

FOURTEENERS INITIATIVE
RARE PLANT SURVEY REPORT



Colorado Natural Heritage Program
1995
(with material added in 1997)

Fourteeners Initiative
Rare Plant Survey Report

Rare plant surveys of
Mount Missouri, Mount Huron, Mount Harvard,
Mount Shavano, Mount Massive, and Tabequache Peak
in the southern Sawatch Range, Colorado
1994 and 1995

Prepared for
US Forest Service
Leadville Ranger District

by

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Acknowledgments

This project would not have been possible without the American Mountain Foundation and the U.S. Forest Service's thoughtful concern for Colorado's alpine ecosystems. Mark Hesse (AMF) and Mary Beth Hennessy (USFS) provided insight for how to best incorporate results from rare plant surveys into decisions for establishing well planned trail routes on Colorado's 14,000 foot peaks. Many hours of hard work and funds contributed by the U.S. Forest Service and the American Mountain Foundation made this phase of the project a success.

Sacha Heath, Hilary Johnson, Bill Labarre, and Chris Johnson enthusiastically assisted with field inventories.

Introduction

Colorado's alpine ecosystems support a diverse and fascinating flora. Many of our alpine plant species are endemic to Colorado (known from nowhere else in the world), and others occur in Colorado populations that are disjunct from more extensive Arctic distributions. These factors lend international significance to many species in Colorado's alpine flora.

Although many of Colorado's 14,000 foot peaks are contained in land areas designated as Wilderness, many peaks are experiencing heavy impacts from recreational hiker use. Without established trails up these peaks, hikers are choosing various routes and causing widespread surface disturbances.

Steps taken by the Fourteeners Initiative are crucial to the preservation of Colorado's alpine ecosystems and the significant taxa that they contain. Through this initiative, peaks experiencing the greatest hiker impacts are identified, and trail routes are proposed that will best protect these ecosystems from the current, increasing level of visitor use.

The Colorado Natural Heritage Program (CNHP), in partnership with the U.S. Forest Service and the American Mountain Foundation, conducted rare plant surveys along proposed trail routes on six 14,000 foot peaks. Our objective was to locate rare, threatened, endangered, and sensitive plant populations which would be of concern during trail route establishment and construction.

This research compliments the mission of the Colorado Natural Heritage Program: to collect, analyze and disseminate the information necessary to protect all plants and animals and the waters and lands that they need to survive.

Methods

A survey of the rare, threatened, endangered, and sensitive (CNHP 1995 and USDA Forest Service 1994) flora of Mount Missouri, Mount Huron, and Mount Harvard was conducted from July 26 through August 4, 1994; and of Mount Massive, Tabeguache Peak, and Mount Shavano from August 8 through 16, 1995. The search area followed proposed routes previously established by U.S. Forest Service personnel. The survey area varied in width from 20 to 100 feet.

Forty-five plant species listed as rare and imperiled by the Colorado Natural Heritage Program (1995) that are known or suspected to occur in the sub-alpine and alpine areas of Pitkin, Gunnison, Lake, and Chaffee Counties were targeted for the survey (Tables 1, 2 and 3).

Occurrences of plant species of concern were documented with photographs, plant species of special concern survey forms (Appendix 1), and specimens (to be deposited at the University of Colorado and Colorado State University Herbaria). Plant locations were recorded on U.S.G.S. 7.5 minute quadrangles.

Table 2. Definition of Natural Heritage state rarity ranks. Global rarity ranks are similar, but refer to a species' rarity throughout its' range. State and Global ranks are denoted with a "S" or "G" followed by a character. A trinomial or "T" rank is used for subspecies or varieties. These ranks should not be interpreted as legal designations.

S1	Critically imperilled or extremely rare: usually 5 or fewer occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.
S2	Imperilled or very rare; usually between 5 and 20 occurrences; or with many individuals in fewer occurrences; often susceptible to becoming endangered.
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.
S4	Common; usually > 100 occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.
S5	Very common; demonstrably secure under present condition
SX	Apparently extirpated from the state.
SU	Status uncertain, often because of low search effort or cryptic nature of the element.
S?	Indicates uncertainty about an assigned rank.
SU	Unable to assign rank due to lack of available information.
SQ	Indicates uncertainty about taxonomic status.

Table 3. Federal Status Definitions

U.S. Fish and Wildlife Service (58 Federal Register
51147,1993)

- LE Endangered: taxa formally listed as endangered.
- LT Threatened: taxa formally listed as threatened.
- C1 Notice of Review, Category 1: taxa for which substantial biological information exists on file to support proposing to list as endangered or threatened.
- C2 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.
- 3C Notice of Review, Category 3C: taxa that have proven to be more abundant or widespread than previously believed, and/or those that are not subject to any identifiable threat.

U.S. Forest Service (USDA Forest Service 1994)

- FS Sensitive: those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:
 - a. Significant current or predicted downward trends in population numbers or density.
 - b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Results

Previously undocumented occurrences of the following species were located along the proposed routes. Further information on each species is presented in Appendix 2.

	Heritage Rank
Alpine Poppy (<i>Papaver lapponicum</i> <i>ssp. occidentale</i> ¹)	G3Q52
Dwarf Hawksbeard (<i>Crepis nana</i>)	G5S2
Woolly Fleabane (<i>Erigeron lanatus</i>)	G4S1
Pinnate Fleabane (<i>Erigeron pinnatisectus</i>)	G4S4
Tundra Buttercup (<i>Ranunculus karelinii</i>)	G4S2
Moonwort (<i>Botrychium lunaria</i>)	G5S2
Lance-leaved Moonwort (<i>Botrychium lanceolatum</i> <i>var. lanceolatum</i>)	G4S2
Thick-leaf Whitlow-grass (<i>Draba crassa</i>)	G3S2
Tundra Draba (<i>Draba ventosa</i>)	G3S1
Arctic Draba (<i>Draba fladnizensis</i>)	G4S2S3
Gray's Peak Whitlow-grass (<i>Draba grayana</i>)	G2S2

Woolly fleabane is the only plant species found during the surveys that is listed by the U.S. Forest Service as sensitive. There were no species found that are currently listed by the U.S. Fish and Wildlife Service as threatened or endangered.

Also of interest is that woolly fleabane had not previously been documented on the eastern slope of Colorado; arctic draba, alpine poppy, and the moonworts had not previously been documented in Chaffee County; and tundra draba had not previously been documented in Lake County. In fact, woolly fleabane and tundra draba were not included on our original search list (i.e. Table 1).

Photographs of the species that were documented during the survey follow (photos 1-9). Unfortunately, photos of the moonwort species are not available.

¹ Scientific nomenclature follows Weber and Wittmann (1992) and Kartesz (1994).



Photo 1. Photo of *Draba crassa*,
Thick-leaf Whitlow-grass



Photo 2. Photo of *Draba fladnizensis*,
Arctic Draba



Photo 3. Photo of *Draba grayana*,
Gray's Peak Whitlow-grass



Photo 4. Photo of *Draba ventosa*,
Tundra Draba



Photo 5. Photo of *Crepis nana*,
Dwarf Hawksbeard



Photo 6. Photo of *Erigeron lanatus*,
Woolly Fleabane



Photo 7. Photo of *Erigeron pinnatisectus*,
Pinnate Fleabane



Photo 8. Photo of *Papaver lapponicum* ssp. *occidentale*,
Alpine Poppy



Photo 9. Photo of *Ranunculus karelinii*,
Tundra Buttercup

MOUNT MISSOURI

Figure 1 presents a map showing the survey route and rare plant habitat on Mount Missouri.

Thick-leaf whitlow-grass was common and widely distributed from the beginning of the proposed route to the prominent saddle between peak 13,930' and Mount Missouri summit (photo 10), growing primarily in boulder and talus slopes. An established trail, no matter where it is placed, will protect this occurrence of **thick-leaf whitlow-grass** by concentrating hiker impact.

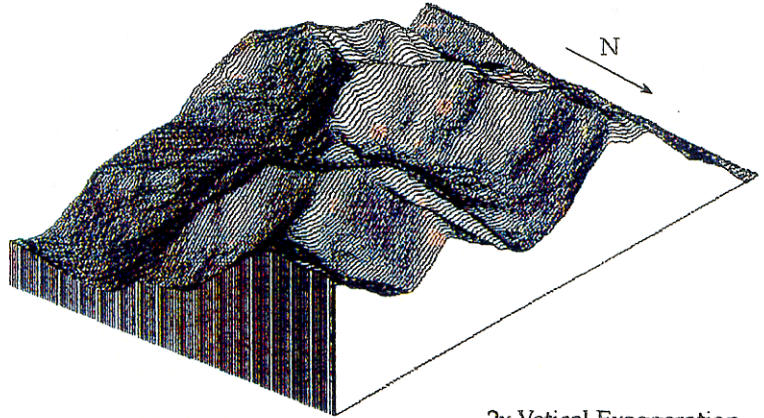
Pinnate fleabane was found on the northeast facing slopes just southeast of the saddle between peak 13,930' and Mount Missouri summit. Research during 1994 and 1995 has revealed that this species is not as rare as previously thought; an established trail will protect this area in general.

The saddle and ridge heading toward the summit (photo 11) supports extremely important habitat for several rare and imperiled plant species. **Dwarf hawksbeard, alpine poppy, woolly fleabane** and **tundra buttercup** are all found along this ridge for about 0.5 miles toward the summit. **Dwarf hawksbeard, alpine poppy,** and **woolly fleabane** are also found in abundance on the scree slope just below this ridge. However, the **tundra buttercup** was only found growing along the ridge. If possible, trail location should avoid this stretch of the ridge. If this is not possible, care should be taken to mark the specific locations of individual plants along the ridge, **tundra buttercup** in particular, to avoid all individuals in trail routing. Additionally, we recommend a sign indicating rare plant habitat and directing hikers to stay on the established route.

Detailed information about each rare plant occurrence found on Mount Missouri follows.





Missouri Mountain

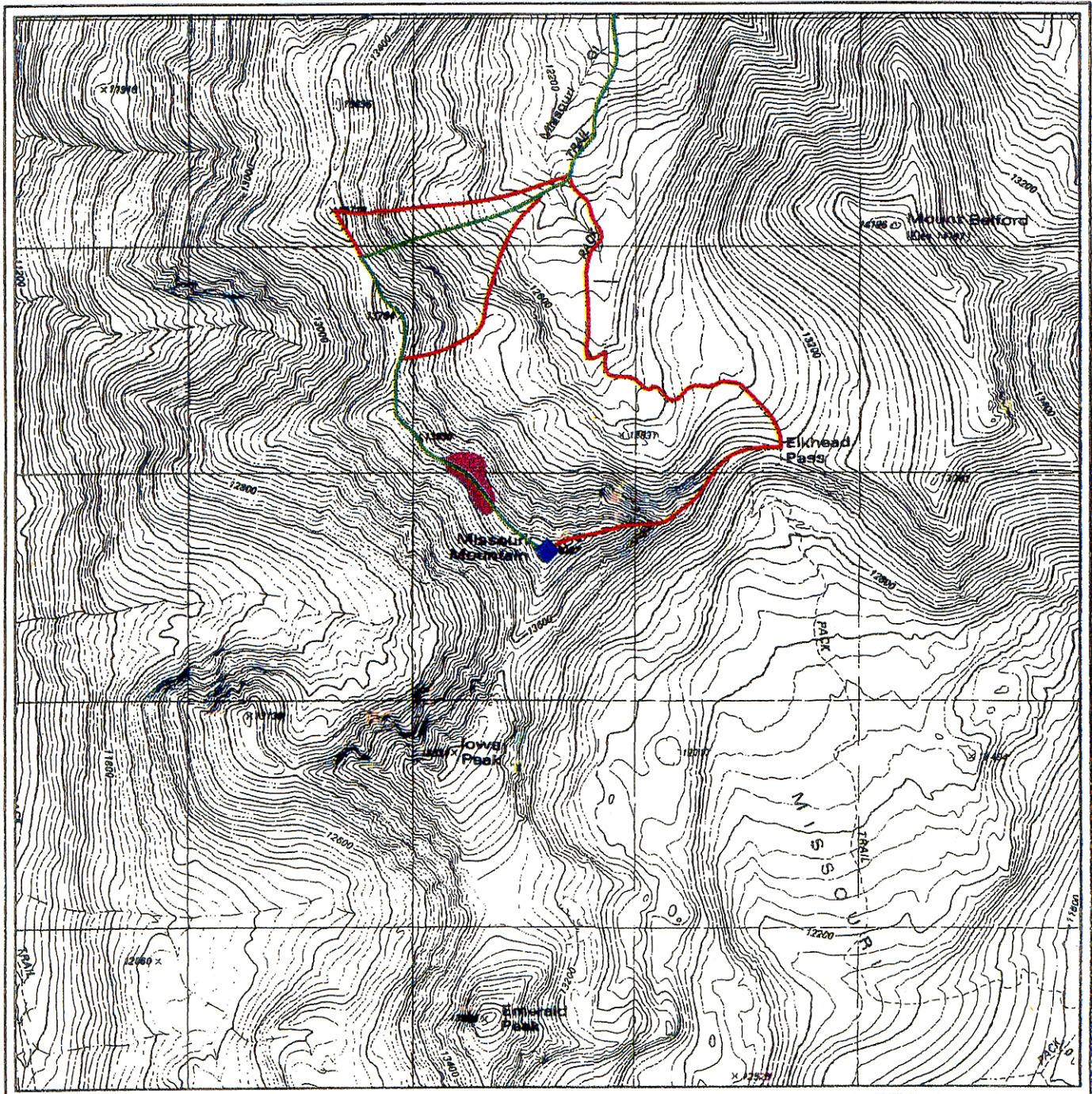
Summit Elevation: 14067 ft.



2x Vertical Exaggeration

COLORADO
• Map Location

- Summit 
- Proposed Trail 
- Social Trail 
- Critical Habitat for Rare Plant Species 





Photos 10 and 11. Rare plant habitat on Mount Missouri.

**DRABA CRASSA
THICK-LEAF WHITLOW-GRASS**

CATORS

PLACE NAME: MISSOURI MOUNTAIN LAT: 385711N
LONG: 1062240W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee WINFIELD

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
013S080W 6 [CNHP:] TRS FROM USFS 7.5'MAP.

DIRECTIONS: 1/4 MILE NW OF MISSOURI MOUNTAIN AND SCATTERED ALONG NE FACING SLOPE LESS THAN 1/2 MILE N OF MISSOURI MOUNTAIN.
12,000-14,000 FEET IN ELEVATION.

MINIMUM ELEVATION 12000 feet MAXIMUM ELEVATION: 14000 feet

HABITAT: POTENTIAL HABITAT CA. 25 ACRES. ROCKY AREAS, SNOW ACCUMULATION AREAS, BOULDER FIELDS, SCREE SLOPES. ASSOCIATED SPECIES: CLAYTONIA MEGARHIZA, TRIFOLIUM NANUM, GEUM ROSSII, PHLOX SP.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:
HUNDREDS OF INDIVIDUALS IN FLOWER AND FRUIT OVER A LARGE [PRISTINE, VARIABLE] AREA.

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
WIDELY SCATTERED IN ROCKY AREAS FROM 12000'-14000'. ALSO IN SNOW ACCUMULATION AREAS. HUNDREDS OF INDIVIDUALS. FLOWER & FRUIT-FLOWERS AT HIGHER ELEV., & FRUIT AT LOWER. DARK BROWN FUNGUS OBSERVED ON LEAVES.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
LEADVILLE RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:
MINIMUM MANAGEMENT NEEDED. INDIVIDUALS WIDELY SCATTERED, TRAIL THROUGH ROCKY AREAS COULD THREATEN.

