

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

**Invertebrate Abstract**

**Element Code:** IMGASJ0220

**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Pyrgulopsis sola*  
**COMMON NAME:** Brown Springsnail  
**SYNONYMS:** *Pyrgulopsis solus*  
**FAMILY:** Hydrobiidae

**AUTHOR, PLACE OF PUBLICATION:** R. Hershler, and J.J. Landye. 1988. Arizona Hydrobiidae (Prosobranchia: Rissoacea). Smithsonian Contributions to Zoology. Number 459: 30 and 32.

**TYPE LOCALITY:** Brown Spring, in southern end of Verde Valley, Yavapai County, Arizona.

**TYPE SPECIMEN:** Holotype: USNM 859045. J.J. Landye, 4 February 1986.

**TAXONOMIC UNIQUENESS:** This genus comprises 35 described species and an additional 20-25 undescribed species in the Southwest.

**DESCRIPTION:** Shell ovate and small with shell height (height from top of shell to bottom of shell) 1.4 to 2.0 mm. Body whorl relatively large (83% of shell height) with 3.5 to 4.0 moderately convex whorls. Inner lip is moderately thickened, fused to or slightly separated from body whorl. Pigment on head/foot may be absent, or range from very light to dark dusting on all surfaces. All hydrobioids have a foot with a rounded posterior end. Penial filament darkly pigmented. Penis is small with enlarged bifurcate lobe. Elongate glandular ridge along lobe's edge, smaller ridge on ventral surface. Females larger than males.

**AIDS TO IDENTIFICATION:** Due to small size, animal cannot be identified to species in the field but must be identified in a laboratory by a qualified authority. To obtain specimens, sift sand believed to contain snail through an ordinary kitchen strainer. Rule of thumb that springsnail species are specific to a particular location (i.e. a single spring or group of springs connected or close to each other), may be used as a means of preliminary identification. The squat penis of this species is unique among southwestern *Pyrgulopsis*.

**ILLUSTRATIONS:** Photographs of shell (Hershler and Landye, 1988)  
Scanning electron microscope micrographs of radula (Hershler and Landye, 1988)

Line drawings (Hershler and Landye, 1988)

Line drawings (Hershler and Ponder, 1998)

**TOTAL RANGE:** Endemic to type locality of Brown Spring, Yavapai County, northwestern Arizona.

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

### **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** The hydrobioid digestive system is typical of style-bearing neotaenioglossans.

The mouth opens to a short oral area containing a pair of dorsolateral chitinous jaws composed of small, simple rodlets, immediately behind which is a well-developed buccal mass (situated within the snout). A pair of simple, unbranched, tubular salivary glands opens anterodorsally to the buccal cavity and (almost always) pass posteriorly over the nerve ring, rarely stopping short of the ring, but never passing through it in hydrobioids. Hydrobioids have a taenioglossate radula (i.e., seven teeth per row) comprising numerous rows of cusped teeth, each of which includes a typically squarish or trapezoidal central tooth flanked on each side by lateral, inner marginal, and outer marginal teeth. Teeth near the anterior end of the radula are often worn or broken, whereas the proximal portion of the ribbon has several to many rows of poorly differentiated or incompletely formed teeth. (Hershler and Ponder, 1998).

**REPRODUCTION:** Most hydrobioids are oviparous, with females depositing small egg capsules, either singly or (rarely) in strings, on the substrate. A small number of hydrobioids are ovoviparous, in which female's brood shelled young in the pallial gonoduct. Hydrobioid egg capsules are typically hemispherical to spherical. Copulation in hydrobioids is usually via an anterior opening to the glandular oviduct. The ventral channel may be traversed at least in part by the penis, but it is more likely that the penis only enters the anterior most section. (Hershler and Ponder, 1998).

**FOOD HABITS:**

**HABITAT:**

**ELEVATION:** 3,160 - 5,600 ft. (964 - 1707 m) According to AGFD HDMS unpublished records, accessed 2003.

**PLANT COMMUNITY:** Unknown.

**POPULATION TRENDS:** Unknown.

**SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None (USDI, FWS 1996)  
[C2 USDI, FWS 1994]  
[C2 USDI, FWS 1991]

**STATE STATUS:** None

**OTHER STATUS:** Forest Service Sensitive (USDA, FS Region  
3 1999)  
Bureau of Land Management Sensitive  
(USDI, BLM AZ 2000)

**MANAGEMENT FACTORS:** **Threats:** highly restricted distribution with associated potential for extinction due to chance events; water development and groundwater depletion.  
**Management needs:** protection of spring source; periodic monitoring of snail population and its habitat; research on ecology and systematics.

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:**

**LAND MANAGEMENT/OWNERSHIP:** USFS - Prescott and Tonto National Forests;  
Private.

**SOURCES OF FURTHER INFORMATION****REFERENCES:**

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**ADDITIONAL INFORMATION:**

**Revised:** 1992-03-25 (DBI)  
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