ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PDFAB5L070
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Pediomelum pentaphyllum* Rydberg
COMMON NAME: Chihuahua scurf pea; Three-nerved Scurf-pea
SYNONYMS: *Psoralea pentaphyllum*; *Psoralea pentaphylla* L.; *Psoralea trinervata* (Rydberg) Standley; *Pediomelum trinervatum* Rydberg
FAMILY: Fabaceae

AUTHOR, PLACE OF PUBLICATION: Rydberg. 1919. N. Amer. Fl. 24:23.

TYPE LOCALITY: Mexico: Vicinity of Chihuahua City.

TYPE SPECIMEN: E. Palmer. 5-10 June 1908.

TAXONOMIC UNIQUENESS: From NatureServe (2001), "A member of a group of legumes sometimes placed in the genus *Psoralea* and sometimes placed in the genus *Pediomelum*; in his 1994 checklist, Kartesz places this species (and other similar species) in *Pediomelum* rather than *Psoralea*. This plant was formerly called *Pediomelum trinervatum* (or *Psoralea trinervata*); the name *P. pentaphyllum* was formerly incorrectly applied to the common Mexican plant now called *P. palmeri* (information from Peter Warren, Arizona Field Office, TNC, letter 28Nov94, based on revision by Grimes, Mem. N.Y. Bot. Gard. 61:82-84, 1990). John Kartesz agreed (phone discussion with Larry Morse, 31Aug95) that *Pediomelum pentaphyllum*, as treated in his 1994 checklist, is known in the United States only from Arizona and New Mexico, and (1/98) Texas, with no current records. A different use of the name *Pediomelum pentaphyllum*, with authorship of "(B. Juss. ex L.) J. Grimes" instead of "(L.) Rydb." is given as the species-level name for the var. *scaposum*, considered by Kartesz to be a synonym of *Pediomelum hypogaeum* var. *scaposum* of Texas. *P. palmeri* has recently been renamed *P. ockendonii*."

There are a total of ten *Pediomelum* species that occur in Arizona (Welsh and Licher 2010).

DESCRIPTION: Glandular, strigose, subacaulescent perennial herbs to 30.0 cm (12.0 in.) tall from thick, deep taproots. Usually has one pseudoscape, to 4.0 cm (1.6 in.), sometimes branched. Main stems to 4.0 cm (1.6 in.), densely tomentose, often branched at base. Leaves palmately or pseudopalmately 5-6 foliolate. Petioles 8.5-15.0 cm (3.4-6.0 in.) long with hairs (tomentose) about 3.0 mm (0.12 in.) long (stems appear furry). Leaves lanceolate, rhombic or slightly oblanceolate, upper surface brown- to black-glandular and uniformly strigose to pubescent only on veins and margins, lower surface strigose and with glands usually of lighter color. Inflorescence short- to long-ovoid, with 6-9 nodes and 3 flowers per node. Flowers 14.0-18.0 mm (0.56-0.72 in.), petals purple; calyx tube 4-5 mm long, the upper 4 lobes 10-12 mm

long; fruits enclosed in the calyx, the beak broad, 10-15 mm long, projecting beyond the calyx lobes; seeds large, reticulate.

AIDS TO IDENTIFICATION: The plants are short stemmed, nearly acaulescent, with grayish to whitish pubescent herbage, tuberous roots, and very unequal calyx lobes (NatureServe 2001). In Arizona, *P. megalanthum* is similar, but has more perfectly palmately compound (rather than shortly pinnately compound) leaves with 5-8 leaflets that are often broadly rounded at the tip (Spellenberg 1999).

ILLUSTRATIONS:
Color photo (Spellenberg 1999)
Color photos (SEINet)

TOTAL RANGE: Southeastern Arizona; Hidalgo County, New Mexico; possibly western Texas; and Chihuahua, Mexico (although the contemporary presence of this plant in Mexico is dubious) (USFWS 2018). Recent collections have expanded the known range within Arizona (SEINet 2020).

RANGE WITHIN ARIZONA: Cochise County: Multiple locations in Sulphur Springs Valley, and just west of Chiricahua National Monument. Graham County: San Simon Valley.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Herbaceous perennial.

PHENOLOGY: Spellenberg (1999), reports that it "Flowers in April and May, and again in July and August, depending on rainfall."

BIOLOGY: Dies back to tuberous roots every year.

HABITAT: Desert grasslands and shrublands with mesquite, mesa dropseed (*Sporobolus flexuosus*), soaptree yucca, and creosote. Alexander (in USFWS 2018) writes that deep sandy soils is the "fundamental niche" for this species. Generally found in bare areas between shrubs.

In New Mexico, *P. pentaphyllum* tended to be associated with mesquite. This observation and the fact that there was evidence of recent, shallow, water channels around plants leads to speculation that the areas where the plants were growing may be more subject to flooding during rain and/or may have slightly more favorable ground water availability. At the present time this suggestion is very speculative but should be considered in future surveys (NatureServe 2001).

The habitat requirements of this species are better understood now that it has been documented and surveyed for in both Arizona and New Mexico. Generally , the substrates are sandy to

sandy-loamy soils; these sandy soils are often associated with aeolian-deposited sand dunes, as well as alluvial deposits from ephemeral drainages (USFWS 2018). Within these areas, *P. pentaphyllum* occupies the bare areas between shrubs.

ELEVATION: 3,600 - 4,500 feet (1098-1373 m) in Arizona. Elsewhere, 4,400 - 6,600 ft (1342-2013 m).

EXPOSURE: Generally found on flat to 5% slopes. Our current knowledge does not suggest it prefers one aspect to another, although in modeling habitat USFWS omitted north and south aspects, presumably because it has never been documented from these aspects (USFWS 2018).

SUBSTRATE: In New Mexico, they are generally found on sandy, loamy soils, but the proportion of small sized (0.5-1.0 cm diameter) gravel ranges from sparse to moderate. (NatureServe 2001).

PLANT COMMUNITY: Per NatureServe (2001), Chihuahuan scurfpea plants are found in at least three different community types:

1. A honey mesquite (*Prosopsis glandulosa*)/littleleaf sumac (*Rhus microphylla*) community. Other shrubs that can be in equal or lower abundance are creosote bush (*Larrea tridentata*), mariola (*Parthenium incana*), Torrey yucca (*Yucca torreyi*) and soaptree yucca (*Yucca elata*).
2. A sparsely distributed, but dominant, creosote bush (*Larrea tridentata*) community with mesquite, longleaf jointfir (*Ephedra trifurca*), snakeweed (*Gutierrezia micrantha*), and desert zinnia (*Zinnia acerosa*) in lower abundance.
3. An open grassland habitat with burrograss (*Scleropogon brevifolius*) and scattered mesquite.

Additionally, soaptree yucca (*Yucca elata*) has been found to be "unambiguously associated" with *P. pentaphyllum* (USFWS 2018).

POPULATION TRENDS: Unknown. Baker's 2011 status report indicated ca. 700 plants in Arizona. In 1998, 3-5 extant occurrences were found in New Mexico. It was first collected around 1740 in Mexico, and has only been collected 5 times in the last 250 years. The collections were widely separated localities: 1 from northern Mexico, 1 from southwestern New Mexico, 1 from western Texas, and 2 (including what was the most recent collection before 1998) made in 1963 from southeastern Arizona. Many botanists had looked for it since 1963, but the known specimen labels lacked precise locality and habitat information and so provided few clues that would aid in the search. Given its fairly broad geographic range, it seemed likely that the species did survive somewhere. It was described as being common, at least locally, on a 1936 specimen label from Arizona (NatureServe 2001).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 2019)
None (USDI, FWS 1996)

[Category 2 under *Pediomelum pentaphyllum*, USDI FWS 1993]
[Category 2 under *Pediomelum trinervatum*, USDI, FWS 1990]
[Category 2 under *Psoralea trinervata*, USDI FWS 1985]

STATE STATUS: None

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 2013)
[Forest Service Sensitive (USDA, FS Region 3 1990, 1999, 2007)]
Bureau of Land Management Sensitive (USDI, BLM AZ 2010)
[Not BLM Sensitive (USDI, BLM AZ 2005)]
[Bureau of Land Management Sensitive under *P. trinervatum* (USDI, BLM 2000)]

MANAGEMENT FACTORS: The impact of common management practices such as grazing, burning, mowing, herbicide use, and mechanical soil disturbance on this species is unknown (NatureServe 2001). However, it appears that this plant is tolerant to slight disturbance, given that it grows in areas of alluvial runoff and shifting sand, and thus subject to erosion and deposition. Additionally, its presence in shrubland that was once historically grassland may suggest a further tolerance for disturbance, although this is speculative (USFWS 2018). Present knowledge of the ecology of this plant suggests populations may be able to be augmented or introduced at occupied or potential habitats (NatureServe 2020).

PROTECTIVE MEASURES: By virtue of nearly 80% of all known plants occurring on federal lands, there are safeguards already in place for this plant, including survey and avoidance procedures for projects that may take place in *P. pentaphyllum* habitat.

SUGGESTED PROJECTS: USFWS has recommended that more frequent monitoring is needed in the four known analysis (population) units to determine population trends (USFWS 2018). Additionally, they recommend studies to define "pollinators and seed dispersal mechanisms and distances", which will aid in conservation measures. Another need is for further surveys; Alexander estimates that only one-third to one-half of the Lordsburg Mesa area in New Mexico has been surveyed (USFWS 2018).

LAND MANAGEMENT/OWNERSHIP: NPS - Chiricahua National Monument, BLM - Safford Field Office, private - Sulfur Springs Valley.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

Peter Warren - Tucson, Arizona.

ADDITIONAL INFORMATION:

Revised: 1990-12-14 (SR)
1991-10-19 (BKP)
1994-12-19 (DBI)
2001-12-27 (SMS)
2020-08-31 (TME)

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