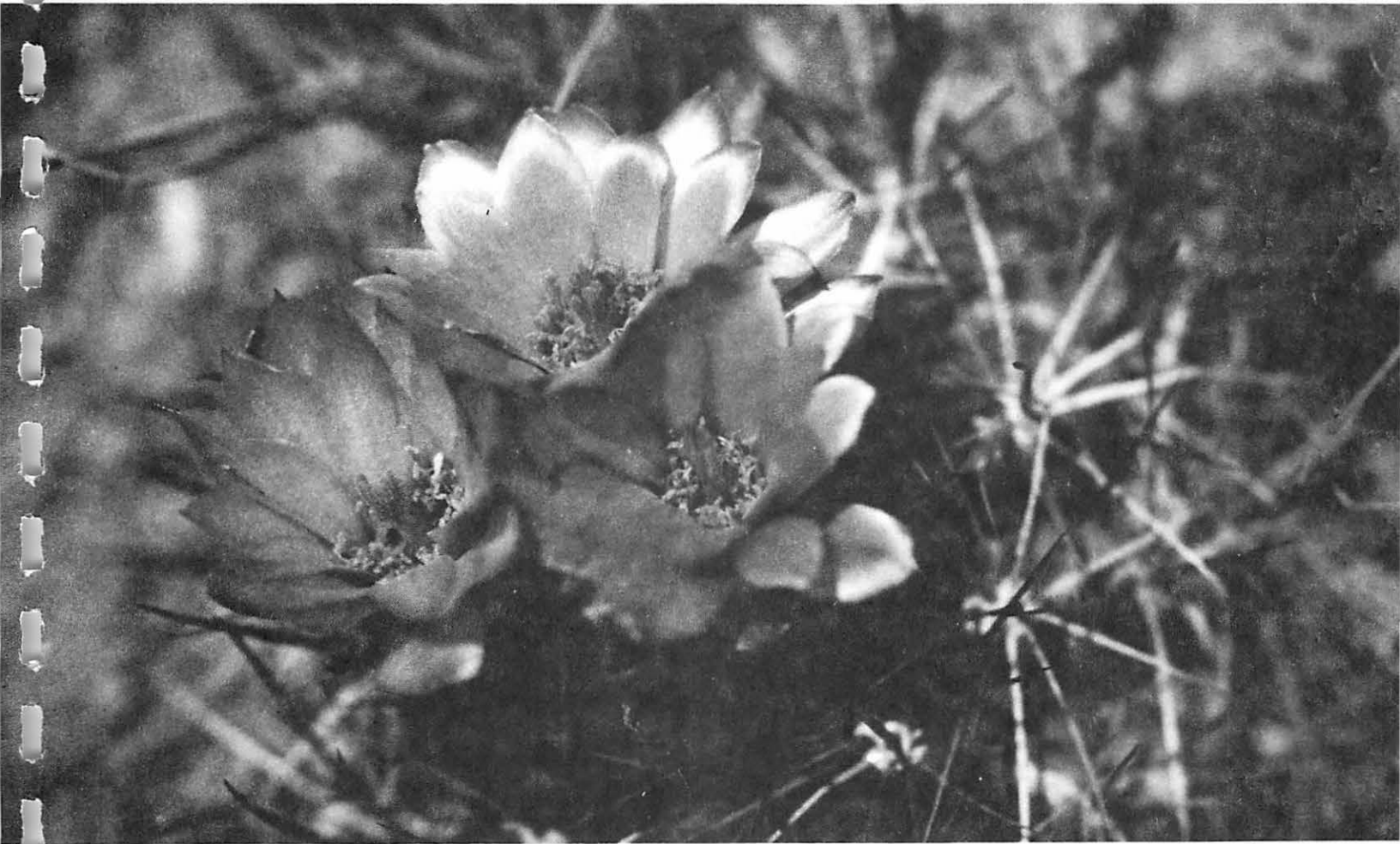


An  
Illustrated Guide to  
the Proposed Threatened  
and Endangered  
Plant Species in Colorado



U.S. DEPARTMENT OF THE INTERIOR  
FISH & WILDLIFE SERVICE  
P.O. BOX 25486, DENVER, COLORADO 80225



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## X. GLOSSARY

Achene. Dry indehiscent one-seeded fruit, the seed connected to the pericarp at only one point.

Aereole. Raised area on a cactus.

Annual. Completing the life cycle in one season.

Anthesis. Period when the flower is open.

Appressed. Lying flat or close against something.

Auriculate. With an ear-shaped lobe or appendage.

Banner. The upper, usually larger petal in a papilionaceous or "sweet pea type" flower.

Bifid. Two cleft or 2-lobed, usually at the apex.

Bract. A more or less modified leaf situated near a flower or inflorescence.

Biserial. In two rows or series, one above the other.

Calyx. The outer series of the perianth, used especially when it differs in size, shape, or color from the inner (or petals).

Campanulate. Bell-shaped, rather cup-shaped with a flaring rim.

Carinate. Keeled with one or more longitudinal ridges.

Caudex. The persistent, often woody base of an otherwise annual herbaceous stem.

Cauline. Of or pertaining to the stem.

Ciliate. Beset with a marginal fringe of hairs.

Cinereus. Color of ashes, gray tinged with black.

Connate. The union of like structures.

Cordate. Of a conventional heart shape; the point apical.

Culm. The specialized stem of grasses, sedges, and rushes.

Cuneate. Wedge-shaped; rather narrowly triangular, the acute angle downward.

Cymose. A flower cluster, often convex or flat-topped in which the central or terminal flower blooms earliest.

Deflexed. Bent or turned abruptly downward.

Deltoid. Shaped like the Greek letter Delta, attached at the center of one side.

Dentate. Toothed with the teeth directed outward.

Divaricate. Widely spreading or diverging.

Entire. Margins without teeth or lobes.

Filament. The part of the stamen that supports the anther.

Follicle. A dry fruit with one carpel and splitting down one side only.

Glabrous. No hairs present at all; also used for smooth.

Glochid. A barbed hair or bristle.

Glume. A chaff-like bract; used particularly for the 2 lower empty bracts of a grass spikelet.

Gynophore. The stalk or stipe of a pistil when not sessile.

Hispid. With stiff and rigid bristles or bristle-like hairs.

Inflorescence. The flowering part of the plant, almost always used for a flower cluster.

Involucre. A whorl of distinct or united leaves or bracts subtending a flower or an inflorescence.

Keel. The name of the 2 anterior united petals of a papilionaceous "sweet pea" flower; a dorsal projecting usually central rib, like the keel of a boat.

Lemma. The scale or bract of a grass spikelet above the glumes, sometimes termed "flowering glume".

Ligulate. Strap-shaped.

Linear. Narrow and flat with sides parallel, like a grass leaf blade.

Monoecious. Flowers unisexual, but the staminate and pistillate ones borne on the same plant.

Node. The place on a stem where leaves or branches normally originate.

Nutlet. A small nut or nut-like fruit; used especially for the separating lobes of the mature ovary in Boraginaceae.

Oblanceolate. Inversely lanceolate (lance-shaped) attached at the tapered end.

Obovate. Inversely ovate, attached at the narrow end.

- Ovate. Egg-shaped in outline, attached at the wide end.
- Panicle. A compound inflorescence with the younger flowers at the apex or center.
- Pappus. The modified calyx limb in Compositae, forming a crown of various character at the summit of the achene.
- Pedicel. The stalk to a single flower of an inflorescence; also used as a stalk to a grass spikelet.
- Peduncle. The stalk to a solitary flower or to an inflorescence.
- Perennial. A plant lasting 3 or more years; a stem not dying back over winter.
- Perigynium. The more or less flask-shaped bract of carex enclosing the achene.
- Pinnate. Compound leaf with the leaflets on 2 opposite sides of an elongated axis.
- Pistillate. Provided with pistils, used when stamens are lacking.
- Pubescent. Loosely used for covered with hairs; technically with short soft hairs.
- Pustulate. Beset with pimple-like elevated areas.
- Raceme. An inflorescence with pedicelled flowers borne along a more or less elongated axis with the younger flowers nearest the apex.
- Radicle. The primary rootlet of an embryo.
- Receptacle. The more or less expanded portion of the flower stalk that bears the organs of a flower or the collected flowers in a head as in compositae.
- Retrorse. Directed backward or downward.
- Revolvute. Rolled backward from each margin upon the lower side.
- Rosette. A dense basal cluster of leaves arranged in circular fashion like the leaves of the common dandelion.
- Scale. Any thin scariosus body resembling the scale of a fish or reptile.
- Scorpioid. Coiled at the apex like the tail of a scorpion.
- Sepal. One of the parts of the outer whorl of the floral envelope or calyx, usually green in color.
- Septum. Any kind of partition.

Sessile. Without a stalk of any kind.

Sigmoid. Doubly-curved like the letter S.

Silique. A fruit of the mustard family (Brassicaceae); dry, dehiscent and 2-celled, the septum (replum) thin with the 2 halves of the fruit peeling away from it. Often used to designate a mustard fruit that is larger than a silicle.

Sinuate. Strongly wavy-margined, deeper than undulate or repand.

Spatulate. Broad and rounded at the apex and tapering at base, like a druggist's spatula; flattened spoon shaped.

Staminate. Bearing stamens only.

Stellate. Star-like or star-shaped with slender segments or hairs radiating out from a common center.

Stipule. An appendage at the base of the petiole or leaf at each side of its (leaf) insertion; often more or less united.

Stramineous. Straw-colored.

Strigose. With appressed, stiff, rather short hairs.

Stylopodium. A disk-like expansion of the base of the style as in Apiaceae.

Suture. A junction or seam of a union; a line of dehiscence.

Ternate. Arranged in threes.

Tomentose. With a dense wool-like covering of matted, intertangled hairs of medium length.

Trichome. A hair-like outgrowth of the epidermis.

Trigonus. Three-angled.

Truncate. Squared at the tip or base as if cut off with a straight blade.

Tubercle. A small rounded structure, often pimple like.

Utricle. A small thin-walled one-seeded fruit; any bladder-like body.

Viscid. Glutinous, sticky, or gummy to the touch.

Valve. One of the parts or segments into which a dehiscent fruit splits.

Wing. One of the lateral petals in a papilionaceous corolla

XI. DISTRIBUTION OF SPECIES BY COUNTY

Adams  
none

Alamosa  
Rorippa coloradensis (T)

Arapahoe  
none

Archuleta  
Lesquerella pruinosa (E)  
Pediocactus knowltonii (E)

Baca  
none

Bent  
none

Boulder  
Draba exunguiculata (T)  
Mertensia viridis  
    var. cana (T)  
Phippsia algida (T)

Chaffee  
Eriogonum brandegei (T)

Cheyenne  
none

Clear Creek  
Draba exunguiculata (T)  
Mertensia viridis  
    var. cana (T)  
Phippsia algida (T)

Conejos  
none

Costilla  
none

Crowley  
none

Custer  
none

Delta  
Eriogonum pelinophilum (E)  
Sclerocactus glaucus (E)

Denver  
none

Dolores  
none

Douglas  
Gaura neomexicana  
    ssp. coloradensis (E)

Eagle  
none

Elbert  
none

El Paso  
Draba exunguiculata (T)

Fremont  
Aquilegia chrysantha  
    var. rydbergii (T)  
Haplopappus fremontii  
    var. monocephalus (E)

Garfield  
Arabis oxylobula (E)  
Astragalus wetherillii (T)  
Festuca dasyclada (E)  
Sullivantia purpusii (T)

Gilpin  
Draba exunguiculata (T)

Grand  
Astragalus osterhoutii (E)

Gunnison

Arabis gunnisoniana (E)  
Astragalus microcymbus (E)  
Mertensia viridis  
    var. cana (T)  
Senecio porteri (E)  
Stellaria irrigua (E)  
Sullivantia purpusii (T)

Hinsdale

Cryptantha weberi (E)  
Mertensia viridis  
    var. cana (T)  
Stellaria irrigua (E)

Huerfano

Neoparrya lithophila (E)  
Haplopappus fremontii  
    var. monocephalus (E)

Jackson

Mertensia viridis  
    var. cana (T)  
Phacelia formosula (E)

Jefferson

none

Kiowa

none

Kit Carson

none

Lake

Mertensia viridis  
    var. cana (T)

La Plata

Stellaria irrigua (E)

Larimer

Gaura neomexicana  
    var. coloradensis (E)  
Mertensia viridis  
    var. cana (T)

Las Animas

Haplopappus fremontii  
    var. monocephalus (E)

Lincoln

Haplopappus fremontii  
    var. monocephalus (E)

Logan

none

Mesa

Astragalus linifolius (E)  
Astragalus wetherillii (T)  
Cryptantha aperta (E)  
Cryptantha elata (T)  
Echinocereus triglochidiatus  
    var. inermis (E)  
Phacelia submutica (E)  
Sclerocactus glaucus (E)

Mineral

Stellaria irrigua (E)

Moffat

Cryptantha stricta (T)  
Eriogonum saurinum (T)  
Eriogonum viridulum (T)  
Parthenium ligulatum (E)  
Oxytropis obnapiformis (E)

Montezuma

Aquilegia micrantha  
    var. mancosana (E)  
Astragalus deterior (E)  
Astragalus humillimus (E)  
Astragalus naturitensis (E)  
Astragalus schmollae (E)  
Atriplex pleiantha (E)  
Sclerocactus mesae-verdae (E)

Montrose

Arabis gunnisoniana (E)  
Astragalus naturitensis (E)  
Echinocereus triglochidiatus  
    var. inermis (E)  
Penstemon retrorsus (E)  
Sclerocactus mesae-verdae (E)  
Sullivantia purpusii (T)



Morgan

none

Otero

Haplopappus fremontii  
var. monocephalus (E)

Ouray

Carex microptera  
var. crassinervia (T)

Park

Braya humilis  
var. ventosa (E)  
Draba exunguiculata (T)  
Eriogonum brandegei (T)  
Eutrema penlandii (E)  
Mertensia viridis  
var. cana (T)  
Phippsia algida (T)

Phillips

none

Pitkin

Mertensia viridis  
var. cana (T)  
Senecio porteri (E)

Prowers

none

Pueblo

Haplopappus fremontii  
var. monocephalus (E)

Rio Blanco

Astragalus detritalis (E)  
Eriogonum ephedroides (E)  
Parthenium ligulatum (E)

Rio Grande

none

Routt

Draba exunguiculata (T)

Saguache

Cryptantha weberi (E)

San Juan

Stellaria irrigua (E)

San Miguel

Stellaria irrigua (E)

Sedgewick

none

Summit

Draba exunguiculata (T)  
Eutrema penlandii (E)  
Mertensia viridis  
var. cana (T)  
Phippsia algida (T)

Teller

none

Washington

none

Weld

Gaura neomexicana  
ssp. coloradensis (E)

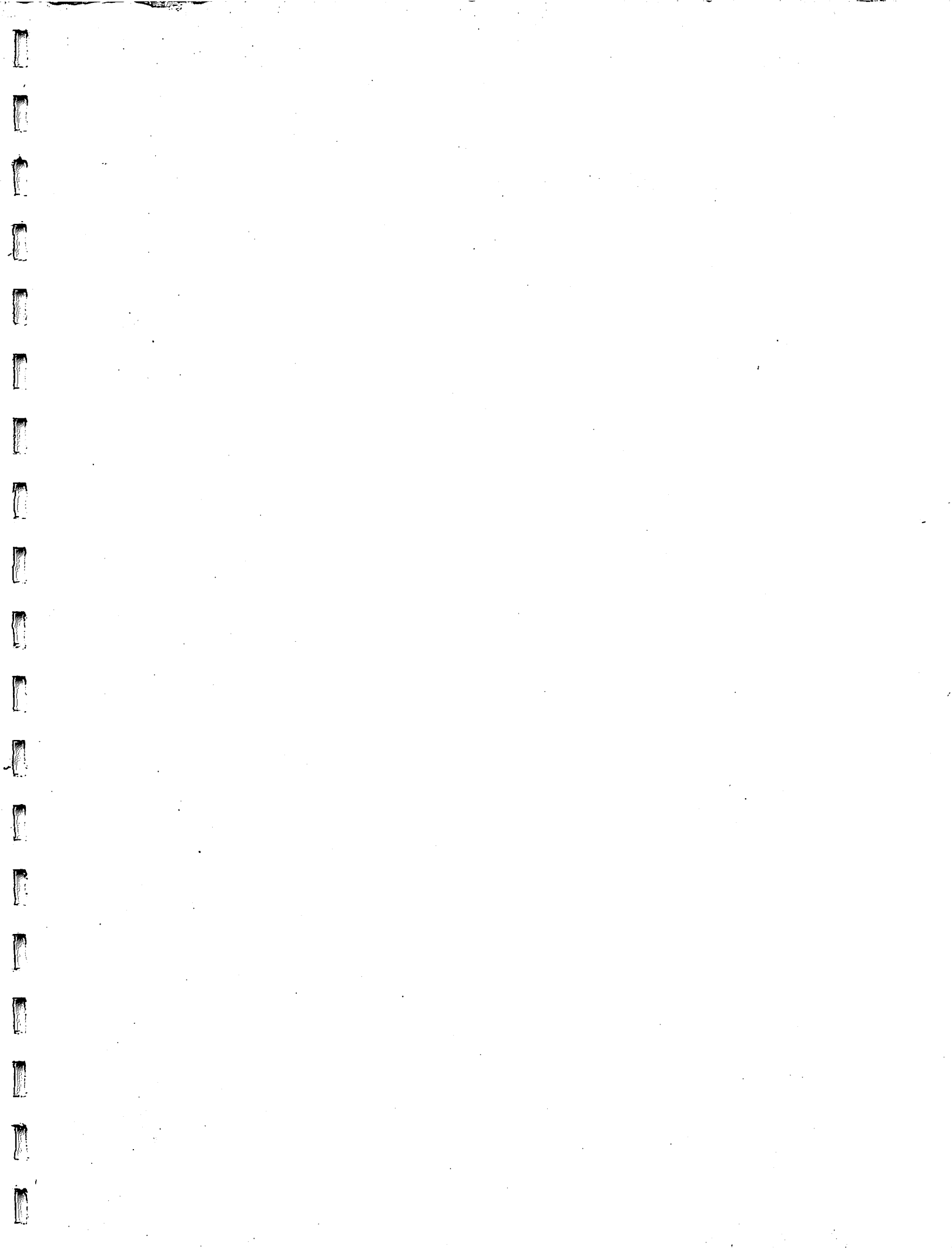
Yuma

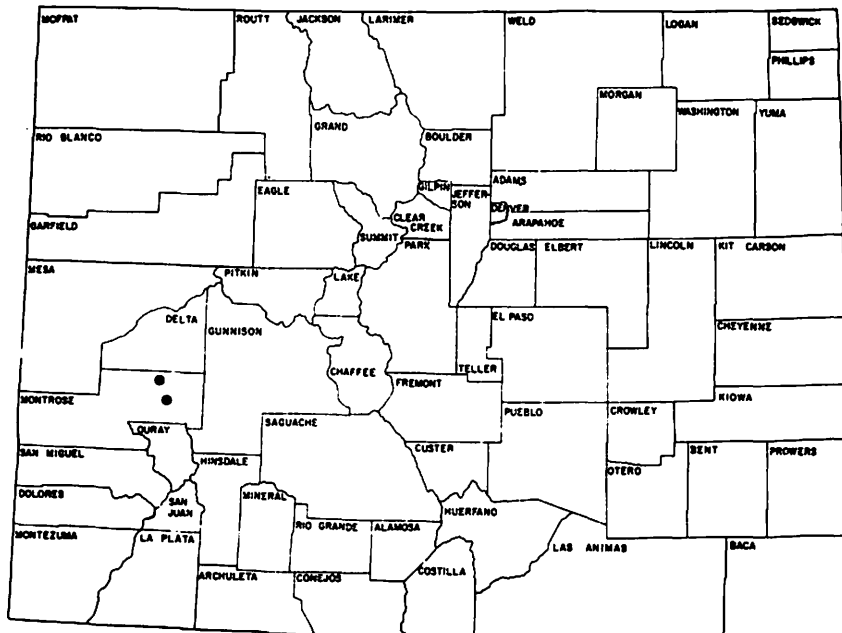
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STATUS CODE

(T) Reviewed as Threatened in Federal Register, July 1, 1975.

(E) Proposed as Endangered in Federal Register, June 16, 1976.





SCROPHULARIACEAE

SCIENTIFIC NAME: Penstemon retrorsus Payson ex Pennell

ORIGINAL DESCRIPTION: Payson, Contr. U.S. Nat. Herb. 20:373. 1920.

COMMON NAME(S): Beardtongue

KNOWN DISTRIBUTION: Montrose County, vicinity Montrose. Representative locality: T 79N, R9W.

HABITAT: Found on Mancos shale in the saltbush vegetation type, with Gutierrezia, Juniperus, and Artemisia at higher elevations. Critical habitat is in gullies on north slopes, drainage areas at the base of north slopes, and where winter snowbanks persist. 5700-6000 feet.

DESCRIPTION: Perennial, with a mat-like appearance. Bases crowded with entire, oblanceolate or spatulate leaves, 2-3 mm wide, 8-15 mm long. Upper leaves variable either smaller or larger than basal leaves. Leaves, stems, and calyx ash colored due to dense hairs which point backward (toward the base of the leaves or stems) hence the name "retrorsus." Inflorescence distinct from the lower part of the plant. Flowers bluish-purple, 15-20 mm long, and contain glabrous anthers with a slender, bearded sterile stamen (staminode). Flowers from May until early June (Harrington 1964).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Recreational use of Mancos shale hills by off road vehicles and vegetation modifications (interseeding and contour furrowing) to improve range for use by livestock threaten known populations.

LAND OWNERSHIP/MANAGEMENT: BLM and private.

REMARKS: Sheep favor other species, such as Atriplex, and do not eat P. retrorsus. There is evidence that when sheep graze Mancos shale areas it reduces the competition by Atriplex and will increase the abundance of P. retrorsus.



SAXIFRAGACEAE

SCIENTIFIC NAME: Sullivantia purpusii (Brand.) Rosendahl

ORIGINAL DESCRIPTION: As Boykinia purpusii Brandege, Bot. Gaz. 27:447. 1899; Rosendahl., Univ. Minn. Stud. Bio. Sci., No. 6:407. 1929.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Gunnison (near Emerald Lake), Garfield (Glenwood Canyon), and Montrose Counties. Representative locality: T 45N, R 92W.

HABITAT: Wet rocks; limestone deposits at the foot of seeps from steep canyon cliffs. 7000-10,000 feet.

