

ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract

Element Code: PDFAB0F3M2

Data Sensitivity: No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Astragalus geyeri* var. *triquetrus* (Gray) Jones

**COMMON NAME:** Beaver Dam milk-vetch, Sand milk-vetch, Threecorner milkvetch, Geyer's milkvetch; Geyer milkvetch

**SYNONYMS:** *Astragalus triquetrus* Gray; *Phaca triquetra* (Gray) Rydberg

**FAMILY:** Fabaceae

**AUTHOR, PLACE OF PUBLICATION:** *Astragalus triquetrus* A. Gray, Proc. Amer. Acad. Arts and Sci. 13: 367. 1878. *Astragalus geyeri* var. *triquetrus* (A. Gray) M.E. Jones, Contributions to Western Botany 8: 7. 1898.

**TYPE LOCALITY:** United States of America, southeastern borders of Nevada: [at the confluences of] Muddy River [with the Virgin], St. Thomas.

**TYPE SPECIMEN:** HT: GH-58996. E. Palmer, 1877.

**TAXONOMIC UNIQUENESS:** *Astragalus* is a species-rich genus, with more than 2000 species in the genus currently known worldwide. *Astragalus geyeri* is 1 of 350 species in the genus *Astragalus* in North America, while variety *triquetrus* is 1 of 2 in the species *geyeri*.

**DESCRIPTION:** Slender, spreading, fast maturing annual herb, with flexuous stems 10-20 cm (4-8 in) long. Leaves and stems covered by a fine ashy pubescence; leaves 3-5 cm (1.2-2 in) long, bearing about 9 elliptical, retuse leaflets 4-15 mm long. Racemes loosely 2-8 flowered; calyx 2-4 mm long, white or partly fuscous-strigulose, tube 1.5-2.5 mm long. Petals of flower are whitish with faint pink veining, which dries violet. Banner moderately recurved, 5-7.5 mm long; keel 3.8-5 mm long. Ovary is strigulose; ovules number 7-11. Pods are oblong, curved, and triangular in cross section with a prominent groove on the lower side, 1 cm long.

**AIDS TO IDENTIFICATION:** Per Barneby (1990, in Knight 1990) "*Astragalus geyeri* var. *triquetrus* ... coincides with the range of the annual *A. sabulonum*, however, *A. sabulonum* differs in a less oblique, thick-textured, villosulous pod and loosely hairy foliage. From typical *A. geyeri*, this variety differs in its pod which is definitely triangular and leaflets which are broadly oblanceolate. Additionally, typical *A. geyeri* of the central Great Basin frequently has populations with pinkish-lilac or bright purple flowers."

**ILLUSTRATIONS:** Line drawing (Mozingo and Williams, 1980: p. 100)

Line drawing (Kurzius, in Niles et al. 1995: fig. 2)

Line drawing of species (Cronquist et al., 1989: p. 157)

Color photo (Marrs-Smith in

[http://www.brrc.unr.edu/implement/milkvetch\\_3corner.html](http://www.brrc.unr.edu/implement/milkvetch_3corner.html).

**TOTAL RANGE:** Northwestern Arizona and southeastern Nevada.

**RANGE WITHIN ARIZONA:** Sand Hollow Wash, Horsethief Canyon, and Beaver Dam Wash, Mohave County. The 1940 Beaver Dam type-station collection, is now inundated.

### **SPECIES BIOLOGY AND POPULATION TRENDS**

**GROWTH FORM:** Annual/biennial forb/herb.

**PHENOLOGY:** Flowers in April and May, although it does not bloom every year. Fruit sets in 4 to 6 weeks.

**BIOLOGY:** This species is an ephemeral annual that is not seen for years at a time. It prefers average to above-average rainfall years to germinate. Most rainfall is from winter cyclonic storms.

**HABITAT:** Limited to washes and small pockets of wind-deposited sand, of the creosote bush scrub series, with sandy soils formed from sedimentary formations (Jurassic age sandstone), adjacent to Lake Mead and its tributary valleys.

**ELEVATION:** 1,100 – 2,400 ft. (336-732 m) for the range. Based on Heritage Data Management System unpublished records (AGFD, accessed 2002), elevation in Arizona ranges from 2,000 - 2,395 ft (610-730 m).

**EXPOSURE:** Prefers low-lying, open flat surfaces, with generally southeast aspects.

**SUBSTRATE:** Commonly found in areas of stabilized sand, and frequently with a sparse gravel covering.

**PLANT COMMUNITY:** Mojave Desert scrub. Creosote bush scrub series dominated by *Larrea tridentata* and *Ambrosia dumosa*. This species is commonly associated with *Allonia incarnata* (windmills), *Camissonia brevipes* ssp. *brevipes* (golden suncup), *Hymenoclea salsola* (white burrow-bush), and *Oryzopsis* (= *Achnatherum*) *hymenoides* (Indian Mountain-ricegrass). Other associated species include: *Amphipappus fremontii* (Fremont's chaffbush), *Astragalus nyensis* (Nye milk-vetch), *A. nuttallianus* var. *imperfectus* (turkey peas), *A. sabulonum* (gravel milkvetch), *Acacia greggii* (catclaw acacia), *Bromus rubens* (red brome), *Chilopsis linearis* (desert-willow), *Eriogonum viscidulum* (sticky buckwheat), *Krameria parvifolia* (= *K. erecta*, littleleaf ratany), *Muhlenbergia porteri* (Porter's muhly), *Opuntia echinocarpa* (straw-top cholla),

*Prosopis juliflora* (mesquite), *Psilostrophe cooperi* (white-stem paper-flower), and *Yucca brevifolia* (Joshua tree).

**POPULATION HISTORY AND TRENDS:** Not well known. *A. geyeri* var. *triquetrus* occurs in very low numbers and does not appear every year. It is known from fewer than 25 occurrences in a restricted range near a large population center. None of the known occurrences are protected.

### **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)  
[C2 *A. geyeri* var. *triquetrus* USDI, FWS 1993]  
[C2 *A. triquetrus* USDI, FWS 1990]  
[C2 USDI, FWS 1985]  
[C2 USDI, FWS 1983]  
[C1 USDI, FWS 1980]  
[PTN-T *A. geyeri* var. *triquetrus* USDI, FWS 1975]

**STATE STATUS:**

None

**OTHER STATUS:**

Bureau of Land Management Sensitive (USDI, BLM AZ 2005, 2008)

**MANAGEMENT FACTORS:** It is threatened by mining activities (sand and gravel) and off-road vehicle use. (NatureServe 2002). Other potential impacts include residential development, and utility development and corridors (NNHP, 2001).

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:** Distribution studies should include a more thorough search of the Beaver Dam slope area.

**LAND MANAGEMENT/OWNERSHIP:** In Arizona: BLM - Arizona Strip Field Office; NPS – Lake Mead National Recreation Area. For its range in both Nevada and Arizona: Bureau of Land Management (BLM), Bureau of Reclamation, National Park Service, State of Nevada, Private.

### **SOURCES OF FURTHER INFORMATION**

**REFERENCES:**

Cronquist, A., et al. 1989. Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A. Volume Three, Part B. The New York Botanical Gardens. Bronx, New York. Pp. 155-157.

- Harvard University Herbaria (HUH). 2001. Index of Botanical Specimens. Accessed: 4/14/2004, from <http://brimsa.huh.harvard.edu/cms-wb/specimens>.  
[http://www.brrc.unr.edu/implement/milkvetch\\_3corner.html](http://www.brrc.unr.edu/implement/milkvetch_3corner.html). Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*). Accessed: 31 July 2002.
- Integrated Taxonomic Information System (ITIS). Retrieved 7/21/2004 from ITIS, <http://www.itis.usda.gov>.
- Kearney, T.H., and R.H. Peebles with collaborators. 1951. Arizona flora. Second edition with supplement by J.T. Howell, E. McClintock and collaborators. 1960. University of California Press. Berkeley, California. Pp. 463.
- Knight, T. 1990. Status Report: *Astragalus geyeri* A. Gray *triquetrus* (A. Gray) M.E. Jones. University of Nevada, Las Vegas, NV, report prepared for U.S. Fish and Wildlife Service, Great Basin Field Office, Reno, NV. 21pp.
- McDougall, W.B. 1973. Seed Plants of Northern Arizona. The Museum of Northern Arizona. Flagstaff, Arizona. Pp. 252-253.
- Missouri Botanical Garden – TROPICOS, Nomenclatural Data Base. *Astragalus geyeri* var. *triquetrus* (A. Gray) M.E. Jones. [http://mobot.mobot.org/cgi-bin/search\\_vast](http://mobot.mobot.org/cgi-bin/search_vast). Accessed: 19 Aug 2004.
- NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: July 31, 2002).
- NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.0. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: July 21, 2004).
- Nevada Natural Heritage Program (NNHP). 2001. Rare Plant Fact Sheet: *Astragalus geyeri* A. Gray var. *triquetrus* (A. Gray) M.E. Jones.
- Niles, W.E, et al. 1995. Occurrence and distribution of *Astragalus geyeri* var. *triquetrus* (Three-cornered milk-vetch) and *Eriogonum viscidulum* (Sticky Buckwheat) in Lake Mead National Recreation Area and adjacent regions of Nevada and Arizona. The University of Nevada, Las Vegas, NV, prepared for U.S. National Park Service, Boulder City, NV. 20pp.
- USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- USDI, Bureau of Land Management. 2005. Arizona BLM Sensitive Species List.
- USDI, Fish and Wildlife Service. 1975. Threatened or Endangered Fauna or Flora; Review of Status of Vascular Plants and Determination of "Critical Habitat". Federal Register 40(127): 27830.
- USDI, Fish and Wildlife Service. 1980. Endangered and Threatened Wildlife and Plants: Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 45(242): 82490.
- USDI, Fish and Wildlife Service. 1983. Endangered and Threatened Wildlife and Plants; Supplement to Review of Plant Taxa for Listing; Proposed Rule. Federal Register 48(229): 53645.

USDI, Fish and Wildlife Service. 1990. Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 55(35): 6190-6191.

USDI, Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 58(188): 51151.

USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species; Notice of Review; Proposed Rule. Federal Register 61(40): 7596-7613.

**MAJOR KNOWLEDGEABLE INDIVIDUALS:****ADDITIONAL INFORMATION:**

**Revised:** 2002-08-01 (SMS)  
2004-08-20 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.