

The pond snail, *Gabbia wykoffi*, in Singapore

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Subjects: Wykoff's pond snail, *Gabbia wykoffi* (Mollusca: Gastropoda: Bithyniidae).

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

Locations, dates and times: Singapore Island, pond near Buangkok Green Medical Park; 30 May 2019; around 1730 hrs.

Habitat: Freshwater mud pond with grasses along the edges (Fig. 1) in urban parkland setting.

Observers: Chan Sow-Yan and Lau Wing Lup.

Observation: At least nine live snails of various growth stages were found among aquatic vegetation and on the undersides of submerged dead leaves along the edges of the pond (Fig. 2-6).

Remarks: *Gabbia wykoffi* was first reported in Singapore as by Chan (1996 as *Bithynia* sp.). As with most species of freshwater molluscs in Singapore, *Gabbia wykoffi* is regarded as a non-native cryptogenic species there due to its exclusive association with human-disturbed habitats (Tan et al, 2012; Ng et al, 2016).

Since September 1994, the authors have recorded *Gabbia wykoffi* on Singapore Island at the Singapore Botanic Gardens, Venus Drive off Upper Thomson Road, Eco-pond at Bishan Park II, Lower Seletar Reservoir off Yishun Avenue 1, Pasir Ris Park and Pasir Ris Farmway 3.

Singapore specimens of *Gabbia wykoffi* match the original description of Brandt (1968). The largest shells are about 5 mm. The shell is squat and ovate-conoidal in shape. It has an inflated body whorl measuring more than 4/5 of shell height, is translucent and coloured straw-yellow to dark olive-yellow. The shell's spire-apex is usually eroded (Fig. 5) and tend to appear rotund (Tan et al, 2012). The shell surface appears somewhat glossy and reticulated with fine growth lines and delicate spiral lines (Fig. 5). The umbilicus is completely closed (Fig. 4). The adult shell has about four convex whorls with deep sutures. The ovate shell aperture is about 3/4 the height of the body whorl, and angled at the top. The operculum is rigid, calcareous, ovate with a paucispiral, centrally placed nucleus. It is tightly fitted, inward-covering at the rim of the aperture, preventing the animal from retracting its operculum further into the aperture (Fig. 4). The animal has a greyish foot and snout with fine yellow spots on its snout, head and back. The eye spots are black. The tentacles are long and grey with pale yellow peripheries (Fig. 3).

Gabbia wykoffi is native to Thailand where it inhabits freshwater swamps and ricefields. It is distributed from the Province of Phetchaburi and Kanchanaburi, in paddy fields through Central Thailand to Nakon Ratchasima and Prachinburi in the east, and Chiang Mai in the north (Brandt, 1968). It is known from the borders with Cambodia and Myanmar, and is expected to occur in those countries (Brandt, 1968).

Bithyniids have medical significance as these snails are the first intermediate host of the liver fluke, *Opisthorchis viverrini*. Infections in humans occur when freshwater fishes are consumed raw (Chanawong & Waikagul, 1991). Hence, it is important to positively identify the species of host snail in order to understand disease epidemiology. Bithyniids are very similar morphologically, especially in their early life stages, resulting in frequent misidentifications. DNA barcoding is a better method in detecting cryptic species. The discovery of identical barcode sequences in *Gabbia pygmaea* and one northern Thailand population of *Gabbia wykoffi* may indicate mis-identification, introgressive hybridisation, incomplete lineage sorting, overlooked species, or previously unrecognised synonymy (Kulsantiwong et al, 2013).



Fig. 1. Pond near Buangkok Green Medical Park where *Gabbia wykoffi* specimens were found.



Fig. 2. A live *Gabbia wykoffi* snail (in red circle) in-situ on a dead leaf with a juvenile apple snail *Pomacea* sp. (in green circle) with which it can easily be confused.



Fig. 3. A pair of live *Gabbia wykoffi* snails, ex-situ. Note the animals with greyish, yellow-speckled feet, black eyes, grey tentacles, yellow-speckled dark grey snout, and translucent shells.



Fig.4. Apertural views of two live specimens with slightly different colour, showing the closed umbilici, rigid-calcareous paucispiral opercula, dark-brown aperture rims. On the right picture, note the fine growth lines (black arrows) and finer spiral lines (within red square) on the shell's surface. Space between black bars = 1 mm.

Photographs by Lau Wing Lup



Fig. 5. Dorso-lateral views (left) of two live snails from the same pond showing the different degrees of erosion of the shell apices (black arrows) and reticulate sculpture of both shells (in red circles). Note the glossy convex whorls and deep sutures of the shells. Apical views (right) of two snails showing the different degrees of erosion of the shell apices (black arrows) which can confuse the general outline. Space between black bars = 1 mm.

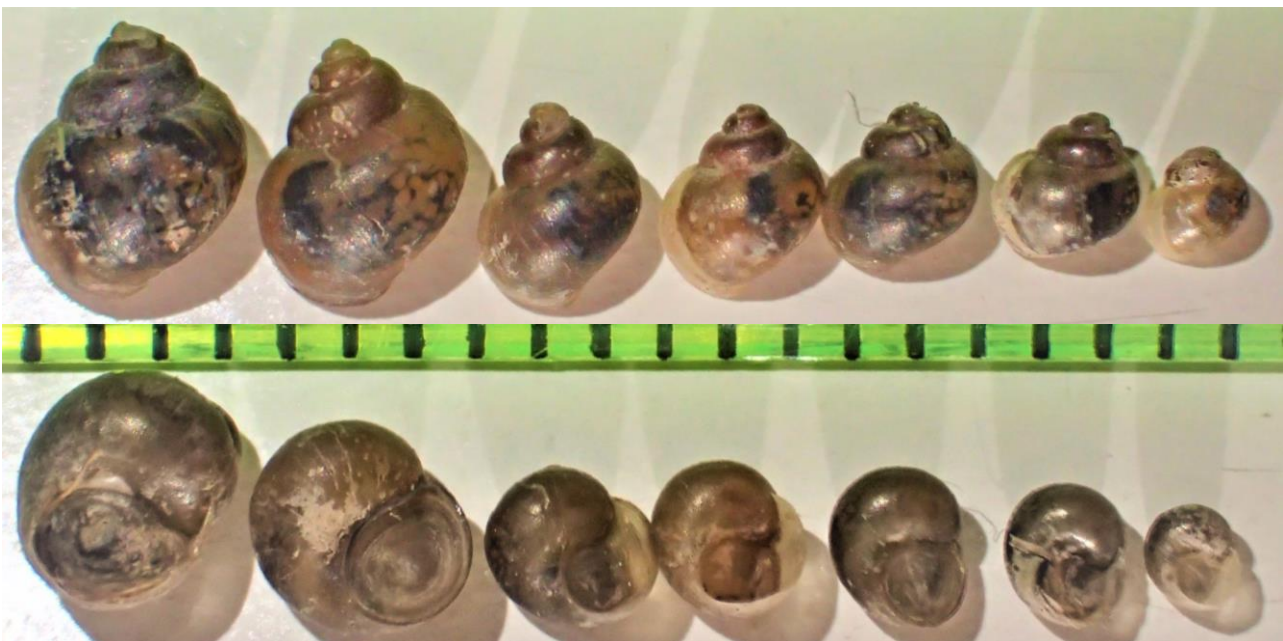


Fig. 6. Growth series of seven *Gabbia wykoffi* snails from the same pond. The upper row shows the dorsal views, while the lower row shows the apertural views. Space between black bars = 1 mm.

Photographs by Lau Wing Lup

References:

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