

New record of glossy pupa-snail, *Gastrocopta servilis*, in Singapore

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Subjects: Glossy pupa-snail, *Gastrocopta servilis* (Mollusca: Gastropoda: Gastrocoptidae).

Subjects identified by: Chan Sow-Yan and Lau Wing Lup.

Location, date and time: Singapore Island, Victoria Street, Jalan Kubor Muslim Cemetery; 10 November 2019, around 1600 hrs, & 24 September 2020, around 1130 hrs.

Habitat: Urban parkland. In the grounds of a cemetery (Fig. 1).

Observers: Chan Sow-Yan and Lau Wing Lup.



Fig. 1. Habitat in the cemetery where *Gastrocopta servilis* and *Nesopupa malayana malayana* were found.



Fig. 2. *Gastrocopta servilis* in-situ. Live example (within orange rectangle at left) on a dead leaf. Three dead shells (in yellow circles at right) among organic debris on top of a boundary wall.

Photographs by Lau Wing Lup

Observation: At least 20 examples were found among organic debris at the top of a concrete boundary wall (Fig. 1). The largest specimen has a shell length of about 2 mm.

Remarks: *Gastrocopta servilis* is herein regarded as a new record for Singapore (see e.g. Ho, 1995; Tan & Woo, 2010; Tan et al., 2012). Described from Cuba (Gould, 1843 as *Pupa servilis*), the species has been recorded from various places across the world, including Western Australia (Whisson & Köhler, 2013), Japan (Nekola et al., 2012), Fiji (Brodie & Barker, 2011), Central America and Brazil (Brook et al. 2010), Easter Island [Chile] (Kirch et al. 2009), Bermuda (Bieler & Slapcinsky, 2000), Hawai'i (Christensen & Kirch, 1986), Indonesia and the Philippines (Vermeulen & Whitten, 1998). *Gastrocopta servilis* is a synanthropic species known to inhabit dry open areas under rocks (Bieler & Slapcinsky, 2000); in coastal areas on limestone soil of denuded sea-facing cliffs (Vermeulen & Whitten, 1998); under stones or logs, in leaf litter of lowland forests (Smith & Staniscic 1998) and in residential gardens (Whisson & Köhler, 2013). It is most likely introduced accidentally in Singapore, but the origin is uncertain, and the authors have yet to detect its presence elsewhere in the country.

The shell specimens in this report conform to the illustrations of *Gastrocopta servilis* by Gould (1843 as *Pupa servilis*) and Vermeulen & Whitten (1998). The shell of adult *Gastrocopta servilis* is elongated, ventricose, smooth and glossy. It has well defined sutures, strongly rounded whorls, everted and flattened lip, and a small umbilicus (Fig. 3, 4, 5 & 7). At its semi-oval aperture, a large conical tooth is located at its middle columellar, and the parieto-angular and angular teeth are fused or partially fused at the base (Fig. 4 & 7). The snail animal has a pair of greyish sensory tentacles and eyestalks, pale grey foot with yellow patches, and pale grey body with a pair of dark grey dorsal stripes (Fig. 5). *Gastrocopta servilis* appears similar to *Nesopupa malayana malayana* and they occur together in the same microhabitat at the featured location. See table below (based on Vermeulen & Whitten, 1998 and Chan & Lau, 2019) for features to tell them apart.

Species	<i>Gastrocopta servilis</i>	<i>Nesopupa malayana malayana</i>
Shell shape	Elongate and pupiform (Fig. 3, 4, 5 & 7).	Cylindrical (Fig. 6 & 7).
Shell height	Up to 2.7 mm.	Up to 2.1 mm.
Shell surface	Shiny and smooth (Fig. 3, 4, 5 & 7).	Densely pitted, silky luster (Fig. 6 & 7).
Radial sculpture	Fine growth lines or weak ribs (Fig. 3, 4, 5 & 7).	Widely spaced and thicker radial ribs (Fig. 6 & 7).
Number of aperture teeth	Between 4 and 6 (Fig. 3 & 4).	Up to 6.
Parieto-angular tooth & angular tooth	Fused entirely or at the base (Fig. 4 & 7). Teeth absent in juveniles (Fig. 3)	Separate (Fig. 7).
Whorls	About 5½ whorls (Fig. 3, 4, 5 & 7).	About 4½ to 5 whorls (Fig. 6 & 7).
Sensory tentacles	Visible (Fig. 5).	Not visible (Fig. 6).
Body	Pale grey with two dark stripes (Fig. 5).	Dark grey without stripes (Fig. 6).
Foot	Pale grey with yellowish patches (Fig. 5).	Uniformly pale grey (Fig. 6).

