Two new species in the species-group of *Vasticardium assimile* (Bivalvia: Cardiidae)

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ABSTRACT. Two new species of the species-group *Vasticardium assimile*, probably uncommon and of limited geographical distribution, are described: *Vasticardium subassimile* sp. nov. and *Vasticardium lomboke* sp. nov.

INTRODUCTION

Four species of *Vasticardium* from the Indo-Pacific which share a sufficient number of common characters, have previously been grouped into the species–group of *Vasticardium assimile* (see Vidal 1998). Two of these species, the most abundant, were described in the first part of the 19th century: *Vasticardium assimile* (Reeve, 1844) and *Vasticardium rubicundum* (Reeve, 1844). A special form of *V. assimile*, endemic to the Persian Gulf, previously known as *Cardium lacunosum* Reeve, 1845, is considered as a subspecies. These two previous species have been, for a long time, known only from the coasts of East Africa and northern part of the Indian Ocean to Sri-Lanka, but *Vasticardium rubicundum* has been recorded as widespread in a large part of the West-Indo-Pacific, and represented by several forms, differing from each another by coloration only, and designated by several names: *Cardium mindanense* Reeve, 1844; *Vasticardium compunctum* Kira, 1959 and *Acrosterigma kengaluorum* Voskuil & Onverwagt, 1992. More recently, two additional species have been added to the species group: *Vasticardium rhegminum* Oliver & Chesney, 1997 and *Vasticardium thomassini* Vidal, 1998.

All the species in the *assimile* species-group share similar macroscopic characters such as shape, coloration, hinge structure, rib number, and have similarity in microstructure and microcoloration of the ribs (Vidal 1998: 112). The two species *V. assimile* (Reeve) and *V. rubicundum* (Reeve) are present and abundant almost everywhere within their large areas of distribution ; *V. thomassini* Vidal is less abundant and limited to the south-eastern tropical coast of Africa, while *V. rhegminum* Oliver & Chesney is known from only one small area, close to Masirah Island (Oman).

Like *V. rhegminum*, the two new species described here are probably rare and of very limited distribution, each one known only from one specimen.

Material and methods

The material, deposited in the Muséum national d' Histoire naturelle de Paris (MNHN) is limited to two paired valves for *V. subassimile*, only one valve for the other. The material is in good condition and show sufficient characters and variations to warrant description as new species.

In the species-group of *V. assimile*, the main character separating the species is the rib morphology which consists of rib structure (shape of the cross section of ribs and interstices) and rib ornamentation (characters of the ornaments of the ribs and interstices: tubercles, crenulations, ridges, scales etc…). Consequently, particular attention has to be devoted to this rib morphology to enable identification.

SYSTEMATICS

Family **CARDIIDAE** Lamarck, 1809
Genus *Vasticardium* Iredale, 1927
Type species by original designation: *Cardium elongatum* Bruguière, 1789

Vasticardium subassimile sp. nov.

Figs 1-3, 6

Type material. Holotype, two paired valves, MNHN, collection Société d'Océanographie. Like all the shells of this collection, no locality data is given, but it is assumed that this animal survives in the Indo-Pacific.

Description. Specimen of large size, probably adult, H = 65.4 mm, L = 49.1 mm, W = 43.0 mm. Shape regularly subovoid, almost equilateral but somewhat posteriorly truncated, with ribs slightly curved backwards in projection. Appreciably elongated (L/H = 0.75) and tumid (W/L = 0.88).

Lunule: Narrow, but well marked in the right valve, purple coloured.