REJECTION COMMENTS:
WILDERNESS AREA; USFS IS AWARE OF POPULATION.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

USFS KNOWS OF POPULATION.

FORMATION SOURCES AND RECORD MAINTENANCE

SPECIMEN CITATIONS:

DUFF, 1994. SPECIMEN (COLLECTION #UNKNOWN) TO BE DEPOSITED
AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: DUFF, M., AND S. SPACKMAN. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] OCCURRENCE CONSISTS OF 3 LOCATIONS MARKED BY THE POLYGON LAT-LONG ABOVE. LAT LONG TAKEN FROM CENTRUM OF
OCCURRENCE, NOT TO DOT. MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDBRA110SO*006*CO

PRINTOUT DATE: 29 JAN 1996

**ERIGERON PINNATISECTUS
PINNATE FLEABANE**

LOCATORS

PLACE NAME: MISSOURI MOUNTAIN LAT: 385703N
LONG: 1062253W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee WINFIELD

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
0135080W 6 [TRS FROM USFS 7.5' MAP]

DIRECTIONS: 1/4 MILE NW OF MISSOURI MOUNTAIN SUMMIT. ON NE FACING SLOPES SE OF SADDLE BETWEEN MISSOURI MOUNTAIN AND 13,930'.

MINIMUM ELEVATION 13500 feet MAXIMUM ELEVATION: 13900 feet

HABITAT: 50-60 DEGREE SLOPE, ASPECT- 46 DEGREES. 90% ROCK, 5-10% FINE SOIL. STEEP UNSTABLE SCREE SLOPE. SNOW ACCUMULATION AREA. BELOW TOP RIDGE OF PEAK. GNEISS ROCK PROBABLY WITH LIMESTONE. SCREE SLOPE ~ 35X150 M. ASSOCIATED SPECIES: ERIGERON VAGUS, E. LANATUS, POLEMONIUM VISCOSUM, BESSEYA ALPINUM, DRABA CRASSA, PAPAVER KLUANENSE, OREOXIS SP., LIGULARIA SP.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S3 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:

50-100 INDIVIDUALS, REPRODUCING, EXTENDS DOWN SLOPE IN ROCKY AREAS, I.E. WIDER RANGE OF HABITATS.

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

TOTAL NUMBER OF INDIVIDUALS 50-100. 20-30 CLUMPS OF INDIVIDUAL WIDELY SCATTERED 10-100 M APART FROM NEXT NEAREST CLUMP. THE CLUMPS ARE NOT MAT FORMING BUT MORE LIKE AGGREGATIONS OF 2-10 PLANTS.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
LEADVILLE RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:

ADJACENT TO TRAIL ON RIDGE. PEAK CLIMBERS COULD SLIDE DOWN SCREE. DESIGNATE TRAIL TO RIDGE.

SECTION COMMENTS:

WILDERNESS AREA; ADJACENT TO TRAIL. NEED DESIGNATED TRAIL ESTABLISHED AND USED. USFS IS AWARE OF POPULATION & IS PROPOSING A DESIGNATED TRAIL.

OWNER: USFS, SAN ISABEL NF
OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. 1994. (COLLECTION #SS-94-216) TO BE DEPOSITED
AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., M. DUFF, AND H. JOHNSON. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES: PHOTOS: Y

UPDATE:
PDAST3M370*021*CO

PRINTOUT DATE: 29 JAN 1996

WILDERNESS AREA; ADJACENT TO TRAIL- NEED DESIGNATED TRAIL ESTABLISHED & USED.

OWNER: USFS

OTHER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

DUFF. 1994. NO COLLECTION NUMBER- TO BE DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., M. DUFF, B. LABARRE. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDAST2R0C0*025*CO

PRINTOUT DATE: 29 JAN 1996

**PAPAVER LAPPONICUM SSP OCCIDENTALE
ALPINE POPPY**

LOCATORS

PLACE NAME: MISSOURI MOUNTAIN LAT: 385703N
LONG: 1062253W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee WINFIELD

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
013S080W 6 [TRS FROM USFS 7.5' MAP]

DIRECTIONS: 1/4 MILE NW OF MISSOURI MOUNTAIN. RIDGE AND SLOPE SE OF SADDLE BETWEEN MISSOURI MOUNTAIN AND PEAK 13,930'.

MINIMUM ELEVATION 13800 feet MAXIMUM ELEVATION: 13900 feet

HABITAT: STEEP UNSTABLE SCREE WITH FINE SOIL. SNOW ACCUMULATION AREA. BELOW TOP RIDGE OF PEAK. GNEISS ROCK PROBABLY WITH SOME SEDIMENTARY ROCK: COAL, SHALE, LIMESTONE. ASSOCIATED SPECIES: ERIGERON VAGUS, E. LANATUS, POLEMONIUM VISCOSUM, BESSEYA ALPINA, DRABA CRASSA, CREPIS NANUM, OREOXIS ALPINA, LIGULARIA SP. SCREE SLOPE ~ 35X150 M.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3Q STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:

WILDERNESS AREA; VERY MANY INDIVIDUALS; REPRODUCING; OTHER SIMILAR UNSURVEYED HABITAT AT SAME ELEVATION.

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

100-150 INDIVIDUAL CLUMPS OF PLANTS. 75% FLOWERING. CLUMPS OF 5-10 PLANTS EACH OFTEN GROWING ON DOWNHILL SIDES OF ROCKS. CLUMPS 1-10 M FROM NEXT NEAREST INDIVIDUAL.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
LEADVILLE RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:

POPULATION IS ADJACENT TO TRAIL. PEAK CLIMBERS SCREE SLIDING COULD SEVERLY IMPACT. DESIGNATED TRAIL TO SADDLE NEEDED.

PROTECTION COMMENTS:

WILDERNESS AREA; [POPULATION IS] ADJACENT TO TRAIL. NEED DESIGNATED TRAIL ESTABLISHED & USED. USFS IS AWARE OF THIS PLANT COMMUNITY AND IS PROPOSING A DESIGNATED TRAIL.

OWNER: USFS, SAN ISABEL NF
OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

DUFF. 1994 SPECIMEN (NO COLLECTION #). TO BE DEPOSITED AT
UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., AND M. DUFF. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES: PHOTOS: Y

UPDATE:
PDPAP0H0H0*035*CO

PRINTOUT DATE: 29 JAN 1996

WILDERNESS AREA; ADJACENT TO TRAIL ON RIDGE. NEED DESIGNATED TRAIL ON RIDGE ESTABLISHED & USED. USFS IS AWARE OF POPULATION & IS PROPOSING A DESIGNATED TRAIL.

OWNER: USFS, SAN ISABEL NF
& COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. 1994. (COLLECTION #SS-94-217.E) TO BE DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., AND M. DUFF. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDAST3M250*004*CO

PRINTOUT DATE: 29 JAN 1996

**RANUNCULUS KARELINII
TUNDRA BUTTERCUP**

CATORS

PLACE NAME: MISSOURI MOUNTAIN LAT: 385703N
LONG: 1062253W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: CHAFFEE QUADNAME: WINFIELD

TOWN\RANGE: SECTION: LEGAL DESCRIPTOR DETAIL:
013S080W 6 [CNHP:] TRS FROM USFS 7.5' MAP.

DIRECTIONS: ON NW RIDGE OF MT MISSOURI TOWARD PEAK @ 13930. 50 METERS ABOVE SADDLE OF THESE TWO PEAKS TOWARD MISSOURI MT.

MINIMUM ELEVATION 13800 feet MAXIMUM ELEVATION: 14000 feet

HABITAT: FELLFIELD, TALUS, ROCK OUTCROP. CALCAREOUS ROCKS (DETERMINED WITH HYDROCHLORIC ACID).

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G4 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:
40 INDIVIDUALS DOCUMENTED IN "NATURAL" HIKER ROUTE. POPULATION NONETHELESS APPEARS REPRODUCTIVE & STABLE.

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
40 INDIVIDUALS IN 5 PATCHES. 100% FRUIT.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
LEADVILLE RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:
PROTECT FROM HIKER IMPACT. CONSIDER USE OF SIGN DIRECTING HIKERS TO STAY ON ESTABLISHED ROUTE BECAUSE OF RARE PLANT HABITAT. DO NOT COLLECT AT THIS SITE UNTIL LARGER POPULATION IS DOCUMENTED.

PROTECTION COMMENTS:
IN WILDERNESS AREA.

OWNER: USFS, SAN ISABEL NF
OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

INEN CITATIONS:

SPACKMAN, S. 1994. SPECIMEN (COLLECTION #SS-94-217.A) TO BE
DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN, S. AND DUFF, M. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PORAMOLOYO*013*CO

PRINTOUT DATE: 29 JAN 1996

MOUNT HURON

Figure 2 presents a map showing the survey route and rare plant habitat on Mount Huron.

From the beginning of the proposed route to treeline, two moonwort species, *Botrychium lanceolatum* var. *lanceolatum* and *B. lunaria*, were found. Both species were widely spaced and occurred in very low numbers (four individuals of *B. lanceolatum* var. *lanceolatum* and seventeen of *B. lunaria*). If this area cannot be avoided for the trail location, all individuals of these species should be avoided by at least 50 feet during trail construction.

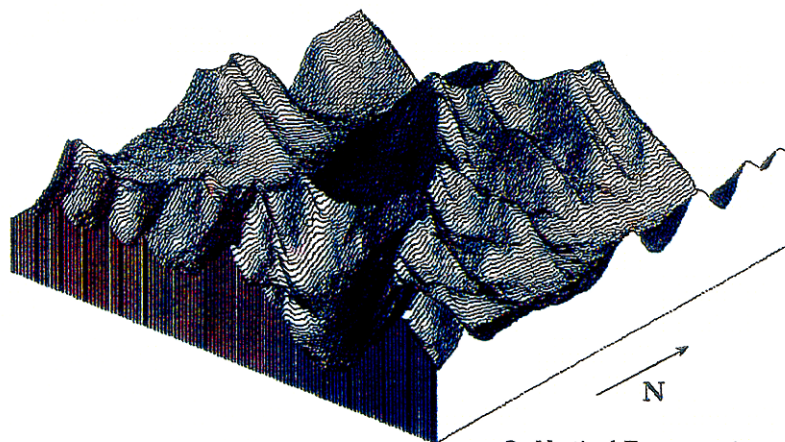
Above treeline, **thick-leaf whitlow-grass** was common in rock outcrops, snow accumulation areas, and boulder and fellfield slopes from about 12,200' to the saddle at 13,400' between peak 13,518' and Huron summit (photo 12). Trail construction should avoid the rock outcrop at 12,200' and the snow accumulation areas.

A small population, twenty-four individuals, of **alpine poppies** was found on a fellfield slope along the proposed route about 200 feet in elevation below the saddle between peak 13,518' and Huron summit, at about 13,300'. The trail should be routed at least 75 feet away from this location.

Detailed information about each rare plant occurrence found on Mount Huron follows.



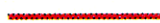

Huron Peak

Summit Elevation: 14003 ft.



2x Vertical Exaggeration

COLORADO
• Map Location

- Summit 
- Proposed Trail 
- Social Trail 
- Critical Habitat for Rare Plant Species 

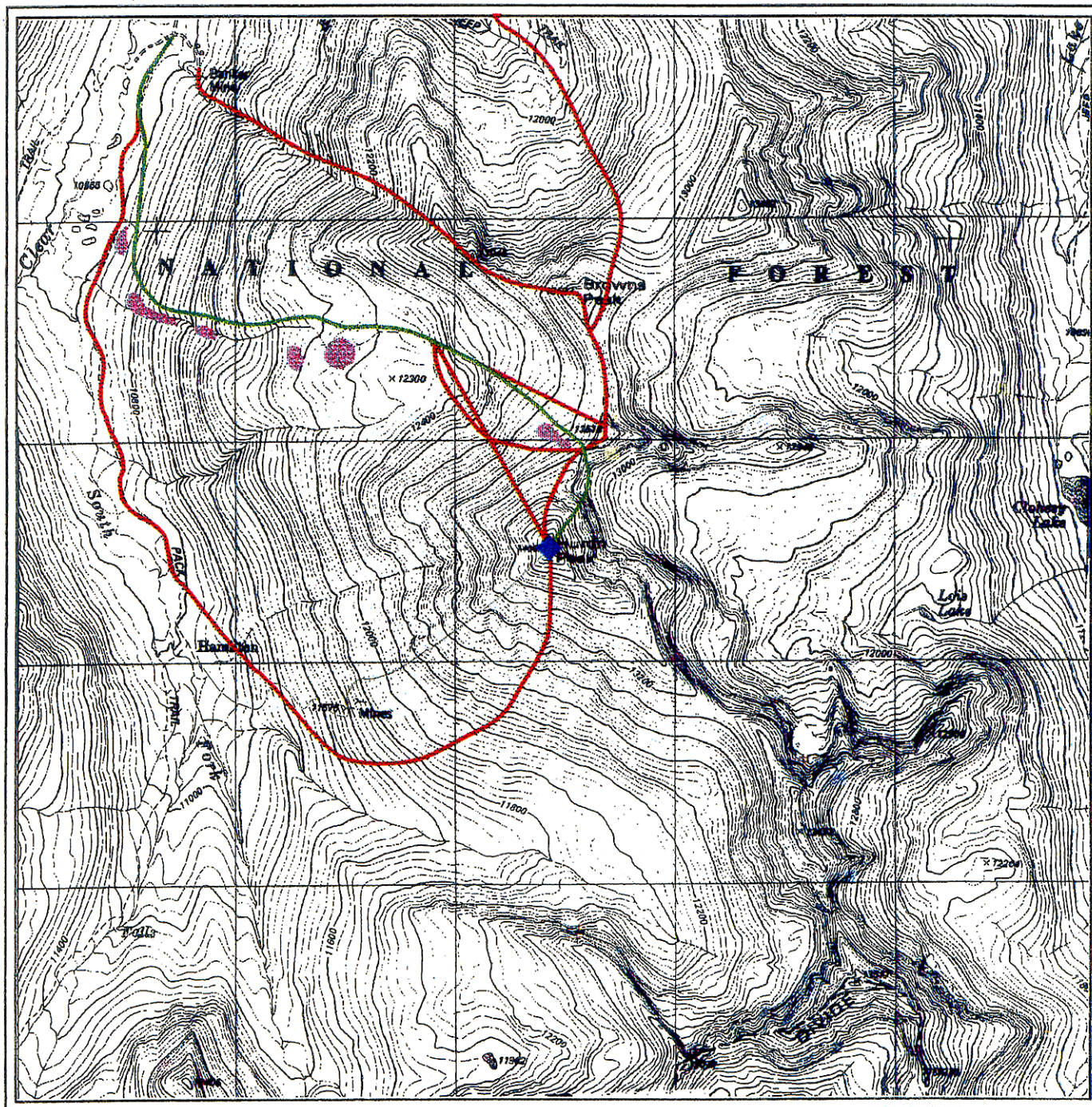




Photo 12. Rare plant habitat on Mount Huron.

