

SCIENTIFIC NAME: *Helminthoglypta walkeriana*
COMMON NAME: Morro shoulderband snail
CLASS, FAMILY: Gastropoda, Helminthoglyptidae

ORIGINAL DESCRIPTION: Hemphill, H. 1911. Descriptions of some varieties of shells, with short notes on the geographical range and means of distribution of land snails. Transactions of the San Diego Society of Natural History 1(3):102, pl. 2 (two views of shells). (Described as *Helix walkeriana*, with *morroensis* described as a variety.)

TYPE MATERIAL: Roth and Sadeghian (2003) list the syntypes as follows: Academy of Natural Sciences, Philadelphia #112424 (4 specimens), California Academy of Sciences #058838 (6), #065523 (2), #065524 (3), Santa Barbara Museum of Natural History #33958 (22), University of Colorado, Boulder #20178 (4), and United States National Museum of Natural History (Smithsonian Institution) #174679-174682 (8).

RANKING/STATUS: Federally Endangered (1994), G1S1 (NatureServe – CNDDDB), CR/A1ce, B1+2bc (IUCN).

GENERAL DESCRIPTION: Moderately large helminthoglyptid snails with globose, helicoid shells and brown bodies.

DIAGNOSTIC CHARACTERS: Only three helminthoglyptid species occur in coastal San Luis Obispo County; until recently *H. morroensis* was considered a subspecies of *H. walkeriana* (Walgren 2003). The third species, *H. umbilicata*, has distinctive malleated shell sculpture (Roth and Tupen 2004).

Detailed morphometric analysis of shells (Roth and Tupen 2004) revealed that *H. walkeriana* and *H. morroensis* are separate species. Shells of *H. walkeriana* are more globose and tightly coiled, with more whorls and less papillation than those of *H. morroensis*. The skin color of *morroensis* is blackish in life, whereas in *walkeriana* it is medium brown, and the mantle pigmentation is more extensive in *morroensis*. Penial morphology also differs, with the penis of *walkeriana* being slender and hourglass-shaped, with simple, smooth pilasters. In addition to having crenulated, coalescing pilasters, the juncture of the penial sac and epiphallus lacks a tongue-like protuberance in *H. morroensis*.

OTHER ILLUSTRATIONS: Roth and Tupen (2004, fig. 1) show the known distribution and projected range of *H. walkeriana* and *H. morroensis*. Shells of both species are illustrated in figs. 5-12.

DISTRIBUTION: *Helminthoglypta walkeriana* occurs around the perimeter of Morro Bay, San Luis Obispo County. Its known range extends from Morro Strand State Beach north of Morro Bay southward to Montana de Oro State Park, and inland as far as Los Osos Creek in eastern Los Osos. *Helminthoglypta morroensis* is generally a more inland species, occurring to the east of the limits of distribution for *walkeriana*, and as far inland as San Luis Obispo. Some specimens of *H. morroensis* have been collected along the coast as far north as Cayucos, but north of Morro Strand State

Beach. As far as is currently understood, the two species are not sympatric in any portion of their ranges.

HABITAT: Coastal dune scrub dominated by woody shrubs, especially *Ericameria ericoides*, *Eriogonum parvifolium*, *Eriastrum densifolium*, *Lupinus chamissonis*, *Artemisia californica*, and *Salvia melifera*. In areas where the snails have been found, mats of *Carpobrotus chilensis* are common, and *Dudleya caespitosa* commonly occurs under *Ericameria* shrubs.

LIFE HISTORY/BEHAVIOR: Roth (1985) noted that the distribution of empty *H. walkeriana* shells was highly clumped, with shells absent from areas of seemingly suitable vegetation. He also observed that vegetation on the north-facing slopes of the dunes was slightly denser and more shrubby, and that the snails were more common in those areas.

Roth speculated that the species might live 6-10 years, as is typical in some other *Helminthoglypta* that inhabit coastal scrub, such as *H. arrosa* in Sonoma County; maturity may be reached, as in that species, sometime between the third and fourth year. Many of the empty large subadult shells that Roth found contained vacant fly puparia (probably of sarcophagid flies), but it is unclear whether the flies actually killed the snails, or simply fed upon dead snails as scavengers.

In *Helminthoglypta arrosa*, most growth, copulation, and egg-laying occurs during the rainy season, and Roth speculated that the same likely is true for *H. walkeriana*. The species is not known to be fossorial, and can be killed outright by prescribed burning, which has been used to thin and renew vegetation for management of the state and federal endangered Morro Bay Kangaroo Rat. But the increased soft forb vegetation resulting from prescribed burning may provide high-quality food and cool, shady habitat for the snails.

SELECTED REFERENCES:

- Roth, B. 1985. Status survey of the banded dune snail, *Helminthoglypta walkeriana*. Report to the U.S. Fish and Wildlife Service, Sacramento Endangered Species Office, Sacramento, CA.
- Roth, B., and P.S. Sadeghian. 2003. Checklist of the land snails and slugs of California. Santa Barbara Museum of Natural History Contributions in Science 3:1-81.
- Roth, B., and J. Tupen. 2004. Revision of the systematic status of *Helminthoglypta walkeriana morroensis* (Hemphill, 1911) (Gastropoda: Pulmonata). Zootaxa 616:1-23.
- Walgren, M. 2003. Distribution and morphotypes of the federally endangered land snail *Helminthoglypta walkeriana* (Hemphill, 1911). Bulletin of the Southern California Academy of Sciences 102(2):96-98.

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