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Biodiversity Record: The micro moss snail, *Microcystina muscorum*, in Singapore

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Subjects: Micro moss snail, *Microcystina muscorum* (Mollusca: Gastropoda: Ariophantidae: Macrochlamydinae).

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

Location, date and time: Singapore Island, Victoria Street, Jalan Kubor Muslim Cemetery; 5 June 2021; around 1530 hrs.

Habitat: Urban parkland (Fig. 1).

Observers: Chan Sow-Yan and Lau Wing Lup.

Observation: Four grazing examples were found after a rain shower under the shade of a saga tree (*Adenanthera pavonina*). They were moving about among building rubble such as broken grave stones, bricks, tiles and organic debris such as dead leaves, twigs and saga seeds (Fig. 2). The largest shell was about 1.7 mm in height and 3 mm in width. Other snails found at the cemetery (both live animals and dead shells) include *Allopeas clavulinum*, *Gastrocopta servilis* (Fig. 2), *Gulella bicolor*, *Kaliella barrakporensis*, *Kaliella doliolum*, *Liardetia samoensis*, *Lissachatina fulica*, *Macrochlamys kelantanensis*, *Quantula striata* and *Subulina octona*. Compared to other snails, *Microcystina muscorum* seems to be faster in its motions, and is capable of rapidly retracting into and emerging from its shell.

The shells of *Microcystina muscorum* are minute, thin, shiny, yellowish brown to reddish brown, somewhat transparent, and almost flat to low-conical-shaped with little elevation (Fig. 3). Adult specimens have up to five regularly increasing, moderately convex whorls with shallow sutures and a rounded apex (Fig. 5). Live individuals have a thin rusty-red margin on the sutures (Fig. 9). The shell base is round, and the umbilicus is open and very narrow (Fig. 6). The columella is thick and a little reflected in mature specimens. There is a minute, whitish, tongue-shaped spur projecting towards the umbilical area. The margin of the shell aperture is oblique, broad, sickle-shaped and evenly rounded. The peristome is thin, sharp and not continuous. The shell sculpture consists of spiral and radial lines when viewed under magnification. The spiral striae are wavy and appear as rows of minute, rather deep, narrow and well-lined pits when viewed under tangential lighting (Fig. 8). The radial sculpture consists of inconspicuous to distinct growth lines at irregular intervals.

The living animal has two pairs of tentacles. The upper pair is longer (than the lower pair) and dark grey with a black eye spot at the tip (Figs. 3, 4, 9). The snail's body is greyish and mottled with dirty pink and brownish-red spots (Figs. 3, 4, 7). The foot is light grey with a raised caudal horn at the trailing tip of its foot (Figs. 3, 9). The snail's upper tentacles, caudal horn and area near the caudal horn are a darker shade of grey compared to the rest of the body (Figs. 3, 4, 9).

Remarks: Previous malacological literature (e.g., Ho, 1995; Tan & Chan, 2009; Tan & Woo, 2010; Tan et al., 2012; Lim et al., 2018) has recorded the genus *Microcystina* in Singapore, but the species was hitherto not identified. *Microcystina muscorum* was described by Van Benthem Jutting (1959: 146, pl. 1 figs. 12a, b) based on material from the east coast of Sumatra. The shell specimens in this record match the original species description. The species is herein identified, and living individuals illustrated, for the first time in Singapore. Elsewhere, *Microcystina muscorum* has been recorded from Java and Bali (Vermeulen & Whitten, 1998), Sabah and Peninsular Malaysia (Phung et al., 2017) and Laos (Vermeulen et al., 2015).

Additional specimens of *Microcystina muscorum* were also found among leaf debris along the highest tideline of Sungei Api Api in Pasir Ris Park, on 19 June 2021.

Fig. 1. Grounds of the cemetery with construction rubble and organic debris. (Photograph by: Lau Wing Lup).

Fig. 2. Two *Microcystina muscorum* (right) on a dead leaf next to a group of *Gastrocopta servilis* snails (left). (Photograph by: Lau Wing Lup).

Fig. 3. Dorso-lateral view of a crawling *Microcystina muscorum*. Note low conical shell outline and raised caudal horn (indicated by arrow). (Photograph by: Lau Wing Lup).