**BOTRYCHIUM LANCEOLATUM VAR LANCEOLATUM
LANCE-LEAVED MOONWORT**

JATORS

PLACE NAME: LOWER HURON PEAK LAT: 385718N
LONG: 1062718W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee WINFIELD

TOWN\ RANGE: SECTION: LEGAL DESCRIPT DETAIL:
013S081W 4 [CNHP:] TRS FROM USFS 7.5' MAP

DIRECTIONS: NW OF HURON PEAK 1.2 MILES. AT 11,400 FEET. HALFWAY UP PROMINENT DRAINAGE TO W OF BROWNS PEAK AND HURON PEAK.
(DRAINAGE IS UNNAMED BUT FLOWS W INTO CLEAR CREEK).

MINIMUM ELEVATION 10800 feet MAXIMUM ELEVATION: 11400 feet

HABITAT: OPEN DRY SUBALPINE MEADOW. GROWING ON LONG LATERAL MORAINNE -LIKE FEATURES EXTENDING DOWN THE SLOPE WITH SMALL DRY DRAINAGES BETWEEN THEM. A FEW SCATTERED PICEA ENGELMANNII, PINUS CONTORTA, JUNIPERUS COMMUNIS. DOMINANT GROUND COVER: VACCINIUM SP. AND FRAGARIA VESCA.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G5T4 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1994-07-26

OCCURRENCE RANK COMMENTS:

4 INDV. OF THIS SP. FOUND IN ONE MILE OF AREA ADJACENT TO TRAIL. FOUND WITH SPOROPHORUS. IN WILDERNESS AREA. NOT AN "A" BECAUSE ADJACENT TO TRAIL, AND LOW NUMBER OF INDIVIDUALS DOCUMENTED.

SURVEY DATE: 1994-07-26 LAST OBSERVED: 1994-07-26 FIRST OBSERVED: 1994-07-26

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

4 INDV. FOUND. WIDELY DISTRIBUTED. INDV. 10-100 M APART. OPEN DRY SUBALPINE MEADOW. SOME SCATTERED TREES. PAST LOGGING AND FIRE CA. 100 YEARS AGO.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
LEADVILLE RANGER DISTRICT-USFS Y

MANAGEMENT COMMENTS:

ADJACENT TO TRAIL THAT HAS HEAVY USE.

PROTECTION COMMENTS:

PROTECT FROM HIKER IMPACT BY ESTABLISHING TRAIL. USFS KNOWS OF POPULATION AND OTHER SENSITIVE PLANT SPECIES ALONG TRAIL.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

USFS KNOWS OF POPULATION AND OTHER SENSITIVE PLANT SPECIES ALONG TRAIL.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN. 1994. SPECIMEN (COLLECTION #94-201) TO BE
DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., M. DUFF, AND M.B. HENNESSEY. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PPOPH01072*013*CO

PRINTOUT DATE: 29 JAN 1996

**BOTRYCHIUM LUNARIA
MOONWORT**

LOCATORS

PLACE NAME: LOWER HURON PEAK LAT: 385722N
LONG: 1062730W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: CHAFFEE QUADNAME: WINFIELD

TOWN\ RANGE: SECTION: LEGAL DESCRIPTOR DETAIL:
013S081W 4,5 [TRS FROM USFS 7.5' MAP]
012S081W 32

DIRECTIONS: NW OF HURON PEAK SUMMIT 1-1.5 MILES AT 10,640-11,400. UPLAND TO E OF CLEAR CREEK.

MINIMUM ELEVATION 10640 feet MAXIMUM ELEVATION: 11400 feet

HABITAT: OPEN DRY SUBALPINE MEADOW. 270 DEGREE ASPECT AND 10 DEGREE ASPECT. 30-35 [DEGREE] SLOPE. LONG LATERAL MORaine -LIKE FEATURES EXTENDING DOWN THE SLOPE WITH SMALL DRAINAGES (DRY) BETWEEN. OPEN DRY MEADOW WITH FEW SCATTERED PICEA ENGELMANNII, PINUS CONTORTA AND JUNIPERUS COMMUNIS. DOMINANT GROUND COVER VACCINIUM SP. AND FRAGARIA VESCA. WITH BOTRYCHIUM LANCEOLATUM.

SPECIES AND SPECIFIC OCCURRENCE STATUS

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

OCCURRENCE RANK: B RANK DATE: 1994-08-26

OCCURRENCE RANK COMMENTS:

17 INDV. FOUND IN 1 MILE OF AREA ADJACENT TO TRAIL, ALL BUT ONE WITH SPOROPOHORES. IN A WILDERNESS AREA. NOT AN "A" BECAUSE THEY ARE ADJACENT TO TRAIL AREA.

SURVEY DATE: 1994-07-26 LAST OBSERVED: 1994-07-26 FIRST OBSERVED: 1994-07-26

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

LOTS OF HABITAT WITH SIMILAR VEGETATION AND ASPECT. 17 INDV FOUND. WIDELY DISTRIBUTED. OCCASIONALLY 2 GROWING WITHIN 0.5M OF EACH OTHER BUT MOST FOUND 10-100 M FROM NEXT NEAREST INDV. SPOROPOHORES. DISTURBED SLOPE FROM FIRE AND LOGGING? PROBABLY CA 100 YEARS AGO.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
LEADVILLE RANGER DISTRICT-USFS Y

MANAGEMENT COMMENTS:

TRAIL(S) IN AREA AND ON MORaine-LIKE FEATURES; USFS IS WORKING ON ESTAB, TRAIL CONSTRUCTION TO MINIMIZE IMPACT.

PROTECTION COMMENTS:

ON WILDERNESS BORDER; TRAMPLING BY USERS OF STEEP TRAIL/ RELATIVELY HEAVY TRAVEL IS A CONCERN.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

USFS IS AWARE OF THIS SP AND OTHER PLANT SP ALONG TRAIL.

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN 55-94-200 TO BE DEPOSITED AT UNIVERSITY OF COLORADO
HERBARIUM.

BEST SOURCE: SPACKMAN S., M. DUFF AND S. HEATH. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 26 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PPOPH01080*015*CO

PRINTOUT DATE: 29 JAN 1996

**DRABA CRASSA
THICK-LEAF WHITLOW-GRASS**

LOCATORS

PLACE NAME: HURON PEAK LAT: 385640N
LONG: 1062710W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee WINFIELD

TOWN\RANGE: SECTION: LEGAL DESCRIP DETAIL:
013S081W 3,4 [CNHP:] TRS FROM USFS 7.5' MAP.

DIRECTIONS: ABOUT 3/4 MILE NW OF SUMMIT OF HURON PEAK. IN AND AROUND ROCK OUTCROPS AND NNW FACING SLOPES OFF RIDGE BETWEEN HURON PEAK AND PEAK 13,518.

MINIMUM ELEVATION 12800 feet MAXIMUM ELEVATION: 13000 feet

HABITAT: SLOPE 22 [DEGREES], 50% BARE GROUND, 40% BOULDERS, 10% ASSOC. SPP. BELOW LOWER FELLFIELDS OF HURON PEAK. IN ROCKY OUTCROPS. ASSOCIATED SPP: GEUM ROSII, TRIFOLIUM NANUM, CLAYTONIA MEGARHIZA, BESSEYA ALPINA, POLEMONIUM VISCOSUM, PHLOX PULVINATA.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:

HUNDREDS OF INDIVIDUALS IN AREAS OFF BEATEN PATHS. SOME INDIVIDUALS IN LIKELY PICNIC SPOT, LOW OVERALL THREAT.

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

HUNDREDS OF INDIVIDUALS. 100% FLOWER. 109 INDIVIDUALS COUNTED IN CA 25 SQUARE METER AREA.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF Y

MANAGEMENT COMMENTS:

NO MANAGEMENT SEEMS NEEDED.

PROTECTION COMMENTS:

PARTIALLY IN WILDERNESS.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. 1994. SPECIMEN (COLLECTION #SS-94-212.C) TO BE
DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S. AND DUFF M. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDBRA110S0*007*CO

PRINTOUT DATE: 29 JAN 1996

**PAPAVER LAPPONICUM SSP OCCIDENTALE
ALPINE POPPY**

LOCATORS

PLACE NAME: HURON PEAK LAT: 385700N
LONG: 1062612W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: Chaffee QUADNAME: WINFIELD

TOWN\RANGE: SECTION: LEGAL DESCRIPTOR DETAIL:
013S081W 3 NW OF SW

DIRECTIONS: 1/4 MILE N OF HURON PEAK. ABOUT 200 FEET (ELEVATION) BELOW SADDLE BETWEEN HURON PEAK AND BROWNS PEAK. WEST SIDE OF SADDLE. SW OF PEAK 13518.

MINIMUM ELEVATION 13200 feet MAXIMUM ELEVATION: 13400 feet

HABITAT: GRAVELLY SOIL-ALMOST PURE GRAVEL. BARE GROUND 70%. ROCKY ALPINE MEADOW AREA. 25% SLOPE, W FACING. ASSOC SPP: GEUM ROSII, DRABA CRASSA.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3Q STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1994-07-27

OCCURRENCE RANK COMMENTS:

PRISTINE SITE, APPARENTLY VIABLE POPULATION, IN WILDERNESS. LOW TOTAL NUMBER OF INDIVIDUALS (24).

SURVEY DATE: 1994-07-27 LAST OBSERVED: 1994-07-27 FIRST OBSERVED: 1994-07-27

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

TOTAL # OF INDIVIDUALS = 24. 20 IN 5 X 5 M AREA, OTHERS WIDELY SCATTERED.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
LEADVILLE RANGER DISTRICT-USFS Y

MANAGEMENT COMMENTS:

NO APPARENT MANAGEMENT NEEDS. PLANTS SHOULD NOT BE COLLECTED AT THIS SITE.

PROTECTION COMMENTS:

APPARENTLY WELL ISOLATED FROM TYPICAL HIKER ROUTES, WILDERNESS AREA.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

.. SPECIMEN CITATIONS:

SPACKMAN, S. 1994. SPECIMEN (COLLECTION #SS-94-208) TO BE
DEPOSITED AT UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S., AND M. DUFF. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 27 JULY 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDPAP0H0H0*032*CD

PRINTOUT DATE: 29 JAN 1996

MOUNT HARVARD

Figure 3 presents a map showing the survey route and rare plant habitat on Mount Harvard.

Pinnate fleabane was found along the proposed route in a dry meadow at 12,400'. The trail should skirt this location by at least 50 feet, preferably further.

Patches of cryptogamic soil occur within dry meadow areas; these areas should be avoided where possible during trail routing and construction.

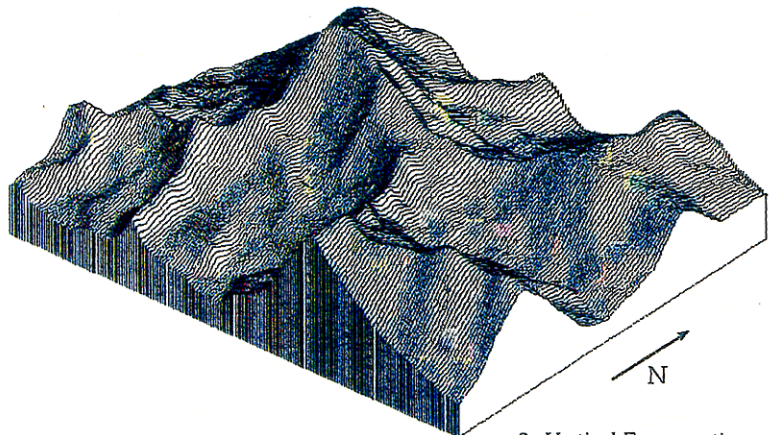
Dwarf hawksbeard was located at about 13,200', at the base of the scree slope below the saddle between peak 13,598' and Harvard summit (photo 13). If possible, this specific location should be avoided.

Thick-leaf whitlow-grass was common in boulder fields at about 13,200' to 13,400', particularly in areas with some soil development (photo 13). An established trail, no matter where it is placed, should adequately protect the occurrence of this species by concentrating hiker impact.

Detailed information about each rare plant occurrence found on Mount Harvard follows.





Mount Harvard

Summit Elevation: 14420



2x Vertical Exaggeration

COLORADO
• Map Location

Summit 
Proposed Trail 
Social Trail 
Critical Habitat for Rare Plant Species 

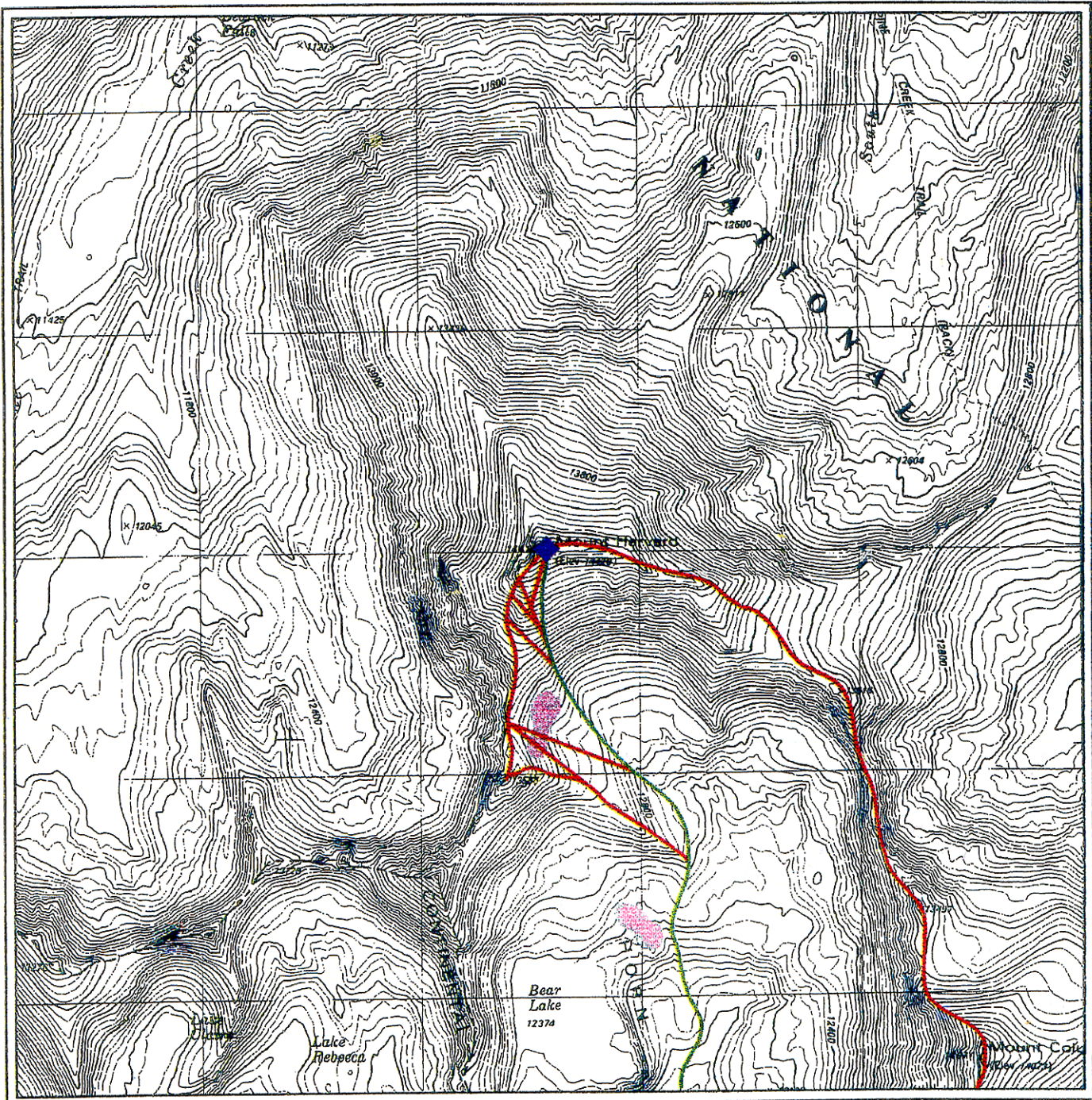




Photo 13. Rare plant habitat on Mount Harvard.

