

The Colorado Rare Plant Technical Committee presents:

2nd Annual Rare Plant Symposium

Friday, September 16th, 2005

8am-noon: 2nd Annual Colorado Rare Plant Symposium (Discuss G1 species)

6:30-7:30pm: Rare Plant Working Group Updates (Ponderosa Room)

Goals – knowledge exchange, project development, conservation of rare plants!

Location – Pagosa Lodge in Pagosa Springs, CO (800 523 7704)

In conjunction with the Colorado Native Plant Society's Annual Meeting

Sponsored by:



Colorado Native Plant Society



Denver Botanic Gardens



Colorado Natural Heritage Program

Providing Comprehensive and Reliable Biological Information For Colorado



The Second Annual Colorado Rare Plant Symposium

September 16, 2005

Pagosa Springs, CO

Sponsored by:

Colorado Rare Plant Technical Committee

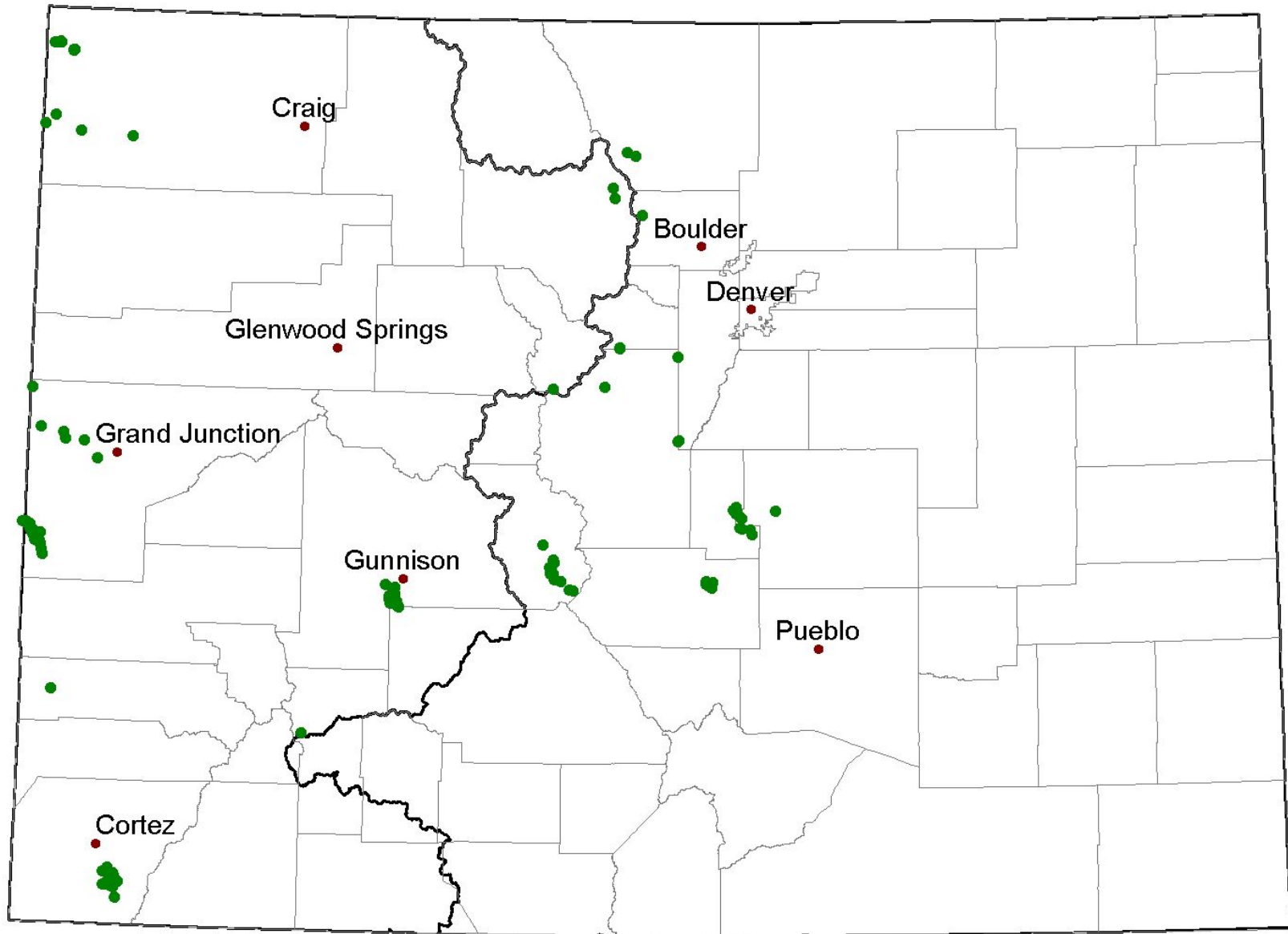
Colorado Native Plant Society

USDA Forest Service

USDI Bureau of Land Management

Denver Botanic Gardens



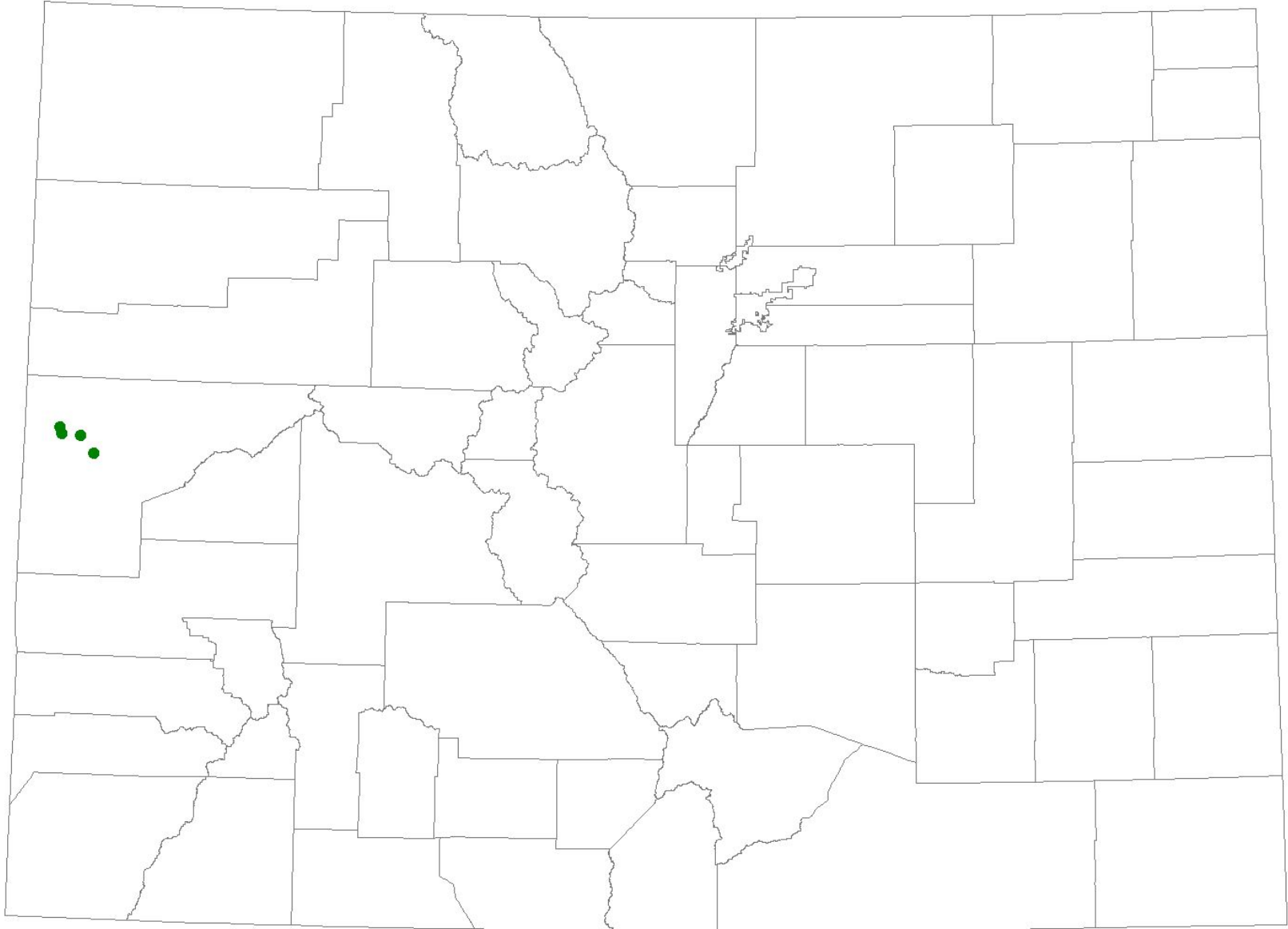


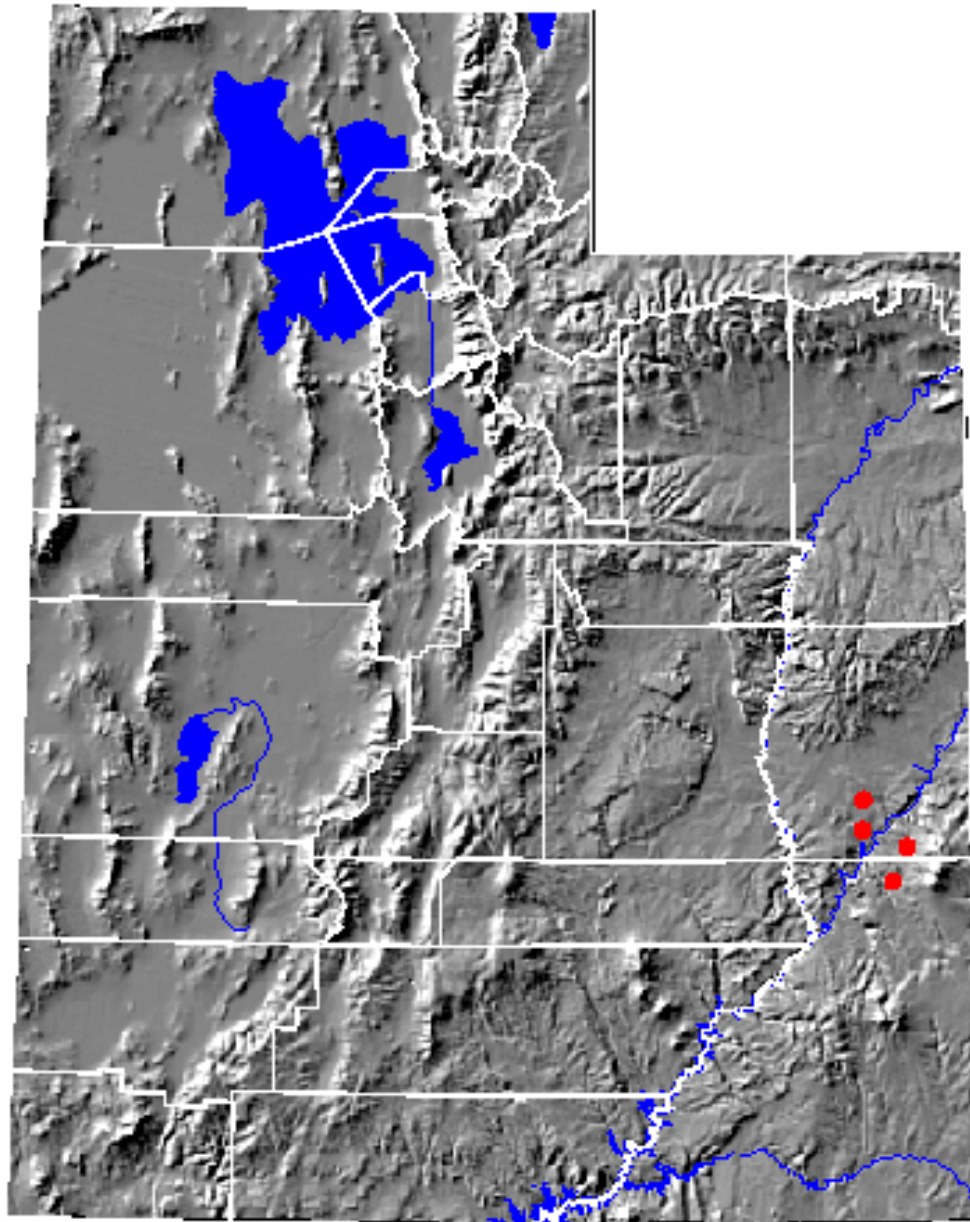
Aletes latilobus=
Lomatium latilobum
Canyonlands biscuitroot

- Federal status: BLM sensitive
- Heritage ranks: G1/S1
- Global distribution: Utah (Grand and San Juan counties) and Colorado (Mesa County-- Colorado National Monument and Rattlesnake Canyon)

Aletes latilobus=
Lomatium latilobum
Canyonlands biscuitroot

- Last observed in Colorado: 1997
- Colorado occurrences: Five (one with general location only)
- Colorado individuals: 1,825
- Primary threats: Park developments, trampling by hikers
- Land ownership/management: Colorado National Monument, BLM, possibly on adjacent private









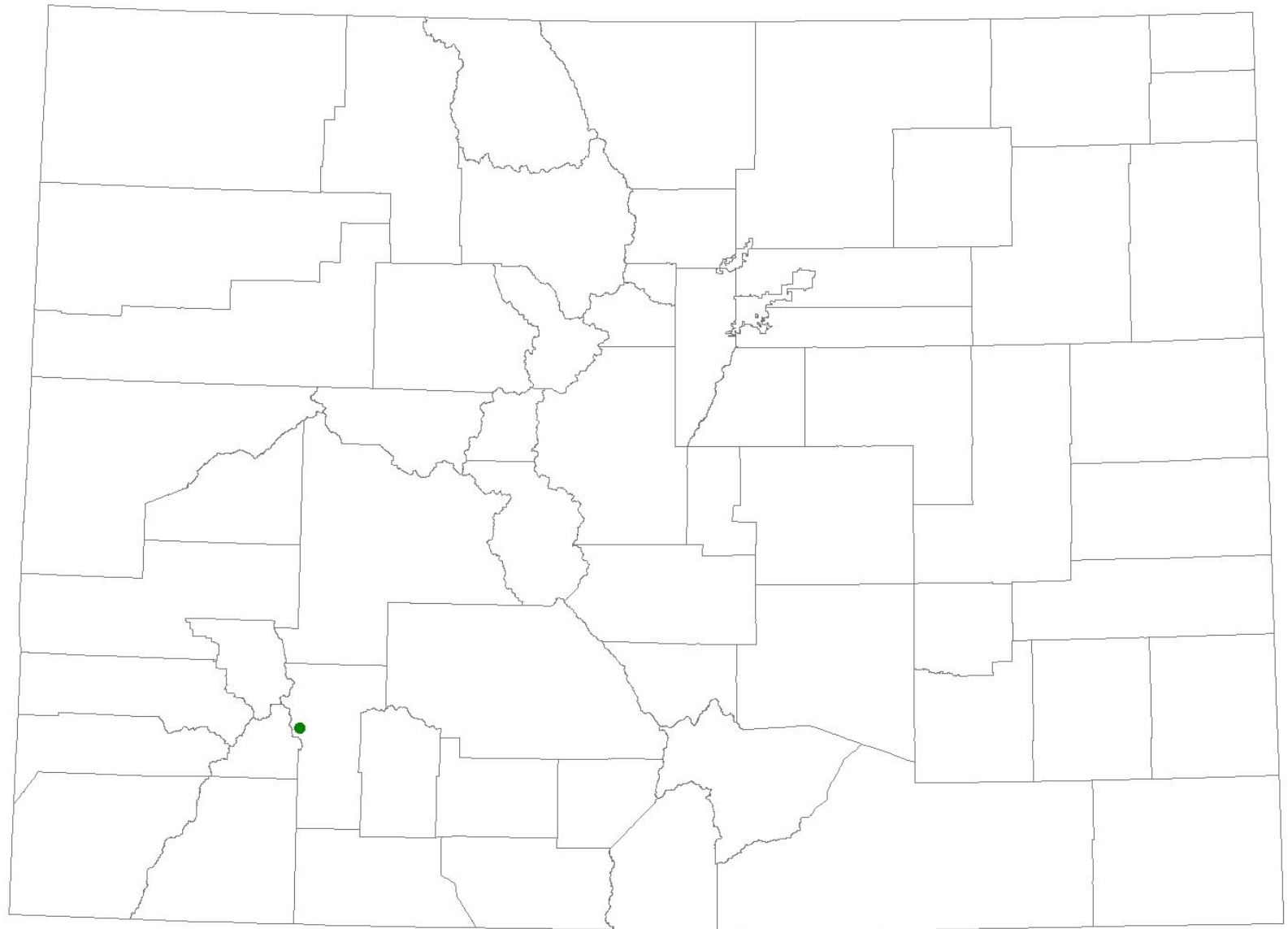


Aliciella sedifolia=*Gilia sedifolia*
Stonecrop gilia

- Federal status: USFS sensitive
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, San Juan Mountains, Hinsdale County