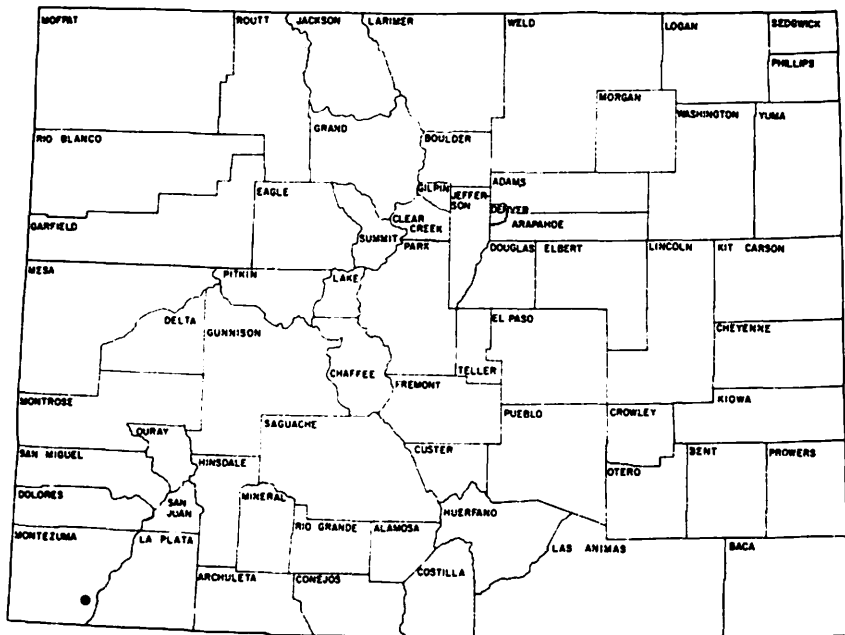
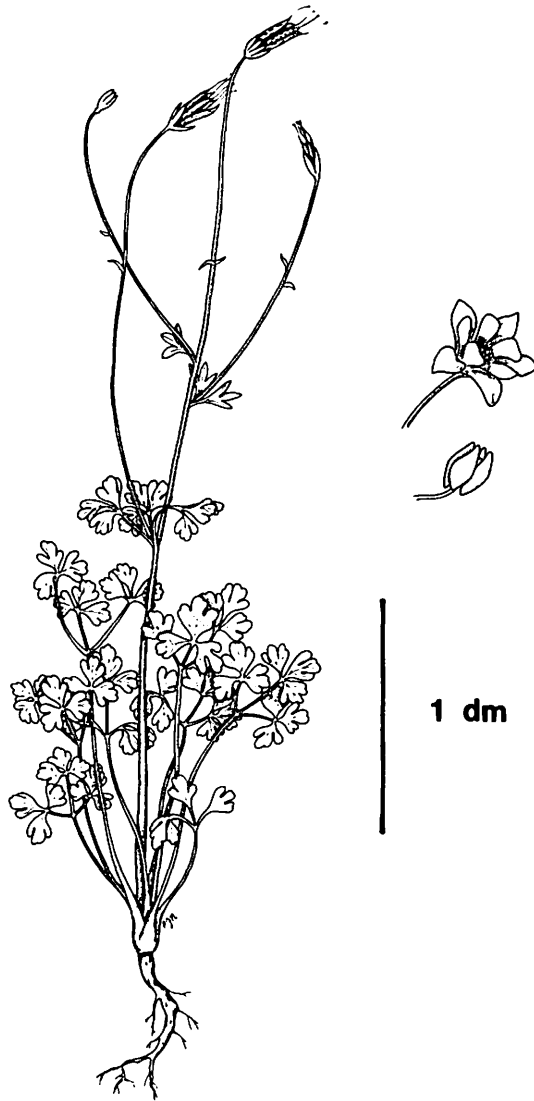
DESCRIPTION: Herbaceous perennial, 20-30 cm tall, with naked flowering stems and basal leaves. Leaves irregular; with 9-12 lobes and dentate edges; 2-3 cm long. Flowers white, arranged in paniced cymes; contain a 2-celled, half-inferior ovary and 5 stamens. Flowers in June (Harrington 1964).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM, private, U.S. Forest Service

REMARKS: Occurs in widely scattered populations, but common where found. Well protected by its inaccessible habitat.



RANUNCULACEAE

SCIENTIFIC NAME: Aquilegia micrantha var. mancosana Eastwood

ORIGINAL DESCRIPTION: Eastwood, Proc. Cal. Acad. Sci., Ser. 2, Vol. IV, p. 261.

COMMON NAME(S): Spurless small-flowered columbine

KNOWN DISTRIBUTION: Southwestern Colorado; near the Mancos River, Montezuma County.

HABITAT: Along creeks and springs; shady spots.

DESCRIPTION: The variety mancosana is like the type species, A. micrantha, except the flowers lack spurs or have only small sac-shaped appendages. Stems are 30-60 cm tall, pubescent above, glabrous below, with biternate or triternate leaves. The under surfaces of leaves are pubescent, but sometimes only sparsely pubescent. The flowers are white, yellowish, pale blue or reddish and 3-4.5 cm long. Flowers: May, June, July (Harrington 1964).

TAXONOMIC PROBLEMS: Probably only a genetic deviant.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: Could be threatened by commercial exploitation because of its spurless characteristic; not seen since August 1892.





RANUNCULACEAE

SCIENTIFIC NAME: Aquilegia chrysantha var. rydbergii Munz

ORIGINAL DESCRIPTION: Munz, Gent. Herb. 7:138. 1946.

COMMON NAME(S): Columbine

KNOWN DISTRIBUTION: Southern Colorado, on moist shaded rocks; associated with A. chrysantha var. chrysantha.

HABITAT: Damp places, springs

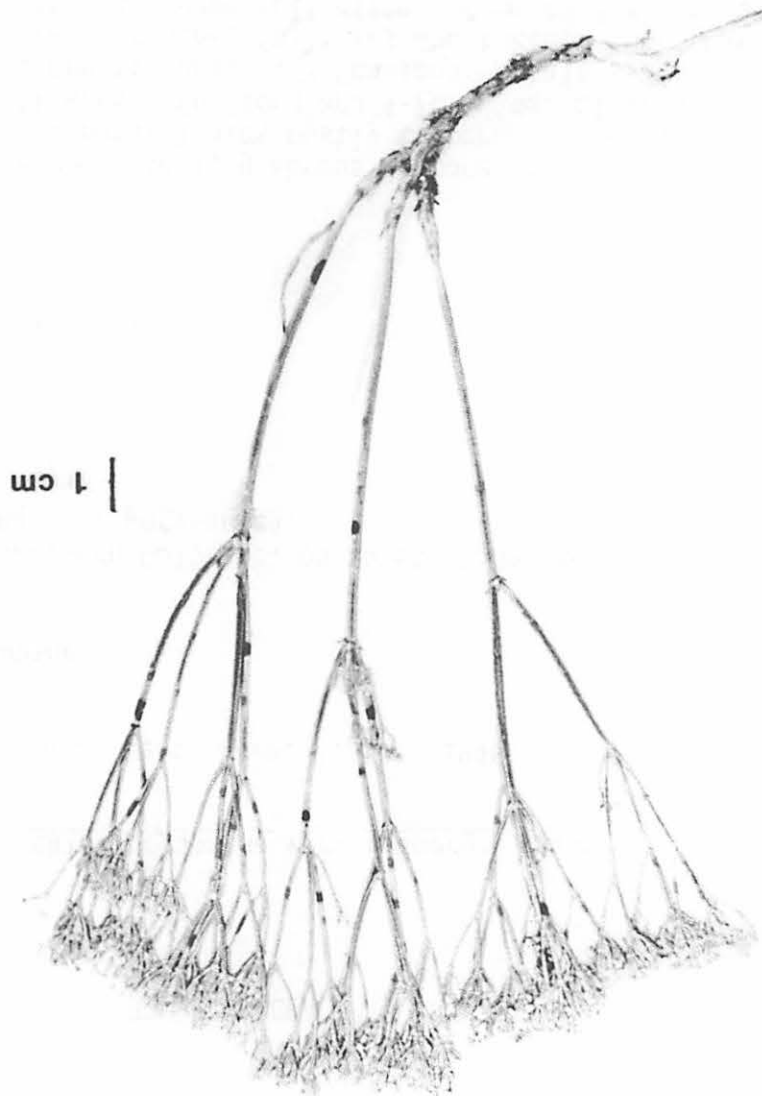
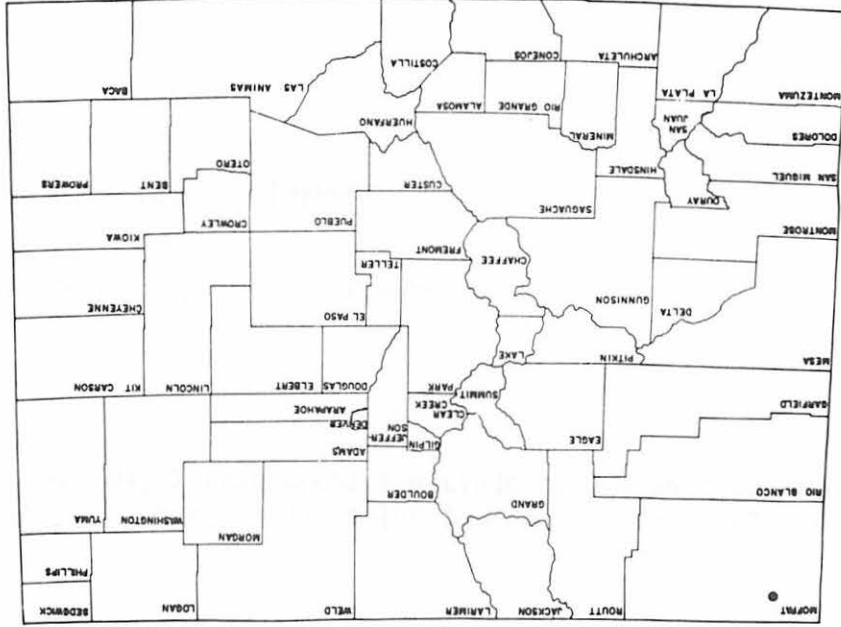
DESCRIPTION: Stems 30-100cm. tall, glabrous or more or less pubescent above, often viscid; basal leaves mostly triternate; leaflets often pubescent below; flowers 5-9cm long and 4-7cm wide, clear golden yellow throughout, erect; sepals 2-3.5cm long; petals 8-20mm long; spurs 4-7cm long, very slender; follicles about 2.5cm long (Harrington 1954). A. chrysantha var. rydbergii differs from typical chrysantha by the smaller size of its flowers.

TAXONOMIC PROBLEMS: Possibly not a legitimate variety. The variety rydbergii occurs 'occasionally throughout the range of the species' (Munz 1946).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: None



*Eriogonum viridulum*

POLYGONACEAE

SCIENTIFIC NAME: Eriogonum viridulum Reveal

ORIGINAL DESCRIPTION: Reveal, Utah Acad. Proc. 42(2):287. 1965.

COMMON NAME(S): Wild buckwheat

KNOWN DISTRIBUTION: Moffat County (vicinity Green River); also in Uintah, Duchesne Counties, Utah. Representative locality: T 9N, R 101W.

HABITAT: Clayey banks along rivers and streams; associated with Atriplex and Artemisia; 5000 feet.

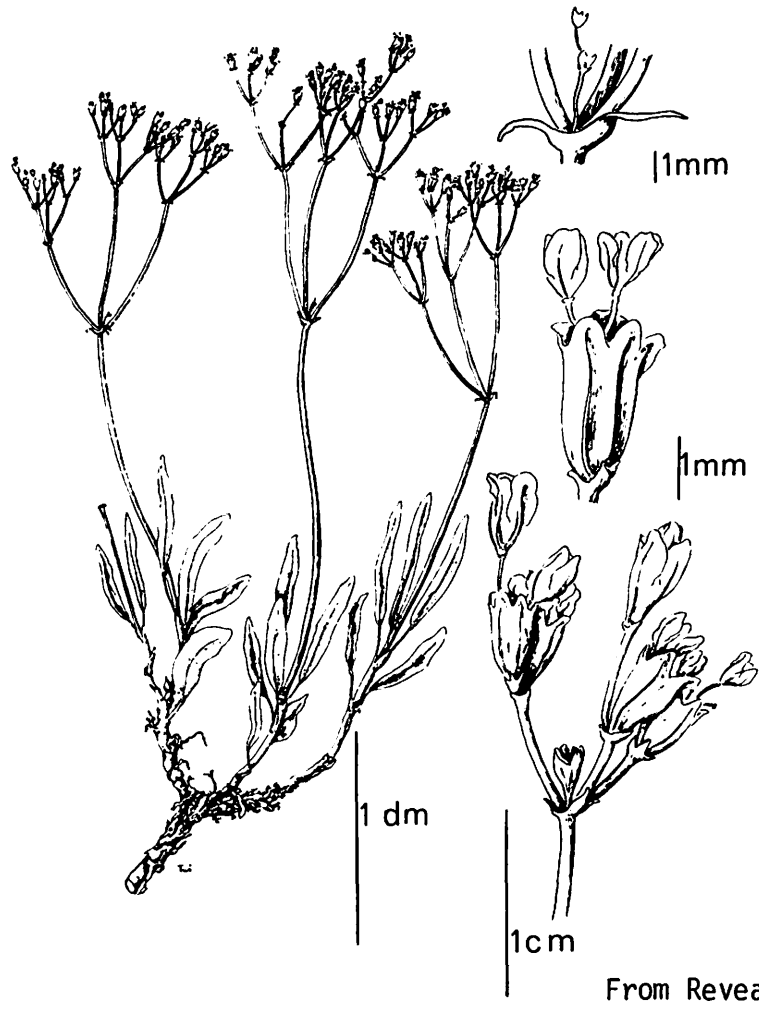
DESCRIPTION: Perennial; from a branched, woody caudex; stems slender; 10-30 cm tall; bright green; glabrous. Leaves linear, 1-2 mm wide, 1-4 cm long; white tomentose below, green above; rolled backward from edges toward lower side (revolute); with short petioles; mostly along the lower 4 cm of the plant. Inflorescence on stems 8-12 cm tall, with 3 branches at the first node and 2 or 3 branched above; branches erect; cymose. Flowers bright yellow with a brownish base at maturity; segments subequal; 1.5-2 mm long; involucre bracts glabrous on inside and outside. Achene brown; 1.5 mm long; with an oval base tapering to a short 3-angled beak. Flowers July, August, September (Reveal 1965).

TAXONOMIC PROBLEMS: Formerly named E. brevicaule Nutt. var. brevicaule; closely related to E. contortum Small, and E. brevicaule var. leptothecum (S. Stokes) Reveal.

EXISTING OR POTENTIAL THREATS: Unknown

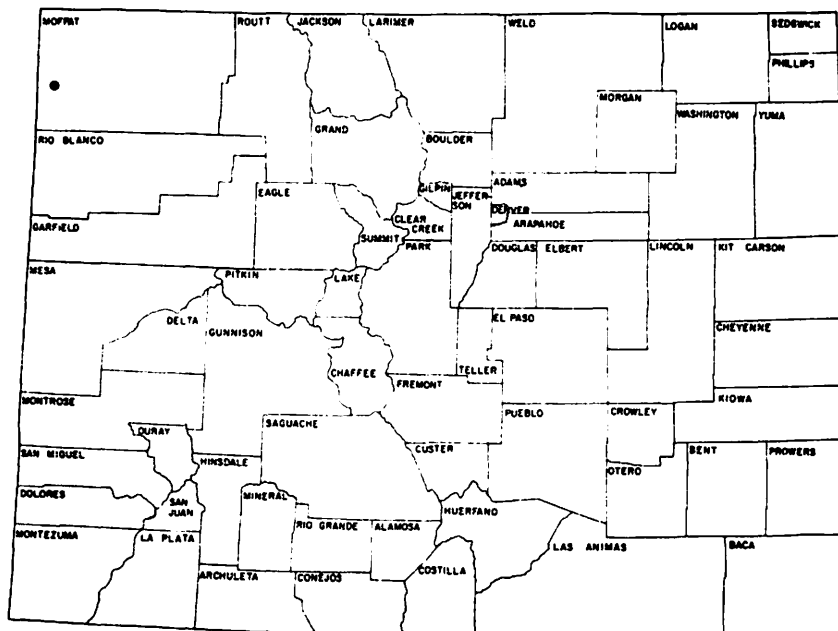
LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: None



From Reveal (1968)

Fig. 4. Habit sketch of *Eriogonum saurinum* showing the general aspect of the species with enlarged drawings of the inflorescence, a single involucre with two exserted flowers, and the bracts subtending the inflorescence.



POLYGONACEAE

SCIENTIFIC NAME: Eriogonum saurinum Reveal

ORIGINAL DESCRIPTION: Reveal, Great Basin Nat. 27(4):196. 1968.

COMMON NAME(S): Dinosaur buckwheat

KNOWN DISTRIBUTION: Dinosaur National Monument area (type locality vicinity of Vernal, Utah).

HABITAT: Steep hillsides and on the ridges of very acidic (pH often less than 5) soil of Mowrey shale; never more than 10 feet away from exposed shale; 5200 feet.

DESCRIPTION: Shrubby perennial, with a few open branches from woody caudices, 30-50 cm high. Basal area of stems densely hairy with whitish appearance, but green and not hairy above. Leaves lanceolate, basal, often deciduous up to 5-10 cm from the base. Leaf blades 3-6 cm long, 4-8 mm wide, densely hairy (whitish) on the lower surfaces and green on the upper surfaces. Inflorescences mostly three-branched with sessile, cream-white to pale yellowish-white flowers. Flowers hairy, if at all, only along the midribs. Achenes light brown, 2.5-3 mm long, with round bases which taper to 3-angled beaks. Flowers late July to September (Reveal 1968).

TAXONOMIC PROBLEMS: Has been incorrectly called E. lonchophyllum which is a species from northern New Mexico and southern Colorado.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: NPS

REMARKS: None



POLYGONACEAE

SCIENTIFIC NAME: Eriogonum pelinophilum Reveal

ORIGINAL DESCRIPTION: Reveal, Great Basin Nat. 33:120. 1973.

COMMON NAME(S): Clay-loving buckwheat

KNOWN DISTRIBUTION: Delta County, west of Hotchkiss. Representative locality: T 14S, R 94W.

HABITAT: Gumbo clay hills; desert (associated with Eriogonum lonchophyllum, Atriplex species).

DESCRIPTION: Subshrub which grows in close, thick mats (cushion plants) 5-10 cm high. Lower stems light brown, leafless, woody with bark peeling off in long, loose strips or in wide plates. Leaves oblanceolate; scattered along the length of the upper, herbaceous stems; densely white-hairy on bottom surface (midvein concealed by white hairs); upper surface is green. Flowers white to cream colored, 3-3.5 mm long, with reddish-brown midribs, and noticeably large brownish-red to greenish-red bases. Achenes light brown, 3-3.5 mm long, with globose bases which taper abruptly to a long, three-angled beak. E. pelinophilum separable from E. contortum by its white or cream colored flowers and longer involucres, flowers, and achenes (Reveal 1973).

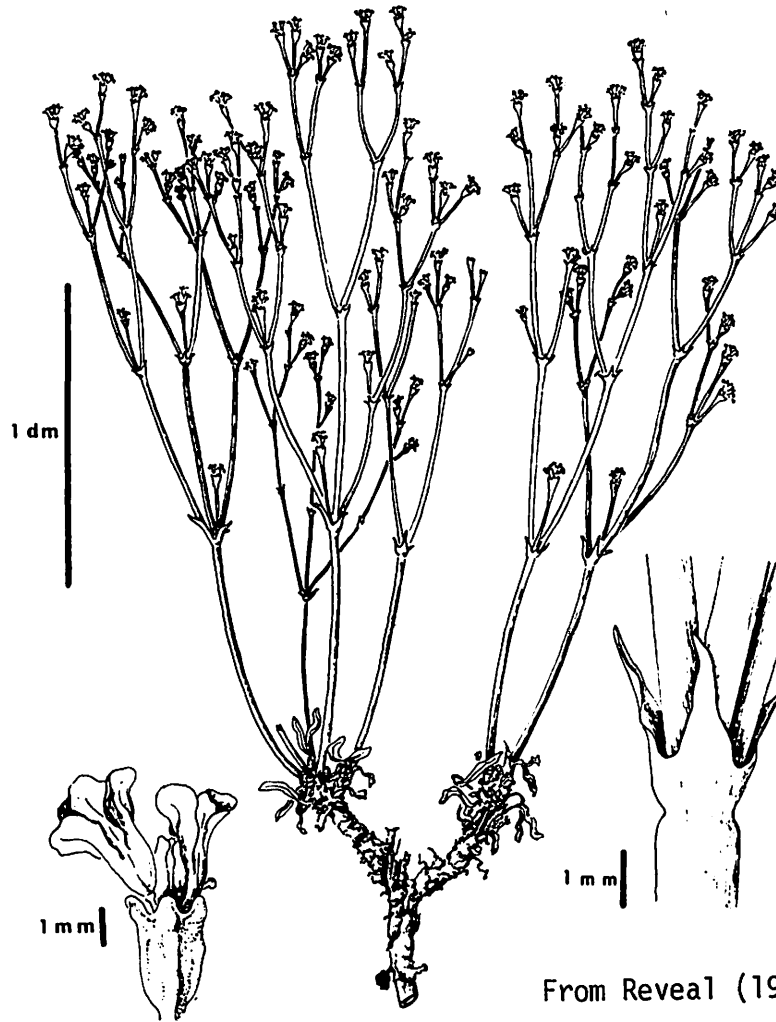
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Private, BLM

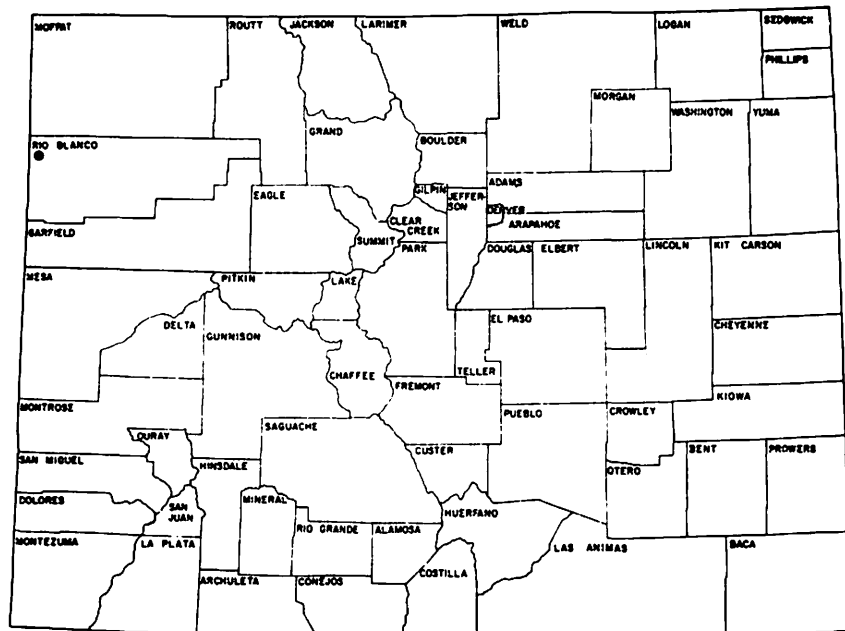
REMARKS: None





From Reveal (1968)

FIG. 4. *Eriogonum ephedroides*. Habit sketch showing the narrowly erect stems and arrangement of the basal leaves with an enlargement of a single involucre with exserted flowers and an enlarged section of the stem at the node showing the ternate bract.



POLYGONACEAE

SCIENTIFIC NAME: Eriogonum ephedroides Reveal

ORIGINAL DESCRIPTION: Reveal, Madrono 19:295. 1968.

COMMON NAME(S): Wild buckwheat

KNOWN DISTRIBUTION: Rio Blanco County; 17 miles northwest of Rangely; also on White River, Uintah County, Utah. Representative locality: T 3N, R 103W.

HABITAT: Light gray to white shale slopes; 5600 feet elevation.

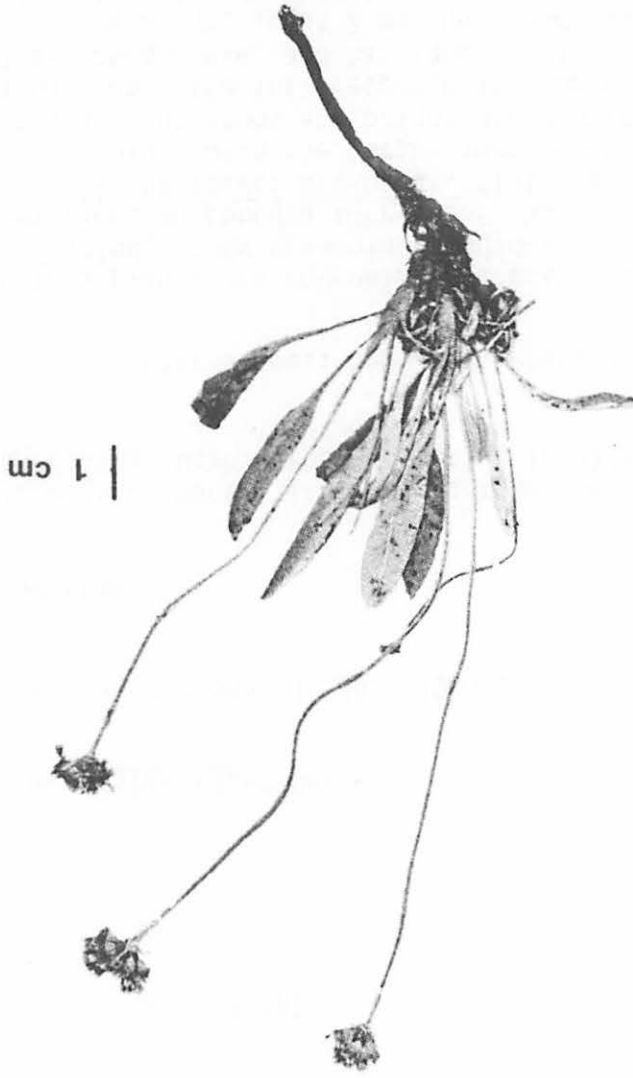
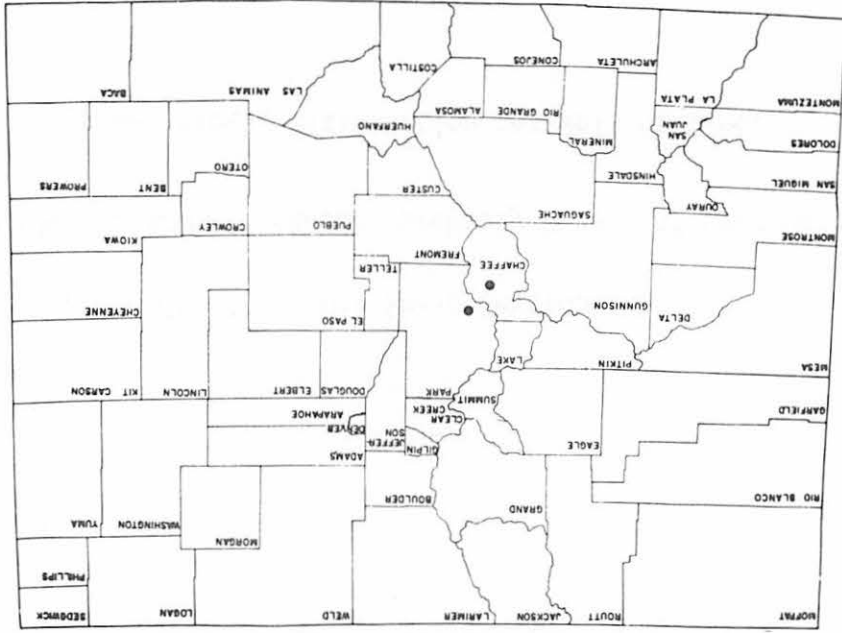
DESCRIPTION: E. ephedroides plants are perennials, erect, and grow 2-3.5 dm high from gnarled, woody branching caudices. This species has a striking resemblance to Ephedra torryana S. Wats., and thus the name "ephedroides." All the leaves are basal, flat, lanceolate 1.5-2.5 cm long, 2-3 mm wide, with the bottom surface white-hairy, and the upper surface green. The stems are bright green with ternate, linear bracts, 1-4 mm long. The inflorescence is 3 branched at the first node, 2 or 3 branched above, and has lemon-yellow to yellow flowers. The achenes are brown, about 2 mm long, and have subglobose bases tapering to 3-angled beaks. This species resembles E. brevicaule var. leptothecum, but the leaves of E. ephedroides are wider, nonrevolute, and are a different size and shape. Variety leptothecum also is restricted to the Front Range of Colorado (Reveal 1968). Flowering: late July.

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Oil Shale Development

LAND OWNERSHIP/MANAGEMENT: Unknown, probably Bureau of Land Management

REMARKS: Recently described, distribution not well studied.



*Eriogonum brandegei*

POACEAE (GRAMINEAE)

SCIENTIFIC NAME: Phippsia algida (Phipps) R. Br.

ORIGINAL DESCRIPTION: Phipps, Chlor. Melv. 27, 1823.

COMMON NAME(S): Icegrass

KNOWN DISTRIBUTION: Boulder, Clear Creek, Summit and Lake Counties, southern part of the east slope of Tenmile range, also in the Front Range (Boulder Co.); Representative locality: T 5S R 74W; Also in NW Wyoming and Alaska.

HABITAT: Wet sand and gravels of slow streamlets, snow beds, mostly in tundra; 12,300-14,000 feet.

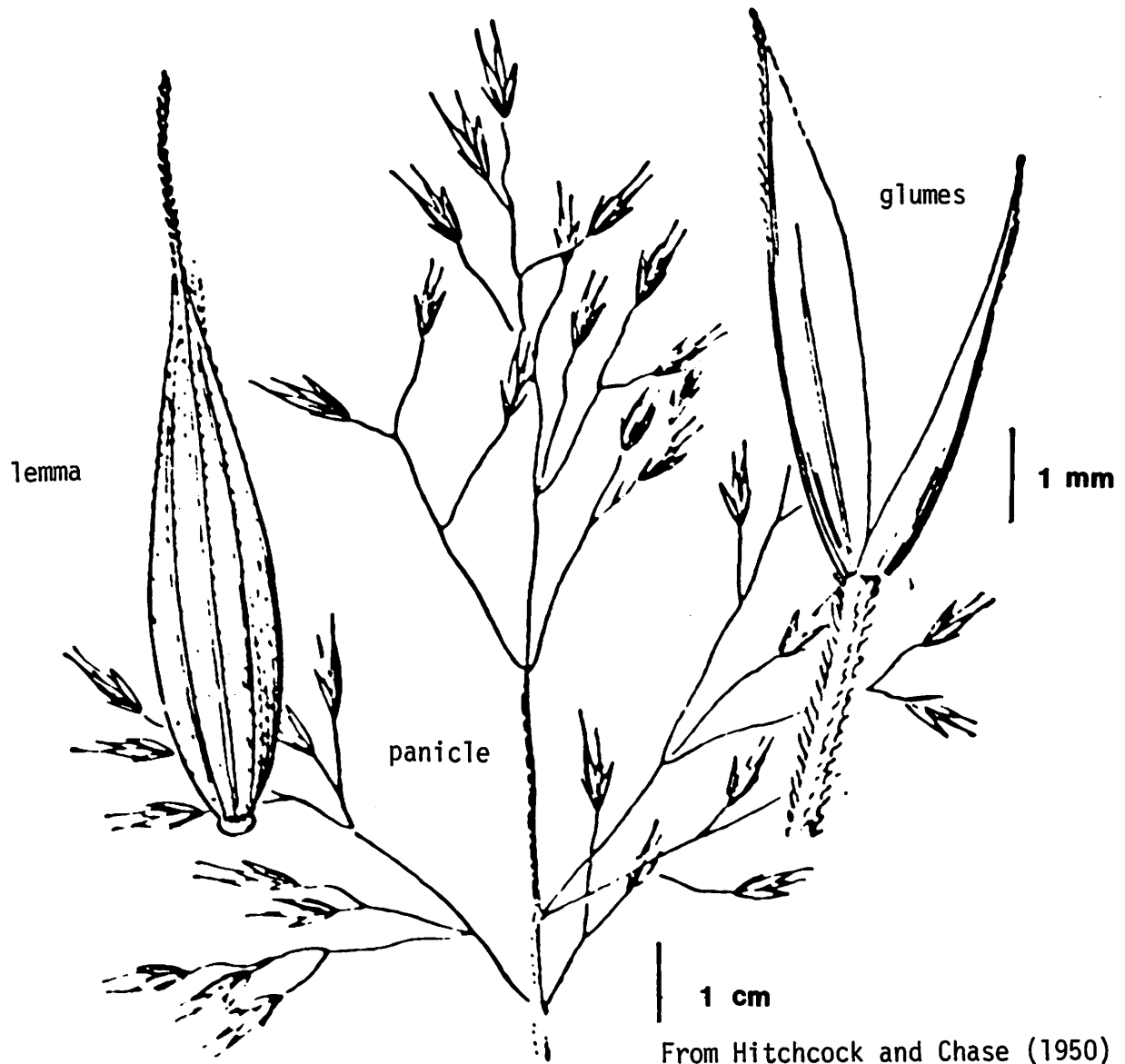
DESCRIPTION: Densely tufted, greenish-yellow plants with more or less decumbent culms, 2-10 cm tall. Leaves flat, shorter than culms. Panicles narrow, up to 4 cm long, contracted. Spikelets 1-flowered, about 1 mm long, greenish-yellow, or sometimes purplish, with a glabrous or very faintly pubescent lemma. Fruit broadest above middle (Hulten 1968).

TAXONOMIC PROBLEMS: None

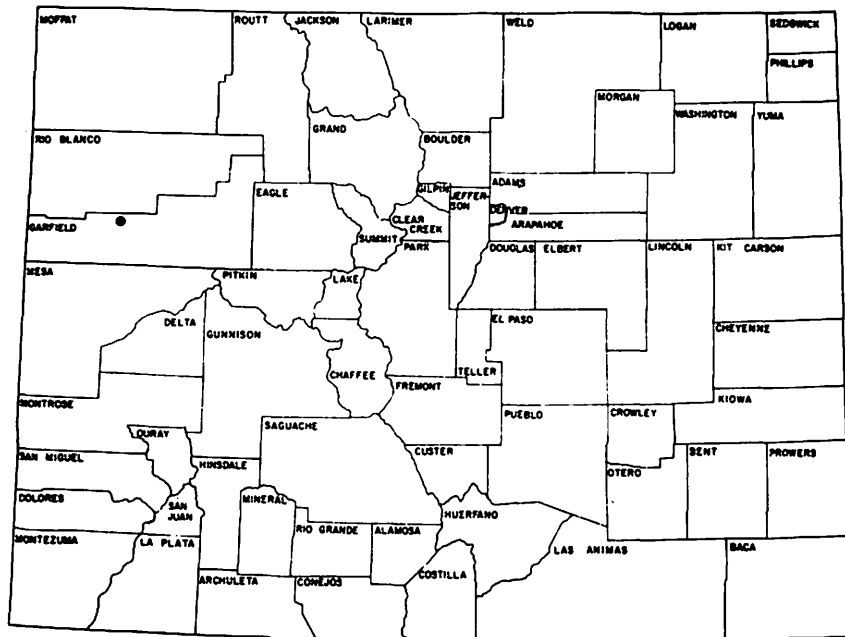
EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: USFS, BLM

REMARKS: Widely scattered across high mountains in Front Range and central mountains of the state. Considered rare because of its inconspicuousness.



From Hitchcock and Chase (1950)



POACEAE (GRAMINEAE)

SCIENTIFIC NAME: Festuca dasyclada Hack.in Beal

ORIGINAL DESCRIPTION: Hack. in Beal, Grasses of North America 2:602. 1896.

COMMON NAME(S): Fescue grass

KNOWN DISTRIBUTION: Garfield County, Roan Plateau; also in Utah.

HABITAT: Rocky slopes

DESCRIPTION: Culms 20-40 cm tall. Leaf blades of culm folded, 2 mm wide, 4-6 cm long; blade near the base 10-15 cm long. Panicle open, 7-12 cm long; stiff; softly pubescent; divaricate. Spikelets pale; long-pedicelated, 2-flowered. Glumes lanceolate, acuminate; the first about 4 mm long, the second about 6 mm long. Lemmas thin; somewhat keeled; strongly nerved; 6 mm long; awn 2 mm long from between 2 minute teeth (Hitchcock & Chase 1950).

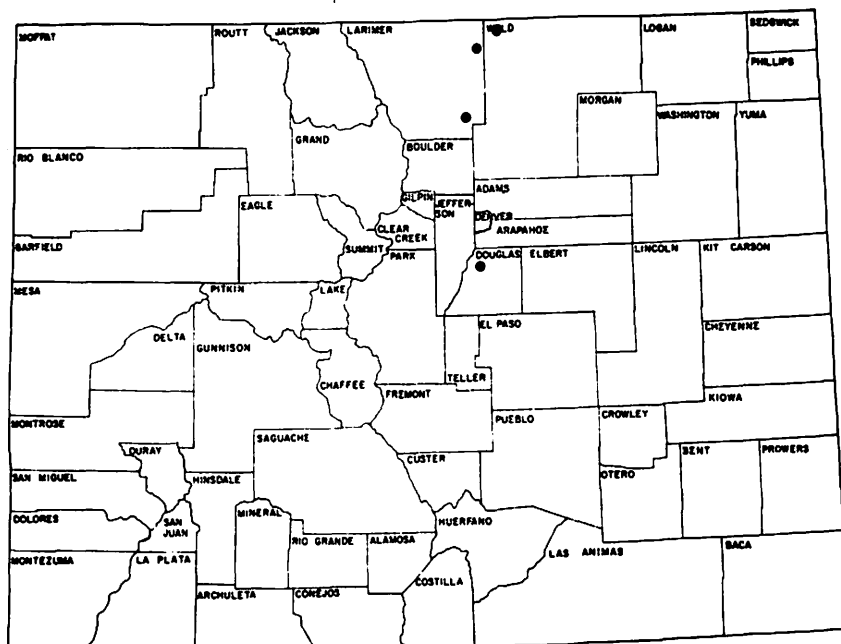
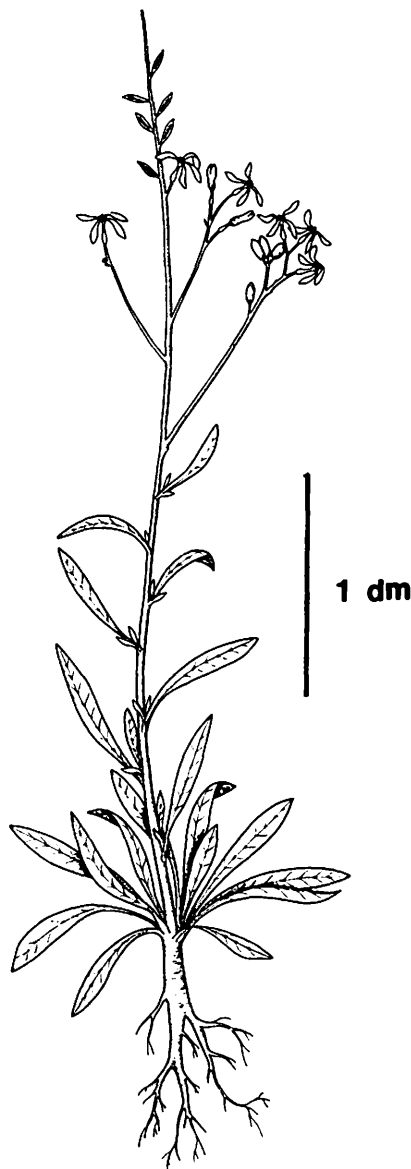
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Private, BLM

REMARKS: Recently rediscovered, but inadequate field collections to determine current distribution.

Gaura neomexicana var. coloradensis



ONAGRACEAE

SCIENTIFIC NAME: Gaura neomexicana Wooton ssp. coloradensis (Rydb.)  
Raven & Gregory. 1938.

ORIGINAL DESCRIPTION: As Gaura coloradensis Rydb. Bull Torrey Bot. Club  
31:572 1904; Raven and Gregory Mem. Torrey Bot. Club 23:63. 1972.

COMMON NAME(S): Gaura

KNOWN DISTRIBUTION: Larimer, Weld, and Douglas Counties. Not recently  
found in Douglas County; recently rediscovered in southern Wyoming  
(R. Dorn, Wyoming Department of Environmental Quality).

HABITAT: Humic soil in wet areas and bottoms of drainages; 5000-6000 feet.

DESCRIPTION: Biennial or perennial; with one to several erect stems, from  
woody roots; 40-70 cm tall. Leaves alternate, lobeless, narrow and 5-10 cm  
long. Flowers pink, turning rose, with petals 8-10 mm long, sepals  
9-11 mm long and linear anthers. The pubescence and the geographic  
distribution distinguishes this variety from the typical subspecies.  
Variety coloradensis is found in the northern part of the state, and  
the typical subspecies is found in the southern part of Colorado and  
New Mexico. Flowers in July (Munz 1938).

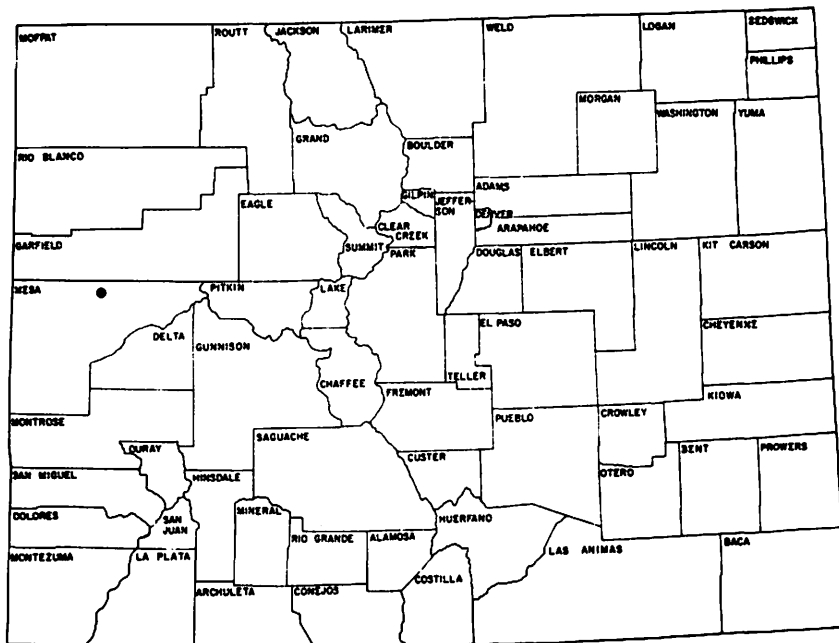
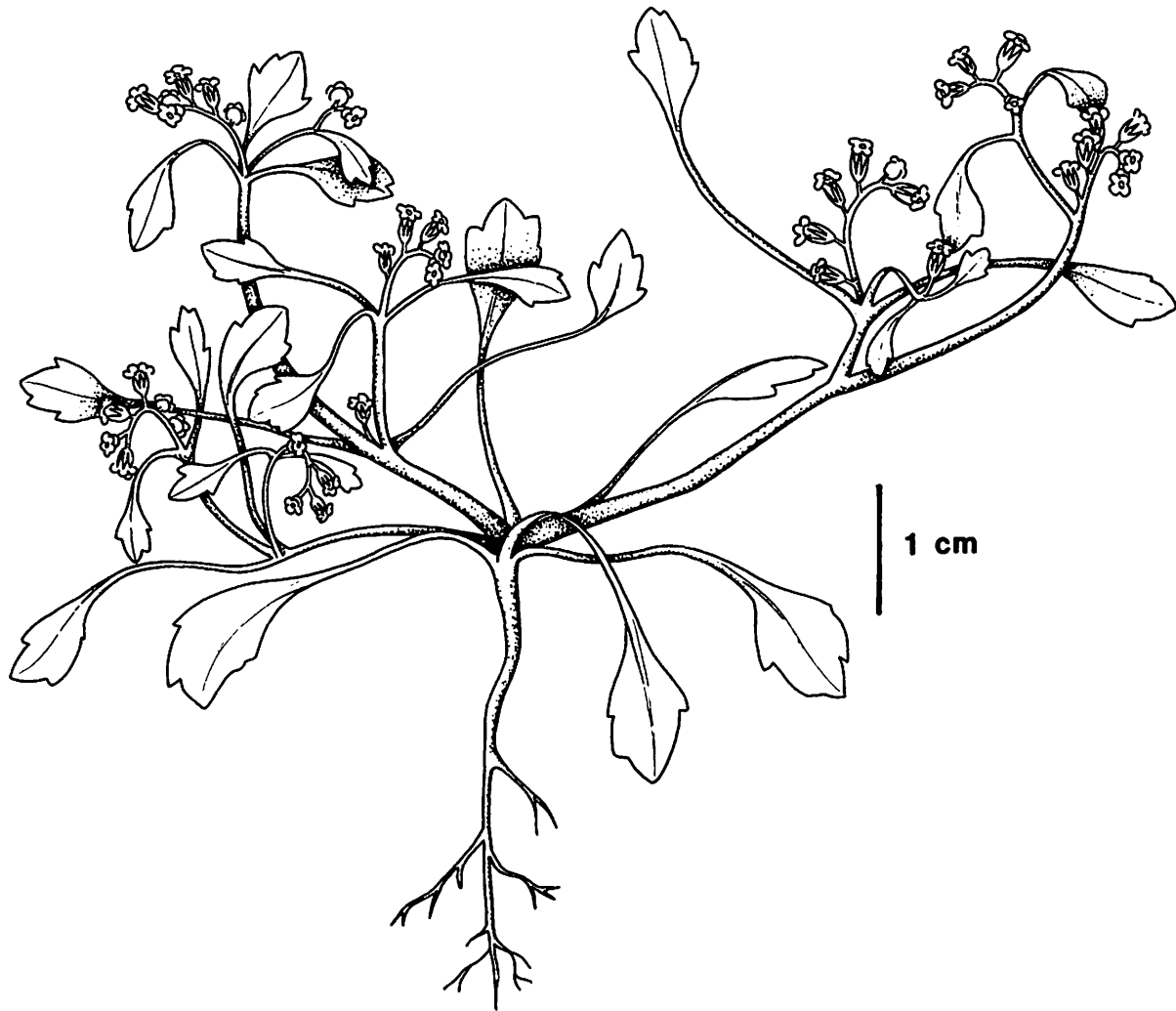
TAXONOMIC PROBLEMS: Gaura neomexicana complex needs further study  
(Johnston, personal communication).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Private and possibly USFS

REMARKS: Possibly extirpated from Colorado (Robert Dorn, personal communication).





