

**RESULTS OF THE RARE PLANT INVENTORY FOR U.S. HIGHWAY 89,  
MONTPELIER TO GENEVA, BEAR LAKE COUNTY**

**Project No. DPI-0191(001), Key No. 5312**

**by**

**Robert K. Moseley  
Conservation Data Center  
Idaho Department of Fish and Game  
600 S Walnut, P.O. Box 25  
Boise, ID 83707**

**June 14, 1993**

**INTRODUCTION**

The Idaho Transportation Department (ITD) is planning to upgrade U.S. Highway 89 between Montpelier and Geneva by straightening and widening some portions and relocating others. Previous floristic work by Michael Mancuso and Bob Moseley of the Idaho Department of Fish and Game's Conservation Data Center (Mancuso and Moseley 1990; Moseley 1991), reported the location of three rare plant species in and around the U.S. 89 corridor between Montpelier and Geneva. The Conservation Data Center (CDC) was contracted by the ITD to determine the extent of impacts that reconstruction of the highway would have on rare plants.

**METHODS**

The CDC data base is the central repository of all information pertaining to rare plant species in Idaho. We work closely with all land-managing agencies in the state, as well as academia and other interested individuals and organizations. Prior to beginning field work on the U.S. 89 corridor, I reviewed all the literature occurring in our manuals files, as well as information in our map and computer files, on rare species and habitats in the vicinity of the proposed project.

As mentioned previously, our work in the area in 1990 and 1991 revealed that three rare plants were known from the vicinity of U.S. 89: starvling milkvetch (*Astragalus jejunus*), Uinta Basin cryptanth (*Cryptantha breviflora*), and tufted cryptanth (*Cryptantha caespitosa*). Rare plant occurrences are entered into our data base chronologically and are assigned an occurrence number. A query of the data base revealed that occurrence number 001 for tufted cryptanth is located near Geneva Summit, Uinta Basin cryptanth 007 occurs in around Telephone Draw, and starvling milkvetch 003 and 013 occur between Montpelier Creek and Telephone Draw.

## RESULTS

On June 7-10, 1993, I conducted a survey of the route between Montpelier and Geneva. The phenology of all three target species was perfect for easy identification and surveying; they were all in full flower.

A summary of my results is as follows:

1. Similar to the results of Mancuso and Moseley (1990), I was not able to find starvling milkvetch 003. I did determine that none occurs in the road corridor.
2. The tufted cryptanth populations in the vicinity of Montpelier Canyon (occurrences 001 and 002) were misidentified. They are actually populations of round-spike cryptanth (*Cryptantha humilis*), a species common on windswept ridges at moderate elevations across southern Idaho.
3. I relocated Uinta Basin cryptanth 007 and found several new populations between Montpelier Creek and Bischoff Canyon. None of the populations will be affected by the road reconstruction and relocation.
4. No additional rare plant species were found.

Figure 1 displays the general distribution of rare plants in the vicinity of U.S. 89, between Montpelier and Geneva, while Figure 2 displays more precise location information. A detailed discussion of my findings for each species occurs after the figures.

Figure 1. General distribution of rare plant populations along U.S. 89 between Montpelier and Geneva, Bear Lake County. The three-digit numbers associated with populations are the Idaho Conservation Data Center occurrence numbers.

*Cryptantha breviflora* 007

*Cryptantha breviflora* 009

*Astragalus jejunus* 003

*Astragalus jejunus* 013

Figure 2. Precise location of rare plant populations along U.S. 89. Map compiled from the USGS 7.5' Montpelier Canyon and Geneva 1970 topographic quadrangles. The three-digit numbers associated with populations are the Idaho Conservation Data Center occurrence numbers.