**ERIGERON PINNATISECTUS
PINNATE FLEABANE**

JCATORS

PLACE NAME: MOUNT HARVARD LAT: 385423N
LONG: 1061854W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: Chaffee QUADNAME: MOUNT HARVARD

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
013S080W 22 [TRS FROM USFS 7.5' MAP]

DIRECTIONS: 1 MILE SSE OF SUMMIT OF MT HARVARD, 1/4 MILE NE OF BEAR LAKE. IN GRAVELLY, ROCKY MEADOW. ALSO ON RIDGE 1/4 MILE SE OF BEAR LAKE.

MINIMUM ELEVATION 12280 feet MAXIMUM ELEVATION: 12420 feet

HABITAT: DRY MEADOW, ALPINE TUNDRA. 75% BARE GROUND, GRAVELLY LOAM SOIL, 15% SLOPE. ASSOCIATED SPECIES: BISTORT [BISTORTA] BISTORTOIDES, CASTILLEJA SULPHUREA, ARNICA MOLLIS, SOLIDAGO SPATHULATA VAR NANA, ANTENNARIA SP., POTENTILLA SP., PEDICULARIS PARRYI.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S3 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1994-08-03

OCCURRENCE RANK COMMENTS:
PRISTINE SITE, BUT FEW INDIVIDUALS (15-30). OFF BEATEN PATH UP MT HARVARD.

SURVEY DATE: 1994-08-03 LAST OBSERVED: 1994-08-03 FIRST OBSERVED: 1994-08-03

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
15-30 INDIVIDUALS. SOME INDIVIDUALS WITH 3+ FLOWER HEADS.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
SALIDA RANGER DISTRICT-USFS Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF Y

MANAGEMENT COMMENTS:
PROTECT FROM HIKER IMPACT. DO NOT COLLECT AT THIS SITE UNTIL MANY MORE INDIVIDUALS ARE DOCUMENTED.

SECTION COMMENTS:
IN WILDERNESS.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

FORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN COLLECTION SS-94-221.A TO BE DEPOSITED AT
UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN S. AND DUFF M. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 03 AUGUST 1994.

COMMENTS: MAP ATTACHED. [CNHP: DOT IS POSITIONED BETWEEN 2 LOCATIONS OF THIS OCCURRENCE.]

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDAST3M370*022*CO

PRINTOUT DATE: 29 JAN 1996

**CREPIS NANA
DWARF HAWKSBEARD**

LOCATORS

PLACE NAME: MOUNT HARVARD LAT: 385506N
LONG: 1061910W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee MOUNT HARVARD

TOWN\RANGE: SECTION: LEGAL DESCRIPTOR DETAIL:
013S080W 15 [TRS FROM USFS 7.5' MAP]

DIRECTIONS: CA 1/2 MILE S OF MT HARVARD SUMMIT. AT BASE OF SE FACING SCREE SLOPE AT 13,200'.

MINIMUM ELEVATION 13200 feet MAXIMUM ELEVATION: 13200 feet

HABITAT: BASE OF ALPINE SCREE SLOPE. SE FACING SLOPE.

SPECIES AND SPECIFIC OCCURRENCE STATUS

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

OCCURRENCE RANK: D RANK DATE: 1994-08-03

OCCURRENCE RANK COMMENTS:

ONLY ONE INDIVIDUAL OBSERVED. POTENTIAL HABITAT SEARCHED BY 5 PEOPLE FOR 5 HOURS. IN WILDERNESS. INDIVIDUAL WAS WELL ISOLATED FROM USUAL HIKER ROUTES.

SURVEY DATE: 1994-08-03 LAST OBSERVED: 1994-08-03 FIRST OBSERVED: 1994-08-03

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

INDIVIDUAL OBSERVED IN FLOWER. POTENTIAL HABITAT APPEARS EXTENSIVE. POTENTIAL HABITAT SEARCHED BY 5 PEOPLE FOR 5 HOURS ALTHOUGH MUCH OF THE POTENTIAL HABITAT WAS NOT SURVEYED.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
SALIDA RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:

ESTABLISHED TRAIL WILL MINIMIZE IMPACT TO THIS & OTHER RARE SPECIES.

PROTECTION COMMENTS:

IN WILDERNESS. INDIVIDUAL WAS WELL ISOLATED FROM USUAL HIKER ROUTES.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

***NFORMATION SOURCES AND RECORD MAINTENENCE**

SPECIMEN CITATIONS:

NOT COLLECTED.

BEST SOURCE: SPACKMAN S., AND M. DUFF. FOURTEENERS INITIATIVE FIELD SURVEY OF 3 AUGUST 1994.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDAST2R0C0*024*CO

PRINTOUT DATE: 29 JAN 1996

**DRABA CRASSA
THICK-LEAF WHITLOW-GRASS**

LOCATORS

PLACE NAME: MOUNT HARVARD LAT: 385454N
LONG: 1061859W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: CHAFFEE QUADNAME: MOUNT HARVARD

TOWN/RANGE: SECTION: LEGAL DESCRIP DETAIL:
013S080W 14,15,23 ALSO SEC23 AT CORNER OF SEC14,15,22&23.USFS7.5'

DIRECTIONS: SSE OF MOUNT HARVARD SUMMIT, 0.5-1 MILE. ELEVATION 12,400-13,600. GROWING AMONG BOULDERS, IN CLIFFS, AND ROCKY AREAS. S, SW, AND SE FACING SLOPES.

MINIMUM ELEVATION 12400 feet MAXIMUM ELEVATION: 13600 feet

HABITAT: GROWING AMONG BOULDERS, IN CLIFFS, & ROCKY AREAS. S, SW, AND SE FACING SLOPES. ASSOC. TAXA: CLAYTONIA SP., OREOXIS SP., POLEMONIUM SP., SENECIO SP., HYMENOXYIS SP..

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1994-08-03

OCCURRENCE RANK COMMENTS:
WIDELY SCATTERED INDIVIDUALS IN ALPINE WILDERNESS. HIKER IMPACT A LOW THREAT.

SURVEY DATE: 1994-08-03 LAST OBSERVED: 1994-08-03 FIRST OBSERVED: 1994-08-03

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
50-100 INDIVIDUALS WIDELY SPACED. IN FLOWER AND FRUIT.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
SALIDA RANGER DISTRICT-USFS	Y
COLLEGIATE PEAKS WILDERNESS AREA- PIKE NF	Y

MANAGEMENT COMMENTS:
PROTECT FROM HIKER IMPACTS BY ESTABLISHING TRAIL.

PROTECTION COMMENTS:

OWNER: USFS, SAN ISABEL NF
OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN SS-94-223 TO BE DEPOSITED OF UNIVERSITY OF COLORADO
HERBARIUM.

BEST SOURCE: SPACKMAN S. AND M. DUFF. 1994. FOURTEENERS INITIATIVE FIELD SURVEY OF 3 AUGUST 1994.

COMMENTS: [CNHP:] MAP PROVIDED; DOT IS POSITIONED IN THE MIDDLE OF 3 LOCATIONS OF OCCURRENCE.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDBRA110S0*008*CO

PRINTOUT DATE: 29 JAN 1996

MOUNT SHAVANO

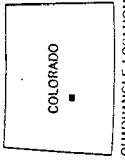
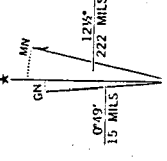
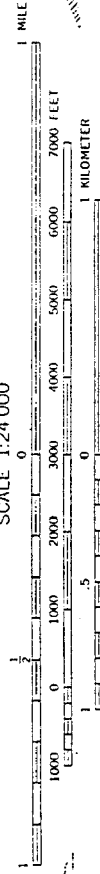
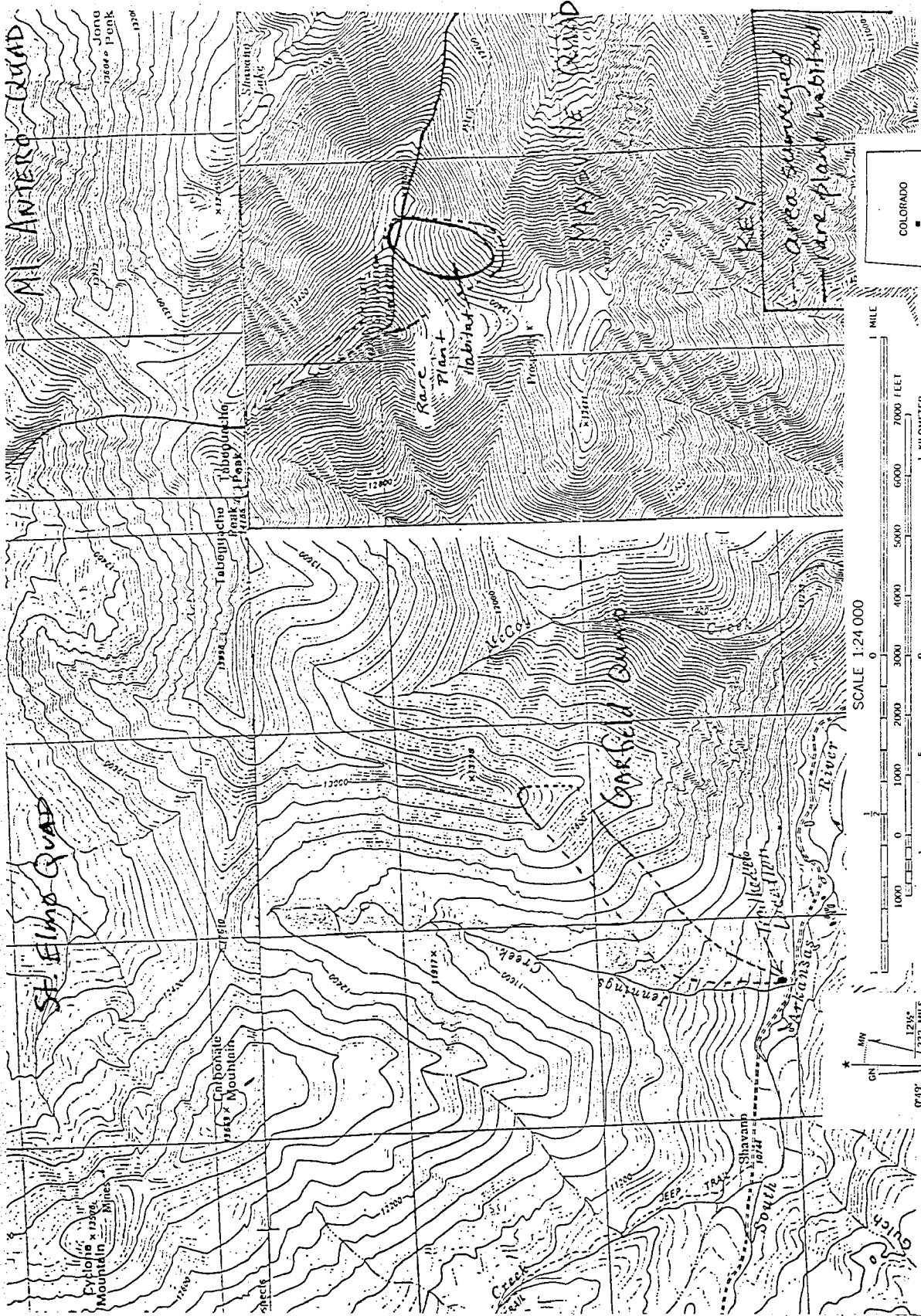
Figure 4 presents a map showing the survey routes and rare plant habitat on Mount Shavano and Tabeguache Peak.

Gray's peak whitlow-grass was located on the rocky meadow slope between the beginning of the proposed route at about 13,000' to the saddle between peak 13,617' and Shavano summit (photo 14). Though few individuals of this inconspicuous species were counted (about ten), it is likely that there are more. Because the plants that were counted are widely spaced, a trail that concentrates hiker use will minimize impacts to this species at this location.

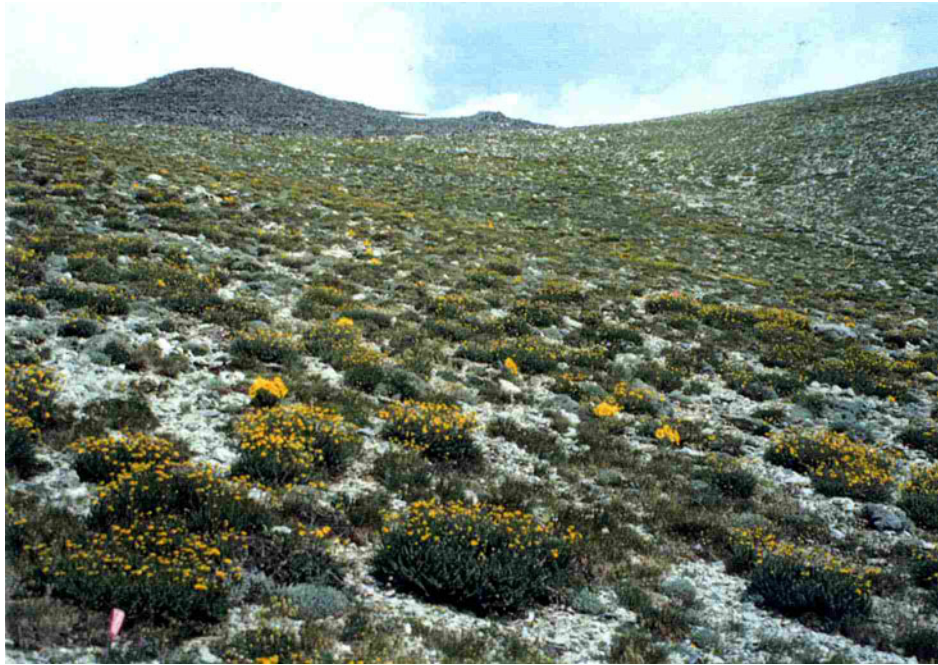
Arctic draba was found growing on mine tailings of a small mine located on the saddle between Shavano summit and peak 13,617' (photo 15). Because the plants appeared to be restricted to this small area, the trail should skirt this location by 75 feet or more.

No rare plant species were found the rest of the way to the summit or along the ridge between Shavano summit and the saddle between Mount Shavano and Tabeguache Peak.

Detailed information about each rare plant occurrence found on Mount Shavano follows.



CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1979



Photos 14 and 15. Rare plant habitat on Mount Shavano.

DRABA GRAYANA
GRAY'S PEAK WHITLOW-GRASS

LOCATORS

PLACE NAME: MOUNT SHAVANO LAT: 383705N
LONG: 1061400W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: Chaffee QUADNAME: MAYSVILLE

TOWN\ RANGE: SECTION: 6 LEGAL DESCRIPT DETAIL:
050N007E [CNHP:] SECTION EXTRAPOLATED FROM USFS 7.5 B&W TOPO.