HYDROPHYLLACEAE

SCIENTIFIC NAME: Phacelia submutica J. T. Howell

ORIGINAL DESCRIPTION: J. T. Howell, Proc. Cal Acad. Sci. 25:370. 1944.

COMMON NAME(S): Phacelia

KNOWN DISTRIBUTION: Mesa County, vicinity of Debeque.  
Representative locality: T 8S, R 96W.

HABITAT: Seleniferous knolls (gumbo clay hills) on dry ground; 4700-5000 feet.

DESCRIPTION: Annual plant of xeric sites, branched at the base with stems 2-8 cm tall which are covered with inconspicuous long, soft, straight hairs. The entire to serrate-lobed leaves have coarse, stiff hairs. Stamens included in light yellow flowers, 3.5-4.5 mm long. Seeds ovate with 6-12 transverse corrugations (Howell 1944).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Only two small populations are presently known and each are threatened by grazing animals, motorcyclists.

LAND OWNERSHIP/MANAGEMENT: BLM and private

REMARKS: None



HYDROPHYLLACEAE

SCIENTIFIC NAME: Phacelia formosula Osterhout

ORIGINAL DESCRIPTION: Osterhout, Bull. Torr. Bot. Club 46:54. 1919.

COMMON NAME(S): Phacelia

KNOWN DISTRIBUTION: Jackson County

HABITAT: Loose sandy soil at an elevation of 8300 feet (Atwood 1975).

DESCRIPTION: Biennial; 1.5-2 cm high, with a single, upright stem or sometimes branched from the base. Stems densely pubescent with stiff, rigid, bristle-like hairs. Leaves lanceolate or narrowly ovate, pinnate, with leaflets 5-10 mm long, 3-5 mm wide. Inflorescence scorpioid, 3-5 cm long, with blue or violet campanulate flowers in 2-ranked racemes; filaments and style are rounded on the back, with a ridge lengthwise through the middle of the ventral side (not transversely corrugated). P. glandulosa is a similar species, but has larger leaves, rougher pubescence, and wider calyx lobes. Flowers in August (Osterhout 1919).

TAXONOMIC PROBLEMS: Atwood (1975) cites difficulties in distinguishing this species from P. glandulosa.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM or private land, possibly U.S. Forest Service.

REMARKS: Recently rediscovered by Atwood (1975) in Jackson County.

FUMARIACEAE

SCIENTIFIC NAME: Corydalis caseana A. Gray ssp. caseana G. B. Ownbey

ORIGINAL DESCRIPTION: Gray Proc. Am. Acad. 10:69. 1874; G. B. Ownbey,  
Ann. Mo. Bot. Gard. 34:201. 1947.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Northern California; never reliably reported in  
Colorado.

HABITAT: Very moist, often shady places--springs and on gravel bars  
in and along streams.

DESCRIPTION: Perennial; 50-100 cm tall, with pinnate leaves which have  
elliptical leaflets 1-2 cm long. Plants are covered with a whitish  
or bluish waxy covering, which usually rubs off. Flowers light pink  
or white, often curved; 11 petals, two outer spreading with one  
spurred at the base, two inner ones which are smaller and narrower and  
united at the reddish-purple apex. Stamens in 2 sets of 3 each  
(diadelphous). The best distinguishing features to look for are the  
narrow or absent wing margin, the narrower curved spurred petal, and  
the acute tips of the outer petals. Subspecies caseana is similar to  
ssp. brandegei (Wats.) G. B. Ownbey, but a smaller plant, with smaller  
flowers, and narrower petal margins (Ownbey 1947).

TAXONOMIC PROBLEMS: Corydalis caseana brandegei occurs in Colorado;  
ssp. caseana does not.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: Should be deleted from Colorado list

FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Trifolium lemmonii Wats.

ORIGINAL DESCRIPTION: Watson, Proc. Am. Acad. Sc., Vol. 11, 1876. p. 127.  
Also as T. gymnocarpon var. lemmonii McDermott, Illustrated Key to North  
American Trifolium. Vol. 194. 1910. Plate 78.

COMMON NAME(S): None

KNOWN DISTRIBUTION: California, Sierra County to Lassen Peak, western  
Nevada.

HABITAT: Yellow pine, sagebrush scrub.

DESCRIPTION: Strigose perennial from a deep taproot and slender stems  
1.5-2 dm high; stipules ovate, coarsely few toothed, to 1 cm long;  
leaflets 4-6, obovate, obtuse mucronate, coarsely toothed, 5-12 mm  
long, peduncles 5-12 cm long, far surpassing leaves, heads 1.5-2 cm  
broad, many flowered; the rachis swollen; pedicels reflexed in age,  
1-2 mm long, calyx curved at base, corolla bright yellow, 1 cm long.  
Pods somewhat pubescent (Munz and Keck 1959).

TAXONOMIC PROBLEMS: Not know from Colorado. T. lemmonii was once  
considered a subspecies of T. gymnocarpon, a species common in  
Colorado.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: This species should be deleted from the Colorado list.



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Oxytropis obnapiformis C. L. Porter

ORIGINAL DESCRIPTION: C. L. Porter, Madrono 9:133, Fig. 1947.

COMMON NAME(S): Locoweed

KNOWN DISTRIBUTION: Moffat County (vicinity Maybell); Utah and Wyoming.  
Representative locality: T 6N, R 96W.

HABITAT: On sand dunes and Browns Park formation outcrops; 5900 feet.

DESCRIPTION: Grayish perennial plant, 1-3 cm high, from silky caudices. Leaves pinnately arranged with 11-25 oblong-lanceolate leaflets, which are also grayish due to appressed, silky hairs. Flowers purplish (banner with white center and purple margin), 15-20 mm long. The most distinguishing feature, the mature pod, is turnip-shaped and has a thin, papery texture (Porter 1947). Flowering: late May, early June.

TAXONOMIC PROBLEMS: None

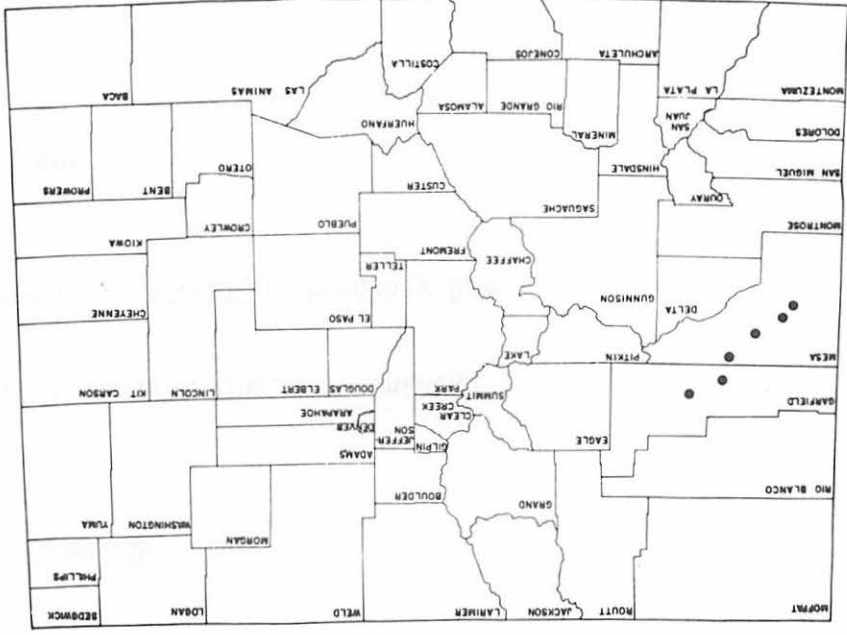
EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Probably BLM

REMARKS: None



*Astragalus wetherii*!!!



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus wetherillii M. E. Jones

ORIGINAL DESCRIPTION: Jones, Zoe 4:34. 1893.

COMMON NAME(S): Wetherill milkvetch

KNOWN DISTRIBUTION: Garfield and Mesa Counties (along the Colorado and Lower Gunnison Rivers).

HABITAT: In dry soil of west facing slope; with pinyon, juniper, and sagebrush; 4500-6000 feet.

DESCRIPTION: Short-lived perennial with slender taproot and superficial root-crown; stems 5-10, decumbent and ascending, .4-2.4 dm long, purplish at base, thinly strigulose with fine, straight appressed hairs up to .3-.45mm long. Leaves 3.5-10cm long with slender petioles and 7-15 broadly obovate or oval, obtuse flat, thin textured leaflets 5-14mm long; racemes loosely 2-9 flowered; pedicels at anthesis ascending, calyx campanulate 2.8-3.6mm long; petals whitish to purplish tinged; pod loosely spreading or declined, obliquely ovoid-ellipsoid 1.4-2cm long, 6-10mm wide, inflated, shallowly grooved along one or both sutures, the thin greenish, often purple speckled, minutely strigulose valves becoming papery, stramineous or brownish, ovules 9-13; seeds brown, 2.4-2.7mm long. Useful field characters are the few, small white or whitish flowers, its few (3-7) pairs of broad, thin textured leaflets, and its obliquely ovoid pods elevated out of the calyx on a short but evident gynophore (Barneby 1964).

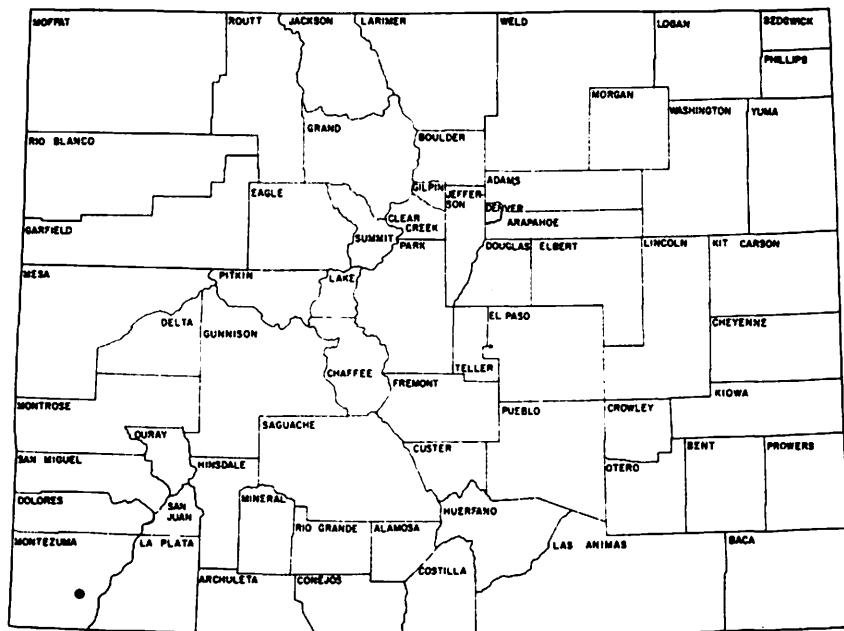
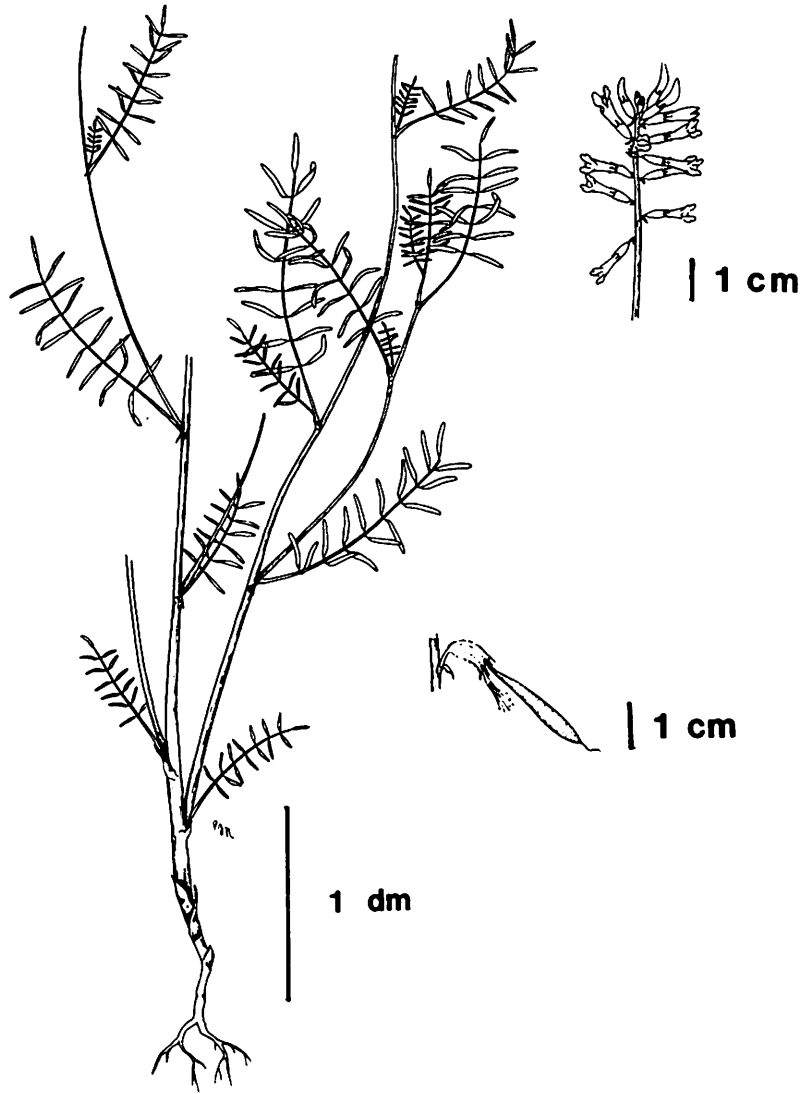
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM and private land

REMARKS: "Rare and local." (Barneby 1964).

Astragalus schmolleae



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus schmollae C. L. Porter

ORIGINAL DESCRIPTION: C. L. Porter, Madrono 8:100, Tab. 9, Fig. 4-7. 1945.

COMMON NAME(S): Schmoll milkvetch

KNOWN DISTRIBUTION: Montezuma County, Mesa Verde National Park.

HABITAT: On dry mesas in sandy loam (loess) soil; pinyon - juniper forest with Poa fendleriana; 6000-8000 feet.

DESCRIPTION: Stems purplish below, green above, tall (45-60 cm), branching from the base, with short, stiff appressed hairs on the foliage. Leaves pinnate with 11-13 linear leaflets, 1-2 mm wide, 1-3 cm long. Flowers yellowish-white or cream colored, 12-13 mm long, subtending bracts (calyx) have black hairs. The distinguishing characteristic is the leathery pod. Pod almost straight when immature, but at maturity the lower (dorsal) suture is concave, and the upper (ventral) suture is convex, making the pod curve downward. Pod 25-40 mm long, 3-4 mm wide, obcordate in cross section, without an internal septum, 10-15 seeds per pod. Flowering: May; Fruit: June (Porter 1945).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: NPS

REMARKS: "Known range of the species extends little over a mile or possibly two in diameter, but the plants are abundant locally in gravelly openings among the nut Pinyon and junipers." (Barneby 1964).



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus osterhoutii M. E. Jones

ORIGINAL DESCRIPTION: M. E. Jones, Rev. Astragalus 251. 1923.

COMMON NAME(S): Osterhout milkvetch

KNOWN DISTRIBUTION: Grand County, near Kremmling & Hot Sulphur Springs.  
Representative locality: T 1N, R 78W.

HABITAT: "Forming colonies along gulches in denuded clay hills, on barren knolls and at the foot of gullied bluffs, in stiff alkaline clay or shaley clay soils, sometimes growing up through sagebrush, 7500-7700 feet." (Barneby 1964). Adapted to soils rich in selenium.

DESCRIPTION: Tall (50-100 cm) rushlike perennial plants branching from a woody caudex. Linear, pinnate leaves have 9-13 leaflets, each 1.5-3.0 cm long. Flowers white or cream colored, 18-20 mm long, occurring in racemes. Pods linear; dorsally compressed making a cross section of the pod rhombic to elliptical; sutures prominent but not intruded; 2.5-4 cm long with many seeds per pod. Flowers in June and July (Harrington 1964). Flowering and fruit: June-August.

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM and private

REMARKS: "The Osterhout milkvetch is very local; its known range being restricted to an area not much over fifteen miles in diameter."  
(Barneby 1964).







BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Eutrema penlandii Rollins

ORIGINAL DESCRIPTION: Rollins, Contr. Gray Herb. 171:51. 1950.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Summit, Lake, and Park Counties in vicinity of Hoosier Pass. Representative locality: T 8S, R 77W.

HABITAT: Roots in moss in alpine bogs; 12,300-12,800 feet elevation.

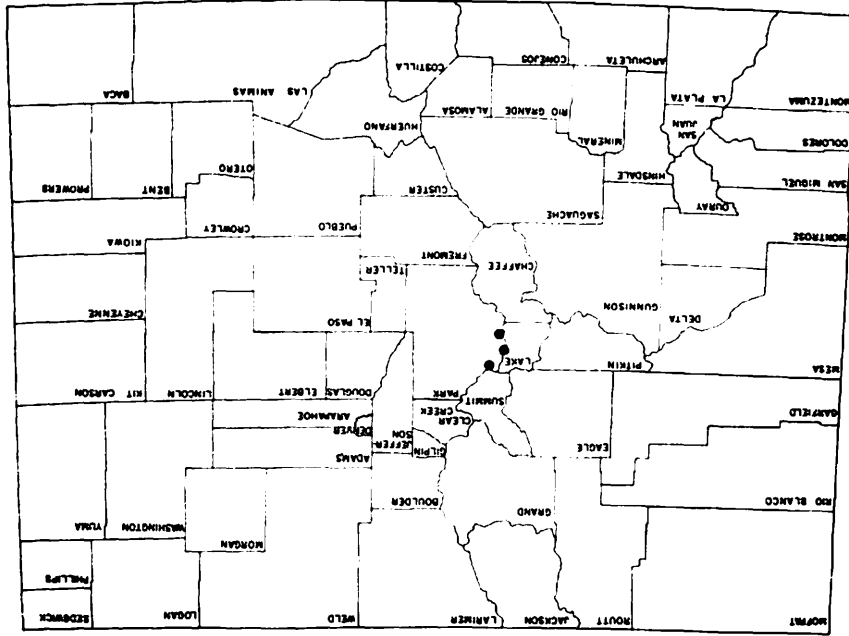
DESCRIPTION: Herbaceous perennial with one to few decumbent to erect stems, 3-8 cm high; ovate, glabrous basal leaves have long, slender petioles, 1-2.5 cm long, with cordate blades and rounded apices; cauline leaves few and narrow (1-1.5 cm long, 2-3 mm wide). Flowers small (2-3 mm long, less than 1 mm wide) with white, ligulate petals and purplish sepals. Narrowly elliptical siliques also small, 1.5 mm wide, 4-8 mm long (Rollins 1950). Flowering and fruit: late July.

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: No current threats noted, but habitat extremely fragile (Johnston, personal communication).

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service and Bureau of Land Management

REMARKS: A similar species is E. edwardsii, a circumpolar species in the arctic and subarctic.



*Eutrema penlandii*

BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Lesquerella pruinosa Greene

ORIGINAL DESCRIPTION: Greene, Pittonia 4:307. 1901.

COMMON NAME(S): Bladderpod

KNOWN DISTRIBUTION: Archuleta County, vicinity of Pagosa Springs  
Representative locality: T 35N, R 2W.

HABITAT: 7000 feet; dry hills and in adobe soil of dry mesas.

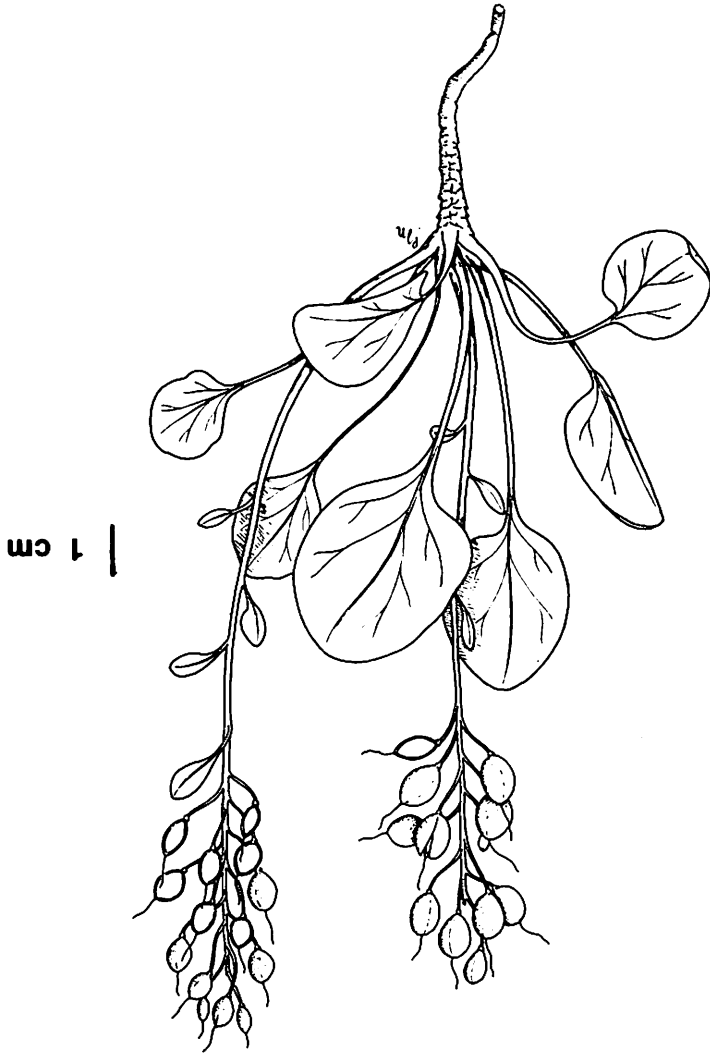
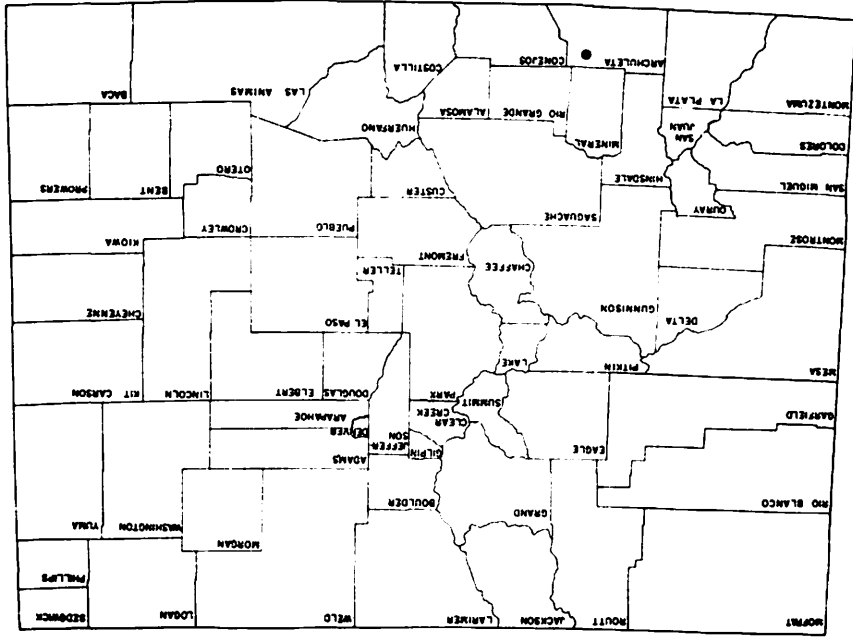
DESCRIPTION: Plant perennial, 10-25 cm tall from a woody caudex which is usually not branched, and stellate pubescent. Leaves basal, oval shaped, with long petioles about twice the length of the blades; cauline leaves obovate. Flowers yellow on sigmoid pedicels 5-10 mm long, somewhat crowded in an elongated inflorescence. Siliques not stellate pubescent. Flowering: May, June; Fruit: mid-June, July (Greene 1901).