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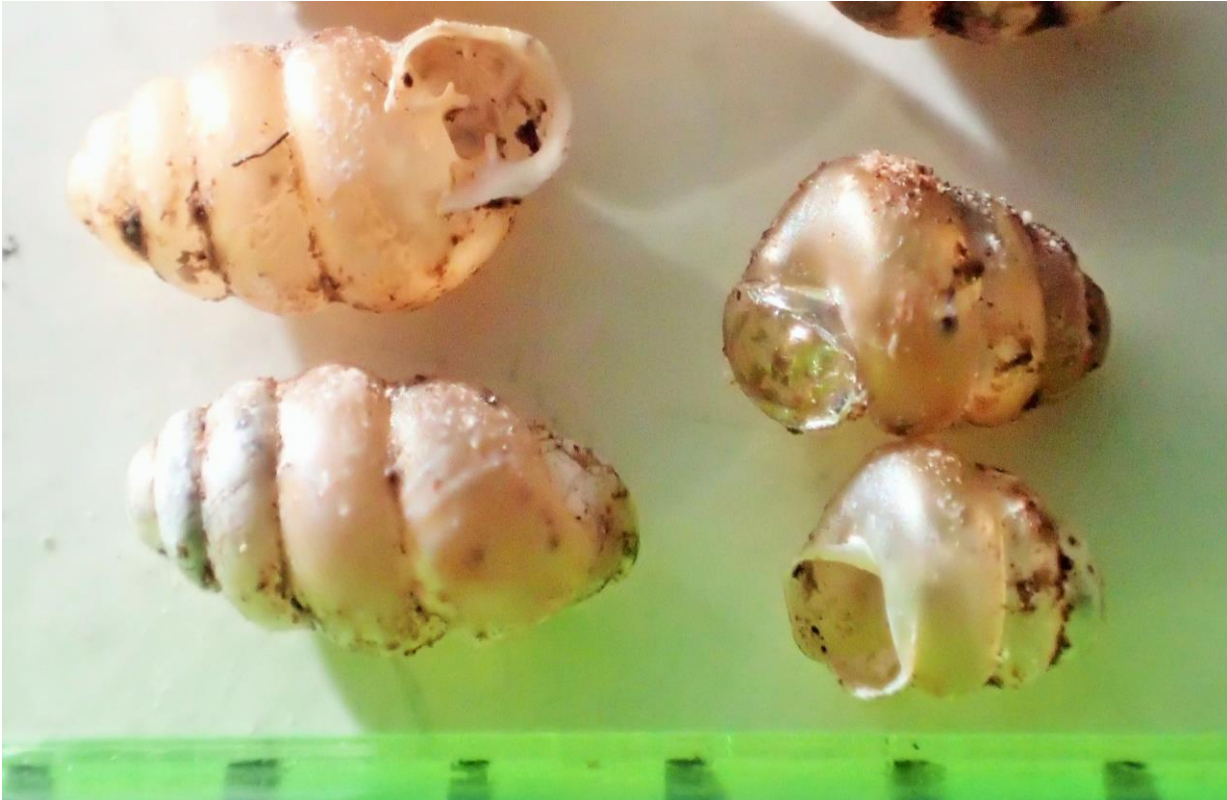


Fig. 3. Dead shells of *Gastrocopta servilis*. The two on the right are juveniles. Note their thin, fragile lips, fewer whorls and absence of aperture teeth compared to the adult shells on the left. Space between black bars is 1mm.



Fig. 4. Aperture views of adult *Gastrocopta servilis* shells showing entire fusion (left) or partial fusion at the base (middle and right) of the parietal-angular tooth and angular tooth.