Aliciella sedifolia=*Gilia sedifolia*
Stonecrop gilia

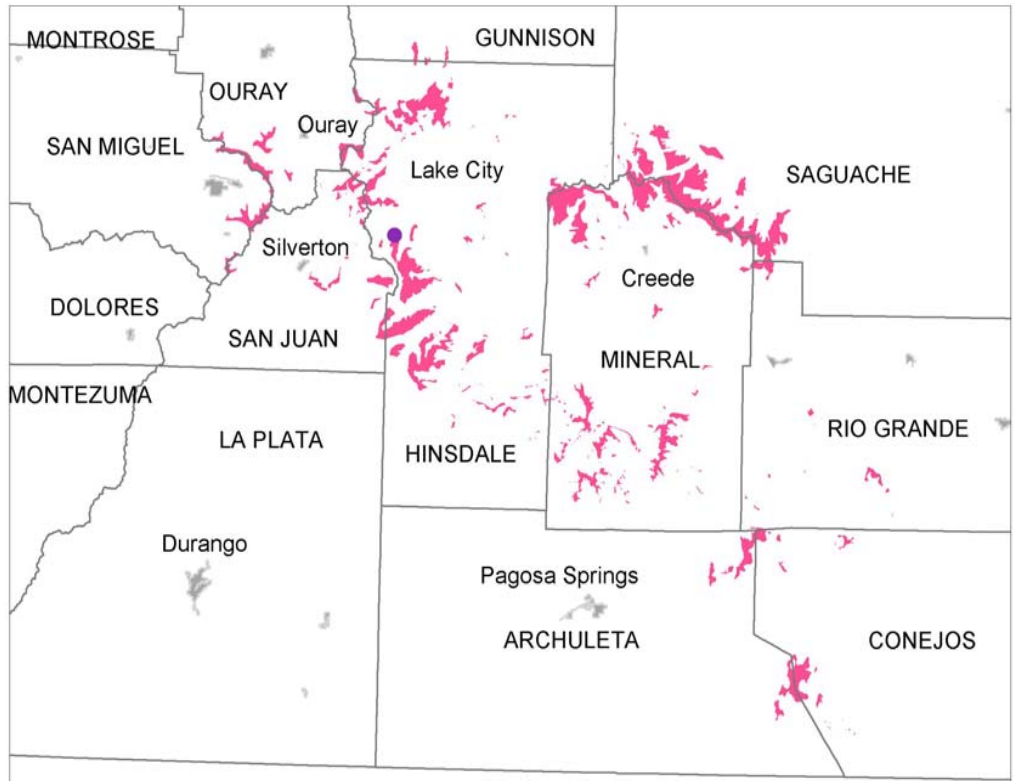
- Last observed: 2003
- Occurrences: 2 (one of these has not been seen since 1892)
- Individuals: 1,100
- Primary threats: off-road vehicle use, recreation, sheep grazing, mining, noxious weed invasion
- Land ownership/management: Gunnison and possibly San Juan National Forests











LEGEND

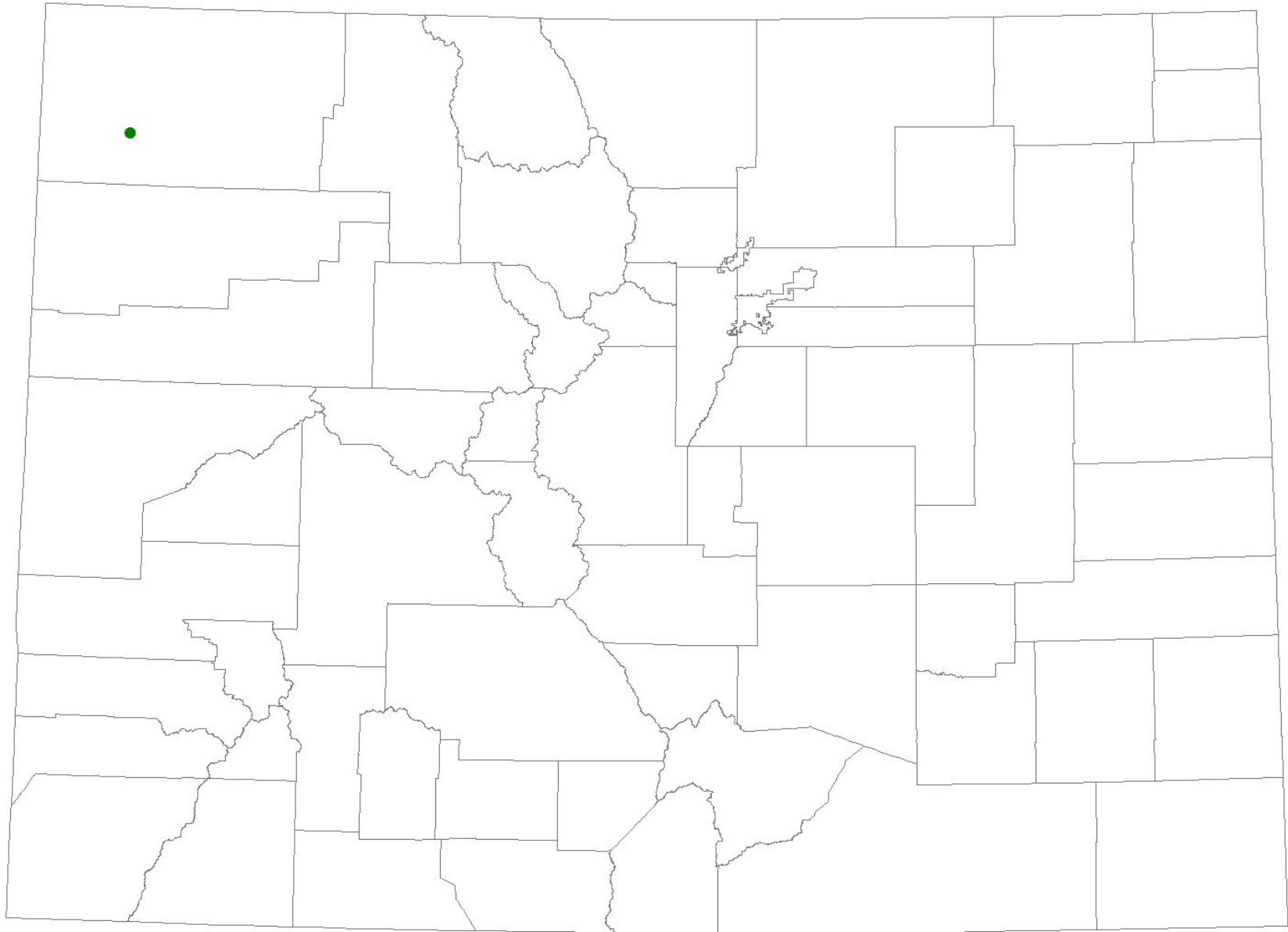
- Known Occurrence
- County Boundaries
- Ash Flow Tuff above 11,700 ft
- Municipal Boundaries

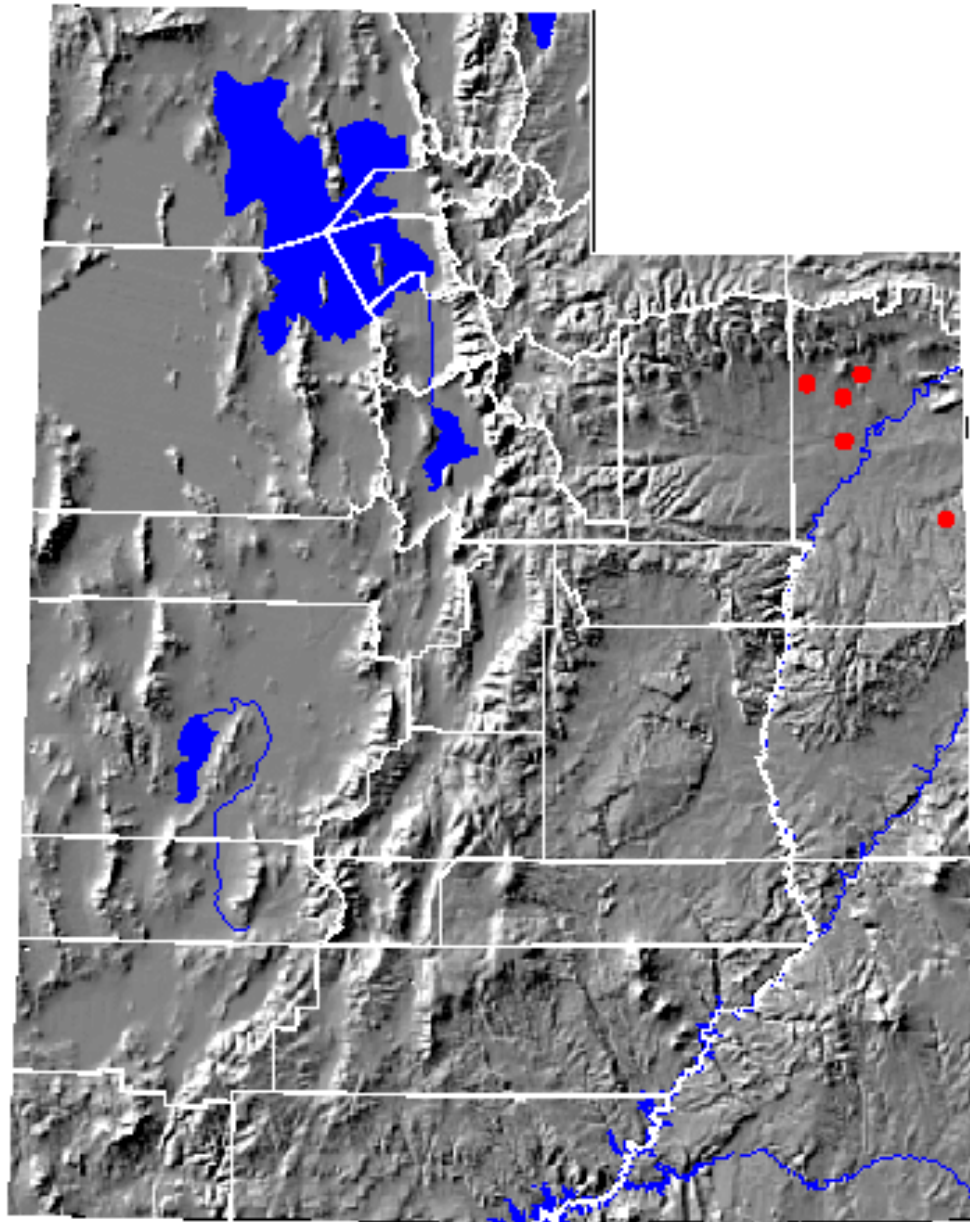
Astragalus lonchocarpus var.
hamiltonii = *A. hamiltonii*
Hamilton's milkvetch

- Federal status: BLM sensitive in CO
- Heritage ranks: G1/S1
- Global distribution: Uintah County, Utah and Moffat County, Colorado

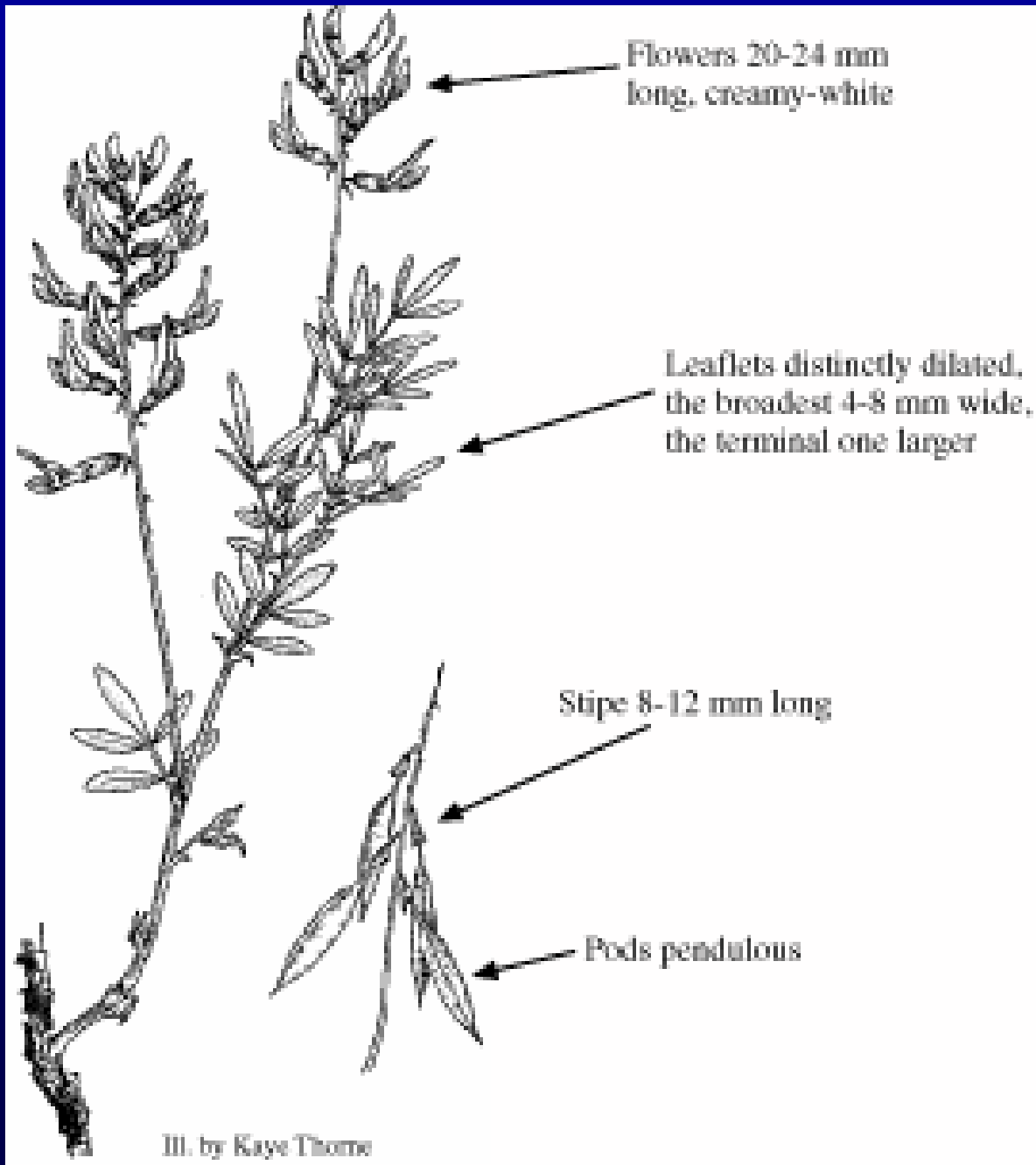
Astragalus hamiltonii
Hamilton's milkvetch

- Last observed in Colorado: 1991
- Colorado occurrences: 1
- Colorado individuals: 12
- Primary threats: unknown, area heavily grazed in past
- Land ownership/management: Dinosaur NM in CO and UT; National Wildlife Refuge, Ute, BLM, State, and private in UT