DIRECTIONS: SOUTH FACING SLOPE BELOW SADDLE BETWEEN MOUNT SHAVANO AND PEAK 13,617'. AT 13,000-13,600' ELEVATION.

MINIMUM ELEVATION 13000 feet MAXIMUM ELEVATION: 13600 feet

HABITAT: DRY ROCKY ALPINE MEADOW, SOUTH FACING SLOPE. 50% BARE GROUND. DOMINANT ASSOCIATED SPECIES: GEUM ROSSII, RYDBERGIA GRANDIFLORA, POTENTILLA SPP., ARTEMESIA SP., PHLOX SP., TRIFOLIUM DASYPHYLLUM, HEUCHERA PARVIFOLIA. SOILS GRAVELLY. ELEV: 13000' - 13600'

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G2 STATE RANK: S2 FED. LEGAL: STATE LEGAL:
OCCURRENCE RANK: B RANK DATE: 1995-08-08

OCCURRENCE RANK COMMENTS:

QUALITY: B, VERY FEW INDIVIDUALS OBSERVED; IT IS LIKELY THAT MORE ARE PRESENT. CONDITION: B, SOME HIKER DISTURBANCE, SITE IS RECOVERABLE. VIABILITY: B, FEW INDIVIDUALS, OTHER NECESSARY SUPPORTING FACTORS APPEAR TO BE IN TACT. DEFENSIBILITY: A, IN WILDERNESS, USFS IS WORKING ON DESIGNATING A TRAIL THROUGH AREA TO MINIMIZE HIKER IMPACTS.

SURVEY DATE: 1995-08-08 LAST OBSERVED: 1995-08-08 FIRST OBSERVED: 1995-08-08

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

UNCOMMON AND WIDELY SCATTERED ON SLOPE TO SADDLE. ABOUT 10 INDIVIDUALS OBSERVED. IT IS LIKELY THAT MORE ARE PRESENT. FLOWERS YELLOW.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
Y

MANAGEMENT COMMENTS:

THIS SPECIES SHOULD NOT BE COLLECTED AT THIS SITE UNTIL LARGER POPULATION IS LOCATED.

PROTECTION COMMENTS:

AN ESTABLISHED TRAIL WOULD MINIMIZE IMPACT.

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. AND S. FLOYD. 1995. SPECIMEN (COLLECTON # SS-95-043) LOCATED AT COLORADO STATE UNIVERSITY HERBARIA.

BEST SOURCE: SPACKMAN, S. AND S. FLOYD. 1995. FOURTEENERS INITIATIVE FIELD SURVEY OF MOUNT SHAVANO.

COMMENTS: MAP PROVIDED. USFS IS AWARE OF OCCURRENCE.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDBRA11120*019*CO

PRINTOUT DATE: 29 JAN 1996

**DRABA FLADNIZENSIS
ARCTIC DRABA**

LOCATORS

PLACE NAME: MOUNT SHAVANO LAT: 383705N
LONG: 1060401W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: CHAFFEE QUADNAME: MAYSVILLE

TOWN\RANGE: SECTION: LEGAL DESCRIP DETAIL:
050N007E 6 [CNHP:] TRS EXTRAPOLATED FROM USFS 7.5 B & W TOPO.

DIRECTIONS: SADDLE BETWEEN MOUNT SHAVANO SUMMIT AND PEAK 13,617'. GROWING ON MINE TAILINGS.

MINIMUM ELEVATION 13240 feet MAXIMUM ELEVATION: 13240 feet

HABITAT: PLANTS WERE GROWING ON MINE TAILINGS. SURROUNDING HABITAT ON SADDLE IS DRY, ROCKY, ALPINE MEADOW, 50% BARE GROUND, DOMINATED BY GEUM ROSSII, RYDBERGIA GRANDIFLORA, POTENTILLA SPP., AND TRIFOLIUM DASYPHYLLUM. SOUTH FACING SLOPE.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G4 STATE RANK: S2S3 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: C RANK DATE: 1995-08-08

OCCURRENCE RANK COMMENTS:
VERY FEW INDIVIDUALS GROWING ON MINE TAILINGS.

SURVEY DATE: 1995-08-08 LAST OBSERVED: 1995-08-08 FIRST OBSERVED: 1995-08-08

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
JUST A FEW INDIVIDUALS, ALL IN FRUIT.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:

OCCURRENCE WHOLLY CONTAINED?:

MANAGEMENT COMMENTS:

PREVENT HIKER IMPACT. THIS SPECIES SHOULD NOT BE COLLECTED AT THIS SITE.

PROTECTION COMMENTS:

TRAIL ROUTE SHOULD SKIRT THIS OCCURRENCE BY 25 METERS OR MORE.

OWNER:

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN S. AND S. FLOYD. SPECIMEN (COLLECTION #SS-95-043.B) AT COLORADO STATE UNIVERSITY HERBARIUM.

BEST SOURCE: SPACKMAN S. AND S. FLOYD. 1995. FOURTEENERS INITIATIVE FIELD SURVEY OF MOUNT SHAVANO. AUGUST 8, 1995.

COMMENTS: U.S. FOREST SERVICE IS AWARE OF OCCURRENCE. [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS: Y

UPDATE:

00BRA11020*024*CO

PRINTOUT DATE: 29 JAN 1996

TABEGUACHE PEAK

Figure 4 presents a map showing the survey routes and rare plant habitat on Mount Shavano and Tabeguache Peak. No rare plant species were found along the proposed route up Tabeguache Peak.



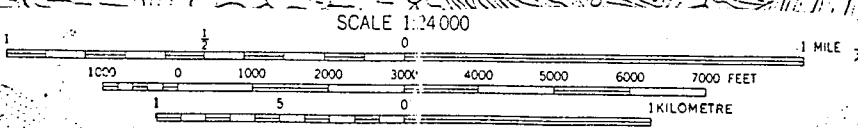
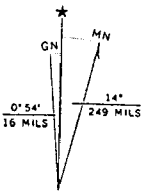
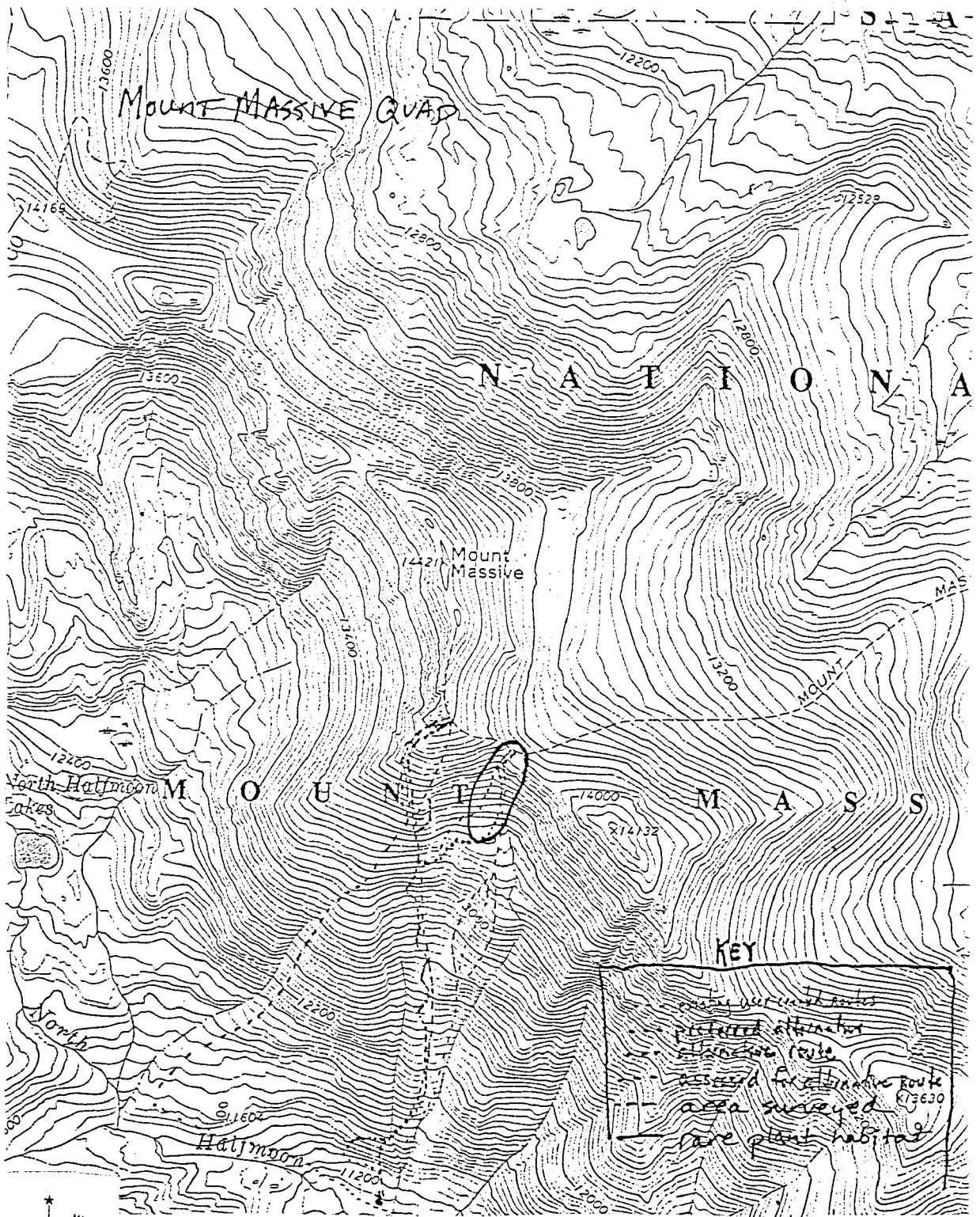
Photos 16 and 17. Survey route on Tabeguache Peak.

MOUNT MASSIVE

Figure 5 presents a map showing the survey routes and rare plant habitat on Mount Massive.

The rare plant species located along this proposed route were concentrated in one area on the saddle at 13,920' (between peak 14,132' and Mount Massive summit) and the south-facing slope below this saddle (photos 18 and 19). **Alpine poppy, thick-leaf whitlow-grass,** and **tundra draba** were found on the rocky, south-facing slope below the saddle. The established route should skirt this area if possible. If a trail is routed through this area, a sign should direct hikers to exercise caution in staying on the trail through the rare plant habitat.

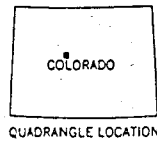
Detailed information about each rare plant occurrence found on Mount Massive follows.



SCALE 1:24,000
 CONTOUR INTERVAL 40 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

KEY

- contour interval 40 feet*
- pastured attraction*
- attraction route*
- accessed for attraction route*
- area surveyed* K13630
- rare plant habitat*





Photos 18 and 19. Rare plant habitat on Mount Massive.

PAPAVER LAPPONICUM SSP OCCIDENTALE
ALPINE POPPY

LOCATORS

PLACE NAME: MOUNT MASSIVE LAT: 391053N
LONG: 1062820W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Lake MOUNT MASSIVE

TOWN\ RANGE: SECTION: LEGAL DESCRIP DETAIL:
010S081W 17 [CNHP:] TRS FROM USFS 7 1/2' B&W MAP.

DIRECTIONS: ON SOUTH FACING BOULDER FILLED SLOPE JUST BELOW SADDLE BETWEEN MOUNT MASSIVE SUMMIT AND PEAK 14,132'. ON WEST SIDE OF
HIKER TRAIL.

MINIMUM ELEVATION 13900 feet MAXIMUM ELEVATION: 13900 feet

HABITAT: IN ROCKY AREA JUST BELOW SADDLE. SOUTH FACING SLOPE, ABOUT 35 DEGREES. 40% BARE GROUND OR ROCK. GNEISS. ASSOC. SPP=
POLEMONIUM VISCOSUM, GRASSES, GEUM ROSSII, TRIFOLIUM MAMM, CIRSEUM SCOPULORUM. PLANTS GROWING IN POCKETS OF SOIL
BETWEEN BOULDERS.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3Q STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1995-08-16

OCCURRENCE RANK COMMENTS:
FAIRLY PRISTINE EXCEPT FOR THREAT OF NEARBY HIKING ROUTES. FEW TOTAL INDIVIDUALS.

SURVEY DATE: 1995-08-16 LAST OBSERVED: 1995-08-16 FIRST OBSERVED: 1995-08-16

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
32 INDIVIDUALS OBSERVED, SOME WITH SEVERAL FLOWERS. 80% FLOWERING, 20% VEGETATIVE. 3 INDIVIDUALS HAD BEEN
GRAZED-FLOWERING STALK COMPLETELY GONE. PLANTS GROWING IN GROUPS OF 1-10 INDIVIDUALS IN 20 X 10 M AREA.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
LEADVILLE RANGER DISTRICT-USFS Y
MOUNT MASSIVE WILDERNESS AREA-USFS Y

MANAGEMENT COMMENTS:
PREVENT HIKER IMPACT. THIS SPECIES SHOULD NOT BE COLLECTED AT THIS LOCATION.

PROTECTION COMMENTS:
ESTABLISH TRAIL. POST SIGN: "RARE PLANT HABITAT PLEASE STAY ON TRAIL"

OWNER: USFS, SAN ISABEL NF
OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN & FLOYD. 1995. SPECIMEN (COLLECTION #55-95-050.H)
AT COLORADO STATE UNIVERSITY HERBARIUM.

BEST SOURCE: SPACKMAN & FLOYD. 1995. FOURTEENERS INITIATIVE FIELD SURVEY OF MOUNT MASSIVE.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES: PHOTOS: Y

UPDATE:
PDPAP0H0H0*036*CO

PRINTOUT DATE: 29 JAN 1996

**DRABA CRASSA
THICK-LEAF WHITLOW-GRASS**

LOCATORS

PLACE NAME: MOUNT MASSIVE LAT: 391253N
LONG: 1062819W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Lake MOUNT MASSIVE

TOWN/RANGE: SECTION: LEGAL DESCRIPT DETAIL:
010S081W 17 [CNHP:] TRS FROM USFS 7.5 B&W TOPO.

DIRECTIONS: SOUTH FACING SLOPE ON MOUNT MASSIVE. BELOW SADDLE BETWEEN SUMMIT AND PEAK 14,132'. ELEVATION 13,600-14,000.

MINIMUM ELEVATION 13600 feet MAXIMUM ELEVATION: 14000 feet

HABITAT: ASSOCIATED SPP: POLEMONIUM VISCOSUM, SAXIFRAGA SP., MERTENSIA SP., CLAYTONIA MEGARHYZA, TRIFOLIUM NANUM, CIRSEUM SCOPULORUM, BESSEYA ALPINA, DRABA CRASSIFOLIA, GEUM ROSSII. ADJACENT TO WIDE ERODED HIKER TRAIL TO SADDLE. STEEP BOULDER FIELD, 80% BARE GROUND OR ROCK. SLOPE: 35 DEGREES. GEOLOGY: GNEISS.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S2 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: A RANK DATE: 1995-08-16

OCCURRENCE RANK COMMENTS:
HUNDREDS OF PLANTS IN WILDERNESS. USFS IS WORKING ON ESTABLISHING TRAIL TO PREVENT HIKER IMPACTS.