*Cryptantha breviflora* 007

*Cryptantha breviflora* 009

*Astragalus jejunus* 003

*Astragalus jejunus* 013

### ***Astragalus jejunus* (starvling milkvetch)**

Until recently, no populations of starveling milkvetch were recognized at the varietal rank. In *Vascular Plants of Wyoming*, Dorn (1988) describes a new variety endemic to the Big Horn Mountains of Wyoming, with the name *Astragalus jejunus* var. *articulatus*. This taxon is considered rare in Wyoming. The name *A. jejunus* var. *jejunus* is reserved for the more widespread variety found throughout the rest of the species' range, including southeastern Idaho. Rupert Barneby, the recognized expert for *Astragalus*, does not acknowledge this varietal distinction in his recent treatment of the regional flora (Barneby 1989). The starveling milkvetch referred to in this report is *A. jejunus* var. *jejunus*.

**Description:** A member of the pea family, starveling milkvetch is a dwarf, compact perennial herb with a long, stout taproot; the herbage is greenish or ashy in color; leaves are erect and small with 9-15 (17) minute leaflets each; each short flowering stalk has 3-7 very small flowers, the petals are pink to lavender-purple in color except the wing-tips are paler to white; the fruit is a spreading or ascending egg- to globe-shaped 'pea pod' that is mottled with red.

**Distinguishing Features and Similar Species:** Starveling milkvetch is quickly recognized by its diminutive, tufted growth habit. Its very small 'pea' flowers and red-mottled pods are also distinguishing. Although several other *Astragalus* species are found in Bear Lake County, none should be confused with starveling milkvetch, which is smaller than any of them. The barren, white shale habitat where it occurs is also distinctive. It often grows in highly localized colonies.

**Range:** Discounting disjunct populations in east-central Nevada (White Pine County), starveling milkvetch is endemic to very southeastern Idaho (Bear Lake County) and adjacent portions of southwestern Wyoming (Carbon, Lincoln, Sublette, Sweetwater and Uinta Counties) and northeastern Utah (Rich County), centering around the Bear River - Green River Divide. It is known to be locally abundant in parts of its Wyoming and Utah distribution (Barneby 1989; Neighbours 1990). In Idaho, starveling milkvetch is usually found in very local colonies. Survey results revealed its overall distribution to be sporadic and localized throughout Bear Lake County, Idaho (Mancuso and Moseley 1990).

Two occurrences have been documented from the Montpelier Canyon area. The occurrence records from the CDC data base are in Appendix 1 and the location of the two populations are displayed in Figures 1 and 2.

*Occurrence 003* was collected by John and Leila Shultz in 1978 (Shultz and Shultz 1978). Neither Mancuso and Moseley in 1990, nor myself in 1993, were able to relocate this population. The habitat is unlike other sites documented by Moseley and Mancuso (1990). I searched this area thoroughly in 1993, and found that no starvling milkvetch occurs in the proposed reconstruction area.

*Occurrence 013.* This population, first collected in 1983, is well away from any road construction impacts.

Habitat and Associated Species: Barneby's (1989) habitat description for starveling milkvetch is: "Dry hilltops, gullied bluffs, and barren ridges or river terraces, on tuff, shale, sandstone, or derived gumbo clays". In Idaho its habitat is somewhat more limited where populations are restricted to exposed Twin Creek Limestone (Mitchell and Bennett 1979; Mansfield 1927). This substrate is level to gently sloping, raw, loose and eroding shale. It supports only sparse vegetation. Adjacent habitats characterized by more soil development and greater amounts of vegetation do not have starveling milkvetch present.

Texture can vary greatly on an outcrop and between outcrops and is an important edaphic attribute. Starveling milkvetch is less abundant where shale size is greater than approximately 5 cm. It also decreases in abundance when the texture becomes clayey. Outcrops and knolls are the common topographic features. Sites are also characterized by being dry and open. It is most common on south to west aspects with slopes less than 20 degrees. There is a point where slope steepness eventually precludes starveling milkvetch. When found on knolls, it is most prevalent around the crest area. Populations were located between 6300 and 7500 feet elevation. In the study area, this habitat occurs only between Montpelier Creek and Bischoff Canyon. The lower part of Montpelier Canyon, between Montpelier and Montpelier Reservoir, has a very low potential for suitable habitat for starveling milkvetch.

