

STATUS REPORT

Taxon: *Astragalus sabulosus* Jones var. *vehiculus* S. L. Welsh

Common Name: Stage station milkvetch

Family: Leguminosae (Fabaceae)

Occurrence: Utah

Federal Status: None

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I. CLASSIFICATION AND NOMENCLATURE

Scientific Name: *Astragalus sabulosus* Jones var. *vehiculus* S. L. Welsh

Original Publication: Great Basin Naturalist 58: 53. 1998.

Type Specimen: USA, Grand County, Utah: T24S, R20E, S7, ca 16 miles due west of Moab, 28 April 1984, S. L. 22709; holotype BRY.

Synonyms: None

Common Name: Stage station milkvetch

Family: Leguminosae (Fabaceae)

Plant Group:

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Rosidae

Order: Fabales

Genus: *Astragalus*

Review of Alternative Taxonomic Treatment: *A. sabulosus* was described by M. E. Jones in 1891 based on collections from the Cisco, Utah area which he made 2 May 1890. P. A. Rydberg (1929) transferred the species to the genus *Jonesiella* in his treatment of *Astragalus* in The North American Flora as *Jonesiella sabulosa* (Jones) Rydberg. Barneby (1964) placed the genus *Jonesiella* in synonymy within the genus *Astragalus* as it had been originally described by Jones in 1891. Barneby's treatment has been followed by later workers in the genus (Welsh 1987, 1993) and Isley (1998). Until 1995 the concept of *A. sabulosus* was based only on plants from Cisco and vicinity. Collections of this taxon were included with the typical material of *A. sabulosus* until var. *vehiculus* was named in 1998 by S. L. Welsh. The species is named for the historic stage station at or near the Type locality in the Courthouse Wash area. The stage ran from Green River to Moab.

Taxon History: The type specimens of *A. sabulosus* (3 sheets) vary in the information on the sheets. Some labeled "Clay slopes on banks of the Grand River" and one "Cisco, on road to Moab". In Jones' autobiographical account of his collections his entry's for 2 and 9 May 1890 indicates he collected at Cisco and at the Green River on both dates (Howell 1965). Apparently he collected almost exclusively along the main route from Green River to Cisco, and did not venture further south toward the Colorado River. Searches by Franklin and Atwood along the northern part of the Colorado River, south of Cisco in 1995, resulted in negative finds. Very little suitable habitat for the species was present. The type locality is probably from the populations at or near Cisco. Plants in this area are the most impacted of all those visited by Atwood and Franklin in their 1988 and 1995 field work, which is the most extensive work done on the species. Jones collected

the species again in 1913 near Moab. This is probably from the Courthouse Rock populations (now var. *vehiculus*) which was rediscovered in 1982 by Atwood & Thompson. In 1982 only a very few plants were observed due to the dry year. The old stagecoach route was probably traveled by Jones in 1890.

Our 1982 rediscovery of the taxon in the vicinity of Courthouse Rock resulted in more field work which added new collections in 1984 by Welsh and Trotter in April and by Atwood, Goodrich and Thompson in May. Atwood (1995) and Atwood and Franklin (1996) conducted detailed survey work on *A. sabulosus* within the potential habitat of the species. In conjunction with these surveys we noted differences in the flowers, fruit and general plant size in the Courthouse Wash populations from those in the Cisco area. The Cisco populations are on the Mancos Shale Formation and those at Courthouse Wash are on the Morrison Formation or Cedar Mountain Shale. The populations in the Courthouse Wash area were then named by Welsh (1998) as var. *vehiculus*.

II. PRESENT LEGAL STATUS

Global: G1T1

Federal: G1T1

State: S1T1

III. DESCRIPTION

Non-Technical: An odiferous, woody, herbaceous, glabrous, green plant to 18 inches tall. Flowers are whitish in color, 2 to nearly 3 cm long. Flowers are borne on a peduncle to 7 cm long. The cylindric calyx has black strigose hairs. The fruit (pods) are spreading to declined, cylindroid, leathery and 3-4.5 cm long and over a cm thick.

Technical: Caulescent perennial from a woody caudex; stems erect, ascending or decumbent to 15 inches long; leaves 3-10 cm long, leaflets 5-11, 6-40 mm long, 3-17 mm wide, obovate or elliptic, mucronate, strigose to glabrous; peduncles 3.5-7 cm long; racemes 4-10-flowered, the flowers ascending-spreading at anthesis the axis 0.5-2 cm long; bracteoles 0.2; calyx 12-16 mm long, the tube 11-13 mm long, cylindric, black strigose, the teeth 2-3.5 mm long, subulate; flowers 23-27 mm long, white, fading whitish; pods spreading to declined, subsessile to incipiently substipitate, inflated, cylindroid, 28-45 mm long, 9-13 mm thick, stiffly leathery (Welsh et al 1993).

Photographs and Line Drawing: Photographs of *Astragalus sabulosus* var. *vehiculus* and habitat are found in Appendix A. Line drawings are presented in Figure 1.