SURVEY DATE: 1995-08-16 LAST OBSERVED: 1995-08-16 FIRST OBSERVED: 1995-08-16

SPECIFIC OCCURRENCE BIOLOGICAL DATA:
150 PLANTS IN A 12'X 12' AREA AND SCATTERED FURTHER UP SLOPE. TOTAL OF 300-500 INDIVIDUALS ESTIMATED. 10% IN FRUIT, 90% FLOWERING. PLANTS MORE ABUNDANT TOWARD BASE OF SLOPE. FLOWERS YELLOW.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME: OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST Y
MOUNT MASSIVE WILDERNESS AREA-USFS
LEADVILLE RANGER DISTRICT-USFS

MANAGEMENT COMMENTS:
PREVENT HIKER IMPACT, ESTABLISH TRAIL.

PROTECTION COMMENTS:
POST SIGN AT BASE OF SLOPE: "RARE PLANT HABITAT PLEASE STAY ON TRAIL."

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

FORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN AND FLOYD. 1995. SPECIMEN (COLLECTION #55-95-050.A)
TO BE DEPOSITED AT COLORADO STATE UNIVERSITY HERBARIUM.

BEST SOURCE: SPACKMAN AND FLOYD. 1995. FOURTEENERS INITIATIVE FIELD SURVEY OF MOUNT MASSIVE.

COMMENTS: MAP PROVIDED. USFS IS AWARE OF OCCURRENCE.

BOUNDARIES:

PHOTOS: Y

UPDATE:

PDBRA110S0*009*CO

PRINTOUT DATE: 29 JAN 1996

**DRABA VENTOSA
TUNDRA DRABA**

LOCATORS

PLACE NAME: MOUNT MASSIVE LAT: 391048N
LONG: 1062822W

MAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Lake MOUNT MASSIVE

TOWN\ RANGE: SECTION: LEGAL DESCRIPT DETAIL:
010s081w 17 [CNHP:] TRS FROM USFS B&W TOPO.

DIRECTIONS: ON SADDLE BETWEEN MOUNT MASSIVE AND PEAK 14,132'. AT 13,920'.

MINIMUM ELEVATION 13600 feet MAXIMUM ELEVATION: 13920 feet

HABITAT: ON WIND BLOWN SADDLE, ROCKY ALPINE MEADOW. ASSOCIATED SPECIES INCLUDE DRABA CRASSIFOLIA, CLAYTONIA MEGARRHIZA, DRABA GRAYONA, TRIFOLIUM NANUM AND GEUM ROSSII. DISTURBED SITE-EROSION AND SLIDING-RECENT SNOWMELT AREAS-SANDY SOILS.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G3 STATE RANK: S1 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: B RANK DATE: 1995-12-28

OCCURRENCE RANK COMMENTS:

LARGE POPULATION WITH GOOD POTENTIAL FOR LONG TERM VIABILITY. HIKER IMPACTS POSE A SIGNIFICANT THREAT AND UNOFFICIAL TRAILS PASS THROUGH CENTER OF HABITAT.

SURVEY DATE: 1995-08-16 LAST OBSERVED: 1995-08-16 FIRST OBSERVED: 1995-08-16

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

SEVERAL HUNDRED INDIVIDUALS FROM BASE TO SADDLE. SPARSE BUT CONSTANT. 5-10% FRUIT. (FLOWERS YELLOW).

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
SAN ISABEL NATIONAL FOREST	Y
LEADVILLE RANGER DISTRICT-USFS	Y
MOUNT MASSIVE WILDERNESS AREA-USFS	Y

MANAGEMENT COMMENTS:

ADJACENT TO UNOFFICIAL TRAIL. NEED TO ESTABLISH DESIGNATED TRAIL TO MASSIVE SUMMIT TO MINIMIZE HIKER IMPACT.

PROTECTION COMMENTS:

NEED DESIGNATED TRAIL ESTABLISHED AND USED.

OWNER:

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. AND S. FLOYD. 1995. COLLECTION (#55-95- 050.C) TO BE DEPOSITED AT COLORADO STATE UNIVERSITY AND THE UNIVE

BEST SOURCE: SPACKMAN, S. AND S. FLOYD. 1995. FOURTEENERS INITIATIVE FIELD SURVEY OF MOUNT MASSIVE.

COMMENTS: [CNHP:] MAP PROVIDED.

BOUNDARIES:

PHOTOS:

UPDATE:

PDBRA112N0*006*CO

PRINTOUT DATE: 29 JAN 1996

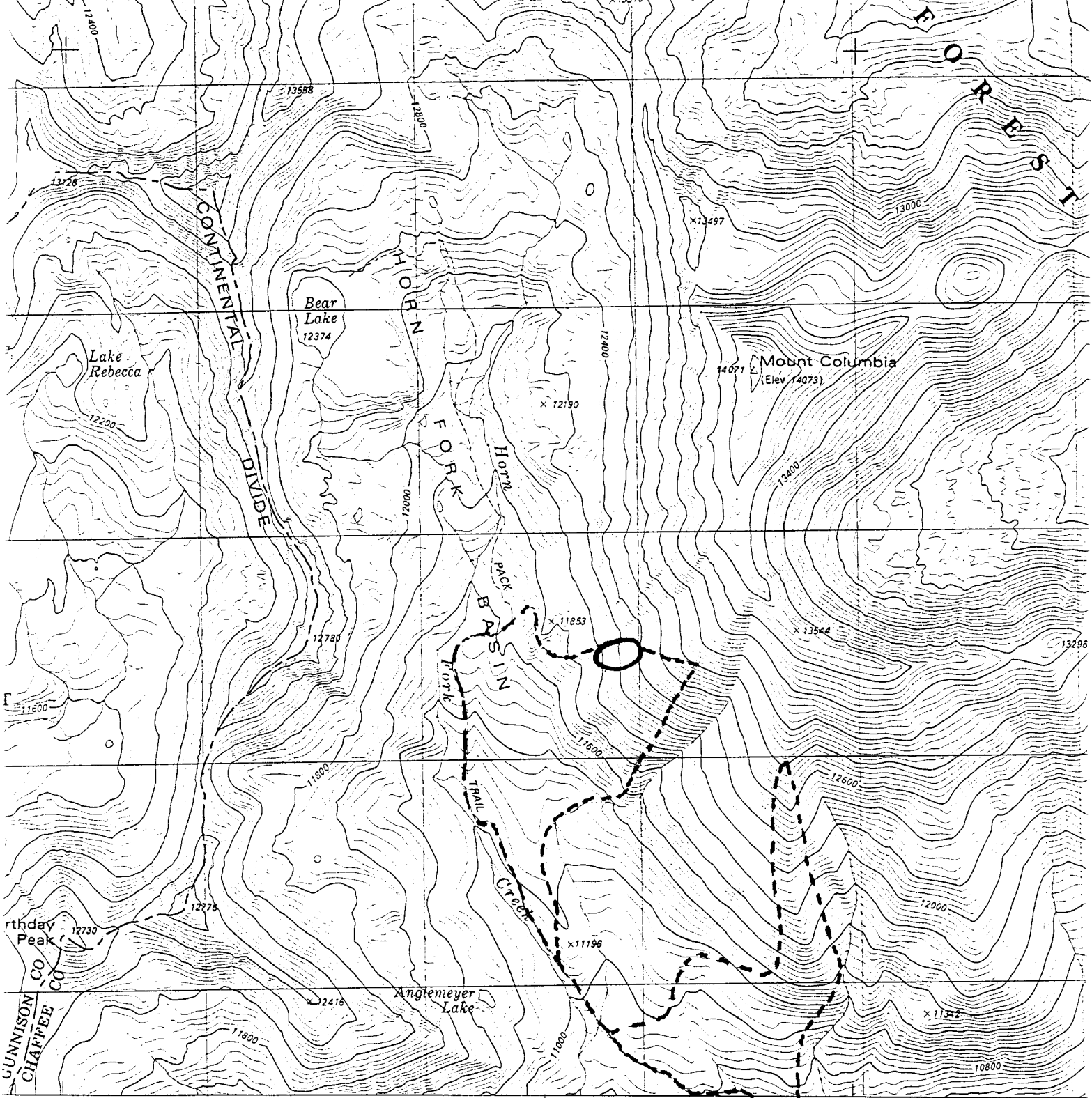
MOUNT COLUMBIA

The following map shows the August 8, 1997 survey route and rare plant habitat on Mount Columbia.

At approximately 12,200', on a west facing slope of Mount Columbia, a very small population of **lancepod whitlow-grass** (*Draba lonchocarpa* var. *lonchocarpa*) was found within a rugged rock outcrop. Though few individuals of this inconspicuous species were counted (about six), it is likely that there are more. The plants are currently afforded some natural protection by the rugged rock outcrop. The trail route should nonetheless avoid this specific location if possible.

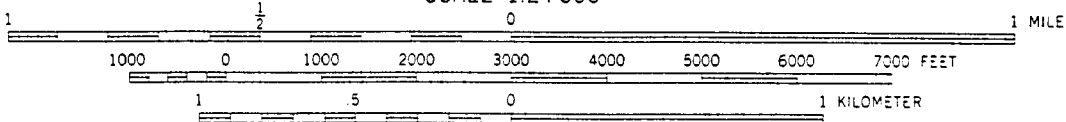
Detailed information about the rare plant occurrence on Mount Columbia follows.

No rare plant species were found along the rest of the survey route.



20' 85 87 17'30" 88

SCALE 1:24 000



CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Mount Harvard
U.S.G.S. 7.5 minute quadrangle
 Survey Route - - - -
 Rare Plant Habitat ———

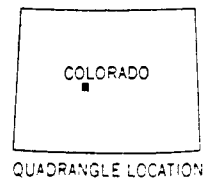




Photo of *Draba lonchocarpa* var. *lonchocarpa*
Lancepod whitlow-grass



Rare plant habitat on Mount Columbia

Element Occurrence Record

DRABA LONCHOCARPA VAR LONCHOCARPA

LOCATORS

PLACE NAME: MOUNT COLUMBIA LAT: 385333N
POTENTIAL CONSERVATION AREA: LONG: 1061813W

MAAPPING PRECISION: SECONDS: ACTUAL MAPPED LOCATION OR EQUIVALENT PROVIDED

COUNTY: QUADNAME:
Chaffee MOUNT HARVARD

TOWN\ RANGE: SECTION: LEGAL DESCRIPT DETAIL:
013S080W 26

DIRECTIONS: [SPACKMAN AND ESSINGTON 1997:] WEST-FACING SLOPE OF MOUNT COLUMBIA, AT ABOUT 12,200 FT. HIKE UP THE PACK TRAIL IN THE HORN FORK BASIN (TOWARDS BEAR LAKE). JUST ABOVE TREELINE, HEAD AROUND THE KNOB AT 11,852 FT. AND STRAIGHT UP (EAST) TO ROCK OUTCROP AT 12,200 FT.

MINIMUM ELEVATION 12200 MAXIMUM ELEVATION: 12200

HABITAT: [SPACKMAN AND ESSINGTON 1997:] STEEP, WEST-FACING, ALPINE SLOPE AT ABOUT 12,200 FT. ROCK OUTCROP BETWEEN A SCREE/TALUS SLOPE AND A STEEP RIDGE DOMINATED BY GRASSES, SEDGES, AND ALPINE WILDFLOWERS. ASSOCIATED TAXA INCLUDE ERIOGONUM SP., CILIARIA AUSTROMONTANA.

SPECIES AND SPECIFIC OCCURRENCE STATUS

GLOBAL RANK: G4T4 STATE RANK: S3 FED. LEGAL: STATE LEGAL:

OCCURRENCE RANK: C RANK DATE: 1997-08-07

OCCURRENCE RANK COMMENTS:

[SPACKMAN AND ESSINGTON 1997:] ONLY SIX PLANTS OBSERVED, THOUGH THE POTENTIAL HABITAT IS EXTENSIVE AND PRISTINE.

SURVEY DATE: 1997-08-07 LAST OBSERVED: 1997-08-07 FIRST OBSERVED: 1997-08-07

SPECIFIC OCCURRENCE BIOLOGICAL DATA:

[SPACKMAN AND ESSINGTON 1997:] SIX PLANTS GROWING IN ROCK OUTCROP. FLOWERS WHITE.

MANAGEMENT, OWNERSHIP AND PROTECTION

MANAGEMENT AREA NAME:	OCCURRENCE WHOLLY CONTAINED?:
PIKE-SAN ISABEL NATIONAL FOREST	Y
SALIDA RANGER DISTRICT	Y
COLLEGIATE WILDERNESS AREA - SAN ISABEL NF	Y

MANAGEMENT COMMENTS:

[SPACKMAN AND ESSINGTON 1997:] THIS AREA RECEIVES A LOT OF RECREATIONAL USE FROM HIKERS CLIMBING MOUNT COLUMBIA. HOWEVER, THE PLANTS ARE NATURALLY PROTECTED BY THE ROCK LEDGES THAT ARE AWAY FROM THE TYPICAL HIKING ROUTES.

PROTECTION COMMENTS:

OWNER: USFS, SAN ISABEL NF

OWNER COMMENTS:

INFORMATION SOURCES AND RECORD MAINTENENCE

SPECIMEN CITATIONS:

SPACKMAN, S. AND K. ESSINGTON. 1997. (COLLECTION #SS-97-41) AT THE UNIVERSITY OF COLORADO HERBARIUM.

BEST SOURCE: SPACKMAN, S. AND K. ESSINGTON. 1997. FIELD SURVEY OF MOUNT COLUMBIA BY THE COLORADO NATURAL HERITAGE PROGRAM.

COMMENTS: [CNHP:] MAP PROVIDED BY SPACKMAN AND ESSINGTON 1997.

BOUNDARIES: Y

PHOTOS: Y

UPDATE:

PDBRA111P1*007*CO

PRINTOUT DATE: 04 MAR 1998

Plant Characterization Abstract for Colorado

DRABA LONCHOCARPA VAR LONCHOCARPA

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CAPPARALES
FAMILY: BRASSICACEAE GENUS: DRABA

Status:

GLOBAL RANK: G4T4 STATE RANK: S3
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 10000 feet
MAXIMUM ELEV: 13000 feet

HABITAT COMMENTS:

Located on mountain peaks (Harrington 1954), on alpine (or subalpine) talus slopes and rock crevices (Hitchcock 1973). Found sporadically on rocky alpine slopes, sometimes locally abundant (Weber 1996).

State Distribution:

COUNTY NAME:

Gunnison
Park
Pitkin
Lake
Summit
Chaffee

RANGE: Found in northcentral and central Colorado (Harrington 1954).

Phenology:

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

PHENOLOGY COMMENTS:

D. lonchocarpa var. *lonchocarpa* is flowering June through July (Rollins 1993).

Look Alikes:

D. lonchocarpa is similar to *D. nivalis*, but stellate hairs are more distinctly stalked, more simple hairs in margin of basal leaves; glabrous scapes and pedicels, and longer pedicels and silicles (Hulten 1968).

Management:

MANAGEMENT COMMENTS:

Global Distribution:

Colorado to Nevada, north to Alaska (Rollins 1993).

References:

ABBREVIATED CITATION:

FULL CITATION:

Harrington 1954

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

Hitchcock and Cronquist
1973

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, WA.

Hulten 1968

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

Rollins 1993

Rollins, R.C. 1993. The Cruciferae of Continental North America: Systematics of the Mustard Family from the Arctic to Panama. Stanford University Press. Stanford, CA.

Weber and Wittmann 1996

Weber, W.A. and Ronald Wittmann. 1996. Colorado Flora: Western Slope. University Press of Colorado.

Welsh, et al., 1993

Welsh, S.L, N.D. Atwood, S. Goodrich, and L.C. Higgins. 1993. A Utah Flora, second edition, revised. Brigham Young University, Provo, UT.

