

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract

Element Code: PDPLM040G0

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Linanthus filiformis*

COMMON NAME: Yellow Gilia

SYNONYMS: *Gilia filiformis*

FAMILY: Polemoniaceae

AUTHOR, PLACE OF PUBLICATION: Porter, J. Mark and Leigh A. Johnson. Aliso
19(1) 55-91, 2000.

TYPE LOCALITY: Near St. George, Utah.

TYPE SPECIMEN: Missouri Botanical Garden, MO-694649 (*Gilia filiformis*, Type specimen).
C.C. Parry, #187, 1874.

TAXONOMIC UNIQUENESS: In 2000, Wilken and Porter reclassified the 379 species in the family *Polemoniaceae* into 26 genera. *Linanthus* (formerly *Gilia*) has 24 species in western North America, and seven species in Arizona.

DESCRIPTION:

Plant: Annual, 4-15 cm tall, branched throughout; stems glabrous to sparsely glandular.
Leaves: glabrous to sparsely glandular, gradually reduced upwards, entire, linear to filiform.
Inflorescence: open, with 1-2 pedicelled flowers in axils or at tips of branches. **Flowers:** calyx 2-5 mm long, glabrous, the lobes 1-4 mm long, acuminate to linear-lanceolate; corolla diurnal, funnelform, 4-7 mm long, yellow, the lobes much longer than the inconspicuous tube and throat; stamens inserted on the tube; anthers exerted; stigma slightly exceeding the anthers. **Capsule:** 2-4 mm long, broadly ovoid. (Wilken and Porter 2005).

AIDS TO IDENTIFICATION: Two *Linanthus* species in Arizona, *L. pungens* and *L. cespitosus* are perennial. For the remaining annual species, if the calyx lobes are 3-5 times longer than the tube, and the flowers are open during the daytime, *L. demissus* has leaves that are palmately lobed, while *L. filiformis* has leaves that are simple and entire. If the calyx lobe is equal to or less than the tube length, and the flowers are closed during the day and open at dusk or nighttime, the calyx for *L. jonesii* is only 4-5 mm long. If the calyx is 8-16mm long, and the filaments are short pubescent and swollen at the base with corollas 12-20(25)mm long, the species is *L. dichotomus*. If the filaments are glabrous at base, with corollas 8-16mm long, the species is *L. bigelovii*. (Wilken and Porter 2000).

ILLUSTRATIONS:

Photo (flower): ©2004 James M. Andre.

http://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+1204+0224

Herbarium Mount:

http://swbiodiversity.org/imglib/seinet/Polemoniaceae/herbarium_sheets/gilia_filiformis133945.jpg.

TOTAL RANGE: SE California (predominantly Inyo, San Bernardino with a few specimens from adjacent counties), mid-W Nevada and E Nevada near St. George, UT, NW Arizona, and reported from Utah (including type specimen).

RANGE WITHIN ARIZONA: Mohave and Coconino counties, following the Colorado River Valley from near the confluence with the Little Colorado River, west to Vulcans Throne, and along the Colorado River at Willow Beach. There is a single collection at Artillery Peak, nearly 120 miles SE of the Willow Beach collections, and an 1884 collection in the vicinity of Yucca, SW of Kingman.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Annual forb.

PHENOLOGY: Flowers: Feb to May. Specimens with flowers in Arizona were collected from mid-March to mid-April.

BIOLOGY:

HABITAT: Sandy washes, rocky slopes in desert scrub communities.

ELEVATION: Rangewide: 500 – 4500 feet (150 – 1350m) Wilken and Porter 2005. California records have been reported from 980 – 5905 feet (300 – 1800m) CalFlora 2013. Collections in Arizona ranged from 760 – 4500 feet (230 – 1370m).

EXPOSURE: Not specified, probably open.

SUBSTRATE: Sandy, very sandy, and gravelly soils. Several collections were also made from volcanic rock soils, including dry cinder soils.

PLANT COMMUNITY: Desert shrubland, including creosote, to pinyon-juniper woodland rangewide. Plant species associated with collections in Arizona include: *Acacia greggii*, *Ephedra torryi*, *E. viridis*, *Encelia farinosa*, *Bebbia juncea*, *Hymenoclea salsola*, *Larrea tridentata*, *Linanthus demissus*, *Yucca*, *Lycium* and *Ambrosia*.

POPULATION HISTORY AND TRENDS: Although *L. filiformis* has been known in Arizona for nearly 130 years, there is no systematic data on its population history and trends. Following the new 2008 collections in Grand Canyon NP, there are only nine mapped collection sites in Arizona. NatureServe considers the species to be imperiled, and possibly critically imperiled in the State. The southern-most collection at Artillery Peak in 1979 recorded that the plant was rare.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.
STATE STATUS: None.
OTHER STATUS: None.

MANAGEMENT FACTORS: Unknown.

PROTECTIVE MEASURES TAKEN: None, although two-thirds of the collection sites in Arizona are from National Park Service lands.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: Of nine collection sites, three are within the USNPS Grand Canyon NP, another three are from the Lake Mead National Recreation Area, and the last three were collected from BLM lands within the Arizona Strip.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- CalFlora, accessed 09/16-2013, http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=9525.
- ITIS, accessed 9/11/2013, http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=845250
- JSTOR| Global Plants, accessed 9/11/2013, <http://plants.jstor.org/specimen/mo-694649?s=t>.
- Porter, J. Mark and Leigh A. Johnson. 2000. A phylogenetic classification of *Polemoniaceae*. *Aliso* 19(1): 55-91.
- Tropicos, accessed 9/11/2013, <http://www.tropicos.org/Name/25800138>.
- Wilken, Dieter H. and J. Mark Porter. 2005. Vascular plants of Arizona: *Polemoniaceae*. *CANOTIA* 1:1-37.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

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Robert Patterson, San Francisco State University, CA.

ADDITIONAL INFORMATION: Breeding systems studies with *Linanthus filiformis* revealed that it is self-compatible and capable of self-pollination (J. Mark Porter to Dean Treadwell, pers. comm. via email 9/12/2013).

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