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Known population adjacent to road and construction activities, use of habitat by motorcyclists (Johnston, personal communication).

LAND OWNERSHIP/MANAGEMENT: Private

REMARKS: Probably one of Colorado's most endangered species because of its small population and proximity to development activities (Johnston, personal communication).



*Lesquerella pruinosa*

BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Parrya nudicaulis(L.) Regel

ORIGINAL DESCRIPTION: As Cardamine nudicaulis L. Sp. Pl. (1753);  
Regel in Gartenfl. (1883), tab. 128, fig. a,b.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Siberia, Alaska

HABITAT: Moist places, sandy slopes.

DESCRIPTION: Plant with stout root, caudex with remains of old leaves,  
stem (10 cm tall) leafless, pubescent with stout glands, leaves all basal,  
ovate, oblong to spatulate, sinuate-dentate with long petiole; petals  
purple, lavender or rarely white, siliques acute at both ends with  
long style (Hulten 1968).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: Never reliably reported from Colorado; should be deleted from  
Colorado list.

BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Rorippa coloradensis Stuckey

ORIGINAL DESCRIPTION: Stuckey, Sida 4:303, Fig. 1. 1972.

COMMON NAME(S): Watercress

KNOWN DISTRIBUTION: Southwestern Colorado, probably vicinity of Alamosa, Alamosa County.

HABITAT: Margin of rivers and lakes; 7000 feet.

DESCRIPTION: Herbaceous perennial, weak trailing stems. Stem slender, strigose with elongate pointed often retrorse trichomes; cauline leaves petiolate, non-auriculate, oblong to broadly oblanceolate, 2.3-3 mm long, .5-1 mm wide, shallowly to somewhat deeply sinuate-lobed. The extremely large buds (3.5-5 mm long) and flowers with spatulate petals strongly differentiated into blade and claw make this species distinctive from others in Rorippa. Mature fruit not known (Stuckey 1972).

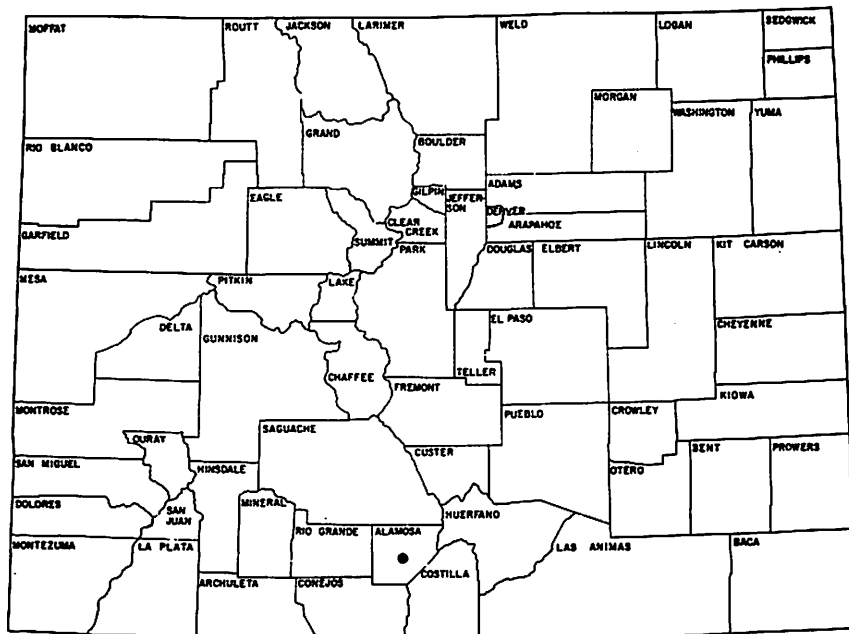
TAXONOMIC PROBLEMS: Unknown

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: Location where original collections made uncertain; not collected since original collections made by Brandegee in 1875. Species not described until Rorippa was monographed by Stuckey.

No Illustration Available



CACTACEAE

SCIENTIFIC NAME: Echinocereus triglochidiatus var. inermis (Schum.) Arp.

ORIGINAL DESCRIPTION: As Echinocereus phoeniceus var. inermis Schum.,  
Monatsschr. Kakt. 6:150. 1896; Arp, Cac. and Succ. Journ.  
45:132-133. 1972.

COMMON NAME(S): Spineless hedgehog cactus

KNOWN DISTRIBUTION: Mesa County (Gunnison and Colorado Rivers), Montrose  
County (Paradox Valley). Representative locality: T 51N, R 13W.

HABITAT: Found in partial shade in duff that accumulates under pinyon pine  
(Pinus edulis) trees, and infrequently among sagebrush on cool exposures,  
5000-8000 feet.

DESCRIPTION: Simple cylindrical or ovoid succulent joints vary from 2-8 cm  
tall and 3-5 cm in diameter. The grass-green joints grow in clusters  
of 5 to 15. Eight to nine ribs found on each joint, areoles spaced  
1 to 2 cm apart on the ribs. Spineless condition variable. Some  
plants entirely spineless, others with one areole containing 2 cm  
spines. Deciduous spines sometimes found on new growth. Flowers  
crimson, arranged laterally on the joint, 5-8 cm in length. Ovary  
and corolla tube bear short bristly spines. Outer surfaces of the  
flower are spineless. Fruit bright red, 2 cm long, seeds 1 mm long  
(Arp 1972). Flowering: April, May; Fruit: May, June.

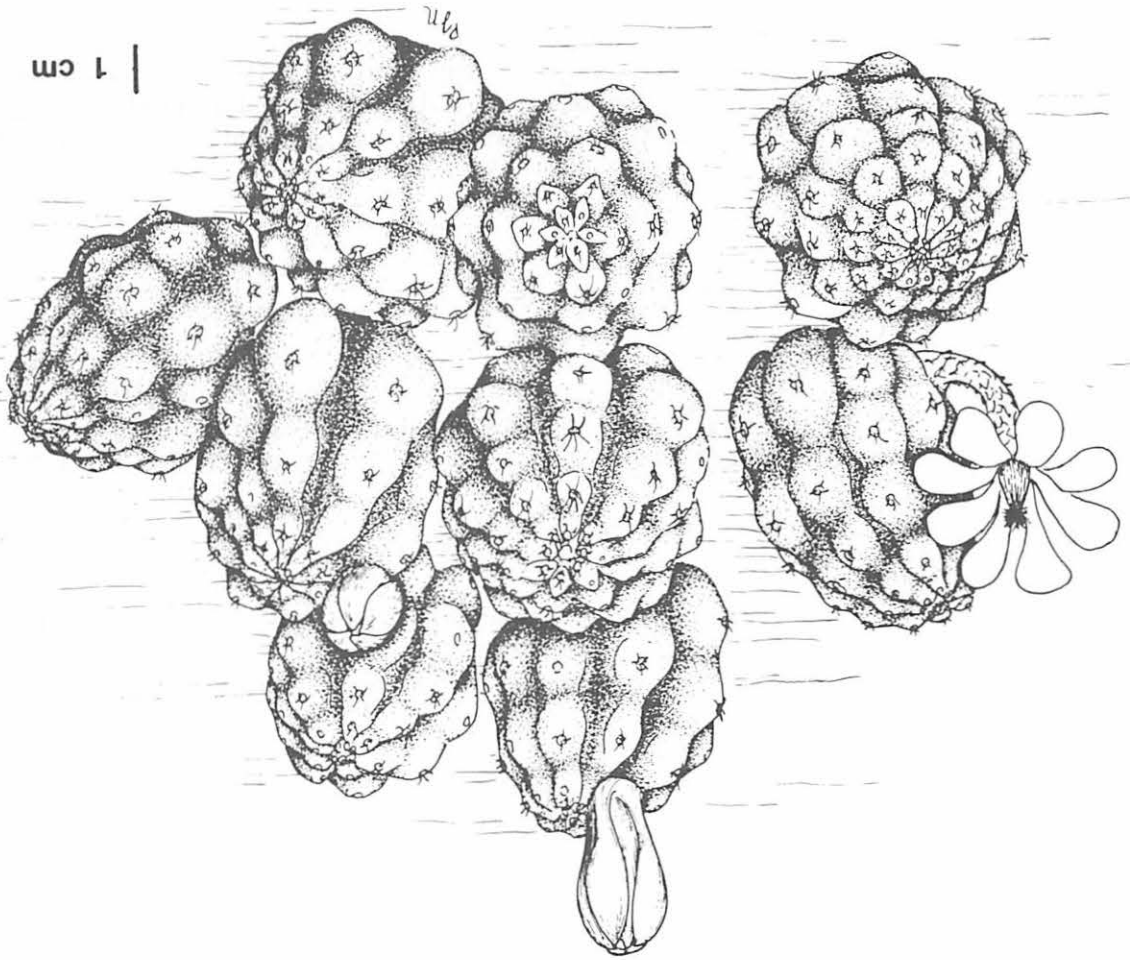
TAXONOMIC PROBLEMS: Varietal status best describes this species' taxonomic  
status because the plant occurs in distinct and identifiable populations.  
Apparent hybrids have been found between inermis and var. melanocanthus  
resulting in crooked, broken, stunted, and normal spines developing on  
the same plant.

EXISTING OR POTENTIAL THREATS: Plants may be susceptible to grazing and tram-  
pling by livestock, and one population has been depleted by tree removal  
operations (chaining). This variety has been exploited commercially.

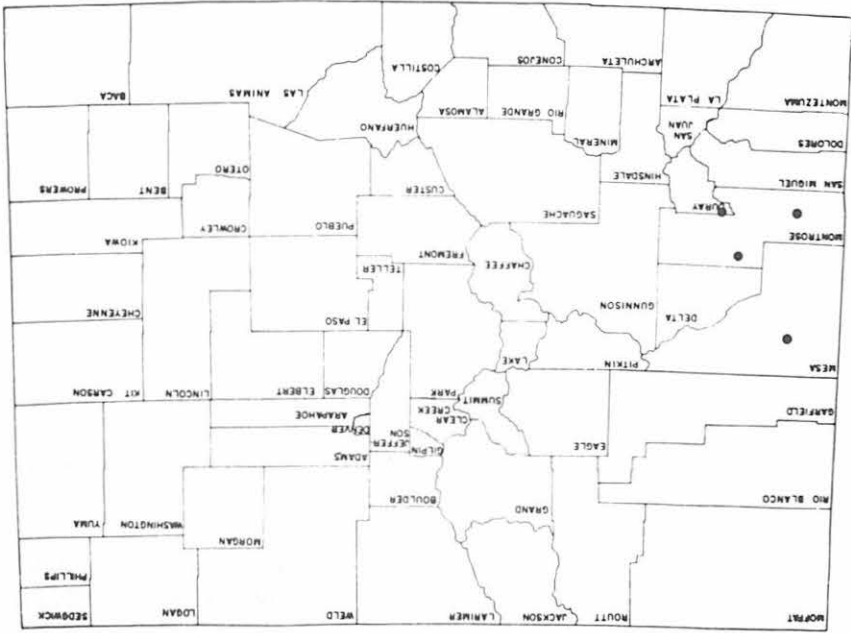
LAND OWNERSHIP/MANAGEMENT: BLM, private.

REMARKS: Recommendation that this species be officially listed as  
Endangered has been forwarded to the Washington Office of Endangered  
Species (Fish & Wildlife Service) and final rulemakings are being  
prepared.





1 cm



CACTACEAE

SCIENTIFIC NAME: Pediocactus knowltonii L. Benson

ORIGINAL DESCRIPTION: Benson, Cac. and Succ. Journ. 32:193. 1960.

COMMON NAME(S): Knowlton's hedgehog cactus

KNOWN DISTRIBUTION: Not yet reliably reported from Colorado, but occurs just south of the Colorado line in New Mexico in the vicinity of Navajo Reservoir near the Los Pinos River (Johnston, personal communication).

HABITAT: Gravelly soils, 6000-6400 feet.

DESCRIPTION: Small, compressed or globose plant, 2.5-15 cm in diameter; with 13-21 spiraled rows of conical tubercles, 1 cm tall, 1 cm in diameter. Short, radial spines white; 12-19 from tops of tubercles; no central spines. Flowers white, yellow, pink or magenta at top of plant (Arp 1972).

TAXONOMIC PROBLEMS: Genus recently revised and some species of Sclerocactus are now thought to be Pediocactus.

EXISTING OR POTENTIAL THREATS: Commercially exploited, with high risk of elimination of remaining populations. Some populations adjacent to Navajo Lake possibly susceptible to flooding.

LAND OWNERSHIP/MANAGEMENT: Ute Indian Reservation in Colorado.

REMARKS: None



CACTACEAE

SCIENTIFIC NAME: Sclerocactus glaucus (Schum.) Benson

ORIGINAL DESCRIPTION: K. Schum. Gesamtb. Kakt.:438. 1898.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Garfield, Mesa, Delta Counties near Colorado and Gunnison Rivers. Also found near the Green River in Utah.

HABITAT: Dry alkaline hills with many rocks; 5000 feet. Associated with Atriplex confertifolia, Hilaria jamesii, and Ephedra sp.

DESCRIPTION: Ovoid or globular succulent stems 3.8-6.2 cm tall, 3.8-5 cm in diameter. Distinguished from the common species Sclerocactus whipplei by the presence of glands above each areole, and the absence of a hooked central spine (Arp 1972). Flowering: April-May; Fruit: May.

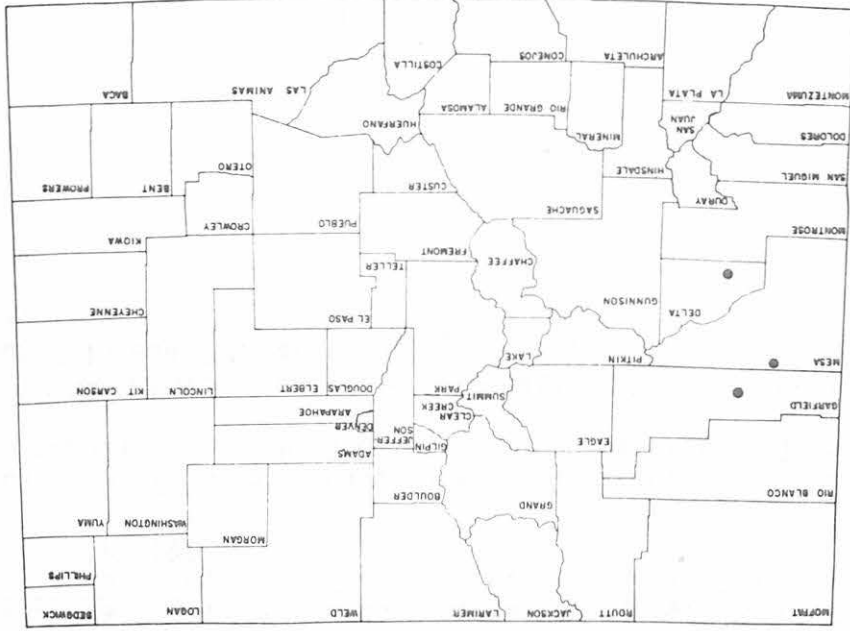
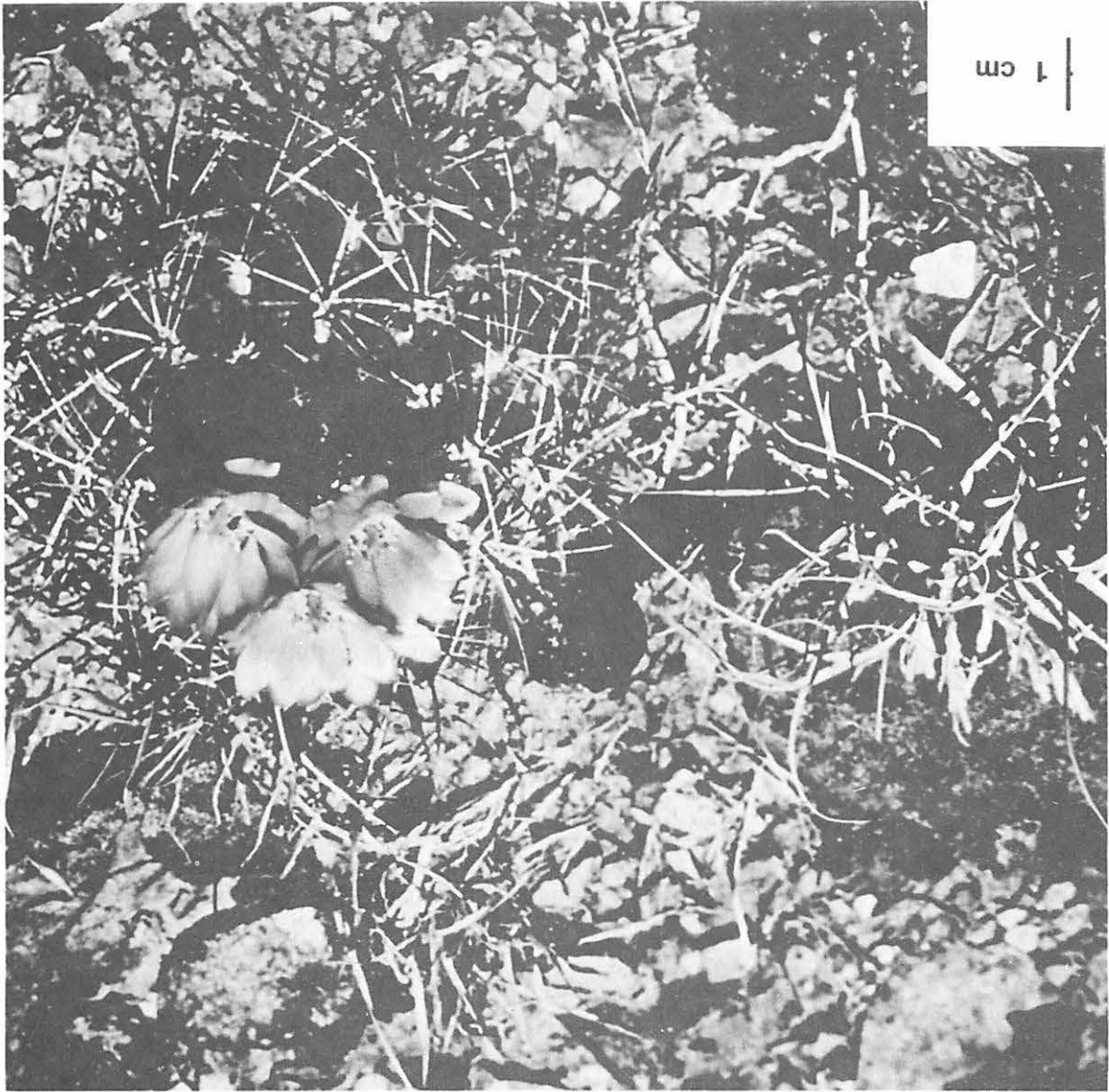
TAXONOMIC PROBLEMS: Appears to hybridize with S. whipplei where the two species are sympatric in the Gunnison River Valley. Recently revised and put into the genus Pediocactus (Arp 1972).

EXISTING OR POTENTIAL THREATS: Some commercial exploitation. Possibly susceptible to trampling by livestock. Some populations possibly threatened by plans to dam the Gunnison River (Dominguez Project).

LAND OWNERSHIP/MANAGEMENT: BLM, private

REMARKS: Recommendation that this species be officially listed as Endangered has been forwarded to the Washington Office of Endangered Species (Fish & Wildlife Service) and final rulemakings are being prepared. S. glaucus does not survive well in cultivation.

*Sclerocactus glaucus*



CACTACEAE

SCIENTIFIC NAME: Sclerocactus mesae-verdae (Boiss. and Davids.) Benson

ORIGINAL DESCRIPTION: As Coloradoa mesae-verdae Boiss. and Davids.,  
Colorado Cacti 55. 1940; Benson, Leafl. West. Bot. 6:163. 1951.

COMMON NAME(S): Mesa Verde cactus.

KNOWN DISTRIBUTION: Montezuma County, southern portion of Mesa Verde  
National Park and adjoining Ute Indian Reservation; Montrose County,  
Uncompahgre Plateau. Also found in the vicinity of Shiprock,  
New Mexico.

HABITAT: Adobe hills, dry clay soils; 4000-5000 feet.

