PLATE 13

MARSH CLAMS
Family: CYRENIDAE

Corbicula solida Clessin, 1887
Geloina coaxans (Gmelin, 1791)

Reported by other workers
and not included in this catalogue

Corbicula subnitens Clessin, 1887 – Prashad, 1928, Subba Rao, 1989

Pieris, Naggs *et al* remark that as no specimens of *Corbicula subnitens* Clessin have been seen they are leaving this species out of the list of Sri Lanka bivalves. It is listed by both Subba Rao, 1989 and Prashad, 1928. Prashad remarks that he has seen a single specimen from the Nevill collection, "...from which also the type of the species originated…". The type specimen is unavailable. Prashad has illustrated the species but this is unavailable in the digitised version. Subba Rao has not provided an image.

Both authors describe the shell but give no indication as to how it differs from *C. solida*.

Solid, thick shells with equal valves, rounded to somewhat triangular. Not gaping. Prominent umbones at, or just in front of the midline. Shells inflated but no lunule or escutcheon. Exterior smooth or with concentric sculpture. Periostracum thick, often fibrous. The ligament is external and thick. The hinge has 3 diverging cardinal teeth in each valve with strong lateral teeth that may be transversely striate. The interior is porcellaneous with two more or less equal, rounded muscle scars. The pallial sinus is reduced or absent.

Marsh clams burrow in the soft bottoms of shallow fresh or brackish water bodies. They are suspension filter feeders.

The following species in the family Corbiculidae have been reported from Sri Lanka by various workers:

Corbicula solida Clessin, 1887– Prashad (1928), Subba Rao (1989), Peiris et al (2015)

Corbicula subnitens Clessin, 1887 – Prashad (1928), Subba Rao (1989), Peiris et al (2015)

Geloina coaxans (Gmelin, 1791) – Pinto (1986), D. H. Fernando (1977); Malik Fernando (2009)

Polymesoda ceylanica (Chemnitz, 1782) – Hadl, (1974)

[Listed by Hadl, (1974) based on one shell; synonyms given are: V*enus ceylonica* Chemnitz, 1782, *Cyclas zeylanica* Lamarck and *Cyrena zeylanica* Lamarck, 1818. The image looks like *G. coaxans.*]

Polymesoda impressa (Deshayes) – Mendis & Fernando (1962)

[*Cyrena impressa* Deshayes, 1854 is a synonym of *Polymesoda bengalensis* (Lamarck, 1818), Siddiqui *et al* (2007)]

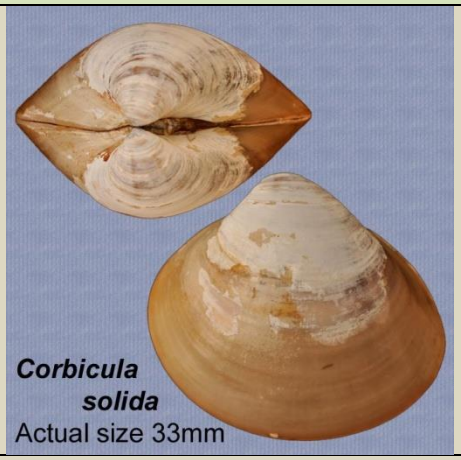
Polymesoda tennenti (Hanley) – Mendis & Fernando (1962)

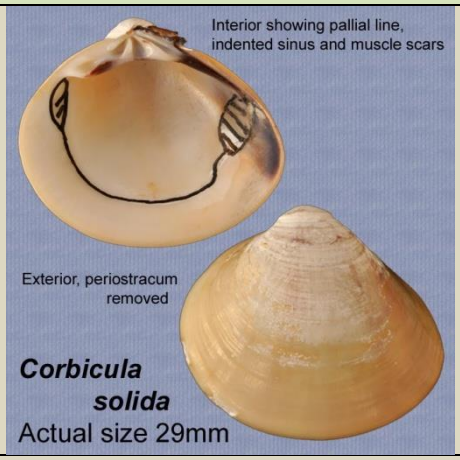
[*Cyrena tennenti* Hanley, 1858 is a synonym of *Geloina coaxans* (Gmelin, 1791), Coan & Kabat, 2012 quoting Huber, 2011 - "tennentii, Cyrena – Hanley, 1858a: 23–24; 1859c: 237. Ariho River, Taprobana [Sri Lanka]; "below the great stone dam". Cyrena tennentii Hanley, 1858 (Preston, 1915: 329; Prashad, 1921: 142, pl. 20, fig. 10). Synonym of Geloina coaxans (Gmelin, 1791) (M. Huber, pers. comm., 20 Dec. 2011). Type material not found in NHMUK or Leeds Museum in 2012."]