Photographs by Lau Wing Lup

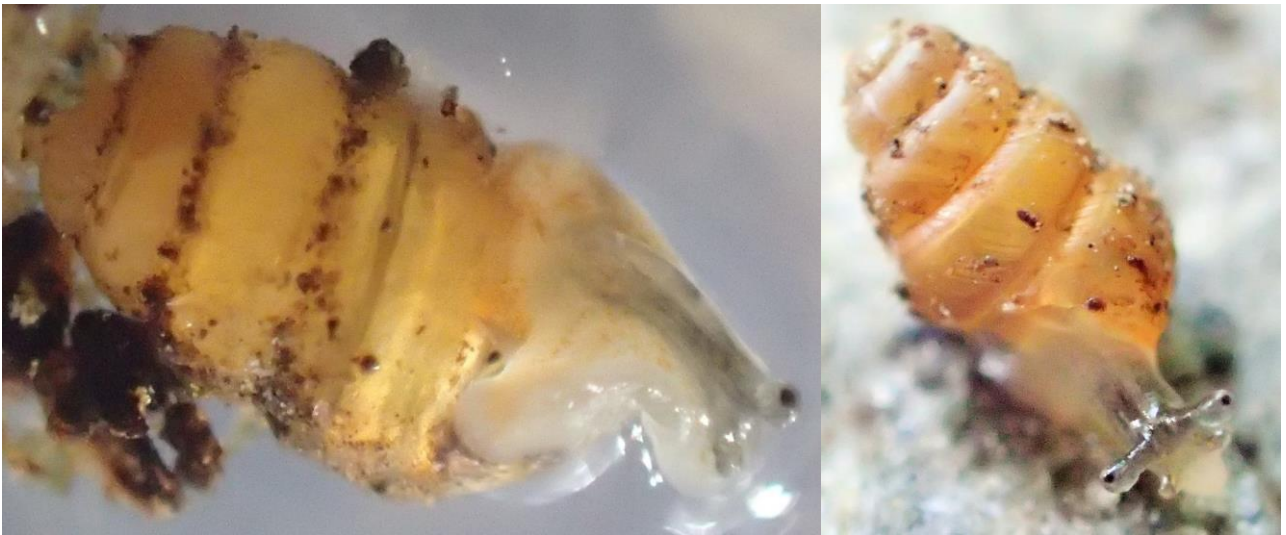


Fig. 5. Ventral (left) and dorsal (right) views of a live *Gastrocopta servilis*. Note yellowish patches on the foot, sensory tentacles, and a pair of dark grey stripes on the back of the animal.



Fig. 6. Lateral view (left) and frontal view (right) of a live *Nesopupa malayana malayana*. Note apparent absence of sensory tentacles and generally dark grey back of the animal.

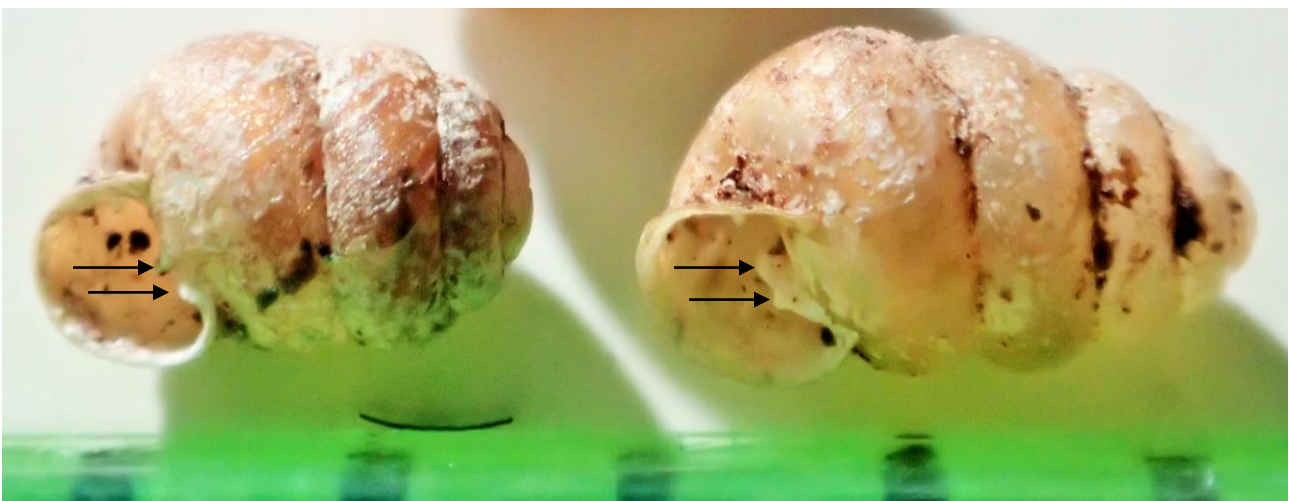


Fig.7. Apertural view of a dead *Nesopupa malayana malayana* (left) shell and a dead *Gastrocopta servilis* shell (right). Note that *Nesopupa malayana malayana* has widely-spaced ribs and separate parieto-angular tooth and angular tooth, while these teeth (indicated with black arrows) are fused in *Gastrocopta servilis*. Space between black bars is 1mm.

Photographs by Lau Wing Lup