

Biodiversity Record: Additions to the records of bivalves of Pulau Satumu

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Subjects: *Anadara subrubra* (Mollusca: Bivalvia: Arcidae), Fig. 1A, B;

Vasticardium pectiniforme (Mollusca: Bivalvia: Cardiidae), Fig. 1C, D;

Isognomon isognomonum (Mollusca: Bivalvia: Isognomonidae), Fig. 1E, F;

Lutraria australis (Mollusca: Bivalvia: Mactridae), Fig. 1G, H;

Pinctada chemnitzii (Mollusca: Bivalvia: Margaritidae), Fig. 1I, J;

Pseudochama retroversa (Mollusca: Bivalvia: Chamidae), Fig. 2A, B;

Modiolus auriculatus (Mollusca: Bivalvia: Modiolidae), Fig. 2C, D;

Booneostrea subucula (Mollusca: Bivalvia: Ostreidae), Fig. 2E, F;

Electromya alacorvi (Mollusca: Bivalvia: Vulsellidae), Fig. 2G, H);

Spondylus nicobaricus (Mollusca: Bivalvia: Spondylidae, Fig. 3A, B;

Spondylus sinensis (Mollusca: Bivalvia: Spondylidae), Fig. 3C, D;

Periglypta lacerata (Mollusca: Bivalvia: Veneridae), Fig. 3E, F

Subjects identified by: Tan Siong Kiat.

Location and dates: Singapore Strait, Pulau Satumu (Raffles Lighthouse); see Table 1.

Habitat: Marine.

Observer: Tan Siong Kiat. Based on material deposited in the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum (LKCNHM), at the National University of Singapore.

Observations: Many additional specimens from Pulau Satumu have been identified and incorporated into the ZRC since the compilation of its malacofauna by Tan & Low (2022). A selection of twelve species were examined (Table 1) and are treated in this note. Most were derived from the Chuang Shou Hwa collection (ex. coll. SH Chuang herein) recently acquired by the LKCNHM (see Yong & Ho, 2024).

Remarks: Eleven of the twelve species featured are new to the malacofaunal records of Pulau Satumu. This brings the total number of recorded species to 344, or 339 if the ones regarded to be likely erroneous are excluded (see Tan & Low, 2022; Tan & Low, 2025).

Anadara subrubra (Figs. 1A, B) was usually identified as *Anadara antiquata* or *Anadara secticostata* in the literature (e.g., Chuang, 1973; Tan & Woo, 2010). Following Lutaenko (2021), most Singapore material identified as *Anadara antiquata* in the ZRC have been redetermined to be this species instead. *Anadara secticostata* was clarified to be an Atlantic species by Huber (2010: 567).

This lot of *Vasticardium pectiniforme* (Figs. 1C, D) examined is determined with some doubt. The shells lack black spots that are often present on the periostracum of the species. There is a possibility that they may turn out to be the closely related *Vasticardium subrugosum* which can be difficult to separate from this species (see also ter Poorten, 2009). That species is devoid of black spots, but the shells are usually quite distinctly yellow.

Isognomon isognomonum (Figs. 1E, F) was listed in Tan & Low (2022) based on records in the literature, thus it was not figured. A representative specimen is shown for the purpose of illustrating the species from Pulau Satumu.

Lutraria australis (Figs. 1G, H) is sometimes treated as a synonym of *Lutraria rhynchaena*. Huber's (2010) recognition of *Lutraria australis* as a tropical Indo-West Pacific species and *Lutraria rhynchaena* as a temperate Australian species

is followed here. Published Singapore records include Pulau Pawai (Morris & Purchon, 1981, as *Lutraria rhynchaena*), and Pulau Semakau (Tan & Yeo, 2010).

Table 1. Details of the Pulau Satumu material examined and included in this study. SL = shell length.