Colours: Externally white with irregular splashes light brown when young, becoming pink marginally

when adult. Internally white with two, thin, coloured umbonal rays, and a very thin pink margin.
Hinge: Moderately arched (angle between cardinals and the two laterals = 130°) and slightly asymmetrical (anterior lateral closer to cardinals than posterior). The two cardinals slightly connected in right valve. Posterior cardinal tooth in left valve short and low. Foundation of anterior lateral in left valve moderately hook-shaped. No medial short weak rib (umbonal support = "sterigma") in the umbonal cavity.
Rib number: 39 in each valve.
Rib morphology: The juvenile median part of shell bears high ribs, rounded in section, smooth and without any side crenulations. On the adult median and anterior part, ribs become trapezoid and slightly asymmetrical (anterior part higher), with lateral crenulations joined on the top of rib forming incurved bars; the lateral crenulations overhang the interstices, which are slightly striated.
The posterior quarter of shell has low squared ribs separated by wide interstices, which bear regularly disposed, slightly twisted tubercular lamellae, obliquely placed on top of ribs.
In the medio-posterior part, ribs become very asymmetrical with posterior flank wider bearing long oblique ridges, homologous of the posterior lamellae, between which other shorter tubercles or lamellae become progressively and regularly intercalated (very unique ornamentation, Fig. 6)

Distribution. Unknown.

Remarks. *Vasticardium subassimile* is similar to *V. assimile* in dimensions, shape and colours, but clearly differs by:
1) Higher number of ribs (39 against 32 to 36).
2) Hinge variation with higher "intercardinal" thin bridge in right valve.
3) Rib morphology in juvenile and adult parts, particularly on posterior and medio-posterior areas. [Comparison between Fig. 6 (*subassimile*) and Fig. 7 (*assimile*)].

Etymology. Similar to *assimile.*

***Vasticardium lomboke* sp. nov.**
Figs 4-5, 8

Type material. Holotype, a right valve of medium size (subadult ?), from north-west coast of Lombok Island (Indonesia), collected on a beach in front of Gili Islands, approximatively 116°03'E-08°27'N. Stored in MNHN, Vidal collection.

Description. Shell medium sized, H = 28.9 mm, L = 24.3mm, shape regularly subovoid, symmetrical with a very slight truncation on posterior margin.
Lunule: Very narrow but well marked, bearing five oblique riblets unconformable with the main ribs of the shell, purple coloured.
Colours: Externally off-white with more or less concentrically disposed light brown stains. On the coloured zones, the top of the ribs remains thinly and regularly white, as in all the shells of the group. Internally white, umbonal cavity strongly purple coloured.
Hinge: Almost symmetrical ; in this right valve, cardinals connected at base by a relatively high bridge.
Rib number: 35.
Rib morphology : On juvenile part, ribs triangular, smooth on top and finely ridged both sides along the flanks, down to the interstices which are finely striated. On adult posterior and median parts of shell, ribs become asymmetrical, flat topped, with successive zones of broadening (Fig. 8). On adult anterior part, the symmetry of ribs progressively changes, lateral ridges become less numerous, but the top remains flat and smooth.

