look Alikes:

Species cannot be confused on site (Wiley-Eberle 1979), it is distinctive in rosette and flowering forms (pers. comm. Coles 1994). *P. formosula* appears to be most closely related to *P. glandulosa*, but can be distinguished from that species by its usually much-branched, erect to spreading habit, less exerted stamens and style, darker seeds, narrower calyx lobes, and more pubescence style (Peterson 1986). *P. glandulosa* is allopatric, growing on oil shale (Coles pers. comm. 1994).

Management:

MANAGEMENT COMMENTS:

Jackson County Airport is in operation, the City of Walden Campground and Picnic Area is heavily used, the Brownlee Cattle Co. owns the other half of the bluff where it is grazed by cattle at certain times of the year. Heavy motorcycle traffic, and use of existing trails and dirt roads on land owned by Jackson County are affecting the species the most. Jackson County commissioners and Mr. Brownlee have been informed of *P. formosula*'s presence (Wiley-Eberle 1979).

Global Distribution:

Colorado endemic.

References:

ABBREVIATED CITATION:

FULL CITATION:

Coles 1994

Coles, J. 1994. Personal communication about Rare Plant Guide Species.

O'Kane 1986

O'Kane, S.L. 1986. Endangered Species Information System Species Workbook Part VII. Unpublished report for the US Fish and Wildlife Service, Denver, CO.

Peterson and Wiley-eberle 1986

Peterson, J. Scott and K.L. Wiley-Eberle. 1986. North Park Phacelia Recovery Plan. USFWS, Denver, CO. 28pp.

Warren 1990

Warren, K.D. 1990. A Comparative Study of the Reproductive Biology of a Rare and a Common Phacelia Species. Unpublished thesis.

Wiley-Eberle 1979

Wiley-Eberle, K.L. 1979. Status report for Phacelia formosula. Unpublished report prepared for the Bureau of Land Management.

Element Global Ranking Form

PHACELIA FORMOSULA
NORTH PARK PHACELIA

Element Description:

Plant, dicot, Hydrophyllaceae. Biennial or short-lived perennial.

Element Occurrence Specifications:

OCCURRENCE

DEFINITION: Any group of several rosettes and at least one flowering plant.

"A" RANKED

OCCURRENCE: Hundreds of flowering plants and thousands of rosettes with few impacts from recreational vehicles, grazing, or other developments.

"B" RANKED

OCCURRENCE: Tens of flowering plants and thousands of plants with light impacts from human activities.

"C" RANKED

OCCURRENCE: Tens of plants and few rosettes with moderate impacts from human activities.

"D" RANKED

OCCURRENCE: Tens to ones of plants with few rosettes and moderate to heavy impacts from human activities.

Descriptors:

TAXONOMIC

COMMENTS:

GLOBAL EXEMPLARY SITE:

Walden North, Jackson Co., Colorado, USA.

HABITAT:

Raw exposures of the Coalment Formations, steep-sided ravines. Grows on sandy bluffs above rivers.

PERMANENCE:

Permanent.

Ranking Factors:

ESTIMATED

OCCURRENCES:

B
8 known locations, only 2 sites with significant numbers.
Less than 10 square mile area.

ABUNDANCE: B
Estimated 8000 individuals, fluctuates annually depending on precipitation. Total acreage is about 700 acres.

SPECIES RANGE: A
Michigan Creek west to the Northern Platte River, Jackson Co., Colorado.

TREND:

PROTECTED OCCURRENCES: B
Listed as endangered by USFWS (Federal Register 9/1/82). One occurrence in a State Natural Area.

THREATS: B
Habitat susceptible to erosion, ORVs, livestock trampling/trailing, grazing, coal, oil and gas development.

FRAGILITY: C
Most occurrences have some grazing. Mature plants have been observed to be trampled.

OTHER CONSIDERATIONS:

Rank and Reasons:

GLOBAL RANK: G1 RANK DATE: 95-11-20

REASONS: 8 occurrences, 8000 individuals; population fluctuates annually. Colorado endemic found in 1 county. All sites subject to domestic cattle grazing. Habitat underlain by coal. Only four occurrences are ranked A or B.

Needs:

RESEARCH NEEDS:
Scientific research on known and potential habitat and biology of taxon.

INVENTORY NEEDS:
Search along the Canadian River drainage for additional populations.

PROTECTION NEEDS:

Register occurrences on private land, encourage federal agencies to protect habitat.

STEWARDSHIP NEEDS:

Monitor occurrences.

References:

ABBREVIATED CITATION: FULL CITATION:

Record Maintenance:

GRANKRESP: COHP
EDITION: 95-11-20 AUTHOR: J.M. Burt
UPDATE: 96-04-09

Element State Ranking Form as of 24 APR 1996
PHACELIA FORMOSULA
NORTH PARK PHACELIA

Descriptors:

STATE EXEMPLARY SITE:
WALDEN NORTH, JACKSON CO

Ranking Factors:

ESTIMATED

OCCURRENCES: B
There are 8 occurrences known in Colorado as of March 29, 1996.

ABUNDANCE: B
Estimated 8,000 individuals, fluctuates annually depending on precipitation. Total acreage is about 700 acres.

SPECIES RANGE: A
Weber (1990) states that this is a narrow endemic from North Park. Range is from Michigan Creek west to the Northern Platte River, Jackson, CO.

TREND: C
Presently, this species appears stable; however its habitat is moderately threatened from grazing cattle.

PROTECTED
OCCURRENCES:

B
Listed as endangered by U.S. Fish and Wildlife Service (Federal Register 9/1/82). Two occurrences are documented in Brownlee and Verner State Wildlife Areas, 2 occurrences on BLM land, and 2 occurrences in the North Park Designated Natural Area. There are 2 occurrences on private lands.

THREATS: B
Habitat susceptible to erosion, ORVs, livestock trampling/trailing, grazing, coal, oil and gas development.

OTHER
CONSIDERATIONS:

Rank and Reasons:

STATE RANK: S1 RANK DATE: 96-03-29
REASONS: Even though there are 8 occurrences with approximately 8,000 individuals, the population numbers fluctuate annually. P. formosula is restricted to Colorado and found only in one county. Its habitat is threatened by livestock grazing, oil and gas development, mining, and recreation use. There are only 2 high quality occurrences.

Needs:

INVENTORY NEEDS:
Search potential habitat in North Park for additional populations.

PROTECTION NEEDS:
Work with the state and federal agencies to protect habitat.

STEWARDSHIP NEEDS:

Protect populations from disturbance from livestock grazing,
mining, oil and gas development, and recreational use.
Monitor known occurrences for changes in population size.

References:

ABBREVIATED CITATION:

FULL CITATION:

Weber 1990

Weber, W.A. 1990. Colorado Flora: Eastern
Slope. University Press of Colorado, Niwot, CO.

Record Maintenance:

EDITION: 96-03-29

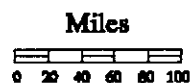
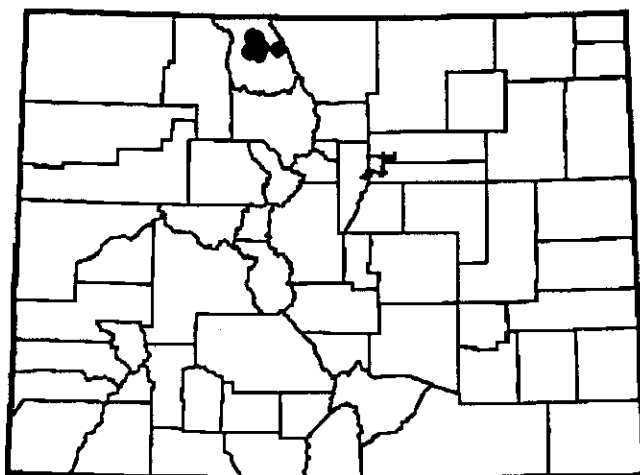
UPDATE: 96-04-24

AUTHOR: D. Culver and J. Burt

Distribution Map - Historical and Extant Occurrences

Phacelia formosula

(North Park phacelia)



Colorado Natural Heritage Program

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments
Scientific Name	Rarity Ranks	Rec#	Last Observed	Occurrence Protection Comments
Common Name	Legal Status	Occurrence Rank / Comments	Owner	Town Range County

CALIFORNIA GULCH

B1 - This site contains an A ranked occurrence of *Phacelia formosula*, a G1 biennial species. The site is largely undisturbed with no sign of ORV use or cattle grazing. There are approximately 125 *P. formosula* individuals documented. Potential habitat extends north and west. There are only 8 known locations and only 2 of those sites with significant numbers.

P3 - *Phacelia formosula* is listed as endangered by USFWS (Federal Register 9/1/82). Grazing and recreational use should be monitored.

M3 - Proposed ACEC designation for BLM land. Grazing and recreational uses should be monitored.

ARTEMISIA TRIDENTATA VASEYANA/LEUCOPOA K G3 S1S2 / 002 1966 0?
 WESTERN SLOPE SAGEBRUSH SHRUBLANDS FED: CO: B - MUCH CHRYSOTHAMMUS AND BOGR. BLM, KREMMLING RA 010N080W Jackson

PHACELIA FORMOSULA
 NORTH PARK PHACELIA

G1 S1 009 1994-07-29 [NEELY AND KIPPER 1994:] PROPOSED ACEC
 FED:LE CO: A - [NEELY AND KIPPER 1994:] LARGELY DESIGNATION FOR BLM LAND. ORGANIZE FIELD TRIP WITH BLM STAFF TO VISIT SITE, INVESTIGATE GRAZING REGIME. BLM, KREMMLING RA

UNDISTURBED, NO SIGN OF ORV USE, CATTLE GRAZING IN AREA ALTHOUGH NOT WITHIN OCCURRENCE, LARGELY INFLUENCED; ASSOCIATED VEGETATION IN EXCELLENT CONDITION. (COLES AND MCLEAN 1993:) EO RANK: A, POPULATION IS SPARSER THAN NORTH PARK RNA, BUT COMMUNITY IS IN BETTER SHAPE AND THERE IS LESS EVIDENCE OF USE BY CATTLE OR ORV'S. QUALITY: A, SMALLER POPULATION, BUT MOST INDIVIDUALS LACK DEAD/DISCOLORED LEAVES COMMON AT N PARK RNA. CONDITION : A, COMMUNITY IS LESS-DISTURBED THAN N PARK RNA - LITTLE GRAZING, NO ORV. VIABILITY: A.

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments
Scientific Name	Rarity Ranks	Rec#	Last Observed	Occurrence Protection Comments
Common Name	Legal Status	Occurrence Rank / Comments	Owner	Town Range County

DEFENSIBILITY: B, SITE IS IN THE MIDDLE
 OF LARGE UNFENCED ALLOTMENT, WITH ROAD
 ACCESS. [O'KANE 1985:] EO RANK: A+,
 PLANTS ROBUST, LITTLE EVIDENCE OF
 DISTURB N. MOST LOCAL.

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments
Scientific Name Common Name	Rarity Ranks Legal Status	Last Observed Occurrence Rank / Comments	Occurrence Protection Comments Owner	Town Range County

Case Reservoir Bluffs				
<p>B2 - An AB ranked occurrence of Phacelia P3 - Phacelia formosula is listed as M2 - Heavy grazing near occurrence on formosula, a G1 biennial species occurs endangered by USFWS (Federal Register BLM may warrant enclosure to protect at this site. There are approximately 75 9/1/82). Grazing and recreational use plants. Grazing should be kept off the individuals in flower with many hundreds could be threatening. The USFWS wildlife refuge and recreational use to thousands of rosettes in a relatively biologists are aware of this site as is near the site should be monitored. undisturbed area. Potential habitat the BLM. extends north and west intermittently. There are only 8 known locations and only 2 of those sites with significant numbers. There are an estimated 8000 individuals, with that figure fluctuating annually dependent on precipitation.</p>				
PHACELIA FORMOSULA NORTH PARK PHACELIA	G1 S1 FED:LE CO:	1995-08-18 AB - [BURT AND CARSTEN 1995-07:] LARGE BUT INTERMITTENT AREA OF POTENTIAL HABITAT. ABOUT 75 INDIV IN FLOWER WITH MANY HUNDREDS TO THOUSANDS OF ROSETTES. RELATIVELY UNDISTURBED BY GRAZING, OHVS, RECREATION, ETC. [CARSTEN 1995-08:] EO	USF&WS, ARAPAHO NWR	008N079W 008N080W Jackson
<p>RANK: C, THIS PARTICULAR OCCURRENCE [OCCURRENCE] VERY TINY - TWO ADULT PLANTS W/SEVERAL JUVENILES, BUT ENTIRE POP IN AREA FAIRLY GOOD SIZED. QUALITY: C, SMALL GROUP OF PLANTS - ONLY SIX; CONDITION: B, AREA GRAZED, BUT NOT REALLY WHERE PLANTS GROW; VIABILITY: B, PLANTS WELL PROTECTED BY ROCKS, ALTHOUGH FEW PRESENT; DEFENSIBILITY: B, NO IMMEDIATE THREATS DETECTABLE. [CARSTEN</p>				

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Rec#	Last Observed	Site Management Urgency Rating	Site Protection Comments	Site Protection Comments	Town Range	
Scientific Name	Legal Status	Rarity Ranks	Occurrence Rank / Comments	Owner	Occurrence Protection Comments	Owner		County	
				1995-07:] EO RANK: C, OCCURRENCE [OCCURRENCE] IS SMALL, AND REPRODUCING, BUT IN HEAVILY GRAZED AREA W/EVIDENCE OF HERBIVORY. QUALITY: B, SMALL, BUT MOST INDIVIDUALS HEALTHY & SEEDLINGS; CONDITION: C, HEAVY GRAZING & TRAMPLING; VIABILITY: C, POPULATION EXTREMELY SMALL; DEFENSIBILITY: C, POPULATION BEING SUBJECTED TO HERBIVORY. [BURT AND CARSTEN 1995- 06:] EO RANK: AB, LARGE BUT INTERMITTENT AREA OF POTENTIAL HABITAT BUT POPLN APPEARS VERY HEALTHY & SEEMS TO BE REPRODUCING VERY WELL. 30 INDIVIDUALS OBSERVED IN FLOWER SECTION 7, 20 IN SECTION 6. QUALITY: A, 75 ADULT INDIVIDUALS OBSERVED, ONE IN FLOWER, BUT MANY, MANY SEEDLINGS IN AREA; CONDITION: B, HABITAT LOOKS GOOD HOWEVER, THERE ARE 4WD TRACKS NEARBY & COW DUNG IN PART OF POTENTIAL HABITAT; VIABILITY: A, LARGE AREA OF POTENTIAL HABITAT, REPRODUCING WELL; DEFENSIBILITY: B, NEAR AREA THAT IS USED FOR RECREATION & WILDLIFE HABITAT MODIFICATIONS & GRAZING. BUT BLUFFS NOT FAVORED BY CATTLE OR RECREATIONAL USERS OF NOW. [CNHP:] OCCURRENCE RANKED AB PER DENISE CULVER. CARSTEN ONLY VISITED SECTION 1 NOT THE ENTIRE OCCURRENCE.					

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments
Scientific Name	Rarity Ranks	Rec#	Last Observed	Occurrence Protection Comments
Common Name	Legal Status	Occurrence Rank / Comments	Owner	Town Range County

INDEPENDENCE MOUNTAIN

B4 - An AB ranked occurrence of Lewisia rediviva, a G5\S1 perennial occurs at this site. There are at least ten thousand individuals. There is a road that bisects the site, but does not receive heavy use.

P3 - There are only 11 known occurrences of Lewisia rediviva in Colorado. There are no protected occurrences. Grazing and recreational use could be threaten this site.

M3 - There is evidence of grazing of livestock and wildlife on BLM lands on this site. Grazing and recreational use near the site should be monitored.