Flowers 20-24 mm long, creamy-white

Leaflets distinctly dilated, the broadest 4-8 mm wide, the terminal one larger

Stipe 8-12 mm long

Pods pendulous

Ill. by Kaye Thorne

Habitat of
Astragalus
hamiltonii



*Astragalus
hamiltonii* in
fruit



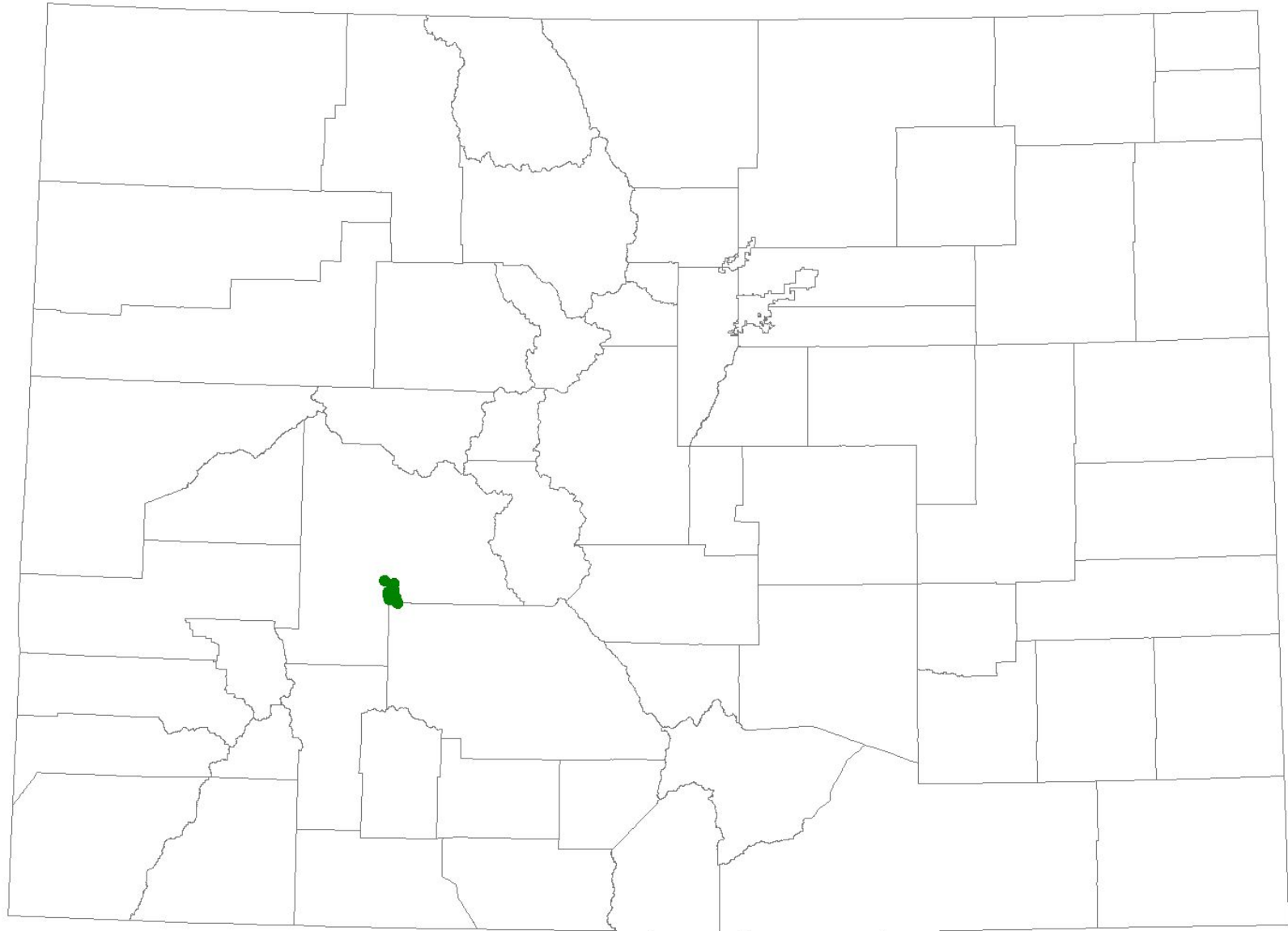
Astragalus microcymbus
Skiff milkvetch

- Federal status: BLM sensitive
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, South Beaver Creek, Gunnison and Saguache counties

Astragalus microcymbus

Skiff milkvetch

- Last observed: 1993 (monitored by DBG)
- Occurrences: 4
- Individuals: 9,152-10,252
- Primary threats: recreation, grazing by cattle and rabbits, mining, residential development
- Land ownership/management: BLM (most occurrences within a BLM ACEC and South Beaver Creek Natural Area), private







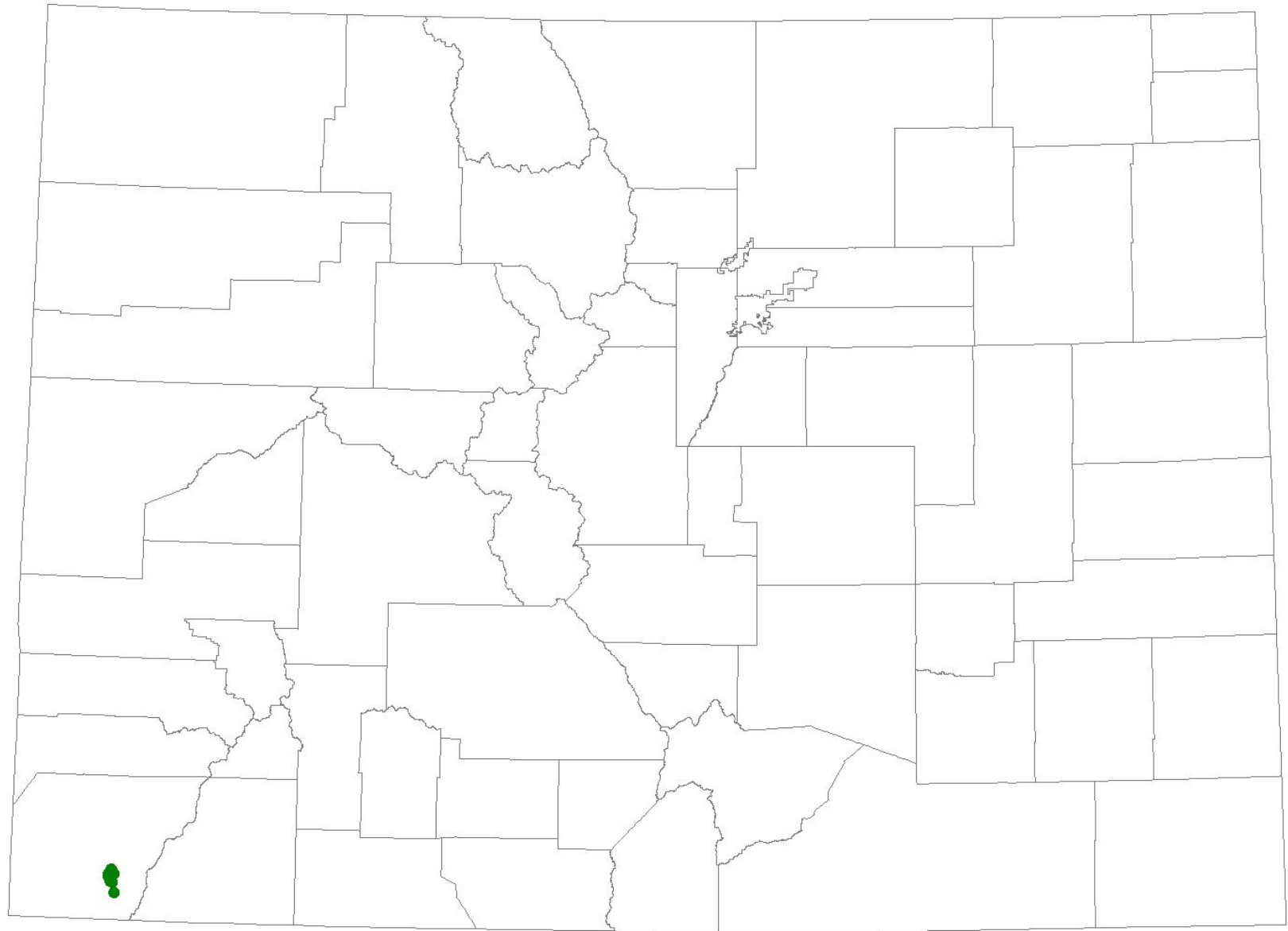
Astragalus schmolliae
Schmoll's milkvetch

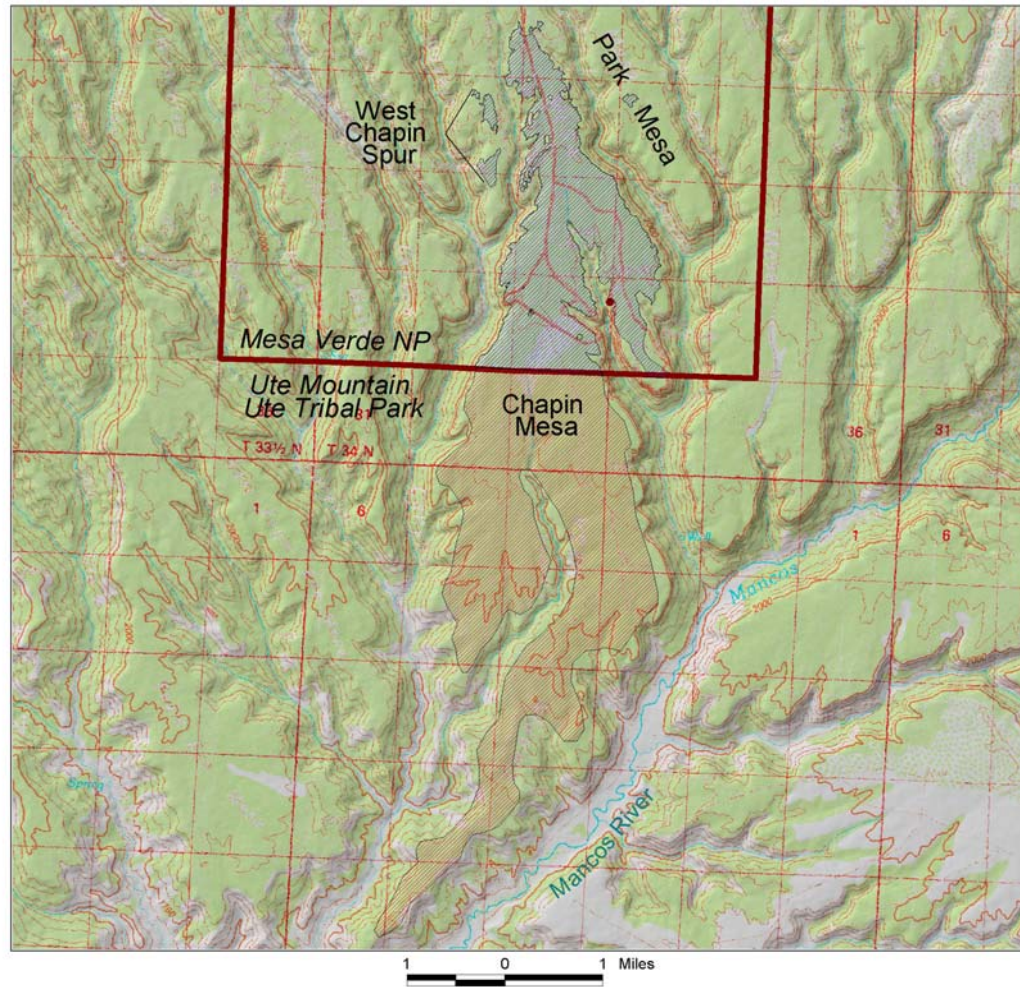
- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, Chapin Mesa, Montezuma County

Astragalus schmolliae

Schmoll's milkvetch

- Last observed: 2005
- Occurrences: 3
- Individuals: 294,549
- Primary threats: Park developments, noxious weed invasions, changes in fire regime, drought, browsing by mule deer, rabbits, butterfly larvae
- Land ownership/management: Mesa Verde National Park, BIA Ute Tribal lands





<p>Colorado Natural Heritage Program Colorado State University College of Natural Resources 8002 Campus Delivery Fort Collins, CO 80523-8002 map created 15 June 2004</p> <p>Disclaimer <i>Data are provided on an as-is, as-available basis without warranties of any kind, expressed or implied, including (but not limited to) warranties of merchantability, fitness for a particular purpose, and non-infringement. CNHP, Colorado State University and the State of Colorado further expressly disclaim any warranty that the data are error-free or current as of the date supplied.</i></p>	<p>Legend</p> <p>Schmolli's Milkvetch Global Range</p> <ul style="list-style-type: none"> Chapin Mesa - Known Distribution Chapin Mesa - Probable Distribution <p>Base Data</p> <ul style="list-style-type: none"> Interstates NPS Property Line State Boundary Counties <p>National Elevation Database and Digital Raster Graphics produced by the U.S. Geological Survey, 1999</p>
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Figure 2. The known distribution of Schmolli's milkvetch in Mesa Verde National Park, and the probable distribution in the Ute Mountain Ute Tribal Park, relative to major landscape features and jurisdictional boundaries.

























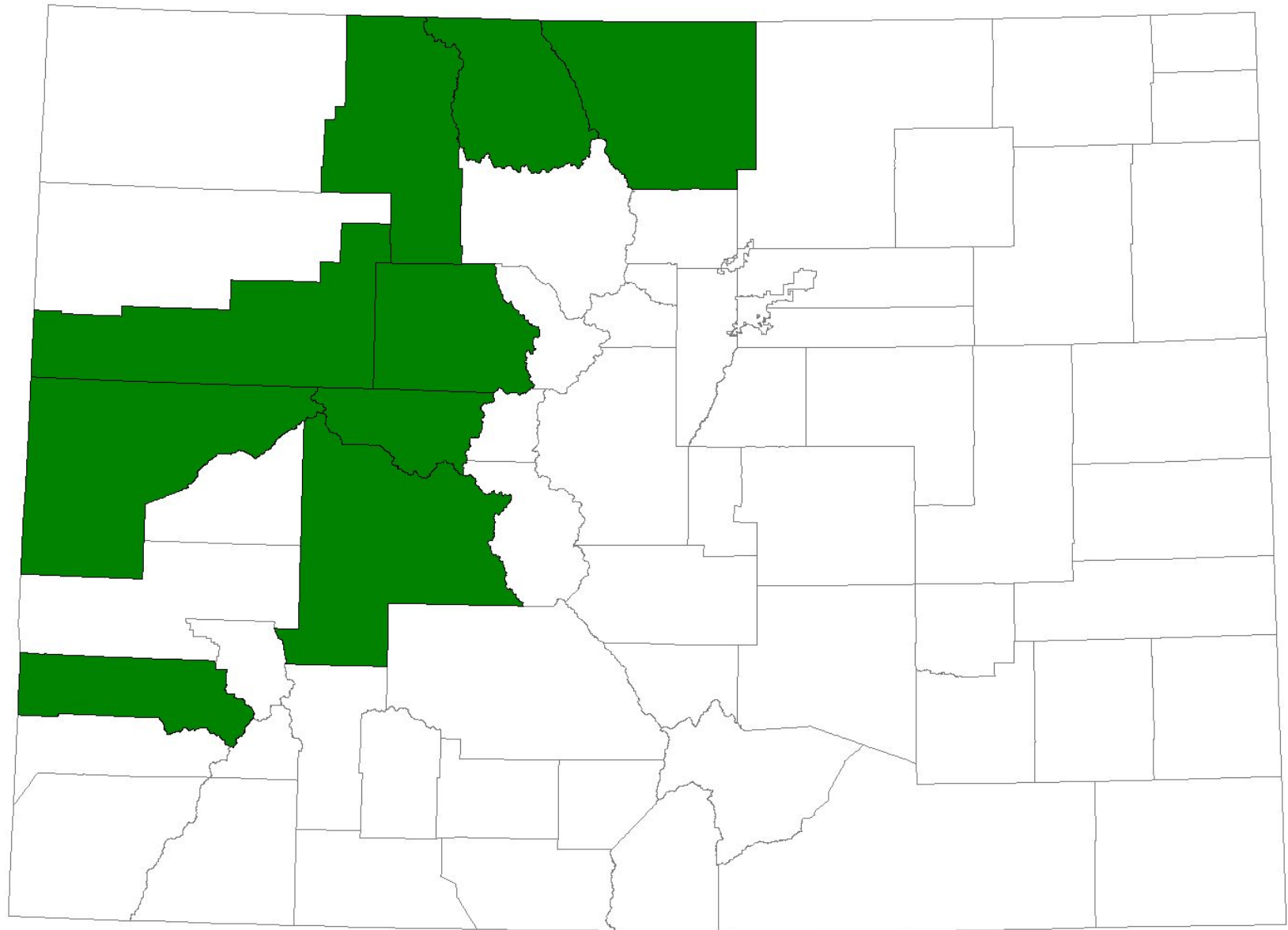


Cirsium scapanolepis
Mountain slope thistle

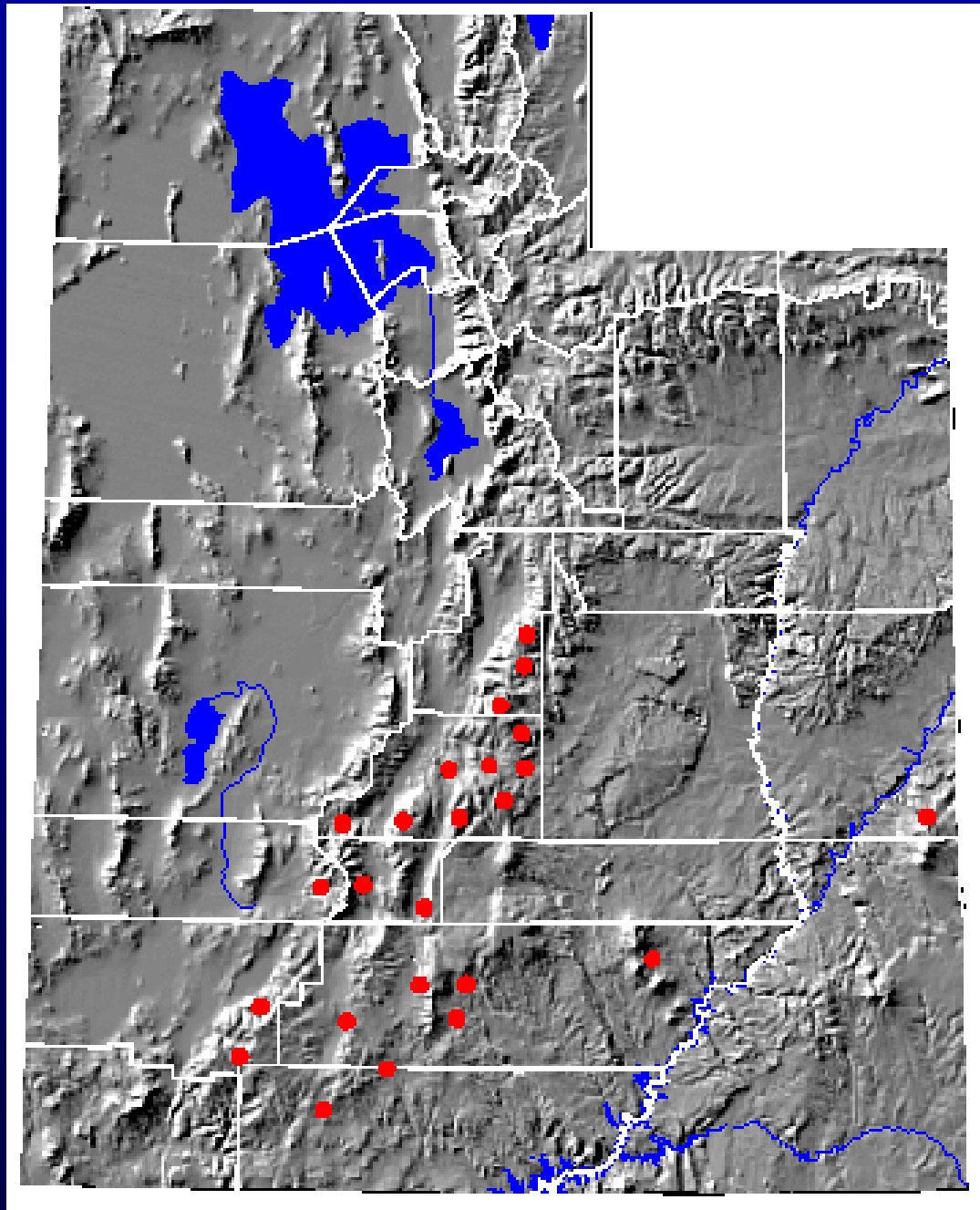
- Federal status: none
- Heritage ranks: G1G2Q/S1
- Global distribution: Colorado endemic