Distribution. Only one locality cited above in shallow reef environment

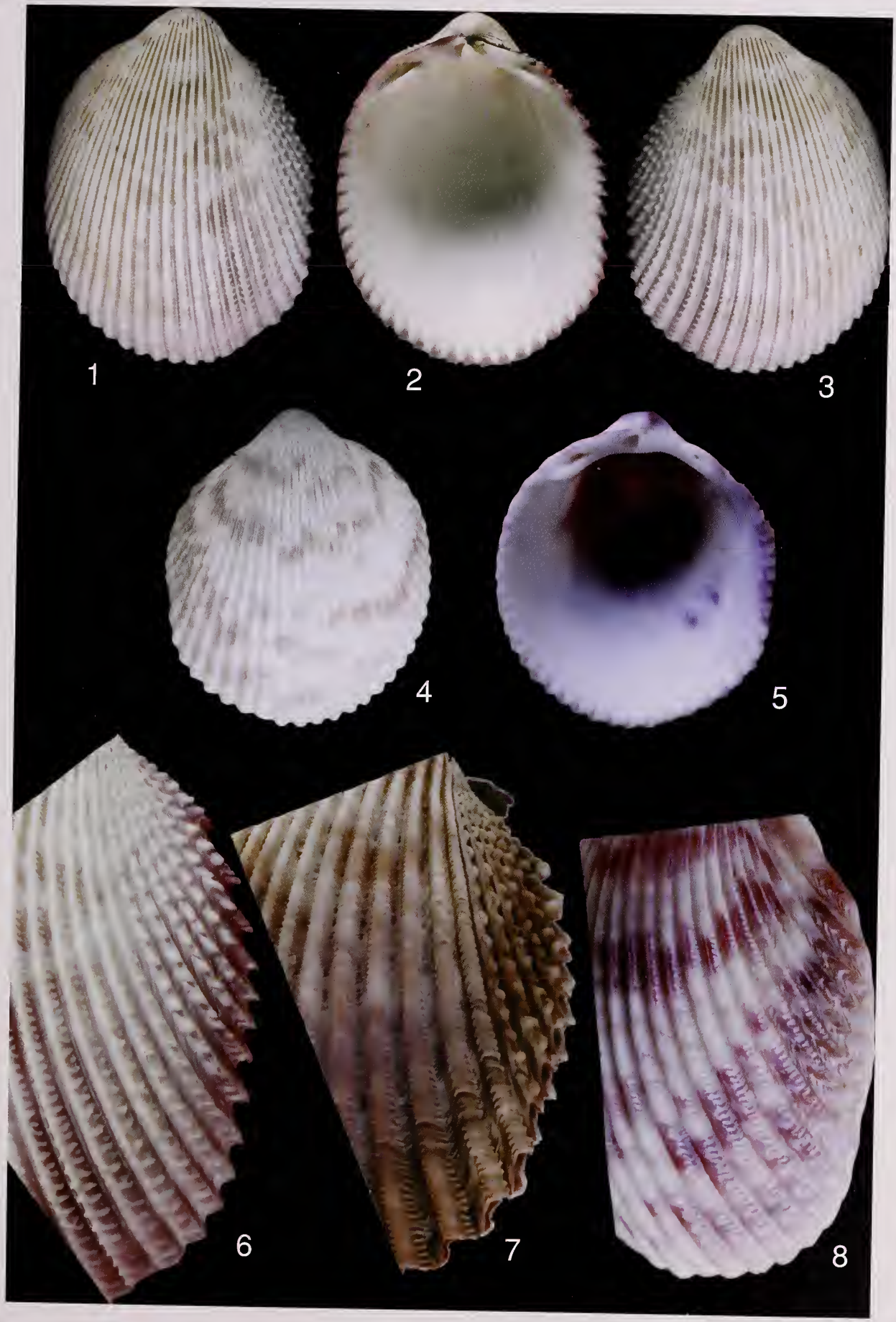
Remarks. *Vasticardium lomboke* differs from similar species in the group by its unique rib morphology, particularly with no variation and contrast between the posterior quarter and the rest of the shell (compare Fig. 8 with Figs 6 and 7), which is exceptional in all the *Vasticardium* species.

Etymology. From Lombok Island, Indonesia.

REFERENCE

Vidal , J. 1988. Taxonomic revision of the Indo-Pacific *Vasticardium assimile* species-group (Mollusca, Cardiidae). *APEX* 13(3): 111-125.

Figures 1-8
1-3. *Vasticardium subassimile* sp. nov., holotype MNHN **1.** Exterior of left valve; natural size; **2.** Interior of right valve, natural size; **3.** Exterior of right valve, natural size.
4-5. *Vasticardium lomboke* sp. nov., Lomboke Id, holotype MNHN **4.** Exterior, scale x 2; **5.** Interior, scale x 2.
6. Holotype of *Vasticardium subassimile* sp. nov. View of posterior part of left valve, showing special ornamentation of ribs, scale x 2; **7.** *Vasticardium assimile* (Reeve, 1844) Mozambique: view of posterior part of left valve, scale x 2; **8.** Holotype of *Vasticardium lomboke* sp. nov. View of posterior part of right valve (photograph reversed), showing special ornamentation of ribs, scale x 4.5.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