Recommendations

1) Where possible, avoid occurrences of rare plant species in establishing trail routes. Trail location should skirt specific locations by at least 50 feet, preferably further.

2) Where specific locations cannot be avoided, avoid individuals of each species.

3) Use interpretive signs to encourage hikers to stay on established routes, especially through rare plant habitat.

4) Because of the high level of visitor use, an established trail, no matter where it is placed, is likely to better protect the rare plant species at these locations.

5) A monitoring program should be established to track changes in population size and distribution of the rare plant species at the locations documented in this report.

6) More widespread rare plant surveys should be conducted to increase our understanding of the total distribution of the species documented in this report. This information would assist with management decisions regarding the level of protection to employ at each location.

References

- Colorado Natural Heritage Program. 1995. Colorado's natural heritage: rare and imperiled animals, plants, and natural communities. Unpublished report.
- Hartman E. L. and M. L. Rottman. 1988. The vegetation and alpine vascular flora of the Sawatch Range, Colorado. Madrono Vol. 35, No. 3, pp. 202-225.
- Kartesz, J.T. 1994. A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. Second edition. Timber Press, Inc., Portland, Oregon. Volume 1: 622 pp., Volume 2: 816 pp.
- USDA Forest Service. 1994. Forest Service Manual, Title 2600-Wildlife, Fish and Sensitive Plant Habitat Management; Region 2 Supplement 2600-94-2, Section 2673.11a, Exhibit 1.
- Weber, W.A. and R.C. Wittmann. 1992. Catalog of the Colorado Flora. University of Colorado Press. Niwot, Colorado. 215 pp.
- Weber, W.A. 1990. Colorado Flora Eastern Slope. University Press of Colorado. Niwot, Colorado.
- Weber, W.A. 1990. Colorado Flora Western Slope. Colorado Associated University Press. Boulder, Colorado.

Appendix 1

Colorado Natural Heritage Program
Plant Species of Special Concern
Survey Form

PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: ___/___/___

OBSERVER(S) _____

TAXONOMY:

SCIENTIFIC NAME: _____

COMMON NAME _____

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

SURVEY SITE NAME: _____

COUNTY: _____

USGS QUADRANGLE: _____

TOWNSHIP: _____ RANGE: _____ SECTION: _____ 1/4 SEC.: _____

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.: _____

ELEVATION (at population center (and range of population if known)): _____

NATIONAL FOREST/BLM DISTRICT: _____ F.S. DISTRICT/BLM RESOURCE AREA _____

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): _____

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.): _____

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%) _____ TOTAL SHRUB COVER (%) _____

TOTAL FORB COVER (%) _____ TOTAL GRAMINOID COVER (%) _____

TOTAL MOSS/LICHEN COVER (%) _____ TOTAL BARE GROUND COVER _____

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known): _____

HABITAT TYPE: _____

ADDITIONAL ASSOCIATED PLANT SPECIES: _____

ASPECT (S, SE, NNW, etc.): _____ % SLOPE _____ SLOPE SHAPE (concave, convex, straight, etc.) _____

LIGHT EXPOSURE (open, shaded, partial shade, etc.): _____

TOPOGRAPHIC POSITION (crest, upperslope, midslope, lowerslope, bottom, etc.): _____

MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) _____

PARENT MATERIAL: _____

GEOMORPHIC LAND FORM (e.g. glaciated mountain slopes and ridges, alpine glacial valley, rolling uplands, breaklands, alluvial-colluvial-lacustrine (floodplains, terraces, etc.), rockslides):

SOIL TEXTURE: _____

EVIDENCE OF THREATS AND DISTURBANCE: (be specific; effects on populations viability)

POPULATION SIZE:

ESTIMATED NUMBER OF INDIVIDUALS (or exact count, if feasible; if plants are spreading vegetatively, indicate number of aerial stems) _____

NUMBER OF SUB POPULATIONS (if applicable): _____

SIZE OF AREA COVERED BY POPULATION (acres):

BIOLOGY:

PHENOLOGY (percentage flowering, fruiting, vegetative): _____

ANY SYMBIOTIC OR PARASITIC RELATIONSHIPS? (e.g. pollinators): _____

EVIDENCE OF DISEASE, PREDATION OR INJURY? _____

REPRODUCTIVE SUCCESS (evidence of seed dispersal and establishment): _____

DOCUMENTATION:

PHOTOGRAPH TAKEN? (if so, indicate photographer and repository): _____

SPECIMEN TAKEN? (if so, list collector, collection number, and repository): _____

IDENTIFICATION (list name of person making determination, and/or name of flora or book used): _____

ECODATA PLOT NUMBER (attach ~~or~~ photocopied data sheets): _____

COMMENTS:

Appendix 2

Species Characterization Abstracts
for species found during the surveys

Plant Characterization Abstract for Colorado

BOTRYCHIUM LANCEOLATUM VAR LANCEOLATUM
LANCE-LEAVED MOONWORT

Taxonomy:

TAXCLASS: PTERIDOPHYTA ORDER: OPHIOGLOSSALES
FAMILY: OPHIOGLOSSACEAE GENUS: BOTRYCHIUM

TAXONOMIC COMMENTS:

No known taxonomic problems.

Status:

GLOBAL RANK: G5T4 STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 8000 feet
MAXIMUM ELEV: 12000 feet

HABITAT COMMENTS:

This species occurs on dry slopes, grassy open places or wooded areas (Harrington 1950).

State Distribution:

COUNTY NAME:

Conejos
Larimer
Boulder
San Juan
Jackson
El Paso
Chaffee

RANGE:

According to records at CNHP, this species occurs in Chaffee, Conejos, Larimer, San Juan, Boulder, Jackson and El Paso Counties.

Phenology:

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

PHENOLOGY COMMENTS:

Leaves usually drying up in midsummer together with other associated species (Flora of North America Editorial Committee 1993).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

No threats or management concerns known to CNHP.

Global Distribution:

Botrychium lanceolatum var *lanceolatum* is known to occur in Greenland; Alberta, British Columbia, Newfoundland, Quebec, Saskatchewan, Yukon; Alaska, Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming; Eurasia (Flora of North America Editorial Committee 1993).

References:

ABBREVIATED CITATION:

FULL CITATION:

Flora of North America
Editorial Committee 1993

Flora of North America Editorial Committee.
1993. Flora of North America North of Mexico:
vol. 2 Pteridophytes and Gymnosperms. Oxford
University Press, New York.

Harrington 1950

Harrington, H.D. 1950. Colorado Ferns and Fern
Allies. Colorado Agricultural Research
Foundation. Fort Collins, Colorado.

Harrington 1954

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

O'Kane and Anderson 1986

O'Kane, S. and J. Anderson. 1986. Field Survey
to San Luis Valley of Aug. 18-22.

Root 1990

Root, P. 1990. Personal communication with
Colorado Natural Areas Program, 12 January
1990.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

BOTRYCHIUM LUNARIA
MOONWORT

Taxonomy:

TAXCLASS: PTERIDOPHYTA
FAMILY: OPHIOGLOSSACEAE

ORDER: OPHIOGLOSSALES
GENUS: BOTRYCHIUM

TAXONOMIC COMMENTS:

No known taxonomic problems.

Status:

GLOBAL RANK: G5
FED. STATUS:

STATE RANK: S2
AGENCY STATUS:

Habitat:

MINIMUM ELEV: 9400 feet
MAXIMUM ELEV: 11500 feet

HABITAT COMMENTS:

Open places such as meadows, slopes, and banks, also in woods (Harrington 1950). This species apparently does well on thin gravelly soils and so thrives on road and trail cuts so long as they are not trampled. It occurs in grasslands and meadows with thin, gravelly soils (BCD-EOR'S). Often occurs with other species of *Botrychium*.

State Distribution:**COUNTY NAME:**

Teller
Clear Creek
Jackson
Larimer
Park
El Paso
San Juan
Conejos
Chaffee

RANGE: In Colorado, *B. lunaria* occurs in Jackson, Larimer, Conejos, Chaffee, Clear Creek, El Paso, and San Juan Counties.

Phenology:

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

PHENOLOGY COMMENTS:

Leaves appearing in the spring, dying in latter half of summer (Flora of North America Editorial Committee 1993):

LOOKALIKES: A number of species with fan-shaped leaflets resemble *B. lunaria*. These species include *B. manganense*, *B. crenulatum*, and *B. ascendens*. *B. lunaria* is distinguished by having its lower pinnae broadly fan-shaped as opposed to narrowly fan-shaped in *B. manganense*, *B. pallidum*, and *B. ascendens*. It is distinguished from *B. crenulatum* by being stouter and fleshier, and by its leaf margins which are barely crenulate to entire. *B. lunaria* also often occurs with *B. lanceolatum* and *B. manganense* (Wagner and Wagner 1990).

SREPROCOM: *Botrychium lunaria* grows with many other species of *Botrychium*, occasionally hybridizing with them (Flora of North America Editorial Committee 1993).

Management:**MANAGEMENT COMMENTS:**

Some populations are located near heavily used recreation

areas and trails. Grazing may also impact some populations mostly through trampling. While trampling may negatively impact this species, it seems to thrive in disturbed areas near trails and roads (i.e. road cuts) (BCD-EOR's).

Global Distribution:

Botrychium lunaria occurs in Greenland; St. Pierre and Miquelon; Albert, British Columbia, Manitoba, New Brunswick, Newfoundland, Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon; Alaska, Arizona, California, Colorado, Idaho, Maine, Massachusetts,, Michigan, Minnesota, Montana, Nevada, New Hampshire, New Mexico, New York, Oregon, Pennsylvania, South Dakota, Utah, Vermont, Washington, Wisconsin, Wyoming; South America; Eurasia; Pacific Islands in New Zealand; Australia (Flora of North America Editorial Committee 1993).

References:

- | ABBREVIATED CITATION: | FULL CITATION: |
|---|---|
| Brumbeck, et al., 1912 | Brumbeck, F.M., and C.A. Davis. 1912. Plants collected during 1912 by Brumbeck and Davis deposited at the Kathryn Kalmbach Herbarium at the Denver Botanic Gardens. |
| Flora of North America Editorial Committee 1993 | Flora of North America Editorial Committee. 1993. Flora of North America North of Mexico: vol. 2 Pteridophytes and Gymnosperms. Oxford University Press, New York. |
| Harrington 1950 | Harrington, H.D. 1950. Colorado Ferns and Fern Allies. Colorado Agricultural Research Foundation. Fort Collins, Colorado. |
| O'Kane and Anderson 1986 | O'Kane, S. and J. Anderson. 1986. Field Survey to San Luis Valley of Aug. 18-22. |
| Root 1985 | Root, P. 1985. Plants collected during 1985 by P. Root deposited at the University of Michigan Herbarium, Ann Arbor, Michigan. |
| Root 1987 | Root, P. 1987. Plants collected in 1987 by P. Root deposited at University of Colorado Herbarium, Boulder, Colorado. |
| Root 1990 | Root, P. 1990. Plants collected during 1990 by P. Root deposited at the University of Colorado Herbarium, Boulder, Colorado. |
| Waterfall 1953 | Waterfall, U.T. 1953. Plants collected during 1953 by U.T. Waterfall deposited at Oklahoma State University Herbarium. |
| Welsh and Goodrich 1987 | Welsh, S.L., N.D. Atwood, L.C. Higgins and S. Goodrich. 1987. Utah Flora, Great Basin Naturalist Memoirs, No. 9. Brigham Young |

University, Provo, Utah.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

CREPIS NANA
DWARF HAWKSBEARD

Taxonomy:

TAXCLASS: DICOTYLEDONEAE
FAMILY: ASTERACEAE

ORDER: ASTERALES
GENUS: CREPIS

TAXONOMIC COMMENTS:

Cronquist et. al. (1994) recognize two varieties of *C. nana*. One from farther north, var. *nana* is "depressed and compact, with the taproot surmounted by a short, stout, simple or few-branched caudex from which numerous very slender, short and closely leafy aerial stems arise so that the plant forms a small cushion. Occasional plants from well within the range of var. *ramosa* even as far south as Colorado and southern Nevada have the taproot surmounted by a shortly few-branched caudex and might pass as variety *nana* had they been collected in Alaska."

Status:

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

Habitat:

MINIMUM ELEV: 10000 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Talus slopes and other rocky or gravelly places at higher elevations (Cronquist 1994).

State Distribution:

COUNTY NAME:

Custer
Lake
Boulder
Gunnison
Pitkin
Park
Clear Creek
Chaffee

RANGE: Boulder, Chaffee, Clear Creek, Custer, Gunnison, Lake, Park, and Pitkin Counties.

Phenology:

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

PHENOLOGY COMMENTS:

Flowers July through August (Cronquist 1994).

LOOKALIKES: Does not have any similar looking species in the same habitat.

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

The only potential threats to *Crepis nana* are over use by hikers, and mountain goats. It is likely however that the alpine scree habitat receives little hiker traffic.

Global Distribution:

Asia, eastern half of Alaska, most of Yukon; scattered across North America east to Labrador, and Newfoundland, south to California, Utah, Nevada, and central Colorado

References:

ABBREVIATED CITATION:

FULL CITATION:

Cronquist 1994

Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal, P.K. Holmgren. 1994. Intermountain Flora, volume 5, Asterales. The New York Botanical Gardens. Bronx, New York. 496 pp.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

DRABA CRASSA
THICK-LEAF WHITLOW-GRASS

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CAPPARALES
FAMILY: BRASSICACEAE GENUS: DRABA

Status:

GLOBAL RANK: G3 STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 12000 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Found in alpine tundra, typically in talus or rock stripes (Welsh and Goodrich 1987). Associated species may include *Poa artica*, *Kobresia* spp. and *Draba* spp. (BCD-EOR's).

State Distribution:

COUNTY NAME:
Chaffee
Park
Summit

RANGE: Found "sporadically in the highest mountains" (Weber 1987).
Known from Chaffee, Park, and Summit counties (BCD-EOR's).

Phenology:

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

PHENOLOGY COMMENTS:

Flowers in late June through early July, fruits in mid to late July (BCD-EOR's).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

May be somewhat protected by its high altitude habitat, but heavy recreational use may impact some populations.

Global Distribution:

Montana, Wyoming, Utah, and Colorado.

References:

ABBREVIATED CITATION:

FULL CITATION:

Weber 1987

Weber, W.A. 1987. Colorado Flora: Western Slope. Colorado Associated University Press, Boulder, Colorado. 530 pp.

Welsh and Goodrich 1987

Welsh, S.L., N.D. Atwood, L.C. Higgins and S. Goodrich. 1987. Utah Flora, Great Basin Naturalist Memoirs, No. 9. Brigham Young University, Provo, Utah.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

DRABA FLADNIZENSIS
ARCTIC DRABA

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CAPPARALES
FAMILY: BRASSICACEAE GENUS: DRABA

TAXONOMIC COMMENTS:

No known taxonomic problems.

Status:

GLOBAL RANK: G4 STATE RANK: S2S3
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 10500 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Draba fladnizensis is known to occur in wet meadows, on bare soil in dry tundra, and in rocky areas both wet and dry. Some associated species include: *Carex scopulorum*, *Draba crassifolia*, *Saxifraga sepyllifolia* and *Saxifraga flagellaris*.