LEWISIA REDIVIVA
BITTERROOT

G5 S2 009 1995-07-10 011N080W
 FED: CO: AB - AT LEAST TEN THOUSAND INDIVIDUALS.
 HABITAT UP ROAD THROUGH PART BUT DOES NOT GET HEAVY USE AND DOES NOT SEEM TO HEAVILY IMPACT OCCURRENCE. QUALITY: A, HUGE OCCURRENCE. CONDITION: B, ROAD THROUGH SITE BUT OTHERWISE SEEMS IN GOOD CONDITION. SOME WEEDS RIGHT ALONG ROAD. VIABILITY: A, UNLESS DISTURBANCE REGIME CHANGES DRASTICALLY, OCCURRENCE SHOULD CONTINUE. DEPENDSIBILITY: B, ROAD THROUGH SITE AND FENCE BOTH WILL GET USE AND REQUIRE MAINTENANCE THAT MAY IMPACT OCCURRENCE.

011N080W
 011N081W
 Jackson

SITE TRACKING REPORT

Site Name Site Biodiversity Rating Site Protection Urgency Rating Site Management Urgency Rating Site Protection Comments

Scientific Name Rarity Ranks Rec# Last Observed Occurrence Rank / Comments Occurrence Protection Comments Town Range

Common Name Legal Status

NORTH PARK NATURAL AREA SITE

B1 - There is one A ranked occurrence, P2 - Phacelia formosula is listed as M3 - Grazing and recreational use should be monitored. one AB occurrence, and one BC occurrence endangered by USFWS (Federal Register 9/1/82). Grazing and recreational use of Phacelia formosula, a G1 plant species. The A ranked occurrence is a large population of five sub-populations with a large number of rosettes. The AB ranked occurrence is a large population which extends over 2 miles. The BC occurrence is large, but spread out. There is evidence of livestock grazing at this site. There are only eight known locations of Phacelia formosula range-wide and only two of those sites contain significant numbers.

PHACELIA FORMOSULA G1 S1 004 1995-07-06 BC - [BURT 1995:] OCCURRENCE IS LARGE BLM 008N080W

NORTH PARK PHACELIA FED:LE CO: BUT SPREAD OUT IN AN AREA WITH MUCH CATTLE TRAMPLING, A POWER LINE AND A DIRT ROAD W/SOME HUMAN RECREATIONAL USE (BEER BOTTLES). QUALITY: B, MANY INDIVIDUALS OBSERVED, IN FLOWER, MANY SEEDLINGS; CONDITION: C, SOME AREAS HEAVILY TRAMPLED BY CATTLE, ALL NEAR DIRT 2 TRACKS & POWERLINE. OTHER AREAS RELATIVELY UNTRAMPLED; VIABILITY: B, PLANT REPRODUCING, APPEAR TO HAVE POLLINATION MECHANISM IN PLACE; DEFENSIBILITY: C, AREA LIKELY TO CONTINUE TO BE GRAZED, & THEREFORE TRAMPLED, POWERLINE MAINTENANCE MAY JACKSON 009N080W

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments	
Scientific Name Common Name	Rarity Ranks Legal Status	Rec#	Last Observed Occurrence Rank / Comments	Owner	
			Occurrence Protection Comments	Town Range County	
PHACELIA FORMOSULA NORTH PARK PHACELIA	G1 S1 FED:LE CO:	006	1994-08 A - [NEELY 1994:] BEST KNOWN SITE. [POP2:] QUALITY=A: SMALL POPULATION BUT GOOD REPRODUCTION; CONDITION=A: VEGETATION IN EXCELLENT CONDITION; VIABILITY=A; DEFENSIBILITY=A: SITE FENCED; RIVER ON WEST SIDE. [POPI:] QUALITY=AB: LARGE POPULATION OF 6 SUBOCCURRENCES, LARGE NUMBER OF ROSETTES; CONDITION=B: CATTLE GRAZING, TRAMPLING AR. [?] EXPOSURE, SOME ORV; VIABILITY=B: LARGE POPULATION, GOOD REGENERATION VERY TIED TO PRECIPITATION; DEFENSIBILITY=A: EST. RNA, NEED TO WORK WITH PRIVATE AND BLM GRAZING MANAGERS. [PETERSON 1981:] EO RANK: A+, BEST KNOWN SITE.	[NEELY 1994:] [POP2:] APPROACH SWIFT REGARDING CONSERVATION EASEMENT OR MANAGEMENT LEASE; [POPI:] EXPAND RNA. [PETERSON 1982:] BLM RECOMMENDING SITE AS RNA IN RMP; REGISTERED NA (PARTIAL). BLM & R. SWIFT	009N080W Jackson
PHACELIA FORMOSULA NORTH PARK PHACELIA	G1 S1 FED:LE CO:	007	1994-11-15 AB - [NEELY AND KIPFER 1994:] LARGE POPULATION EXTENDING OVER TWO MILES LONG WITH MUCH POTENTIAL HABITAT, PARTICULARLY TO E AND S OF MAPPED OCCURRENCE; PLANTS LIKELY MUCH MORE EXTENSIVE THAN MAPPED. [1992, RANK=	CNAP, NORTH PARK DNA	009N080W Jackson

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Urgency Rating	Site Protection Comments
Scientific Name	Rarity Ranks	Rec#	Last Observed	Occurrence Protection Comments	Town Range
Common Name	Legal Status		Occurrence Rank / Comments	Owner	County

LEWISIA REDIVIVA	G5 S2	008	1995-06-29	BLM	009N080W
BITTERROOT	FED: CO:		C -		Jackson
PENSTEMON CYATHOPHORUS	G3G4 S2	019	1995-06-29	AREA IS OWNED BY BLM. GRAZING HAS NOT	009N080W
MIDDLE PARK PENSTEMON	FED: CO:		B - MANY INDIVIDUALS IN LARGE AREA THAT	APPEARED TO HARM THE P. CYATHOPHORUS.	Jackson
<p> "B":} LARGE, MANY INDIVIDUALS, RELATIVELY UNDISTURBED BUT GRAZING EVIDENCE PRESENT. [NORTHWEST POPULATION IS] ADJACENT TO ROAD, SMALL, SOMEWHAT DISTURBED. [ANONYMOUS 1988:] ONE OF THE LARGEST KNOWN POPULATIONS. THREATENED BY ORV AND MOTORCYCLE USE, OIL AND GAS DEVELOPMENT, DOMESTIC LIVESTOCK TRAMPLING, GRAZING, FRAGILE SOILS VULNERABLE TO EROSION, COAL DEVELOPMENT. [O'KANE ET AL 1986:] [SEC3:] EO RANK: A, LG, MANY INDS, REL UNDISTURBED BUT GRAZE EVID. PRESENT; [SEC4:] EO RANK: C, ADJ TO ROAD, SMALL, SOMEWHAT DISTURBED. </p>					
<p> B - MANY INDIVIDUALS IN LARGE AREA THAT DOES NOT APPEAR TOO HEAVILY GRAZED. QUALITY: A, MANY INDIVIDUALS SCATTERED THROUGHOUT AREA. CONDITION: B, AREA GRAZED & TRAMPLED BUT LOOKS PRETTY GOOD FOR THIS AREA. UNDERSTORY NOT COMPLETELY GONE, FEW WEEDS. VIABILITY: B, REALLY DEPENDS ON LONG TERM RESPONSE TO GRAZING. DEFENSIBILITY: C, GRAZING LIKELY TO REMAIN. BLM LAND OPEN TO OIL/GAS DEVELOPMENT & ROAD DEVELOPMENT. </p>					

SITE TRACKING REPORT

Site Name	Site Biodiversity Rating	Site Protection Urgency Rating	Site Management Urgency Rating	Site Protection Comments
Scientific Name	Rarity Ranks	Rec#	Last Observed	Occurrence Protection Comments
Common Name	Legal Status	Occurrence Rank /	Comments	Owner
				Town Range
				County

Jackson County Conservation Sites for Plant Species of Special Concern

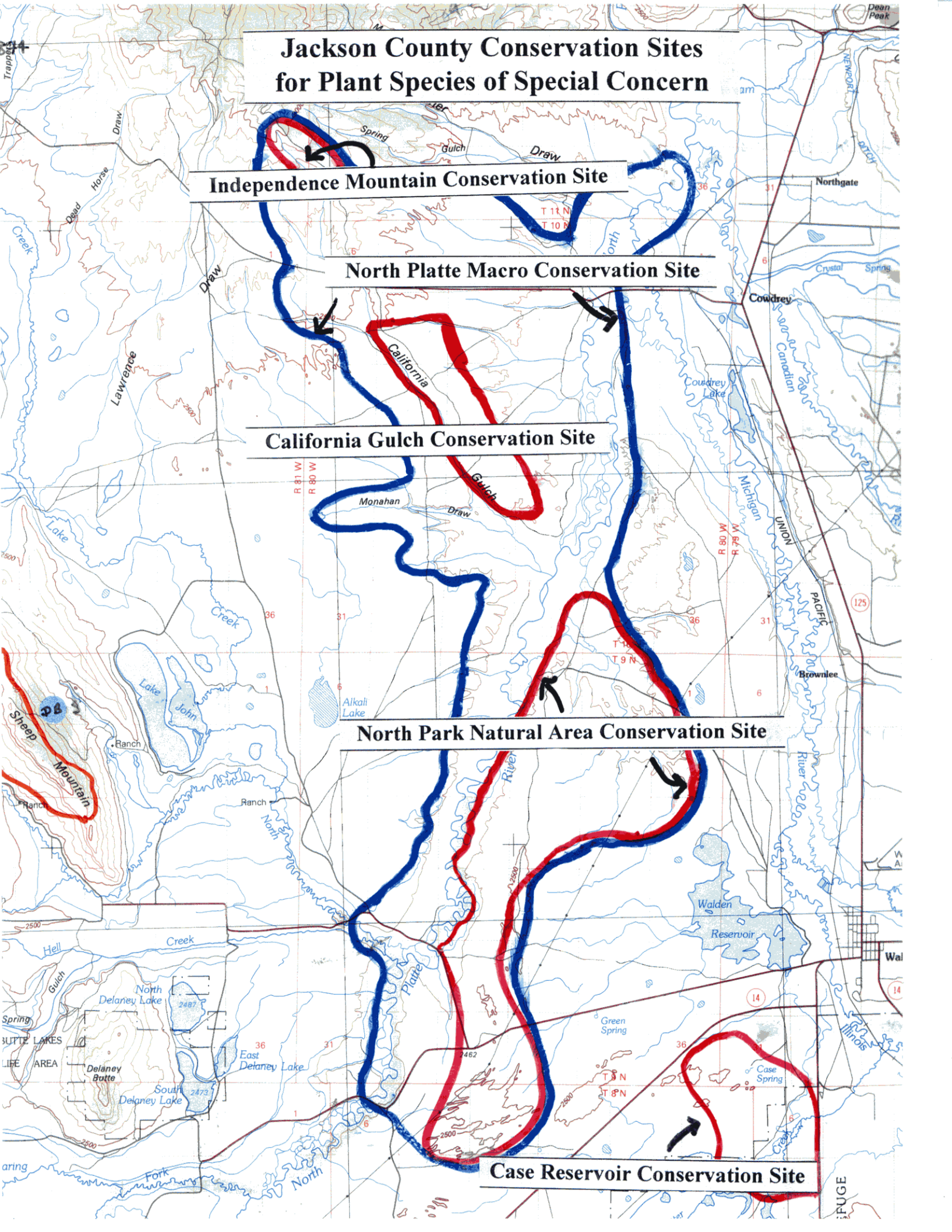
Independence Mountain Conservation Site

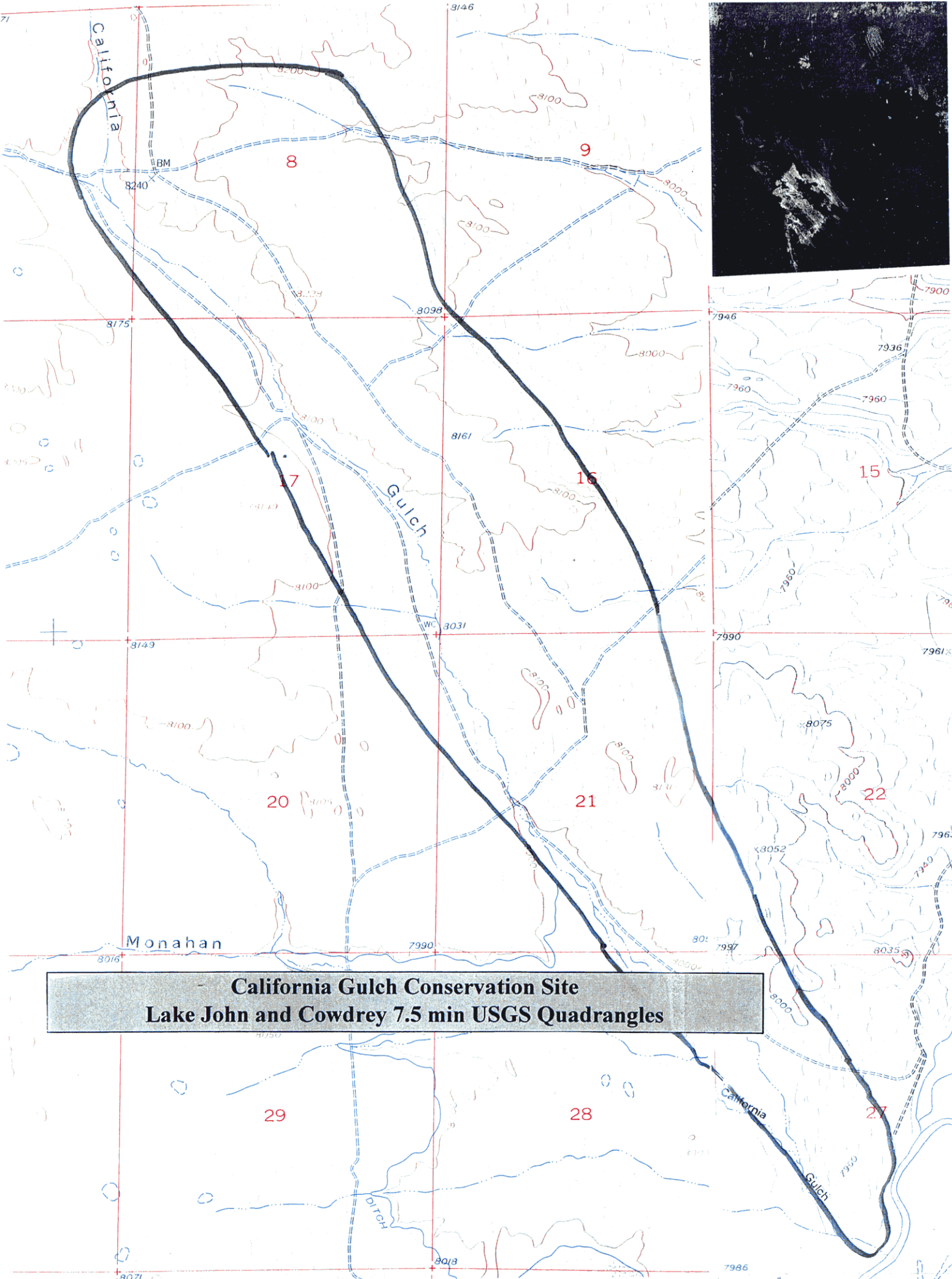
North Platte Macro Conservation Site

California Gulch Conservation Site

North Park Natural Area Conservation Site

Case Reservoir Conservation Site





**California Gulch Conservation Site
Lake John and Cowdrey 7.5 min USGS Quadrangles**

COLORADO NATURAL HERITAGE PROGRAM
CONSERVATION SITE PROFILE

CALIFORNIA GULCH

SIZE: 1920.00

BIODIVERSITY SIGNIFICANCE: 1: OUTSTANDING SIGNIFICANCE

PROTECTION URGENCY RATING: 3: DEFINABLE THREAT/OPPORTUNITY, BUT NOT
WITHIN 5 YEARS

MANAGEMENT URGENCY RATING: 3: NEEDED WITHIN FIVE YEARS TO MAINTAIN
QUALITY

LOCATION:

9 air miles northwest of Walden, CO.

USGS Quadrangle name(s):

LAKE JOHN, COWDREY

Townrange and section:

010N080W 7,8,17,21,28,33,22,27

Elevation: 8,000 ft. to 8,200 ft.

GENERAL DESCRIPTION:

The California Gulch Site is located between Mansfield Draw and Monahan Draw between 8,000 and 8,200 feet elevation. California Gulch is formed by an intermittent stream that flows southeast into the North Platte river. The site includes outcrops of the Coalmont Formation which consists of Arkosic sandstone, conglomerate, and shale. The site contains a gentle southeast to northwest oriented ridge, with rolling hills broken by eroding gullies. There is evidence of moderate livestock grazing. There is much potential habitat for *Phacelia formosula* on BLM land included in this site.

NATURAL HERITAGE RESOURCE SIGNIFICANCE:

This site contains an A ranked occurrence of *Phacelia formosula*, a G1 plant species. The site is largely undisturbed with no sign of ORV use or cattle grazing. There are approximately 125 *P. formosula* individuals documented. Potential habitat extends north and west. There are only eight known locations of this species and only two of those sites with significant numbers.

SCIENTIFIC AND COMMON NAME:

GLOBAL	STATE	FEDERAL	STATE	FOREST
RANK	RANK	STATUS	STATUS	SENS

PHACELIA FORMOSULA () (NORTH PARK PHACELIA)

G1	S1	LE
----	----	----

PROTECTION AND MANAGEMENT COMMENTS:

Phacelia formosula is listed as endangered by USFWS (Federal Register 9/1/82). Grazing and recreational use could be a threat.

Proposed Area of Critical Environmental Concern (ACEC) designation for BLM land. Grazing and recreational uses should be monitored.

BOUNDARY JUSTIFICATION:

The primary boundary protects habitat and ecological processes to support the Phacelia formosula occurrences.

RECOMMENDED FURTHER RESEARCH:

Element Occurrence Record

PHACELIA FORMOSULA NORTH PARK PHACELIA

LOCATORS

PLACE NAME: CALIFORNIA GULCH **LAT:** 404939N
POTENTIAL CONSERVATION AREA: CALIFORNIA GULCH **LONG:** 1062333W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: JACKSON **QUADNAME:** LAKE JOHN
COWDREY

TOWN\ RANGE:	SECTION:	LEGAL DESCRIPT DETAIL:
010N080W	21,28	[COLES AND MCLEAN 1993:]NW4 & SE4. [O'KANE 1981:] SW1/4 OF SE1/4 OF NW1/4, E2SE4NW4 & SE4NW4NW4. [PETERSON AND BAKER 1981:] NW/SE. [PETERSON ET AL 1981:] E2NW4SE4.
010N080W	27	

DIRECTIONS: [COLES AND MCLEAN 1993:] T10NR80W, S21, NW4 & SE4. ON BARREN AREAS OF EXPOSED SOIL ALONG BLUFFS WHICH FORM THE NORTHEAST RIM OF CALIFORNIA GULCH, NORTHWEST AND SOUTHEAST OF THE POINT WHERE CR 9A CROSSES THE BLUFF. ELEV: 8040 FT. HABITAT EXTENDS ALONG BLUFFS IN T10N R80W SECTIONS 8, 16, 17, 22. HIGHEST DENSITY OF PLANTS (BEST HABITAT) IS IN SECTION 21. [O'KANE 1985:] JACKSON COUNTY, TAKE RD E OF ALKALI LAKE N TO WHERE IT FORKS JUST N OF MONAHAN DRAW (COUNTY RD 9), CA 1.0 MILE ABOVE CONFLUENCE WITH MONAHAN DRAW, OCCURRENCE EITHER SIDE OF ROAD ON BLUFF E OF CALIFORNIA GULCH, T10N, R80W, S21, SW1/4 OF SE1/4 OF NW1/4 & E2SE4NW4 & SE4NW4NW4, ELEV: 2450 METERS OR 8040 FT. [PETERSON AND BAKER 1981:] T10N, R80W, S23, NW/SE, S-FACING SLOPE. [PETERSON ET AL 1981:] T10N, R80W, S23, E2NW4SE4, CA 2.3 AIR MILES SW OF COWDREY, E OF NORTH PLATTE RIVER, S OF HANSON RANCH CA 2.4 AIR MILES, ELEV: 8000 FT.

MINIMUM ELEVATION 7970 **MAXIMUM ELEVATION:** 8060

HABITAT: [COLES AND MCLEAN 1993:] ELEV: 8040 FT; TOPO POS: UPPER SLOPE-MID SLOPE; GEOLOGY: COALMONT FM; SOIL: CHOCOLATE BROWN BANDS OF SANDY SILT LOAM. ACTIVELY ERODING SLOPES AND GULLIES, GENERALLY WEST TO SOUTH-FACING SLOPES, ON SANDY SILT SOILS DERIVED FROM THE COALMONT FORMATION. COMMUNITY IN IMMEDIATE VICINITY OF PLANTS IS EXTREMELY SPARSE. ELSEWHERE ON THE RIDGE IT IS A SAGE-DOMINATED GRASSLAND WHICH CURRENTLY DOES NOT RECEIVE MUCH GRAZING USE. DOMINANTS ARE ARTEMISIA VASEYANA, ORYZOPSIS HYMENOIDES, AGROPYRON SPICATUM INERME, ERIOGONUM SPP, GILIA SP. SOME OF THE GULLIES HAVE OLD TRASH DUMPS IN THEM. [...] BISECTS THE RIDGE. TWO-TRACKS FOLLOW THE CREST OF THE RIDGE NORTH AND SOUTH - THE SOUTH TRACK IS STILL USED, WHILE THE NORTH TRACK HAS BEEN ABANDONED. EST 90 ACRES OF POTENTIAL HABITAT. HABITAT EXTENDS ALONG BLUFFS IN [...]. DOES NOT OCCUR IN SHALLOW OR SANDY OR CLAY SOILS, UNLESS THE SAND IS A THIN VENEER OF OVERWAS[H] COVERING THE APPROPRIATE SILTY SUBSTRATE. THREATS: OIL AND GAS EXPLORATION. [O'KANE 1985:] CA 1.0 MILE ABOVE CONFLUENCE, RARE AND LOCAL ON SAND OF COALMONT FORMATION, ON W EXPOSURE WITH CHYSOTHAMNUS, ORYZOPSIS, LUPINUS, PHLOX, ARTEMISIA, AND HYMENOXYS. SLOPE: 0-40%; ASPECT: WEST; ELEV: 8040 FT OR 2450 METERS. SITE LITTLE DISTURBED. [PETERSON AND BAKER 1981:] ON COALMONT FORMATION, SANDY SOIL, S-FACING SLOPE, NORTHERNMOST LOCALITY AS OF 9 OCT 81. [PETERSON ET AL 1981:] GEOL: COALMONT FM OUTCROP; ASPECT: S; SOIL: SANDY; SIZE: 1 ACRE; ELEV: 8000 FT. [ANONYMOUS ND:] ON GENTLE SE-NW ORIENTED RIDGE, ROLLING HILLS, BROKEN BY ERODING GULLIES. SOIL FINER TEXTURED THAN AT RNA, OFTEN CRUSTY LAYER ON TOP, PLTY CONE ON SIDE SLOPES OF GULLIES AND OFTEN ASSOCIATED WITH ROCK OUTCROPS. GENERAL AREA COMPOSED OF ROLLING HILLS OF ARNO, CHVA, KOMA. [...] GULCH DOMINATED BY CHNA, ARTR - INTERMITTENT STREAM.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G1 **STATE RANK:** S1 **FED. LEGAL:** LE **STATE LEGAL:**

OCCURRENCE RANK: A RANK DATE: 1994-07-29

OCCURRENCE RANK COMMENTS:

[NEELY AND KIPFER 1994:] LARGELY UNDISTURBED, NO SIGN OF ORV USE, CATTLE GRAZING IN AREA ALTHOUGH NOT WITHIN OCCURRENCE, LARGELY INFLUENCED; ASSOCIATED VEGETATION IN EXCELLENT CONDITION. [COLES AND MCLEAN 1993:] EO RANK: A, POPULATION IS SPARSER THAN NORTH PARK RNA, BUT COMMUNITY IS IN BETTER SHAPE AND THERE IS LESS EVIDENCE OF USE BY CATTLE OR ORV'S. QUALITY: A, SMALLER POPULATION, BUT MOST INDIVIDUALS LACK DEAD/DISCOLORED LEAVES COMMON AT N PARK RNA. CONDITION : A, COMMUNITY IS LESS-DISTURBED THAN N PARK RNA - LITTLE GRAZING, NO ORV. VIABILITY: A. DEFENSIBILITY: B, SITE IS IN THE MIDDLE OF LARGE UNFENCED ALLOTMENT, WITH ROAD ACCESS. [O'KANE 1985:] EO RANK: A+, PLANTS ROBUST, LITTLE EVIDENCE OF DISTURB N. MOST LOCAL.

SURVEY DATE: 1994-07-29 LAST OBSERVED: 1994-07-29 FIRST OBSERVED: 1894

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[NEELY AND KIPFER 1994-07:] CA. 125+ INDIVIDUALS OBSERVED IN 2 HOUR SEARCH SOUTH OF ROAD THAT CROSSES RIDGE. POTENTIAL HABITAT EXTENDS TO SOUTH AND EAST. [NEELY AND KIPFER 1994-06:] PLANTS ROBUST. CA. 70-100 PLANTS OBSERVED IN 2 HOUR FOOT SEARCH NORTH OF COUNTY ROAD [...]. LIKELY MANY MORE; VARIETY OF AGE CLASSES. [COLES AND MCLEAN 1993:] COLONIES OCCUR IN "BANDS" WHICH CORRESPOND TO "OUTCROPS" OF APPROPRIATE SILTY SUBSTRATE. MOST OF POPULATION VEGETATIVE ROSETTES. BUD: 0%; FRUIT: 5%; FLOWER: 1%. HIGHEST DENSITY OF PLANTS (BEST HABITAT) IS IN [...]. A NUMBER OF VERY LARGE PLANTS SET A LOT OF SEED THIS YEAR. A FEW PLANTS STILL IN BLOOM (LATE ANTHESIS IN LOWER FLOWERING BRANCHES PRODUCED DURING LATE SUMMER WET PERIOD). POPULATION DOCUMENTED VIA SIGHT, NO ID PROBLEMS. EST #: 350+. [O'KANE 1985:] 106 PLANTS IN FLOWER, 19 ROSETTES; VEGETATION VERY SPARSE WHERE ELEMENT OCCURS; EST NO IND: 125; FLOWER: 80%, COROLLA BLUISH-PURPLE. [PETERSON AND BAKER 1981:] LESS THAN 10 INDIVIDUALS, COROLLA BLUE, NORTHERNMOST LOCALITY AS OF 9 OCT 81. [PETERSON ET AL 1981:] EST NO IND: 10-.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:

[NEELY AND KIPFER 1994:] CATTLE CONCENTRATED N OF OCCURRENCE NEAR RESERVOIR. AREA WHERE PLANTS OCCUR NEAR COUNTY ROAD [...] LARGELY UNGRAZED, NO FENCES OBSERVED ON N END. CHECK ROAD USE; CONSIDER CLOSING UNIMPROVED ACCESS ROAD. CHECK OIL AND GAS. [COLES AND MCLEAN 1993:] THREATS: OIL AND GAS EXPLORATION. SOME OF THE GULLIES HAVE OLD TRASH DUMPS IN THEM. COUNTY ROAD 9A BISECTS THE RIDGE. TWO-TRACKS FOLLOW THE CREST OF THE RIDGE NORTH AND SOUTH - THE SOUTH TRACK IS STILL USED, WHILE THE NORTH TRACK HAS BEEN ABANDONED. [O'KANE 1985:] SITE LITTLE DISTURBED.

PROTECTION COMMENTS:

[NEELY AND KIPFER 1994:] PROPOSED ACEC DESIGNATION FOR BLM LAND. ORGANIZE FIELD TRIP WITH BLM STAFF TO VISIT SITE, INVESTIGATE GRAZING REGIME.

OWNER: BLM, KREMMLING RA

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

O'KANE, S. 1985. SPECIMEN (COLLECTION #2103) LOCATED AT UNIVERSITY OF COLORADO HERBARIUM. PETERSON, J.S. AND W.L. BAKER. 1981. SPECIMEN (COLLECTION #813) LOCATED AT COLORADO STATE UNIVERSITY HERBARIUM. OSTERHOUT, G.E. 1894. SPECIMEN (COLLECTION #312) LOCATED AT ROCKY MOUNTAIN HERBARIUM.

BEST SOURCE: NEELY, B. AND T. KIPFER. 1994. FIELD SURVEY OF 14 JUNE 1994 AND 29 JULY 1994.

COMMENTS: [NEELY AND KIPFER 1994:] ORGANIZE FIELD TRIP WITH BLM STAFF TO VISIT SITE, INVESTIGATE GRAZING REGIME.
[CNHP:RE:COLES AND MCLEAN 1993:] MAP PROVIDED. [O'KANE 1985:] OCCURRENCE CONSISTS OF FOUR BOUNDARIED AREAS.
[CNHP:RE:O'KANE 1985:] MAP PROVIDED. [PETERSON AND BAKER 1981:] VERY CLOSE TO BLM LAND. [PETERSON ET AL 1981:]
ADDITIONAL CITATION: OSTERHOUT, G.E. (312), 1894, RM. [CNHP:RE: PETERSON ET AL 1981:] MAP PROVIDED. [CNHP:]
DATA FOR NEELY AND KIPFER IN UNKNOWN LOCATION, DATA CITED AS UNKNOWN COULD BE THEIRS.

BOUNDARIES: Y

PHOTOS: Y

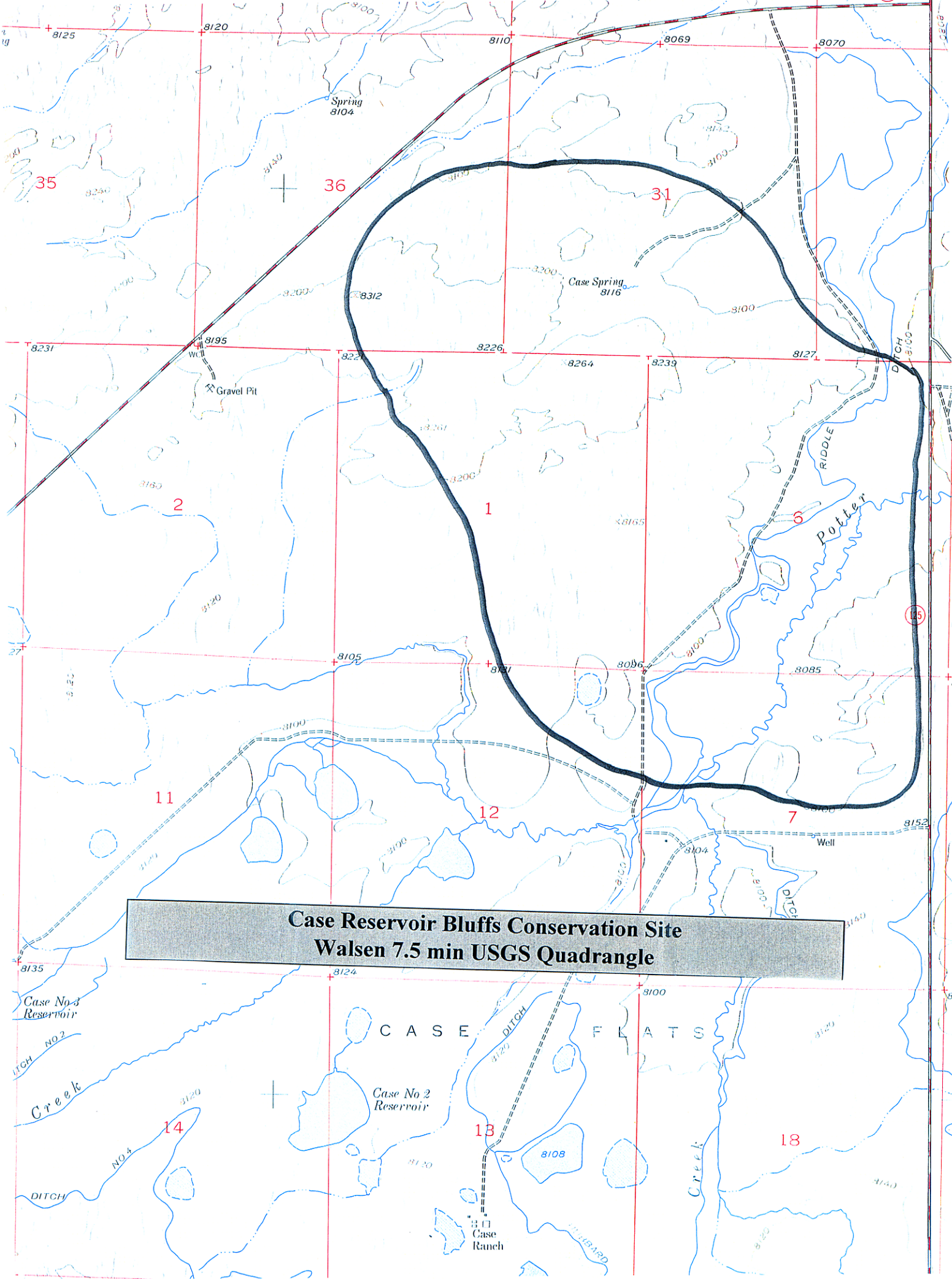
UPDATE:

PDHYD0C1H0*009*CO

PRINTOUT DATE: 09 MAY 1996



Photograph taken at Case Reservoir Bluffs Site.



**Case Reservoir Bluffs Conservation Site
Walsen 7.5 min USGS Quadrangle**

C A S E F L A T S

Case No 2 Reservoir

Case Ranch

Case No 3 Reservoir

Spring 8104

Case Spring 8116

Gravel Pit

Potter

RIDDLE

Well

Creek

Creek

DITCH

DITCH

SHUBARD

COLORADO NATURAL HERITAGE PROGRAM
CONSERVATION SITE PROFILE

Case Reservoir Bluffs

SIZE: 6.40

BIODIVERSITY SIGNIFICANCE: 2: VERY HIGH SIGNIFICANCE

PROTECTION URGENCY RATING: 3: DEFINABLE THREAT/OPPORTUNITY, BUT NOT
WITHIN 5 YEARS

MANAGEMENT URGENCY RATING: 2: ESSENTIAL WITHIN FIVE YEARS TO
PREVENT LOSS

LOCATION:

3 air miles southwest of Walden. Partially in the Arapaho National Wildlife
Refuge, partially on BLM land adjacent to the Refuge.

USGS Quadrangle name(s):
Walden

Townrange and section:
008N079W 1,6,7

Elevation: 8100 ft. to 8240 ft.

GENERAL DESCRIPTION: :

The Case Reservoir Bluffs site is located on bluffs above Potter Creek between 8100 feet and 8240 feet elevation. Potter Creek flows northeast into the Illinois River. The site includes bluffs with outcrops of the Coalmont Formation above a new reservoir and stretches north into BLM land. The area is sparsely vegetated where *Phacelia formosula* occurs but is surrounded by extensive sagebrush plains. Evidence of past grazing exists on the Wildlife Refuge part of this occurrence. There is some recreational use associated with the Refuge, but currently it does not seem to have impacted the site. Heavy grazing and trampling were observed on the BLM portion of the site. There is much potential habitat on BLM land included in this site, that may support *Phacelia formosula* once grazing levels are reduced.

NATURAL HERITAGE RESOURCE SIGNIFICANCE: :

An AB ranked occurrence of *Phacelia formosula*, a G1 plant species occurs at this site. There are approximately 75 individuals in flower with many hundreds to thousands of rosettes in a relatively undisturbed area. Potential habitat extends north and west intermittently. There are only eight known locations and only two of those sites with significant numbers. There are an estimated 8000 individuals documented for this species range-wide, with that figure fluctuating annually dependent on precipitation.

SCIENTIFIC AND COMMON NAME:

GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS	FOREST SENS
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PHACELIA FORMOSULA () (NORTH PARK PHACELIA)

		G1	S1	LE
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PROTECTION AND MANAGEMENT COMMENTS:

Phacelia formosula is listed as endangered by USFWS (Federal Register 9/1/82). Grazing and recreational use could be threatening. The USFWS biologists are aware of this site as is the BLM.

Heavy grazing near occurrence on BLM land may warrant enclosure to protect plants. Grazing should be kept off the wildlife refuge and recreational use near the site should be monitored.

BOUNDARY JUSTIFICATION:

The primary boundary protects habitat and ecological processes to support the occurrence of Phacelia formosula at this site.

RECOMMENDED FURTHER RESEARCH:

Element Occurrence Record

PHACELIA FORMOSULA
NORTH PARK PHACELIA

LOCATORS

PLACE NAME: CASE FLATS-POTTER CREEK LAT: 404054N
POTENTIAL CONSERVATION AREA: Case Reservoir Bluffs LONG: 1061815W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Jackson WALDEN

TOWN\ RANGE:	SECTION:	LEGAL DESCRIP DETAIL:
008N079W	6,7	[BURT AND CARSTEN 1995-07:] NW1/4 SE4/4 SEC7. SE1/4 SEC6. [BURT AND CARSTEN 1995-06:] SEC7 NW1/4 SE4/4, SE1/4.
008N080W	1	[CARSTEN 1995-08:] SEC1 NE1/4 NE4/4. [CARSTEN 1995-07:] T8NR79W S6, ON BORDER OF S1. IN S1, SE1/4 NE4/4. [BURT AND CARSTEN 1995-07:] SEC 1 SE1/4 NE4/4.

DIRECTIONS: [CARSTEN 1995-08:] T8N, R80W, S1 NE1/4 NE4/4. BLM KREMMLING DISTRICT. SOUTH OF WALDEN. DRIVE ABOUT 2.8 MILES SOUTH ON 125 FROM JUNCTION OF 14 & 125. TURN WEST INTO ARAPAHO WILDLIFE REFUGE, FOLLOW DIRT ROAD, TAKE FIRST RIGHT FORK, 2ND LEFT FORK, AND PARK. ELEVATION: 8220 FT. [CARSTEN 1995-07:] T8N, R80W, S1 SE1/4 NE4/4 AND T8N, R79W, S6 ON BORDER OF S1. S OF WALDEN, BLM KREMMLING DISTRICT FROM JUNCTION OF 125 & 14, GO S ON 125 FOR 2.6 MILES. TURN WEST INTO ARAPAHO WILDLIFE REFUGE GO 0.8 MILES TO FIRST FORK, BEAR RIGHT. GO 0.3 MILES TO 2ND FORK. BEAR RIGHT AGAIN (LEAVING REFUGE). GO 0.9 MILES ON TWO-TRACK AND PARK. OCCURRENCE ON RIDGE. ELEVATION: 8100- 8200 FT. [BURT AND CARSTEN 1995-07:] T8N, R79W, S1,6,7. NW1/4 SE4/4 SECTION 7, SE1/4 SECTION 6. SE1/4 NE4/4 SECTION 1. FROM WALDEN TAKE RTE 125 SOUTH 2 1/2 MILES PAST RTE 14 TURNOFF TO KREMMLING. AT SIGN FOR ARAPAHO NATIONAL WILDLIFE REFUGE AUTO TOUR TURN RIGHT (FOLLOWING AUTO TOUR). DRIVE 1/2 MILE WEST TO FIRST STOP. OCCURRENCE BEGINS ON WEST SIDE OF SMALL BLUFF. ELEV: 8100-8160 FT. [BURT AND CARSTEN 1995-06:] T8N, R79W, S1,6,7. NW1/4 SE4/4 SECTION 7, SE1/4 SECTION 7, SE1/4 NE4/4 SECTION 1. FROM WALDEN TAKE RTE 125 SOUTH 2 1/2 MILES PAST RTE 14 TURNOFF TO KREMMLING. DRIVE 1/2 MILE TO SMALL HILL ON NORTH SIDE OF ROAD JUST BEFORE ROAD CURVES SOUTH. ADDITIONAL OCCURRENCES ON SMALL HILLS TO N & NW. ELEV: 8100-8160 FT.

MINIMUM ELEVATION 8080 MAXIMUM ELEVATION: 8240

HABITAT: [CARSTEN 1995-08:] BARREN HILLTOPS AND SLOPES, WITH 70% OR MORE BARE GROUND, ABOVE SAGEBRUSH COMMUNITY. AREA IS GRAZED BY CATTLE AND ANTELOPE. ASSOCIATED SPECIES: CHAENACTIS DOUGLASII, COMANDRA UMBELLATA, CRYPTANTHA VIRGATA, OREOCARYA SP., ORYZOPSIS HYMENOIDES, LINUM LEWISII, OXYBAPHUS LINEARIS. ELEV: 8220 FT; SLOPE: 0-5 %; ASPECT: S; SOIL: SANDY, WITH LARGE PEBBLES & COBBLES, PALE IN COLOR. BARREN, SANDY HILLTOPS & SLOPES WITH VERY LITTLE COVER. [CARSTEN 1995-07:] SAGEBRUSH COMMUNITY, BUT SPARSE WHERE EO OCCURS. MANY LICHEN ENCRUSTED BOULDERS AND SANDY SOIL. AREA HEAVILY GRAZED AND TRAMPLED, NEAR WEEDY AREA. ASSOCIATED SPECIES: CRYPTANTHA VIRGATA, CHAENACTIS DOUGLASII, COMANDRA UMBELLATA, OENOTHERA CAESPITOSA. ELEV: 8100- 8200 FT; WEATHER: CLOUDY AND COOL; SLOPE: 10-30%; ASPECT: NW & SE; TOPOGRAPHICAL POSITION: MID TO UPPER SLOPE; LIGHT: OPEN; MOISTURE: DRY; SOIL: SANDY W/COBBLES AND PEBBLES, LIGHT IN COLOR. CATTLE GRAZING, TRAMPLING. ESTIMATED AMOUNT OF POTENTIAL HABITAT: 600, 5-10% OCCUPIED. [BURT AND CARSTEN 1995-07:] SPARSE, LOW VEGETATION COVER - 60% BARE GROUND OR MORE WHERE PLANTS ARE FLOWERING. SEEDLINGS MAY OCCUR IN MORE DENSE VEGETATION - UP TO 40%. GROWING FROM MIDDLE TO TOP OF GENTLE, SLOPING BLUFFS - SLOPE 5-15%. SOIL BROWN AND SANDY - COALMONT FM. ASPECT: NW TO SW. MOISTURE: VERY DRY. SPECIES IN AREA INCLUDE: CRYPTANTHA SP., CHRYSOTHAMNUS SP, ORYZOPSIS HYMENOIDES, COMANDRA UMBELLATA, SENECIO CANUS, CHAENACTIS DOUGLASII, LESQUERELLA SP, STIPA COMATA, LEPTODACTYLON PUNGENS, GILIA SP. SOME COW PIES INDICATE OLD GRAZING, BUT NO EVIDENCE OF GRAZING THIS YEAR. A 2-TRACK GOES UP TO CREST OF HILL ON WHICH PHACELIA GROWS BUT NO TRACKS OVER PLANTS THEMSELVES. ELEV: 8100-8160 FT. [BURT AND CARSTEN 1995-06:] ELEVATION : 8100-8120 FT. VERY SPARSE VEGETATION - OVER 60% BARE GROUND WHERE PHACELIA IS GROWING.

GROWING NEAR THE TOP OF A LOW HILL WITH 5-10% SLOPE & SMALL SANDSTONE OUTCROPS. SOIL BROWN & SANDY. COALMONT FM. ASPECT: 310 DEGREES (NW). TOPOGRAPHICAL POSITION: MID-UPPER SLOPE; LIGHT: OPEN; SOIL: VERY SMALL AREA OF APPROPRIATE HABITAT, BUT OCCURRENCE APPEARS HEALTHY. OPEN SHRUBLAND/GRASS LAND. NO SPECIES REALLY GROWING WITH PHACELIA BUT NEARBY. ASSOCIATED SP INCLUDE: CRYPTANTHA SP, CHRYSOTHAMNUS SP, ORYZOPSIS HYMENOIDES, COMMANDRA UMBELLATA, SENECIO CANUS, OENOTHERA CAESPITOSA, IPOMOPSIS CONGESTA, ARTEMISIA FRIGIDA, PHLOX HOODII, CHAENACTIS DOUGLASII, LESQUERELLA SP, LEPTODACTYLON PUNGENS. VERY FEW COW PIES OBSERVED IN AREA. 2-TRACK NEARBY UP HILL. NATURAL EROSION. POSSIBLY GRAZING OR OHV USE ON HILL (NEED TO MONITOR SITE). EST AMOUNT OF POTENTIAL HABITAT: 100 ACRES, 5% OCCUPIED.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G1 STATE RANK: S1 FED. LEGAL: LE STATE LEGAL:

OCCURRENCE RANK: AB RANK DATE: 1995-07-12

OCCURRENCE RANK COMMENTS:

[BURT AND CARSTEN 1995-07:] LARGE BUT INTERMITTENT AREA OF POTENTIAL HABITAT. ABOUT 75 INDIVIDUALS IN FLOWER WITH MANY HUNDREDS TO THOUSANDS OF ROSETTES. RELATIVELY UNDISTURBED BY GRAZING, OHVS, RECREATION, ETC.
[CARSTEN 1995-08:] EO RANK: C, THIS PARTICULAR OCCURRENCE VERY TINY - TWO ADULT PLANTS WITH SEVERAL JUVENILES, BUT ENTIRE POP IN AREA FAIRLY GOOD SIZED. QUALITY: C, SMALL GROUP OF PLANTS - ONLY SIX; CONDITION: B, AREA GRAZED, BUT NOT REALLY WHERE PLANTS GROW; VIABILITY: B, PLANTS WELL PROTECTED BY ROCKS, ALTHOUGH FEW PRESENT; DEFENSIBILITY: B, NO IMMEDIATE THREATS DETECTABLE. [CARSTEN 1995-07:] EO RANK: C, OCCURRENCE IS SMALL, AND REPRODUCING, BUT IN HEAVILY GRAZED AREA WITH EVIDENCE OF HERBIVORY. QUALITY: B, SMALL, BUT MOST INDIVIDUALS HEALTHY AND SEEDLINGS; CONDITION: C, HEAVY GRAZING & TRAMPLING; VIABILITY: C, POPULATION EXTREMELY SMALL; DEFENSIBILITY: C, POPULATION BEING SUBJECTED TO HERBIVORY. [BURT AND CARSTEN 1995-06:] EO RANK: AB, LARGE BUT INTERMITTENT AREA OF POTENTIAL HABITAT BUT POPLN APPEARS VERY HEALTHY & SEEMS TO BE REPRODUCING VERY WELL. 30 INDIVIDUALS OBSERVED IN FLOWER SECTION 7, 20 IN SECTION 6. QUALITY: A, 75 ADULT INDIVIDUALS OBSERVED, ONE IN FLOWER, BUT MANY, MANY SEEDLINGS IN AREA; CONDITION: B, HABITAT LOOKS GOOD HOWEVER, THERE ARE 4WD TRACKS NEARBY & COW DUNG IN PART OF POTENTIAL HABITAT; VIABILITY: A, LARGE AREA OF POTENTIAL HABITAT, REPRODUCING WELL; DEFENSIBILITY: B, NEAR AREA THAT IS USED FOR RECREATION AND WILDLIFE HABITAT MODIFICATIONS & GRAZING. BUT BLUFFS NOT FAVORED BY CATTLE OR RECREATIONAL USERS OF NOW. [CNHP:] OCCURRENCE RANKED AB PER DENISE CULVER. CARSTEN ONLY VISITED SECTION 1 NOT THE ENTIRE OCCURRENCE.

SURVEY DATE: 1995-07-12 LAST OBSERVED: 1995-08-18 FIRST OBSERVED: 1995-06-28

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[CARSTEN 1995-08:] OCCURRENCE OF TWO FLOWERING ADULTS, WITHERED, AND SEVERAL JUVENILES PROTECTED FROM WIND AND OTHER DISTURBANCE BY LARGE ROCKS. NO PREDATION OR DISEASE EVIDENT ON THESE INDIVIDUALS. POPULATION ON OTHER, NEARBY HILLS FAIRLY EXTENSIVE. POPULATION DOCUMENTED VIA SIGHT AND PHOTOS, NO IDENTIFICATION PROBLEMS, IDENTIFIABLE ONLY BY LEAVES. NUMBERS OBSERVED AND POP SIZE ESTIMATE: SIX. IN THIS SPOT, VERY FEW PLANTS, BUT THE ENTIRE CASE SPRING AREA CONTAINS A RATHER EXTENSIVE POP. [CARSTEN 1995-07:] TOTAL OF 9 ADULTS SEEN. 95% IN FLOWER, 5% IN BUD. SEEDLINGS PRESENT, ABOUT 30 OR SO. PLANTS ARE ADJACENT TO CATTLE TRACKS AND ONE PLANT (ADULT) HAD SEVERAL FLOWERING STALKS EATEN OFF. POPULATION DOCUMENTED VIA SIGHT AND PHOTO, NO IDENTIFICATION PROBLEMS. POPULATION SIZE ESTIMATE: 15 ADULTS AT MOST. POPULATION SMALL, AND MAY GET SMALLER IF HERBIVORY CONTINUES. HERBIVORY EVIDENT ON 1 OF THE 9 ADULTS. PLANTS UNHEALTHY. NO POLLINATORS. [BURT AND CARSTEN 1995-07:] 75 INDIVIDUALS OBSERVED IN FLOWER WITH MANY HUNDREDS TO THOUSANDS OF ROSETTES. POTENTIAL HABITAT EXTENDS NORTH AND WEST INTERMITTENTLY. PLANTS JUST BEGINNING TO FLOWER IN LATE JUNE FULL FLOWER BY JULY 12. [BURT AND CARSTEN 1995-06:] 30 INDIVIDUALS OBSERVED, JUST BEGINNING TO FLOWER IN LATE JUNE. 1 INDIVIDUAL IN FLOWER, 5-10 IN BUD, REST VEGETATIVE. SEVERAL HUNDRED SEEDLINGS THROUGHOUT AREA. AREA OF POTENTIAL HABITAT LESS THAN 5 ACRES. POPULATION DOCUMENTED VIA SIGHT AND PHOTO, NO ID PROBLEMS. NUMBERS OBSERVED: 75 ADULTS, HUNDREDS OF SEEDLINGS; POP SIZE EST: ADULT: 30. SMALL AREA BUT SEEMS TO BE REPRODUCING VERY WELL.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

ARAPAHO NATIONAL WILDLIFE REFUGE

OCCURRENCE WHOLLY CONTAINED?:

Y

MANAGEMENT COMMENTS:

[CARSTEN 1995-08:] POSSIBLY GRAZING, UNDETERMINED. AREA IS GRAZED BY CATTLE AND ANTELOPE. [CARSTEN 1995-07:] GRAZING IS IMPACTED OCCURRENCE. EXCLOSURE MAY BE NECESSARY. AREA HEAVILY GRAZED AND TRAMPLED, NEAR WEEDY AREA. HERBIVORY EVIDENT ON 1 OF THE 9 ADULTS. [BURT AND CARSTEN 1995-07:] AREA USED FOR GRAZING, RECREATION & WILDLIFE (BIRD) MGMT. NONE OF THESE SEEM TO BE HEAVILY IMPACTING THE OCCURRENCE. RELATIVELY UNDISTURBED BY GRAZING, OHVS, RECREATION, ETC. [BURT AND CARSTEN 1995-06:] AREA PART OF NATIONAL WILDLIFE REFUGE. NEAR WILDLIFE AUTO TOUR. SOME COW PIES IN AREA. BUT NO MANAGEMENT NEEDS OBVIOUS, NEED TO MONITOR SITE. 2-TRACK GOES UP HILL NEAR OCCURRENCE. MAY NEED TO KEEP PEOPLE FROM TRAMPLING AREA. NATURAL EROSION.

PROTECTION COMMENTS:

OWNER: USF&WS, ARAPAHO NWR

OWNER COMMENTS:

[BURT AND CARSTEN 1995-06:] HAVE CONTACTED WILDLIFE BIOLOGIST AT REFUGE TO ALERT OF OCCURRENCE.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

BEST SOURCE: CARSTEN, LAURA. 1995. FIELD SURVEY TO JACKSON COUNTY OF 8/17-8/19, 1995.

COMMENTS: [CARSTEN 1995-08:] BLM IS INTERESTED IN PROTECTING THIS SPECIES. [BURT AND CARSTEN 1995-06:] MAPS FROM 1955 (7.5 TOPOS) DO NOT HAVE ACCURATE ROADS & RESERVOIRS FOR 1995. [CNHP:] PRIMARY LAT/LONG IS TO DOT WHICH IS AN ACTUAL OCCURRENCE.

BOUNDARIES:

PHOTOS: Y

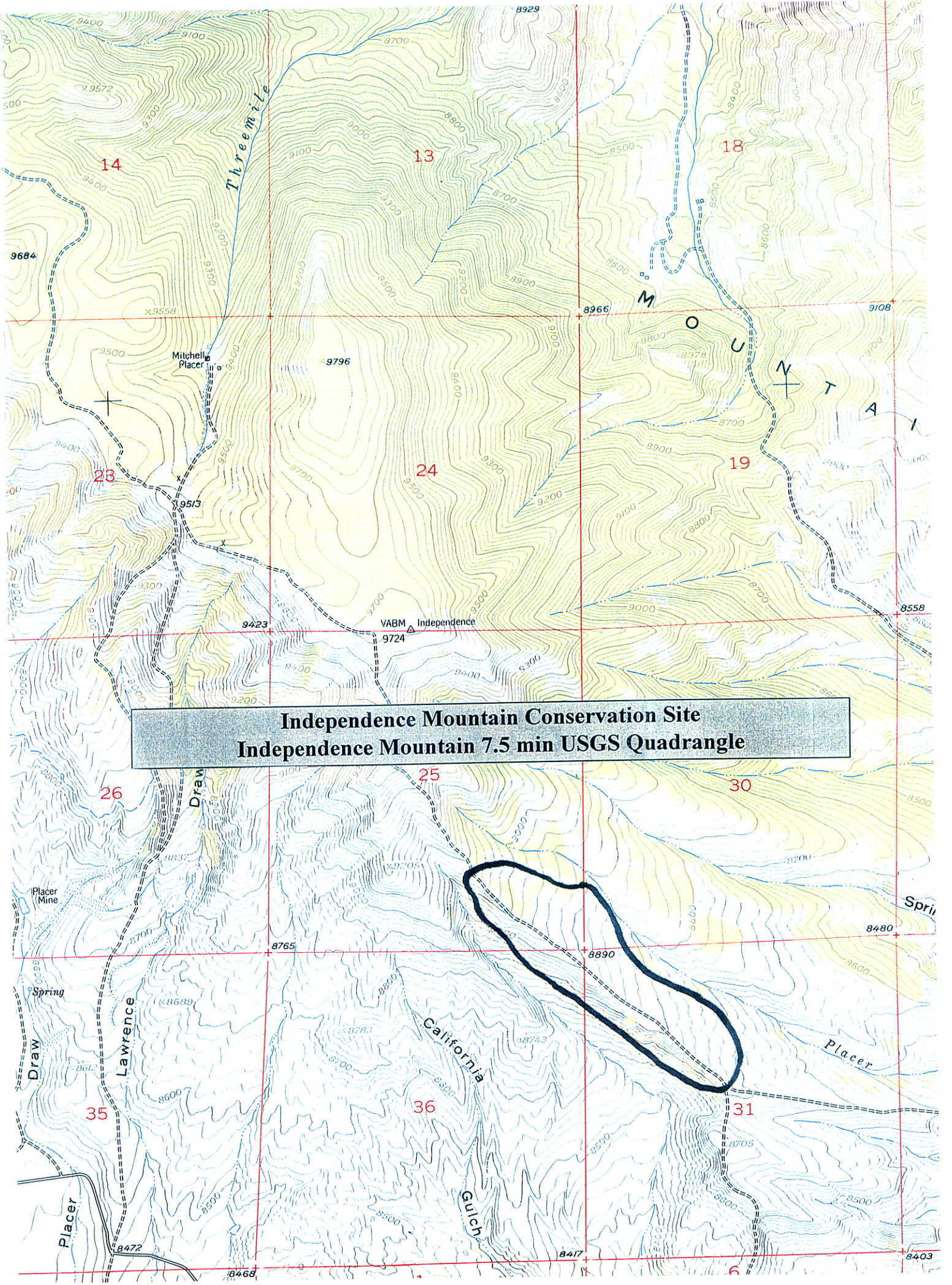
UPDATE:

PDEYDOC1H0*014*CO

PRINTOUT DATE: 09 MAY 1996



Photograph taken at Independence Mountain Site.



**Independence Mountain Conservation Site
Independence Mountain 7.5 min USGS Quadrangle**

COLORADO NATURAL HERITAGE PROGRAM
CONSERVATION SITE PROFILE

INDEPENDENCE MOUNTAIN

SIZE: 200.00

BIODIVERSITY SIGNIFICANCE: 4: MODERATE SIGNIFICANCE

PROTECTION URGENCY RATING: 3: DEFINABLE THREAT/OPPORTUNITY, BUT NOT
WITHIN 5 YEARS

MANAGEMENT URGENCY RATING: 3: NEEDED WITHIN FIVE YEARS TO MAINTAIN
QUALITY

LOCATION:

12 air miles northwest of Walden, on BLM land.

USGS Quadrangle name(s):

INDEPENDENCE MOUNTAIN

Townrange and section:

011N080W 30,31

011N081W 25,36

Elevation: 8800 ft. to 8900 ft.

GENERAL DESCRIPTION::

The Independence Mountain Site is located on the gravelly slopes above Placer Creek between 8800 and 8900 feet elevation. The Placer Creek flows southeast through the northwestern portion of North Park into the the North Platte River. The site includes bluffs with outcrops of the Coalmont Formation which consists of Arkosic sandstone, conglomerate, and shale. The site begins with a 10% gentle slope and ends at the edge of a very steep ridge with a 30-35% slope. The site contains a cover of 50% gravel, pebbles, and cobbles, there are some large boulders on the ridge. There is evidence of moderate to heavy antelope use. *Lewisia rediviva*, a state rare plant species was found growing along this ridge. There is livestock grazing to the east behind the pasture fence, however there was no evidence of cattle during the 1995 field survey. Natural erosion and soil movement are also apparent, although not where *Lewisia rediviva* was found. There is a dirt two-track road that bisects the site. The estimated amount of potential habitat is 200 acres.

NATURAL HERITAGE RESOURCE SIGNIFICANCE::

An AB ranked occurrence of *Lewisia rediviva*, a G5\S1 plant occurs at this site. There are at least ten thousand individuals. There is a road that bisects the site, but does not receive heavy use.

SCIENTIFIC AND COMMON NAME:

GLOBAL	STATE	FEDERAL	STATE	FOREST
RANK	RANK	STATUS	STATUS	SENS

PROTECTION AND MANAGEMENT COMMENTS:

There are only 11 known occurrences of *Lewisia rediviva* in Colorado. There are no protected occurrences. Grazing and recreational use could be threaten this site.

There is evidence of grazing of livestock and wildlife on BLM lands on this site. Grazing and recreational use near the site should be monitored.

BOUNDARY JUSTIFICATION:

The boundary protects habitat and the ecological processes necessary that to support this occurrence of *Lewisia rediviva*.

RECOMMENDED FURTHER RESEARCH:

Element Occurrence Record

LEWISIA REDIVIVA BITTERROOT

LOCATORS

PLACE NAME: INDEPENDENCE MOUNTAIN **LAT:** 405320N
POTENTIAL CONSERVATION AREA: INDEPENDENCE MOUNTAIN **LONG:** 1062545W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: JACKSON **QUADNAME:** INDEPENDENCE MOUNTAIN

TOWN\ RANGE:	SECTION:	LEGAL DESCRIPTOR:
011N080W	30,31	
011N081W	25,36	

DIRECTIONS: FROM COWDREY FOLLOW SIGNS FOR INDEPENDENCE MOUNTAIN. TAKE CR35 NORTH OFF MAIN ROAD (ABOUT 5 MILES FROM COWDREY CROSSROADS). FOLLOW CR 35 2.8 MILES (ROAD MILES) OCCURRENCE CONTINUES ON BOTH SIDES OF ROAD FOR ONE MILE.

MINIMUM ELEVATION: 8660 **MAXIMUM ELEVATION:** 9080

HABITAT: OCCURRENCE FIRST NOTICED ON ROAD WITH ABOUT 10% GENTLE SLOPE BUT CONTINUES OVER EDGE OF VERY STEEP RIDGE WITH SLOPE OF 30-35%. 50% COVER BY GRAVEL, PEBBLES AND COBBLES. SOME LARGE BOULDERS ON STEEP RIDGE. MANY ANTELOPE APPEAR TO USE AREA. OCCURRENCE GRAZED BY CATTLE ONLY TO THE EAST BEHIND PASTURE FENCE. NO COWS EVIDENT THIS YEAR. WEATHER: V. HOT, SUNNY AND WINDY. SLOPE: 10-35%. ASPECT: 216 DEGREES AND 130 DEGREES. TOPO. POS: MID TO UPPER SLOPE. LIGHT: OPEN. MOISTURE: DRY. VERY OPEN, GRAVELLY SITE. ASSOCIATED SPECIES INCLUDE: STIPA COMATA, CASTILLEJA FLAVA, ERIGERON NEMATOPHYLLUS, PENSTEMON SECONDIFLORUS, ASTRAGALUS SP., ARTEMISIA FRIGIDA, CHRYSOTHAMNUS SP., ERIOGONUM SP., OXYTROPIS SERICEA, LEPTODACTYLON PUNGENS, IPOMOPSIS AGGREGATA. DIRT ROAD THROUGH SITE AND ANTELOPE GRAZING. NATURAL EROSION AND SOIL MOVEMENT ALSO APPARENT ALTHOUGH NOT RIGHT WHERE PLANTS ARE GROWING. EST AMOUNT OF POTENTIAL HABITAT: 200 ACRES. % OF POTENTIAL HAB OCCUPIED: 5%.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G5 **STATE RANK:** S2 **FED. LEGAL:** **STATE LEGAL:**

OCCURRENCE RANK: AB **RANK DATE:** 1995-07-10

OCCURRENCE RANK COMMENTS:

AT LEAST TEN THOUSAND INDIVIDUALS. HABITAT UP ROAD THROUGH PART BUT DOES NOT GET HEAVY USE AND DOES NOT SEEM TO HEAVILY IMPACT OCCURRENCE. QUALITY: A, HUGE OCCURRENCE. CONDITION: B, ROAD THROUGH SITE BUT OTHERWISE SEEMS IN GOOD CONDITION. SOME WEEDS RIGHT ALONG ROAD. VIABILITY: A, UNLESS DISTURBANCE REGIME CHANGES DRASTICALLY, OCCURRENCE SHOULD CONTINUE. DEFENSIBILITY: B, ROAD THROUGH SITE AND FENCE BOTH WILL GET USE AND REQUIRE MAINTENANCE THAT MAY IMPACT OCCURRENCE.