The community in which starveling milkvetch is found is unclassified and has low species richness. The few associated species include *Eriogonum brevicaulis* var. *laxifolium*, *Haplopappus acaulis*, *Artemisia arbuscula*, *Cryptantha humilis*, *Ivesia gordonii*, *Phlox hoodii*, *Arenaria kingii*, *Berberis repens*, *Agropyron spicatum* and *Oryzopsis hymenoides*. The barren starveling milkvetch sites are often interspersed among more productive *Artemisia tridentata* - *Agropyron spicatum*, or *Artemisia arbuscula* habitat types (Hironaka et al. 1983).

#### Conservation Status:

*IDAHO* Starveling milkvetch is a Sensitive species on the Idaho Native Plant Society's list of the state's rare flora (Idaho Native Plant Society 1993). The Sensitive category refers to species with small populations or localized distributions within Idaho that presently do not meet criteria for classification as Priority 1 or 2, but whose populations and habitats may be jeopardized without active management or removal of threats (Moseley and Groves 1992).

The Idaho CDC currently ranks starveling milkvetch as G5/S2 (G5 = demonstrably widespread, abundant and secure globally; S2 = in Idaho, imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extirpation; Moseley and Groves 1992).

Starveling milkvetch is not currently recognized as a conservation concern in Idaho by either the Forest Service or BLM.

*UTAH* The Utah Natural Heritage Program (Utah Natural Heritage Program 1990) currently ranks starveling milkvetch as S1 (S1 = critically imperiled in the state because of extreme rarity or because of some other factor of its biology making it especially vulnerable to extirpation; Moseley and Groves 1990).

Assessment and Recommendations: Two populations of starvling milkvetch have been documented in the vicinity of Montpelier Canyon. One (013) is well away from reconstruction activities. The other (003) is near the highway and two different attempts to relocate it have failed. Regardless, I searched the corridor in this area thoroughly and did not find any. It appears starvling milkvetch will not be impacted by proposed activities.

### ***Cryptantha breviflora* (Uinta Basin cryptanth)**

Description: Uinta Basin cryptanth is a taprooted perennial herb with a much branched caudex; it is usually 15-35 cm tall; the stems are covered by short hairs, the leaves by longer, straight, firm hairs; there are many, tufted basal leaves, while stem leaves are much less crowded, leaves are oblanceolate to spatulate and often possess a bluish cast; the flowering stem is elongated and very hairy; flowers are small and white with a yellow fornix (set of small appendages around corolla throat).

Distinguishing Features and Similar Species: The genus *Cryptantha* is well represented in the western United States. However, the strong perennial habit of Uinta Basin cryptanth distinguishes it from many congeners. The only other perennial cryptanth seen during the survey was *C. humilis* (round-spike cryptanth). It was never found sympatric with Uinta Basin cryptanth, although it was found on relatively barren Twin Creek Limestone sites, only on more exposed, windswept ridges. Hairs on the round-spike cryptanth are more tangled than on Uinta Basin cryptanth.

Range: Until Shultz and Shultz (1978) discovered a disjunct population near Montpelier Reservoir in 1978, Uinta Basin cryptanth was not known to occur in Idaho. Prior to this discovery, it was considered a Uinta Basin, Utah, endemic, where it can be locally common. No subsequent populations were documented in Idaho until a 1990 field survey discovered seven other populations (Mancuso and Moseley 1990). This was not unexpected, as relatively little floristic work has been done in this part of Idaho.

My survey in June, 1993, expanded the one known occurrence in Montpelier Canyon (007) and found three new populations east of Geneva Summit that have been lumped into occurrence 009. The occurrence records from the CDC data base are in Appendix 1 and populations are mapped in Figures 1 and 2.

*Occurrence 007* was first discovered in 1990. It is comprised of nine small populations occurring on relatively steep, clayey slopes. It appears to me that all nine populations are outside the area of impact for highway construction.

*Occurrence 009* is comprised of three small populations. The western two populations are along a section of highway that is to be relocated and the eastern population is well above the proposed right-of-way.

