

Biodiversity Record: New Singapore record of the estuarine snail, *Wakauraia fukudai*

Chan Sow-Yan* & Lau Wing Lup

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

Recommended citation. Chan S-Y & Lau WL (2024) Biodiversity Record: New Singapore record of the estuarine snail, *Wakauraia fukudai*. Nature in Singapore, 17: e2024062. DOI: 10.26107/NIS-2024-0062

Subjects: Fukuda's iravadiid snail, *Wakauraia fukudai* (Mollusca: Gastropoda: Iravadiidae).

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

Location, date and time: Singapore Island, Pasir Ris Park, Sungei Api Api; 17 February 2024; around 1105 hrs.

Habitat: Estuarine. Intertidal zone along mangrove-fringed muddy river bank. At low tide.

Observers: Lau Wing Lup and Chan Sow-Yan.

Observation: Three live snails of about 3.5 mm in shell height, were found together, hardly moving, on the shell of a freshly dead bivalve *Geloina* sp. partially buried in the mud (Fig. 1). Two of the snails were dislodged and fell on the mud (Fig. 2). Along the same riverbank, the confamilial *Iravadia quadrina* and *Iravadia bombayana*, were also present.

The shell of *Wakauraia fukudai* is thin, transparent and generally whitish when devoid of its smooth brown periostracum. It is elongately ovate or turreted with up to four regularly increasing convex whorls, separated by an indented suture (Fig. 5). The spire is convexly sided with a blunt apex. The micro sculpture consists of irregularly spaced delicate spiral ridges crossed by weak axial lines (Fig. 4). The umbilicus is closed. The aperture is about one third the entire shell height. The aperture is ellipsoid and its outer lip curved, prosocline, thin and fragile (Fig. 6). The shell with its periostracum consists of a pale beige background with darker reddish or chestnut brown sub-sutural spiral bands (Figs. 5 & 6). The soft tissue is partially brownish red. The head-foot and cephalic tentacles are semi-transparent white with opaque white and bright yellow speckles on the sides of the neck and between the eyes (Fig. 3).

Remarks: The morphological characters of the featured snails match the original description of *Wakauraia fukudai* by Golding (2014) from the upper shore area of mangrove swamps at Tin Can Bay in Queensland, Australia. The species was also found at several coastal localities in Queensland between Great Sandy Strait and Cooktown. It is considered rare, being found on damp or submerged leaf litter in small pools or under logs, and seems to be associated with sandy substrate on the mid to high shore in estuarine mangrove forests (Golding, 2014).

At Sungei Api Api, *Wakauraia fukudai* occurs sympatrically with the confamilial *Iravadia bombayana* and *Iravadia quadrina*. It bears a superficial resemblance to *Iravadia bombayana*, but the shell of the latter is larger and taller, has thicker spiral ridges, and long hair like periostracum on its sutures (see Fig. 7). The shell of *Iravadia quadrina* is similar in size to *Wakauraia fukudai*, but the shape and sculpture are very distinct (see Fig. 8).

The genus *Wakauraia* and the species *Wakauraia fukudai* are herein recorded for the first time in Singapore (see Tan & Woo, 2010). This record also represents the first for the species outside Australia, and a significant westward extension of its range. Notably, the substrate in the present record is muddy, rather than sandy reported for the Australian localities.

Literature cited:

- Golding RE (2014) Molecular phylogeny and systematics of Australian 'Iravadiidae' (Caenogastropoda: Truncatelloidea). Molluscan Research, 34: 222–257.
- Tan SK & Woo HPM (2010) A Preliminary Checklist of the Molluscs of Singapore. Raffles Museum of Biodiversity Research, National University of Singapore, 78 pp. Uploaded 2 June 2010. https://lkenhm.nus.edu.sg/wp-content/uploads/sites/10/app/uploads/2017/04/preliminary_checklist_molluscs_singapore.pdf (Accessed 28 June 2024)



Fig. 1. One of the three live *Wakauraia fukudai* in-situ on the external shell of a freshly dead and articulate *Geloina*. Fig. 2. Two live *Wakauraia fukudai* dislodged. Fig. 3. Dorsal view of *Wakauraia fukudai* emerging from its shell and grazing on mud. Fig. 4. Lateral view of the spire with apex pointing to the left, showing the dark spiral bands, and micro sculpture of irregularly spaced delicate spiral ridges crossed by weak axial lines. Fig. 5. Dorsal lateral view of *Wakauraia fukudai* shell. Fig. 6. Aperture view of *Wakauraia fukudai* shell. Fig. 7. Aperture view of an *Iravadia bombayana* shell (for comparison). Fig. 8. Aperture view of an *Iravadia quadrina* shell (for comparison) (Photographs by: Lau Wing Lup).