

Recent sightings of two species of sundial shells at eastern Singapore

Subjects:

Partridge sundial shell, *Architectonica perdix* (Mollusca: Gastropoda: Architectonicoidea: Architectonicidae);
Clear sundial shell, *Architectonica perspectiva* (Mollusca: Gastropoda: Architectonicoidea: Architectonicidae).

Subjects identified by: Tan Siong Kiat & Chan Sow-Yan.

Location, date and time: Singapore Island, Tanah Merah; 27 May 2017; and Changi, 26 June 2017; early morning.

Habitat: Estuarine and marine. Sand and seagrass/seaweed, muddy sand flats, during low tides.

Observers: Contributors.

Observation: Many individuals of the partridge sundial shell, *Architectonica perdix* (Fig. 1 & 2), and clear sundial shell, *Architectonica perspectiva* (Fig. 3-5), were encountered on the shores at Tanah Merah. Only the clear sundial shell was observed at Changi. Most of them were exposed on the sandy or muddy sand substrate and were inactive. Perhaps they became immobilised because they were dried out by the receding tide.

Several partridge sundials (Fig. 1 & 2) and a couple of clear sundials, all with shell diameters between 20 and 25 mm, were noted at Tanah Merah. Some of the partridge sundials were found in pairs and presumed to be mating pairs, but the act was not observed. At Changi, a number of clear sundials, averaging about 40 mm in shell diameter (Fig. 3 & 4), were seen laying eggs, or with laid egg masses near their shells (Fig. 5). The sundials were on silty sand substrate among sea grasses and seaweeds. None of them were observed to be feeding or near potential prey items.



Fig. 1. *Architectonica perdix* in situ, on sand substrate at Tanah Merah on 27 May 2017. The snails were presumed to have been mating before they were seen.



Fig. 2. *Architectonica perdix* ex situ, from Tanah Merah on 27 May 2017. Note differences in the live snail and shell pattern from *A. perspectiva*.

Photographs by Chan Sow-Yan

Remarks: Members of the family Architectonidae are carnivores that feed on coelenterates, such as actinarian anemones and zoanths (Bieler, 1993; Poutiers, 1998; Valentine et al., 2002). Architectonids may be gonochoristic, or protandric to simultaneous hermaphrodites (Bieler, 1993). These snails are apparently consumed by fishermen, and the shells are used for shell craft (Poutiers, 1998).



Fig. 3. *Architectonica perspectiva* in situ, crawling with its foot extended on silty sand at Changi on 26 June 2017. Barnacles on the shell indicate that it is a surface dweller. Photograph by Chan Sow-Yan



Fig. 4. *Architectonica perspectiva* at Changi on 26 June 2017. Note that the striped tentacles appear to match the dark spiral band pattern on its shell. Photograph by Tan Heok Hui



Fig. 5. Dorsal view of *Architectonica perspectiva* at Changi on 26 June 2017, on sand substrate among seagrass, with its gelatinous egg mass on the left. Photograph by Lee Bee Yan.

Three species of *Architectonica* have been hitherto recorded from Singapore, namely *A. maxima*, *A. perdix* and *A. perspectiva* (e.g., Chuang, 1973; Way & Purchon, 1981; Sanpanich & Tan, 2016). Chuang (1961) also mentioned *Architectonica perdix* as recorded from Malaya but it is uncertain if the record was from Singapore. Historical locations include ‘southeast part of Singapore’ (Chuang, 1973: 188) and ‘Bedok’ (Way & Purchon, 1981: 315), and Telok Kurau and Siglap (data from specimens deposited in the Zoological Reference Collection [ZRC] of the Lee Kong Chian Natural History Museum at the National University of Singapore). These areas have since been reclaimed, and may be the cause of their perceived rarity in Singapore (e.g., Chou & Tan, 2008). More recent records in the ZRC are from the southern islands, and Chek Jawa at Pulau Ubin.

The recent occurrence of numerous individuals of the two species of *Architectonica* on the main island of Singapore is quite exceptional as sundials were rarely encountered alive, and most prior reports are from the southern islands (e.g., Ng et al., 2011: 473) and Pulau Ubin. Both sundial species here reported are known to inhabit sublittoral depths (e.g. Abbott, 1991; Bieler, 1993). Bieler (1993) lists records of the partridge sundial to be between 10 and 60 m depth, with live records from 15-50 m, while depth records of the clear sundial are between 10 and 120 m, with live records from 10-65 m. The finds of these two species in the intertidal area are, therefore, noteworthy.

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