Habitat and Associated Species: Uinta Basin cryptanth's habitat in Utah has been described in part as "mostly heavy clay soils" (Higgins 1987); "poor substrates of eroding knolls and badland slopes" (Goodrich and Neese 1986); and "dry, open places, variously on barren clay or in sandy soil" (Cronquist 1984). In Idaho, it is apparently restricted to exposed Twin Creek Limestone (Mitchell and Bennett 1979; Mansfield 1927) substrate that is a raw, loose and eroding shale. It is very similar to the habitat of starveling milkvetch, except that the substrate has a very high clay content.

It occurs at elevations from 6400 to 6900 feet and on all aspects, but southern exposures predominate. Although most common on slopes of little to moderate steepness, on several occasions it was observed on slopes greater than 30°. Paralleling a pattern noted earlier for starveling milkvetch, Uinta Basin cryptanth occupies only a fraction of all the suitable-appearing habitat searched. It was commonly absent from similar-looking habitats near sites supporting the species.

The community in which Uinta Basin cryptanth is found is unclassified and has low species richness. The few associated species include *Eriogonum brevicaule* var. *laxifolium*, *Haplopappus acaulis*, *Artemisia arbuscula*, *Purshia tridentata*, *Chrysothamnus viscidiflorus*, *Phlox hoodii*, *Physaria acutifolia*, *Berberis repens*, *Agropyron spicatum* and *Oryzopsis hymenoides*.

Uinta Basin cryptanth is found on barren sites interspersed within more productive *Artemisia tridentata* - *Agropyron spicatum*, and *Artemisia arbuscula* habitat types (Hironaka et al. 1983).

#### Conservation Status:

*IDAHO* Uinta basin cryptanth is currently considered a category 3c candidate by the U.S. Fish and Wildlife Service, which includes those federal candidate species found to be more widespread or abundant than previously believed, or not subject to identifiable threats (Moseley and Groves 1990).

The Idaho Native Plant Society considers Uinta Basin cryptanth a Priority 2 species in Idaho (Idaho Native Plant Society 1993). Priority 2 species are those which are likely to be classified as Priority 1 within the foreseeable future in Idaho (Moseley and Groves 1992).

The Idaho CDC currently ranks Uinta Basin cryptanth as G4/S1 (G4 = taxa that are apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery; S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extirpation; Moseley and Groves 1992).

The Idaho State Office of the BLM lists Uinta Basin cryptanth as a Sensitive Species, defining such species as designated by the state director, usually in cooperation with the state agencies responsible for managing the species as sensitive. They are those species that are 1) under status review by USFWS/NMFS; or 2) whose numbers are declining so rapidly that federal listing may become necessary; or 3) with typically small and widely dispersed populations; or 4) those inhabiting ecological refugia or other specialized or unique habitats (Moseley and Groves 1992).

It is currently not recognized on any Forest Service Sensitive Species lists (Moseley and Groves 1990).

Assessment and Recommendations:

Seven populations of Uinta Basin cryptanth at occurrences 007 and 008 occur along U.S. Highway 89 between Montpelier Creek and Bischoff Canyon. All seven appear to be well away from the zone of impact; they are either outside of the area that will be widened or are along sections of the highway that will be relocated.

***Cryptantha caespitosa* (tufted cryptanth)**

Tufted cryptanth is known from southeastern Wyoming and northeastern Utah (Uinta Basin), and disjunct to the north in Bear Lake County, Idaho. For many years the only record of tufted cryptanth in Idaho was a collection by J.F. Macbride, made in 1910, from simply "Montpelier".

Moseley (1991) reported that three other Bear Lake County populations had been found during our 1990 survey in the Montpelier Canyon area and Pegram Creek drainage. I also reported that a collection from the northern Bear River Range was originally identified as *Cryptantha caespitosa*, but was actually a misidentified specimen of *C. humilis*.

