ARIZONA GAME AND FISH DEPARTMENT HERITAGE DATA MANAGEMENT SYSTEM

Invertebrate Abstract **Element Code:** IMGASC9290
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Sonorella granulatissima* H.A. Pilsbry 1905
COMMON NAME: Ramsey Canyon talussnail
SYNONYMS:
FAMILY: Helminthoglyptidae

AUTHOR, PLACE OF PUBLICATION: H.A. Pilsbry, 1905, Proc. Acad. Nat. Sci. Philadelphia 57:211-290; Pls.11-27 (reviewed by T.D.A. Cockerell, 1905b:68-71).

TYPE LOCALITY: Corrected Type Locality (TL) is Huachuca Mts, Ramsey Canyon, E slope of Range, Cochise Co. (Pilsbry and Ferris, 1910a:500); elevation not given. Originally the TL was given as "Huachuca Mts, Spring Canyon, near Fort Huachuca." (Bequaert and Miller 1973).

TYPE SPECIMEN: HT: ANSP 83257 A10387E. J.H. Ferriss, -- Feb 1902 to – Mar 1902, 1 dry specimen and 1 in alcohol.

TAXONOMIC UNIQUENESS: Based on an unpublished revision by W.B. Miller (1968a, in Bequaert and Miller 1973), he recognized 68 valid species of *Sonorella* (with 19 subspecies), 57 of them in Arizona (three common with Sonora), 3 in New Mexico, 1 in trans- Pecos Texas (in common with New Mexico), 8 in Sonora (3 in common with Arizona), and 3 in Chihuahua. *Sonorella granulatissima* is 1 of 23 species in the *S. granulatissima* complex.

DESCRIPTION: Snails in the genus *Sonorella* have a "depressed globose, helicoids shell, 12 to 30 mm in diameter, umbilicate or perforate, with a wide, unobstructed mouth and a thin, barely expanded peristome, smoothish or slightly sculptured with growth-lines, occasionally with fine oblique or spiral granulation and short hairs (mainly on the early whorls), lightly colored, and normally with a dark peripheral band. Its most characteristic features are, however, in the genitalia, which lack a dart sac and mucus glands." (Bequaert and Miller 1973). For species in the *S. granulatissima* complex: The verge of the penis is usually stout and truncate, reaching extremes of diminution in some species or gigantism in others. Snails in the complex have minutely granulose or wrinkly-granulose shells, with a readily peeling periostracum; mostly without apical spirally descending threads. (Bequaert and Miller 1973).

AIDS TO IDENTIFICATION: The most characteristic features of the genus *Sonorella* are, in the genitalia, which lack a dart sac and mucus glands (Bequaert and Miller 1973).

ILLUSTRATIONS: Photographs of a live specimen (Sorensen 2016)

TOTAL RANGE: Endemic to the Huachuca Mountains of Arizona including Carr, Garden, Miller, and Ramsey canyons, although most recent collections are from Garden Canyon in 1988 and Ramsey Canyon in 2016. Historically, they have been collected from Bear, Brown, Carr, Cave, Garden (formerly Tanner), Ida, Miller, and Ramsey canyons.

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

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Terrestrial gastropods do not move much, usually only to find food or reproduce. Olfaction is the primary sensory behavior utilized to find and move toward a food item (on the scale of centimeters to meters). A moving terrestrial gastropod lays down water- laden mucus on which it moves exposing its integument to a potentially drying atmosphere, and increasing its water losses through the pallial cavity because of the necessity for gas exchange. A resting terrestrial gastropod deploys a variety of passive mechanisms for water conservation, including the direct protection of its wet surfaces from drying conditions, avoidance of temperature extremes, the creation of more favorable microclimates and decreases in gas exchange. (A. Cook, *in* Barker 2001).

REPRODUCTION:

FOOD HABITS: Probably omnivorous, feeding on plant material (including algae, mosses, lichens, and possibly roots, shoots, leaves, flowers, flowers, anthers, pollen, fruit, seeds and rotting wood), and microorganisms associated with live and decaying vegetation; followed to a lesser extent by fungi and soil. (Speiser, *in* Barker 2001).

HABITAT: Collected in limestone rock piles in canyon, and under rocks and logs (SBMNH). The talussnail is a rock snail usually found in taluses or "slides" of coarse broken rock, generally found in crevices one to several feet below the surface, sealed to stones by their mucus (SDCP).

ELEVATION: Based on collections by J.H. Ferriss in the early 1900's (ANSP 2008), elevation ranged from around 5,000 – 7,500 ft (1524-1753 m). Bequaert and Miller (1973) report elevation from 5,750 up to 9,000 feet (1754-2745 m).

PLANT COMMUNITY: Pine/oak woodlands.

POPULATION TRENDS: Unknown. Over a hundred live specimens of all age classes were observed in July 2016 (within a 25 minute search effort) in Ramsey Canyon along the trail between the creek crossing and the Hamburg Trail's overlook; a couple live specimens were taken as vouchers for future genetic analysis.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None
STATE STATUS: 2 (AZGFD, AWCS 2022)
[1C (AGFD SWAP 2012)]
OTHER STATUS: None

MANAGEMENT FACTORS: Threats include: destruction or disturbance of talus slopes, and wildfire.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Validity of the informal *Sonorella* "species-groups" (or "complexes") has been brought into question by Naranjo-García (1988) and Roth (1996). Further research, including the use of molecular techniques, is needed to help clarify the relationships of these informal taxa (Gilbertson and Radke 2005). Status surveys need to be conducted to determine if populations still exist in remaining endemic canyons such as Brown, Carr, and Garden and their surround peaks. Recommend managing and protecting under a multi-species conservation agreement that covers the species range.

LAND MANAGEMENT/OWNERSHIP: DOD – Fort Huachuca Military Reservation; USFS – Coronado National Forest; TNC Ramsey Canyon Preserve.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Arizona Game and Fish Department. 2012. Arizona State Wildlife Action Plan 2012-2022.

Arizona Game and Fish Department. 2022. Arizona Wildlife Conservation Strategy: 2022-2032. Arizona Game and Fish Department, Phoenix, Arizona. 378 pages.

Bequaert, J.C., and W.B. Miller. 1973. The Mollusks of the Arid Southwest. The University of Arizona Press. Tucson, Arizona. Pp. 111, 121.

California Academy of Science – Invertebrate Zoology Department. CAS Invertebrate Zoology Online Collection Database, accessed 3/26/2008. http://research.calacademy.org/research/izg/iz_coll_db/index.asp.

Http://www.co.pima.az.us/cmo/sdcp/sdcp2/fsheets/vuln/ts.html. Fact-sheet: Talussnail, *Sonorella*. Accessed: 11/23/2005.

Integrated Taxonomic Information System (ITIS). Retrieved 3/26/2008 from ITIS, http://www.itis.usda.gov.

MCZ Malacology Collection. Accessed: 3/26/2008. http://collections.oeb.harvard.edu/Mollusks.MolluskDetail.cfm.

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.0. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/ (Accessed: March 26, 2008).

Santa Barbara Museum of Natural History. SBMNH: Invertebrate Zoology Online Database Collection. http://www.sbcollections.org/iz/recordview.php. Accessed: 3/26/2008.

The Academy of Natural Sciences. ANSP Malacology Search Details. Accessed: 26 March 2008. http://clade.ansp.org/malacology/collections/index.php.

The Field Museum. 2007. Department of Zoology Invertebrates Collections. Accessed 3/26/2008. http://emuweb.fieldmuseum.org/iz/MolluscDisplay.php.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Nick D. Waters – AGFD contractor, Phoenix, Arizona

ADDITIONAL INFORMATION:

Revised: 2008-03-07 (SMS)
2017-06-09 (VAP)
2023-02-08 (MBL)