Species	Material examined
<i>Anadara subrubra</i>	1 paired example, SL 70.2 mm (ZRC.MOL.31722 [ex coll. SH Chuang]), coll. May 1962.
<i>Vasticardium pectiniforme</i>	4 paired examples, SL 27.6–36.3 mm (ZRC.MOL.31648 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Isognomon isognomon</i>	1 paired example, SL 96.9 mm (ZRC.MOL.31650 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Lutraria australis</i>	1 valve, SL 80.3 mm (ZRC.MOL.31735 [ex coll. SH Chuang]), coll. May 1962.
<i>Pinctada chemnitzii</i>	1 paired example, SL 63.2 mm (ZRC.MOL.10249 [ex coll. CF Lim]), coll. 1978.
<i>Pseudochama retroversa</i>	1 paired example, SL 12.6 mm (ZRC.MOL.25557), coll. 15–17 November 2020.
<i>Modiolus auriculatus</i>	2 paired examples, SL 32.0–45.3 mm (ZRC.MOL.31656 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Booneostrea subucula</i>	1 paired example, SL 17.6 mm (ZRC.MOL.31657 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Electromya alacorvi</i>	3 paired examples, SL 16.5–24.9 mm (ZRC.MOL.31664 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Spondylus nicobaricus</i>	1 paired example, SL 73.9 mm (ZRC.MOL.31660 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Spondylus sinensis</i>	1 paired example, SL 86.6 mm (ZRC.MOL.31661 [ex coll. SH Chuang]), coll. 3 May 1962.
<i>Periglypta lacerata</i>	1 paired example, SL 72.0 mm (ZRC.MOL.31663 [ex coll. SH Chuang]), coll. 3 May 1962.