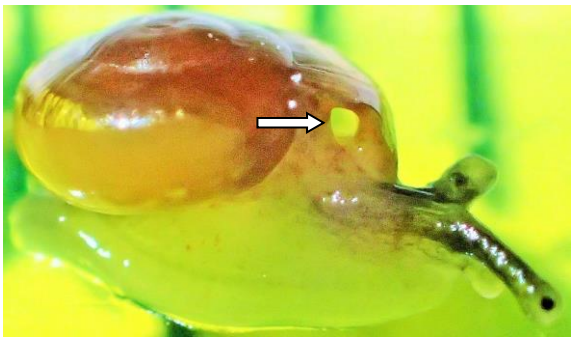

Fig. 4. Lateral view of *Microcystina muscorum* facing the aperture. Note pneumostome (indicated by arrow). (Photograph by: Lau Wing Lup).

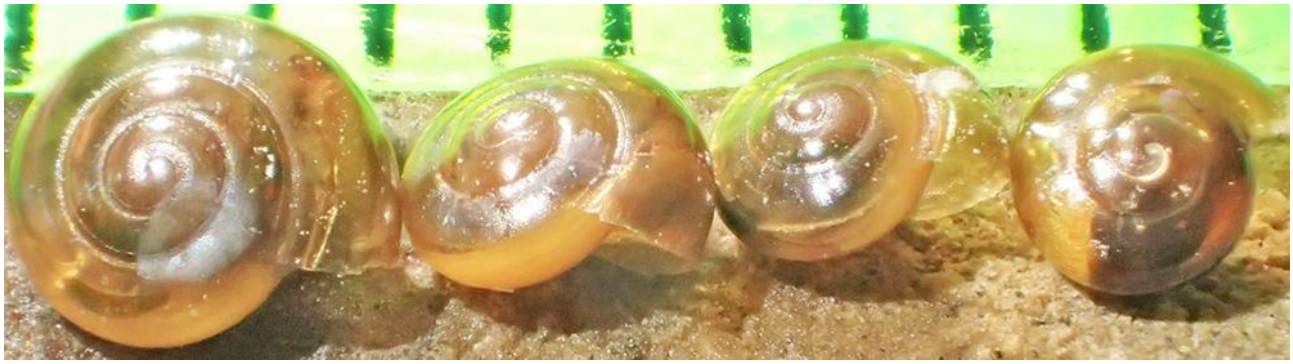

Fig. 5. Apical view of *Microcystina muscorum* shells. Space between black bars = 1 mm. (Photograph by: Lau Wing Lup).

Fig. 6. Umbilical view of *Microcystina muscorum* shells with animals fully retracted. Blackish tentacles and pinkish flesh are visible through the shells. (Photograph by: Lau Wing Lup).

Fig. 7. Umbilical view of *Microcystina muscorum* shells with the animals' feet exposed. (Photograph by: Lau Wing Lup).

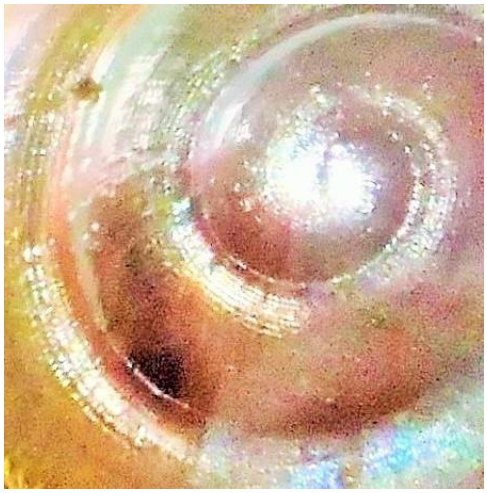

Fig. 8. Magnified apical view of a *Microcystina muscorum* snail shell showing the minute and narrow pits as white specks under tangential lighting. (Photograph by: Lau Wing Lup).

Fig. 9. Dorsal view of a live *Microcystina muscorum* snail showing the dark upper tentacles and narrow reddish-brown lines on the shell sutures. Space between black bars = 1 mm. (Photograph by: Lau Wing Lup)

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