

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Astragalus humistratus* var. *crispulus*

COMMON NAME: Villous Ground-cover Milkvetch

SYNONYMS:

FAMILY: Fabaceae

AUTHOR, PLACE OF PUBLICATION: Barneby, Rupert Charles. Leaflets of
Western Botany 4(4): 53-54. 1944.

TYPE LOCALITY: Arizona: roadside bank in pinewoods above Nutrioso, Apache Co,
alt. 8150 feet.

TYPE SPECIMEN: CAS 27750 (holotype). Ripley, H.D.D. and R.C. Barneby, #5074.
September 5, 1942.

TAXONOMIC UNIQUENESS: *Astragalus* is a very large genus with over 600 species and varieties found in the U.S. and Canada. *A. humistratus* has seven varieties. All but one are found in Arizona. One, *A. h. tenerrimus* is found only in the State, and *A. h. crispulus*, *hosakiae*, and *sonorae* are found only in Arizona and New Mexico.

DESCRIPTION: Plants perennial; pubescence gray-villous, villosulous, or subtomentose, the longer hairs basifixed, the shorter dolabriform; stems prostrate, divaricately branched, 1-5.5 dm long; stipules near base of stem 2.5-8 mm long, fully encircling the stem; leaves 1-5 cm long, with 11-15 narrowly lanceolate to ovate, usually acute leaflets 2-14 mm long; racemes 3-15-flowered, the axis 1-3 cm long in fruit; petals white, or whitish and faintly pink-tinged, banner 7-9.2 mm long, wings slightly shorter than banner, keel 5.1-6.2 mm long, the blade half-ovate and incurved about 90 degrees to the sharply deltoid apex; pods usually lying on ground at maturity, sessile, 1-celled, 8-10 mm long, thinly papery, strigulose-villosulous, lunately half-ellipsoid, incurved through 1/4-1/2 circle, laterally compressed and obscurely 3-sided, low-convex or shallowly grooved dorsally in lower half, carinate ventrally by the suture, cuspidate at apex; ovules 6-9 (New Mexico Rare Plant Technical Council 1999).

AIDS TO IDENTIFICATION: *Astragalus humistratus* differs from other astragali in the region by its prostrate, forking stems, large connate stipules at the base of the stems, and its sessile, unilocular pods. The var. *crispulus* differs from other varieties of the species by its short pod of 1 cm or less and particularly the fine curly hairs that are both basifixed and dolabriform (New Mexico Rare Plant Technical Council 1999).

ILLUSTRATIONS:

Photos: <http://eol.org/pages/1233809/media>.

Photo and Line Drawing:

http://nmrareplants.unm.edu/rarelist_single_photo.php?SpeciesID=221.

TOTAL RANGE: Arizona and New Mexico.

RANGE WITHIN ARIZONA: Around the White Mountains in southern Apache County and above the Mogollon Rim in southwest Navajo County.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial herb.

PHENOLOGY: Not reported in the literature, but notes from Arizona collections indicate flowering from at least early August to end September, and fruiting during end September

BIOLOGY:

HABITAT: In sandy soils of volcanic origin on slopes, benches, and ledges in xeric pine forest (New Mexico Rare Plant Technical Council 1999). Spillway area of a lake dam with Ponderosa Pine and weeds; within the Rodeo-Chediski burn area; a meadow above a stream; and along a torn-out old highway amongst asphalt chunks were also reported.

ELEVATION: Based on Arizona collections, 6900 – 8350 feet (2100-2550m).

EXPOSURE: Not specified.

SUBSTRATE: Sandy soils of volcanic origin. One collection noted Coconino Sandstone.

PLANT COMMUNITY: Xeric Ponderosa Pine; also Ponderosa Pine-Mixed Conifer, meadow and weeds were mentioned.

POPULATION HISTORY AND TRENDS: Unknown in Arizona. There are only seven known collections (some historical) in the State, and a similar number in New Mexico. New Mexico includes it in their Rare Species List, the USDA Forest Service considers the variety to be Sensitive, and Nature Serve lists the plant as Critically Imperiled. None of the collections included data on population sizes or trends. Spellenberg (2007, in New Mexico Rare Plant Technical Council 1999) notes that in Arizona, the variety is distributed locally, but forms colonies. Barneby, when collecting the holotype specimen in 1942, stated it was locally plentiful.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.
STATE STATUS: None.
OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 2013)

MANAGEMENT FACTORS: There are no known threats to this species. In addition to its natural habitat, it occurs on road banks that are open but well vegetated.