IV. Significance of Taxon

Natural: This species is endemic to the Morrison Formation or Cedar Mountain Shale Formation near the head of Courthouse Wash north of Moab. It is restricted to a limited area. It is a strong smelling seleniferous plant which is poisonous to livestock. The large production of seeds in good years is important for survival of the species. Seeds germinate in the fall following rains with the rosette over wintering. In the event fall rains do not occur then seeds germinate in the spring when winter snow and spring rains are sufficient for germination. It has the ability to metabolize selenium and is able to grow on very poor quality soils.

Human: While other members of the genus may have been eaten and/or probably used medicinally, there are no known human or agricultural uses for this taxon.



FIGURE 1: Line drawing of *Astragalus sabulosus* var. *vehiculus* by Shannie Workman.

V. Geographic Distribution

Geographical Range: *Astragalus sabulosus* var. *vehiculus* occurs only on the Morrison and/or Cedar Mountain Shale formation in the Canyon lands section of the Colorado Plateau in southeastern Utah. All populations are from the head of Courthouse Wash north of Moab. See Figure 2 for present range of this taxon.

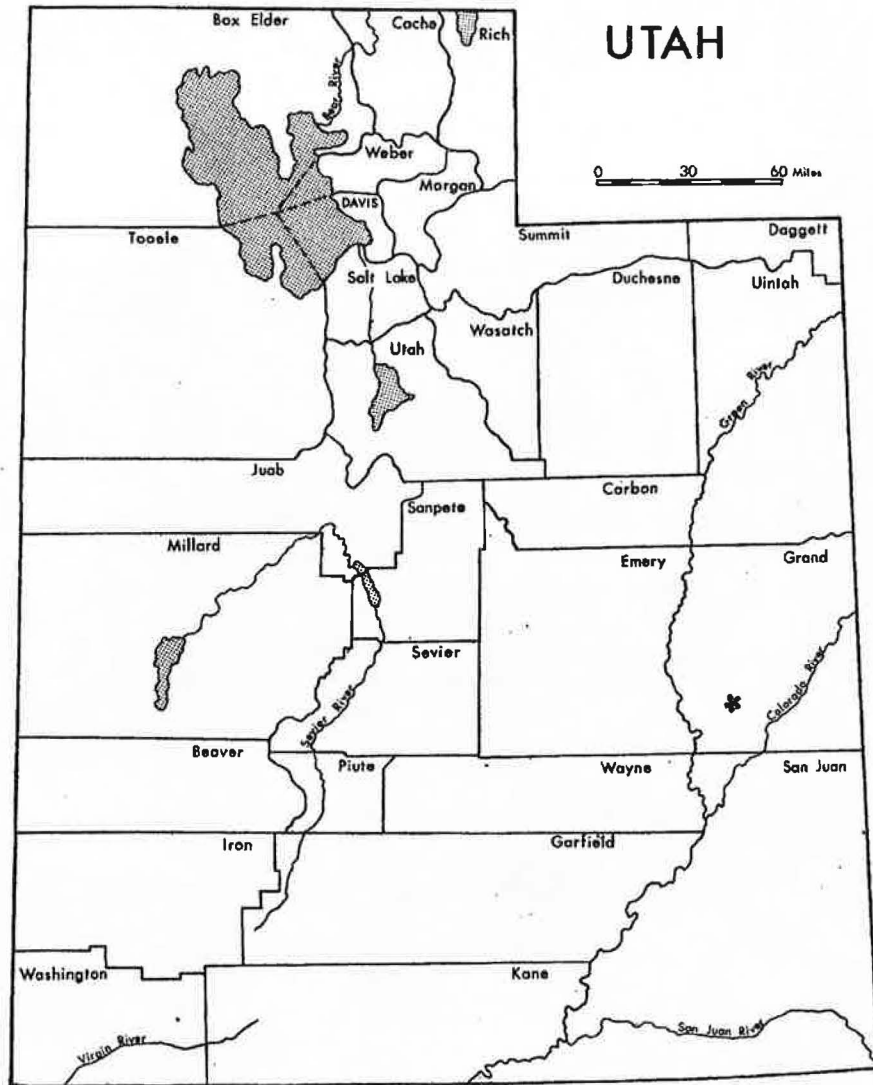


FIGURE 2. Utah counties with *Astragalus sabulosus* var. *vehiculus* distribution.

Precise Occurrences: Appendix B contains topographic maps of the few populations of *Astragalus sabulosus* var. *vehiculus*. A list of herbarium specimens is in Appendix C.

Site(s) Currently or Recently Known Extant:

*See discussion under 'Population Biology' for information on population estimates.

Population: 1- Type locality

Location: T24S R20E S7

Elevation: 4500 ft. elev.

U.S.G.S. Quadrangle Map:

Population Estimate:

Date: 28 April 1984

Collector (s): S. L. Welsh

Land Ownership: BLM/ State of Utah

Population: 2- Private section

Location: T24S R20E S16,

Elevation: ca. 4600 ft.

U.S.G.S. Quadrangle Map:

Population Estimate: 10,000 (on 60 acres)

Date: 16 June 1995

Collector (s): Duane Atwood # 20276

Land Ownership: Private

Population: 3- North of Courthouse Rock

Location: T24S R20E S17, south of the Tushar Canyon road and 1.2 air miles north of Courthouse Rock; near Courthouse Wash; vicinity of Mill Canyon; road to Mill Hollow; and where power lines cross road.

