

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

Invertebrate Abstract

Element Code:IMGASK0010

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Melanooides tuberculatus*

COMMON NAME: Red-Rimmed Melania, Malaysian Trumpet Snail, Burrowing Snail, Live Bearer Snail

SYNONYMS: *Nerita tuberculata*, *Thiara tuberculata*, *Thiara tuberculatus*, *Melania tuberculatus*

FAMILY: Thiaridae

AUTHOR, PLACE OF PUBLICATION: Müller, O. F., 1774. Vermium Terrestrium et Fluviatilium seu animalium infusorium, helminthicorum, et testaceorum non marinorum succincta historia.

TYPE LOCALITY: These snails originated from North/East Africa & Southeast Asia.

TYPE SPECIMEN: Unknown

TAXONOMIC UNIQUENESS: Taxonomy of thiarids is problematic. Species are generally variable, and largely parthenogenetic, so variant morphologies may easily be established. The invasive populations represent several independent lineages and multiple invasions, with multiple morphotypes. Crossing between lineages can generate new morphologies. At least three species are established in the North American mainland. (Perez et al. 2004).

DESCRIPTION: Red-rimmed melania typically attain a shell length of 30-36mm. However, individuals from a large deep pool in the head waters of Las Moras creek, Texas were reported to have reached a shell length of 70-80 mm from. (Thompson, 1984 and Murray, 1975 as cited by The Gulf States Marine Fisheries Commission, 1975).

This species has an elongate conical shell with regularly increasing whorls, typically five in number. The last whorl is usually broken. The shell is light brown, frequently mottled with rust colored spots that may form a spiral below the suture. The spiral is usually twice the length of the aperture or more. The shell is sculptured with vertical, weakly curved ribs and much finer spiral striations. Prominent vertical ribs are present on the middle and upper whorls. Generally there are no differences between the younger and older portions of the shell. The operculum is clearly paucispiral, with the nucleus so near the base; in some cases it may approach the subspiral condition. The head is tongue-like and constricted on its ventral side to give rise to the foot. The tentacles arise from just above this constricted area. The tentacles are long and slender. Simple eyes are present at the base of each tentacle. (Morrison, 1954; Thompson, 1984; Lee, 1973 as cited by The Gulf States Marine Fisheries Commission, 1997).

AIDS TO IDENTIFICATION: *M. tuberculatus* is closely related to *M. turriculus*, and is possibly an ecophenotype of it, making a proper visual identification difficult. *M. tuberculatus* is brown, versus the olive shell color of *M. turriculus*. Both have reddish-brown markings. The vertical ribs on the upper and middle whorls of *M. tuberculatus* are well-developed with fine spiral striations, while the vertical sculpture of *M. turriculus* is much weaker. (Perez et al., 2004).

ILLUSTRATIONS: Color photo (Cassani *in* <http://www.swfwc.org/ANS/Invertebrates/Redrimmelania.htm>)
Drawing (Perez 2004)
Color photos (*In* <http://www.jaxshells.org/420aa.htm>)
Color photos (*In* <http://www.esg.montana.edu/aim/mollusca/nzms/id2b.html>)

TOTAL RANGE: The range of this species in the United States includes AZ, CA, CO, FL, HI, ID, LA, MT, NV, OR, TX, UT, and WY. Found also in Africa and the eastern Mediterranean countries and throughout India, Southeast Asia, Malaysia, and southern China, north to the Ryukyu Islands of Japan, south and east through many of the Pacific islands to Northern Australia and the New Hebrides. (Burch, 1989 as cited in NatureServe, 2005).

RANGE WITHIN ARIZONA: Unknown

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: This species is an aquatic snail that is active mostly at night, hiding beneath decaying plants and stones or burying them selves in the mud during the day. The red-rimmed melania is herbivorous, which is very common over most of its native range in Africa and Asia, and serves as a vector for several important diseases. This species is of special interest within the Gulf ecosystem because it serves a transmission vector for several dangerous parasites. This species serves as a host for *Clonorchis sinensis*, the Chinese liver fluke and *Paragonimus westermani*, the Oriental lung fluke both of which can infest human beings. For the life cycle of these parasites to be completed, a crustacean must eat infected snails and infected crustaceans must be eaten raw by human beings. Other parasites of interest this species carries include *Diorchitrema formosanum*, *Opisthorchis sinensis*, and *Philophthalmus sp.* Red-rimmed melania also pose a threat because they have been reported to displace native gastropods where introduced. (The Gulf States Marine Fisheries Commission, 1997).

REPRODUCTION: Red-rimmed melania may reproduce both sexually and by parthenogenesis. Individuals as small as 10 mm may begin to reproduce. This species is reported to be viviparous. The brood pouch is located in the head and the number of young within the brood pouch ranges from 1 to 71. A contradicting report states that this species may carry anywhere from 1 to 42 young in their brood pouch. The number

of young within the pouch appears to vary with the size of the adult. The young have been observed being carried on the shell of the parent. The new-borns measured between 1.5 and 2mm and their shells consisted of a large protoconch and the first two whorls. Another report states an observation of eggs carried in a pouch made of sand, attached to the outside of the shell. The pouches were round in shape and measured from 1.5 to 2mm in diameter. (Morrison, 1954, Berry and Haji Kadri, 1974, Livshits et al., 1984, Livshits and Fishelson, 1983, Rao and Mitra, 1982, Subda, Rao and Mitra, 1982, as cited by The Gulf States Marine Fisheries Commission, 1997).

FOOD HABITS: *Melanoides tuberculatus* feeds on epiphytic algae, fine detritus, and food remains. They will also feed on plants if it is the only food source available.

HABITAT: Typically, this species is found in shallow slow running water (0.6-1.2m in depth), on a substrate consisting of soft mud, or soft mud and sand. It is very resistant to low oxygen levels. Areas rich in detritus and silt behind overhanging stems and protruding roots of bank vegetation, such as *Eragrotis* and *Lysimachia*, have been reported to be prime habitat in Louisiana. Red-rimmed Melania are in high abundance in estuarine areas of Florida dominated red (*Rhizophora mangle*) and white (*Laguncularia racemosa*) mangroves. Red-rimmed Melania have also been reported from relatively deep portions of freshwater pools (3-3.7m deep) with substrate composed largely of rocks. *M. tuberculatus* is most common in rivers, streams, canals, and springs and can flourish in brackish water with salinity from 0 to 30 ppt. (Neck, 1984, Dundee and Paine, 1977, Roessler et al., 1978, Muray, 1975, and Roessler et al., 1997, as cited by The Gulf States Marine Fisheries Commission, 1997).

ELEVATION: Unknown

PLANT COMMUNITY: Unknown

POPULATION TRENDS: *Melanoides tuberculatus* is expanding in Brazil (Bogea et al 2005).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None

STATE STATUS: None

OTHER STATUS: None

MANAGEMENT FACTORS: This snail is an exotic, nuisance species.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP:

SOURCES OF FURTHER INFORMATION

REFERENCES:

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

Thiarids are popular aquarium snails and have also been introduced for biological control of schistosomiasis hosts because they out compete *Biomphalaria* spp.

A San Francisco aquarium dealer introduced this species to California. In 1937 a Tampa Bay aquarium dealer acquired specimens from California and began selling them. By 1947 feral specimens were collected in Hillsborough County, Florida.

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