ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PDCAC0V011
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Peniocereus greggii* var. *greggii*
COMMON NAME: Night-blooming Cereus
SYNONYMS: *Cereus greggii* var. *cismontanus*, *C. pottsii*
FAMILY: Cactaceae

AUTHOR, PLACE OF PUBLICATION: N.L. Britton and J.N. Rose. Contrib. U.S. Natl. Herb. 12: 428. 1909.

TYPE LOCALITY: Mexico: south of Chihuahua: High ground west of Cadena.

TYPE SPECIMEN: MO 313101 (lectotype). Josiah Gregg, #599. May 9, 1847.

TAXONOMIC UNIQUENESS: There are two species of *Peniocereus: greggii* and *striatus. P. greggii* has two recognized varieties: *P.g. greggii* and *P.g. transmontanus*. *P. striatus* and *P.g. transmontanus* occur only in Arizona. *P. greggii* and *P.g. greggii* occur in Arizona, New Mexico and Texas.

DESCRIPTION: Shrubs, erect to sprawling, usually inconspicuous. Roots turnip-shaped, usually 15-30 × 5-12 cm (much larger ones known). Stems gray-green to gray, simple or with 2-5 branches, 40-120(-300) cm, distally 8-20 mm diam., at midlength ca. 10 mm diam., often narrowed toward base; wood hollow, solid-surfaced cylinders, 4-7 mm diam.; ribs 4-6, prominent; areoles (3.5-)12(-15) mm apart along ribs, circular to elliptic, 2-5 × 2 mm. Spines (9-)11-15(-17) per areole, usually in 3 vertical rows; abaxial 3-5 spines appressed, yellowish white throughout or only at tips, to 3 mm, puberulent when young; adaxial spines black, subulate, to 1 mm. Flowers: nocturnal (remaining open next day), 15-25 cm; scales of flower tubes green, tipped red or brown; outer tepals greenish white with brown to reddish midstripes; inner tepals white or lightly tinged cream or pink (or rarely all rose-pink), lanceolate-attenuate, apiculate, 4-7 cm, attenuate to mucronate; stamens 2.5 cm; anthers cream-yellow, 2 mm; style white, 10-14 cm; stigma lobes 9-11, white. Fruits bright red, darkening in age, ellipsoid, 60-90 × 40-50 mm. Seeds 3-4 × 2-2.5 mm (Flora of North America 2015).

AIDS TO IDENTIFICATION: The two species of *Peniocereus* can be separated based on the following criteria (Pinkava 1995):

- Stems at mid-height about 10-25 mm in diameter, strongly angular with 4-6 prominent, triangular ribs, these well-spaced; flowers 15-25 cm long……..*P. greggii*
- Stems at mid-height about 6 mm in diameter, appearing nearly terete but with 6-9 low, rounded ribs, these crowded together; flowers 8-10 cm long……*P. striatus*

The following key can be used to distinguish the two varieties of *P. greggii* (Flora of North America 2015):

- Areoles elliptic, 4-5 × 2 mm; adaxial spines tending to be directed toward tip of plant; abaxial spines directed toward base of plant; flowers 15-17 × 5-6 cm……var. *greggii*
- Areoles nearly circular, 2 × 2 mm; spines radially spreading; flowers 22-25 × 7-8 cm..... var. *transmontanus*

P. striatus and *P. greggii* var. *transmontanus* are cacti of the Sonoran desert; *P. greggii* var. *greggii* is a Chihuahuan desert cacti.

ILLUSTRATIONS:
Photos and Herbarium Mounts: http://eol.org/pages/486587/media.
Photos: http://nmrareplants.unm.edu/rarelist_single_photo.php?SpeciesID=45.
Line Drawing: http://nmrareplants.unm.edu/rarelist_single_line.php?SpeciesID=45.

TOTAL RANGE: SE Arizona, S New Mexico, SW Texas, Chihuahua and Zacatecas, Mexico.

RANGE WITHIN ARIZONA: Cochise County: Upper San Pedro Valley, along Mexican border, and east of the Chiricahua Mountains.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial succulent.

PHENOLOGY: Flowers: May-June (see Biology).

BIOLOGY: *Peniocereus greggii* is a slow growing plant with a large rhizome; roots typically range from 5-15 pounds, but have been known to grow as large as 87 pounds (Kearney and Peebles 1960). A majority of biomass is below ground, making the plant rather inconspicuous in the field when not flowering. This plant is found in association with nurse plants during early development. Nurse plants provide young plants with protection from the harsh desert environment (EOL 2015).

Peniocereus greggii blooms for 4 to 12 nights each season, with most flowers opening synchronously at dusk and closing at dawn (Raguso et al. 2003). This species is also known to be self-incompatible, so pollination by an insect, usually a hawk moth or honeybee, is required for successful fruit maturation (Raguso et al. 2003). Fruits are red, fleshy and ripe during the fall migration season and are dispersed by birds (EOL 2015).

HABITAT: Grows under creosote bushes or mesquite in desert flats and washes.

ELEVATION: 3900 – 5000 feet (1200-1500m), Benson 1982.

EXPOSURE: Not specified, but reportedly found in nursemaid settings.

SUBSTRATE: Calcareous soils. Sandy or gravelly loams, along washes and on creosote-bush flats or gentle slopes.

PLANT COMMUNITY: Creosote bush, desert grassland or Chihuahuan desert scrub. Associated species include *Larrea divaricata, Prosopis glandulosa, Larrea tridentata, Fouquieria splendens, Ferocactus.*

POPULATION HISTORY AND TRENDS: Unknown in Arizona. There are only three known collections in the State, and two of these are historical. Elsewhere in its range, there are a reported 13 occurrences in Texas, and 15 from New Mexico, but many of these are historic or extirpated from over-collection or land development. There is no abundance data from Mexico. The variety *P.g. greggii* is widespread (from Mexico to Texas and west to Arizona) but apparently sparsely populated within this distribution. Most workers have reported this plant as rare, and most occurrences are based or one or two individual plants. It is considered imperiled in Texas, and critically imperiled in New Mexico and Arizona. The short-term trend reported by NatureServe is a decline of 10-30%.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: SC (USDI, FWS 1996).
STATE STATUS: SR- Salvage Restricted (ARS, ANPL 2008)
OTHER STATUS: CITIES Appendix II. 2013.
PR- Special Protection (Norma Oficial Mexicana PROY-NOM-059-ECOL-2010)
Rare (New Mexico Rare Plant List 2015)

MANAGEMENT FACTORS: *Peniocereus greggii* var. *greggii* is threatened by development from roads, power lines, pipelines, windmill farms, agricultural and urban expansion. There is probably some illegal collection, and over-grazing may also be

detrimental. It has also been reported that populations of the pollinator hawk moth may be decreasing due to pesticide use.

PROTECTIVE MEASURES TAKEN: Although *P. greggii* var. *greggii* is offered some level of protection as a salvage restricted plant in Arizona, its "rare" designation in New Mexico and its "special protection" status in Mexico. However, probably the most effective protection for the species derives from the fact that it is widely scattered and very difficult to find.

SUGGESTED PROJECTS: Since there is a difference of opinion on whether or not this plant can be easily propagated from cuttings and seeds (see Additional Information, below), this should be investigated and determined definitively. If indeed it can be readily propagated, this fact should be widely advertised in the appropriate channels with the objective of reducing or eliminating collection in the wild.

LAND MANAGEMENT/OWNERSHIP: U.S. Forest Service, Coconino National Forest; U.S.D.I. Bureau of Land Management, Tucson Field Office; Arizona State Trust Land; U.S. F.W.S. San Bernardino National Wildlife Refuge; and private land holdings.

SOURCES OF FURTHER INFORMATION

REFERENCES:

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Ferguson, David J. 1998, New Mexico Rare Plants: *Peniocereus greggii* var. *greggii* (Night-blooming cereus, queen of the night, deer-horn cactus), accessed online 8/12/2015, http://nmrareplants.unm.edu/rarelist_single.php?SpeciesID=45.

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Pinkava, Donald J. 1995. Cactaceae, Part 1. Cactus Family. The Ceroid Cacti. Jour. AZ-NEV Acad. Sci. Vol 29, No. 1. pp. 6-12.

Raguso, Robert A., Cynthia Henzel, Stephen Buchmann and Gary Nabham. 2003. Trumpet flowers of the Sonoran Desert: floral biology of *Peniocereus* cacti and sacred *Datura*. Int. J. Plant Sci. 164(6): 877-892.

UNEP World Conservation Monitoring Centre, Cambridge. CITIES Species. 2003

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Donald J. Pinkava, Vascular Plant Herbarium, Arizona State University, Tempe, AZ.

ADDITIONAL INFORMATION:

Historically, this plant was used for food and medicine by indigenous groups (Benson 1982). Michael McGuffin, president of the American Herbal Products Association (http://www.ahpa.org/Default.aspx?tabid=126) concluded in 2000 that there is "very limited" collection of this species for the herbal industry (pers. com. 2000).

There seems to be a correlation between heavily grazed land and low numbers of plants. One reason may be that cattle and goats have been known to eat these plants down until they die. Grazing animals also have been observed to affect this species by damaging the shrubs that *Peniocereus* depend on for protection from the sun and support (EOL 2015).

Tohono Chul in Tucson, Arizona (7366 N. Paseo del Norte), has the largest private collection of Sonoran Desert native Night-blooming Cereus - *Peniocereus greggii*. Each summer this botanical garden/museum hosts "Bloom Night," the one night each summer it is predicted the greatest number of cereus flowers will be in bloom, opening from 6pm until midnight to allow guests to stroll the grounds and view the flowers.

There seems to be some discrepancy regarding artificial reproduction of this plant. EOL (2015), states that this species is difficult to propagate from cuttings and slow growing from seed. However, Ferguson (1998) states in New Mexico Rare Plants that it is ironic that private and commercial collectors have eliminated entire populations, because it is easily propagated by short stem cuttings and from seed. There is no reason for wild plants to be dug up.

Revised: 2015-08-12 (BDT)