Elevation: ca. 4500-4600 ft.

U.S.G.S. Quadrangle Map:

Population Estimate:

Date: 16 June 1995; 21 May 1984; 14 May 1988; 26 April 1986; 3 May 1989

Collector (s): Duane Atwood # 20278; Duane Atwood, Sherel Goodrich, & Bob Thompson # 9700; MA (Ben) Franklin # 6021; S. L. Welsh & S. L. Welsh # 27655 ; Rich Flemming # 738.

Land Ownership: BLM/State of Utah

Population: 4- East of Courthouse Rock

Location: T24S R20E S20 (probably S21), 1 mile south of historic stage station and 1 mile east of Courthouse Rock

Elevation:

U.S.G.S. Quadrangle Map:

Population Estimate:

Date: 20 May 1985

Collector (s): S. L. Welsh
Land Ownership: BLM/State of Utah

Population: 5- SSE of historic stage station
Location: T24S R20E S21, ca 1 mile SSE of historic stage station
Elevation: 1464 m elev.
U.S.G.S. Quadrangle Map:
Population Estimate:
Date: 30 April 1984
Collector (s): Stanley L. Welsh & Daryl Trotter # 22723
Land Ownership: BLM/State of Utah

Population: 6- NE of Courthouse Rock
Location: T24S R20E S21 SWNW, gravel road NE of Courthouse Rock
Elevation: 5280 ft. elev.
U.S.G.S. Quadrangle Map:
Population Estimate:
Date: 19 April 1994
Collector (s): Joel S. Tuhy # 3737
Land Ownership: BLM/State of Utah

Site(s) Known or Assumed Extirpated: None known

Site(s) Where Present Status Unknown:

Population: 7- 4.4 miles n of Dead Horse Point road
Location: T24S R20E S?, .5 miles west of Hwy 163 and 4.4 miles north of
Dead Horse Point road (Hwy 313)
Elevation:
U.S.G.S. Quadrangle Map:
Population Estimate:
Date: 21 May 1982
Collector (s): Duane Atwood & Bob Thompson # 8809
Land Ownership: BLM/State of Utah

Population: 8- ? west of Hwy 191
Location: 10 miles north of Moab west of Hwy 191
Elevation:
U.S.G.S. Quadrangle Map:
Population Estimate:
Date: 26 April 1986
Collector (s): Mark Porter # 2330
Land Ownership:

Site (s) Known or Suspected to be Erroneous Reports: None known

Status and Location of Presently Cultivated Material: In participation with the Center for Plant Conservation (CPC), the Red Butte Gardens & Arboretum in Salt Lake City, Utah stores seeds of Endangered, Threatened and Sensitive plant species. They are kept at the National Seed Storage Laboratory (Ft. Collins, CO).

Red Butte Garden has no seeds stored for this species (Torti, pers.comm., 2003).

Biogeography and Phylogeny: The genus consists of about 1600 species, the largest genus in Leguminosae. The genus is dispersed primarily around the Northern Hemisphere, but most highly diversified in arid continental, desert and Mediterranean climates and are most numerous in central Asia, the Iranian Highland, Anatoia, and North America. The Intermountain Region has 156 species (plus 122 varieties), 100 in South America, the rest Eurasian and African. The name comes from the Greek *astragalos*, anklebone, early applied to some leguminous plant, perhaps analogous to rattleweed; bones, used by the Greeks as dice, rattle when shaken, like seeds in an inflated pod (Barneby 1989).

The genus belongs to the order Fabales, in the Rosidae.

VI. Habitat Description

Environment and Habitat Summary: Stage station locoweed occurs on the Morrison and/or Cedar Mountain Shale formation in the Canyon lands section of the Colorado Plateau. It thrives in moist years and in dry periods produces few or no plants.

Physical Characteristics

Climate: The weather station in Moab, about 13.5 miles southeast of the habitat is one of the closest where records have been taken since January 1, 1890. The average maximum monthly temperatures (F) from January-December are 42.2, 50.8, 62.0, 72.0, 82.0, 92.4, 98.0, 95.2, 86.5, 73.3, 56.9, and 44.4 respectively with the average yearly maximum at 65. The average minimum temperatures, January-December are 17.9, 24.6, 32.8, 40.6, 48.4, 55.8, 62.6, 60.9, 51.4, 39.4, 28.1, and 20.1 respectively with the average yearly minimum at 33. The average total precipitation (in.) by month, January-December are 0.66, 0.66, 0.83, 0.82, 0.73, 0.43, 0.78, 0.85, 0.85, 1.04, 0.69, and 0.76 respectively with the average total yearly precipitation at 8.9 inches. Snow fall is usually sparse occurring in January-early April and December.

Observations recorded in Atwood and Franklin (1996) indicate Moab records and those from Cunningham Ranch recorded 8 inches of precipitation respectively from January- June 21, 1995. Recordings at the Cunningham Ranch were made by caretaker Dan Murphy. This is more moisture than normally falls during an average 12 month period. The 1995 field season was the coolest spring on record

resulting in a prolonged growing season for this species wherein a large number of plants and seeds were produced. During the evening of May 16th while camped near Courthouse Rock a light rain fell all night leaving the area quite wet for early morning field work on the 17th. In the afternoon of the 17th thunder showers occurred over much of the Courthouse Rock area and then in the evening a down pour over the area from Thompson to the Colorado border left the area impassable for work on the 18th (Atwood and Franklin 1996).

