ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Invertebrate Abstract **Element Code:** IMGASB5120
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Oreohelix grahamensis*
COMMON NAME: Pinaleño Mountainsnail
SYNONYMS: *Oreohelix concentrata grahamensis*
FAMILY: Oreohelicidae

AUTHOR, PLACE OF PUBLICATION: W.O. Gregg and W.B. Miller. 1974. Two new species of land snails from the Pinaleño Mountains, Arizona. Bulletin of Southern California Academy of Sciences 73(3): 146-151.

TYPE LOCALITY: South slope of the Pinaleño Mountains along the Swift Trail highway (State Route 366), on North side at a point 20.7 road miles from its beginning at US Highway 191, Graham County, Arizona. This is approximately half way between Ladybug Saddle and Heliograph Peak.

TYPE SPECIMEN:

Holotype:	No. 1155	Natural History Museum of Los Angeles County.
Paratypes:	No. 12947	Geological Collection of the California Academy of Sciences.
	No. 109587	Field Museum of Natural History
	No. 2546	San Diego Natural History Museum

TAXONOMIC UNIQUENESS: The Pinaleño mountainsnail was originally described by Greg and Miller (1974) from specimens collected from the Pinaleño Mountains, Graham County, Arizona. This species is considered valid by the Integrated Taxonomic Information System (the Forest Service taxonomic standard), Turgeon *et al*. (1998; the malacologists taxonomic standard), and more recently confirmed to be genetically distinct from its congeners by Weaver *et al*. (2010).

DESCRIPTION: Snail with mottled shell, "light brown above and lighter on the base with strong growth lines. It has two bands; the one above the periphery is about 1 mm wide and chestnut brown. The one below the periphery is somewhat wider. The shell is approximately 18 mm in diameter and is the only one in the Pinaleño Mountains that looks like this." (Hoffman 1990).

AIDS TO IDENTIFICATION: Shell appearance - see "**Description**". "Wider umbilicus,

more elevated spire, spiral striations, and more uniform coloration than other species in the *O. yavapai* group." (Hoffman, 1990).

ILLUSTRATIONS: Black and white photo of shell (Hoffman, 1990).

TOTAL RANGE: Pinaleño Mountains, Arizona. Rockslides from the Clark Peak area, the vicinity of Mt. Graham, south to the Heliograph Peak area, Twilight Canyon, and Wet Canyon.

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

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Stylommatophorans often take water up through the pneumostome: a rectal pump rapidly conveys this water through the anus into the digestive tract. Under dry environmental conditions, this extrasomal reserve cannot only be utilized by absorption into the blood, but a large portion can be expelled from the anus and directly conveyed to the external body surfaces where water losses due to evaporation and locomotion occur. Furthermore, these animals frequently store urine in the pallial cavity, which is thought to function as a reservoir of water for subsequent resorption by the renal system. They are also able to rehydrate rapidly by the uptake of water through the integument, by drinking and through feeding.

Stylommatophora primarily possess two pairs of tentacles on the head, the cephalic tentacles with an eye at the apex of each, and inferior tentacles on the anterior face of the snout below the cephalic tentacles. They also lack an operculum.

REPRODUCTION: The genus *Oreohelix* is ovoviviparous, giving birth to only five or six offspring, normally once each summer. Stylommatophora are hermaphrodites. The gonad, typically embedded in the upper lobe of the digestive gland, produces both oocytes and spermatozoa.

FOOD HABITS: "*Oreohelix* in the Pinaleño Mountains subsist primarily on fungus and decaying plant matter. This diet is often supplemented with young green shoots when they are available." (Hoffman 1990).

HABITAT: *O. grahamensis* is normally not found within the talus and does not seem to seal to the rocks; but is found in the leaf litter within and around the talus.

ELEVATION: 6,590 - 10,080 ft (2,009-3,072 m) according to AGFD HDMS unpublished records, accessed 2003.

PLANT COMMUNITY: Hoffman states that "the species mix along State Route 366 (Swift Trail) above Ladybug Saddle, the type locality of ... *Oreohelix grahamensis* ... is found

Quercus gambelii, Pinus ponderosa, and *Robinia neomexicana*" (Hoffman 1990).

POPULATION TRENDS: Unknown, although recent timed presence/absence surveys have documented a few live mountainsnails in Wet Canyon (two observed below the trail crossing in 2008) and in Twilight Canyon (four observed in 2015 along with numerous shells). Surveys in 2008 and 2015 were conducted under dry conditions, both following rain events two days prior.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[3C USDI, FWS 1991]

STATE STATUS: 1 (AZGFD, AWCS 2022)
[1B (AGFD SWAP 2012)]

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

MANAGEMENT FACTORS: **Threats:** potential for extinction due to chance events acting on small localized populations; potentially intense fires due to increased fuel loads. **Management needs:** research on effects of controlled burns; modification of fire suppression policy; periodic monitoring of known populations and their habitats.

PROTECTIVE MEASURES TAKEN: The USFS has ongoing fuel load evaluations and fuel reduction efforts ongoing within the Pinaleño Mountains, to reduce the risk of future catastrophic wildfires. Standards and guidelines for Forest activities that may affect USFS sensitive species are also being incorporated into the Forest Plan revision.

SUGGESTED PROJECTS: Finalize the 2011 draft multi-species conservation agreement for Pinaleño land snails, including the Pinaleño Mountainsnail. Conservation activities under that agreement include: continuing a monitoring program for land snails within the Pinaleño Mountains, conducting evaluations of fuel load conditions and fuel reductions in areas occupied and adjacent to land snails, and maintaining talus habitat and other habitat components used by Pinaleño land snails.

LAND MANAGEMENT/OWNERSHIP: USFS - Coronado National Forest, Safford Ranger District.

SOURCES OF FURTHER INFORMATION

REFERENCES:

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

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Barker, G.M. 2001. The Biology of Terrestrial Molluscs. CABI Publishing Wallingford, UK.

Bequaert, J.C. and W.B. Miller. 1973. The mollusks of the arid southwest, with an Arizona check list. The University of Arizona Press. Tucson, Arizona. P. 127.

Hoffman, J.E. 1990. Status survey of seven land snails in the Mineral Hills and the Pinaleño Mountains, Arizona.

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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): 58821.

USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants: Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species. Federal Register 61(40): 7596-7613.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Jim Hoffman – Tucson, Arizona

Nick D. Waters – Arizona State University, Tempe, Arizona

ADDITIONAL INFORMATION:

Hoffman reports in his status survey that these snails were "considered to be *O. concentrate* until Miller looked at them more closely."

Revised:

1992-04-22 (DBI)
1992-04-23 (DBI)
1997-03-02 (SMS)
2003-11-10 (AMS)
2003-12-03 (JH)
2015-08-14 (AJM)
2023-01-17 (MBL)

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