

Biodiversity Record: New record of the mud whelk, *Nassarius cf. arewarensis*, in Singapore

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Subject: Aare-Ware mud whelk, *Nassarius cf. arewarensis* (Mollusca: Gastropoda: Nassariidae).

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

Location, date and time: Singapore Island, Johore Strait; Changi Beach Park; 2 February 2022, around 1730 hrs.

Habitat: Estuarine. On the shore of a mangrove-fringed creek at low tide (Fig. 1).

Observers: Chan Sow-Yan, Lau Wing Lup, Calvin Jiah Jay Leow and Tan Siong Kiat.

Observation: A living adult specimen of about 11 mm shell height (Figs. 2–7) was found on mud in the shade of a mangrove tree, on the underside of a dead sea hibiscus (*Talipariti tiliaceum*) leaf. The bluish black shell is covered with brown fibrous periostracum, and the operculum is oval and light yellow (Figs. 3 & 5). The protoconch is black. When the snail retracted deep into its shell, the short and wide siphonal canal and aperture appears bluish, while the shell's interior appears reddish brown (Fig. 6). The flesh is yellowish mottled with grey (Fig. 4).

Remarks: *Nassarius cf. arewarensis* is herein reported as a new record for Singapore (see Tan & Woo, 2010). In-situ photographs of the living snail with its emerging flesh and intact periostracum, are probably illustrated for the first time in the malacological literature. The authors have, since 1994, encountered several beached shells of *Nassarius cf. arewarensis* along East Coast Park, Pasir Ris Park and Changi Beach. They range from 8.9 to 11.8 mm shell height (see Fig. 8 for two of these examples). In Singapore, this snail is distinguished from other mangrove nassarids by its small size and unique apertural features.

Shells without periostracum are predominantly brown. The bluish white colour of the aperture tends to fade (see Fig. 8). This shell has a tall spire and a relatively small, narrow and oval aperture. About two of its early whorls are sculptured with numerous axial ribs that turn into growth lines around the penultimate and last whorls, and are crossed by spiral lines. The outer lip is thickened with four lirae within, of which the anterior most is most pronounced. The outer shell margin is smooth. Its columellar is thickened and there is a denticle within its aperture. Another denticle is present on the parietal region. The anal canal is shallow and wide with another small anal denticle at its entrance, at the outer lip margin. A layer of bluish white callus extends from the siphonal canal to the anal canal. The side of the siphonal canal is marked with spiral grooves.

Although the shells from Singapore strongly resemble the original description and photographs of *Nassarius arewarensis* (see Nerurkar et al., 2020), the authors are unable to confirm its identity because the soft tissues of *Nassarius arewarensis* have not been described nor illustrated. The species is said to be abundant in its type locality in Aare-Ware Creek, Ratnagiri, Maharashtra, on the west coast of India, occurring intertidally to a depth of one metre (Nerurkar et al., 2020). However, it is yet to be recorded in other parts of India and the surrounding regions.

Literature cited:

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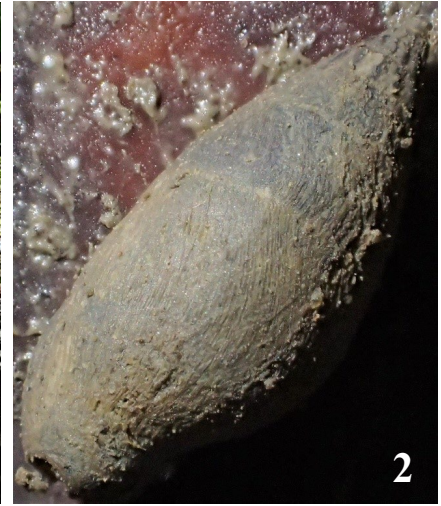


Fig. 1. Habitat where the mud whelk was discovered. Fig. 2. A live *Nassarius* cf. *arewarensis* in-situ on the surface of a dead leaf, exposed during low tide (Photographs by: Lau Wing Lup).



Fig. 3. *Nassarius* cf. *arewarensis* shell covered in periostracum. The operculum (arrowed) is partially covered in mud. Fig. 4. Siphonal view with parts of the snail's yellow and mottled flesh exposed. (Photographs by: Lau Wing Lup)



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Fig. 5 Apertural view of *Nassarius* cf. *arewarensis* shell. Note yellowish operculum partially covered in mud and debris. Fig. 6. Apertural view of the same shell with the animal retracted further into the shell. Fig. 7. Dorsal view of the same shell. (Photographs by: Lau Wing Lup) Fig. 8. Shells of *Nassarius* cf. *arewarensis*. The example on the left, 9 mm in shell height, was found in East Coast Park; the one on the right, 11 mm in shell height, was found in Changi Beach Park. (Photograph by: Tan Siong Kiat)