Physiography: Habitat for this species is located in the Canyon lands section of the Colorado Plateau Physiographic Province.

Geology: Welsh (1993) indicate the species occurs on the Morrison Formation. Atwood and Franklin (1988) list the geology as Cedar Mountain Shale based on Hintze 1963. The species is in the Canyon lands section of the Colorado Plateau.

Aspect: Plants occur on all aspects. The larger population centers are on upper slopes and small draws down slope into the main draws between 4490-4623 feet elevation.

Soil: Clay shale soils of the Morrison Formation or Cedar Mountain Shale.

Biological Characteristics

Community Physiognomy: Stage station locoweed is a locally dominant taxon on the Morrison Formation within its habitat. It occurs in a desert shrub community of saltbush, or sometimes blackbrush with woody aster and galleta grass.

Vegetation Type: *Astragalus sabulosus* var. *vehiculus* occurs in a saltbrush, or blackbrush community with woody aster and galleta grass.

Associated Plant Species:

Trees

None

Shrubs

Gutierrezia sarothrae
Atriplex confertifolia
Rhus aromatica
Coleogyne ramosissima
Chrysothamnus sp.
Artemisia spinescens
Sarcobatus vermiculatus
Opuntia polyacantha
Artemisia tridentata

Forbs

Xylorhiza venusta
Enceliopsis nudicaulis
Thelesperma subnudum
Euphorbia fendleri
Lepidium montanum
Sclerpcactus whipplei
Stanleya pinnata
Helianthella microcephala
Platyschkuhria integrifolia
Chamaechaneactis scaposa
Oenothera caespitosa
Eriogonum bicolor

Grasses

Hilaria jamesii
Bromus tectorum

Population Biology

Population Summary: *Astragalus sabulosus* var. *vehiculus* is known from approximately 6 contiguous populations. Populations located in T24S, R20E, S's 7, 16, 17, 20 and 21 were estimated to be on ca 60 acres with ca 10,000 plants. Age classes of these plants were estimated to be 20 % seedlings, 30 % immature and 50 % mature individuals. The observations were made on 16 June 1995 by N. D. Atwood (Atwood and Franklin 1995).

Phenology: Flowering occurs from early to mid April through mid May with fruit set as early as late April but mostly in late may to mid June and seed dispersal mostly in early to mid June.

Hybridization: No hybrids are known to occur with *Astragalus sabulosus* var. *vehiculus*.

Reproductive Biology: Stage station locoweed is a short lived perennial with the underground rootstock over wintering and producing shoots in the spring. Atwood and Franklin (1996) reported the large seeds of *A. sabulosus* are dispersed by gravity and water with many of the seeds shed remaining close to the parent plant (previous years skeletons). Seedlings observed on steep slopes were below the old parent plants and those on more level ground were in a ring around the old plant bases. The number of seedlings observed in 1995 was proportionate to the size of old parent plants (i.e. large skeletons had more seedlings then small skeletons) and number of pods/seeds produced. In 1995 they checked pods to determine seed production. Most pods were found to contain forth to fifty seeds. However, most of the pods had already opened and may have already dropped some seeds. Based on these observations they postulated that the close

relationship of seedlings and old skeleton plants would seem to indicate that most seedlings develop from seeds produced the previous year rather than from seeds two or more years old. Seedling mortality is probably very high in some years. The seeds apparently germinate in the fall or spring following adequate moisture. In years when no spring rain occurs many of the small rosettes produced in the fall die. Potential pollinators include bees, wasps, butterflies and moths.

Demography: Approximately 6 populations exist for this taxon. Data on some herbarium specimens have insufficient data to assign them to a population. Ben Franklin, Duane Atwood and Daryl Trotter established a monitoring program in 1988 on one site along the power line habitat. Ben Franklin completed the report on this study and I have not made the document available for review.

Land Ownership and Management: Habitat for the Stage station locoweed occupies habitat managed by the Bureau of Land Management, Moab District, Grand Resource Area; and some private property.

Evidence of Threats to Survival

Natural: *Astragalus sabulosus* var. *vehiculus* is restricted to a limited area of the Morrison Formation. One of the most limiting factors to survival of the species, observed to date, seem to be a lack of moisture during the fall and spring when seeds germination occurs; and a lack of spring moisture wherein the small rosettes die before they become well rooted. This is a natural occurrence which the species has adapted to and continues too produce sufficient seeds for germination and replacement of new plants.

