

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

Invertebrate Abstract

Element Code: IMGASC9240

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Sonorella eremita*

COMMON NAME: San Xavier Talussnail, Arizona Twin Peaks Snail

SYNONYMS:

FAMILY: Helminthoglyptidae

AUTHOR, PLACE OF PUBLICATION: Pilsbry, H.A. Land Mollusca of North America (North of Mexico). Philadelphia 1939.

TYPE LOCALITY: West end of "San Xavier Hill" (aka: White Hill), the southwestern hill of the Mineral Hills, Pima County, Arizona.

TYPE SPECIMEN: 112161 A.N.S.P. Pilsbry and Daniels 1910.

TAXONOMIC UNIQUENESS: Genus *Sonorella* is divided into four complexes by Miller (1967). Within these complexes there are about 60 species and subspecies of *Sonorella* within Arizona. *Sonorella eremita* is 1 of 26 species in the *S. hachitana* Complex. Species in this complex distinguished by a penis with a usually long, slender, narrowly pointed verge; in extreme forms, verge thick and club-shaped. The shell is relatively large and capacious, with smooth, silky-lustrous periostracum, usually with apical spirally descending threads. (Bequaert and Miller 1973).

DESCRIPTION: Shell is globose-depressed, umbilicate, the width of umbilicus contained 5 ½ to 6 ½ times in the diameter; more solid than other species of the same region, glossy, opaque pinkish buff, fading to nearly white around the umbilicus, and having a chestnut-brown shoulder band without noticeable light borders. The spire is very low, conoidal. Whorls 4 ½, moderately convex, the last slowly descending in front. The oblique aperture is rounded, but slightly wider than high. Peristome slightly expanded above, the outer and basal margins expanding more, slightly thickened, the margins converging connected by a very thin parietal film. The top of the head is gray, integument elsewhere cream-tinted. The median area of the sole is whitish, twice as wide as either side area, the latter flesh-tinted.

Type: Height 11.4 mm; diameter 19.4 mm; umbilicus 3 mm.

Paratype: Height 10.5 mm; diameter 18.6 mm.

AIDS TO IDENTIFICATION: Unique reproduction organs and highly restricted range/location.

ILLUSTRATIONS: (Pilsbry and Ferriss 1915)
(Pilsbry 1939)

TOTAL RANGE: San Xavier Hill (White Hill), Pima County, Arizona.

RANGE WITHIN ARIZONA: See "Total Range."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Desert adapted, spending large portion of life in estivation; attached to a rock by a mucus and calcium seal. May remain in estivation for up to 3 years and in most years is only active for several days when moisture conditions are suitable. Lifespan probably 7-10 years. Talussnails require calcium carbonate found in the limestone rock to neutralize the carbonic acid produced in respiration while they estivate.

REPRODUCTION: *S. eremita* is hermaphroditic. After a rain, snails lay eggs, feed, and when they meet, mate. Fertilization and production of eggs takes several days. If rains are short-lived, eggs must be held until next rain. Development in shell takes approximately a month but eggs do not hatch until a soaking rain has occurred after their development is completed. In wild, it probably takes three or four years to mature, depending on how often it rains. *S. eremita* has a reproductive life of approximately four to six years depending on the number of days it can remain active.

FOOD HABITS: Fungus and decaying plant material with some young green shoots when available.

HABITAT: Talus slide on northwest aspect of San Xavier Hill (=White Hill).

ELEVATION: 3,850 - 3,920 ft. (1,174 - 1,196 m).

PLANT COMMUNITY: Plants found in association with *S. eremita* include *Prosopis juliflora*, *Acacia greggii*, *Cercidium microphyllum*, *Lycium pallidum*, *Larrea tridentata*, and *Opuntia engelmanni*.

POPULATION TRENDS: Unknown, but at least 47 live individuals were observed active following a monsoon rainstorm in August 2001 (B. Terkianian pers. obs.).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: CCA (USDI FWS 1998, renewed 2008]
[SC USDI, FWS 1999]

[PE USDI, FWS 1997]

[PE USDI, FWS 1996]

[PE USDI, FWS 1994]

[C1 USDI, FWS 1991]

1A (AGFD SWAP 2012)

STATE STATUS:**OTHER STATUS:**

MANAGEMENT FACTORS: **Threats:** highly restricted distribution with associated potential for extinction due to chance events; development of habitat, including mine expansion and prospecting. Additional threats include any activities that could cause increased interstitial sedimentation (any development above the talus slopes) or alter the moisture conditions in the talus slopes. Also any herbicides applied above the talus slope may be washed downhill where the snails will encounter them. Another potential threat is the predation by rodents. **Management needs:** protection of habitat from direct and indirect effects of mining; periodic monitoring of snail population and its habitat.

PROTECTIVE MEASURES TAKEN: In 1998, the Arizona Game and Fish Department partnered with the U.S. Fish and Wildlife Service, El Paso Gas Company and Arizona Electric Power Cooperative Inc. to develop a Candidate Conservation Agreement (CCA) to ensure the long term viability of the San Xavier Talussnail and its habitat. The San Xavier Talussnail CCA was finalized in September 1998. The State of Arizona has placed the San Xavier Talussnail on the 2001 Crustaceans and Mollusks Commission Order 42 and the list of sensitive elements that qualify for Heritage funding. This designation makes it illegal to collect or possess the species.

SUGGESTED PROJECTS: Trapping studies to determine rodent densities are being considered. Also more information is needed on the life history, diet, reproduction, activity patterns, home range size, survivorship and basic biology of the San Xavier Talussnail.

LAND MANAGEMENT/OWNERSHIP: Private. Land is apparently being held for investment and ultimately development.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Arizona Game and Fish Department. 2012. Arizona's State Wildlife Action Plan 2012-2022. Phoenix, AZ.

Bequaert, J.C. & W.B. Miller. 1973. The Mollusks of the Arid Southwest. The University of Arizona Press, Tucson, Arizona. Pp:106.

Hoffman, J.E. Undated status survey of seven land snails in the Mineral Hills and the Pinaleno mountains, Arizona.

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- NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: July 31, 2003).
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- USDI, Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule. Federal Register 56(225):58822.
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ADDITIONAL INFORMATION:

S. eremita is a calciophile needing limestone to supply it with calcium during dry periods. “The entire known range of this species is not much greater than the area occupied by a house of moderate size (Pilsbry 1939).”

Revised: 1992-03-13 (DBI)
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 1997-11-13 (SMS)

1999-12-20 (DJG)

2003-07-31 (JS)

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