SURVEY DATE: 1995-07-10 **LAST OBSERVED:** 1995-07-10 **FIRST OBSERVED:** 1995-07-10

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

749 INDIVIDUALS COUNTED, BUT MANY MORE SUBSEQUENTLY OBSERVED. AT LEAST 10,000 ESTIMATED AND LIKELY MANY MORE. PLANTS IN FLOWER. DO NOT APPEAR TO BE IMPACTED BY ANTELOPE OR CATTLE GRAZING ALTHOUGH BOTH OCCUR IN AREA. SOME PLANTS GROWING IN ANTELOPE DROPPINGS. NOT AS MUCH CATTLE EVIDENCE. NO ID PROBLEMS. SPECIMENS TAKEN.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:

OCCURRENCE SEEMS TO BE DOING VERY WELL UNDER CURRENT MANAGEMENT.

PROTECTION COMMENTS:

OWNER:

OWNER COMMENTS:

BLM, KREMMLING RA

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

BURT, JULIE 1995. SPECIMEN (COLLECTION # JB 95-81) TO BE
DEPOSITED AT COLORADO STATE UNIVIRSITY HERBARIUM.

BEST SOURCE: BURT, JULIE. 1995. FIELD SURVEY TO JACKSON COUNTY OF JULY 4-12, 1995.

COMMENTS: [CNHP:] MAP PROVIDED. PRIMARY LAT/LONG IS TO DOT WHICH IS CENTRUM OF OCCURRENCE. AS OF 3/29/96, RAW DATA IN
UNKNOWN LOCATION, QC OF THIS DATE IS LOCATION ONLY.

BOUNDARIES:

PHOTOS: Y

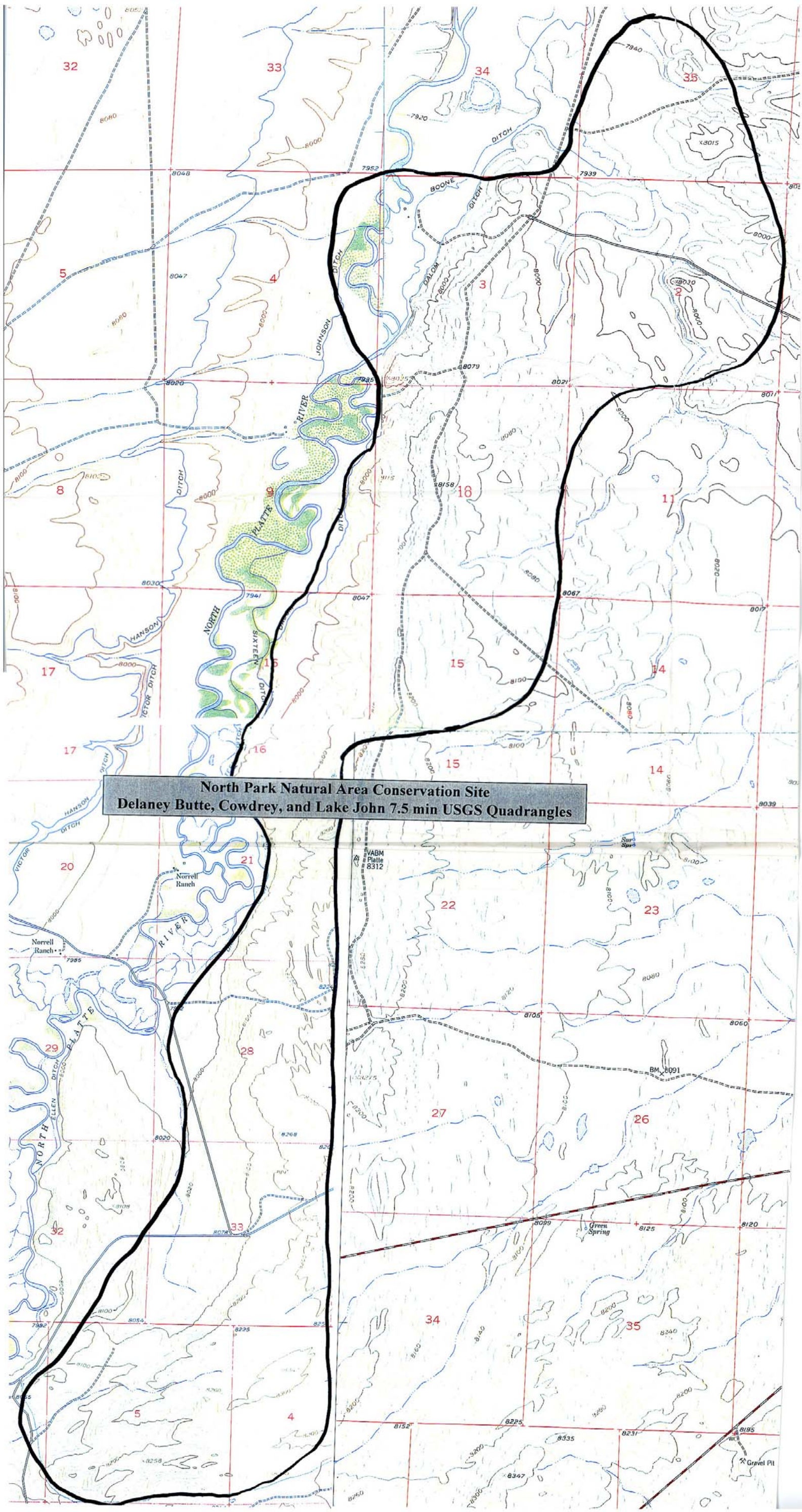
UPDATE:

PDPOR040D0*009*CO

PRINTOUT DATE: 09 MAY 1996



Photograph taken at North Park Natural Area Site.



North Park Natural Area Conservation Site
Delaney Butte, Cowdrey, and Lake John 7.5 min USGS Quadrangles

COLORADO NATURAL HERITAGE PROGRAM
CONSERVATION SITE PROFILE

NORTH PARK NATURAL AREA SITE

SIZE: 6200.00

BIODIVERSITY SIGNIFICANCE: 1: OUTSTANDING SIGNIFICANCE

PROTECTION URGENCY RATING: 2: THREAT/OPPORTUNITY WITHIN 5 YEARS

MANAGEMENT URGENCY RATING: 3: NEEDED WITHIN FIVE YEARS TO MAINTAIN
QUALITY

LOCATION:

8 air miles west of Walden, CO.

USGS Quadrangle name(s):

DELANEY BUTTE, COWDREY, LAKE JOHN

Townrange and section:

009N080W 21,3,2,10,9,4,32

Elevation: 8,000 ft. to 8,200 ft.

GENERAL DESCRIPTION::

The North Park Natural Area Site is located west of Walden, CO and east of North Platte River. It consists of approximately 6,200 acres between 8,000 and 8,200 feet elevation. The site includes outcrops of the Coalmont Formation. There are 3 occurrences of *Phacelia formosula* and 1 occurrence of *Lewisia rediviva*.

NATURAL HERITAGE RESOURCE SIGNIFICANCE::

There is one A ranked occurrence, one AB occurrence, and one BC occurrence of *Phacelia formosula*, a G1 plant species. The A ranked occurrence is a large population of five sub-populations with a large number of rosettes. The AB ranked occurrence is a large population which extends over 2 miles. The BC occurrence is large, but spread out. There is evidence of livestock grazing at this site. There are only eight known locations of *Phacelia formosula* range-wide and only two of those sites contain significant numbers.

SCIENTIFIC AND COMMON NAME:

GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS	FOREST SENS
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PHACELIA FORMOSULA () (NORTH PARK PHACELIA)			G1	S1	LE
PHACELIA FORMOSULA () (NORTH PARK PHACELIA)			G1	S1	LE
PHACELIA FORMOSULA () (NORTH PARK PHACELIA)			G1	S1	LE
LEWISIA REDIVIVA () (BITTEROOT)			G5	S2	
PENSTEMON CYATHOPHORUS () (MIDDLE PARK PENSTEMON)			G3G4	S2	

PROTECTION AND MANAGEMENT COMMENTS:

Phacelia formosula is listed as endangered by USFWS (Federal Register 9/1/82). Grazing and recreational use could be a threat.

Grazing and recreational use should be monitored.

BOUNDARY JUSTIFICATION:

The boundary protects habitat and the ecological processes necessary to support this occurrence of *Lewisia rediviva*.

RECOMMENDED FURTHER RESEARCH:

Element Occurrence Record

LEWISIA REDIVIVA
BITTERROOT

LOCATORS

PLACE NAME: WEST OF WALDEN RESERVOIR LAT: 404526N
POTENTIAL CONSERVATION AREA: NORTH PARK NATURAL AREA SITE LONG: 1062207W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Jackson COWDREY

TOWN\ RANGE: SECTION: LEGAL DESCRIPT DETAIL:
009N080W 15 SECTION 15 NW1/4 NE4/4 SW4/4/4

DIRECTIONS: T9N, R80W, SECTION 15 NW1/4 NE4/4 SW4/4. APPROXIMATELY 4 MILES SOUTH WEST OF WALDEN. OCCURRENCE OF PLANTS IS
2.6 MILES SOUTH ON CTY RD 33.

MINIMUM ELEVATION 8150 MAXIMUM ELEVATION: 8150

HABITAT: RELATIVLY FLAT AREA WITH ARTEMISIA TRIDENTATA, AND CHRYSOTHAMNUS SP. DOMINANT.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G5 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: C RANK DATE: 1995-06-29

OCCURRENCE RANK COMMENTS:

SURVEY DATE: 1995-06-29 LAST OBSERVED: 1995-06-29 FIRST OBSERVED: 1995-06-29

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

APPROXIMATELY 4 PLANTS IN SAGEBRUSH, POPULATION SMALL AND IN POOR HABITAT. PLANTS APPEARED HEALTHY. NO
SEEDLING EVIDENT, 50% IN FLOWER, 50% IN BUD.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:
GRAZING COULD POSE THREAT.

PROTECTION COMMENTS:

OWNER: BLM

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

BURT, JULIE AND LAURA CARSTEN. 1995. SPECIMEN (COLLECTION #95-59) AT COLORADO STATE UNIVERSITY HERBARIUM.

BEST SOURCE: BURT, JULIE AND LAURA CARSTEN. 1995. FIELD TRIP OF JACKSON COUNTY OF 6/27-7/2 1995.

COMMENTS: [CNHP:] MAP PROVIDED. ORIGINAL DATA IN UNKNOWN LOCATION.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDPOR040D0*008*CO

PRINTOUT DATE: 09 MAY 1996

Element Occurrence Record

PHACELIA FORMOSULA NORTH PARK PHACELIA

LOCATORS

PLACE NAME: DIAMOND J RANCH **LAT:** 404700N
POTENTIAL CONSERVATION AREA: NORTH PARK NATURAL AREA SITE **LONG:** 1062117W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: JACKSON **QUADNAME:** COWDREY
LAKE JOHN

TOWN\ RANGE: 009N080W **SECTION:** 03,02,10,09,04 **LEGAL DESCRIPT DETAIL:**
[CASER 1994:] W1/2. [O'KANE 1986:] SEC 2, SEC10W2, SEC9E2, CENTRAL NE4 NE4. [WAL 1981:] SEC9 & 10 SE4, SEC36 & 009N SEC2. [PETERSON ET AL 1981:] SW1/4 SW1/4.

DIRECTIONS: [NEELY AND KIPPER 1994:] W-FACING SLOPES E OF NORTH PLATTE RIVER BETWEEN DITCH ROAD ALONG BASE OF BLUFFS TO ROAD ABOVE RIDGE. [CASER 1994:] NORTH PLATTE, ELEV: 8100 FT, T9N, R80W, SEC W1/2. [O'KANE ET AL 1986:] T9N, R80W, SEC3, SEC2, SEC10W2, SEC9E2: 5 AIR MILES E OF LAKE JOHN, ALONG ROAD PARALLELLING NORTH PLATTE RIVER, ELEV: 8000 FT. T9N, R80W, SEC4 CENTRAL NE4 NE4: ACROSS RIVER (BRIDGE) FROM DIAMOND J RANCH AND JUST SOUTH OF ROAD INTERSECTION, ELEV: 7940 FT. [WAL 1981:] T9N, R80W, SEC3, SEC9 & 10 SE4. T10N, R80W, SEC35, SEC36 & 009N SEC2. 5.0 AIR MI SSW OF COWDREY, RIDGE BETWEEN NORTH PLATTE RIVER AND MICHIGAN RIVER, ELEV: 8000 FT. [PETERSON ET AL 1981:] EAST OF DALOM DITCH AND WEST OF N-S RUNNING ROAD, BELOW DIAMOND J RANCH, ELEV: 8000 FT, T9N, R80W, S3, SW1/4, SW1/4, SW-FACING SLOPE. [ANONYMOUS 1981:] CA 4.6 AIR MILES W OF BROWNLEE; E OF NORTH PLATTE RIVER; E OF DALOM DITCH; ACCESSIBLE VIA ROAD HEADING N ALONG W SIDE OF ILLINOIS R. BELOW WALDEN RESERVOIR; CALIFORNIA GULCH S.

MINIMUM ELEVATION 7940 **MAXIMUM ELEVATION:** 8000

HABITAT: [NEELY AND KIPPER 1994:] ASSOCIATED WITH CHDO, LUAR, GIPI, CHNA. [CASER 1986:] DRY BADLANDS SANDSTONE. [O'KANE ET AL 1986:] [SEC3:] GEOL: COALMONT FM (SANDSTONE), ASPECT: SW-NW, SOIL: SANDY LOAM, ELEV: 8000 FT, SIZE: 50 ACRES, ASSOC TAXA: ROSA, ARENARIA, CHNA, ORHY, AST.KEN., PHHO, LUAR, AGSM, CHAE.DOUG., GUSA, GILIA CALCYCOLA; [SEC4:] GEOL: COALMONT FORMATION SANDSTONE, ASPECT: ESE, SOIL: SAND, SLOPE: 25 DEG, ASSOC TAXA: ORHY, LUPINUS ERGENTEUS, CHNA. [UNKNOWN 1988:] [OTHER ASSOCIATED SPECIES INCLUDE:] TECA, ARNO, EULA. PLANTS CONCENTRATED ON UPPER SLOPES ON BARRENS AND IN RAVNES, LARGELY ON W-FACING BLUFFS. [PETERSON ET AL 1981:] SW-FACING SLOPE; ON COALMONT FORMATION, SANDY SOIL, WITH ROSA, CHAMAERHODOS & ARENARIA; ELEV: 8020 FT. [WAL 1981:] [SEC3:] EO CONSISTS OF FIVE BOUNDARIED AREAS, ASPECT: SW-NW, SIZE: 57 ACRES; [SEC35:] OCCURRENCE CONSISTS OF TWO BOUNDARIED AREAS, ELEV: 8000 FT, SOIL: SANDY, GEOL: COALMONT FORMATION, SIZE: 83 ACRES. .

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G1 **STATE RANK:** S1 **FED. LEGAL:** LE **STATE LEGAL:**

OCCURRENCE RANK: AB **RANK DATE:** 1994-07-28

OCCURRENCE RANK COMMENTS:

[NEELY AND KIPPER 1994:] LARGE POPULATION EXTENDING OVER TWO MILES LONG WITH MUCH POTENTIAL HABITAT, PARTICULARLY TO E AND S OF MAPPED OCCURRENCE; PLANTS LIKELY MUCH MORE EXTENSIVE THAN MAPPED. [1992, RANK="B":] LARGE, MANY INDIVIDUALS, RELATIVELY UNDISTURBED BUT GRAZING EVIDENCE PRESENT. [NORTHWEST POPULATION IS] ADJACENT TO ROAD, SMALL, SOMEWHAT DISTURBED. [ANONYMOUS 1988:] ONE OF THE LARGEST KNOWN POPULATIONS.

THREATENED BY ORV AND MOTORCYCLE USE, OIL AND GAS DEVELOPMENT, DOMESTIC LIVESTOCK TRAMPLING, GRAZING, FRAGILE SOILS VULNERABLE TO EROSION, COAL DEVELOPMENT. [O'KANE ET AL 1986:] [SEC3:] EO RANK: A, LG, MANY INDS, REL UNDISTURBED BUT GRAZE EVID. PRESENT; [SEC4:] EO RANK: C, ADJ TO ROAD, SMALL, SOMEWHAT DISTURBED.

SURVEY DATE: 1994-07-28

LAST OBSERVED: 1994-11-15

FIRST OBSERVED: 1981-08-19

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[NEELY AND KIPFER 1994:] SMALL CLUSTERS OF PLANTS BELOW BLUFFS, CLOSEST TO RIVER ABOVE DITCH. SMALL PLANTS IN FLOWER AND FRUIT; MANY SMALL PLANTS, NOT ROBUST, ONLY HUNDREDS OF INDIVIDUALS, SOME ROSETTES, LARGEST CONCENTRATION OF INDIVIDUALS ABOVE COALMONT BLUFFS; EXTENSIVE POTENTIAL HABITAT, PLANTS IN SCATTERED PATCHES, NOT DENSE. [CASER 1994:] ESTIMATED NUMBER INDIVIDUAL: IN REPORT. [O'KANE ET AL 1986:] [SEC3:] POPULATION CONSISTS OF 15 SMALL BOUNDARIED AREAS, TENDING TO BE IN LARGE BUNCHES, PLANTS VERY ROBUST WITH MANY ROSETTES (86-07-20), ESTIMATED NUMBER OF INDIVIDUALS: 6000+, FRUIT: 30%, FLOWER: 65%; [SEC4:] SMALL POPULATION BUT PLANTS ROBUST, 29 FLOWERING INDS, 54 ROSETTES, FRUIT: 20%, FLOWER: 100% (OF MATURE), EST INDS: 83. [PETERSON ET AL 1981:] COROLLA COLOR: BLUE; SIZE AND BOUNDARY TO POP: FEW. [WAL 1981:] [SEC 3:] POPULATION CONSISTS OF FIVE BOUNDARIED AREAS, ESTIMATED NUMBER INDIVIDUALS UNKNOWN; [SEC4:] EO CONSISTST OF TWO BOUNDARIED AREAS, EST NO IND: 150++.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

NORTH PARK DESIGNATED NATURAL AREA

OCCURRENCE WHOLLY CONTAINED?:

Y

MANAGEMENT COMMENTS:

[NEELY AND KIPFER 1994:] FENCE RUNS ALONG BOTTOM OF OCCURRENCE WITH ROAD PARALLEL. SOME BUT NOT ALOT OF CATTLE USE IN AREA. THREATS INCLUDE POSSIBLE OVERGRAZING, EXPANSION OF DITCH ROAD, HERBICIDE SPRAYING. [UNKNOWN 1988:] THREATENED BY ORV AND MOTORCYCLE USE, OIL AND GAS DEVELOPMENT, DOMESTIC LIVESTOCK TRAMPLING, GRAZING, FRAGILE SOILS VULNERABLE TO EROSION, COAL DEVELOPMENT. PRIMARY USE OF SITE IS CATTLE-GRAZING (COW-CALF OPERATION). MOST OF SITE IS IN GOOD CONDITION; TRAGOPOGAN DUBIUS ONE OF THE ONLY EXOTIC SPECIES OBSERVED. [PETERSON ET AL 1981:] THREATS TO POPULATION: NONE KNOWN.

PROTECTION COMMENTS:

OWNER: CNAP, NORTH PARK DNA

OWNER COMMENTS:

[O'KANE 1986:] MANAGED BY MR & MS DAVIS.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

PETERSON, J.S., W.L. BAKER, J. ANDERSON, AND S. TABAR. 1981.
SPECIMEN (COLLECTION #812) LOCATED AT COLORADO STATE
UNIVERSITY HERBARIUM.

BEST SOURCE: NEELY, B. AND T. KIPFER. 1994. FIELD SURVEY OF 27-29 JULY 1994. 19-20.

COMMENTS:

[NEELY AND KIPFER 1994:] PHOTOS TAKEN BY TODD KIPFER, TNC-COFO. NOTE: 1994 MAY NOT HAVE BEEN A GOOD YEAR FOR PHFO, DROUGHT DURING SUMMER. [WAL 1981:] NEED: COUNT, CHECK BOUNDARIES. [CNHP:] DATA FOR 1988 FROM UNKNOWN SOURCE IN UNKNOWN LOCATION. UNSURE IF WAL IS COMPLETE NAME FOR SOURCE. DATA FOR NEELY AND MCLEAN IN UNKNOWN LOCATION.

BOUNDARIES: Y

PHOTOS: Y

UPDATE:
PDHYD0C1H0*007*CO

PRINTOUT DATE: 09 MAY 1996

Element Occurrence Record

PHACELIA FORMOSULA NORTH PARK PHACELIA

LOCATORS

PLACE NAME: DAM DITCH LAT: 404407N
POTENTIAL CONSERVATION AREA: NORTH PARK NATURAL AREA SITE LONG: 1062303W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Jackson DELANEY BUTTE

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
009N080W 21,28 [CASER 1994:] NE. [PETERSON 1982:] E2 & S28
NE4W2. [PETERSON ET AL 1981:] [POP1:] SE1/4
NE1/4; [POP2:] NE1/4 SE1/4 NE 1/4 NW1/4
SE1/4; [POP3:] NE1/4 SE1/4; [POP4:] N1/2
SE1/4 NW1/4 SE1/4; [POP5:] E1/2 SE1/4 NW1/4
SE1/4; [POP6:] SE1/4 SE1/4 NW1/4 SE1/4;
[POP7:] SW1/4SE1/4; [POP9:] NW/NW/NW/NE.

DIRECTIONS: [CASER 1994:] T9N, R80W, SECTION 21, 28, 1/4 SEC NE. ELEV: 8100 FT. CRAIG BLM DISTRICT, KREMMLING BLM RESOURCE DISTRICT. [PETERSON 1982:] FROM WALDEN, PROCEED WEST TOWARD DELANEY BUTTES; CA. 1.0 MILE EAST OF NORTH PLATTE RIVER, TURN NORTH 1 MILE, THEN E 0.4 MILE; WALK NORTH TO SITE, T9N, R80W, S21, E2 & S28 NE4W2, ELEV: 8150 FT. [PETERSON ET AL 1981:] JACKSON COUNTY. IN RAVINE, ABOVE/ACROSS THE NORTH PLATTE RIVER FROM THE NORRELL RANCH, ABOUT 6 MILES WEST OF WALDEN. R80W, T9N, S21. ELEV: 2440 METERS, 8100 FT. [POP1:] SE1/4 NE1/4. [POP2:] NE1/4 SE1/4 NE1/4 NW1/4 SE1/4. [POP3:] NE1/4 SE1/4. [POP4:] N1/2 SE1/4 NW1/4 SE1/4. [POP5:] E1/2 SE1/4 NW1/4 SE1/4. [POP6:] SE1/4 SE1/4 NW1/4 SE1/4. [POP7:] SW1/4 SE1/4. [POP9:] NW/ NW/NW/NE.

MINIMUM ELEVATION 8080 MAXIMUM ELEVATION: 8220

HABITAT: [NEELY 1994:] [POP2:] SIDESLOPES OF GULLIES AND LARGE ROCK OUTCROPS. ASSOCIATED SPECIES: CHNA, ORHY, TECA, ORHY, CAREX, LINUM, COUM, CRVI. [POP1:] PLANTS LIMITED TO LOOSE DEEPER SILT AND SANDY SOILS IN A WIDE RANGE OF MICROHABITATS OF DIFFERENT ASPECTS ALONG MOSTLY W-FACING RIDGE OF COALMONT FORMATION. ASSOCIATED WITH ORHY, CHDO, GIPI, IPCO, LUSE, VARIES CONSIDERABLY FROM SUBPOPULATION TO SUBPOPULATION, BARRENS SURROUNDED BY SAGEBRUSH HILLS ARNO, BOGR, STCO, ARVA, ORHY. [CASER 1994:] ELEV: 8100 FT; ASPECT: W; LIGHT EXPOSURE: OPEN; TOPO POSITION: MIDSLOPE TO CREST; MOISTURE: DRY. [PETERSON 1982:] GEOL: COALMONT FM.; ASPECT: S,W,N; SOIL: LOAMY SAND; SLOPE: 0-60 DEG.; ASSOC TAXA: ROSA, ARENARIA; ELEV: 8100-8200 FT; SIZE: 18 ACRES; COMPRISED OF 10 BOUNDARIED SITES. [PETERSON ET AL 1981:] COALMONT FORMATION, SANDY SOIL. [POP1:] S TO W FACING 60 PERCENT SLOPE, IN RAVINE, WITH ROSA, ARENARIA & CHAMAERHODOS; [POP2, POP3, POP4, POP6, POP7, POP8:] W-FACING SLOPE; [POP5:] SW-FACING SLOPE.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G1 STATE RANK: S1 FED. LEGAL: LE STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1994-06-13

OCCURRENCE RANK COMMENTS:

[NEELY 1994:] BEST KNOWN SITE. [POP2:] QUALITY=A: SMALL POPULATION BUT GOOD REPRODUCTION; CONDITION=A: VEGETATION IN EXCELLENT CONDITION; VIABILITY=A; DEFENSIBILITY=A: SITE FENCED; RIVER ON WEST SIDE. [POP1:] QUALITY=AB: LARGE POPULATION OF 6 SUBOCCURRENCES, LARGE NUMBR OF ROSETTES; CONDITION=B: CATTLE GRAZING, TRAMPLING AR. [?] EXPOSURE, SOME ORV; VIABILITY=B: LARGE POPULATION, GOOD REGENERATION VERY TIED TO

Element Occurrence Record

PHACELIA FORMOSULA
NORTH PARK PHACELIA

LOCATORS

PLACE NAME: VERNER SWA 3 LAT: 404145N
POTENTIAL CONSERVATION AREA: NORTH PARK NATURAL AREA SITE LONG: 1062427W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Jackson DELANEY BUTTE

TOWN\ RANGE: SECTION: LEGAL DESCRIPTOR DETAIL:
008N080W 5,6 [HARE 1989:] E2. [BURT 1995-06:] SECTION 5 NW
1/4. [PETERSON ET AL. 1981] [POP 1:] NW4NE4.
[POP 2:] SE4NE4. [POP 3:] NE4NE4SW4.
009N080W 32

DIRECTIONS: [BURT 1995:] FROM WALDEN TAKE CR 12W TO CR 18. FOLLOW CR 18 TO JCT WITH CR 9. TURN SOUTH ON CR9. SITE IS TO EAST ALONG RIDGES UNDER POWERLINE. 008N 080W SEC. 5. ALSO SECTION 33, T9N R80W. [BURT AND CARSTEN 1995:] FROM WALDEN TAKE CR 12 WEST TO CR 18. FOLLOW CR 18 WEST TO JCT. WITH CR 9. JUST BEFORE CR 18 CROSSES THE NORTH PLATTE RIVER. BLUFFS TO SOUTH OF CR 18 AND TO EAST OF CR 9. T008NR080W SEC.5,6. MIN ELEV. 8020, MAX. 8100. [BORLAND 1987:] FROM WALDEN WEST TOWARD DELANEY BUTTES, EAST OF NORTH PLATTE RIVER AND EAST SOUTH EAST OF HIGHWAY CROSSING, EAST OF PAVED ROAD JUNCTION (COLORADO COUNTY 9) QUAD: DELANEY BUTTE T008N R080W SECT. 06.8065FT. [PETERSON ET AL. 1981] JACKSON COUNTY, T9N, R80W. [POP1:] S6 NW1/4 NE1/4, ELEV: 8050 FT, WEST OF NORTH PLATTE RIVER AND NORTH OF ROAD FROM WALDEN TO DELANEY BUTTES ON SANDSTONE BLUFF; [POP2:] S6 SE1/4 NE1/4, ELEV: 8065 FT, SOUTH OF ROAD TO DELANEY BUTTES BEFORE ROAD TURNS TO CROSS BRIDGE ON NORTH PLATTE RIVER FROM WALDEN; [POP3:] T9N, R80W, S32 NE1/4 NE1/4 SW1/4, ELEV: 8200 FT., ON SANDSTONE ROCK NORTHWEST OF ROAD FROM WALDEN TO DELANEY BUTTES & SOUTHEAST OF NORTH PLATTE RIVER.

MINIMUM ELEVATION 3020 MAXIMUM ELEVATION: 8260

HABITAT: [BURT 1995:] SUBPOPLN #1: TOWARDS MID TO TOP OF SW/W FACING SLOPE - 10% W/SMALL PEBBLES ON THE SURFACE. PLANTS GROWING IN MOST OPEN AREAS W/LESS GRAVEL. SUBPOPLN #2: AREA HEAVILY TRAMPLED BY CATTLE. URBAN USE ALSO EVIDENTED BY BEER BOTTLES. NEAR LARGE ROCK OUTCROP. SUBPOPLN #3: AREA SOMEWHAT TRAMPLED. NEAR POWER LINE AND BY DIRT ROAD. SUBPOPLN #4: NW ASPECT, FEW CATTLE TRACKS THROUGH AREA. SUBPOPLN #5: SMALL AREA JUST NW OF POWERLINE W/A FEW COW PIES AND TRACKS. PLANTS GROW IN MOST OPEN AREAS. SPECIES GROWING NEARBY INCLUDE: CHAENACTIS DOUGLASII, CHRYSOTHAMNUS SP, ERIOGONUM GORDONII, ORYZOPSIS HYMENOIDES, STIPA SP., KOELERIA SP, EUPHORBIA SP, LITHOSPERMUNI INCISUM, PENSTEMON CYANTHOPHORUS, LINUM SP, IPOMOPSIS CONGESTA, CAREX ELEOCHARIS, ASTRAGALUS KENTROPHYTA. DISTURBANCE: PARTS OF HABITAT HEAVILY TRAMPLED BY CATTLE; SOME EROSION; AREA GRAZED. SLOPE: 10-15%; ELEV: 8100-8240 FT; TOPO POS: MID-UPPER SLOPE; LIGHT: OPEN; MOISTURE: DRY; GEOLOGY: COALMONT FM; SOIL: SANDY - NO LITTLE ORGANIC MATTER - DERIVED FROM COALMONT FM. EST AMOUNT OF POTENTIAL HABITAT: 200 ACRES IN PATCHES; 1% OF POTENTIAL HABITAT OCCUPIED. [BURT AND CARSTEN 1995:] BARREN/OUTCROPS OF COALMONT FM SANDSTONE & MOSTLY BARE SANDY SOIL AT 8020 TO 8100 FT IN ELEVATION. SLOPE:5-25%; NW FACING; BARE GROUND: 70-80%; TOPO POS: UPPER TO MID SLOPE; LIGHT: OPEN; MOISTURE: DRY. SOIL V SANDY, DARK YELLOW BROWN. SPECIES IN AREA INCLUDE: COMMANDRA UMBELLATA, CRYPTANTHA SP, OENOTHERA CAESPITOSA, CHAENACTIS DAGLASII, SENECIO CANUS, LINUM SP, LESQUERELLA SP, ASTRAGALUS CRASSICARPUS, IPOMOPSIS CONGESTA, ORYZOPSIS HYMENOIDES. ROAD CUT GOES THROUGH POTENTIAL HABITAT. AREA IS GRAZED. WEATHER: RAINING/THUNDER. 300 ACRES OF ESTIMATED POTENTIAL HABITAT, 1% OCCUPIED. [BORLAND 1987:] PLANT COMMUNITY: ARTEMISIA; ASSOC SPECIES: ARTEMISIA TRIDENTATA, CHRYSOTHAMNUS SP, ARTEMISIA FRIGIDA, OENOTHERA CAESPITOSA; LIGHT: OPEN; SLOPE: 0-10%; SOIL MOISTURE: <10%; APPROX ORGANIC CONTENT: <10%; EXPOSURE: SOUTH; SOIL PH: 8.3; SOIL TYPE: SAND; PARENT ROCK: COALMONT FORMATION SANDSTONE; TOTAL AREA COVERED: 400X30 M; THREATS: ROAD IMPROVEMENTS MAY DESTROY EXISTING PLANTS. [PETERSON ET AL 1981:] [POP1:] ON SANDSTONE BLUFF; SOIL: CLAYEY, SANDY LOAM; ASPECT/SLOPE: SE 10%; POP SIZE: CA. 10, CA 1 ACRE. [POP2:] SOIL: CLAYEY, SANDY LOAM; ASPECT/SLOPE: NW 15%; POP SIZE: CA 15, CA 1 ACRE. [POP3:] ON SANDSTONE ROCK;