Present or Threatened Destruction, Modification or Curtailment of Habitat or Range: Off-Highway Vehicle (OHV) use within its habitat may be a factor with the population growth and recreation use of the Moab area over the last few years. Activities along the power line and access route, especially if graded could pose a significant threat to this taxon. Livestock grazing may also result in the lost of some plants by trampling. Since the plants are poisonous livestock are not known to eat the plants. Trampling of plants and effects of off road bikes or other off road vehicles may have some harmful effects on the species. Welsh (1979) identified highways and off-road uses as the primary impacts to Cisco milkvetch habitat. The primary road used to access this area dissects the courthouse Rock area. It is heavily used by mountain bikers and 4x4 vehicles in route to the sand dune, and other areas that provide 4x4 and mountain bikers outdoor opportunities. The power line that dissects the core of the populations has probably had the most impact on the species in this area in addition to the main road. Atwood and Franklin (1996) recommended that recreation use in the Courthouse Rock area be monitored to help reduce impacts too the species habitat. They also recommended contacting the power company to alerted them of the presence of this species and request work on the power line right-of-way be coordinated with the BLM. If this action has not been taken it is even more important now that

plants in this area have been designated as a different variety from the Cisco plants.

Over-Utilization for Commercial, Sporting, Scientific, or Educational Purposes: Approximately 12 collections have been made of this variety since the discovery of *A. sabulosus* in 1890. The collections from the Courthouse Rock area have had very little or not impact on the taxon. These scientific collections are part of the necessary collections needed by Plant Taxonomists to identify and name plant taxa, and determine the distribution and rarity of the various species in Utah. Without such collections it would be impossible to reach the level of knowledge now present on the flora of Utah.

Disease or Predation: None known

Inadequacy of Existing Regulatory Mechanisms: None. As pointed out by Atwood and Franklin (1996) the state office of the BLM has developed a statewide list of Special Status Plants, which includes this taxon. Botanical staffing and funding within the BLM are important limiting factors for development and implementation of conservation measures for this and other rare plant taxa. The majority of habitat for variety *vehiculus* is public lands administered by the BLM. The exception is the occupied habitat in Section 16 of 25S, R20E that is private property.

Other Natural or Man-made Factors: Any mineral and energy development, or road building could be threats to the species. Livestock grazing are minor threats, and, at present, are probably insignificant to the survival of the species.

VII. General Assessment and Recommendations

General Assessment: *Astragalus sabulosus* var. *vehiculus* is known from approximately 6 populations within the upper Courthouse Wash section of southeastern Utah north of Moab. Populations located in T24S, R20E, S's 7, 16, 17, 20 and 21 were estimated to be on ca 60 acres with ca 10,000 plants. Age classes of these plants were estimated to be 20 % seedlings, 30 % immature and 50 % mature individuals. The observations were made on 16 June 1995 by N. D. Atwood (Atwood and Franklin 1995) Populations are not currently being monitored and no additional work has been done on this taxon. One population occurs on private property and a considerable portion of a major population occurs along the power line and power line access road with required power line access. The remaining sites are on BLM administered lands. The monitoring study established along the power line by Ben Franklin, Duane Atwood and Daryl Trotter in 1988 has probably not been re-read since its establishment. It would be advisable to revisit and read the permanent plots established to help determine any possible trends in population numbers. With the limited distribution and proximity to heavy recreational use this taxon may qualify for listing by the Fish and Wildlife Service as a threatened species. However,

no action should be taken before detailed studies are completed to determine its status and threats, potential or real.

Recommended Critical Habitat: None at this time. Although most if not all populations may be essential to survival of the species. Atwood (1995) recommended the habitat in the Courthouse Rock area of sections 16,17, 20, 21 of T24S, R20E be considered essential habitat for this taxon.

Conservation and Recovery Recommendations: This taxon is dependant on seeds for survival. All populations should be revisited to determine if the habitat has been reduced in size or condition that would threaten survival of the taxon. Populations should be mapped, acreage calculated and land ownership determined for each population. Monitoring studies may be necessary to determine natural fluctuation in population numbers. Optimize the level of impacts if impacts warrant such action.

The U. S. Fish and Wildlife Service should initiate these studies and monitoring recommendations to help ensure species viability that would reduce the need for official listing.