Cirsium scapanolepis
Mountain slope thistle

- Last observed in Colorado: 1900-1983?
- Colorado occurrences: unknown, obscure
- Colorado individuals: unknown
- Primary threats: weevils, unknown
- Land ownership/management: unknown



Distribution of
Cirsium clavatum
in Utah





ISOTYPE OF: *Carduus spathulatus* Osterhout

Bull. Torrey Bot. Club 32: 612. 1905.

C. Anderson 1971

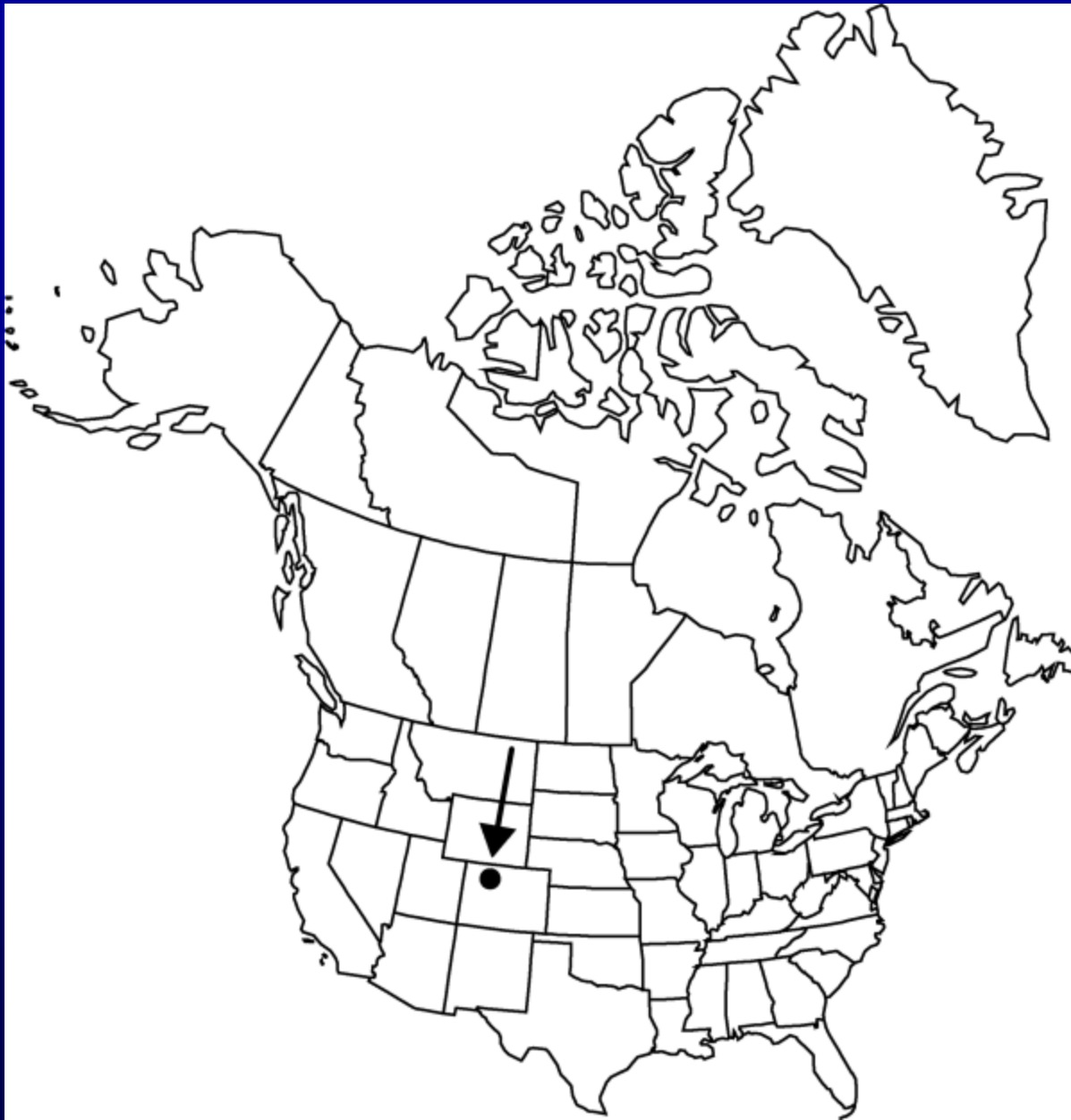
Carduus spathulatus Osterh.
North Park, Larimer Co., Colo.
Saw Mill. Aug 27, 1900
D. E. Osterhout No. 2254

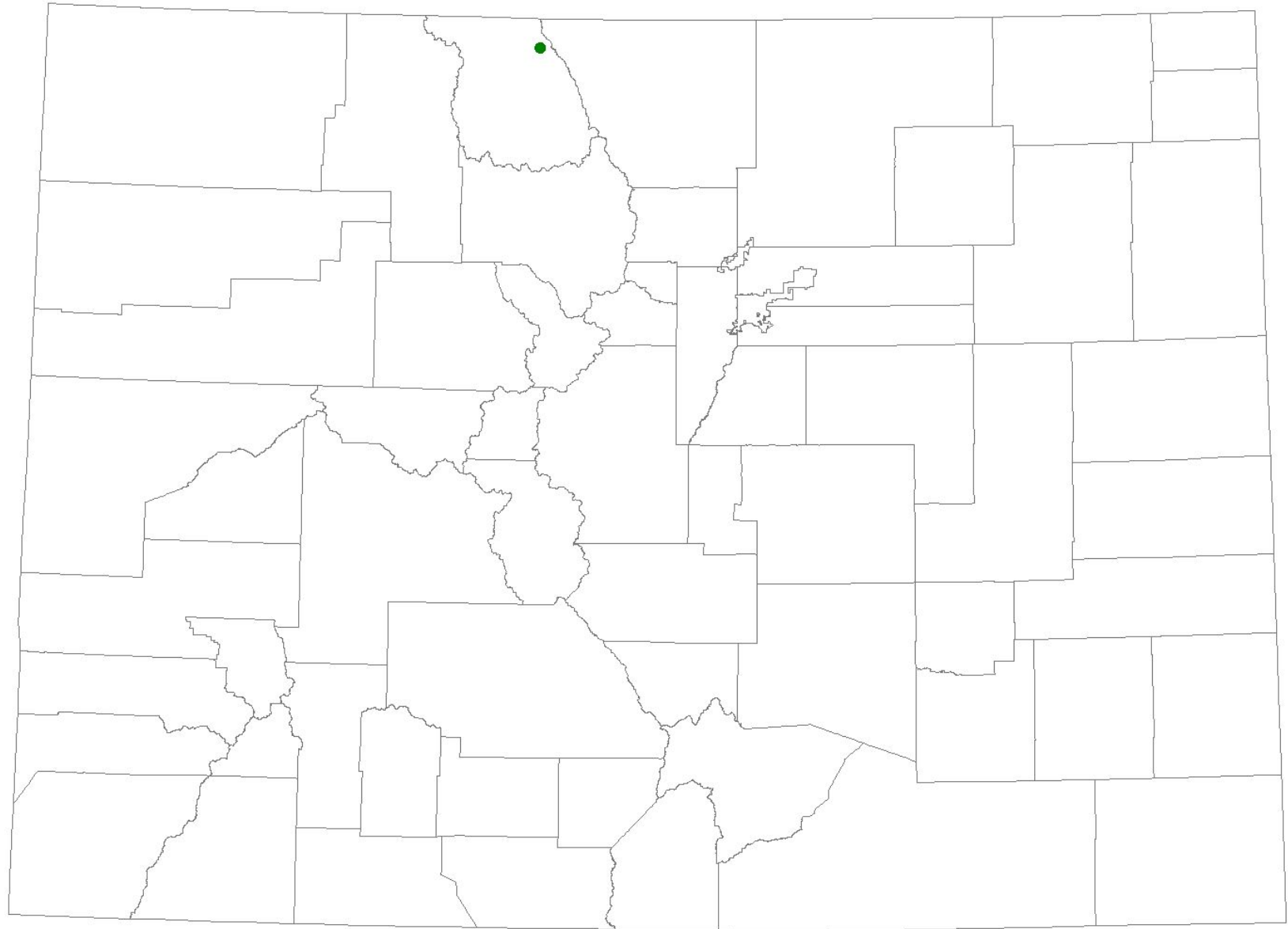
Corispermum navicula
Crescent bugseed

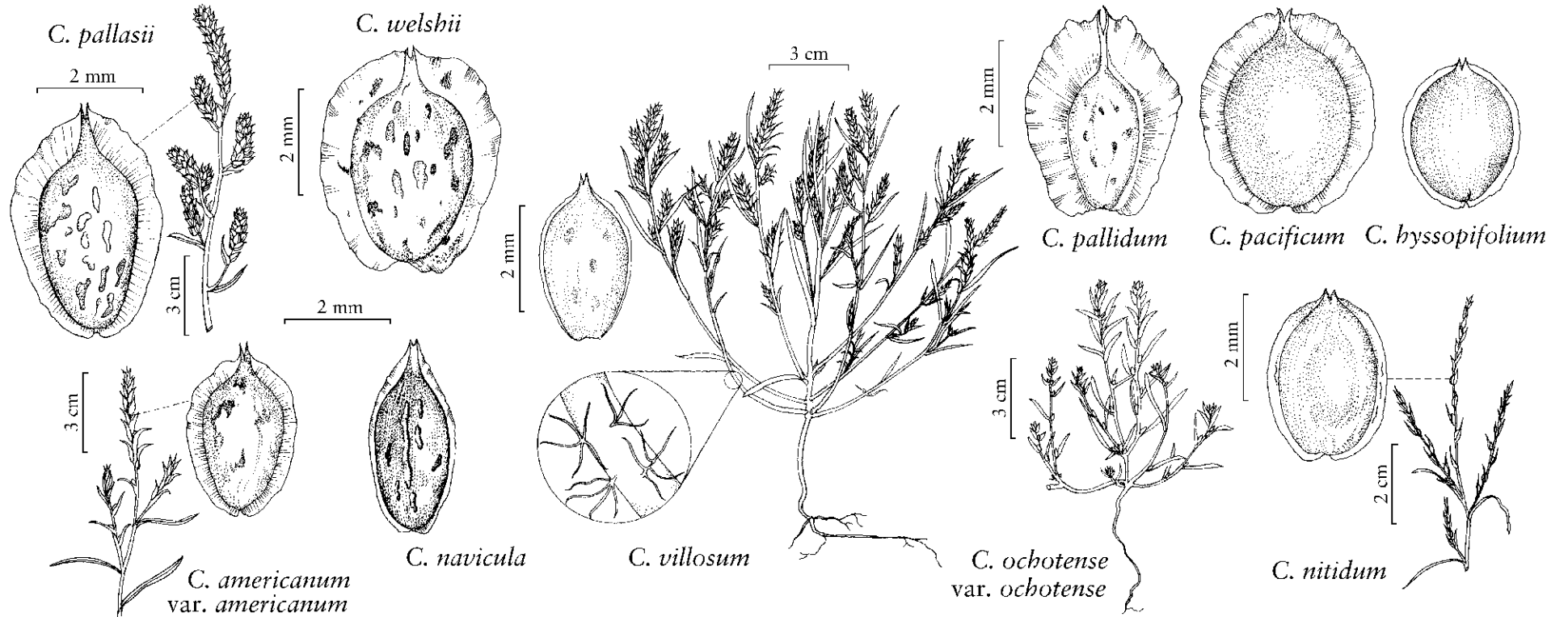
- Federal status: none
- Heritage ranks: G1?/S1
- Global distribution: Colorado endemic, possibly Oklahoma

Corispermum navicula
Crescent bugseed

- Last observed: 1996
- Occurrences: 1
- Individuals: common locally
- Primary threats: unknown
- Land ownership/management: BLM, Kremmling Field Office







CORISPERMUM

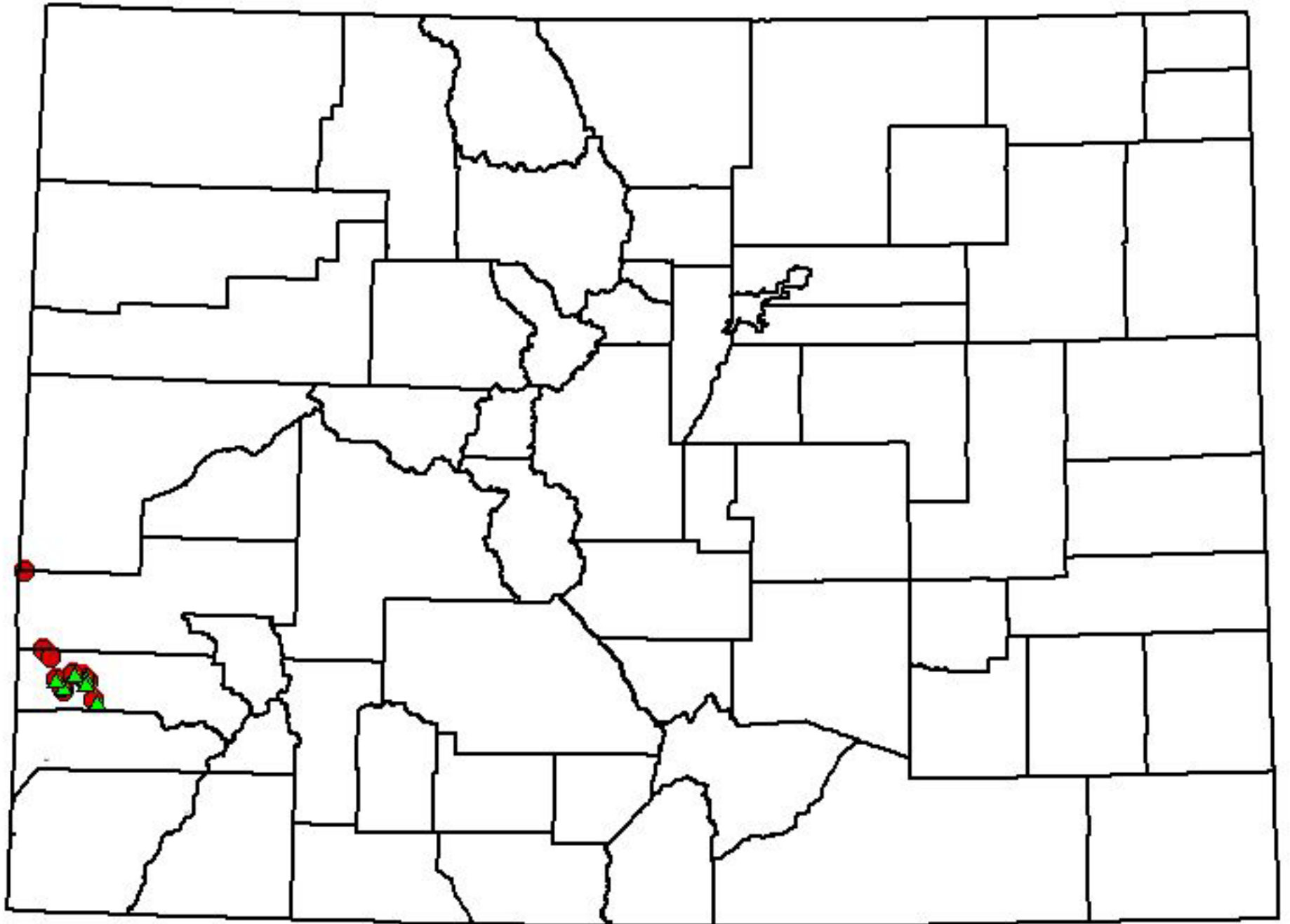
Cryptantha gypsophila
Gypsum Valley Cat-eye