PROTECTIVE MEASURES TAKEN: Listed as Forest Service Sensitive in Apache-Sitgreaves National Forest in Arizona and two national forests in New Mexico.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: All but one of the seven collection sites in Arizona are on USDA Forest Service Apache-Sitgreaves National Forest. The other is on USDI Bureau of Indian Affairs White Mountain Apache Reservation.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Barneby, R.C. 1944. Pugillus astragalorum III. Leaflets of Western Botany 4:49-63. (*A. humistratus* var. *crispulus* appears on pp. 53-54, figs. 24-26).
- Barneby, R.C. 1964. Atlas of North American Astragalus. Memoirs of the New York Botanical Garden 13:1-1188.
- Howell, J.T., E. McClintock, and collaborators. 1960. Supplement. In T.H. Kearney, R.H. Peebles, and collaborators. 1951. Arizona Flora. 2nd Edition with Supplement. Univ. California Press, Berkeley. Pages 1033-1085.
- Isely, D. 1998. Native and naturalized Leguminosae (Fabaceae) of the United States (exclusive of Alaska and Hawaii). Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
- JStor| Global Plants, accessed 1/25/2016, <https://bioticsaz.natureserve.org/biotics/services/page/Eo/23211.html>.
- New Mexico Rare Plant Technical Council. 1999. New Mexico Rare Plants. Albuquerque, NM: New Mexico Rare Plants Home Page. <http://nmrareplants.unm.edu> (Compiled by Richard Spellenberg, 2007).
- Tropicos, accessed 1/25/2016, <http://www.tropicos.org/Name/13063319>.
- USDA, Forest Service Region 3, Regional Forester's List of Sensitive Plants. 2013.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION: The following is the original text from Barneby 1944:

Arizona : roadside bank in pinewoods above Nutrioso, Apache Co., alt. 8150 ft., Ripley & Barneby No. 5074. Type in Herb. Calif. Acad. Sci., No. 313637. Fig. 24—26.

The group of Astragali immediately allied to *A. humistratus* Gray has been variously treated by Jones (Rev. Astrag. 81, sequ.) as a single polymorphous species with three named varieties, and by Rydberg (N. Amer. Fl. 24:315, sequ.) as a group of about half a dozen species in his genus *Batidophaca*. The recognized entities are all very similar in habit and structure, and differ chiefly in the length and compression of the pod and in the quantity and distribution of the pubescence. These characters, however, are subject to some fluctuation and Rydberg's species, even disregarding such obviously minor variations as he recognized under the names *Batidophaca stipulacea* and *B. huniivagans*, are not very clearly defined either morphologically or geographically. Therefore, although the var. *crispulus* is at least as distinct from the typical phase of *A. humistratus* as *A. Hosackice* Greene is from the latter or from *A. sonorce* Gray, I am disposed for the present to follow Jones' classification and to regard the plant described above merely as another marked variety within the compass of a complex and widely distributed species.

Its slender habit, short subsessile leaves, and few-flowered racemes the var. *crispulus* is likely to recall *A. humistratus* var. *tenerrimus* Jones (*A. sonora* var. *tenerrimit*[^] (Jones) Kearns & Peab.), a form which is known only from the high parks of the Kaibab Plateau, but the resemblance goes no further. The var. *crispulus* is unique among its close relatives both in pubescence and in the texture of the pod. In all described varieties and segregates of *A. humistratus*, the pubescence is composed of straight, basally or sometimes medially attached, strigose hairs more or less closely appressed to the surface of the leaflets, stems, and pods. Throughout the herbage of var. *crispulus*, on the other hand, the hairs are of a quite different character, being not at all appressed or even evidently ascending, but rather spreading, curly and tangled, and extremely fine : the vesture of the pod is similar but shorter and mixed with a few longer, straight hairs. The pod itself is smaller than in any of the other varieties, with a maximum length of 7 mm., while it is more strongly curved into almost half a circle and has thinly membranous, at length translucent valves. The corolla becomes ochroleucous immediately after fertilization, but at first anthesis the banner at least is veined and suffused with pale and sordid rose.

The var. *crispulus* was seen in only one locality along Nutrioso Creek in the yellow pine forest of the White Mountains, but it was locally plentiful. The stems were strictly prostrate and rather freely branched, and formed wide circular mats on an open gravel bank. Both typical *A. humistratus* and its variety *sonorce* (Gray) Jones were also collected in the neighborhood, the former in the shade of pines a few miles to the south towards Alpine, the latter at the upper edge of the pinyon-zone above Eagar, and the differences were very apparent even in the field.

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