VIII. Information Sources

Literature Cited

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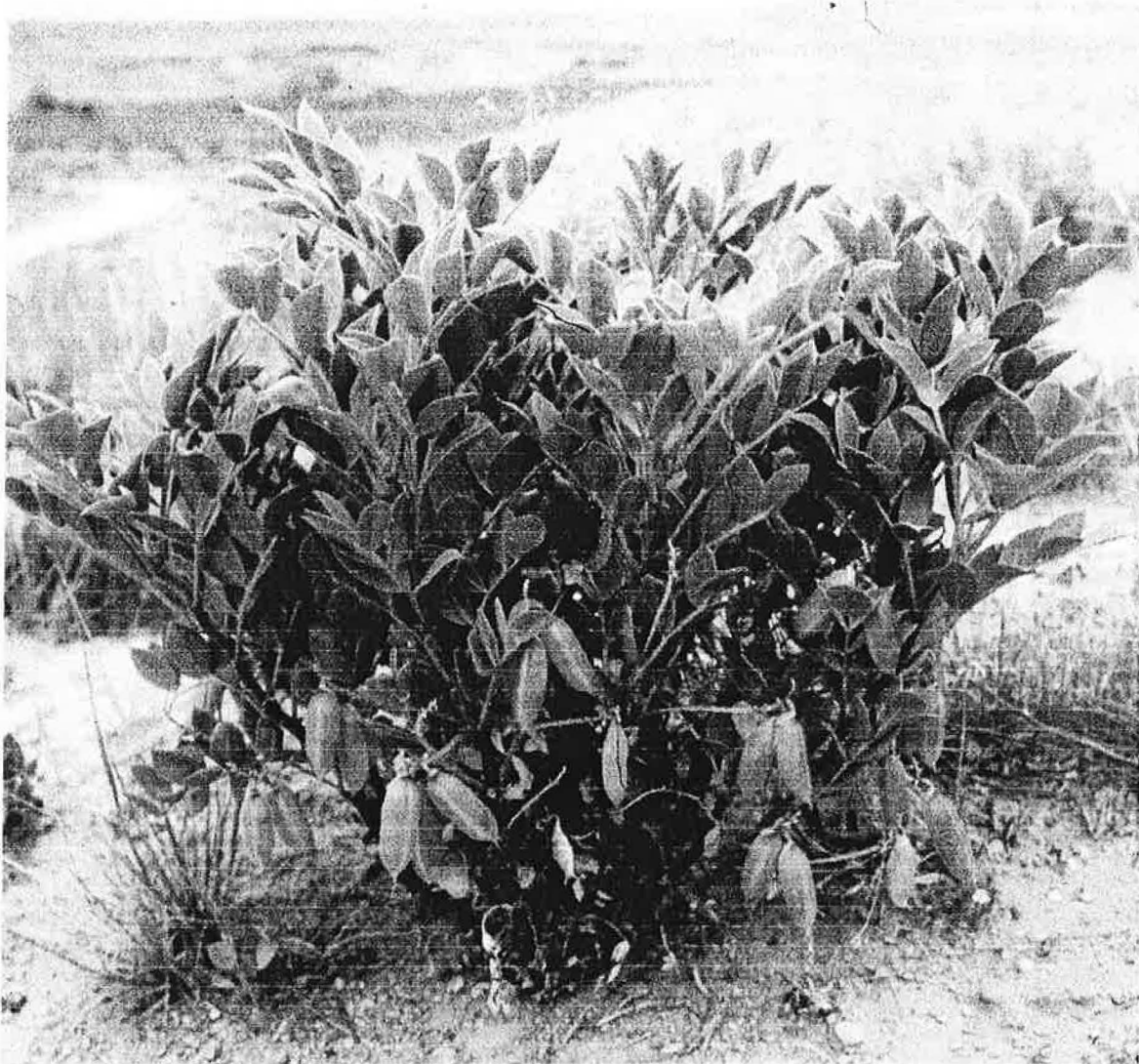
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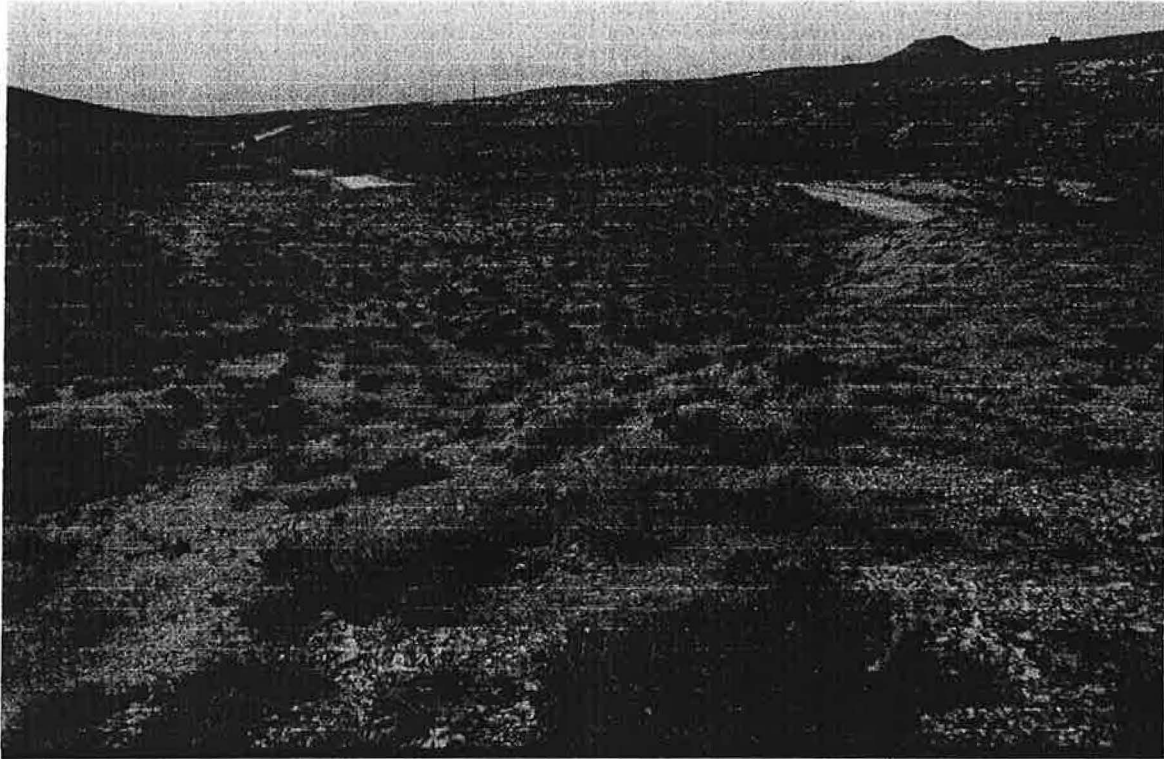
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IX. Appendix A
Photographs of *Astragalus sabulosus* var. *vehiculus* and habitat