- New species, described by Jim Reveal in 2004.
- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, San Miguel County

Cryptantha gypsophila

Gypsum Valley Cat-eye

- Last observed: 2005 CNHP Rare Plant Survey
- Occurrences: specimens from 13 locations, surveyed all but 3 in 2005.
- Individuals: locally abundant, many thousands in each
- Primary threats: oil and gas development, ATVs, recreation, roads
- Land ownership/management: BLM, San Juan RA and UBRA



Cryptantha gypsophila













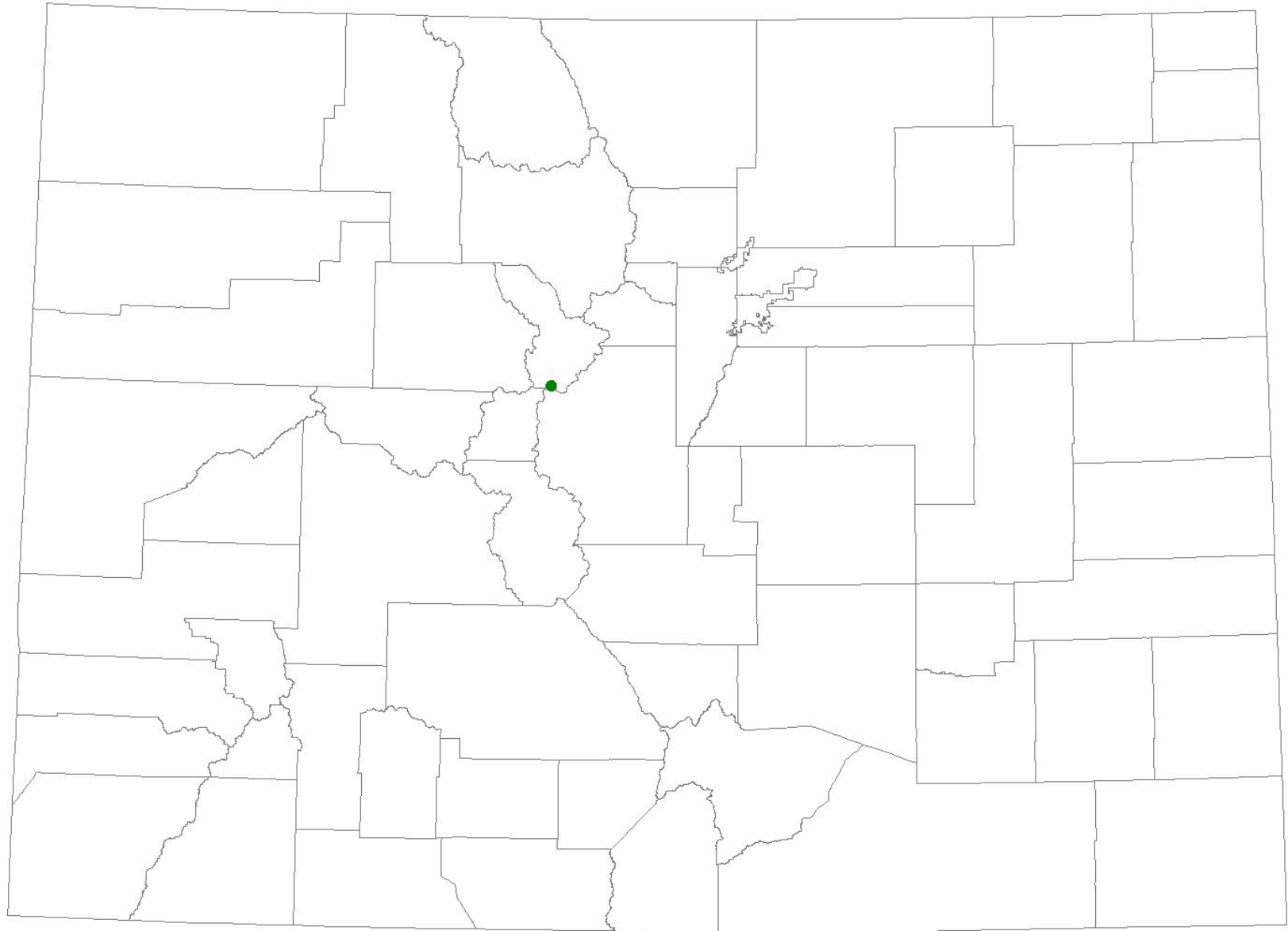


Draba weberi
Weber's draba

- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, Monte Cristo Creek drainage in Summit County

Draba weberi
Weber's draba

- Last observed: 2003
- Occurrences: 1
- Individuals: 20-100
- Primary threats: road and dam construction and maintenance, recreation, mining, noxious weeds
- Land ownership/management: private









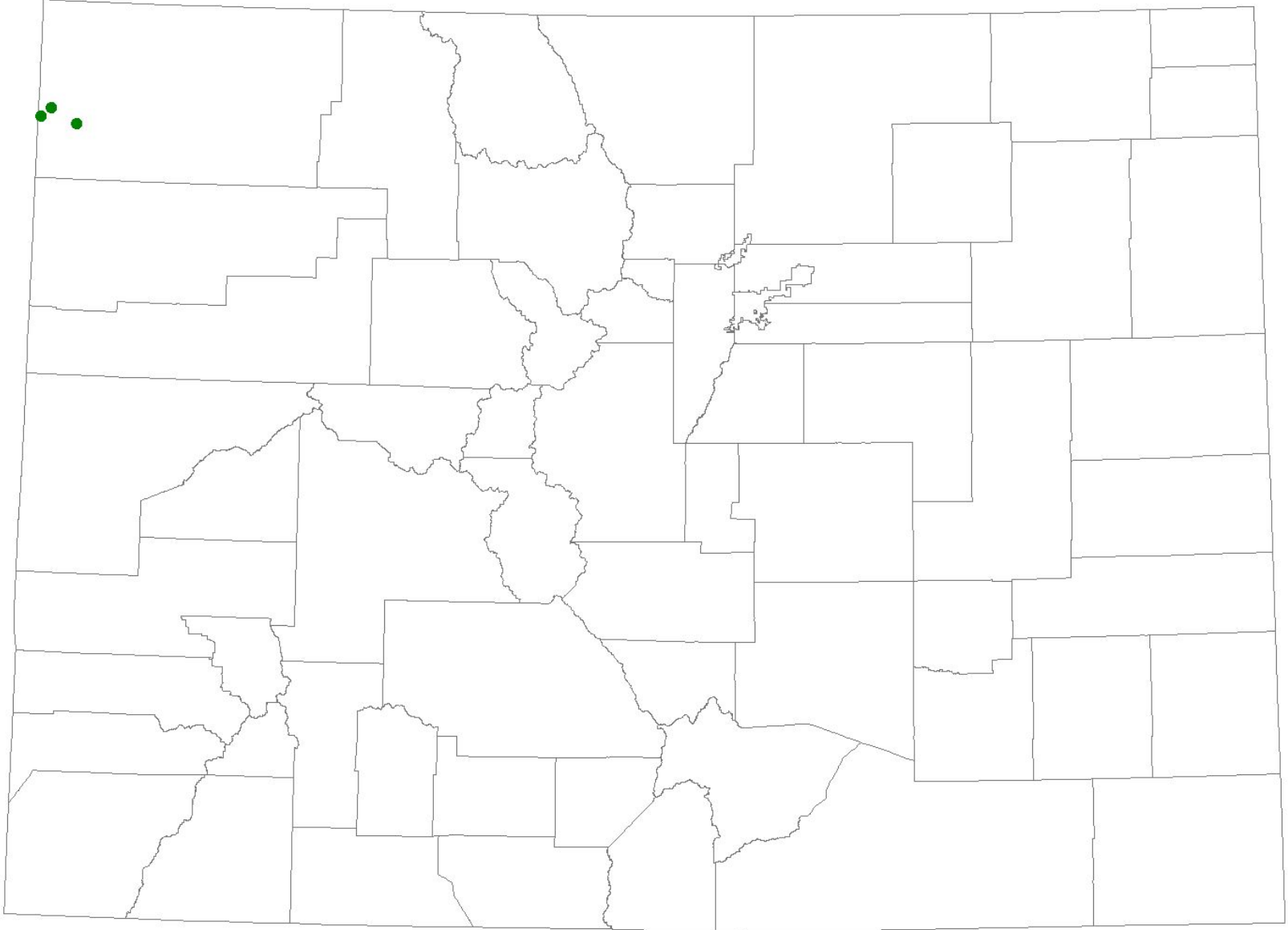


Erigeron wilkenii
Dieter's fleabane

- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: endemic to Colorado (Dinosaur National Monument, Moffat County)

Erigeron wilkenii
Dieter's fleabane

- Last observed: 1995
- Occurrences: 4 (one is imprecisely described and may overlap with one of the other 3)
- Individuals: 1,000-3,000
- Primary threats: no specific threats known
- Land ownership: Dinosaur NM







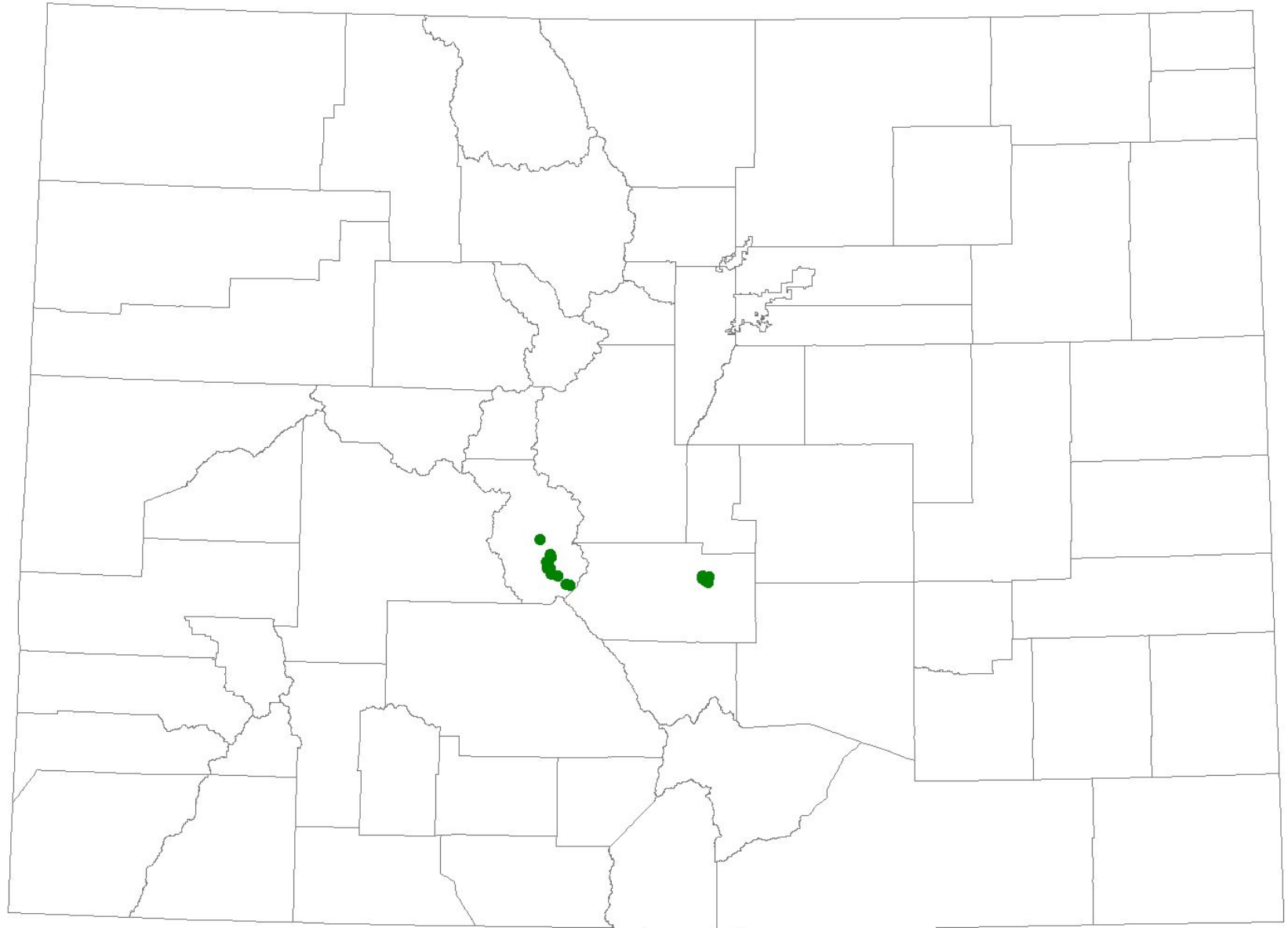


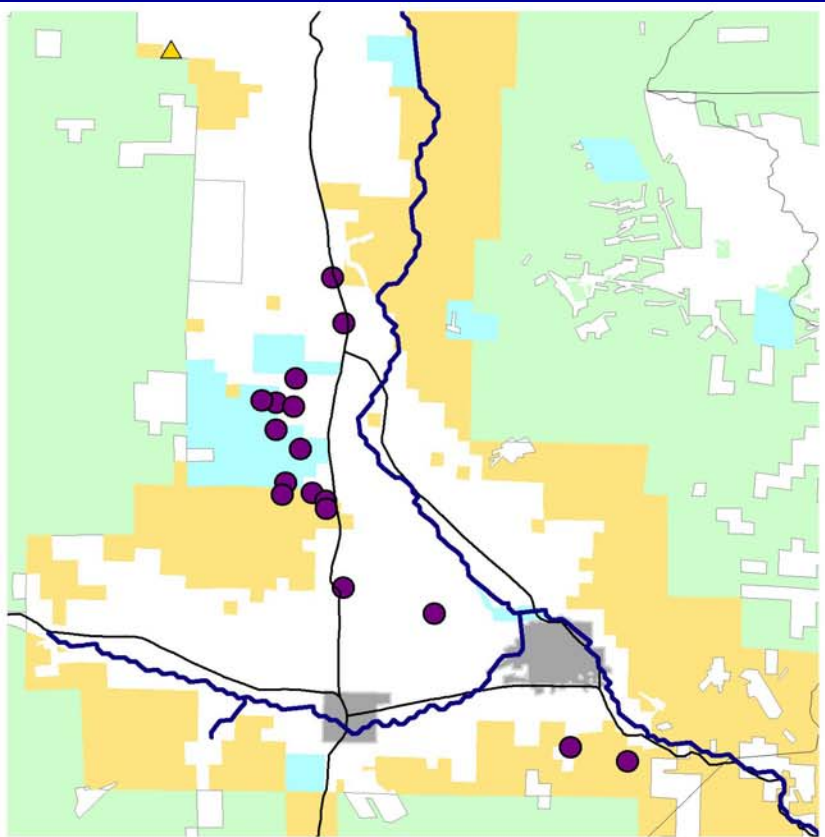
Eriogonum brandegei
Brandegee's buckwheat

- Federal status: USFS and BLM sensitive
- Heritage ranks: G1G2/S1S2
- Global distribution: Colorado endemic, Chaffee and Fremont counties