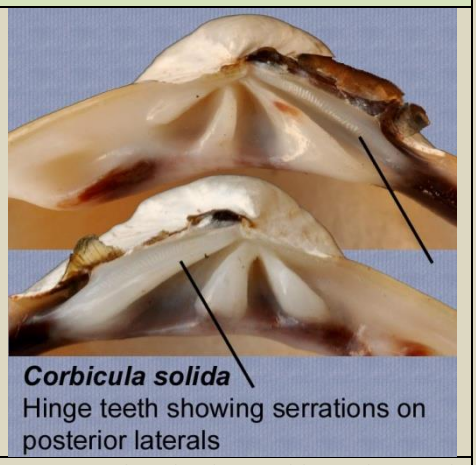
Polymesoda zeylanica (Lamarck) – Mendis & Fernando (1962)

[GBIF database: *Polymesoda zeylanica* Lamarck, 1818, species of unknown status according to museum Victoria KEmu database (Oct 2006). Habitat Marine.29.9.2016]

Corbicula – Basket clams







(Left) MF380: Rekawa, lagoon, brackish water. With periostracum. The concentric grooves are barely discernible. Subcentral umbones. (Centre) Shell denuded. Entire collection with eroded umbones. Posterior of shells with purplish blush. (Right) Detail of hinge. Right valve above (3 cardinal teeth), left below (2 cardinals).
The Rekawa collectiion measurements: 18 x 15.5 x 10.5 mm -29 x 26 x 17 mm - 33 x 28 x 21 mm.

MF382: Kirinda, Palatupana lagoon. Empty shells on shore.

Corbicula solida Solid marsh clam

Checklist 2012 as *Meretrix* sp. 'Rekawa' ?casta: Veneridae

Shells thin, light, triangular-ovate, inflated, prominent central pointed umbones. Posterior somewhat drawn out. Anterior broadly rounded, smoothly confluent with the arcuate ventral, postero-ventral angle narrowly rounded, the postero-dorsal margin sloping. The beaks touching, lunule an elongated diamond shape, ligament external with no defined escutcheon. Interior porcellaneous, hinge plate narrow, three cardinal teeth in the right valve, two in the left, a small, smooth anterior lateral and a long serrated posterior lateral in each valve. Indented pallial sinus. Sculpture of wide, shallow grooves that are barely discernible. Denuded shell ivory-cream with dark purple-blushed posteriors, the umbones eroded; thin adherent periostracum imparts a dark tan hue. Interior creamy-white, the umbonal region blushed with pink, posterior margin purplish-cinnamon sometimes spreading on to the hinge plate.

These clams are called basket clams because the more heavily sculptured species resemble baskets. The genus name 'corbicula' is from the Latin for 'little basket'.