State Distribution:

COUNTY NAME:

Boulder
Clear Creek
Park
Saguache
San Juan
Summit
Larimer
Rio Grande
Chaffee

RANGE:

No published state range information known to CNHP. Known from Boulder, Chaffee, Clear Creek, Park, Saguache, San Juan, Summit, Larimer, and Rio Grande Counties.

Phenology:

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

PHENOLOGY COMMENTS:

Flowers late June through August, produces fruits beginning in July and continuing through September (herbarium specimen information).

LOOKALIKES: Similar to *D. lactea* (Hulten 1968).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

One population is thriving along man-made trail cutbanks so a few individuals may be trampled (Lederer 1993).

Global Distribution:

Draba fladnizensis is known from British Columbia, south to Colorado and Utah; Eurasian (Harrington 1954).

References:

ABBREVIATED CITATION:

FULL CITATION:

Dixon 1983

Dixon, H. 1983. Plants collected during 1983 by H. Dixon deposited at Adams State College Herbarium, Alamosa, Colorado.

Harrington 1954

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

Komarkova 1972

Komarkova, V. 1972. Plants collected during 1972 by V. Komarkova deposited at the University of Colorado Herbarium, Boulder, Colorado.

Lederer 1993

Lederer, N. 1993. Field survey of August 18, 1993.

O'Kane and Neely 1985

O'Kane, S. and B. Neely. 1985. Plants collected during 1985 by O'Kane and Neely deposited at Colorado State University Herbarium, Fort Collins, Colorado.

Rollins 1951

Rollins, R.C. 1951. Plants collected during 1951 by R.C. Rollins deposited at the University of Colorado Herbarium, Boulder, Colorado.

Weber 1969

Weber, W.A. 1969. Plants collected during 1969 by W.A. Weber deposited at the University of Colorado Herbarium, Boulder, Colorado.

Willard 1960

Willard, B. 1960. Plants collected during 1960 by B. Willard deposited at the University of Colorado Herbarium, Boulder, Colorado.

Yeatts 1991

Yeatts, L. 1991. Plants collected during 1991
by L. Yeatts deposited at the University of
Colorado Herbarium, Boulder, Colorado.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

DRABA GRAYANA
GRAY'S PEAK WHITLOW-GRASS

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CAPPARALES
FAMILY: BRASSICACEAE GENUS: DRABA

Status:

GLOBAL RANK: G2 STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 11500 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Gravelly alpine slopes, 11,500 feet and above. *Draba grayana* is restricted to alpine fellfields, occasionally associated with *Eritrichum aretoides* (Yeatts 1985). Elevational range 11500 - 14000 ft.

State Distribution:

COUNTY NAME:

Clear Creek
Gilpin
Grand
Lake
Farrimer
Park
Summit
Chaffee
Saguache

RANGE: Endemic to central and northcentral Colorado (Kettler and Lederer 1993).

Phenology:

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

PHENOLOGY COMMENTS:

Flowers mid-late July through August. Produces fruits from August through September (BCD-EOR's).

LOOKALIKES: *Draba grayana* is distinguished from other yellow flowered alpine *Drabas* having fewer than 4 stem leaves and growing in dry rocky sites as follows: *D. grayana* has clawed petals exceeding the sepals, and dense, tangled, simple pubescence on stems; *D. streptobrachia* has stellate or cruciform pubescence; and *D. exunguiculata* has glabrous stems and clawless petals equalling the sepals; *D. crassifolia* has a much shorter style (less than .15 mm); *D. crassa* has semi-succulent basal leaves that are glabrous on the surface (although ciliate-margined) (Kettler et al. 1993).

SREPROCOM: This species is a perennial (Harrington 1954).

Management:

MANAGEMENT COMMENTS:

Impacts from off-trail hikers are most important threats. Most alpine areas are not heavily impacted in this way (Kettler, et. al. 1993).

Global Distribution:

Draba grayana is endemic to Colorado (Price 1980).

References:

ABBREVIATED CITATION:

FULL CITATION:

Harrington 1954

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

Kettler and Lederer 1993

Kettler, S. M. and N.D. Lederer, D. Bacher, S. Spackman. 1993. Pike and San Isabel National Forests and Comanche and Cimarron National Grasslands Plants of Special Concern. Colorado Natural Heritage Program.

Price 1980

Price, Robert. 1980. Personal communication with Robert Price 15 Oct. 1980.

Weber and C 1992

Weber, William A. and Ronald C. Wittmann. 1992. Catalog of The Colorado Flora: A Biodiversity Baseline. University Press of Colorado. 215 pp.

Yeatts 1985

Yeatts, L. 1985. Plant specimens collected during 1985 by L. Yeatts deposited at the Kathryn Kalmbach Herbarium at the Denver Botanic Gardens.

Plant Characterization Abstract for Colorado

DRABA VENTOSA
TUNDRA DRABA

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: CAPPARALES
FAMILY: BRASSICACEAE GENUS: DRABA

Status:

GLOBAL RANK: G3 STATE RANK: S1
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 11000 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Alpine tundra and talus (Welsh and Goodrich 1987).

State Distribution:

COUNTY NAME:

Gunnison
Pitkin
Lake

RANGE:

In Colorado this species is found in Gunnison, Lake, and Pitkin Counties (Price 1980).

Phenology:

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

PHENOLOGY COMMENTS:

Flowers from late July through August and sets fruit in mid August.

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

Protect from hiker impacts.

Global Distribution:

Wyoming, Utah, and Colorado.

References:

ABBREVIATED CITATION:

FULL CITATION:

Hitchcock 1941

Hitchcock, C.L. 1941. A revision of the Drabas of Western North America. University of Washington Publications 11:1-132.

Welsh and Goodrich 1987

Welsh, S.L., N.D. Atwood, L.C. Higgins and S. Goodrich. 1987. Utah Flora, Great Basin Naturalist Memoirs, No. 9. Brigham Young University, Provo, Utah.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

ERIGERON LANATUS
WOOLLY FLEABANE

Taxonomy:

TAXCLASS: DICOTYLEDONEAE
FAMILY: ASTERACEAE

ORDER: ASTERALES
GENUS: ERIGERON

Status:

GLOBAL RANK: G4 STATE RANK: S1
FED. STATUS: AGENCY STATUS: FS

Habitat:

MINIMUM ELEV: 12500 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Alpine scree slopes (Weber 1987). Steep alpine scree slopes, forming mats 12-24 inches across (Herbarium labels, University of Colorado Herbarium).

State Distribution:

COUNTY NAME:

Pitkin
Gunnison
Chaffee

RANGE:

Known from the Pitkin/Gunnison county line (pers. comm. Jennings 1995), in the Elk Mountains; and in Chaffee County in the Sawatch Range.

Phenology:

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

Flower

Flower

Flower

PHENOLOGY COMMENTS:

Flowers in late July through August (CNHP database; pers. comm. Jennings 1995).

LOOKALIKES:

Distinguished by its apetiolate leaves, which narrow to the base with at least some of them 3-toothed at the apex (Weber 1987).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

One specimen was found along a disturbed roadside. The effects of disturbance from road use and possible hiker use is unknown.

Global Distribution:

British Colombia, NW Montana, Colorado

References:

ABBREVIATED CITATION:

FULL CITATION:

Weber 1987

Weber, W.A. 1987. Colorado Flora: Western Slope. Colorado Associated University Press, Boulder, Colorado. 530 pp.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

ERIGERON PINNATISECTUS
PINNATE FLEABANE

Taxonomy:

TAXCLASS: DICOTYLEDONEAE ORDER: ASTERALES
FAMILY: ASTERACEAE GENUS: ERIGERON

Status:

GLOBAL RANK: G3 STATE RANK: S3
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 9000 feet
MAXIMUM ELEV: 13000 feet

Habitat Comments:

Erigeron pinnatisectus occurs on alpine slopes and meadows with gravelly soils. Often associated with Penstemon hallii, Senecio crocatus, and Dryas octopetala. Elevational range 9000 ft. - 14000 ft.

State Distribution:

COUNTY NAME:

Conejos
Chaffee
Park
Summit
Gunnison
Clear Creek
San Juan
Boulder
Mesa

RANGE: In Colorado, found in Conejos, Chaffee, Gunnison, Clear Creek, San Juan, and Boulder Counties.

Phenology:

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

Phenology Comments:

Flowers late June through early August, fruit in late July through August.

LOOKALIKES: Looks like *Erigeron compositus* which has leaves that are hirsute and three lobed or repeatedly ternately lobed. Ray flowers are white, pink, rose-blue or violet (pers. comm. Spackman 94-11-09). This species is related to *E. mancus* of the La Sal Mountains in Utah. This species is smaller and more compact than *E. pinnatisectus* and differs sharply in the complete absence of pistillate flowers (Cronquist and Holmgren 1977).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

No threats are currently known to CNHP.

Global Distribution:

Erigeron pinnatisectus is found from Wyoming to New Mexico (Harrington 1954).

References:

ABBREVIATED CITATION:

FULL CITATION:

Cronquist and Holmgren
1977

Cronquist, A., A.H. Holmgren, N.H. Holmgren,
J.L. Reveal and P.K. Holmgren. 1977.
Intermountain Flora vol. 6. Columbia University
Press, New York. 584 pp.

Douglas 1988

Douglas, P. 1988. Plants collected during 1988
by P. Douglas deposited at Colorado State
University Herbarium, Fort Collins, Colorado.

Flock 1972

Flock, J. 1972. Plants collected in 1972 by J.
Flock deposited at Brigham Young University
Herbarium, Provo, Utah.

Harrington 1954

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

Heil 1986

Heil, K. 1986. Plants collected in 1986 by K.
Heil deposited at Brigham Young University
Herbarium, Provo, Utah.

Higgins 1969

Higgins, L. 1969. Plants collected during 1969
by L. Higgins deposited at Brigham Young
University Herbarium, Provo, Utah.

Maguire and Pirenian 1935

Maguire, B. and G. Pirenian. 1935. Plants
collected during 1935 by B. Maguire and G.
Pirenian deposited at Intermountain Herbarium,
Logan, Utah.

Neely 1985

Neely, B. 1985. Plants collected during 1985 by
B. Neely deposited at Intermountain Herbarium,
Logan, Utah.

Neely and Carpenter 1984 Neely, B. and A. Carpenter. 1984. Plants collected during 1984 by B. Neely and A. Carpenter deposited at Utah State University Herbarium, Logan, Utah.

Thorne 1992 Thorne, K. 1992. Plants collected in 1992 by K. Thorne deposited at Brigham Young University Herbarium, Provo, Utah.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

PAPAVER LAPPONICUM SSP OCCIDENTALE
ALPINE POPPY

Taxonomy:

TAXCLASS: DICOTYLEDONEAE
FAMILY: PAPAVERACEAE

ORDER: PAPAVERALES
GENUS: PAPAVER

TAXONOMIC COMMENTS:

Belongs to a complex of problematical phases in need of monographic study on a worldwide basis (Welsh, et. al. 1987).

Status:

GLOBAL RANK: G3Q STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 11500 feet
MAXIMUM ELEV: 14000 feet

HABITAT COMMENTS:

Alpine tundra and screes, rockstripes in alpine tundra communities growing in small clumps (Welsh and Goodrich 1987). Dry alpine tundra meadows, gravelly slopes, talus, and fell-fields.

State Distribution:

COUNTY NAME:

Ark
Clear Creek
Lake
El Paso
Grand
Pitkin
Summit
Boulder
Gilpin
Gunnison
Chaffee

RANGE:

Found in Grand, Gilpin, Gunnison, Boulder, Chaffee, Clear Creek, Park Summit, Lake, and El Paso Counties. A peripheral species infrequent in Colorado (Weber 1990).

Phenology:

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

PHENOLOGY COMMENTS:

Flowers from late June through mid-August in Colorado (BCD-EOR's) depending on snowmelt.

LOOKALIKES: *P. croceum*, an introduced plant persisting around old alpine mining townsites, has large bright orange petals as opposed to the small pale yellow or white flowers this species.

SREPROCOM: A perennial species (Harrington 1954).

Management:

MANAGEMENT COMMENTS:

Some populations possibly threatened by mountain goats, others by road development. Mining claims threaten at least one population, and intensive hiker use may threaten several populations (BCD-EOR's).

Global Distribution:

Alaska to Greenland, south to New Mexico.

References:

ABBREVIATED CITATION:

FULL CITATION:

Harrington 1954

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

Weber 1990

Weber, William. 1990. Colorado Flora: Eastern Slope. University of Colorado, Niwot, CO, 396 pp.

Welsh 1974

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

Welsh and Goodrich 1987

Welsh, S.L., N.D. Atwood, L.C. Higgins and S. Goodrich. 1987. Utah Flora, Great Basin Naturalist Memoirs, No. 9. Brigham Young University, Provo, Utah.

DATA PROVIDED BY THE COLORADO NATURAL HERITAGE PROGRAM; CURRENT TO MARCH 1995

Plant Characterization Abstract for Colorado

RANUNCULUS KARELINII
TUNDRA BUTTERCUP

TAXONOMY:

TAXCLASS: DICOTYLEDONEAE ORDER: RANUNCULALES
FAMILY: RANUNCULACEAE GENUS: RANUNCULUS

TAXONOMIC COMMENTS:

=R. gelidus

Status:

GLOBAL RANK: G4 STATE RANK: S2
FED. STATUS: AGENCY STATUS:

Habitat:

MINIMUM ELEV: 12000 feet
MAXIMUM ELEV: 14100 feet

HABITAT COMMENTS:

Ranunculus karelinii occurs in wet places, scree slopes (Hulten 1968), stream banks and hillsides; in tundra or heathlands (Welsh 1974).

State Distribution:

COUNTY NAME:

Park
Clear Creek
Chaffee
Gunnison
Hinsdale
Lake
Summit
Boulder

RANGE: Park, Clear Creek, Chaffee, Gunnison, Hinesdale, Lake, Summit, and Boulder Counties.

Phenology:

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

PHENOLOGY COMMENTS:

Flowers in July, fruit in August.

LOOKALIKES: Ranunculus pygmaeus has significantly smaller flowers and fruit. Petals are 1.5-3.5 mm long and 1-2.8 mm wide; achenes are 1 mm long with 30-50 in an ovoid head 2-4 mm long. R.

pygmaeus petals are the same length as sepals. Could also be confused with *R. pedatifidus* (pers. comm. Spackman 94-11-09) which has stem leaves with linear divisions. *R. pygmaeus* is smaller (less than 5 cm tall), with 3-lobed leaves and petals only equaling the sepals, while the larger *R. karelinii* has leaves more dissected and petals greatly exceeding the sepals (Kettler et al. 1993).

SREPROCOM:

Management:

MANAGEMENT COMMENTS:

Some populations are subject to natural scree erosion. Other populations occur in areas with heavy hiker use. Areas where this species occurs with known heavy hiker use should consider measures to minimize impacts on populations.

Global Distribution:

Disjunct from Arctic and Alaska. Found in Eastern Siberia, Alaska, south to Montana and Colorado.

References:

ABBREVIATED CITATION:

FULL CITATION:

Goodrich and Neese 1986

Goodrich, S. and E. Neese. 1986. Uinta Basin Flora. USDA Forest Service-Intermountain Region, Ogden, Utah.

Hulten 1968

Hulten, E. 1968. Flora of Alaska and Neighboring Territories: a Manual of the Vascular Plants. Stanford University Press, Stanford, CA. 1008 pp.

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Kar. And kar. 1842 Bull. Soc. Nat. Mosc. Bot. 15:133.

Welsh 1974

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

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