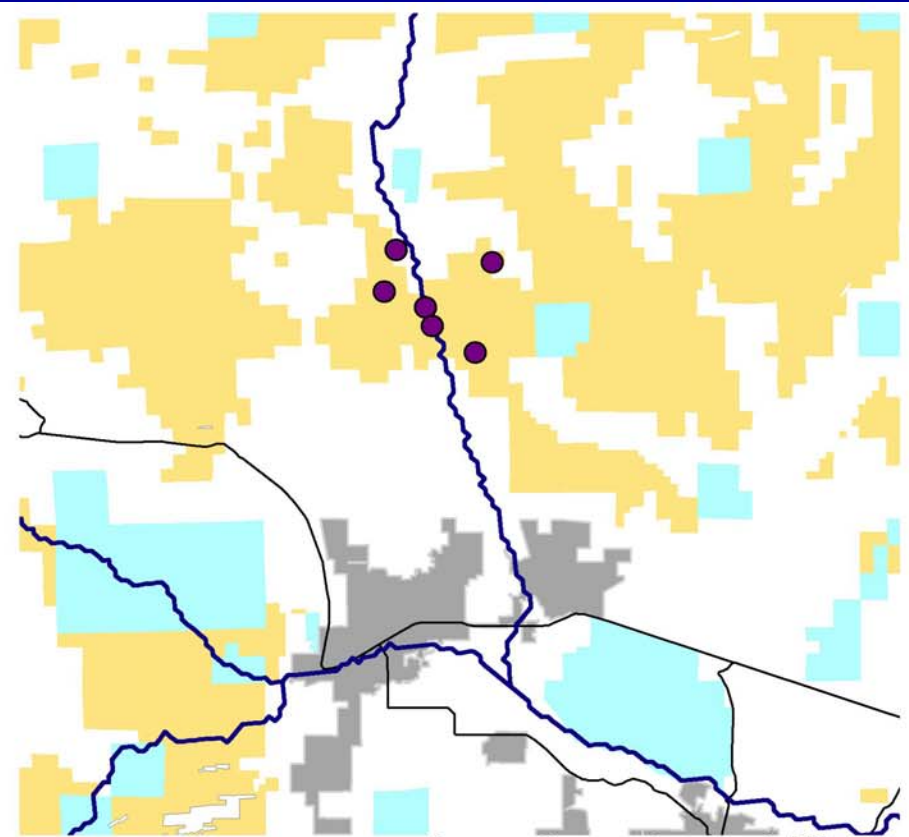
Eriogonum brandegei
Brandegee's buckwheat

- Last observed: 2004
- Individuals: 35,000-several million
- Occurrences: 9
- Primary threats: off-road vehicle use and other recreation, residential and commercial development, timbering, mining, highway maintenance, weeds, grazing
- Land ownership/management: BLM (some within ACECs), state, private, highway right of way





CHAFFEE COUNTY



FREMONT COUNTY

Colorado Natural Heritage Program
 Colorado State University
 College of Natural Resources
 254 General Services Building
 Fort Collins, CO 80523

map created January 30, 2004

Disclaimer

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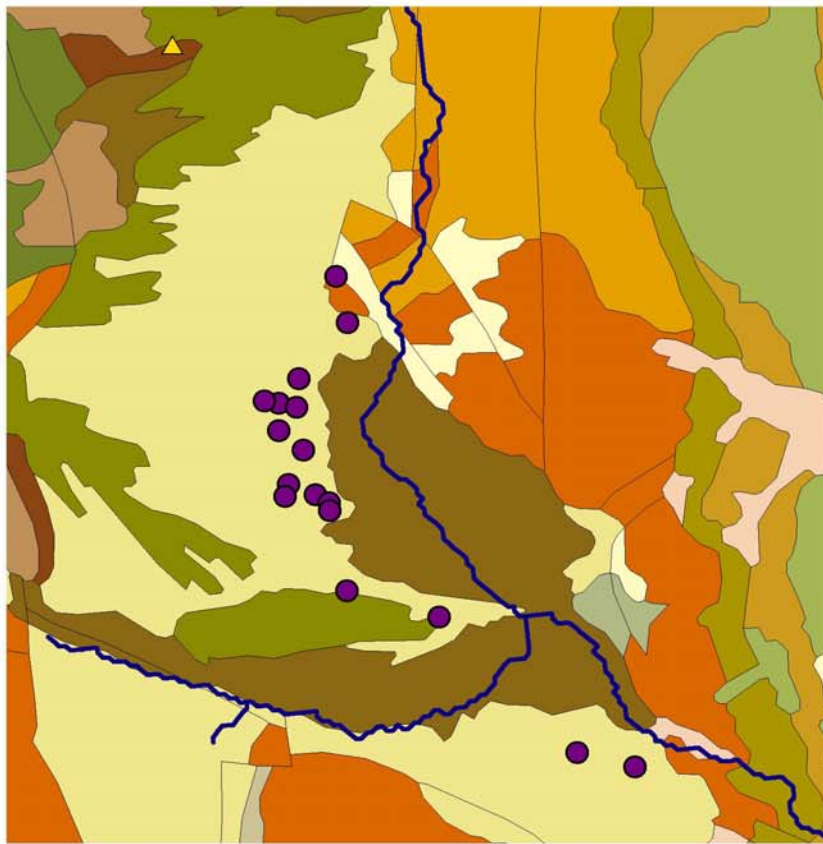


LEGEND

- Arkansas River and Tributaries**
- Eriogonum brandegeei* (verified)**
- Eriogonum brandegeei* (questionable)**
- Highways**
- Municipal Boundaries**
- State Land**
- National Forests and Grasslands**
- Wilderness Areas**
- Bureau of Land Management**
- Private Lands**

Location in Colorado





CHAFFEE COUNTY



FREEMONT COUNTY



Colorado Natural Heritage Program
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LEGEND

- Arkansas River and Tributaries**
- Eriogonum brandegeei (verified)**
- Eriogonum brandegeei (questionable)**

GEOLOGY

CHAFFEE COUNTY

- Td
- Tial
- Qdo
- Qgo

FREEMONT COUNTY

- KJdr
- P&f
- Ql

Colorado Geology Map reproduced from Tweto (1979)

Location in Colorado











RARE PLANTS AND RARE FOSSILS SHARE THIS SITE

A rare plant, the Brandegee Wild Buckwheat, grows along this trail and in a few other sites in Garden Park. What do this rare plant and the rare fossils of Garden Park have in common? The Morrison Formation, layers of gray, tan, maroon and light green soils and rock exposed here, sustains this rare plant and holds world-class fossils.

Hunters of Rare Plants and Rare Fossils Know the Rocks

Paleontologists, scientists who study ancient life, identify areas to search for fossils based on geology. They know that certain types of rocks often bear fossils. Botanists, scientists who study plants, also use their knowledge of geology to identify areas to search for rare plants. They know that rare plants often grow in soils formed from specific types of rocks.



habitat of Brandegee Wild Buckwheat, *Eriogonum brandegeei* by Susan Spackman



Brandege Wild Buckwheat, *Eriogonum brandegeei* Susan Spackman

Colorado's Wealth of Rare Native Plants

The Brandegee Wild Buckwheat represents only one of over 200 rare plant species native to Colorado. To discover the key to Colorado's plant diversity, look at the landscape around you. The canyons, mountains, and foothills here provide just a small sample of Colorado's variety of terrain. These places, with so many differences in geology, soil, temperature and moisture, provide the perfect conditions for many different plant species to flourish.



Nature's Diversity—Protect, Explore and Enjoy It

Protecting Colorado's natural diversity, its wide variety of plants, animals and landscapes, is important and challenging work. Lend a hand by learning more about native plants and animals—both rare and familiar. Visit botanical gardens, zoos and universities that have exhibits and collections. Increase your enjoyment of natural areas by carrying binoculars and using field guides to identify the wildlife and plants. Consider joining a native plant society or Audubon group. You can make a difference.

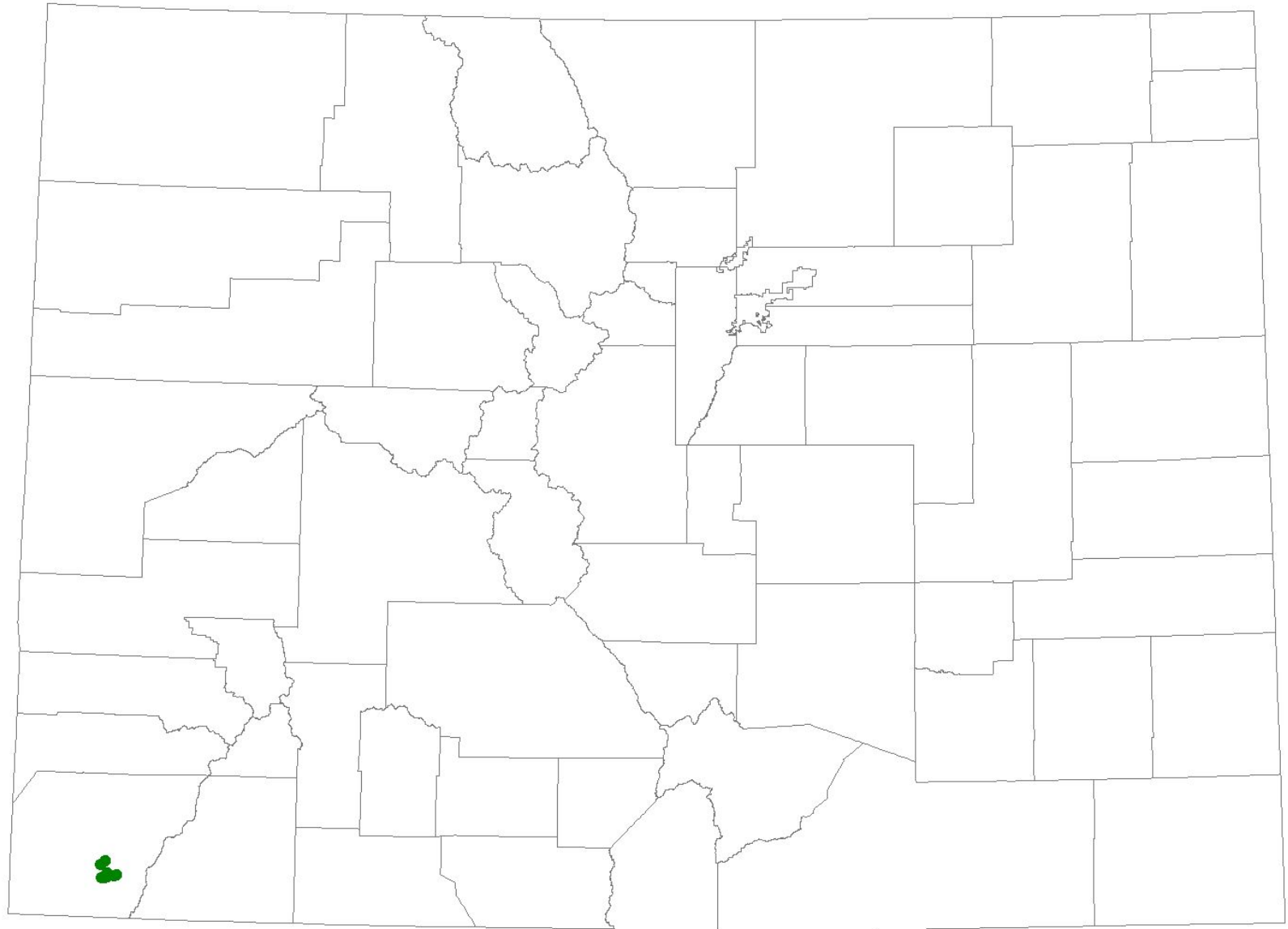


Hackelia gracilentia
Mesa Verde stickseed

- Last observed: 2005 (some not since 1980)
- Occurrences: 9 (most have not been updated in CNHP databases in 25 or more years)
- Individuals: only one occurrence reports population size as “infrequent”
- Primary threats: Unknown, possibly recreation, and/or developments in the Park, such as trails or roads. Fires may have had an impact on this species.
- Land ownership/management: Mesa Verde NP

Hackelia gracilentia
Mesa Verde stickseed

- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, Mesa Verde National Park, Montezuma County











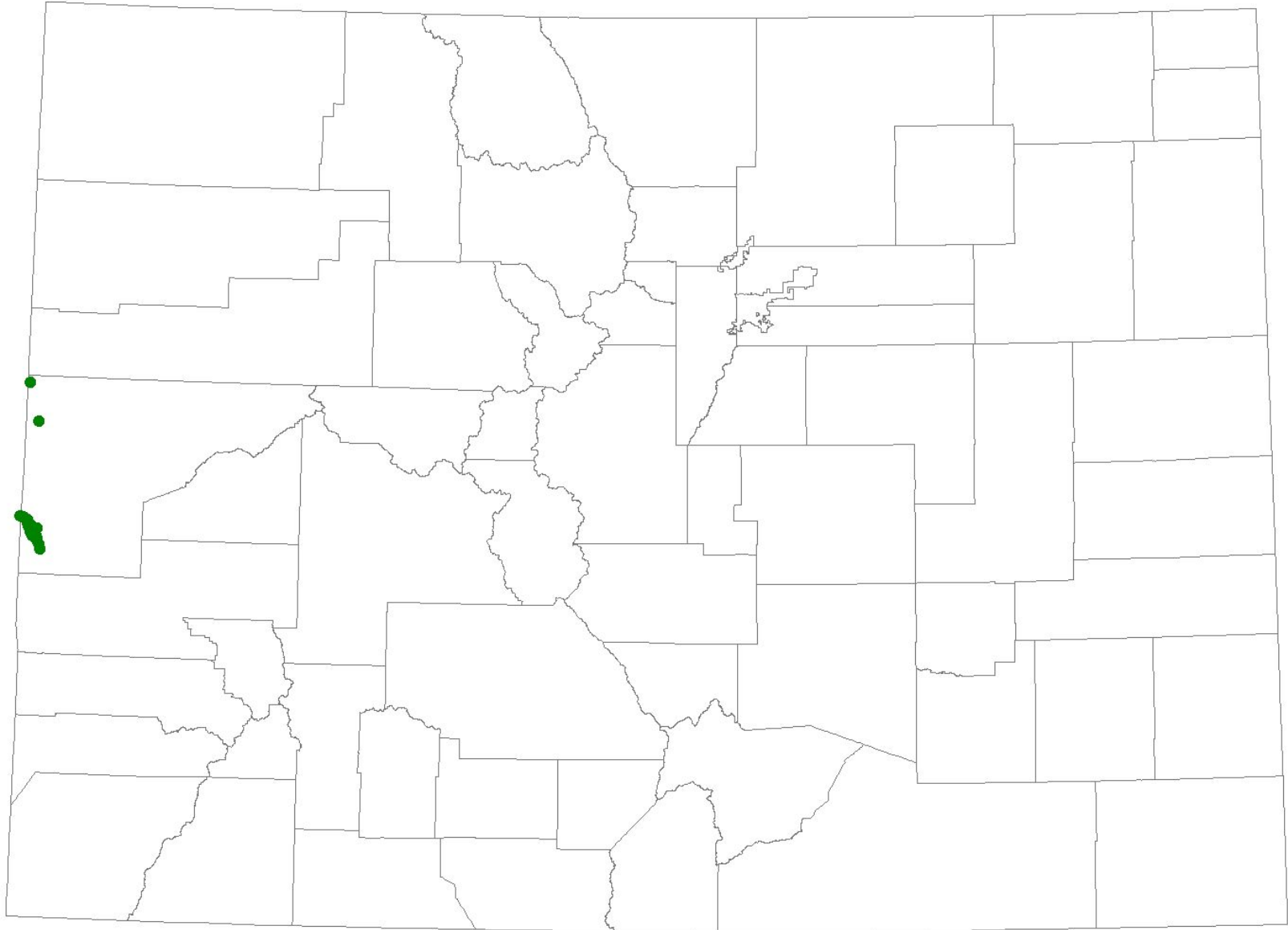
Lygodesmia doloresensis
Dolores River skeletonplant

- Federal status: BLM sensitive in CO
- Heritage ranks: G1Q/S1
- Global distribution: Utah and Colorado (Mesa County)