Upon further investigation of the two populations of tufted cryptanth from the Montpelier Canyon area in 1993, it turns out that they were also misidentified *Cryptantha humilis*. These two populations occur on the small ridge immediately east of Geneva Summit and on the divide between Montpelier Reservoir and Telephone Draw. I also found *Cryptantha humilis* to be common and abundant on several other ridges in the Montpelier Canyon area. *Cryptantha humilis* is common throughout the Intermountain area, including most of southern Idaho. I did not visit the Pegram Creek population to determine if it was identified correctly. The mystery still remains, however, as to where J.F. Macbride was when he collected tufted cryptanth from the Montpelier area in 1910. This specimen has been studied by several taxonomists over the years and its identification is not questioned.

## REFERENCES

- Barneby, R.C. 1989. Intermountain Flora, Vascular plants of the Intermountain West, U.S.A., Fabales, Volume 3, Part B. New York Botanical Garden, Bronx, N.Y. 277 p.
- Cronquist, A. 1984. *Cryptantha*. Pages 223-269 *In*: Intermountain Flora, Vascular plants of the Intermountain West, U.S.A., Volume 4, by A. Cronquist, A.H. Holmgren, N. Holmgren, J.L. Reveal, N.H. Holmgren, New York Botanical Garden, Bronx, N.Y.
- Dorn, R.D. 1988. Vascular Plants of Wyoming. Mountain West Publishing, Cheyenne, WY. 340 p.
- Goodrich S., and E. Neese. 1986. Uinta Basin Flora. USDA Forest Service, Intermountain Region, Ogden, Utah. 320 p.
- Higgins, L.C. 1987. *Cryptantha*. Pages 62-75 *In*: A Utah Flora, by S.L. Welsh, N.D. Atwood, L.C. Higgins and S. Goodrich. Great Basin Naturalist Memoir No. 9. Brigham Young University, Provo, Utah. 894 p.
- Hironaka, M., M.A. Fosberg, and A.H. Winward. 1983. Sagebrush-grass habitat types of southern Idaho. Bull. No. 35, Forest, Wildlife and Range Experiment Station, University of Idaho, Moscow.
- Idaho Native Plant Society. 1993. Results of the ninth annual Idaho Rare Plant Conference. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 6 p.
- Mancuso, M., and R.K. Moseley. 1990. Field investigations of *Astragalus jejunus* (starvling milkvetch), *Cryptantha breviflora* (Uinta Basin cryptanth), and *Eriogonum brevicaulis* var. *laxifolium* (varying buckwheat) on the Caribou National Forest. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 25 p., plus appendices.
- Mansfield, G.R. 1927. Pages 97-98 *In*: Geography, geology, and mineral resources of part of southeastern Idaho. U.S.G.S. Professional Paper 152. United States Government Printing Office, Washington.
- Mitchell, V.E., and E.H. Bennett, compilers. 1979. Geologic Map of the Preston quadrangle, Idaho (scale 1:250,000). Idaho Bureau of Mines and Geology, Moscow, ID.
- Moseley, R.K. 1991. Threatened, endangered, and sensitive plant inventory of the Bear River Range, Caribou National Forest: Second year results. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 20 p., plus appendices.
- Moseley, R., and C. Groves. 1992. Rare, threatened and endangered plants and animals of Idaho. Conservation Data Center, Nongame and Endangered Wildlife Program, Idaho Department of Fish and Game, Boise, ID. 38 p.

Neighbours, M. 1990. Personal communication. Data Base Manager, Wyoming Natural Heritage Program, Laramie, WY.

Shultz, J.S., and L.M. Shultz. 1978. Report of the botanical survey of endangered and threatened plants, Caribou National Forest. USDA Forest Service contract report; on file at Idaho Natural Heritage Program, Boise, ID. 114 p.

Utah Natural Heritage Program. 1990. Special plant list. Unpublished report on file at the Idaho Department of Fish and Game, Conservation Data Center, Boise, ID. 49 p.

Appendix 1

Conservation Data Center occurrence records for  
*Astragalus jejunus* and *Cryptantha breviflora*  
along U.S. Highway 89, Bear Lake County, Idaho.

\*NOT INCLUDED IN THE CDC HOME PAGE VERSION OF THIS REPORT\*