



**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Plant Abstract

Element Code: PMLIL02120

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Allium gooddingii* Ownbey

COMMON NAME: Goodding Onion

SYNONYMS: None

FAMILY: Liliaceae

AUTHOR, PLACE OF PUBLICATION: Ownbey, G. S. 1947. Res. State Coll. Washington 15:221-224.

TYPE LOCALITY: Arizona: Apache County: White Mountains: Ft. Apache Indian Reservation: Bonita Creek.

TYPE SPECIMEN: ARIZ SN. L. N. Goodding 1233. 23 July 1912.

TAXONOMIC UNIQUENESS: There are twelve species of *Allium* in Arizona (Lehr 1978). *Allium* is a widespread genus with about 500 species distributed worldwide (Hickman 1993).

DESCRIPTION: Herbaceous perennial with caespitose bulb terminating in short, thick iris-like rhizomes connecting individual bulbs. Bulb coats are striate with parallel fibers (not net-forming). The leaves are broad, about 8 mm (0.32 in.) wide, flat, with rounded tip, yellowish-green in color, several in number, and shorter than the scape (flowering stalk). Numerous purplish-red to rose-pink flowers on erect scape to 45 cm (18.0 in.) tall. Each umbel (terminal flower cluster) bears about 20 flowers. Flowers with 6 petals.

AIDS TO IDENTIFICATION: Leaves are much wider than other *Allium* species in the area; *A. gooddingii* has an erect flower head, the flower stalk of other local onions noticeably droop.

ILLUSTRATIONS: Line drawing (New Mexico Native Plants Protection Advisory Committee 1984:199).

TOTAL RANGE: Southern Arizona and New Mexico (Grant, Catron, and Otero counties).

RANGE WITHIN ARIZONA: Apache County: White Mountains, extirpated from Canyon del Muerto; Pima County: Santa Catalina Mountains.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Herbaceous perennial.

PHENOLOGY: Initiates above-ground growth in late spring following snow melt. Flowers from June through August and sets seed beginning in July and continuing into September. Above-ground growth persists through October and then dies back with the advent of frosts.

BIOLOGY: Reproduces from seed and also vegetatively from bulbils that arise from division of the rhizomes. Pollinated by hymenopterans, dipterans, and lepidopterans (at least). Seeds germinate readily (Spellenberg 1982, Fletcher 1984). A stem may not grow from every bulb every year. May be locally abundant at certain sites and dominate the herbaceous understory. Usually does not occur where other perennial herbaceous species exceed 50% ground cover.

HABITAT: Moist shaded canyon bottoms in climax conifer forests. Located most frequently in mature forests, usually along north-trending drainages, in a narrow strip at the very bottom of low gradient (low erosion) perennial, intermittent and ephemeral stream courses with well developed organic soils. Occasionally found in moist soils on north aspect slopes, usually adjoining stream bottom populations. Generally does not occur in meadows though may be found in semi-open situations along the edge of large clearings or bordering streams.

ELEVATION: 7,000 - 10,600 feet (2135 - 3233 m) in Arizona; up to 11,300 feet (3446.5 m) in New Mexico.

EXPOSURE: North, northeast, and northwest aspects

SUBSTRATE: Mollic Cryoboralf and Eutric Glossoboralfs; these in the stream bottom are deeper with a greater loam and organic content. The latter description probably pertains to the White Mountains.

PLANT COMMUNITY: Ranging from *Abies lasiocarpa/Vaccinium myrtillus* habitat type at the upper end of the elevational range through the *Abies concolor/Pseudotsuga menziesii/Poa pratensis* habitat type at the lower end. In New Mexico, canopy cover on the Lincoln National Forest ranged from 0-100%; *A. gooddingii* is found in spruce-fir forests but not in aspen stands or on lower and south facing slopes dominated by Douglas fir; also grows on open ski runs, but not towards the middle of wider runs. Note: in Arizona, the species is found in association with Douglas fir.

POPULATION TRENDS: Renee Galeano-Popp (1991 Apache-Sitgreaves National Forest Plant Workshop) feels populations are declining.

The populations at Canyon del Muerto (Navajo Nation) and Phelps Cabin Research Natural Area (Apache-Sitgreaves National Forest) have been extirpated.

The Santa Catalina Mountain population west of the ski area is very large and appears stable (Reichenbacher--1991 Coronado National Forest Plant Workshop).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1999)
 [C USDI, FWS 1996]
 [C1 USDI, FWS 1980]
 [PTN-T USDI, FWS 1975]

STATE STATUS: Highly Safeguarded (ARS 1993)

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999)
 [Forest Service Sensitive USDA, FS Region 3 1990]
 Group 3 (NNDFW, NESL 2000, 2005)

MANAGEMENT FACTORS: Degradation of riparian habitat due to livestock management and timber harvesting (watershed management); habitat disturbance associated with silvicultural operations; construction of ski recreation areas and associated facilities.

A. gooddingii is readily grazed by livestock and seems to be a selected food plant. Elk also eat *A. gooddingii* but not as heavily as livestock. Populations seem to be less vigorous after several years of consistent grazing (Bob Vahle pers comm 1990). Persistent grazing may eliminate all sexual reproduction within a population.

CONSERVATION MEASURES TAKEN: Silvicultural practices altered. Apache-Sitgreaves National Forest requires a 100 foot buffer (minimum, determined in part by slope) of all timber sales to maintain shading for populations along stream corridors. Some populations have been introduced on the Apache-Sitgreaves NF.

SUGGESTED PROJECTS: Survey potential habitat throughout the White Mountains; and also in the Pinaleño Mountains (especially north facing canyons). Determine relative recruitment contribution of sexual and vegetative reproduction based on habitat and management parameters. Determine what level of livestock grazing is compatible with maintaining viable populations of *A. gooddingii*. Develop standardized monitoring procedures (cannot identify individuals because of asexual reproduction by rhizomes; must monitor population size and density of stems). Establish long-term monitoring plots.

Prepare and implement Habitat Management Plans (HMP) for the species on each National Forest. Management recommendations from the draft HMP for the Apache-Sitgreaves (from Laurenzi et al 1987):

1. Inventory and map populations.
2. Construct and maintain fences around RNAs to exclude livestock.

3. Amend Apache-Sitgreaves National Forests Land Management Plan to include protection of this species in the management emphasis for Black River Management Area 14 and East and West Forks of the Black River Management Area 15.
4. Restrict timber harvesting from stands that support this species.
5. Manage livestock to restore riparian ecosystems.
6. Designate a Special Management Area that includes at least one high density population.

Within Allotment Management Plans (AMPs) include surveys and adjust livestock distribution and management.

LAND MANAGEMENT/OWNERSHIP: Arizona: USFS - Apache-Sitgreaves AND Coronado National Forests; BIA White Mountain Apache Reservation. New Mexico: USFS Gila and Lincoln National Forests; BIA Mescalero Indian Reservation.

SOURCES OF FURTHER INFORMATION

LITERATURE CITATIONS:

- Arizona Revised Statutes, Chapter 7. 1993. Arizona Native Plant Law. Appendix A:2.
- Fletcher, R. 1978. *Allium gooddingii* supplement. Unpublished report prepared for the U.S. Forest Service Regional Office, Albuquerque, New Mexico.
- Fletcher, R. 1984. *Allium gooddingii* Status Report Supplement. Unpublished report prepared for the U.S. Forest Service Regional Office, Albuquerque, New Mexico.
- Hickman, J. C. ed. 1993. The Jepson manual, higher plants of California. University of California Press. Berkeley. p. 1172.
- 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. p.180.
- Laurenzi, A.W. and P.L. Warren. 1987. *Allium gooddingii* on the Apache-Sitgreaves National Forest: Current status and management recommendations. Unpublished report submitted to Apache-Sitgreaves National Forest, Springerville, Arizona.
- Lehr, J.H. 1978. A catalogue of the flora of Arizona. Desert Botanical Garden, Phoenix, Arizona. p. 31.
- Navajo Nation Department of Fish and Wildlife. 2000. Navajo Endangered Species List. p. 2.
- Navajo Nation Department of Fish and Wildlife. 2005. Endangered Species List for the Navajo Nation. The Navajo Nation, Window Rock, Arizona. p. 2.
- New Mexico Native Plants Protection Advisory Committee. 1984. A handbook of rare and endemic plants of New Mexico. Univ. New Mexico Press. Albuquerque, New Mexico. pp. 198-199.
- Ownbey, G.S. 1947. The genus *Allium* in Arizona. Research Studies of the State College of Washington 15(4):221-224.
- Spellenberg, R. 1982. Status report on *Allium gooddingii*. Unpublished report to USFWS, Albuquerque, New Mexico.

- USDA, Forest Service, Region 3. 1990. Regional Forester's Sensitive Species List.
- USDA, Forest Service, Region 3. 1999. Regional Forester's Sensitive Species List.
- USDI, Fish and Wildlife Service. 1975. Threatened or Endangered Fauna or Flora. Federal Register 40(127):278309.
- 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):82486
- 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. Federal Register 61(40):7596-7613.
- USDI, Fish and Wildlife Service. 1999. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Recycled Petitions; Annual Description of Progress on Listing Actions; Proposed Rule. Federal Register 64(205):57545.
- Wagner, W.L. and D.G. Sabo. 1977. Status report for *Allium gooddingii*. Unpublished report for USFWS, Albuquerque, New Mexico.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

- Renee Galeano-Popp - USDA, Forest Service Botanist, Lincoln NF, Alamogordo, NM.
- Andy Laurenzi - The Nature Conservancy, Tucson, Arizona.
- Charlie MacDonald - USDI, Fish and Wildlife Service, Albuquerque, New Mexico.
- Richard Spellenberg - New Mexico State University, Las Cruces, New Mexico.
- Bob Vahle - AGFD, Pinetop, Arizona.
- Peter Warren - Tucson, Arizona.

ADDITIONAL INFORMATION:

Plants under cultivation at the Arboretum at Flagstaff. Observations there indicate that the species may be apomictic (self-fertile).

Revised: 1990-12-26 (SR)
 1991-10-18 (BKP)
 1991-12-04 (SR)
 1992-09-14 (BKP)
 1997-10-07 (SMS)
 1999-12-20(DJG)

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edited by the Heritage Data Management System, Arizona Game and Fish Department,
Phoenix, AZ. X pp