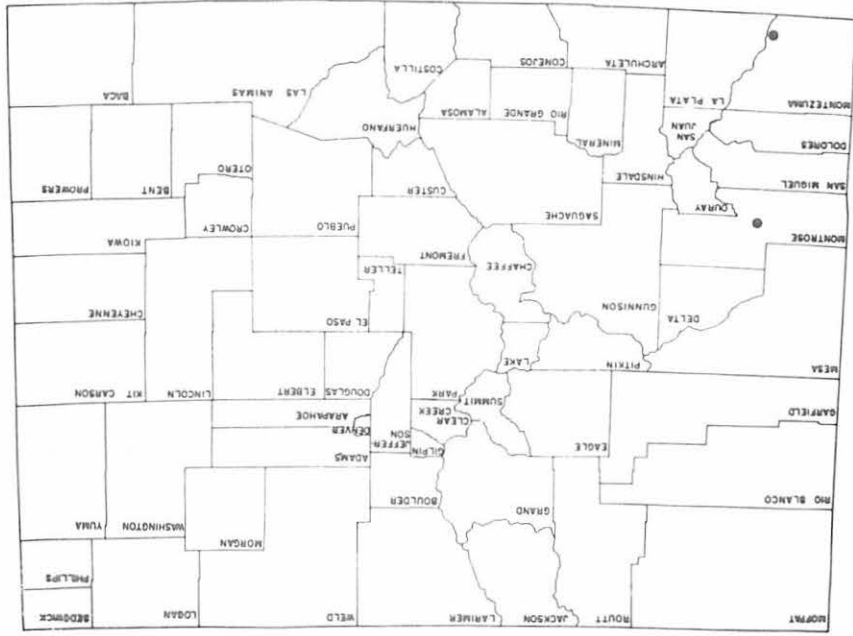
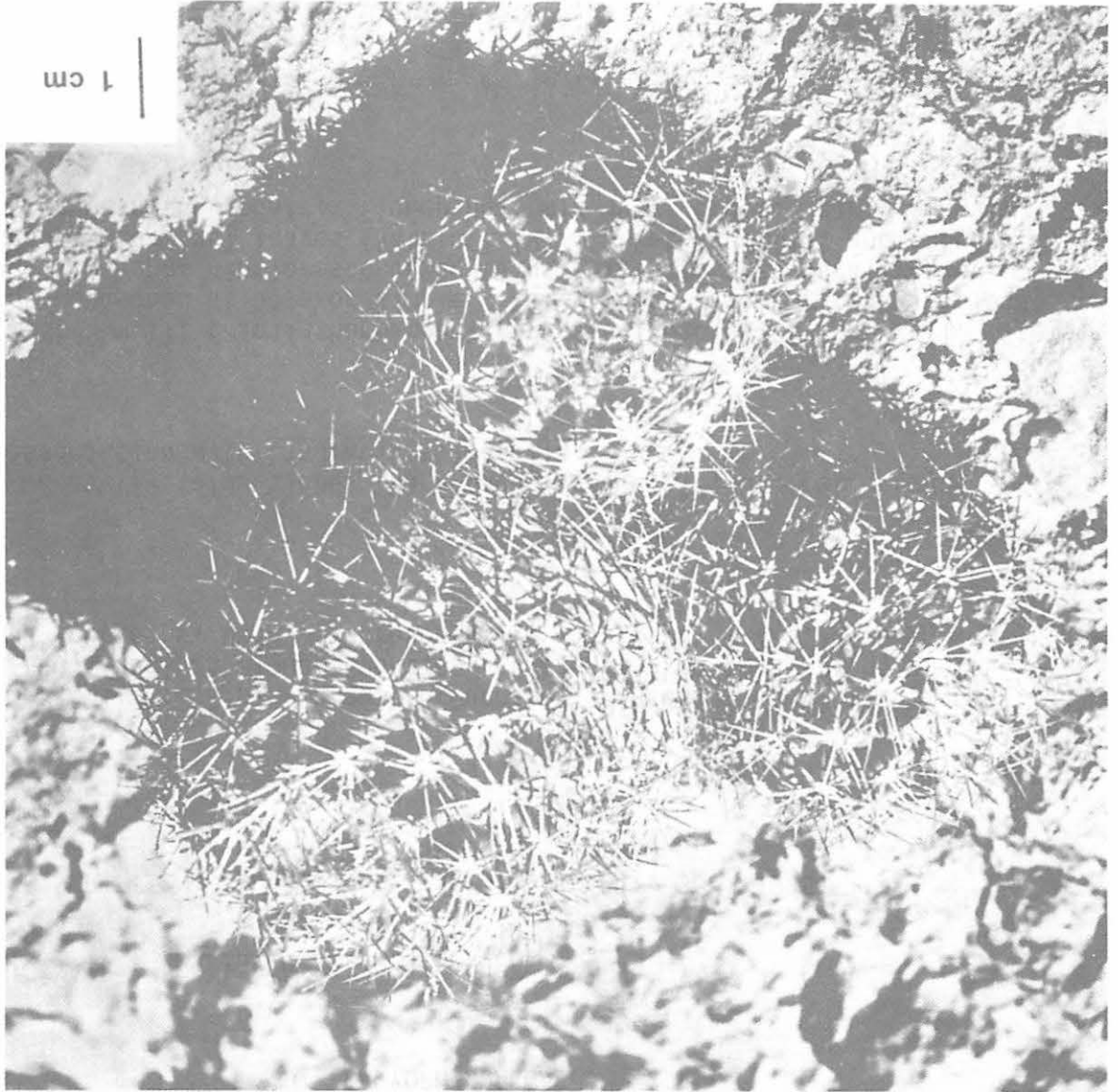
DESCRIPTION: Plants solitary or growing in tufts; about 6 cm high; globose,  
not jointed; with 13-17 more or less vertical or spiral continuous  
ribs; no glochids present. Flowers vertical or nearly so, coming  
from special areoles just above an immature spine-producing areole  
at the stem apex; 3.5 cm long; yellow to greenish-white; tube naked  
or with a few scales (these not hairy in the axils). Fruit naked;  
seeds large (4 mm long); black (Harrington 1964). Flowering: April,  
May; Fruit: May.

TAXONOMIC PROBLEMS: Considerable intergradation occurs among the taxa  
within Sclerocactus which causes numerous problems. Formerly  
Echinocactus mesae-verdae. Recently revised and included in genus  
Pediocactus (Arp 1972).

EXISTING OR POTENTIAL THREATS: Heavy commercial exploitation threatens  
remaining populations. The species does not persist well in cultivation.

LAND OWNERSHIP/MANAGEMENT: Ute Indian Reservation, NPS, BLM (species not  
located on Colorado BLM land south of Mesa Verde National Park by  
Ratzloff).

REMARKS: None



CARYOPHYLLACEAE

SCIENTIFIC NAME: Stellaria irrigua Bunge

ORIGINAL DESCRIPTION: Bunge, Verz. Suppl. Fl. Alt. 35. 1835.

COMMON NAME(S): Starwort.

KNOWN DISTRIBUTION: Alpine areas in Gunnison, Hinsdale, La Plata, Mineral, San Juan, and San Miguel Counties. Disjunct from populations in the Altai Mountains, USSR. Representative locality: T 12S, R 86W.

HABITAT: Gravelly talus slopes, hard packed soils; 12,000 feet. Found in association with Ligularia soldanella.

DESCRIPTION: Small, fragile herbaceous perennial species, 2-3 cm tall. Stems either branched at base or simple. Leaves dark green or reddish, less than 1 cm long. Inflorescence contains white flowers, usually overtopped by terminal leaves (Ratzloff 1977). Petals bifid, and frequently shorter than the sepals. Flowering: mid-July; Fruit: early August.

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: None known, but species occupies a habitat that is very sensitive and easily disturbed.

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service

REMARKS: This species ranges widely in the Elk and San Juan Mountains, and may be a candidate for deletion from the Federal List (Wilken, personal communication).





CHENOPODIACEAE

SCIENTIFIC NAME: Atriplex pleiantha W.A. Weber

ORIGINAL DESCRIPTION: Weber, Madrono 10:189. 1950

COMMON NAME(S): None

KNOWN DISTRIBUTION: Montezuma County, Mancos River. Representative  
locality: T 32N, R 19W.

HABITAT: Barren clay slopes of low hills, 5100 feet.

DESCRIPTION: Herbaceous, erect annual, .5 - 1.5 dm tall, much branched from the base. Stem and branches commonly white or reddish. Leaves alternate, round to ovate, with an acute or obtuse apex and a truncate or cuneate base; sparsely mealy or whitish. Flowers monoecious, with 2 to 6 pistillate flowers subtended by triangular-ovate bracts. Bracts united only at the very base. Utricle suborbicular, compressed, black smooth and shining, 1.5 mm long, falling free at maturity, not permanently enclosed within the bracts; seed vertical; radicle inferior (Weber 1950). Flowering: June; Fruit: June-July.

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Ute Indian Reservation

REMARKS: Unique population (cited above).

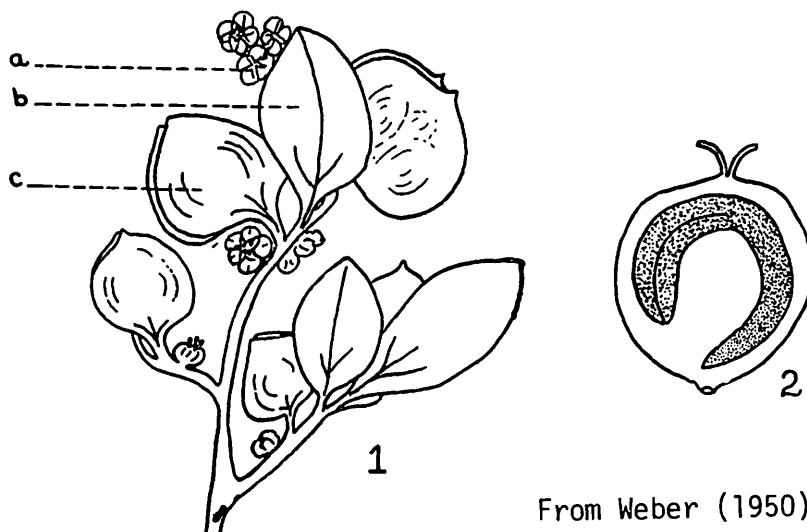
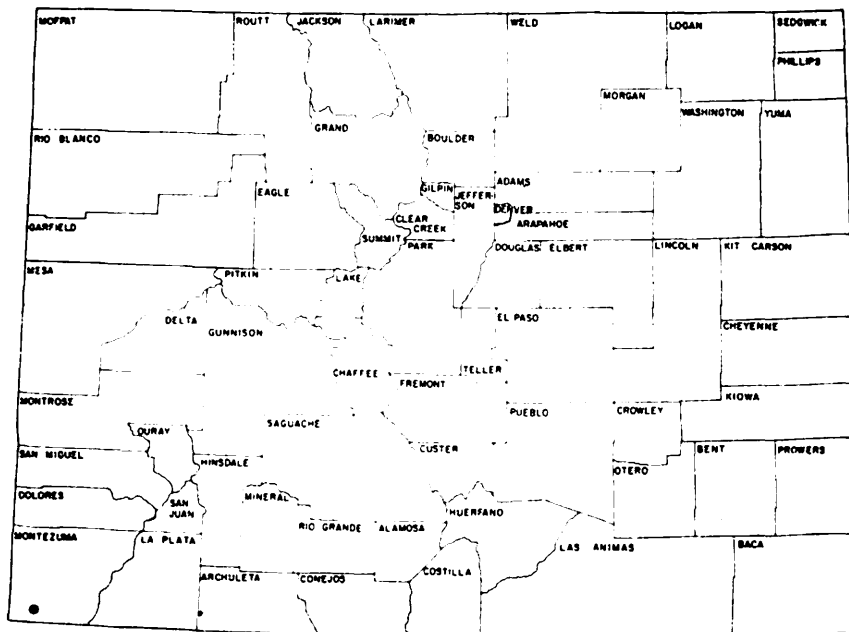


FIG. 2. *Atriplex pleiantha* Weber, 1, portion of plant ( $\times 5$ ), showing a. staminate flower, b. leaf, c. bract of carpellate flower cluster; 2, gynoecium showing position of embryo ( $\times 15$ ); 3, perianth segment of carpellate flower ( $\times 30$ ); 4, diagrammatic representation of ventral view of bract showing enclosed cluster of carpellate flowers ( $\times 6$ ).



CYPERACEAE

SCIENTIFIC NAME: Carex microptera Mack. var. crassinervia F.J. Herm.

ORIGINAL DESCRIPTION: F.J. Hermann, Rhodora 70:420. 1968.

COMMON NAME(S): Sedge

KNOWN DISTRIBUTION: Ouray County, Colorado; Natrona County, Wyoming.

HABITAT: Open parks and basins, in wet meadows; 11,000 feet in Colorado and 7900 feet in Wyoming.

DESCRIPTION: Culms 3-10 cm high from densely tufted bases, with fine longitudinal lines at the base, triangular near the top. Leaf blades flat, 1-3 cm long, 2-4.5 mm wide. Spikes of inflorescence closely bunched forming ovoid or suborbicular heads 12-18 mm long, and 10-16 mm wide with pistillate spikes occurring above the staminate spikes. Scales dull brown, with a lighter midrib (obscure) and translucent white margins. Variety crassinervia differs from the typical C. microptera only in the stout 5-7 ventral nerves on the perigynia. In the typical species, perigynia have only a few inconspicuous nerves. Flowering: August (Hermann 1970).

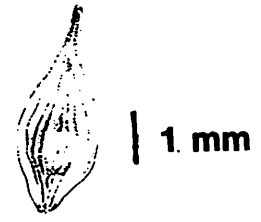
TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service

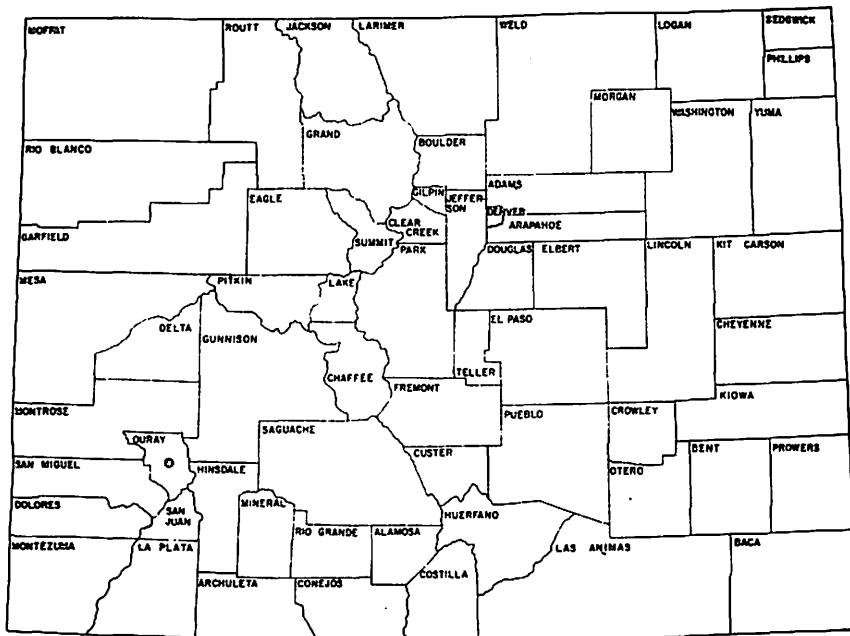
REMARKS: None

Carex microptera var. crassinervia



perigynium

From Hermann (1970)



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus deterior Barneby

ORIGINAL DESCRIPTION: Barneby, Leafl. West. Bot. 7:35. 1953.

COMMON NAME(S): Cliff-palace milkvetch

KNOWN DISTRIBUTION: Montezuma County; Mesa Verde National Park.  
Representative locality: T 34N, R 15W.

HABITAT: Found on dry rocky mesas, on sand-filled depressions of flat or shelving rock, seeding down to loose sandy talus; with juniper and pinyon; 5000-7000 feet.

DESCRIPTION: Low growing, perennial plants with short or obsolete stems; narrow stipules at base of plant are connate; flowers yellowish-white from root crown or shortly forming caudex or cream colored (faintly purple-veined) arranged in 2-5 small, loosely ascending racemes, with shallow-campanulate calyx tube; keel with deltoid apex. Flowers smaller (10-11 mm) than a similar species A. naturitensis. Pods with short, stiff, appressed hairs, 8-10 ovules, elevated on a stipelike gynophore (0.2-1 mm long), trigonously compressed, flowering in May (Barneby 1953).

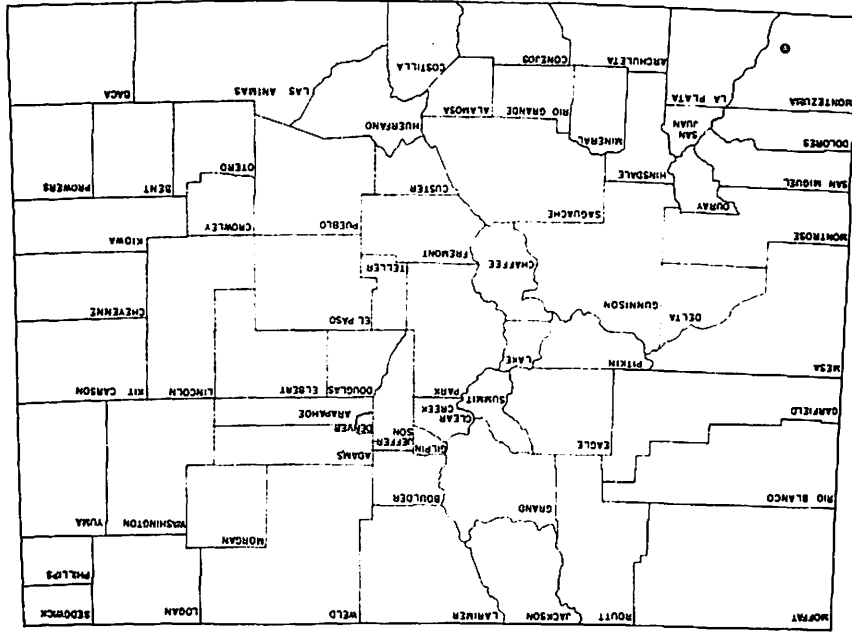
TAXONOMIC PROBLEMS: Formerly a variety of A. naturitensis.

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: National Park Service.

REMARKS: None

No Illustration Available



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus detritalis M. E. Jones

ORIGINAL DESCRIPTION: Jones, Contrib. West. Bot. 13:9. 1910.

COMMON NAME(S): Debris milkvetch

KNOWN DISTRIBUTION: Rio Blanco County, White River Valley. Representative locality: T 1N, R 94W.

HABITAT: Barren sandy clay soil on detrital slopes of sandstone outcrops; with sagebrush; 5400-7000 feet; exposed white shales of southern periphery of Uintah Basin, associated with Lesquerella and Penstemon.

DESCRIPTION: Cushion or close (2-6 cm tall) thick mat-forming perennial. Leaves 1-2 cm long, narrowly oblanceolate or linear, with gray or white silky hairs. Upper leaves have 3-5 leaflets, lower leaves are simple. Flowers are purple, and arranged in racemes. Pods flat, elliptic to linear in outline, laterally compressed, with prominent sutures, 15-31 mm long. Flowering in May (Harrington 1964).

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM and private

REMARKS: "Local, but forming colonies at scattered stations within the Uintah Basin in Duchesne, Uintah Counties, Utah, and Rio Blanco County, Colorado" (Barneby 1964).





FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus humillimus Gray ex Brand.

ORIGINAL DESCRIPTION: Gray ex Brandegee, Bull. U.S. Geol. Surv. 23:235. 1876

COMMON NAME(S): Mancos milkvetch

KNOWN DISTRIBUTION: Montezuma County, Mesa Verde, near the Mancos River.

HABITAT: "It is to be sought in crevices of rimrock pavement and on sand-filled ledges of shelving rock masses, the ecological niches in which several specialized Basin astragali have found a congenial home" (Barneby 1964); 6000 feet.

DESCRIPTION: Diminutive, tufted perennial, cinereously strigulose; stems .5-1 cm long; stipules submembranous, becoming papery, deltoid-ovate; leaves 8-15 mm long shortly petioled, leaflets .7-2 mm long; peduncles 2-4 mm long; racemes very shortly 1-3 flowered; calyx 3 mm long; pod spreading, sessile, oblong ellipsoid, 4.5 mm long, 2 mm in diameter, carinate by the prominent sutures, the strigulose valves becoming stiffly papery and stramineous (Barneby 1964). Flowering and fruit: June and July.

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: National Park Service, Ute Indian Reservation.

REMARKS: Known only from the type. Has not been rediscovered since Brandegee collected the type in July 1875 (Barneby 1964).



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus linifolius Osterhout.

ORIGINAL DESCRIPTION: Osterhout, George E., Bull. Torr. Bot. Club  
55:75. 1928.

COMMON NAME(S): Grand Junction milkvetch

KNOWN DISTRIBUTION: Mesa County, along Colorado River near Grand Junction  
"6 miles across Colorado River from Grand Junction" (Osterhout 1928),  
possibly in what is now Colorado National Monument.

HABITAT: Dry adobe hills and sandstone areas; 4500 feet.

DESCRIPTION: Perennial plant, stems 3.5-4 dm long, shortly subterranean  
at base. Leaves are slender, pinnate with 2-5 leaflets, attached at  
a node or joint and separate at maturity leaving a clean-cut scar.  
Flowers yellowish-white (originally purple, but fade), sometimes with  
a purple tip, 15 mm long, and occur in racemes. Sessile pods are  
rounded in cross section, 15 mm long, 5-6 mm wide, do not nod, and have  
two prominent but not intruded sutures. This species closely resembles  
A. rafaensis which has dark purple, longer (18-25 mm) flowers and flat,  
noddling pods. A. rafaensis is known from Dinosaur National Monument  
Headquarters near Jensen, Utah, close to Moffat County, Colorado.  
Blooms in June (Osterhout 1928).

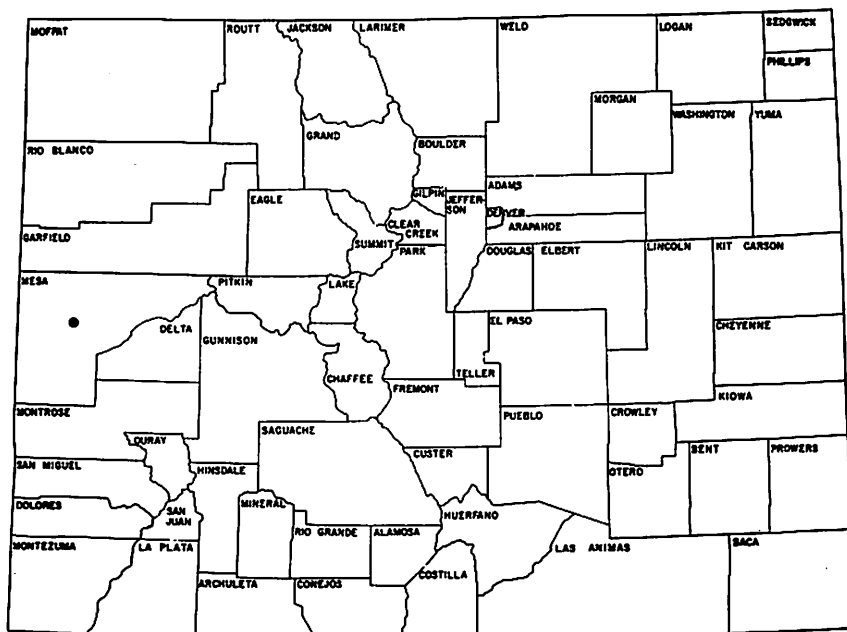
TAXONOMIC PROBLEMS: Since a specimen has not been found recently, it is  
not certain if A. linifolius is a separate species. It resembles both  
A. rafaensis and A. toanus (in fruit), and the three species could  
be one discontinuously dispersed species. A. linifolius appears to be  
varietally distinct (Barneby 1964).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: NPS, BLM, or private land

REMARKS: None

No Illustration Available



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus microcymbus Barneby

ORIGINAL DESCRIPTION: Barneby, Am. Midl. Nat. 41:499. 1949.

COMMON NAME(S): Milkvetch

KNOWN DISTRIBUTION: Gunnison County, vicinity of Gunnison. Representative locality: T 49N, R 86W.

HABITAT: In sandy soil along roadsides with foreign weeds, and on sagebrush slopes; 7600-7700 feet.

DESCRIPTION: Taller (30+ cm), perennial plants, diffusely branched pinnate leaves, elliptical to obovate, 12 or more leaflets. Flowers arranged in racemes which tend to be in groups of three at a node. Principal lateral branches (peduncles) accompanied by an auxiliary branch which is sometimes a naked peduncle. Blooms in May; fruits in June and July (Barneby 1949).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Private, BLM

REMARKS: Original population found on disturbed ground near Gunnison; a second population located by Barrell (Barrell 1969) at the base of cliffs in the drainage of South Beaver Creek.