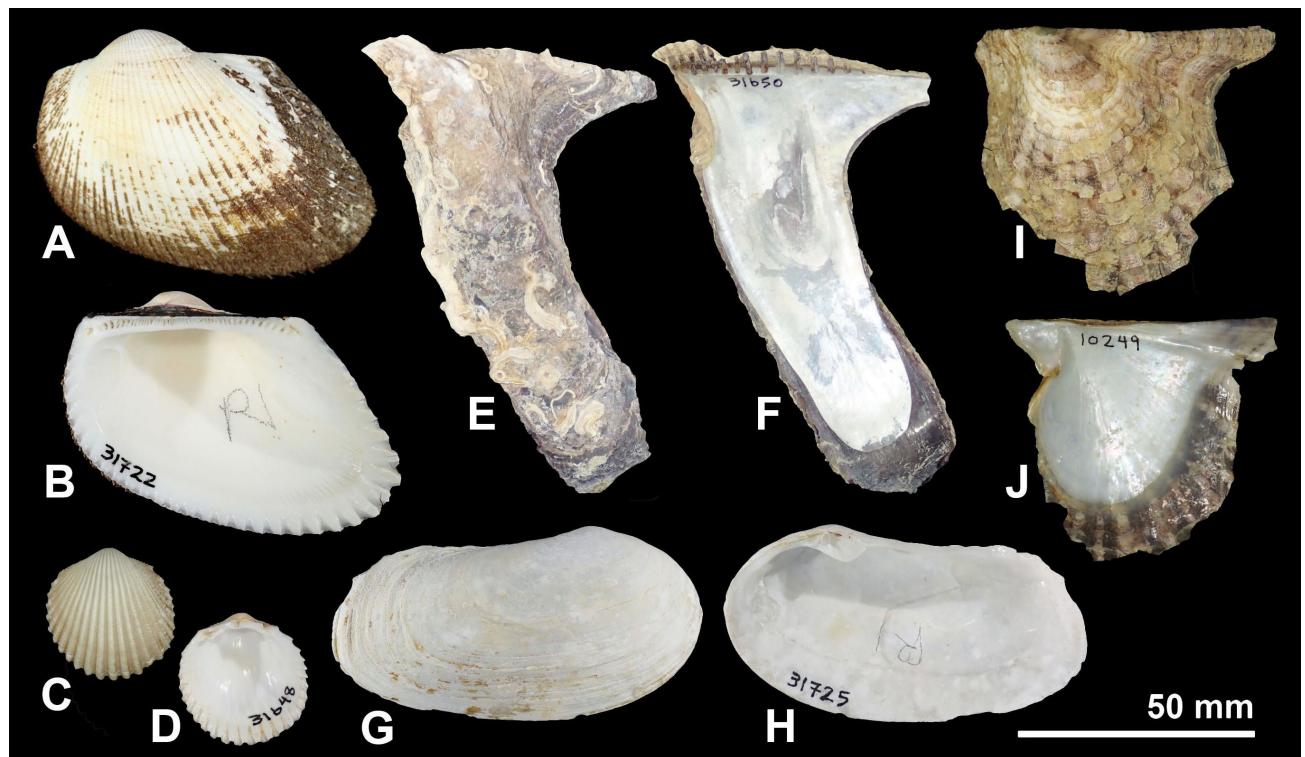


Fig. 1. A, B, *Anadara subrubra* (ZRC.MOL.31722). C, D, *Vasticardium pectiniforme* (ZRC.MOL.31648). E, F, *Isognomon isognomon* (ZRC.MOL.31650). G, H, *Lutraria rhynchaena* (ZRC.MOL.31725). I, J, *Pinctada chemnitzii* (ZRC.MOL.10249). Exterior (A, C, E, G, I) and interior (B, D, F, H, J) views of the valves; *Lutraria australis* (G, H) are views of the same valve (Photographs by: Tan Siong Kiat).

The record of *Pinctada chemnitzii* (Figs. 1I, J) is from the Lim Chuan Fong collection mentioned in some detail in Tan & Low (2022) and was inadvertently overlooked in that work. Although this species can be easily recognized by its large and prominent posterior ear, its presence in Singapore was largely overlooked until quite recently (Tan, 2023).

Pseudochama retroversa (Figs. 2A, B) was unintentionally omitted in Tan & Low (2022). Although this is technically the first published record of the species from Singapore (e.g., Tan & Woo, 2010), photographs of a specimen with extended siphons are figured online (see Biodiversity of Singapore, 2025).

Modiolus auriculatus (Figs. 2C, D) is scarcely mentioned from Singapore since it was first recorded by Chuang (1973). Several species are very similar looking, and thus easily confused. As an example, the specimens that formed the basis of *Modiolus cf. micropterus* in Tan & Yeo (2010) deposited in the ZRC have since been redetermined to be this species.

This record of *Booneostrea subucula* (Figs. 2E, F) is apparently the first for Singapore (see e.g., Tan & Woo, 2010). Elsewhere in Singapore, this species has been found, usually cemented on the underside of rocks, on the reef flats at Pulau Semakau and Sentosa (Tan SK, unpub. data).