Lygodesmia doloresensis

Dolores River skeletonplant

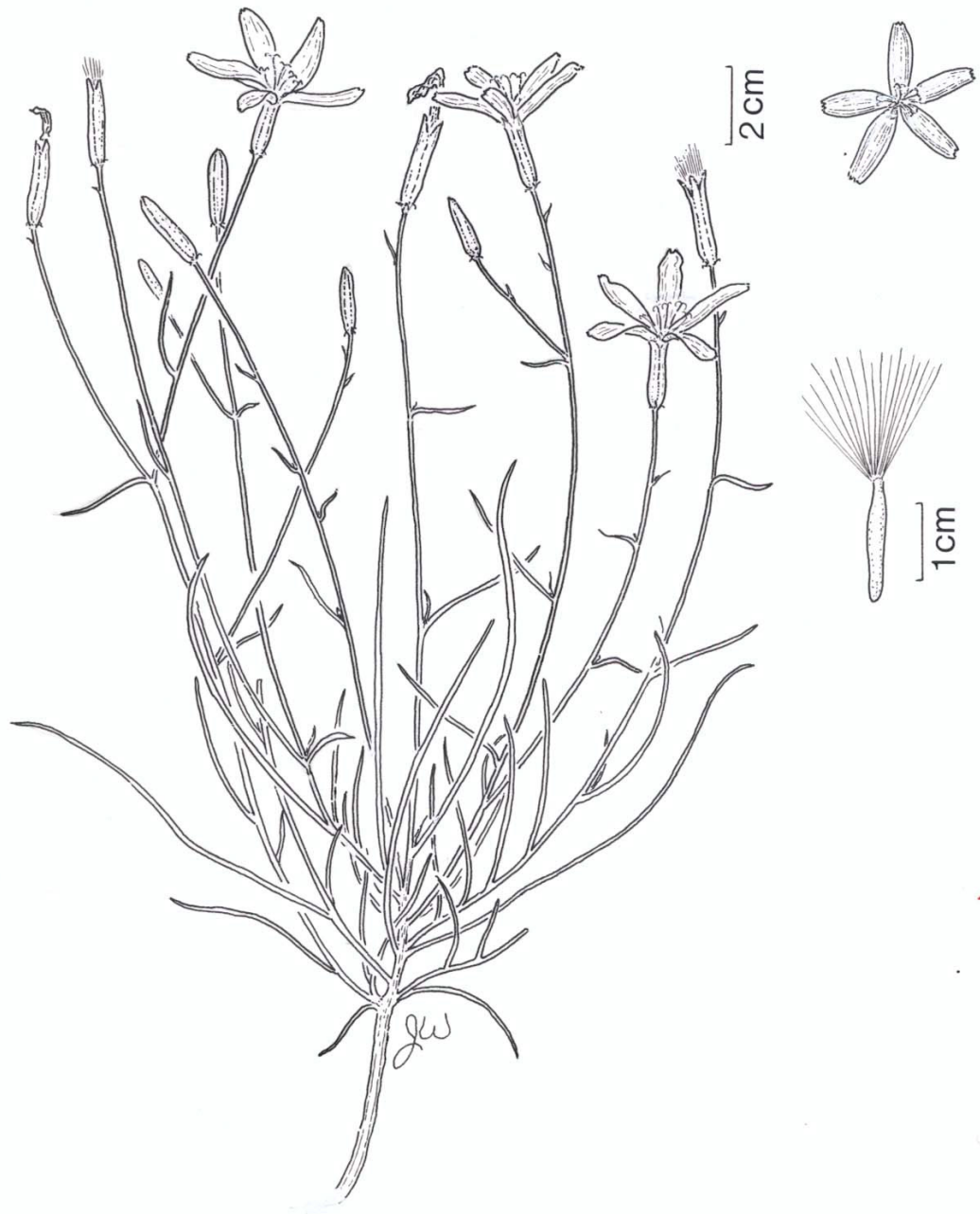
- Last observed in Colorado: 2004
- Colorado occurrences: 11 or 12
- Colorado individuals: 2470
- Primary threats: deer, rabbit, and cattle grazing, private land development, road maintenance, weeds
- Land ownership/management: private, BLM











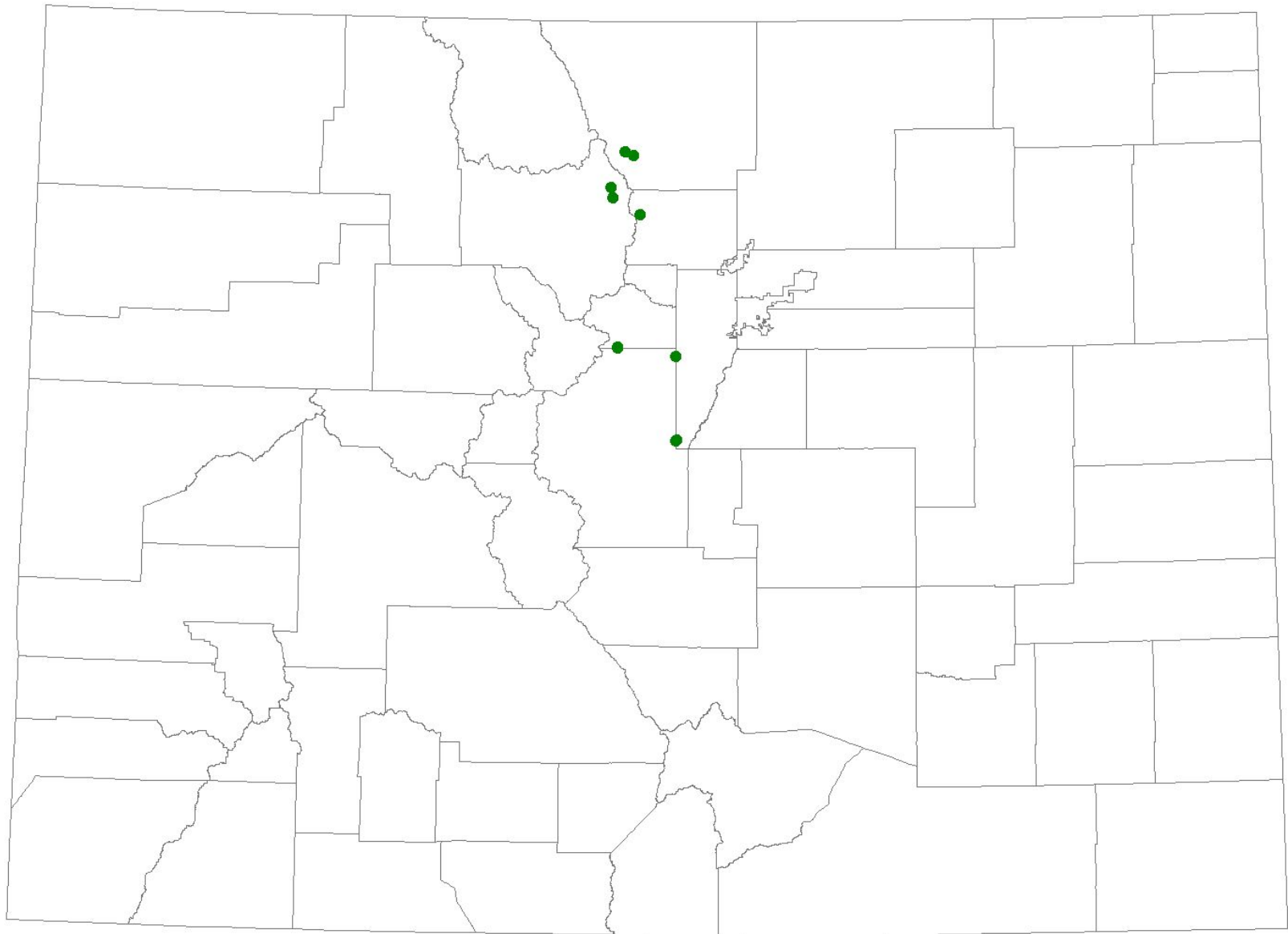


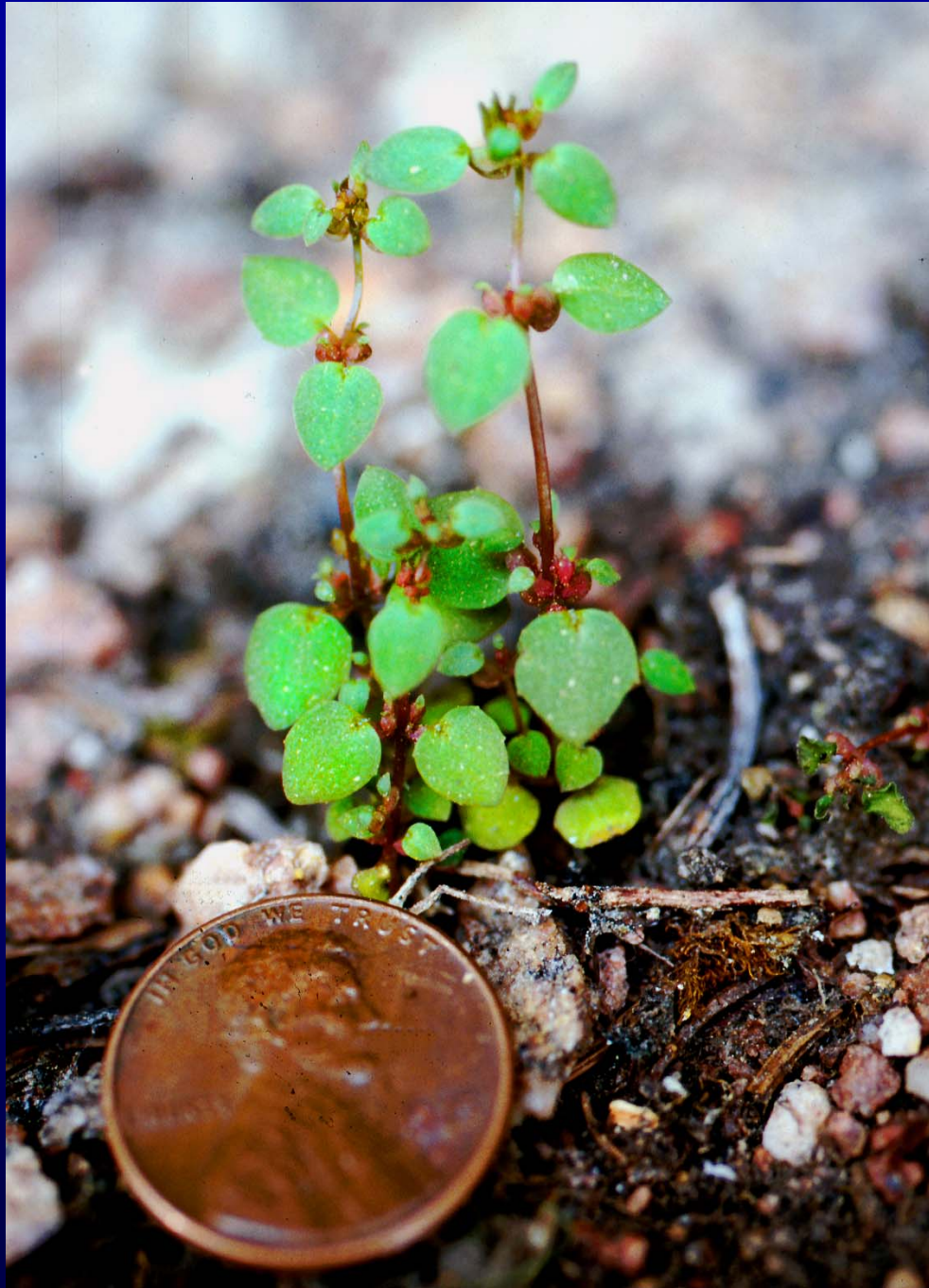
Mimulus gemmiparus
Rocky Mountain monkeyflower

- Federal status: USFS sensitive
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, Boulder, Clear Creek, Jefferson, Grand, and Larimer counties

Mimulus gemmiparus
Rocky Mountain monkeyflower

- Last observed: 2003
- Occurrences: 8
- Individuals: roughly 118,000
- Primary threats: trampling, competition from other plants, interference with hydrology
- Land ownership/management: Rocky Mountain NP, Pike and Arapahoe Roosevelt National Forests







Oreoxis humilis

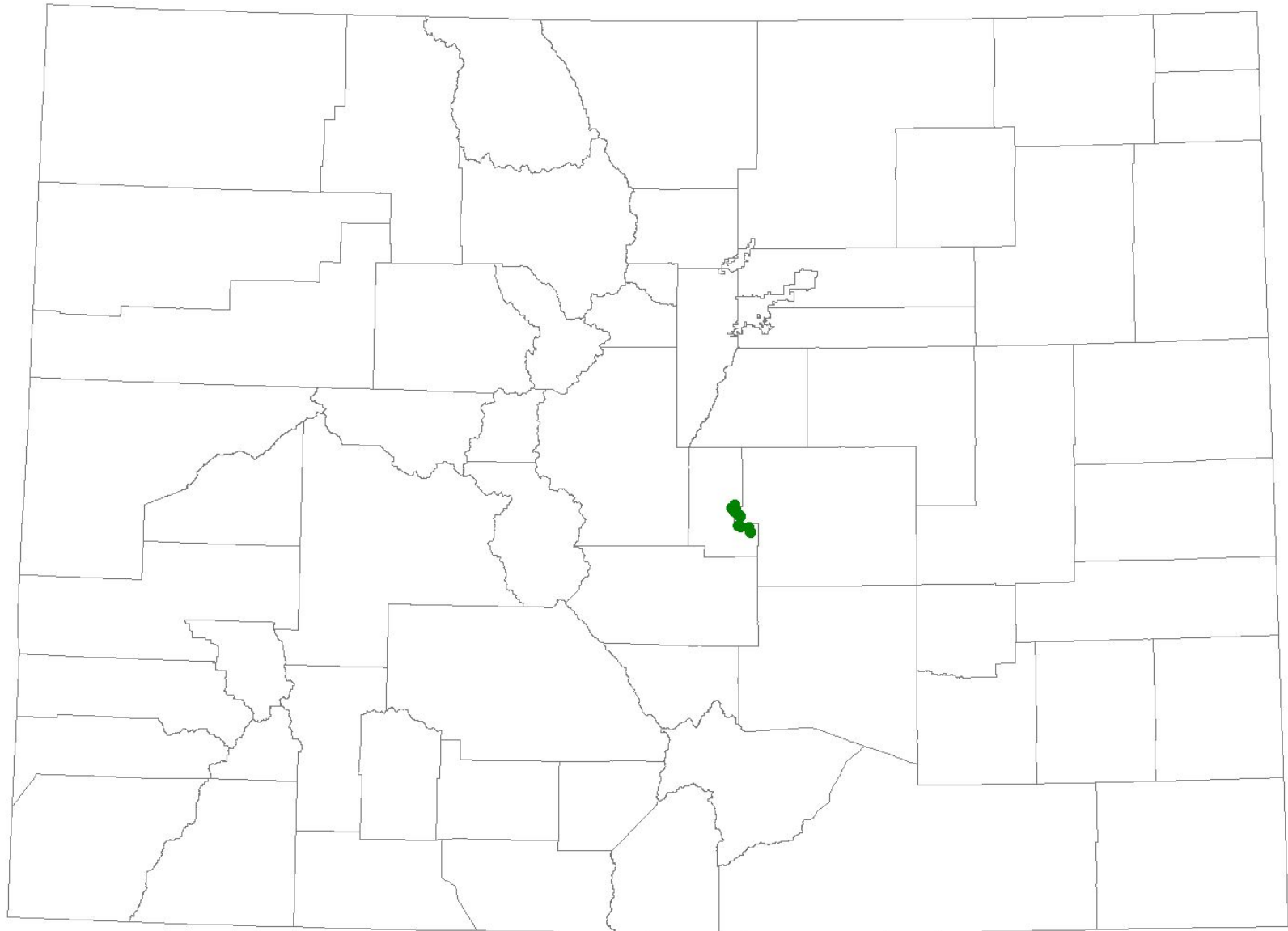
Pike's Peak alpine parsley

- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic (El Paso and Teller counties)

Oreoxis humilis

Pike's Peak alpine parsley

- Last observed: 2005
- Occurrences: 3 or 4
- Individuals: 4,340 (tens of thousands estimated)
- Primary threats: road erosion and construction, structure maintenance, motorized and non-motorized recreation, herbivory, weeds
- Land ownership/management: Pike National Forest, private (Colorado Springs Utilities)