FABACEAE (LEGUMINOSAE)

SCIENTIFIC NAME: Astragalus naturitensis Payson

ORIGINAL DESCRIPTION: Payson, Bot. Gaz. 60:377. 1915.

COMMON NAME(S): Naturita milkvetch

KNOWN DISTRIBUTION: Montrose (Dolores River) and Montezuma (McElmo Creek) Counties.

HABITAT: "Sandstone ledges and crevices of rimrock pavement along canyons, with juniper and piñon, 5400-6200 feet." (Barneby 1964).

DESCRIPTION: Low growing (about 10 cm) spreading perennial plants with pinnate leaves. Flowers bicolored with white banners and reddish wings and keels, 14-15 mm long, calyx cylindric and 6-8 mm long. A. deterior is a similar species but has smaller, entirely yellowish-white flowers. Pods leathery, heavily covered with short, stiff, appressed hairs. Stipules large and conspicuous, 3-7 mm long, 2-5 mm wide (Barneby 1948).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: NPS, BLM

REMARKS: "Local, and apparently rare." (Barneby 1964).





BORAGINACEAE

SCIENTIFIC NAME: Mertensia viridis var. cana (Rydb.) Williams

ORIGINAL DESCRIPTION: As Mertensia cana Rydberg, Bull. Torrey Bot. Club 36:698. 1909; Williams, Ann. Mo. Bot. Gard. 24:120. 1937.

COMMON NAME(S): Greenleaf bluebells

KNOWN DISTRIBUTION: Scattered localities along Front Range (Larimer County) into central mountains (Summit County). Also reported from Utah.

HABITAT: Meadows in conifer forest, ranging to above treeline (9000-12,000 feet).

DESCRIPTION: Herbaceous perennial, 5-35 cm tall. Basal and upper leaves linear to narrowly ovate, unilateral, with short, stiff gray or white appressed hairs on the upper and lower surfaces. Flowers (corolla) blue, filaments attached near the throat; calyx lobed 2/3 or more of its entire length, tube of calyx longer (3-9 mm) than the limb (Harrington 1964). Flowering: June; Fruit: July.

TAXONOMIC PROBLEMS: The variety cana appears to intergrade extensively with other subspecies of the viridis complex over a wide geographical area, and may not represent a good variety (Wilken, personal communication).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service, National Park Service, private

REMARKS: This species may be a candidate for removal from the federal list after further study.



BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Arabis gunnisoniana Rollins

ORIGINAL DESCRIPTION: Rollins, Rhodora 43:434. 1941.

COMMON NAME(S): Rockcress

KNOWN DISTRIBUTION: Gunnison and Montrose Counties, vicinity of the Gunnison River. Representative localities: T 49N, R 85W; T 49N, R 84W.

HABITAT: Rocky soil in areas dominated by big sagebrush (Artemisia tridentata).

DESCRIPTION: Herbaceous perennial plants, 10-20 cm tall, slender stems arising from a closely branching or simple caudex. Stems densely pubescent below, lacking hairs above. Basal leaves numerous, linear-oblongate, acute, entire or rarely few-toothed, 1-2 cm long. Petals pink to purplish, 4-6 mm long and 2 mm wide. Pubescent pedicels spread at right angles to the stem; therefore, flowers and siliques occur perpendicular or slightly recurved to the stem. Siliques not hairy, 2.5-4 cm long and 1-1.5 mm wide, compressed parallel to the septum at maturity (Rollins 1941). Flowering: April; Fruit, May, June.

TAXONOMIC PROBLEMS: Part of the Arabis demissa complex needs further study to clarify relationship with other members of the complex (Johnston, personal communication).

EXISTING OR POTENTIAL THREATS: Species not recently found in localities where previously known; factors responsible for disappearance not known (Johnston, personal communication).

LAND OWNERSHIP/MANAGEMENT: BLM, private

REMARKS: Appears to be highly restricted in its range, and not common where found.



BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Arabis oxylobula Greene

ORIGINAL DESCRIPTION: Greene, Pittoria 1:195. 1900.

COMMON NAME(S): Rockcress

KNOWN DISTRIBUTION: Garfield County, near Glenwood Springs.

HABITAT: Unknown, possibly found in limestone cliffs on southern exposures. Similar to habitat of Arabis demissa, a closely related species (Johnston, personal communication). 5,000-6,000 feet.

DESCRIPTION: Herbaceous perennial plant, 10-12 cm tall. Stems shortly and loosely racemose at the summit. Tufted basal leaves about an inch long, narrowly oblanceolate, acute, entire, the slender petiolar base sparingly hispid-ciliate. Flowers pink, about 5 mm long. Pods about 5, linear, straight, about 3/4 inch long, acute, spreading or a little deflexed on short filiform pedicels; valves with a distinct midnerve; seeds imperfectly biserial. Flowering and fruit: June (Greene 1900).

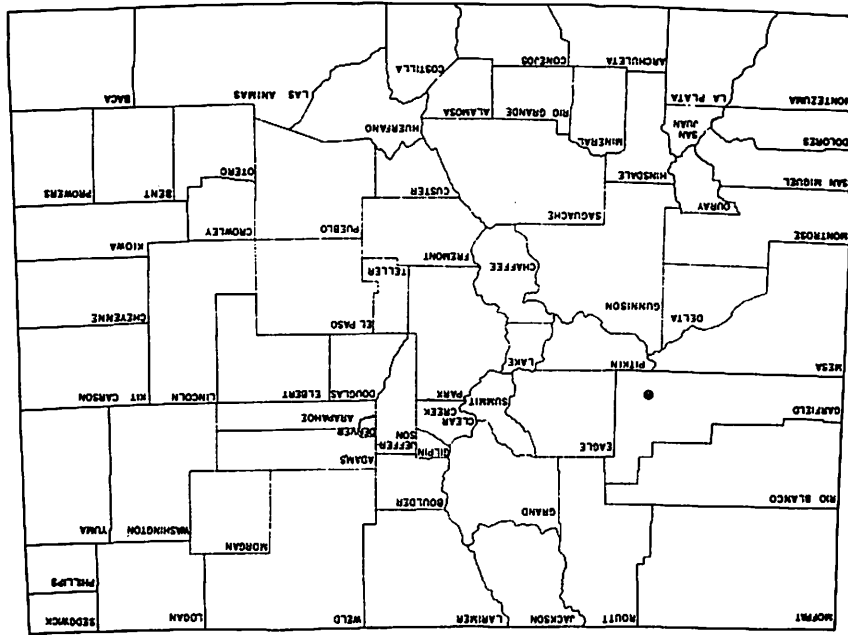
TAXONOMIC PROBLEMS: Relationship to the Arabis demissa complex should be studied (Johnston, personal communication).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown, possibly U.S. Forest Service.

REMARKS: Known from two collections made by Osterhout in 1899 and 1902, not rediscovered since then despite extensive field efforts.

No Illustration Available



BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Braya humilis (C.A. Meyer) Robinson ssp. ventosa Rollins

ORIGINAL DESCRIPTION: Rollins, Rhodora 55:114. 1953.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Park County, alpine area in the vicinity of Hoosier Pass. Representative locality: T 8S, R 78W.

HABITAT: Steep rocky slopes near alpine tundra, B. humilis plants frequently concealed by rocks and other plants; 12,000 feet.

DESCRIPTION: Herbaceous perennial plants, 3-6 cm tall. Stems several to numerous, arising from a basal rosette. Leaves entire, spatulate, thickened, 1-2 cm long, 2-3 cm wide. Stem leaves few. Leaves and stems pubescent with 2 to 3 branched trichomes. Inflorescence dense, composed of white flowers, often covering the whole stem. Siliques round in cross-section, widely spreading or diverging, 1.5-2 cm long, 1 mm wide, with 2-branched trichomes. Flowering and fruit: early to mid July (Rollins 1953).

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: The one known population near a road and possibly subject to disturbance.

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service

REMARKS: A highly restricted subspecies, representing a disjunct from related subspecies found in the North American Arctic. Extremely small population (less than 100 plants), and no others discovered in the vicinity despite extensive field efforts (Johnston, personal communication).





BRASSICACEAE (CRUCIFERAE)

SCIENTIFIC NAME: Draba exunguiculata (Schulz) C.L. Hitchcock.

ORIGINAL DESCRIPTION: As Draba chrysantha var. exunguiculata Schulz, Pflanzenreich 4(105): 194. 1927; C.L. Hitchcock, Univ. Wash. Publ. Biol. 11:46. 1941.

COMMON NAME(S): Whitlow-wort

KNOWN DISTRIBUTION: Summit, Park, El Paso, Clear Creek, Gilpin, Boulder, Routt Counties; alpine areas in the Front Range, possibly more widespread. Representative localities: T 3S, R 74W.

HABITAT: Alpine, rocky areas 11,000-13,000 feet.

DESCRIPTION: A tufted, perennial plant growing 2-7 cm tall. Persistent basal leaves, 10-25 mm long and 1-3 mm wide, form thick tufts; 1-3 leaves occur on the stems. Leaves linear to oblanceolate and sparsely hairy, with only a few simple or sometimes branched hairs. Yellow flowers crowded (5-20 flowers) in racemes without bracts (Hitchcock 1941). Flowering and fruit: late July, early August.

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service

REMARKS: None.



BORAGINACEAE

SCIENTIFIC NAME: Cryptantha aperta (Eastw.) Payson

ORIGINAL DESCRIPTION: (As Oreocarya aperta) Eastwood, Bull. Torr. Bot. Club 30:241. 1903; Payson, Ann. Missouri Bot. Gard. 14:295. 1927.

COMMON NAME(S): Catseye

KNOWN DISTRIBUTION: Mesa County, vicinity of Grand Junction.

HABITAT: Upper Sonoran Zone, on dry ground. 4500 feet.

DESCRIPTION: Herbaceous perennial, several stems 10-20 cm tall ascending from a caudex. Leaves mostly basal, spatulate or oblanceolate. Pubescence of upper and lower leaf surfaces consisting of sparse, short, stiff appressed hairs and pustulate hairs. Flowers white, occurring in aggregated or spreading spikes branching from the base of the inflorescence. Corolla tube 2.5-3 mm long (equalling or shorter than the sepals). Mature nutlets lanceolate acute, 2.5-3 mm long, roughened on the inside and outer surfaces, scars closed (Payson 1927).  
Flowering: May; Fruit: June.

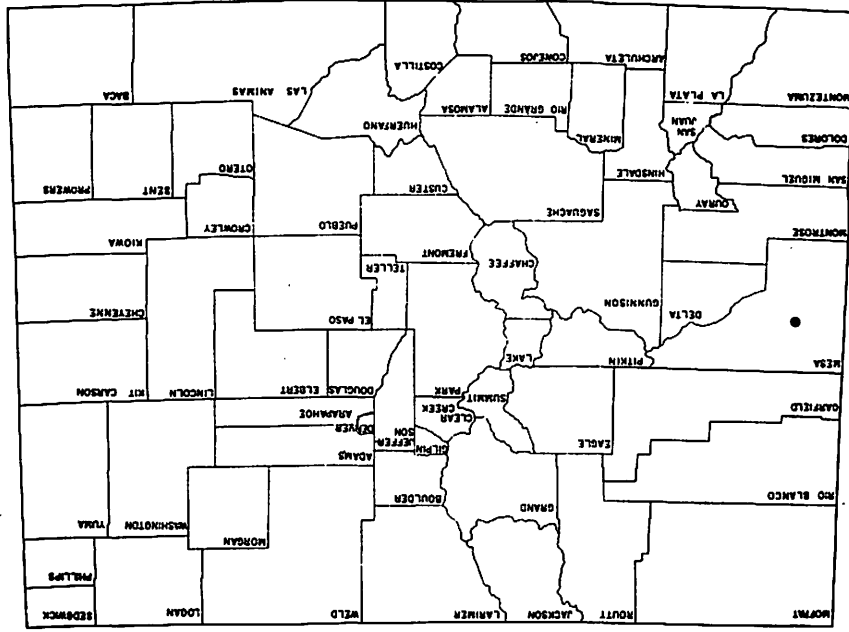
TAXONOMIC PROBLEMS: Unknown

EXISTING OR POTENTIAL THREATS: None known

LAND OWNERSHIP/MANAGEMENT: Unknown

REMARKS: This species has not been collected since 1892, and the type locality may have been eliminated by agricultural and urban development in the vicinity of Grand Junction.

No Illustration Available



BORAGINACEAE

SCIENTIFIC NAME: Cryptantha elata (Eastw.) Payson

ORIGINAL DESCRIPTION: Eastwood, Bull. Torr. Bot. Club 30:241. 1903;  
Payson, Ann. Missouri Bot. Gard. 14:285. 1927.

COMMON NAME(S): Catseye, Cliffdweller's candlestick

KNOWN DISTRIBUTION: Mesa County, Colorado River valley in the vicinity of  
Grand Junction. Representative locality: T 10S, R 101W.

HABITAT: Barren clay hills, Upper Sonoran Zone. 4500-6000 feet. Dry,  
shifting, or disturbed soil.

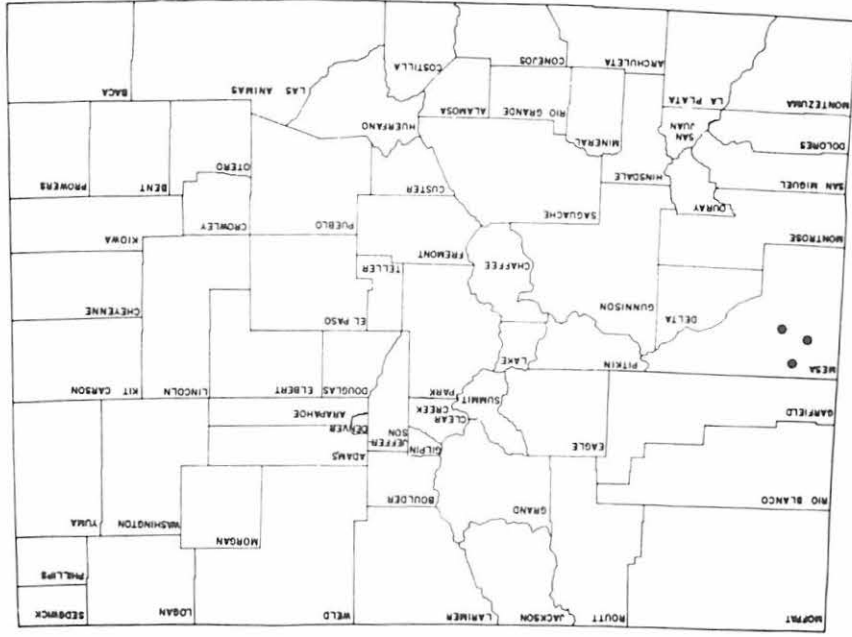
DESCRIPTION: Herbaceous perennial, stems stout, one to several, 30-50 cm  
tall. Stems covered by stiff, bristle-like appressed hairs. Basal  
leaves spatulate, 1.5-3 cm long, stem leaves linear oblanceolate,  
acute, 2-4 cm long; hairy. Inflorescence extending over upper 1/3  
or 1/2 of the stem, broad at the top, tapering at base. Flowers  
(corolla) white, 4 mm long, equal in length to the sepals. Nutlets  
about 5 mm long, surface slightly glossy, densely bumpy (tuberculate)  
and wrinkled. Scar extends from near the base to the apex, straight,  
closed except at the base where scar is forked and slightly open.  
Flowering: mid-May; Fruit: late June (Payson 1927).

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM, private

REMARKS: Occurs in adjacent Utah.



BORAGINACEAE

SCIENTIFIC NAME: Cryptantha stricta (Osterhout) Payson

ORIGINAL DESCRIPTION: As Oreocarya stricta Osterhout, Bull. Torrey Bot. Club. 50:217. 1923; Payson, Ann. Mo. Bot. Gard. 14:295. 1927.

COMMON NAME(S): Catseye

KNOWN DISTRIBUTION: Moffat County, south of the Yampa River, Dinosaur National Monument. Representative locality: T 6N, R 103W. Also known from adjacent Utah and Wyoming.

HABITAT: Clay soils, 5000-8500 feet.

DESCRIPTION: Herbaceous perennial consisting of 1-3 erect stems (1.5-3 cm high). Stems with strong, divaricate bristles and sparsely retrorse-strigose hairs. Leaves mostly basal, oblanceolate, 2-5 cm long, with spreading bristles and strigose pustulate hairs about equally numerous on both leaf surfaces. Upper leaves similar, but reduced in number. Narrow crowded inflorescence consists of white or possibly yellow flowers. Petals equal or shorter (3.5 mm) than the sepals. Surfaces of nutlets glossy, dorsal surface roughened, inner surface smooth; scar nearly closed and straight (Payson 1927). Flowering and fruit: late June, early July.

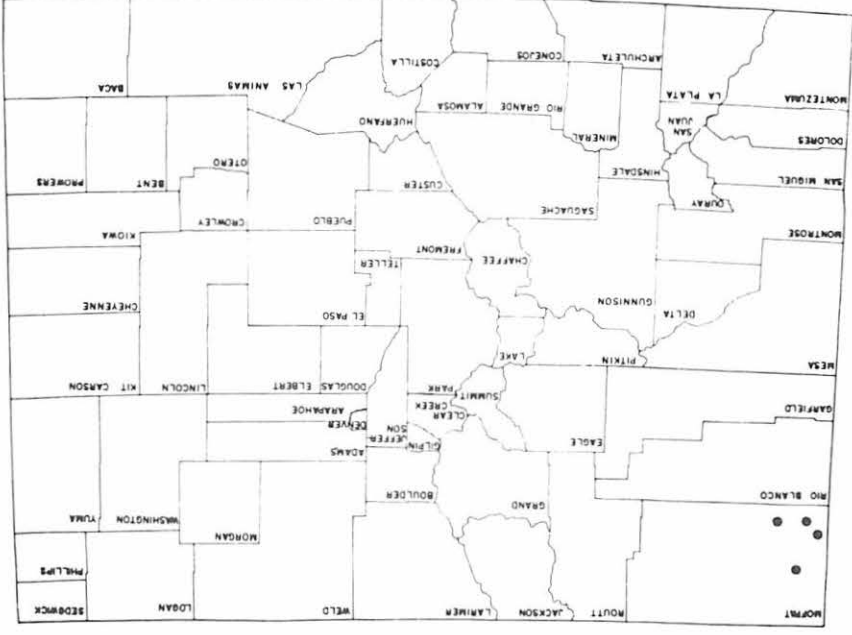
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM, National Park Service, Private.

REMARKS: None





BORAGINACEAE

SCIENTIFIC NAME: Cryptantha weberi I.M. Johnston

ORIGINAL DESCRIPTION: Johnston, Journ. Arn. Arb. 33:72. 1952.

COMMON NAME(S): Weber's catseye

KNOWN DISTRIBUTION: Saguache and Hinsdale Counties, 9700-10,000 feet.  
Representative locations: T 45N, R 3E; T 45N, R 2W.

HABITAT: Volcanic ash deposits in association with Aster coloradoensis,  
Senecio hallii, and Penstemon secundiflorus. On dry slopes among  
rubble, shelves of cliffs.

DESCRIPTION: Herbaceous perennial, weak stems branching from the base.  
Stems 20-60 cm tall. Leaves narrow, oblanceolate (3-10 cm long),  
beset with long sharp rigid bristles on both surfaces. Flowers white,  
conspicuous bracts extending beyond groups of flowers (cymes). Corolla  
tube 3-4 mm long. Nutlets small (less than 2.5 mm long) with open  
scars, roughened outer surfaces and smoother inner surfaces. This  
species differs from Cryptantha virgata by its branching habit, and  
smaller nutlets (Johnston 1952). Flowering: late June, early July;  
Fruit: late July.

TAXONOMIC PROBLEMS: None known

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: BLM, private, U.S. Forest Service.

REMARKS: Apparently restricted by edaphic (soil) factors. Locally  
abundant at two sites, scattered elsewhere (Johnston, personal  
communication).