**Photographs of *Astragalus sabulosus* var. *vehiculus* S. L. Welsh *and* habitat
In upper Counthouse Wash. Photo by Duane Atwood
Photo Courtesy of N. D. Atwood
6027 West 4600 South
Hooper, Utah 84315**

**X. Appendix B
Populations of *Astragalus sabulosus* var. *vehiculus***

XI. Appendix C
List of herbarium specimens
Astragalus sabulosus var. vehiculus

Utah

Grand County

1. T24S R20E S7 (**Type locality**), 28 April 1984, S. L. Welsh.
2. T24S R20E S16, 16 June 1995, D. Atwood 20276.
3. T24S R20E S17, south of the Tushar Canyon road and 1.2 airmails north of Courthouse Rock, 16 June 1995, D. Atwood 20278.
4. Near Courthouse Wash, 21 May 1984, D. Atwood, S. Goodrich, & B. Thompson 9700.
5. Vicinity of Mill Canyon, 14 May 1988, B. Franklin 6021.
6. Road to Mill Hollow, 26 April 1986, S. Welsh & S. Welsh 27655.
7. Where power lines cross road, 3 May 1989, R. Flemming 738.
8. T24S R20E S20, 1 mile south of historic state station and 1 mile east of Courthouse Rock, 20 May 1985, S. Welsh.
9. T24S R21E S21, ca 1 mile SSE of historic stage station, 30 April 1984, S. Welsh & Daryl Trotter 22723.
10. T24S R20E S21 SWNW, gravel road NE of Courthouse Rock, 19 April 1994, J. Tuhy 3737.
11. T24S R20E S?, .5 miles west of Hwy 163 and 4.4 miles north of Dead Horse Point road (Hwy 313), 21 May 1982, D. Atwood & B. Thompson 8809.
12. 10 miles north of Moab west of Hwy 191, 26 April 1986, M. Porter 2330.

**Utah Natural Heritage Program
EOR Records**

Element Occurrence Record
ASTRAGALUS SABULOSUS VAR VEHICULUS

Identifiers:

Elcode EO# State:
EOCODE: PDFAB0F7S2*001*UT FONUM: IDENT: Y
SNAME: ASTRAGALUS SABULOSUS VAR VEHICULUS

SCOMNAME: STAGE STATION MILKVETCH

ELEMENT RANKS: GRANK: G1T1 SRANK: S1

Locators:

NATION: US SITECODE:
SITENAME:
SURVEYSITE: COURTHOUSE ROCK

PRECISION: S

COUNTYCODE: COUNTYNAME LOCALJURIS:
UTGRAN Grand

QUADNAME: QUADCODE: DOTNUM: TENTEN:
MERRIMAC BUTTE 38109F6 8 2,3

LAT: 384444N S: 384220N
LONG: 1094330W N: 384343N
E: 1094251W
W: 1094438W

TOWNRANGE: SECTION: MERIDIAN: TRSNOTE:
024S020E 07 SL

024S020E 17 SL N2 NE4 NE4

024S020E 20 SL SW4 SE4 SW4

Astsab

024S020E 16 SL NE4 SW4 NW4

024S020E 21 SL

DIRECTIONS: Ca. 13.5 airmiles northwest of Moab, north and east of

Courthouse Rock along Courthouse Wash.

PHYSPROV: WATERSHED:
CL 14030005

Status:

SURVEYDATE: 1995-06-16 LASTOBS: 1995-06-16 FIRSTOBS: 1913-06-16

EORANK: EORANKDATE:

EORANKCOM:

EODATA: - 1988 (by B. Franklin) - POPULATION: unknown. PHENOLOGY:
in

leaf, fruit; several flowers seen but dry on plant.

POULATION AREA: 60 acres. VIGOR: normal. AGE CLASS: ma
ture

100 %. - 1995 (by D. Atwood) - POPULATION: 10,000
estimated.

PHENOLOGY: in leaf, in fruit. AGE CLASS: seedlings 20%

immature 30%, mature 50%.

CONTACTID:

CONTACT.NAME:

CONTACT.NOTE:

Description:

EOTYPE:

GENDESC: - 1988 (by B. Franklin) - COMMUNITY: Salt desert shrub
;

occasionally blackbrush is dominant. DOMINANT SPECIES:

ATRI
jamesii,
ATED
Xylorhiza sp., and Coleogyne ramosissima. OTHER ASSOCI

misia
SPECIES: Bromus tectorum, Enceliopsis nudicaulis, Artemisia
tridentata, Opuntia polyacantha, Thelesperma subnudum,

Euphorbia fendleri, Lepidium montanum, Sclerocactus

whipplei, Artemisia spinescens, Gutierrezia, Stanleya

pinnata, Helianthella microcephala, Platyschkuhria

Oenothera
atus.
integrifolia desertorum, Chamaechaenactis scaposa,
caespitosa, Eriogonum bicolor, and Sarcobatus vermicul

ASPECT: varied. SLOPE: flat-35+ degrees. LIGHT: open.