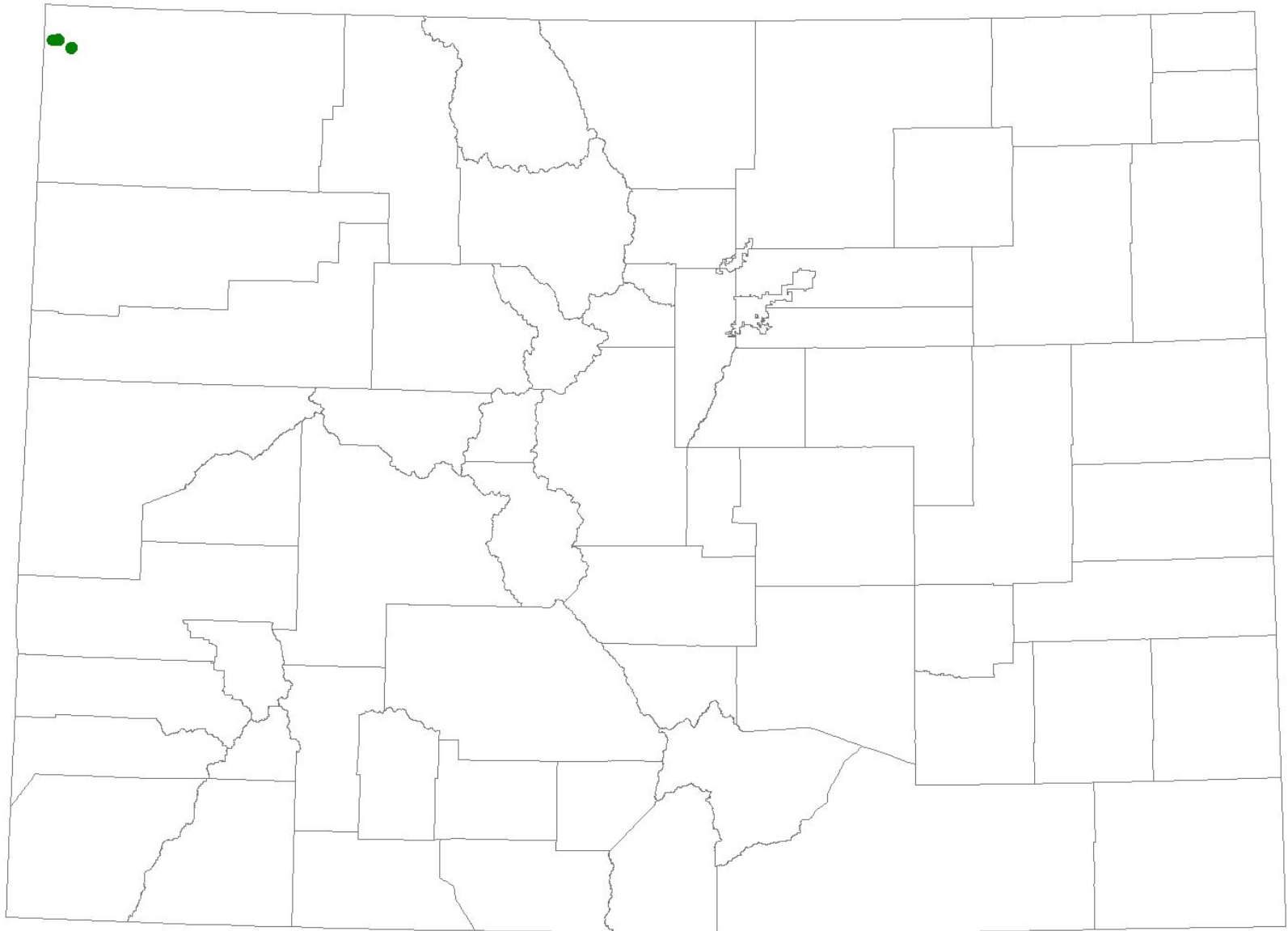


Penstemon gibbensii
Gibbens' beardtongue

- Federal status: BLM sensitive
- Heritage ranks: G1/S1
- Global distribution: SC Wyoming, NE Utah, and NW Colorado

Penstemon gibbensii
Gibbens' beardtongue

- Last observed in Colorado: 1999
- Occurrences: 7 total, 2 in CO
- Individuals: 17,000 individuals total, 6,300 in Colorado
- Primary threats in CO: noxious weeds, grazing, recreational activities, and uranium mining
- Land ownership in CO: BLM, National Wildlife Refuge



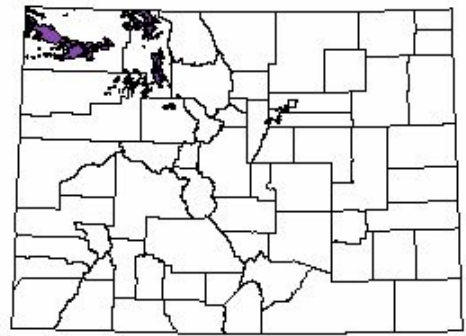
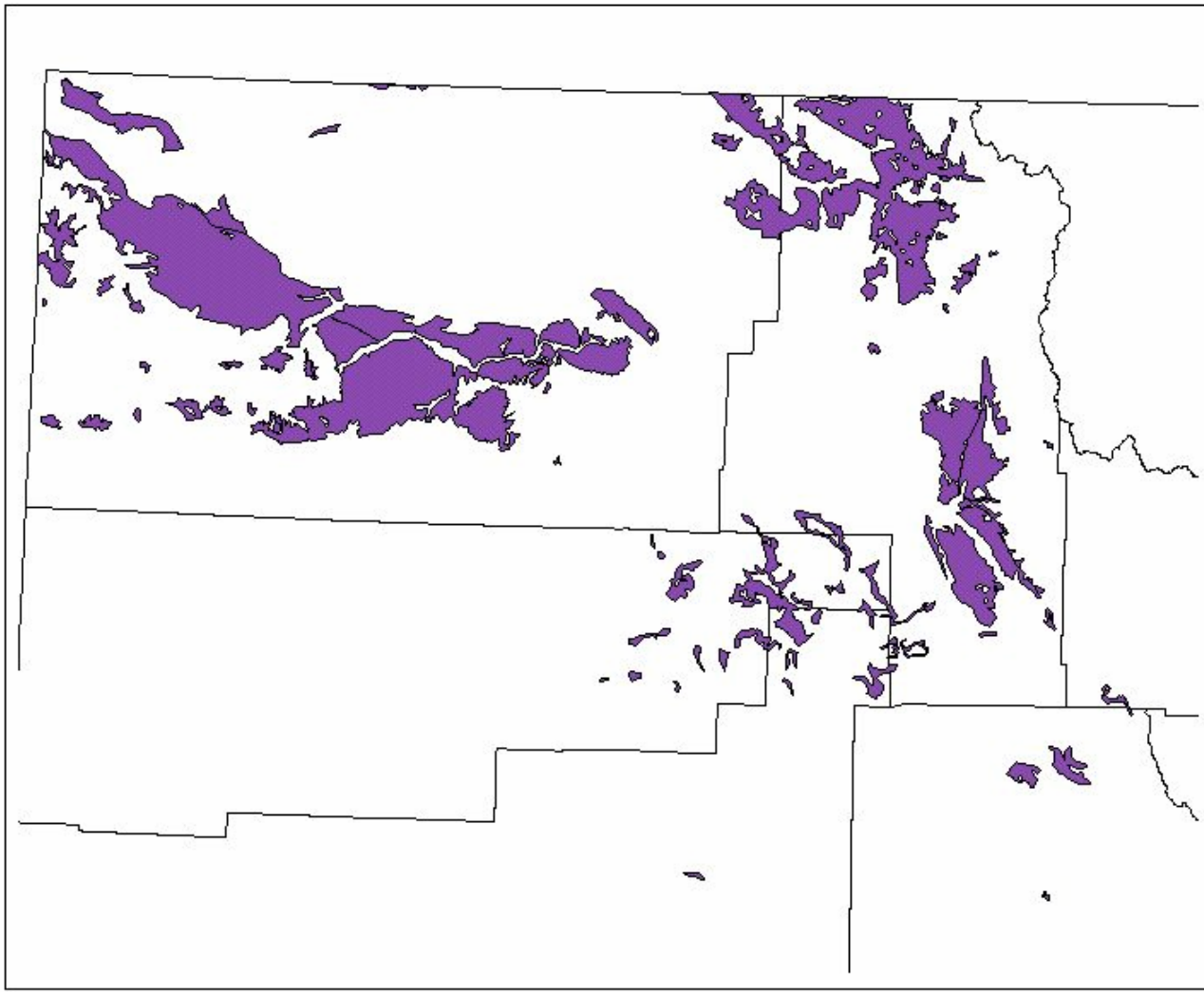








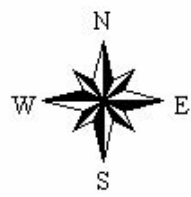




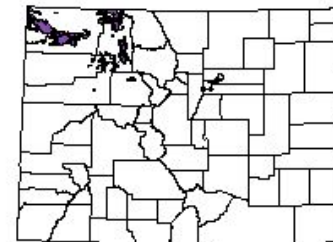
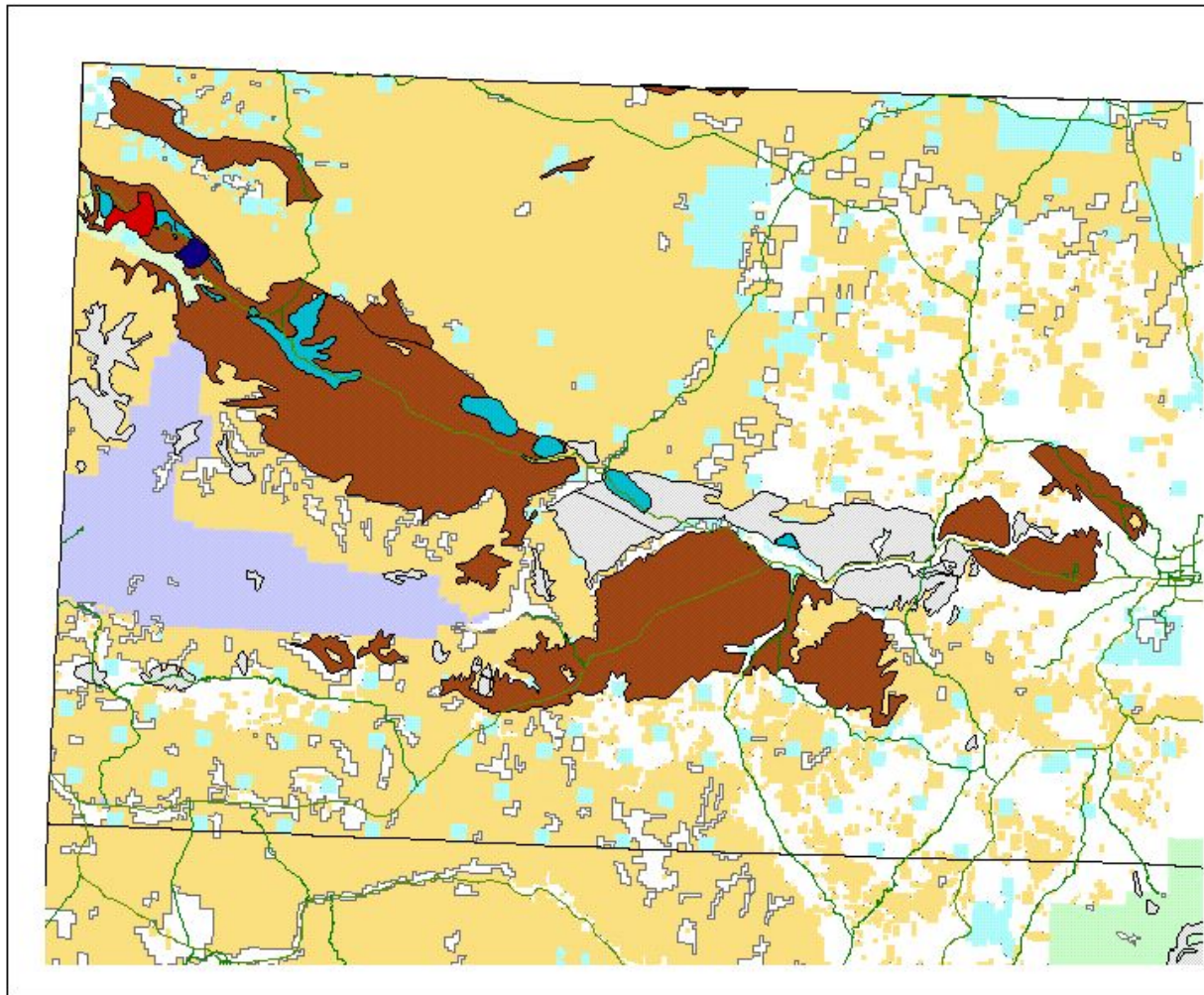


Location in Colorado

-  Browns Park Formation
-  County Boundaries



THE BROWNS PARK FORMATION IN COLORADO



DISTRIBUTION OF BROWN'S PARK FORMATION IN COLORADO

LEGEND

- Spitzie Draw PCA
- Sterling Place PCA
- Apparently suitable habitat; future surveys should visit these areas
- Areas of Brown's Park Formation that were searched but no suitable habitat was found
- Areas of Brown's Park Formation that were not intensively searched in this survey
- Roads
- State Land
- Bureau of Land Management
- Dinosaur National Monument
- Private Land
- National Forest
- U.S. Fish and Wildlife

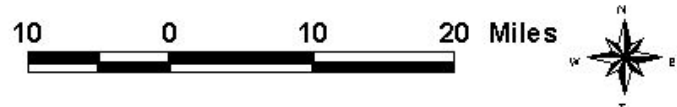


FIGURE 7:
**TARGETED INVENTORY AREAS FOR PENSTEMON GIBBENSII
 IN MOFFAT COUNTY, COLORADO**



Physaria pulvinata
Cushion bladderpod

- New species, described by Jim Reveal 2004
- Federal status: none
- Heritage ranks: G1/S1
- Global distribution: Colorado endemic, San Miguel and Dolores counties

- Last observed: 2005 CNHP Rare Plant Survey
- Occurrences: specimens from 5 locations, surveyed 2, so far
- Individuals: 2000+ in each
- Primary threats: recreation, roads
- Land ownership/management: Colorado: Miramonte SWA; San Juan NF; private

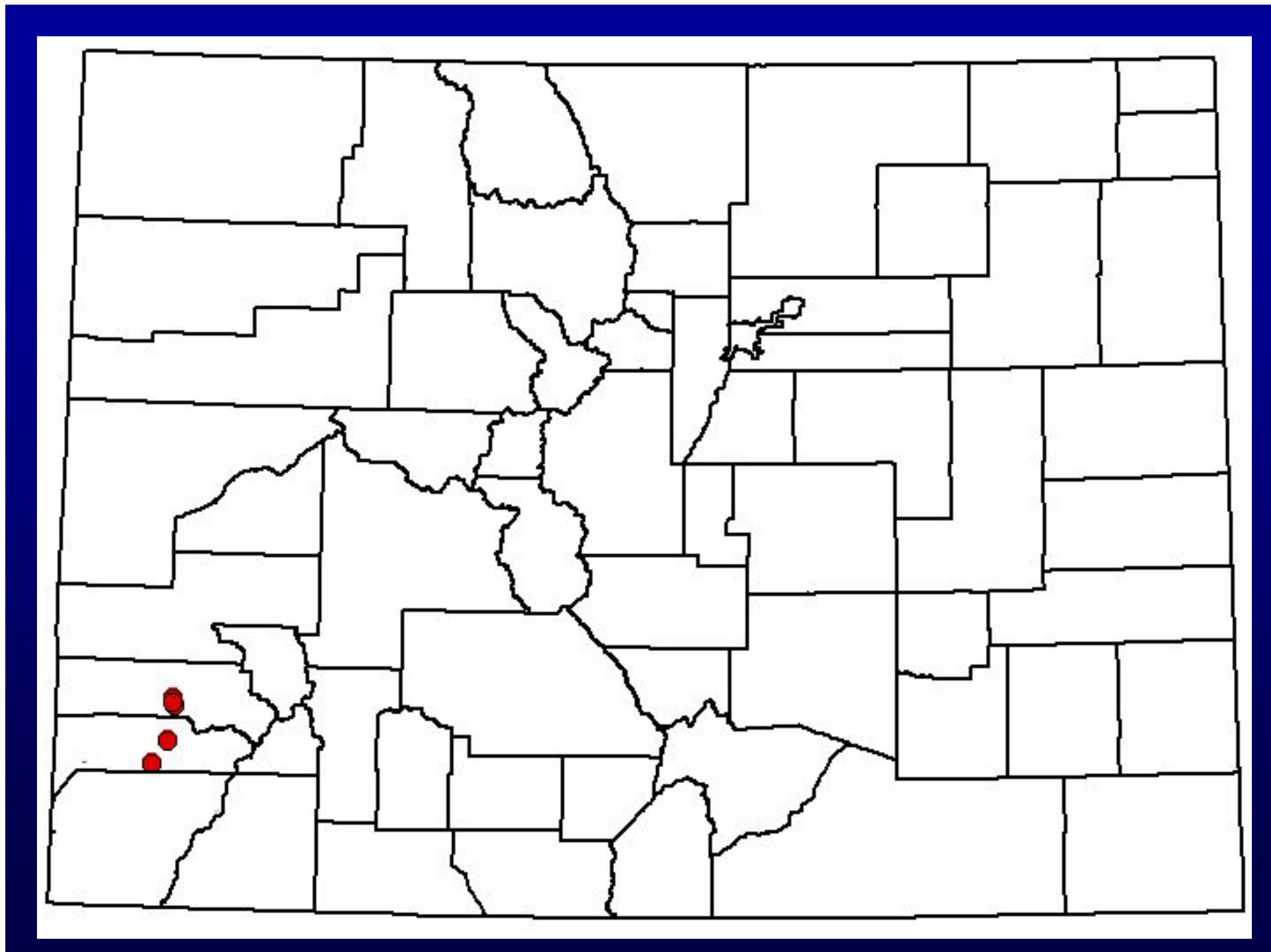








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Neely, Steve Olson, Susan
Spackman Panjabi, Jim Ratzloff,
Jim Reveal, Bobbi Siems, Kaye
Thorne, Margaret Williams

If you have any information on these species, please contact:

Colorado Natural Heritage Program

Botany Information Manager

8002 Campus Delivery

Fort Collins, CO 80523

(970) 491-5857

www.cnhp.colostate.edu



Knowledge to Go Places

