ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PDFAB0F0L0
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Astragalus ampullarius* S. Watson
COMMON NAME: Gumbo milkvetch, Gumbo milk-vetch
SYNONYMS: *Tragacantha ampullaria* (S. Wats.) Kuntze, *Phaca ampullaria* (S. Wats) Rydb.
FAMILY: Leguminosae

AUTHOR, PLACE OF PUBLICATION: S. Watson, American Naturalist 7(5): 300. 1873.

TYPE LOCALITY: USA. Utah. Kane County. "--Kanab, Southern Utah ...", Mrs. E.P. Thompson, [in Apr-May] 1872. Isosyntype: US.

TYPE SPECIMEN: HT: GH. E.P. Thompson s.n., [in Apr-May] 1872.

TAXONOMIC UNIQUENESS: Largest genus of flowering plants in Arizona with over 100 species within the state (Kearney et al. 1960). There are 350 species in the genus. The species is so edaphically restricted that each occurrence is thought to be somewhat genetically divergent.

DESCRIPTION: A shortly caulescent herbaceous perennial, 2.0-28.0 cm (0.8-11.2 in.) tall, from a deeply buried root crown (usually more than half the stem is underground). The scale-like pubescence on the stem gives a whitish appearance. The stems are prostrate-ascending, and radiating; previous years stems persistent. Papery stipules are 2-6 mm long, sheathing the base of the leaf and the stem. Leaves are 3-14 cm (1.2-5.5 in) long, with 7-15 (19) obovate, rounded or emarginate leaflets (4-15 mm long, 2-12 mm wide). Green leaflets are strigose (stiff straight hairs) on both sides or glabrous above. Racemes are 5- to 30-flowered, the flowers ascending at anthesis, the axis 1.2-13 cm long in fruit. Calyx is 4.8-7.5 mm long, the tube 4.2-6 mm long short-cylindric, black strigose, the teeth 0.5-1.5 mm long and broadly triangular. Flowers are 1.4-2.2 cm long, pink-purple or buff-colored with white wing-tips. Pods ascending-erect, stipitate, the stipe 9-19 mm long, the body ovoid to subglobose, inflated, 12-20 mm long, 8-11 mm thick, subunilocular, glabrous or nearly so. The stem of the fruit grows out of the calyx (Welsh 1978).

AIDS TO IDENTIFICATION: Certain phases of *A. eremiticus* (hermit milkvetch) simulate *A. ampullarius* because of the inflated ovoid-oblong pods, but the caudex of the latter is

subterranean and the stems prostrate-ascending (Welsh 1978). The elongate stalk of the fruit pod is a uniquely distinguishing character.

"The hypogeous caudex and short, prostrate-ascending stems, which persist in rosette form with marcescent stems (persistent after withering) and pods of previous years circular-reclining, bleached and skeleton-like, are quite unlike any of the taxa within the region" (Welsh 1978).

ILLUSTRATIONS: Line drawing of plant and flower (Welsh 1979)
Line drawing (Cronquist et al. 1989: p. 113)
Color photo of Isosyntype (USNH, *in* http://ravenel.si.edu/botany/types/fullRecords.cfm?myFamily=)

TOTAL RANGE: Endemic on clay soils in the Chinle Formation in western Kane and Washington counties, Utah, and adjacent northern Mohave and Coconino counties, Arizona.

RANGE WITHIN ARIZONA: Near Fredonia, Mohave County, and House Rock Valley, North Canyon, Coconino County.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial forb/herb.

PHENOLOGY: Flowering occurs April – June (May–early June).

BIOLOGY: Roots penetrate deeply into the shale soils. The crown of the plant is buried up to 10 cm below the soil surface. Reproductive methods, dispersal mechanisms, pollinators (if any) and other biological factors are unknown (Welsh 1978).

HABITAT: "Badlands." "Gumbo clay knolls derived from the Chinle shale formations (and other formations) at 970-1650 m. The gumbo knolls are primarily composed of fine-grained clay, which holds moisture at depth throughout the summer, even when the surface becomes cracked and desiccated. The characteristic, deeply buried root-crown of *A. ampullarius* is an adaption to this barren, apparently inhospitable medium." (NatureServe 2003, 2005).

ELEVATION: 3,200 - 5,400 feet (970 - 1,650 meters).

EXPOSURE: Variable. Collected on NE to SE-facing slopes of 5-20%.

SUBSTRATE: Clay, clay-silt, shale, saline, seleniferous to very sandy soils of the Chinle and Moenkopi formations.

PLANT COMMUNITY: Pinyon-juniper, mixed desert shrub. Associated species include: *Astragalus* sp. (milkvetch), *Atriplex* sp. (saltbush), *Eriogonum* sp. (wild buckwheat),

Eriogonum subreniforme (kidney-shape wild buckwheat), *Helianthus* sp. (sunflower), and *Phacelia cephalotes* (virgin phacelia). (SEINet accessed 2005).

POPULATION TRENDS: Both rare and local: occurs in small populations in narrowly restricted localities. The species is so edaphically restricted that each occurrence is thought to be somewhat genetically divergent. Probably fewer than 15 small occurrences exist and some are potentially threatened by mineral exploration. (NatureServe 2003 and 2005).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[Category 2 USDI, FWS 1993]
[Category 2 USDI, FWS 1990]
[Category 2 USDI, FWS 1985]
[Category 2 USDI, FWS 1980]
[PTN-T USDI, FWS 1975]

STATE STATUS: None

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999)
[Forest Service Sensitive (USDA, FS Region 3 1990)]

MANAGEMENT FACTORS: Threats may include right-of-way corridors and urban expansion. Management of this species should include the avoidance of surface disturbance in the Chinle and Moenkopi formations. According to NatureServe (2005), potentially threatened by mineral exploration. Also possibly threatened by livestock grazing (Barneby 1964, UTHP)

CONSERVATION MEASURES TAKEN:

SUGGESTED PROJECTS: Surveys, including potential habitat on the Navajo Nation.

LAND MANAGEMENT/OWNERSHIP: BIA - Kaibab-Paiute Reservation; USFS - Kaibab National Forest, North Kaibab Ranger District.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Barneby, R.C. 1964. Atlas of North American *Astragalus*. Memoirs of the New York Botanical Garden 13 (Part I): 568-570.

Cronquist, A., et al. 1989. Intermountain Flora, vascular plants of the Intermountain West, U.S.A. Volume three, part B, Fabales. The New York Botanical Garden. Bronx, New York. Pp. 112-113.

Harvard University Herbaria. 2001. Index of Botanical Specimens. Accessed: 8/12/2003. http://brimsa.huh.harvard.edu/cms-wb/specimens.jsp.

Integrated Taxonomic Information System (ITIS). Retrieved 8/12/2003 from ITIS, http://www.itis.usda.gov.

Kearney, T.H., R.H. Peebles with collaborators. 1960. Arizona flora. Second edition with supplement by J.T. Howell, E. McClintock and collaborators. University of California Press. Berkeley, California. P. 464.

Missouri Botanical Garden – TROPICOS, Nomenclatural Data Base. *Astragalus ampullarius* S. Watson. http://mobot.mobot.org/cgi-bin/search_vast. Accessed: 12 Aug 2003.

NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. Arlington, Virginia. Available: http://www.natureserve.org/explorer. (Accessed: August 12, 2003).

NatureServe. 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.5. NatureServe, Arlington, Virginia. Available: http://www.natureserve.org/explorer. (Accessed: September 7, 2005).

Rydberg, P.A. 1913. Rocky Mountain flora. Bulletin of the Torrey Botanical Club 40:47.

SEINet. Collections Search Result. Accessed 9/7/2005 at http://seinet.asu.edu/collections/list.jsp.

U.S. National Herbarium Type Specimen Register (US). http://ravenel.si.edu/botany/types/. Accessed: 9/7/2005.

USDA, Forest Service Region 3. 1990. Regional Forester's Sensitive Species List.

USDA, NRCS. 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDI, Fish and Wildlife Service. 1975. Threatened or Endangered Fauna or Flora. 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. Federal Register 45(242): 82489.

USDI, Fish and Wildlife Service. 1985. Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species. Notice of Review. Federal Register 50(188): 00005.

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): 6189.

USDI, Fish and Wildlife Service. 1993. Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Federal Register 58(188): 51150.

Watson, S. 1873. New plants of northern Arizona and the region adjacent. American Naturalist 7: 299-301.

Welsh, S.L. 1978. Status report *Astragalus ampullarius*. Submitted to U.S. Fish and Wildlife Service, Denver, Colorado.

Welsh, S.L. 1979. Illustrated manual of proposed endangered and threatened plants of Utah. Submitted to U.S. Fish and Wildlife Service, Denver, Colorado.

Welsh, S.L., N.D. Atwood and J.L. Reveal. 1975. Endangered, threatened, extinct, endemic, and rare or restricted Utah vascular plants. The Great Basin Naturalist 35(4): 327, 346.
Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. 1993. A Utah Flora. Second Edition, revised. Print Services, Brigham Young University. Provo, Utah U.S.A. P. 397.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

S.L. Welsh - Orem, Utah

ADDITIONAL INFORMATION:

Welsh (1978) recommended this plant for Threatened status under the Endangered Species Act.

Welsh (in Utah Flora) lists 13 known sites in Utah.

Only two populations are known from Arizona as of 1992.

Revised: 1992-05-26 (DBI)
1992-06-01 (BKP)
1992-09-14 (BKP)
2003-08-21 (SMS)
2005-09-09 (SMS)