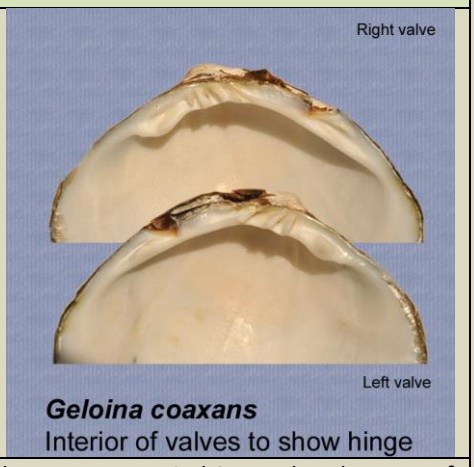
The collection from Rekawa was first determined as a species of *Meretrix* and reported in *Shells of the Sri Lanka Seashore* (Fernando, 2009) and the 2012 checklist. The other two collections were determined as *Meretrix casta. The illustrated guide to Sri Lanka freshwater mollusca* by Amritha Pieris, Fred Naggs *et al* contains a colour image of *Corbicula solida* that led the way to a re-assessment of shells in the collection and the revised determination. This species is not listed in the WoRMS database, but 4 other species of *Corbicula* are; no doubt because it has been reported as a freshwater clam (September 2016 – see below). Subba Rao (1989) describes this species with a monochrome illustration, giving the distribution as Sri Lanka and the type locality as Sri Lanka. Prashad (1928) includes it in his paper on Asiatic species of *Corbicula* but does not provide a figure. It is also listed in the Worldwide Mollusc Species Database by BagniLiggia of Genova, Italy, with no image, distribution Sri Lanka and in the Global Biodiversity Information Facility (GBIF) - Interim Register of Marine and Nonmarine Genera, the distribution being given as Oriental, Indo-Malayan. *C. solida* is also listed in the pages of *The Freshwater Mussels (Unionoida) of the World* (*and other less consequential bivalves*), under the authority of Bogan (2010) – see The Mussel Project, hosted by the University of Wisconsin-Stevens Point.

An attempt was made in 2002 to re-collect this bivalve from Rekawa; the attempt was unsuccessful. It appears to be a candidate for endemic status that warrants focussed study, including DNA profiling (and comparison with that of *Meretrix casta*). There is no data regarding the exact location of the original collection. It would appear that the habitat description of 'freshwater' is inaccurate. There is a remarkable similarity between this species and *Meretrix casta* (Veneridae), especially as regards the dentition. It differs in being a much lighter shell with centrally placed umbones, narrower hinge plate and with a nearly smooth exterior. Exterior and interior colouration is also similar, especially the pigmentation along the posterior margin spreading on to the hinge plate.

A WoRMS page has been created in July, 2019, as a fresh water species. (7.4.2020)

Geloina

MF353: Trincomalee, Cod Bay, in muddy ditch. A juvenile shell, periostracum intact with frilled lamellae.



MF354: Maggona, Diyalagoda, Dummalamodera ganga. Buried in mud at bottom of stream through mangrove. Right - External ligament with an internal component, 3 cardinal teeth each valve, laterals: r/v 2 anterior and posterior, l/v 1 anterior and posterior.

MF352: Kaluamodera, Kaluamodera ganga. Denuded valve shows concentric growth lines. Also, Batticaloa, Palameenmadu, Lighthouse mangrove, empty on muddy-sand bottom in <1 m depth.

Some of the synonymised name are: *Venus coaxans* Gmelin, 1791 (original name), *Cyclas zeylanica* Lamarck, 1806, *Cyrena tennentii* Hanley, 1858, *Polymesoda coaxans* (Gmelin, 1791), *Polymesoda proxima* (Prime, 1864)

Geloina coaxans

Shell heavy, nearly circular, inflated. No lunule or escutcheon. Ligament external with a small internal component. The posterior margin has a distinct flattening characteristic of this species.

Interior porcellaneous. Surface covered by close-set growth lines, milky white in colour. Adherent dark brown periostracum, the surface raised into frilled lamellae over the growth lines; these rubbed smooth to varying degrees in older shells. The shells with partially weathered periostracum are coloured golden-brown. The umbones eroded to varying extents exposing the white shell.

Edible, collected for food.

Collections measure 47 x 46 mm, 54 x 51 x 30 mm to 107 x 92 x 58 mm.

BIBLIOGRAPHY:

Citation: Gofas, S. (2010). Cyrenidae. In: MolluscaBase (2016). Accessed through: World Register of Marine Species at http://www.marinespecies.org/aphia.php?p=taxdetails&id=238370 on 2016-09-26.