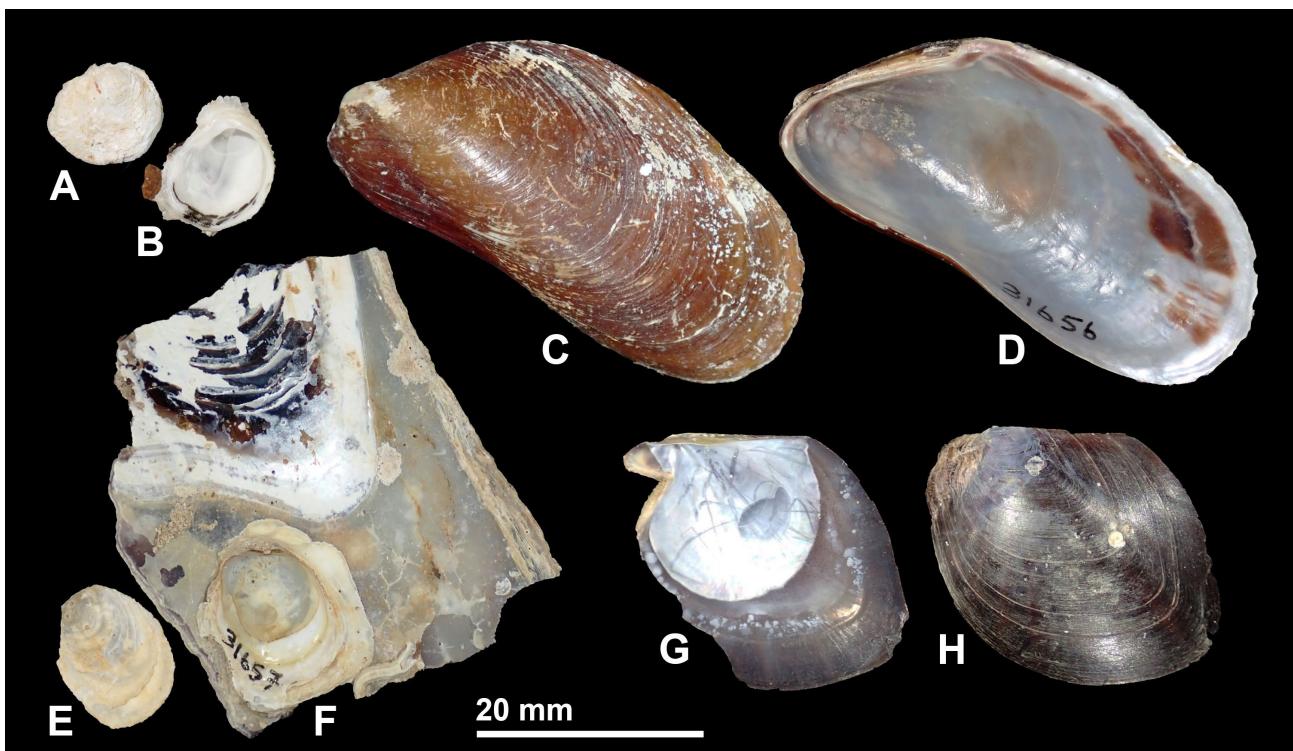


Fig. 2. A, B, *Pseudochama retroversa* (ZRC.MOL.25557). C, D, *Modiolus auriculatus* (ZRC.MOL.31656). E, F, *Booneostrea subcula* (ZRC.MOL.31657) attached on a broken shell. G, H, *Electroma alacorvi* (ZRC.MOL.31664). Exterior (A, C, E, H) and interior (B, D, F, G) views of the valves (Photographs by: Tan Siong Kiat).