COLORADO PROPOSED THREATENED AND ENDANGERED PLANT SPECIES (Continued)

<u>Taxon</u>	<u>Proposed Status</u>	<u>Page</u>
CARYOPHYLLACEAE		
22. <u>Stellaria irrigua</u>	E	51
CHENOPODIACEAE		
23. <u>Atriplex pleiantha</u>	E	53
CYPERACEAE		
24. <u>Carex microptera</u> var. <u>crassinervia</u>	T	55
FABACEAE		
25. <u>Astragalus deterior</u>	E	57
26. <u>Astragalus detritalis</u>	E	59
27. <u>Astragalus humillimus</u>	E	61
28. <u>Astragalus linifolius</u>	E	63
29. <u>Astragalus microcymbus</u>	E	65
30. <u>Astragalus naturitensis</u>	E	67
31. <u>Astragalus osterhoutii</u>	E	69
32. <u>Astragalus schmollae</u>	E	71
33. <u>Astragalus wetherillii</u>	T	73
34. <u>Oxytropis obnapiformis</u>	E	75
35. <u>Trifolium lemmonii</u> <sup>3</sup>	E	77
FUMARIACEAE		
36. <u>Corydalis caseana</u> var. <u>caseana</u> <sup>3</sup>	T	78
HYDROPHYLLACEAE		
37. <u>Phacelia formosula</u>	E	79
38. <u>Phacelia submutica</u>	E	81
ONAGRACEAE		
39. <u>Gaura neomexicana</u> ssp. <u>coloradensis</u>	E	83
POACEAE		
40. <u>Festuca dasyclada</u>	E	85
41. <u>Phippsia algida</u>	T	87

COLORADO PROPOSED THREATENED AND ENDANGERED SPECIES (Continued)

<u>Taxon</u>	<u>Proposed Status</u>	<u>Page</u>
POLYGONACEAE		
42. <u>Eriogonum brandegei</u>	T	89
43. <u>Eriogonum ephedroides</u>	E	91
44. <u>Eriogonum pelinophilum</u>	E	93
45. <u>Eriogonum saurinum</u>	T	95
46. <u>Eriogonum viridulum</u>	T	97
RANUNCULACEAE		
47. <u>Aquilegia chrysantha</u> var. <u>rydbergii</u>	T	99
48. <u>Aquilegia micrantha</u> var. <u>mancosana</u>	E	101
SAXIFRAGACEAE		
49. <u>Sullivantia purpusii</u>	T	103
SCROPHULARIACEAE		
50. <u>Penstemon retrorsus</u>	E	105

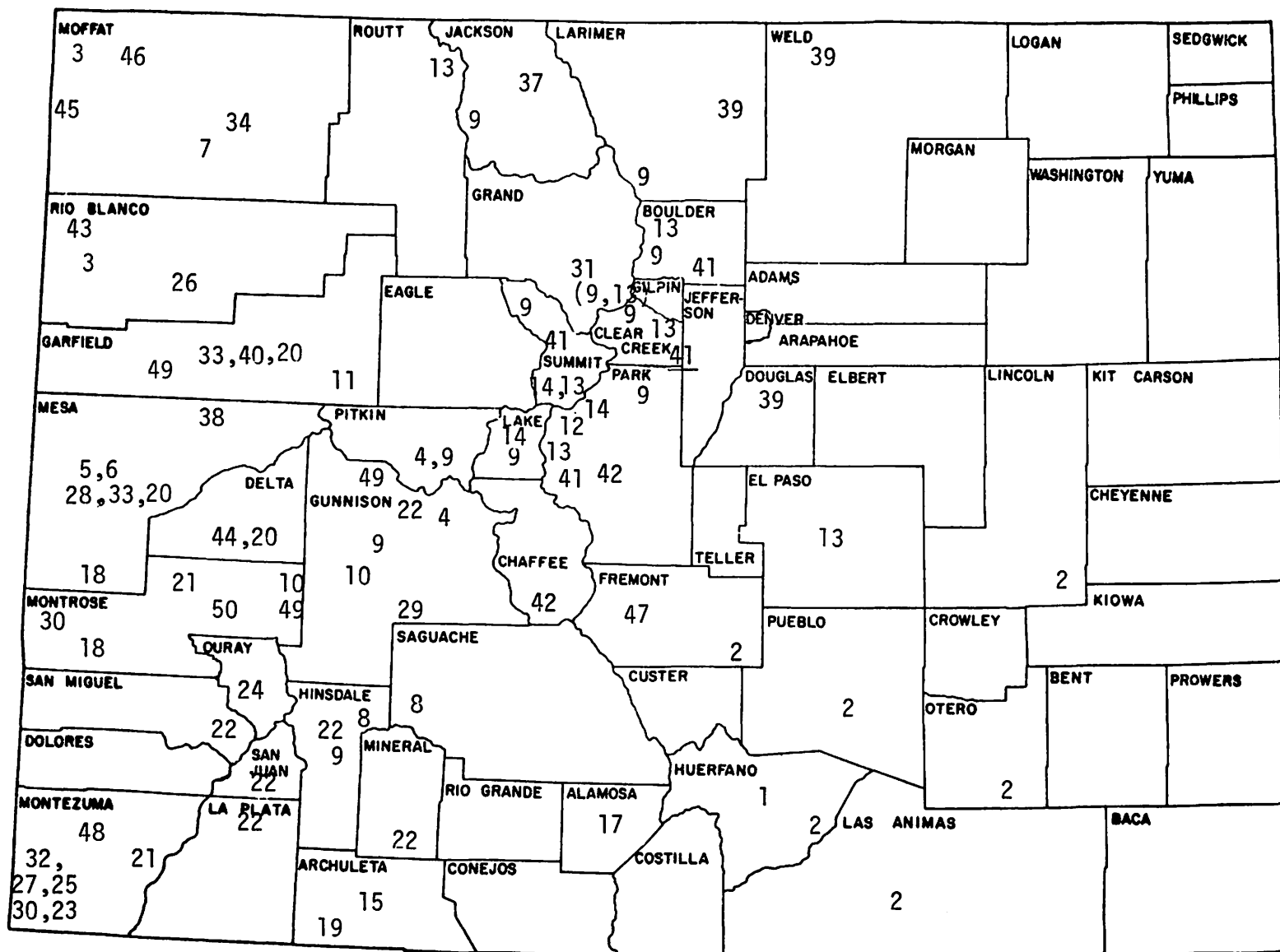
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1 Proposed as endangered, June 16, 1976. Exceptions are Neoparrya lithophila, Oxytropis obnapiformis, and Trifolium lemmonii, which were listed as endangered on the July 1, 1975, list but were deleted from the 1976 list.

2 Reviewed as threatened, July 1, 1975.

3 Not reported from Colorado.

VII. MAP OF PROPOSED THREATENED AND ENDANGERED PLANT SPECIES



VIII. SPECIES ACCOUNTS

APIACEAE (UMBELLIFERAE)

SCIENTIFIC NAME: Neoparrya lithophila Mathias

ORIGINAL DESCRIPTION: Mathias, Ann. Mo. Bot. Gard. 16:393-394. 1929.

COMMON NAME(S): None

KNOWN DISTRIBUTION: Huerfano County, vicinity Farisita; T 27S, R 69W.

HABITAT: Occurring in cracks and shelves of cliffs associated with a volcanic dike; 7000 feet.

DESCRIPTION: Herbaceous perennial appearing stemless due to crowded basal leaves. Singly pinnate basal leaves and reflexed umbel rays are diagnostic characters. Linear leaflets 5-20 mm long. Flowering stems exceed basal leaves. Fruit oblong, glabrous, 3-5 mm long, lacks stylopodium, but with inconspicuous dorsal ribs. Flowering: June, July; Fruit: late July, early August (Mathias 1929).

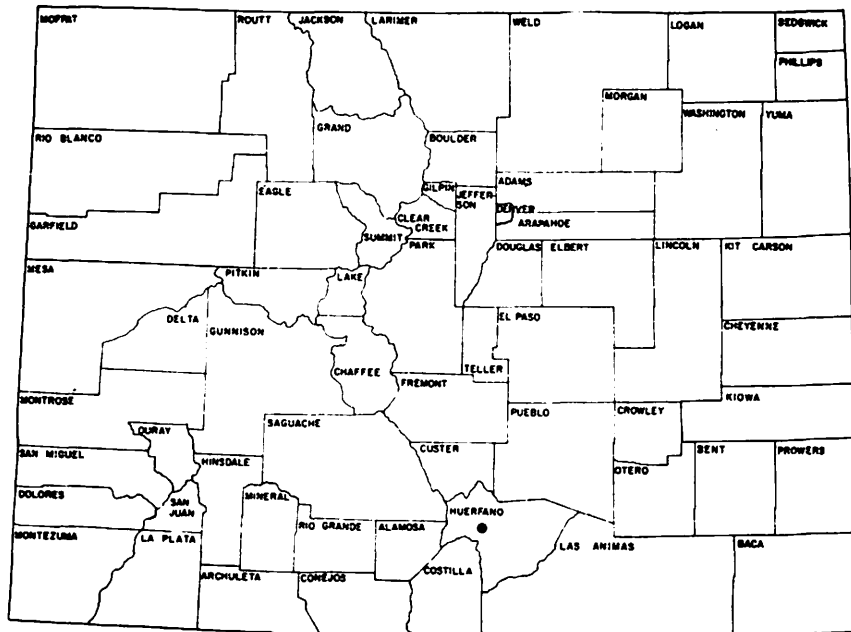
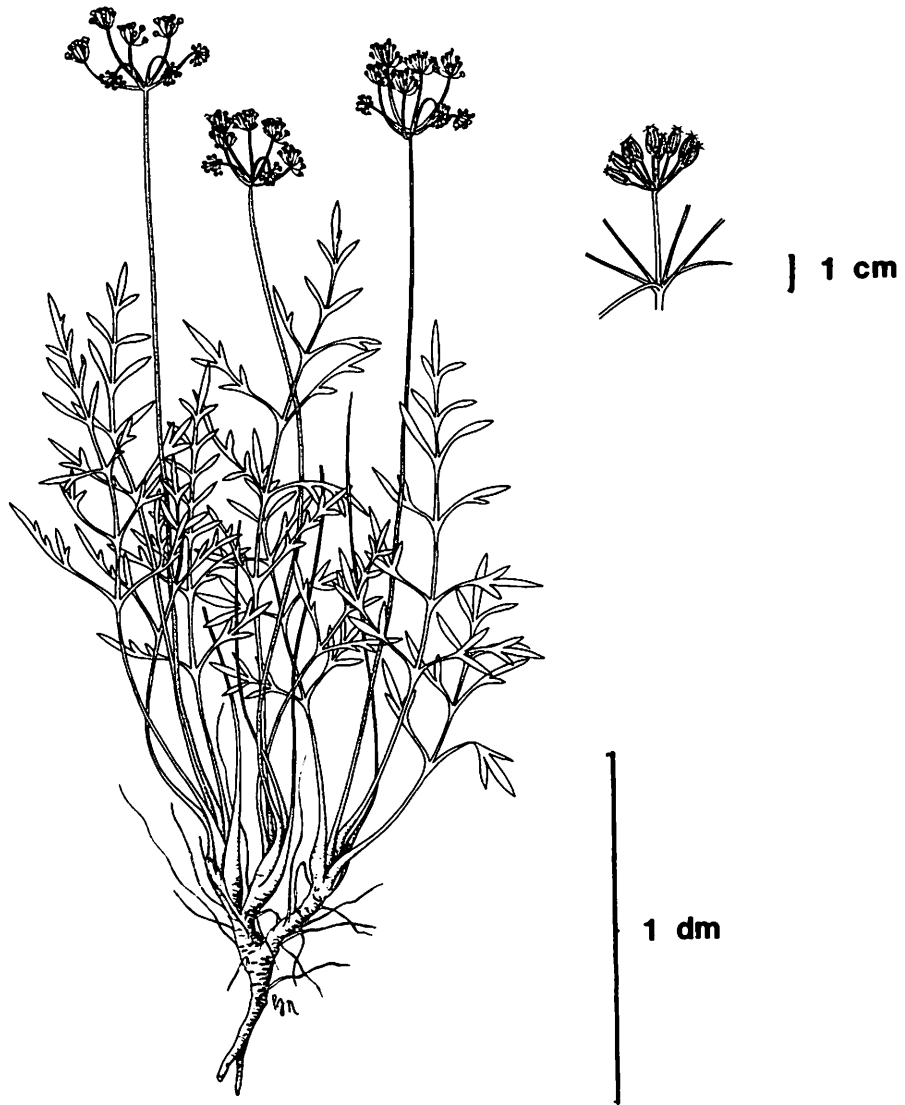
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Private land

REMARKS: Unique population, not found on other volcanic dikes in the vicinity of the type locality.

Neoparrya lithophila



ASTERACEAE (COMPOSITAE)

SCIENTIFIC NAME: Haplopappus fremontii ssp. monocephalus (A. Nels.)  
Hall [Oonopsis foliosa (Gray) Greene]

ORIGINAL DESCRIPTION: Hall, Harvey M. "The Genus Haplopappus: A Phylogenetic Study in the Compositae." 1928. 391 pp.

COMMON NAME(S): Goldenweed

KNOWN DISTRIBUTION: Las Animas, Huerfano, Pueblo, Lincoln, Fremont and Otero Counties. Representative location: T 17S, R 53W.

HABITAT: Plains and hills, 5500 - 6000 feet.

DESCRIPTION: Herbaceous perennial, 15-30 cm tall, stems arising from a woody caudex. Leaves usually oblong-lanceolate, entire, 5-10 cm long, 5-15 mm wide. Diagnostic characteristic is lack of ray flowers, and imbricated long, sharp, pointed (about 18 mm long) involucre bracts. Usually one flower head per stem (hence the name monocephalus), disk flowers yellow (Harrington 1964). Flowers in June, July.

TAXONOMIC PROBLEMS: Possibly a genetic deviant, but not well studied (Wilken, personal communication).

EXISTING OR POTENTIAL THREATS: Unknown

LAND OWNERSHIP/MANAGEMENT: Unknown, probably private

REMARKS: Appears to be widespread in southeastern Colorado, possibly ranging into New Mexico.





ASTERACEAE (COMPOSITAE)

SCIENTIFIC NAME: Parthenium ligulatum (Jones) Barneby

ORIGINAL DESCRIPTION: As Parthenium alpinum var. ligulatum Jones,  
Contr. W. Bot. 13:16, 1910; Barneby, Leaflet West.  
Bot. 5:20. 1947.

COMMON NAME(S): Feverfew

KNOWN DISTRIBUTION: Rio Blanco, Moffat Counties, also in adjacent Utah  
(Duchesne County). Representative locality: T 11N, R 103W.

HABITAT: White gypseous shale bluffs, associated with species that occur  
only on soils rich in selenium. Stanleya, Astragalus racemosus,  
A. detritalis (a proposed endangered species) occur with P. ligulatum  
near Duchesne, Utah; 5400-5750 feet.

DESCRIPTION: Herbaceous perennial plants; 2-5 cm tall. Leaves all basal,  
and crowded on a caudex. Flowers rayless, disk flowers perfect but  
sterile except for a few marginal flowers. Chaff of the receptacles  
pubescent at the tip and the pappus consists of two thick teeth  
extending from the edge of the wingless achene. P. ligulatum is similar  
to P. tetraeuris and P. alpinum, but has strap-shaped pistillate florets,  
sessile heads (almost hidden among the leaves), and thicker, broadly  
spatulate, yellowish-green leaves (Barneby 1947). Flowering: early  
spring (April); Fruit: mid-June.

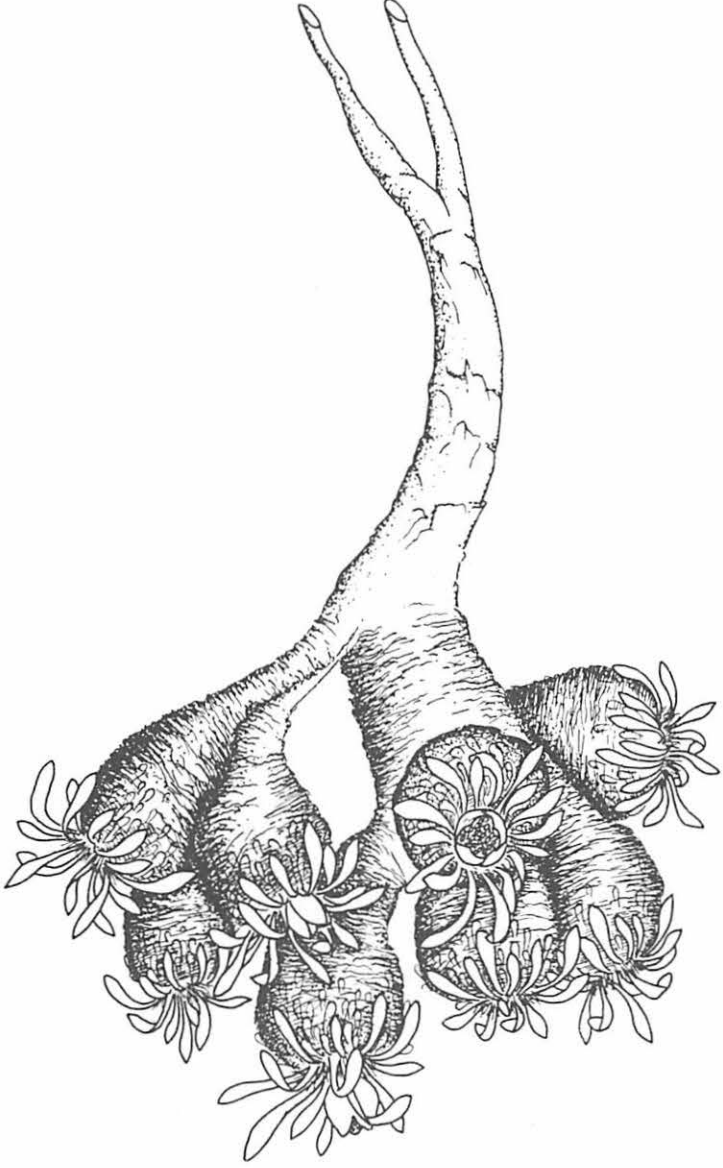
TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: Some populations possibly damaged by motor-  
cyclists using shale hills and basins.

LAND OWNERSHIP/MANAGEMENT: BLM, private

REMARKS: None

1 cm



ASTERACEAE (COMPOSITAE)

SCIENTIFIC NAME: Senecio porteri (Greene)

ORIGINAL DESCRIPTION: Greene, Pittonia 3:186. 1897.

COMMON NAME(S): Porter groundsel

KNOWN DISTRIBUTION: Gunnison and Pitkin Counties, alpine areas in the Elk Mountains. Representative locality: T 12S, R 85W.

HABITAT: Boulder fields, gravelly slopes in association with Ligularia holmii; 12,000 feet.

DESCRIPTION: Herbaceous perennial alpine plant, 1-10 cm tall. Leaves basal, purplish-tinged, 8-15 mm long, usually reniform (kidney-shaped) but sometimes broadly ovate, with serrated edges. Flower heads solitary, ray flowers yellow (Ratzloff 1977).

TAXONOMIC PROBLEMS: None

EXISTING OR POTENTIAL THREATS: One of four known populations depleted by seepage from old mine tailings (Johnston, personal communication).

LAND OWNERSHIP/MANAGEMENT: U.S. Forest Service

REMARKS: Appears to occupy a very restricted range, populations small to moderate in size (Johnston, personal communication).

each species is indicated in the species list at the front of the guide. The number before each species in the list corresponds to the same number on the Colorado map showing species occurrence by county.

For each species the SCIENTIFIC NAME, ORIGINAL DESCRIPTION, and COMMON NAME(S) are cited. Scientific names are consistent with the Federal List, although another name by which a species is known sometimes follows in brackets. The original description is cited. The description accompanying a revised name is cited when a major generic or specific taxonomic revision was made for a species. Common names are those found in the literature (Nickerson, et al. 1976, Johnston 1977). In most cases no common names exist for these species, and a general generic common name is listed (e.g. milkvetch for Astragalus).

KNOWN DISTRIBUTION includes county, geographical feature(s), and/or representative locality (to the level of a township) for all species for which adequate data exist. The known distribution is based on literature reviews and examination of Colorado herbaria. Since herbaria outside Colorado were not examined, the species ranges shown on the distribution maps are incomplete. Additional information on distribution is solicited by the authors from interested persons. The known distribution includes all available past and present records. No attempt was made to distinguish historical from current distribution. A representative locality is defined as an area where a particular species has been collected. Representative locality data are included only if the collection site is fully documented by an herbarium specimen.

HABITAT includes soil, exposure, and elevation factors that have been noted from field observations. Habitat information was derived from original descriptions, herbarium labels, and conversations with botanists familiar with the species.

A DESCRIPTION is abstracted from the original description or other source to provide information on the growth habit, and key characteristics of the foliage, flower, and fruit. Key characteristics are provided to distinguish similar species. Phenological data are provided to assist the field botanist in locating the species at the proper phenological stage for positive identification.

TAXONOMIC PROBLEMS are discussed where a species is known to be difficult taxonomically. The purpose of this section is to point out areas where further taxonomic study is needed.

EXISTING OR POTENTIAL THREATS have been identified where known. Threats include detrimental actions by man that have been observed in the vicinity of plant populations, or planned actions that might affect the continued existence of these populations.

OWNERSHIP/MANAGEMENT responsibility has been identified where plant population locality data are available. In some cases several owner/management agencies have responsibility for land occupied by proposed threatened or endangered plant populations. The owner/manager under whose jurisdiction the majority of the known populations occur is listed first.

Under REMARKS the distribution and relative abundance of species populations and the length of time since the species was last collected or observed are discussed where appropriate.

The LITERATURE CITED section includes all citations not referenced in the ORIGINAL DESCRIPTION section at the beginning of each narrative.

#### IV. ILLUSTRATIONS

Line drawings were prepared for species for which specimens could be located in Colorado herbaria. Good quality illustrations were also taken from journal articles when possible. Illustrations were not prepared for species not reliably reported from Colorado, or species for which specimens could not be readily obtained, such as species for which very few specimens have ever been collected.

A distribution map showing the location of known populations based on herbarium records is provided for each species.

#### V. SOURCES CONSULTED

Plant descriptions for this guide were obtained from review of original descriptions and generic revisions. Habitat and plant phenology information was obtained from the literature and herbarium labels. Evaluations of taxonomic problems and potential and existing threats were obtained through discussions with herbarium curators and field botanists with

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



AN  
ILLUSTRATED GUIDE TO  
THE PROPOSED THREATENED AND ENDANGERED  
PLANT SPECIES IN COLORADO

Submitted to  
U.S. FISH AND WILDLIFE SERVICE  
LAKEWOOD, COLORADO

by  
ECOLOGY CONSULTANTS, INC.  
Fort Collins, Colorado

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Line Drawings by Paula Nicholas

Cover: Sclerocactus glaucus



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## I. GUIDE OBJECTIVES

This illustrated guide was prepared to provide the botanical community, land managers, and other interested persons, a reference that describes and locates the fifty plant species currently considered by the Fish and Wildlife Service as threatened or endangered in Colorado. The guide is intended to assist managers of government agencies to determine the presence of these species and define management programs for their protection. The guide is also intended to stimulate interest in learning more about the distribution and biology of the listed species.

## II. BACKGROUND OF THE FEDERAL ENDANGERED AND THREATENED PLANT SPECIES LIST

The Endangered Species Act of 1973 authorized the Smithsonian Institution to prepare a list of possible threatened and endangered plant species in the continental U.S. An "endangered" species is defined as "any species which is in danger of extinction throughout all or a significant portion of its range." A "threatened" species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

"The accepted interpretation of this definition of species of plants is that any species, subspecies, or variety of plants is eligible for consideration as a Threatened or Endangered species" (Johnston 1977).

The Smithsonian Institution submitted a Report to Congress on December 15, 1974 which summarized recommendations for preserving threatened and endangered plants, and provided a list of Threatened and Endangered species. It was suggested that preservation of native habitats was the best method to ensure the survival of Endangered species, that continued study was necessary to reevaluate the proposed status of the species, and that special efforts were necessary to protect species threatened by commercial or private exploitation.

"The second part of the Smithsonian Report is five lists: Commercially Exploited Species, Extinct Species, Endangered Species, Threatened Species, and Hawaiian Species in three categories. The first two lists, Exploited

and Extinct Species, have no official status under the law. Exploited Species must necessarily be categorized as Threatened or Endangered; Extinct Species must be reevaluated to determine, where possible, if man caused their extinction, and if so, they must be determined Threatened or Endangered to preserve them if they are rediscovered. Several species listed in the Smithsonian Report as Extinct have been since rediscovered. These have either proved to be truly Endangered, or else problems of taxonomic definition of the species" (Johnston, 1977).

The lists contained in the Smithsonian Report were republished in the Federal Register on July 1, 1975. The list of Exploited Species was not included.

A revised list was published in the Federal Register on June 16, 1976, as a Proposed Rule, and included only species proposed as Endangered. An addendum list consisting of Extinct and Commercially Exploited species was included. The proposed Threatened list has not been revised since the Smithsonian Report.

The species classified as Threatened in this guide are plants which were included on the 1975 Review of Status List. The species classified as Endangered in the guide were included on the 1976 List, with the exception of three species: Neoparrya lithophila Mathias, Oxytropis obnapiformis C. L. Porter, and Trifolium lemmonii Wats.

Since the publication of the 1976 List, only four species have received final rulemaking, conferring legal protection. None of these plants is from Colorado.

It is anticipated that many changes will be made in the proposed list as more is learned about the distribution and biology of the proposed species. The Colorado Native Plant Society has prepared a supplemental list, and has carefully reviewed the Federal List to determine which species are deserving of protection and those which should be deleted. It is hoped that this guide will provide a starting point for the revisions needed in the Federal List.

### III. GUIDE ORGANIZATION

Species treated in this guide are arranged alphabetically by family, and then alphabetically by species. The proposed status (Federal Register) of