

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

Plant Abstract

Element Code: PDONA031J2

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Camissonia specuicola* ssp. *specuicola* (P.H. Raven) P.H. Raven
COMMON NAME: Kaibab suncup, Ditch evening primrose, cave dweller
SYNONYMS: *Oenothera specuicola* P.H. Raven
FAMILY: Onagraceae

AUTHOR, PLACE OF PUBLICATION: P.H. Raven, *Brittonia* 16(3): 281. 1964. *Oenothera specuicola* P.H. Raven, University of California Publications in Botany 34: 87. 1962.

TYPE LOCALITY: Kaibab Trail, 5,300 ft, south rim of Grand Canyon, Coconino County, Arizona, U.S.A.

TYPE SPECIMEN: HT: RSA. P.H. Raven 13119. 8 June 1958. IT: US.

TAXONOMIC UNIQUENESS: The species *specuicola* is 1 of 15 species of *Camissonia* in Arizona, with 61 species occurring in North America (USDA, NRCS 2004 reports 58 species), and 1 in South America (Hickman 1993, Lehr 1978). Subspecies *hesperia* is 1 of 2 in the species *specuicola*.

DESCRIPTION: Densely tufted perennial with a somewhat woody base, 10-50 cm (4-20 in) tall with numerous divergent branches from the base; occasionally with secondary flowering axes arising above from the decumbent stems. Leaves broadly elliptical, glabrous, glutinous, shining, 3-20 cm (1.2-8 in) long, pinnate or often bipinnate, mostly in a basal rosette. Style 4-5 mm long, glabrous. Lateral leaflets well developed, to 15 mm long and 7 mm wide, often further divided and alternating with smaller pinnules; oil cells beneath prominent, dark brown. Inflorescences erect, elongating in flower and fruit; the mature buds individually drooping. Hypanthium 1.5-2.0 mm long, 1.0 mm across at the summit, glandular-pubescent, caudate with short appendages at the apices, these free in bud. Petals 2-6 mm long, 1.5-4.0 mm wide, bright yellow, fading light purplish, red-dotted near the base, of the same color as inside of hypanthium, stamens, and style. Filaments of the episealous (longer) stamens 1.5-3.0 mm long, those of the epipetalous (shorter) ones 1.0-2.0 mm long; anthers glabrous. Stigma at about the same level as the anthers at anthesis. Capsule straight to slightly curved, spreading to ascending, 8-20 mm long and 1.0-1.5 mm thick; glandular-pubescent or glabrous. Pedicel 6-10 mm long. Seeds 0.6-1.0 mm long. Gametic chromosome number, $n=7$. (Raven 1962, Raven 1969, Phillips et al. 1981).

AIDS TO IDENTIFICATION: *Camissonia specuicola* ssp. *specuicola* is most similar to *C. specuicola* ssp. *hesperia*. The key to differentiate between the two is that ssp. *specuicola* has

glabrous leaves and styles, whereas ssp. *hesperia* has sparsely pubescent leaves and styles that are pubescent at the base. (Raven 1962, Raven 1969, Phillips et al. 1981, Falk et al. 2001). In addition, the style on ssp. *hesperia* is 5-7 mm long. Other similar species include *C. walkeri*, which is an annual or short-lived perennial with pubescent leaves, and *C. multijuga*, which has petals > 6 mm long, the style is > 6 mm long, and the stigma is elevated above the anthers, instead of surrounded by the anthers. (Raven 1962, Raven 1969, Falk et al. 2001).

ILLUSTRATIONS: Line drawing (USFWS)
Line drawing (B. Dennis, *in* Falk et al. 2001)
Color photos of plant and habitat (Art Phillips, *in* Falk et al. 2001)
Color photo of Isotype (P.H. Raven *in* US at
<http://ravenel.si.edu/botany/types//fullRecords.cfm?myFamily=>)

TOTAL RANGE: Grand Canyon National Park in Coconino and Mohave counties, Arizona.

RANGE WITHIN ARIZONA: See “Total Range.”

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Herbaceous perennial.

PHENOLOGY: Flowers and sets seed from April to June (Phillips et al. 1981). According to Falk et al. (2001), this subspecies produces flowers and fruits during all seasons except winter.

BIOLOGY:

HABITAT: Debris slides and crevices of broken Redwall Limestone.

ELEVATION: 3,100 - 5,600 ft. (946-1708 m).

EXPOSURE: All aspects.

SUBSTRATE: Broken Redwall Limestone.

PLANT COMMUNITY: Great Basin Desertscrub communities, often in Blackbrush dominated communities. Associated species include: *Acacia* sp., *Agave* sp., *Brickellia longifolia* (Longleaf brickellbush), *Cercocarpus* sp. (Mountain mahogany), *Coleogyne ramosissima* (Blackbrush), *Purshia* sp. (= *Cowania*, cliffrose), *Thymophylla* (= *Dyssodia*) *acerosa* (pickleleaf dogweed), *Eriogonum* sp. (wild buckwheat), *Hesperodona salicina* (= *Haplopappus salicinus*, willow glowweed), *Hedeoma nana* (= *nanum*, Dwarf false-pennyroyal), *Argyrochosma* (= *Notholaena*) *jonesii* (Jones's lipfern), *Rhus trilobata* (skunkbush), and *Stipa* sp. (needlegrass). (Phillips et al. 1981).

POPULATION TRENDS: According to Phillips et al. (1981), “The populations that occur on Redwall limestone boulders are numerous and healthy....No accurate estimation of the total area of potential habitat could be made....A relatively high percentage of flowering adults and seedlings, in 1981, indicated a healthy, self-perpetuating taxon.” Current population status and trend is unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1983)
[PE (USDI, FWS 1976)]

STATE STATUS: None

OTHER STATUS: None

MANAGEMENT FACTORS:

CONSERVATION MEASURES TAKEN: This taxon is protected by Department of Interior regulations concerning collecting practices in National Parks. There is also no livestock grazing allowed within the park.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: BIA Havasupai and Hualapai Nations; NPS - Grand Canyon National Park.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Brian, N.J. 2000. A Field Guide to the Special Status Plants of Grand Canyon National Park. Science Center, Grand Canyon National Park, Grand Canyon, Arizona. Pp. 3c.
- Cronquist, A. et al. 1997. Intermountain Flora, Vascular Plants of the Intermountain West, U.S.A. The New York Botanical Garden. Bronx, New York. Pp. 176.
- Falk, M. & P. Jenkins et al., 2001. Arizona Rare Plant Field Guide. Published by a collaboration of agencies and organizations. Unnumbered Pages.
- Hickman, J.C. 1993. The Jepson Manual. University of California Press. Berkeley, California. P. 778.
- Integrated Taxonomic Information System (ITIS). Retrieved 12/15/2004 from ITIS, <http://www.itis.usda.gov>.
- Lehr, J.H. 1978. A catalogue of the flora of Arizona. Desert Botanical Garden. Phoenix, Arizona. P. 107.
- Missouri Botanical Garden – TROPICOS, Nomenclatural Data Base. *Camissonia specuicola* P.H. Raven. http://mobot.mobot.org/cgi-bin/search_vast. Accessed: 15 Dec 2004.

- NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: May 05, 2004).
- NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.1. NatureServe, Arlington, Virginia. Available: <http://www.natureserve.org/explorer>. (Accessed: December 15, 2004).
- Phillips, A.M., L.T. Green III, J. Mazzone, and B.G. Phillips. 1981. Unpublished status report, *Camissonia specuicola specuicola*. Submitted to the Office of Endangered Species, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.
- Raven, P.H. 1962. The systematics of *Oenothera* subgenus *Chylismia*. University of California Press. Berkeley, California. Pp. 87-88.
- Raven, P.H. 1964. *Brittonia*. 16(3): 281.
- Raven, P.H. 1969. A revision of the genus *Camissonia* (Onagraceae). Contributions from the United States National Herbarium, Vol. 37, Part 5. Smithsonian Institution Press, Washington D.C. 396pp.
- Rickett, H.W. 1970. Wild Flowers of the United States. McGraw-Hill Book Company. New York, New York. Pp. 406.
- SEINet. Collections Search Result. Accessed 12/15/2004 at <http://seinet.asu.edu/collections/list.jsp>.
- The New York Botanical Garden. NYBG Specimens Detailed Results. http://scisun.nybg.org:8890/searchdb/owa/wwwcatalog.detail_list. Accessed: 12/15/2004.
- U.S. National Herbarium Type Specimen Register (US). Accessed: 12/15/2004 from <http://ravenel.si.edu/botany/types/fullRecords.cfm?myFamily=>
- USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

- Art Phillips – Flagstaff, Arizona.
Peter H. Raven - Missouri Botanical Garden, St. Louis, Missouri.

ADDITIONAL INFORMATION:

“At its type locality, *Camissonia specuicola* subsp. *specuicola* occurs in narrow crevices in the solid limestone, *C. walkeri* subsp. *walkeri* nearby on loose rockslides; no evidence of hybridization between these two entities was noted” (Raven 1969). “The distribution of this species and its close relatives along the Colorado River is most interesting. On the upper River, *C. walkeri walkeri* is common on limestone slopes and slides. At the south rim of the Grand Canyon, *C. specuicola specuicola* grows sympatrically with *C. s. hesperia*, but occurs in more stable limestone. Lower on the River, at havasu, *C. s. hesperia* grows sympatrically with *C. walkeri walkeri*. In the vicinity of Toroweap, *C. walkeri* is absent, but *C. multijuga* and *C. confertiflora* grow in adjacent sites, and the former extends down river to Diamond Creek, near the Mohave County Line. Below that point, *C. s. hesperia* reappears, extending from Separation Canyon to Spencer Canyon, of which Meri Witica Canyon is a branch. At Quartermaster Canyon, *C. multijuga* is again found and extends north, west, and south, away from the immediate vicinity of the river. Likewise, *C. walkeri tortilis* occurs far to the north and west of this area, where it grows sympatrically with *C. multijuga*. The variation pattern

of *C. multijuga* suggests that it may at times have hybridized with both *C. confertiflora* and *C. specuicola*, and this would be possible with migration of these taxa along the Colorado River, with its nearly continuous limestone slides and banks (Raven 1962). This taxa appears to be an outcrosser, but it is probably not self-incompatible, judging from its relatively small flowers. (Raven 1962).

The species name *specuicola* means cave dwelling (from *specui* meaning covered watercourse ditch, drain, pit, mine, sewer, hollow cavity, or cavern and *cola* meaning dweller); and *hesperia* meaning western. (Brian 2000).

Revised: 1998-12-18 (JCP)
1998-12-30 (DJG)
2004-05-14 (AMS)
2004-12-16 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp