

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

**Plant Abstract**

**Element Code:** PDCAC060K1  
**Data Sensitivity:** Yes

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**



**ME:** *Echinocereus triglochidiatus* var. *arizonicus*  
**COMMON NAME:** Arizona hedgehog cactus  
**SYNONYMS:** *Echinocereus arizonicus* Rose ex Orcutt 1926, *E. coccineus* var. *arizonicus* (Rose ex Orcutt) Ferguson, *E. triglochidiatus* var. *neomexicanus* auct. non (Standl.) W.T. Marsh, *E. polyacanthus* var. *neomexicanus* auct. non (Standl.) L. Benson  
**FAMILY:** Cactaceae

**AUTHOR, PLACE OF PUBLICATION:** *Echinocereus triglochidiatus* var. *arizonicus* (Rose ex Orcutt) L.D. Benson, The cacti of Arizona (ed. 3) 21: 129. 1969. *Echinocereus arizonicus* Rose ex Orcutt, Cactography 3. 1926.

**TYPE LOCALITY:** Zion (boundary) monument between Pinal and Gila counties, Arizona, USA, at 4,700 feet.

**TYPE SPECIMEN:** HT: US. C.R. Orcutt s.n., July 1922. LT: NY.

**TAXONOMIC UNIQUENESS:** Lehr (1978) recognizes five varieties of *E. triglochidiatus* in Arizona. Parfitt and Zimmerman are working on the *Echinocereus* group for the Vascular Plants of Arizona, with clarification of the *E. triglochidiatus* varieties (Parfitt wants to raise it to full status). Difficulties in interpreting the taxon lie at the extremes of character variation where plants more closely resemble the other two varieties, primarily along the fringes of its distribution. Brack (1985) believes that this taxon is only one step along a cline of variation from southwestern New Mexico into central Arizona, and that it belongs with *Echinocereus coccinea* rather than *E. triglochidiatus*. Crosswhite (1985) believes the taxon may be a polyploid and that it is a good entity that should perhaps even be recognized at the specific level again. Plants resembling var. *E. t.* var. *arizonicus* were found near Tombstone, Arizona and Deming, New Mexico, and were determined by Parfitt not to be *E. t.* var. *arizonicus*.

**DESCRIPTION:** Large succulent perennial plant, with dark green cylindroid stems occurring singly or most often in clusters of 4-20 stems, occasionally exceeding 50. Large, robust stems are 23-41 cm (9-16 in.) tall, averaging 8 cm (3 in.) in diameter, but commonly 10 cm and over; stems are longer than similar varieties. Each stem has an average of 9 tuberculate ribs; ribbing strong. Spines are smooth, and consist of 1-3 gray or pinkish central spines, the **largest is deflexed** (points down), and 5-11 radial spines that are slightly curved. Relative to other *Echinocereus*, spines are shorter but more robust. Flowers are red to crimson with yellow anthers and a green stigma, and are broad, about 5 cm (2 in) in diameter

and 7.4 cm (3 in) in length. Flowers burst through the stem sides, leaving a scar on the stem above the spine. Flowers occur on the upper third of stem ribs (Reichenbacher 1994). The fruit is red, 2.5 cm in diameter, globose, and spiny. Seeds are black, 2 mm in diameter.

**AIDS TO IDENTIFICATION:** **Hallmark of *Echinocereus*:** flowers burst through sides of stem, leaving scar on stem right above spine. Brilliant red flowers (no bluish or lavender hues), track it to section *triglochidiatus*. *E. t. arizonicus* is distinguished from other hedgehog cacti in Highland area below 6,000 ft (2000 m) by flowers on upper third of stem ribs.

The typical plant of var. *arizonicus* is visually very different from var. *melanacanthus*. In var. *melanacanthus*, stems are much smaller (in height and width) and each cluster has many (up to 500) stems. In contrast, var. *arizonicus* has just a few stems per cluster. The species *E. fasciculatus*, typically exhibits well in excess of 11 ribs, and the flowers are magenta in color.

Variety *arizonicus* also intergrades with var. *neomexicanus* (common in southeastern Arizona), which will form clusters of up to 45 stems. Ribbing of var. *neomexicanus* is weaker than var. *arizonicus*. Central spines on var. *neomexicanus* are thinner (0.5-1.0 mm) than central spines of var. *arizonicus* (1.5 mm) (Benson 1982). Largest central spine of var. *arizonicus* is deflexed with minute striations and is 2.5-4.0 cm (1.0-1.5 in.) long; central spines of var. *neomexicanus* are smooth, not deflexed, and are 4.5-7.0 cm (1.8-2.8 in.) long (Benson 1982).

**ILLUSTRATIONS:** B&W photo of plant in flower (Benson, 1982: Fig. 654, p. 617).  
 Line drawing (USFWS).  
 Color photo and line drawing (USFWS, in Kelly and McGinnis 1994)  
 Color photos of plant and habitat (Sue Rutman/FWS, in Falk & Jenkins et al. 2001)  
 Line drawing (Falk & Jenkins et al. 2001)  
 Color photos of plant and habitats (Steven R. Viert, 1996: pls. 1-8)  
 Color photo (Jane Villa-Lobos, in USDA NRCS PLANTS web site [http://plants.usda.gov/cgi-bin/plant\\_search.cgi](http://plants.usda.gov/cgi-bin/plant_search.cgi))  
 Color photo (Andrew Cooper, Accessed 9/12/2003 from <http://www.whitethornhouse.com/cacti/cacti04-20.htm>)  
 Color photo (in <http://www.lisowski58.freeweb.co.uk/1184.jpg> Accessed 9/12/2003)  
 Color photo (Accessed 9/12/2003 from [http://arizonaes.fws.gov/images/AZ\\_Hedgehog\\_Cactus.jpg](http://arizonaes.fws.gov/images/AZ_Hedgehog_Cactus.jpg))

**TOTAL RANGE:** Central Arizona, from Pinal and Gila counties. This includes the Pinal, Dripping Springs, Superstition and Mescal mountains. It also can be found in the highlands between Globe and Superior. Falk & Jenkins et al. (2001), reports range as "Superstition Mountains, Top of the World, Tonto NF."

**RANGE WITHIN ARIZONA:** See "Total Range."

## **SPECIES BIOLOGY AND POPULATION TRENDS**

**GROWTH FORM:** Succulent perennial.

**PHENOLOGY:** Budding occurs from April to May, anthesis from late-April to mid-May, and fruiting from May to June; germination occurs in mid-summer. Weather can hasten, prolong, or inhibit flowering by a couple of weeks. According to Parfitt (1992), flowering occurred in April and early May. By June, fruits were nearly ripe with mature seeds. Normal sexual reproduction by seeds is the means of reproduction.

**BIOLOGY:** Pollen dissemination agents are bees and hummingbirds. Seed dissemination agents are unknown. Variations in annual seed production, viability and longevity are also unknown. Approximately 100 seeds are produced per fruit (Phillips 1985). There does not appear to be any special germination or cultivation requirements. Germination of seeds in cultivation observed at 17% (Boyce-Thompson Arboretum) and 90% (S. Brack).

Limiting factors include specialized soil type, Mediterranean-type climate, frost and perhaps fire. Predators include borers and leaf-foot bugs (Coreidae), which attack the stems, and rodents which eat the fruits (Crosswhite 1976; Phillips et al. 1979).

**HABITAT:** Rugged steep-walled canyons, boulder-pile ridges and slopes. Cactus scattered on open slopes, in narrow cracks between boulders and in understory of shrubs. This plant does well within extensive rock cover. It is commonly found among shrubby vegetation within the Arizona desert grassland.

**ELEVATION:** Commonly found from 3,300 – 5,700 ft. (1007-1740 m), but ranges up to 6,360 ft. (1940 m).

**EXPOSURE:** On slopes from almost vertical to nearly level.

**SUBSTRATE:** Normally found on Orthoclase-rich granite of late Cretaceous age; other parent materials in the area include volcanic tuft, mid-Tertiary age dacite and perhaps rhyolite. Schultz granite, light in color. Devils Chasm has dacite substrate, Gila/Pinal County line (Queen Creek) has much lighter granite. S. Bingham's locations on limestone would be separate species (Rutman 1994). Ph ranges from 5 to 6, or slightly acidic.

**PLANT COMMUNITY:** Found in the ecotone between Interior Chaparral and Madrean Evergreen Woodland; also into desert grassland. Often with the following associated species: *Agave chrysantha* (century plant), *Arctostaphylos pungens* (point-leaf manzanita), *Berberis haematocarpa* (red holly grape), *Ceanothus greggii* (desert ceanothus), *Cercocarpus montanus* (mountain mahogany), *Dasyilirion wheeleri* (desertspoon), *Garrya wrightii* (silktassel), *Juniperus deppeana* (alligator-bark juniper), *J. erythrocarpa* (= *J. coahuilensis*,

redberry juniper), *Mimosa biuncifera* (catclaw mimosa), *Muhlenbergia emersleyi* (bullgrass), *Nolina microcarpa* (beargrass), *Opuntia spinosior* (cane cholla), *Pinus edulis* (pinyon pine), *P. monophylla* (singleleaf pinyon), *Quercus turbinella* (desert scrub oak), *Quercus emoryi* (Emory oak), *Rhus trilobata* (squawbush), *R. ovata* (sumac), *Rhamnus crocea* (hollyleaf buckthorn), and *Yucca baccata* (banana yucca).

**POPULATION TRENDS:** Unknown. Major threat would be habitat loss due to mining. Devil's Chasm special collection plant.

## **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** LE (USDI, FWS 1985)  
 [LE USDI, FWS 1980]  
 [LE USDI, FWS 1979 (without Critical Habitat)]  
 [PE USDI, FWS 1976]  
 [PT-E USDI, FWS 1975]

**STATE STATUS:** Highly Safeguarded (ARS, ANPL 1999)  
 [Highly Safeguarded (ARS, ANPL 1993)]

**OTHER STATUS:** Forest Service Sensitive (USDA, Apache-Sitgreaves NF 2000)  
 [Forest Service Sensitive USDA, FS Region 3 1990]  
 CITES Appendix 1

**MANAGEMENT FACTORS:** The limited geographic distribution of this plant increases its vulnerability to threats from mining, off-road vehicle use, illegal collecting, and road and utility construction. Other threats include potential land exchanges at the "Top of the World" vicinity, along with recreational activity, especially in the Oak Flat campground vicinity, which receives seasonally heavy recreation use, including camping, hiking, hunting, and off-road vehicle use (trail bikes). This area has been identified for increased recreational development.

**CONSERVATION MEASURES TAKEN:** Seeds have been collected for propagation by the Forest Service. These are held, and have been grown, at the Boyce Thompson Arboretum. Question remains about the source of these seeds and what should be done with the plants grown at the arboretum? The Globe Ranger District, Tonto National Forest, conducted surveys for this species in 1989 and 1990. It is unclear at this time, if these surveys provided the seeds for propagation.

**SUGGESTED PROJECTS:** Strong need to complete chromosomal studies. Zimmerman (1989) recommended a morphological study of *Echinocereus* populations on a

transect from the type locality up into the Pinal Mountains to determine if var. *arizonicus* is conspecific with the ordinary *E. coccineus* that grow on Pinal Peak.

Research needed to determine susceptibility of this cactus to fire. Has fire suppression and livestock grazing contributed to a conversion from a grassland habitat to a shrubbier habitat?

Additional survey needed, especially in eastern Superstition Mountains. If identification is questionable, take photograph and notes on habitat. Bring in for examination (S. Rutman 1994).

Research (genetic) is needed to determine if the cactus populations in the Cochise County mountain ranges, are the same as variety *arizonicus*.

**LAND MANAGEMENT/OWNERSHIP:** USFS - Tonto National Forest (most plants, including plants within the Superstition Wilderness Area); Private. Possibly State Land Department.

## **SOURCES OF FURTHER INFORMATION**

### **REFERENCES:**

- Arizona Revised Statutes, Chapter 7. 1993. Arizona Native Plant Law. Appendix A.  
 Arizona Revised Statutes, Chapter 7. 1999. Arizona Native Plant Law. Appendix A.  
 Benson, L. 1969. The cacti of Arizona. 3rd edition. University of Arizona Press, Tucson. pp. 21, 124, 127, 129.  
 Benson, L. 1982. The cacti of the United States and Canada. University of Arizona Press, Tucson. pp. 604, 606-607, 617, 940.  
 Crosswhite, F. 1976. Threatened and endangered species habitat study area notes on *Echinocereus triglochidiatus* var. *arizonicus*. Prepared for the U.S. Forest Service.  
 Earle, W.H. 1980. Cacti of the southwest. Rancho Arroyo Distributor, Tempe, Arizona. p. 72.  
 Falk, M., P. Jenkins, et al; Arizona Rare Plant Committee. 2001 Arizona Rare Plant Guide. Published by a collaboration of agencies and organizations. Pages unnumbered.  
 Ferguson, D.J. 1989. Revision of the U.S. members of the *Echinocereus triglochidiatus* group. Cactus and Succulent Journal of the Cactus and Succulent Society of America. 61: 217-224.  
 Integrated Taxonomic Information System (ITIS). Retrieved 9/12/2003 from ITIS, <http://www.itis.usda.gov>.  
 Kearney, T.H., 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. Pp. 570-571.  
 Kelly, K. and J. McGinnis. 1994. Highly safeguarded protected native plants of Arizona. Arizona Department of Agriculture, Native Plant Protection Program.  
 Lehr, J.H. 1978. A catalogue of the flora of Arizona. Desert Botanical Garden, Phoenix, Arizona. p. 102.

- Missouri Botanical Garden – TROPICOS, Nomenclatural Data Base. *Echinocereus triglochidiatus* var. *arizonicus* (Rose ex Orcutt) Benson. [http://mobot.mobot.org/cgi-bin/search\\_vast](http://mobot.mobot.org/cgi-bin/search_vast). Accessed: 12 Sep 2003.
- NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.8. Arlington, Virginia. Available: <http://www.natureserve.org/explorer>. (Accessed: September 12, 2003).
- Parfitt, B.D. and C.M. Christy. 1991. *Echinocereus arizonicus* field work associated with chromosome study. Attachment to letter to S. Rutman, U.S. Fish and Wildlife Service, Ecological Services. Phoenix, Arizona.
- Phillips, B.G. 1985. Endangered species information system record. U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Phillips, A.M. III, B.G. Phillips, L.T. Green III, J. Mazzone, and E.M. Peterson. 1979. Status report *Echinocereus triglochidiatus* Engelm. var. *arizonicus* (Rose ex Orcutt) L. Benson. U.S. Fish and Wildlife Service, Office of Endangered Species. Albuquerque, New Mexico.
- Reichenbacher, F. 1994. Bureau of Land Management, Safford District, Rare Plant Workshop. November 14-16. Tucson, Arizona.
- Rutman, S. 1994. Bureau of Land Management, Safford District, Rare Plant Workshop. November 14-16. Tucson, Arizona.
- U.S. National Herbarium Type Specimen Register (US). Department of Systematic Biology – Botany, Smithsonian Institution. Accessed: 9/12/2003 from <http://rathbun.si.edu/botany/types/fullRecords.cfm?myFamily=>.
- USDA, Apache-Sitgreaves National Forest. 2000. List of Endangered, Threatened, Proposed, and Sensitive Species. p. 3.
- 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: Review of Status of Vascular Plants and Determination of "Critical Habitat": Notice of Review. Federal Register 40(127):27827.
- USDI, Fish and Wildlife Service. 1976. Endangered and Threatened Wildlife and Plants: Proposed Endangered Status for some 1700 U.S. Vascular Plant Taxa; Proposed Rule. Federal Register 41(117):24536.
- USDI, Fish and Wildlife Service. 1979. Determination that *Echinocereus triglochidiatus* var. *arizonicus* is an Endangered Species: Final Rule. Federal Register 44(208):61556.
- 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; Proposed Rule. Federal Register 45(242):82482.
- USDI, Fish and Wildlife Service. 1985. Final Rule. Determination that *Echinocereus triglochidiatus* var. *arizonicus* is an endangered species. Federal Register 44(208):61556-61558.
- USDI, Fish and Wildlife Service, Arizona E.S. office. Web abstract – Arizona Hedgehog Cactus (*Echinocereus triglochidiatus* var. *arizonicus*). Accessed: 9/12/2003 from <http://arizonaes.fws.gov/>.

- Viert, S.R. 1996. A conservation assessment and plan for the Arizona hedgehog cactus (*Echinocereus triglochidiatus* var *arizonicus*). Report prepared for the USDA, Tonto National Forest. Phoenix, AZ. 51pp.
- Zimmerman, A.D. 1989. Letter to René Galeano-Popp, U.S. Forest Service, Region 3, Botanist. U.S. Forest Service files, Albuquerque, New Mexico.

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Bruce Parfitt - Missouri Botanical Garden, St. Louis, Missouri.  
Allan Zimmerman - Phoenix, Arizona.

**ADDITIONAL INFORMATION:**

Reichenbacher emphasizes that new Arizona Flora is not based on in-depth surveys. New version will not be ideal but will help.

Ferguson (Cactus and Succulent Journal) gave name *arizonicus* to all red flowered hedgehogs in southeastern Arizona but Parfitt believes new species exists in Globe-Superior area, and another closely related, in southeastern Arizona. Heavily collected at Top of the World sites.

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