

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

Plant Abstract

Element Code: PDCAC0E051

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Pediocactus peeblesianus* ssp. *fickeiseniae*

COMMON NAME: Fickeisen Plains Cactus, Fickeisen Pincushion Cactus; Fickeisen Navajo Cactus; Fickeisen Indian Cactus

SYNONYMS: *Pediocactus peeblesianus* var. *fickeiseniae*, *Pediocactus peeblesianus* (Croizat) L.D. Benson subsp. *fickeiseniae* (Backeberg ex Hochstätter) Lüthy; *Navajoa fickeisenii* Backeberg; *Pediocactus peeblesianus* var. *fickeisenii*; *Toumeyia fickeisenii* Kladiwa; *Pediocactus fickeisenii* Benson ex Earle

FAMILY: Cactaceae

AUTHOR, PLACE OF PUBLICATION: L. Benson, The cacti of Arizona 24, 186-187, f. 8.3-8.4. Third Edition, 1969.

TYPE LOCALITY: Watershed of the Little Colorado River west of Cameron, Coconino County, Arizona.

TYPE SPECIMEN: HT: POM 285856. L. and R.L. Benson (15,745), 29 June 1957.

TAXONOMIC UNIQUENESS: Seven species of *Pediocactus* occur from the Columbia River Basin, Great Basin, Rocky Mountains and Colorado Plateau. Six of these species, including *P. peeblesianus*, are restricted endemics. There are two recognized subspecies of *P. peeblesianus* to include ssp. *fickeiseniae*, and ssp. *peeblesianus*.

DESCRIPTION: Succulent, globose cactus that is solitary or clustered (0-4 branched). Stems 2.5-6.5 x 2.0-5.5 cm (1.0-2.6 x 0.79-2.2 in); tubercles 3-7 x 4-6 mm, forming a spiral pattern around the plant. Spines are usually radial and central; rarely all radial. Radial spines 6-7 per areole, 3-7 x 0.3-0.5 mm; central spine usually 1 per areole, straight to strongly curved, 5-18 x 1 mm. Flowers 1-1.4 x 1.5-2.5 cm, inner tepals parts cream, yellow or yellowish-green, lanceolate, 6-12(-15) mm. Outer tepals undulate, with brown-purple midstripes, oblanceolate, 5-13 x 2-4.5 mm. The outer perianth parts have a pink or green midstripe. Stamens and stigma are yellow. The fruit is turbinate (top-shaped), green, drying reddish-brown, 6-11 x 5-8 mm; dehiscent by a vertical slit along the ovary wall. Seeds dark brown to black, 3 x 2 mm, papillate and rugose.

AIDS TO IDENTIFICATION: The larger *P. peeblesianus* ssp. *fickeiseniae* has corky/spongy spines, including a central spine, and 6-7 radial spines per areole. *P. p.* ssp. *peeblesianus* is smaller, lacks a central spine, and has 4-5 radial spines.

ILLUSTRATIONS:

- Black & white photos (Benson 1969: p. 185).
- Line drawing (USFWS).
- Color photos (Hughes 1996).
- Color photos (In <http://davesgarden.com/guides/pf/>)
- Color photos (In <http://cactiguide.com/>)
- Line drawing and Color photo (Falk, Jenkins, et. al 2001)

TOTAL RANGE: An endemic of northern Arizona, including Coconino, Mohave and Navajo counties. In Coconino County, populations are widely scattered from House Rock Valley and the area of Gray Mountain, along canyon rims of the Little Colorado and Colorado rivers. In Mohave County, it ranges in Hurricane Valley and Main Street Valley, and near Clayhole Ridge and Sunshine Ridge. A population south of the Colorado River near Cataract Canyon was documented in 2006. It may also occur near Joseph City in Navajo County (USFWS 2001). A total of 33 populations have been documented. Although endemic to northern Arizona, *P. p.* ssp. *fickeiseniae* is much more widespread than *P. p.* ssp. *peeblesianus*. Historic range is unknown, but probably similar to current distribution.

RANGE WITHIN ARIZONA: See “Total Range.”

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Globose succulent perennial.

PHENOLOGY: Spring flowers bloom from mid-May to mid-April; fruits May-June. An entire population completes anthesis (the period when the flower is open and functional) in 7-14 days (Travis 1987, in USDI, FWS 2012). After flowering and fruiting, this cactus retracts into gravelly soils, as a preservation mechanism from drought and winter cold.

BIOLOGY: This small cactus retracts into the soil during periods of drought and winter cold. There are often four to five fruits per plant; fruits are turgid. When fruits dry the cap breaks off and the capsule splits on the side. Each local population is rather small. Predation by rodents is especially severe in drought periods. The life span of this cactus is estimated to be 10-15 years (Phillips et al, 1982). Population monitoring suggests that this variety has low reproductive capacity. Moreover, two different researchers have noted that there appear to be 2-3 significant episodes of recruitment during a 9-10 year period (USDI, FWS 2012).

HABITAT: Occurs on gravelly soils of alkaline desert scrub and desert grasslands (FNA, eFloras 2011). Most populations occur on canyon margins or well-drained hills, including flatter ridge-tops and benches with slight to moderate slopes; has also been observed in grasslands at the foot of cliffs. There seems to be abundant suitable habitat that is unoccupied by the species for reasons unknown.

ELEVATION: 3,985 - 5,940 ft. (1215 - 1812 m). FNA (eFloras, 2011) lists elevation between 1200 and 1600 m (3,937-5,249 ft).

EXPOSURE: All. Observed on slopes of 5-20+/-%

SUBSTRATE: Gravelly limestone soils derived from Kaibab limestone, in the Moenkopi formation. Also observed on limestone overlaying chert pavement, and on slopes above steep limestone outcrops. In Navajo County, observed on lag gravels of Shinaromp Conglomerate (ASU 186503).

PLANT COMMUNITY: Great Basin desert scrub, Great Basin desert grasslands, and Plains grasslands. Associated species include: *Artemisia tridentata* (big sagebrush), *Atriplex canescens* (four-wing saltbush), *Bouteloua eriopoda* (black gramma), *B. gracilis* (blue gramma), *Bromus* sp. (brome), *Chrysothamnus* sp. (rabbit-bush), *Coryphantha vivipara* var. *rosea* (Viviparous foxtail cactus), *Cryptantha* sp. (cat's-eye), *Gutierrezia sarothrae* (broom snakeweed), *Hilaria* (=Pleuraphis) *jamesii* (James's Galleta), *Lycium* sp. (desert-thorn), *Phlox* sp., *Sphaeralcea* sp. (globe-mallow), and *Stipa* sp. (needlegrass). The foxtail cactus, *Escobaria vivipara* var. *rosea* is typically found in close association. (Hughes 1996).

POPULATION TRENDS: Since 1986, five populations have been monitored as plots or transects. Four are located on the Arizona Strip and are being monitored by the Arizona Strip Field Office of the Bureau of Land Management. These are the North Canyon, Dutchman (Mainstreet Valley), Clayhole, and Sunshine populations. Hughes (1996) stated that, at these monitoring sites, populations show stability with years of increase and decrease. In 1989, the monitoring plot at North Canyon had not shown much recruitment, though the preceding years had poor precipitation (B. Phillips--North Kaibab Plant Workshop, June 1992). The North Canyon monitoring plot (BLM) has been heavily vandalized in the past. In 2003, the Dutchman plot showed an increase and it is at its highest level of emerged cactus since 1997. The Clayhole plot and North Canyon plot were down by a small amount in 2003. Only about 1,150 Fickeisen plains cactus, distributed among 33 populations, have ever been documented rangewide from 1962 to 2011. Based on the six monitored populations (that represent several of the largest BLM and one of the largest Navajo Nation populations), the breakout by land ownership is BLM (26%), Kaibab NF (unknown), Arizona State land (32%), the Navajo Nation (14%), and private lands (29%). Trend information from the monitored plots shows a significant decline in plant numbers. The decline since 1992 on the BLM plots has been 72%, and 49% during the past 5 years on a Navajo Nation plot. The increase in plant numbers on the Cataract Canyon population between 2007 and 2011 has been attributed to better detection during subsequent surveys, and not to greater abundance (USFWS 2012).

Because of its rare and disjunct occurrence, *P. p.* ssp. *fickeiseniae* is vulnerable to depopulation by damage to areas where it occurs. It seems to have low reproductive capacity (e.g., seed dormancy, low seed production and poor dispersal mechanisms), even after favorable weather conditions. (USFWS 2001). More specifically, based on data and observations from the monitored plots, it is difficult to attribute the decline or absence in seedling recruitment and survival to a single cause. It is more likely derived from a combination of environmental factors that are acting together (USFWS 2013).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:	LE (USDI, FWS 2013) [PE with CH (USDI, FWS 2012)] [C USDI, FWS 1996] [C USDI, FWS 2002, 2004-2011] [C USDI, FWS 1997, 1999] [C1 USDI, FWS 1990, 1993] [C1 USDI, FWS 1980, 1985] [PTN-T USDI, FWS 1975]
STATE STATUS:	Highly Safeguarded (ARS, ANPL 2008) [Highly Safeguarded - ARS, ANPL 1993, 1999]
OTHER STATUS:	Forest Service Sensitive (USDA, FS Region 3 1990, 1999, 2007) Group 3 (NNDFW, NESL 2008) [Group 3 NNDFW, NESL 1994, 2001, 2005] None (USDI, BLM AZ 2005, 2008) [Bureau of Land Management Sensitive (USDI, BLM AZ 2000)]

MANAGEMENT FACTORS: *P. p.* ssp. *fickeiseniae* is a narrow endemic to Kaibab limestone derived soils. Current and potential threats include: off-road vehicle use, livestock grazing (cattle, sheep and horses), mining (e.g. uranium), recreational activities, road construction and maintenance, illegal collection, and herbivory by rodents. (USFWS 2001), nonnative invasive species as well as natural environmental variability and climate conditions such as drought (USFWS 2013).

CONSERVATION MEASURES TAKEN: As of October 2012 (USDI, FWS), *P. p.* ssp. *fickeiseniae* was given proposed Endangered status with critical habitat, which includes a total of 19,901 hectares (49,186 acres) divided into nine separate units on federal (33%), state (28%), tribal (19%) and private (19%) lands. As of October 31, 2013, the Fickeisen Plains Cactus is listed as an endangered species. Protected from collection under Arizona Native Plant Law. BLM Arizona Strip Field Office established 6 monitoring plots (Dutchman, Toquer Tank, Clayhole, Sunshine, Soap Creek, and North Canyon). The USFWS had funded the monitoring plot at South Canyon, but has not funded this plot since 1989. Due to this new endangered species status, the Forest Service will once again monitor this area. The newly discovered (2006) populations on Cataract Ranch benefit from the protection afforded by a conservation easement.

SUGGESTED PROJECTS: Ongoing monitoring needed to determine current distribution, habitat and ecological factors that may be affecting known populations, trends,

and changes in threats. Surveys needed on the Kaibab National Forest to determine presence, especially in the vicinity of South Canyon, House Rock Valley.

LAND MANAGEMENT/OWNERSHIP: BIA - Navajo Nation; BLM - Arizona Strip and Hassayampa Field Offices; Arizona State Land Department; Private. Based on the six monitored populations, the breakout by land ownership is BLM (26%), Kaibab NF (unknown), Arizona State land (32%), the Navajo Nation (14%), and private lands (29%).

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Phillips et al. (1982) recommended the Fickeisen Plains cactus for Threatened status under the Endangered Species Act.

Revised:	1991-12-11 (DBI)
	1992-05-28 (BGP)
	1992-09-14 (BKP)
	1997-11-12 (SMS)
	1998-11-24 (DJG)
	1999-12-20 (DJG)
	2004-07-23 (AMS)
	2011-11-03 (SMS)
	2013-10-16 (BDT)

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