MOISTURE: dry(xeric). SOIL/GEOLOGY: white to gray fine textured / Cedar Mountain Shale. - 1995 (by D. Atwood)

(primarily here); *Atriplex confertifolia*-*Hilaria jamesii* benches and upper draw slopes); *Sarcobatus*-forb (at one location in Section 17). Further discussion is available in field form in Atwood (1995). ASPECT: all. SLOPE: 0-20

degrees. TOPOGRAPHIC POSITION: crest-bottom. LIGHT: open.

MOISTURE: dry. SOIL/GEOLOGY: primarily on blue-green white outcrops. DISTURBANCES/VISIBLE THREATS: Main road dissects population. Some ORV and mountain bike tracks are visible. Several exploratory roads are visible through populations along with a powerline and its access road

MINELEV: 4480 MAXELEV: 4620 SIZE: 7.7236611756

Protection:

SOURCECODE: CITATION:
F88FRA01UTUS Franklin, M. A. "Ben". 1988. Report for Sensitive Plant
Inventory
U95ATW01UTUS Atwood, D. 1995. Final report for candidate sensitive
plant survey

SPECIMENS: Franklin, M.A. (6021). 1988. #326588. BRY.

TRANSCRIBR: 1991-04-19 BEN CDREV: Y
MAPPER: QC:

Record Maintenance:
LEADRESP: UTHP
EDITION: 1996-03-15 EDAUTHOR: Ben Franklin

MANUAL.FILE.NOTE:

Optional Fields:

COLLECTION: M. Jones; BRY # (ex POM #25986), POM #25949, UC #372
664,

UTC, RM; 1913-06-16; Fr(m).

D. Atwood, B. Thompson; 8809; BRY #244516; 1982-05-2
1;

Fr(im).

S.L. Welsh; 22709; BRY #266677, RM #360461; 1984-04-
28;
Fl.

Astsab

30; S.L. Welsh, D. Trotter; 22723; BRY #266690; 1984-04-

Fl.

D. Atwood, S. Goodrich, B. Thompson; 9700; BRY #2728

03;

1984-05-21; Fr(m) .

S.L. Welsh; 23432; BRY #287428, RM #389697; 1985-05-

20;

Fr(m) .

J.M. Porter; 2330; BRY #312665; 1986-04-26; Fr(m?) .

M.A. (Ben) Franklin; 6021; BRY #326588; 1988-05-14;

Fr(m) .

J.S. Tuhy; 3737; BRY #379335, UTC #217963; 1994-04-1

9;

Fl.

R. Fleming; 738; BRY #335067; 1994-05-19; Fr(im) .

D. Atwood; 20276; BRY #380230; 1995-06-16; Fr(ma) .

D. Atwood; 20277; BRY #380231; 1995-06-16; Fr(ma) .

D. Atwood; 20278; BRY #380232; 1995-06-16; Fr(ma) .

ELEV.METER: 1366-1408

UTM Coordinates: E: 610785

N: 4289100

Weather Data Sources

MOAB, UTAH (425733)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1890 to 12/31/2001

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annu
Average Max. Temperature (F)	42.2	50.8	62.0	72.0	82.0	92.4	98.0	95.2	86.5	73.3	56.9	44.4	71
Average Min. Temperature (F)	17.9	24.6	32.8	40.6	48.4	55.8	62.6	60.9	51.4	39.4	28.1	20.1	40
Average Total Precipitation (in.)	0.66	0.60	0.83	0.82	0.73	0.43	0.78	0.85	0.85	1.04	0.69	0.76	9.0
Average Total Snowfall (in.)	4.0	1.5	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8	10
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	

Percent of possible observations for period of record.

Max. Temp.: 94.8% Min. Temp.: 94.8% Precipitation: 95.8% Snowfall:
91.2% Snow Depth: 58.7%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

THOMPSON, UTAH (428705)

Period of Record Monthly Climate Summary

Period of Record : 7/ 1/1948 to 11/30/1994

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annu
Average Max. Temperature (F)	37.1	45.5	55.3	66.0	75.6	86.9	93.1	90.4	81.6	69.5	52.1	40.4	66
Average Min. Temperature (F)	14.6	22.3	29.7	37.9	47.0	57.1	63.9	61.5	52.6	41.1	28.2	18.1	39
Average Total Precipitation (in.)	0.80	0.53	0.86	0.76	0.88	0.43	0.69	1.00	0.94	1.07	0.64	0.59	9.2
Average Total Snowfall (in.)	4.8	2.4	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.6	3.2	12
Average Snow Depth (in.)	2	1	0	0	0	0	0	0	0	0	0	1	

Percent of possible observations for period of record.

Max. Temp.: 92.3% Min. Temp.: 92.1% Precipitation: 95.4% Snowfall:
88.4% Snow Depth: 84.2%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu