

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

Invertebrate Abstract

Element Code: IMGASC9360

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Sonorella macrophallus*

COMMON NAME: Wet Canyon Talussnail

SYNONYMS:

FAMILY: Helminthoglyptidae

AUTHOR, PLACE OF PUBLICATION: Fairbanks, H.L. & R.L. Reeder. 1980. Two new species of *Sonorella* (Gastropoda: Pulmonata: Helminthoglyptidae) from the Pinaleno Mountains, Arizona. Proceedings of the Biological Society, Washington. 93(2): 395-404.

TYPE LOCALITY: South side of Wet Canyon about 300 feet from Hwy 366, Pinaleno Mountains, Graham County, Arizona.

TYPE SPECIMEN: Holotype: USNM 783324. H.L. Fairbanks. Paratype: USNM 783325. W.B. Miller #4832.

TAXONOMIC UNIQUENESS: Location as well as physical characteristics. "This species has been found only in Wet Canyon in the Pinaleno Mts. of southeastern Arizona. It is found there in sympatry with *S. imitator*... The genitalia, in particular the verge, will immediately identify this species" (Fairbanks and Reeder 1980).

DESCRIPTION: Shell depressed, heliciform, convex above and below, thin, light brown in color, with chestnut-brown band just above midline of rounded shoulder of body whorl. Diameter 17.7 mm (0.71 in.); height 10.6 mm (0.42 in.), umbilicus diameter 2.5 mm (0.1 in.); whorls 4 1/2; embryonic whorls 1 1/3. For helminthoglyptidae, the buccal mass is small and spheroidal. The gastric caecum and the rectal caecum are absent. The radular teeth are endocones and ectocones retained in marginal teeth but these are serrated, on quadrate or rectangular basal plates or the central and lateral teeth may be lacking endocones and ectocones but with a broad mesocone. The prolonged cuspid head on radular teeth may or may not be present. The cephalic shield is reduced, defined only by vestigial grooves. The hyponotum is absent. Inferior tentacles are present. The eye position is at the tip of more or less elongate cephalic tentacle. The tentacular nerve is bifurcated. (Barker 2001).

AIDS TO IDENTIFICATION: Location as well as physical characteristics. Found only in Wet Canyon in the Pinaleno Mountains of southeastern Arizona. Described as a land snail with globose shell having about 4.5 whorls. Shell has tan to olive tint and chestnut-brown shoulder band which has indistinctly pallid borders. Shell is approximately 18.0 mm (0.72

in.) in diameter. *S. macrophallus* has shell essentially identical to that of *S. grahamensis* and cannot be reliably distinguished from shells of other *Sonorella* species in the Pinaleno Mountains.

ILLUSTRATIONS: B&W photos of holotype (Fairbanks and Reeder 1980:396)
Cutaway camera lucida drawings of genitalia (Fairbanks and Reeder, 1980:398).
Color photo (J. Sorensen, AGFD)
B&W photo of dorsal view of shell (J.E. Hoffman unpublished:17).

TOTAL RANGE: Pinaleno Mountains, Graham County, Arizona. No other known locations. Hoffman states "range is apparently limited to talus slopes above approximately a one mile length of Wet Canyon." Recent surveys in 2001 and 2002 by Arizona Game and Fish Department biologists, documented live talussnails (identity unconfirmed) further upstream and downstream in the Wet Canyon watershed than was previously reported by Hoffman. They also reported finding several live talussnails (identity unconfirmed) in the nearby Twilight Canyon drainage, upstream of Highway 366, and in an unnamed drainage uphill of Twilight Creek (Jontz et al. 2002).

RANGE WITHIN ARIZONA: See "Total Range."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Adapted to fairly wet conditions. Although suitable moisture conditions are likely for this snail during most summers, it spends a large part of year in estivation; it may have limited activity in some summers. Life span is probably 6 years. Calcium carbonate from the limestone aids in shell deposition and buffers carbonic acid produced by the buildup of respiratory carbon dioxide during hibernation.

REPRODUCTION: Hermaphroditic but usually mates. Eggs laid during favorable moisture conditions, in clutches of 30 to 40. For helminthoglyptidae, embryonic brooding may or may not be present and they can be oviparous or viviparous. The eggs are single, not embedded in a jelloid/mucoid mass. The egg capsule could be partially calcified, with calcite crystals embedded in jelly layers but not forming a distinct shell or it could be calcified forming a distinct shell. The larval development has no trochophore or veliger stages; there is direct development in the egg. The larval operculum is absent. The genital orifices in the male and female are fused or nearly so in cephalic region, near right ocular tentacle. The extrapallial sperm duct is a closed duct, free in the body cavity. The lumen of the penis is lacking of spines. (Barker 2001).

FOOD HABITS: Fungus and decaying plant material with some young green shoots when available. For helminthoglyptidae, the openings of the digestive gland lobes are more or less adjacent, openings are intestinal. The stomach is greatly simplified, with very poorly

developed musculature. The diagonal intestinal folds are absent. The intestinal valve is absent. (Barker 2001).

HABITAT: Found only in the canyon bottom along perennially flowing portion of stream in Wet Canyon on the northeast slope of the Pinaleno Mountains. Hoffman observed that “this snail appears to require a somewhat wetter and possibly a lower elevation habitat than the other snails in this study.”

ELEVATION: 6,050-7,400 ft. (1,845-2,255 m) According to AGFD HDMS unpublished records accessed 1-13-04.

PLANT COMMUNITY: Unknown

POPULATION TRENDS: Locally abundant with fluctuations dependent upon moisture conditions. Arizona Game and Fish Department biologists observed over 120 live talussnails in the Wet Canyon drainage in August 2001, and over 25 live talussnails in Twilight Canyon and the nearby unnamed drainage during that survey (Jontz et al. 2002). In September 2002, Department and USDA Forest Service biologists observed 35 live talussnails in Wet Canyon and another 6 live talussnails in Twilight Canyon. These surveys were not compatible or exhaustive in effort from year to year, therefore no population estimates or trend analysis is available for the Wet Canyon talussnail.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: CCA (USDI FWS 1999)
[None USDI, FWS 2001]
[C USDI, FWS 1996]
[C1 USDI, FWS 1991]

STATE STATUS: 1A (AGFD SWAP 2012)

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999, 2013)

MANAGEMENT FACTORS: **Threats:** highly restricted distribution with associated potential for extinction due to chance events; human impacts from nearby campground and associate trail, including potential removal or infilling of talus and increased fire hazard; potentially intense fires and post-fire ash flows from increasing fuel loads. **Management needs:** research on effects of controlled burns; modification of fire suppression policy; manual removal of woody debris and potential fire fuels from the canyon drainage recommended; periodic monitoring of snail population and its habitat.

PROTECTIVE MEASURES TAKEN: In December of 1999, the USDA Forest Service, the State of Arizona and the U.S. Fish and Wildlife Service entered into a Candidate Conservation agreement to work together for the conservation of the Wet Canyon Talussnail and its habitat. Also the Arizona Department of Game and Fish fishing regulations, Commission Order 42,

prohibits collection of the Wet Canyon Talussnail. The Coronado Land and Resource Management Plan incorporates a special management area for protection of the Wet Canyon Talussnail.

SUGGESTED PROJECTS: Little is known about the life history, diet, reproduction, activity patterns, home range size, survivorship and basic biology of the Wet Canyon Talussnail. Small mammal live-trapping on site is needed to estimate the size of the rodent population in each of the drainages, and to help determine if rodents prey on talussnails. Genetic work should be conducted in order to determine if the talussnails found in each of the three surveyed drainages are all *S. macrophallus* or if they are all different species or subspecies. If all of the talussnails are found to be *S. macrophallus* the snail may be less imperiled than previously believed--therefore making the Candidate species designation unnecessary. Conversely, it may be discovered that there are multiple, endemic species of talussnails requiring alternative management.

LAND MANAGEMENT/OWNERSHIP: USFS - Coronado National Forest.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

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 J.E. Hoffman - Pima Community College (West), Tucson, Arizona
 R.L. Reeder - University of Tulsa, Tulsa, Oklahoma
 S. Stefferud - USDI, FWS Ecological Services, Phoenix, Arizona
 Debra Bills – U.S. Fish and Wildlife Service, Phoenix, Arizona
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ADDITIONAL INFORMATION:

Sonorella macrophallus: *Sonorella* refers to the Sonoran Desert region from which this landsnail was first described. The specific epithet describes the anatomical features that distinguish this species from other talussnails in this genus.

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