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Biodiversity Record: Climbing glass-snails, *Kaliella scandens*, in Singapore

Chan Sow-Yan* & **Lau** Wing Lup

Email: chansowyan@gmail.com (*corresponding author), suiseki1984@yahoo.com.sg

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Subjects: Climbing glass-snail, *Kaliella scandens* (Mollusca: Gastropoda: Chronidae).

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

Locations, dates and times: Four locations on Singapore Island —
1. Windsor Nature Park, 17 May 2017, around 1500 hrs.
2. Toa Payoh Sensory Park at Toa Payoh Lorong 5, 23 May 2020, around 1630 hrs.
3. Buangkok Park Connector at Hougang Avenue 10, 18 June 2017, around 1300 hrs.
4. Commonwealth Close, 6 June 2020, around 1100 hrs.

Habitat: Urban parkland.

Observer: Lau Wing Lup.

Observations:
1. At least ten individuals were found about 1.7 m up on a tree roosting on the underside of arrowhead vine (*Syngonium podophyllum*) leaves (Fig. 1) alongside examples of the semi slug, *Helicarion perfragilis*.
2. Two individuals found roosting on the mossy wall of a white concrete planter box (Figs. 2 & 3), together with toothless pupa snails (*Pupisoma dioscoricola*) (see Chan & Lau, 2020).
3. About seven examples observed on the trunks of red lip trees (*Syzygium myrtifolium*) (Fig. 4) during a drizzle. They were crawling on damp tree bark, apparently grazing on tree-dwelling lichen (Figs. 5 & 6), in close proximity with many striated awl snails (*Striosubulina striatella*).
4. At the bottom of a chain link fence, seven individuals were seen after rain, crawling on moss on the concrete barrier (Fig. 7) together with cask hive snails (*Liardetia doliolum*) (Figs. 8 & 9). Two predatory snails, the two-toned gulella (*Gulella bicolor*), were noted in the vicinity (see Lau & Chan, 2020).

All examples of *Kaliella scandens* observed were no larger than 2 mm shell diameter.

Fig.1. Leaves and inflorescences of *Syngonium podophyllum* at Windsor Nature Park where *Kaliella scandens* were found roosting on the underside of leaves. Fig. 2. Moss-covered wall of planter box wall at Toa Payoh where two *Kaliella scandens* snails were found. Fig. 3. In-situ top-down view of a roosting *Kaliella scandens* on the planter box (Photographs by: Lau Wing Lup).

Fig. 4. Several *Kaliella scandens* were found on the trunk of *Syzygium myrtifolium* during an afternoon drizzle along the Buangkok Park Connector. Fig. 5. In-situ dorsal view of a young *Kaliella scandens* on the tree trunk. Note its slightly angular peripheral shell and whitish caudal horn. Fig. 6. In-situ dorso-lateral view of another *Kaliella scandens*. Note the dark grey tentacles, black eyes and light greyish white foot and irregular growth lines on its shell (Photographs by: Lau Wing Lup).

Remarks: *Kaliella scandens* was described by Cox (1872, as *Helix scandens*) from Port Macquarie on the east coast of Australia. This is a widespread species found across the Asia-Pacific region with several synonyms: *Sitala dulcis* at Gomantong Hill in Sabah, Malaysia (Smith, 1895); *Sitala pudica* at Cape Byron in New South Wales, Australia (Gude, 1905); and *Kaliella indifferens* in Java (see Boettger, 1891). In Singapore, it has been referred to as *Liardetia indifferens* (see Ho, 1995; Tan & Woo, 2010; Tan et al., 2012) and *Liardetia scandens* (see Lau & Chan, 2020). *Kaliella scandens* is highly adaptable, being able to live on a wide variety of plants and habitats. Being a synanthropic species, it is challenging to ascertain its original range, and it is not known if the snail is native to Singapore, or an established alien.

The living animal of *Kaliella scandens* has hitherto, to the authors' knowledge, not been illustrated in literature. Figures 5 & 6 could be the first images of the live animal in publication.

Due to its small size, cryptic habits and absence of distinctive markings, *Kaliella scandens* is often overlooked. It can easily be confused with other similar-looking and common local snails, particularly the confamilial *Liardetia doliolum*, due to similar shell shape and dark greyish tentacles (see Lim et al., 2018), as well as the pinkish patch on their soft tissue. The shell of *Kaliella scandens* differs from those of *Liardetia doliolum* by the presence of fine spiral threads, and absence of, or indistinct, radial ribs at the shell's umbilical region (Foon et al., 2017). Additionally, *Liardetia doliolum* has much rougher radial sculpture than *Kaliella scandens* (see Figs. 8 & 9).

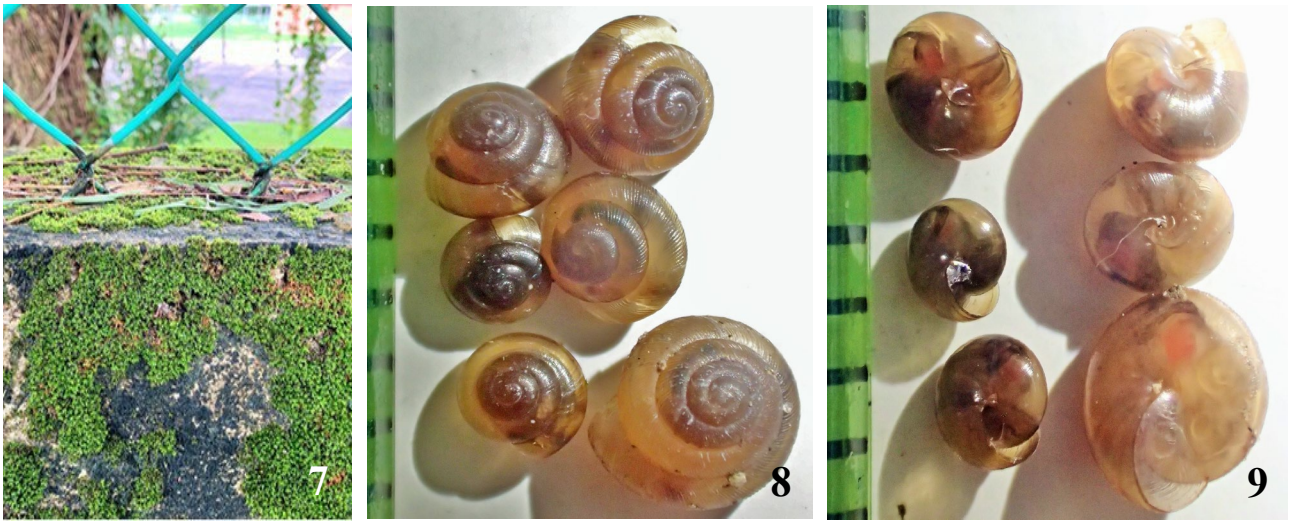

Fig. 7. Concrete barrier of chain link fence at Commonwealth Close where *Kaliella scandens* occurs alongside *Liardetia doliolum*. Fig 8. Dorsal view of live *Kaliella scandens* (smaller three snails on left) and *Liardetia doliolum* (larger three snails on right). Note that *Liardetia doliolum* has comparatively coarser riblets. Fig 9. Ventral view of live *Kaliella scandens* (smaller three snails on left) and *Liardetia doliolum* (larger three snails on right). Space between black bars is 1 mm (Photographs by: Lau Wing Lup).

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