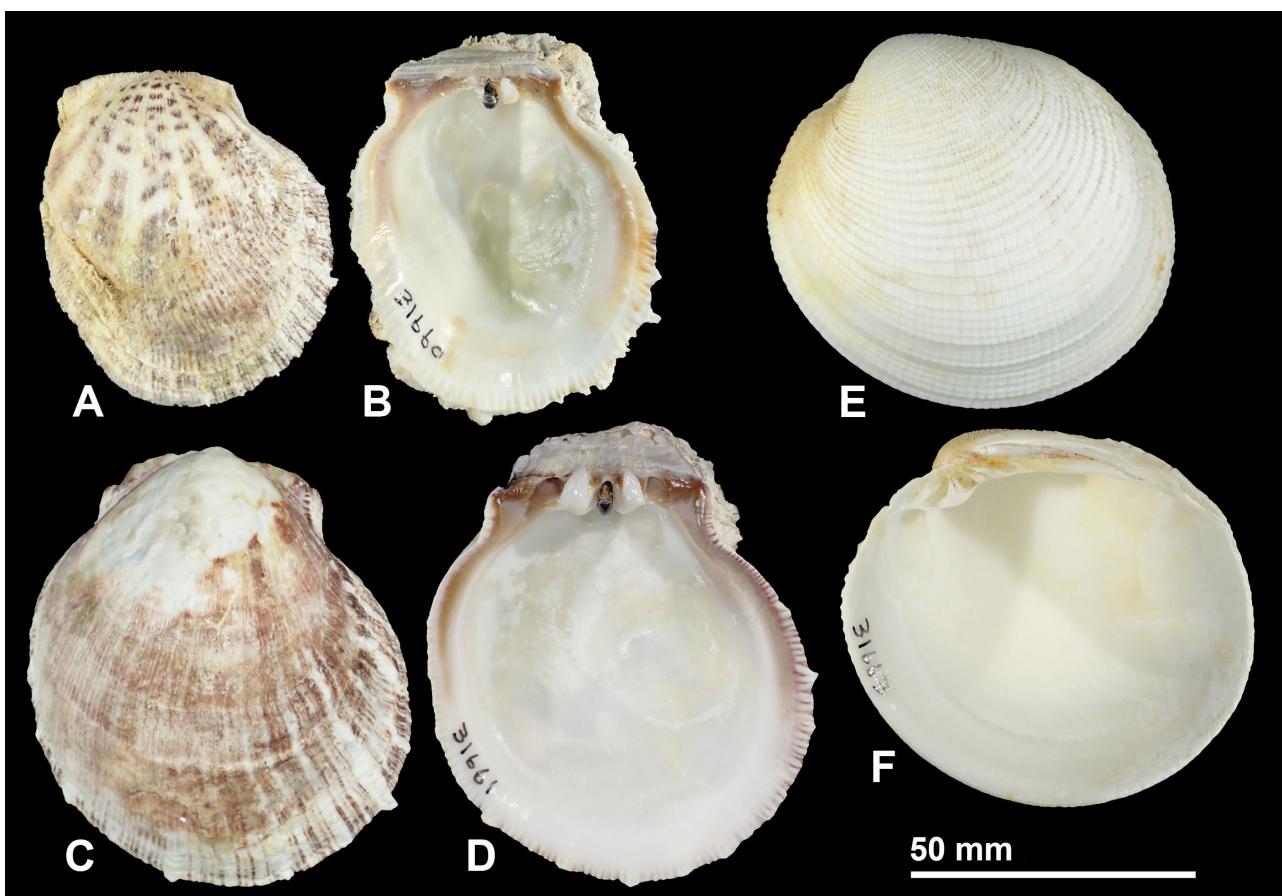


Fig. 3. A, B, *Spondylus nicobaricus* (ZRC.MOL.31660). C, D, *Spondylus sinensis* (ZRC.MOL.31661). E, F, *Periglypta lacerata* (ZRC.MOL.31663). Exterior (A, C, E) and interior (B, D, F) views of the valves (Photographs by: Tan Siong Kiat).

Electroma alacorvi (Figs. 2G, H) is hitherto only recorded from Singapore by Chuang (1973, as *Electroma ovata*). It may be interesting to note that the specimens examined for this study were part of his private collection, but it is unknown if these specimens could have been the basis for the remarks in that work that this species can be found on branches of staghorn corals.

Spondylus nicobaricus (Figs. 3A, B) is possibly one of the more recognizable members of its family in Singapore. It has also been recorded from Labrador by Morris & Purchon (1981, as *Spondylus hystrix*), and Pulau Semakau (Tan & Yeo, 2010).

The *Spondylus sinensis* (Figs. 3C, D) herein is determined with low confidence because of the eroded surface of its shell. The *Spondylus sinensis* here is that of Schreibers (1793), not of Sowerby II (1847). Fulton's (1915) record of *Spondylus multimuricatus*, a junior synonym, seems to be the only prior record of this species from Singapore.

The earliest Singapore record of *Periglypta lacerata* (Figs. 3E, F) is in Reeve (1863–1864) who described it as *Venus aegrota*, which is a junior subjective synonym (e.g., Huber, 2010). This species was reassigned to the genus *Antigona* by Huber (2010) who considered the genus *Periglypta* synonymous. However, the supposed synonymy of the genera is not supported by recent molecular studies that included the respective type species (e.g., Liu et al., 2022). Pending a resolution, the genus species combination more familiar to us is provisionally maintained.

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