SOIL: CLAYEY, SANDY LOAM; ASPECT/SLOPE: S & N 5%; POP SIZE: CA. DOZEN TOTAL ON TWO SIDES OF THE ROCK.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G1 STATE RANK: S1 FED. LEGAL: LE STATE LEGAL:

OCCURRENCE RANK: BC RANK DATE: 1995-07-06

OCCURRENCE RANK COMMENTS:

[BURT 1995:] OCCURRENCE IS LARGE BUT SPREAD OUT IN AN AREA WITH MUCH CATTLE TRAMPLING, A POWER LINE AND A DIRT ROAD W/SOME HUMAN RECREATIONAL USE (BEER BOTTLES). QUALITY: B, MANY INDIVIDUALS OBSERVED, IN FLOWER, MANY SEEDLINGS; CONDITION: C, SOME AREAS HEAVILY TRAMPLED BY CATTLE, ALL NEAR DIRT 2 TRACKS & POWERLINE. OTHER AREAS RELATIVELY UNTRAMPLED; VIABILITY: B, PLANT REPRODUCING, APPEAR TO HAVE POLLINATION MECHANISM IN PLACE; DEFENSIBILITY: C, AREA LIKELY TO CONTINUE TO BE GRAZED, & THEREFORE TRAMPLED, POWERLINE MAINTENANCE MAY IMPACT OCCURRENCE. [BURT AND CARSTEN 1995:] EO RANK: B, AREA NEAR ROADS WITH SOME COW TRACKS. POTENTIAL HABITAT EXTENDS ABOUT 1 MILE NE ALONG BLUFF. NEED TO RE- SURVEY WHEN PLANTS IN FULL FLOWER. [PETERSON ET AL 1981:] EO RANK: C-, SMALL OCCURRENCE.

SURVEY DATE: 1995-07-06 LAST OBSERVED: 1995-07-06 FIRST OBSERVED: 1981-06-04

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[BURT 1995:] SUBPOPLN #1: HAS 30 INDIVIDUALS W/MANY SEEDLINGS. ALL PLANTS BEGINNING TO BUD. SUBPOPULATION #2: 1 INDIVIDUAL OBSERVED IN FLOWER (AREA HEAVILY TRAMPLED). SUBPOPULATION #3: ABOUT 10 INDIVIDUALS OBSERVED, 1 IN FLOWER. WASP OBSERVED VISITING FLOWERS. SEVERAL SEEDLINGS. SUBPOPULATION #4: 27 INDIVIDUALS OBSERVED, 3 IN FLOWER, MOST IN BUD. MANY SEEDLINGS. FEW CATTLE TRACKS. SUBPOPLN #5: 8 MORE INDIVIDUALS OBSERVED IN BUD - AREA TRAMPLED. POPULATION DOCUMENTED VIA SIGHT AND PHOTO. NO ID PROBLEMS. NUMBERS OBSERVED: ABOUT 75 ADULTS AND MANY HUNDRED OF SEEDLINGS; POPULATION SIZE ESTIMATE: 300. PLANTS TEND TO OCCUR IN GROUPS THAT ARE RELATIVELY DENSE. [BURT AND CARSTEN 1995:] POPULATION SIZE ESTIMATE: 40-50. ABOUT 25 ADULTS SEEN ONLY 4 IN BUD, THE REST STILL IN ROSETTES. MANY SMALL SEEDLINGS OBSERVED. INDIVIDUALS SCATTERED THROUGHOUT AREA. TWO PLANTS OBSERVED GROWING IN A COW TRACK. POPULATION DOCUMENTED VIA SIGHT, NO ID PROBLEMS. NO DISEASE OR PREDATION OBSERVED. [BORLAND 1987:] # PLANTS: 31-100; AVG # PLANTS/SQ M: 1; MAX # PLANTS/SQ M: 3; MIN # PLANTS/SQ M: 0; # REPRODUCTIVES: 90%; # NON-REPRODUCTIVES: 10%; 100% IN FRUIT; 600 SEEDS COLLECTED. [PETERSON ET AL 1981:] NOT FLOWERING. [POP1:] CA 10 ROSETTES; [POP2:] CA. 15 ROSETTES; [POP3:] ROSETTES, CA. 12 INDIVIDUALS.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:

[BURT 1995:] PARTS OF HABITAT HEAVILY TRAMPLED BY CATTLE, SOME EROSION, AREA GRAZED, TRAMPLING OVER SOME HABITAT MAY HARM PLANTS. [BURT AND CARSTEN 1995:] NEED TO KEEP CATTLE OUT OF AREA. [BORLAND 1987:] ROAD IMPROVEMENTS MAY DESTROY EXISTING PLANTS. [PETERSON ET AL 1981:RE:POP1, POP2, AND POP3:] THREATS TO POP: UNPROTECTED.

PROTECTION COMMENTS:

OWNER: BLM

OWNER COMMENTS:

[BURT AND CARSTEN 1995:] NEED TO ALERT BLM TO PRESENCE OF OCCURRENCE.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

BURT, JULIE. 1995. SPECIMEN (COLLECTION # 95-86) TO BE DEPOSITED AT COLORADO STATE UNIVERSITY HERBARIUM.

BEST SOURCE: BURT, JULIE. 1995. FIELD SURVEY TO JACKSON COUNTY OF JULY 5-13 1995.

COMMENTS: [BURT AND CARSTEN 1995:] PENSTEMON CYATHOPHORUS OBSERVED ON ROADCUT NEARBY. NEED TO REVISIT LATER IN SUMMER WHEN PLANTS IN FLOWER. [CNHP:] DAVID HARE APPARANTLY VISITED SITE ON 5-09-89, BUT NO DATA CAN BE LOCATED.

BOUNDARIES: Y

PHOTOS: Y

UPDATE:

PDHYD0C1H0*004*CO

PRINTOUT DATE: 09 MAY 1996

Element Occurrence Record

PENSTEMON CYATHOPHORUS MIDDLE PARK PENSTEMON

LOCATORS

PLACE NAME: WALDEN RESERVOIR BLUFFS (WEST) **LAT:** 404515N
POTENTIAL CONSERVATION AREA: NORTH PARK NATURAL AREA SITE **LONG:** 1062200W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: **QUADNAME:**
Jackson COWDREY

TOWN\ RANGE: **SECTION:** **LEGAL DESCRIP DETAIL:**
009N080W 15 NE 1/4

DIRECTIONS: T009N R080W SEC. 15, NE1/4. FROM WALDEN TAKE CR 12 TO CR 33. TURN NORTH ONTO CR 33 AND DRIVE 3 MILES. PARK AND WALK.

MINIMUM ELEVATION 8080 **MAXIMUM ELEVATION:** 8200

HABITAT: ELEVATION 8080-8200' SLOPE 3-10%. GRAZED SAGEBRUSH COMMUNITY: ARTEMISIA TRIDENTATA, ARTEMISIA FRIGIDA, CHRYSOTHAMNUS SP., SENECIO SP., CORPHANTHA SP., COMMANDRA UMBELLATA, ERIOGONUM JAMESII, PHLOX HOODII, LEPTODACTYLON PUNGENS, PHLOX MULTIFLORA, ERIGERON NEMATOPHYLLUS, & SEVERAL GRASSES. SLOPE: 3-10%. TOPO POS.: UPPER TO MID SLOPE. COMMUNITY COMMENTS: NEED TO DETERMINE WHETHER P. CYATHOPHORUS WOULD BE NATURALLY MORE COMMON WITHOUT GRAZING OR WHETHER IT INCREASES WITH GRAZING. SEEMS DISTURBANCE TOLERANT AT LEAST.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3G4 **STATE RANK:** S2 **FED. LEGAL:** **STATE LEGAL:**

OCCURRENCE RANK: B **RANK DATE:** 1995-06-29

OCCURRENCE RANK COMMENTS:

MANY INDIVIDUALS IN LARGE AREA THAT DOES NOT APPEAR TOO HEAVILY GRAZED. QUALITY: A, MANY INDIVIDUALS SCATTERED THROUGHOUT AREA. CONDITION: B, AREA GRAZED & TRAMPLED BUT LOOKS PRETTY GOOD FOR THIS AREA. UNDERSTORY NOT COMPLETELY GONE, FEW WEEDS. VIABILITY: B, REALLY DEPENDS ON LONG TERM RESPONSE TO GRAZING. DEFENSIBILITY: C, GRAZING LIKELY TO REMAIN. BLM LAND OPEN TO OIL/GAS DEVELOPMENT & ROAD DEVELOPMENT.

SURVEY DATE: 1995-06-29 **LAST OBSERVED:** 1995-06-29 **FIRST OBSERVED:** 1995-06-29

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

ABOUT 65 INDIVIDUALS OBSERVED IN FLOWER, ABOUT 35 ROSETTES NOT IN FLOWER. SPARSE THROUGHOUT AREA, AS IS NORMAL FOR THIS SPECIES. PLANTS DO NOT APPEAR GRAZED ALTHOUGH CATTLE & ANTELOPE ARE IN THE AREA. PLANTS NEAR TOP OF SLOPE ONLY 2-3 DM TALL. PLANTS LOWER DOWN, TALLER & MORE ROBUST - PERHAPS MOISTURE RELATED. ESTIMATED NUMBER OF INDIVIDUALS OVER 100. NUMBERS OBSERVED: 65 IN FLOWER, 35 ROSETTES. ESTIMATED AMOUNT OF POTENTIAL HABITAT: THOUSANDS OF ACRES-PERCENT OF POTENTIAL HABITAT OCCUPIED: 1% OR LESS. POPULATION SIZE AND HABITAT AREA COMMENTS: P. CYATHOPHORUS APPEARS TO BE NATURALLY DISPERSED WITHIN THE SAGEBRUSH COMMUNITY. PHENOLOGICAL CONDITION: 2/3 INDIVIDUALS IN FLOWER; 1/3 BASAL ROSETTES.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:

AREA IS GRAZED BUT DOES NOT APPEAR OVERGRAZED. MANAGEMENT SHOULD NOT NEED TO CHANGE. THREATS: GRAZING IN AREA, BUT AT CURRENT LEVEL DOES NOT APPRAR TO BE IMPACTING P. CYATHOPHORUS.

PROTECTION COMMENTS:

AREA IS OWNED BY BLM. GRAZING HAS NOT APPEARED TO HARM THE P. CYATHOPHORUS.

OWNER:

OWNER COMMENTS:

BLM, KREMMLING R.A.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

BURT, J. 1995. SPECIMEN (COLLECTION #95-57) TO BE DEPOSITED AT COLORADO STATE UNIVERSITY HERBARIUM, AS CITED IN BURT AND CARSTEN FIELD SURVEY 1995.

BEST SOURCE: BURT, J. AND L. CARSTEN. 1995. FIELD SURVEY TO NORTH PARK OF JUNE 26-30 1995.

COMMENTS: LEWISIA REDIVIVA ALSO FOUND IN AREA. [CNHP:] MAP PROVIDED. ID PROBLEMS: NO.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDSR1L1S0*019*CO

PRINTOUT DATE: 09 MAY 1996

Conclusions

- 1). *Phacelia formosula*, *Lewisia rediviva*, *Allium schoenoprasum*, *Penstemon radicosus*, and *Penstemon cyathophorus* have a strong likelihood of long term survival in Jackson County if a strategic conservation plan is developed and implemented.
- 2). The California Gulch Conservation Site contains one of the two highest quality occurrences of *Phacelia formosula*. Livestock grazing and recreational uses do not seem to pose an immediate threat. However, we recommend that grazing and recreational uses be monitored. This site is a proposed Area of Critical Environmental Concern (ACEC). Management needs should be reviewed within five years so that the quality of the site will be maintained.
- 3). The Case Reservoir Bluffs Conservation Site contains one of the highest quality occurrences of *Phacelia formosula*. The threats of livestock grazing and recreational use are not immediate. The threat of disturbance from maintenance crews attending to the powerline that bisects the site is of concern. There is evidence of heavy grazing near the *Phacelia formosula* occurrence on BLM land that will warrant attention within the next five years to prevent loss of the occurrence. It is recommended that the BLM fence off the population to keep livestock and wildlife from damaging the occurrence. Additionally, the powerline crews need to be informed of the occurrence of *Phacelia formosula*.
- 4). The Independence Mountain Conservation Site was not of outstanding significance on a global scale, however it is the highest quality occurrence of *Lewisia rediviva* for Colorado. There are no immediate threats to this site, however, management needs to monitor the population of *Lewisia rediviva* for changes in population size due to disturbance from livestock grazing and recreational use.
- 5). The North Park Natural Area Conservation Site contains three of the eight known occurrences for *Phacelia formosula*, one occurrence of *Lewisia rediviva*, and one occurrence of *Penstemon cyathophorus*. There are no immediate threats, such as grazing, recreational use, or oil and gas development. However, management needs to monitor these occurrences to maintain the quality of the site.
- 6). Further inventories are necessary to gain a more thorough understanding of the overall distribution and imperilment of the species that occur in Colorado on the periphery of their ranges: *Lewisia rediviva*, *Penstemon radicosus*, and *Allium schoenoprasum* var. *sibiricum*. There were no conservation sites recommended at this time for *Penstemon radicosus* because the McCallum Oil Field of Suddath Draw occurrences were so degraded and not defensible. Additional inventories would determine if *Penstemon cyathophorus* is as abundant as observed in the summer of 1995, perhaps changing its rank to S3S4 (watchlisted species).
- 7). CNHP botanists concentrated search efforts on large pieces of BLM land mostly in the center of North Park. There remains some work at higher elevations, however we

now have a fairly good understanding of plant species of concern that occur at lower elevations on BLM land in Jackson County. It should be emphasized again that most of Colorado, including North Park, experienced a very wet year in 1995 that may have contributed to the abundance of plants species of concern that were previously undocumented. Only future surveys in subsequent years will reveal whether the species abundantly found in 1995 occur abundantly in all years.

Proposed Conservation Actions

- 1). Incorporate the specific information presented in this report in a range-wide conservation plan for each of the rare and imperiled plants known from BLM lands in Jackson, County.
- 2). Develop and implement a conservation plan for each of the sites identified in this report. Develop management plans to ensure the long-term survival of each imperiled plant species at each site. Monitor the occurrences of *Allium schoenoprasum* var. *sibiricum* on the Arapaho National Wildlife Refuge and *Penstemon radicosus* at McCallum Oil Fields and Suddath Draw to assess long-term viability. Conduct additional surveys for higher quality sites for *Penstemon radicosus*. If there are no other occurrences for *P. radicosus*, then the Suddath Draw site should be considered for restoration.
- 3). Increase public awareness of the benefits of protecting significant areas on BLM land in Jackson County by educating and informing public land users regarding the natural resources located in the Kremmling Resource Area.
- 4). Continue to identify significant natural resources on BLM land in Jackson County through inventories and communications with other researchers in Colorado.

References

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