MolluscaBase eds. (2020). MolluscaBase. Corbicula solida Clessin, 1887. Accessed through: World Register of Marine Species at: http://www.marinespecies.org/aphia.php?p=taxdetails&id=1358593 on 2020-04-07

Citation: Bouchet, P. (2014). Geloina erosa (Lightfoot, 1786). In: MolluscaBase (2016). Accessed through: World Register of Marine Species at http://www.marinespecies.org/aphia.php?p=taxdetails&id=747107 on 2016-10-04.

Worldwide Mollusc Species Database. http://www.bagniliggia.it/WMSD/HtmSpecies/6080504181.htm

GBIF. http://www.gbif.org/species/5794011/ :- Global Biodiversity Information Facility (Interim Register of Marine and Nonmarine Genera), distribution: Oriental, Indo-Malayan, with no locations. (Reference to *Corbicula solida*).

Freshwater Mussels of the World. Bogan, A.E. 2010**.** Mollusca-Bivalvia checklist. Freshwater Animal Biodiversity Project. Available at: http://fada.biodiversity.be/ (Freshwater Animal Biodiversity Assessment Project is an informal network of scientists specialized in freshwater biodiversity).

FADA Bivalvia: World checklist of freshwater Bivalvia species in the Catalogue of Life in The Catalogue of Life Partnership: Catalogue of Life. doi:10.15468/rffz4x
Accessed via http://www.gbif.org/species/111041056 on 2016-09-29.

Bishogai Database. http://bigai.world.coocan.jp/pic_book/data43/r004290.html

The MUSSEL Project — Home Page http://www.mussel-project.net/.
Site developed and maintained by Dan Graf & Kevin Cummings.
Hosted by The University of Wisconsin-Stevens Point.

http://mussel-project.uwsp.edu/db/db.php?p=tax&l=sppop&n=8047

www.gbif.org/
(GBIF database: *Polymesoda zeylanica* Lamarck, 1818, species of unknown status according to museum Victoria KEmu database, Oct 2006). Accessed on 29.9.2016. (Reference to *Geloina coaxans*).

Coan, Eugene V. & Alan R. Kabat (2012), The Malacological works and taxa of Sylvanus Hanley (1819-1899), *Malacologia*, 2012, 55(2): 285−359. Accessed through:
https://www.Researchgate.Net/Publication/256454741_The_Malacological_Works_and_taxa_of_Sylvanus_Hanley1819-1899

Fernando, D. H., 1977, Lamellibranchiate Fauna of the Estuarine and Coastal Areas in Sri Lanka. *Bulletin of the Fisheries Station, Sri Lanka (Ceylon)*, **27**:29-54

Hadl, G., 1974, Freshwater mussels Bivalvia. *Bulletin Fisheries Research Station, Sri Lanka* (*Ceylon*), **25**: 183-188.

Mendis, A. S. and C. H. Fernando, 1962, A Guide to the Freshwater Fauna of Ceylon. *Bulletin of the Fisheries Research Station, Ceylon*. **12**:51 - 59 (Mollusca)

Peiris, A., Naggs, F., Preece, R.C., Taylor, H., & White, T.S.,2015, *An illustrated guide to the freshwater Mollusca of Sri Lanka*. Joint Conchological Society / Malacological Society Publication, SRP Ltd, Exeter.

Pinto, L., 1986, *Mangroves of Sri Lanka*. Natural Resources, Energy and Science Authority of Sri Lanka, Colombo.

Prashad, B., 1928, *Memoirs of the Indian Museum,* Vol. IX, Revision of the Asiatic species of the genus Corbicula, I.-The Indian species of Corbicula. Zoological Survey of India, Calcutta.

Siddiqui, K.U., Islam, M.A., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A., Haque, E.U., Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A., Khondker, M. and Rahman, M.M. (eds.), 2007, *Encyclopedia of Flora and Fauna of Bangladesh, Vol. 17. Molluscs*, Asiatic Society of Bangladesh, Dhaka, p. 313.

Subba Rao, N. V, 1989, *Handbook of Freshwater Molluscs of India*. Zoological Survey of India, Calcutta, p. 204, Figs. 577, 578.

MF: 3.10.2016; 7.4.2020.