

***Globivenus barti* n. sp. (Bivalvia, Veneridae) from the Neogene of The Netherlands**

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Received 1 May 2009; revised version accepted 23 July 2009

Globivenus barti n. sp. is described from dredged material of the Westerschelde estuary (prov. Zeeland, The Netherlands). Its stratigraphic provenance has not yet been recorded in boreholes or outcrops, but given the preservation state it presumably derives from Early Pliocene deposits.

KEY WORDS: *Globivenus*, Neogene, Westerschelde, North Sea Basin, new species

Introduction

As part of working on a book on the fossil shells of the Dutch beaches and estuaries, foreseen in 2010, venerid bivalves were studied. Some fossil venerid shells dredged from the Westerschelde (The Netherlands) could not be attributed to any of the known fossil or recent species of Veneridae. The shells are attributed here to a new species, *Globivenus barti* n. sp.

Systematic Palaeontology

Superfamily Veneroidea Rafinesque, 1815
Family Veneridae Rafinesque, 1815
Subfamily Venerinae Rafinesque, 1815
Genus *Globivenus* Coen, 1934 (type-species *Venus effossa* Philippi, 1836, Recent, Mediterranean)

***Globivenus barti* n. sp.**

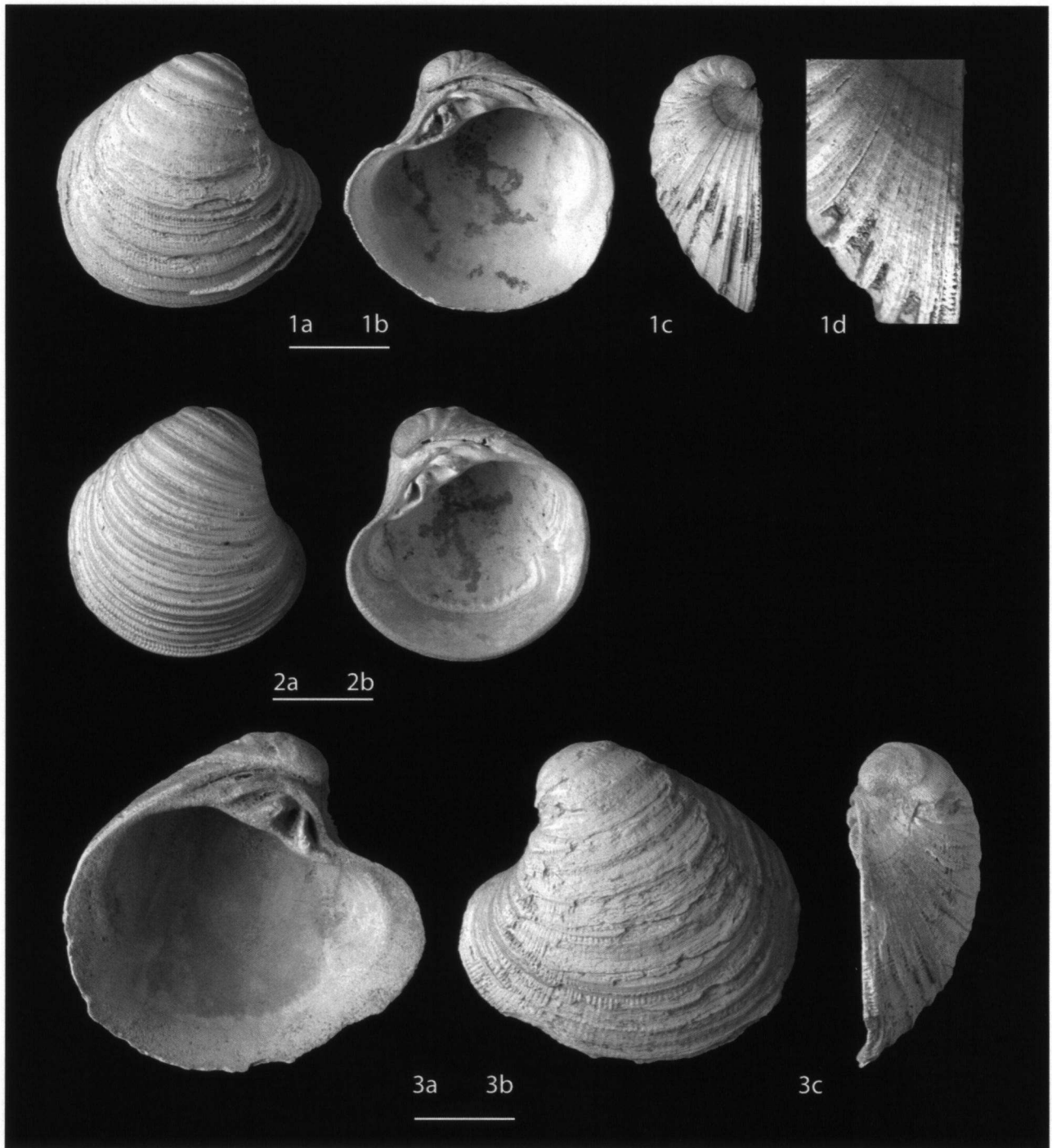
Figures 1-3

Type material – RGM 566382a (holotype): right valve, dredged in Westerschelde near Ellewoutsdijk (Zeeland, The Netherlands), leg. A.C. Janse (Fig. 1); RGM 566382b, (paratype) left valve, same locality, leg. A.C. Janse (Fig. 3); RGM 566381 (paratype), right valve, dredged in Westerschelde near Baarland (Zeeland, The Netherlands), leg. P.W. Moerdijk (Fig. 2).

Other material studied – RGM 566382c, 3/2 from type locality, leg. A.C. Janse; n.n., 2/2 from Westerschelde near Baarland, coll. H.A.A. de Jong; 1/2 from same locality, coll. G.F. Simons; 5/2 from same locality, coll. A.C. Rijken; 5/2 from same locality, coll. A.P. Goetheer; n.n., 1/2 Westerschelde, material from “Rug van Baarland”, 1/2, coll. A.P. Goetheer.

Diagnosis – A *Globivenus* with a protruding umbo and moderately impressed lunule.

Description – The shell is very convex when viewed from the side; a pair would make a heart-shaped outline. The shell is about as long as high. The lunule is impressed, partly concave but convex near the beaks (outline s-shaped), circumscribed by a narrow groove. The poorly delimited escutcheon can be observed in the right valve, but is hard to determine for the left valve because all of the studied right valves are too much decorticated and/or worn. The large protruding umbo is prosogyrate. The anterodorsal margin is convex, the anterior margin is narrowly rounded. The ventral and posterior margins are evenly rounded, describing the outline of nearly half a circle (c. 170°). The posterior margin is separated from the postero-dorsal margin by a rounded edge. The delimitation of the ventral and posterior margins is subrounded. The sculpture of all studied valves is eroded to a considerable extent, but as far as it can be observed it consists of robust irregular commarginal ripples covered with microscopically fine commarginal threads.



Figures 1-3. *Globivenus barti* n. sp. Scale bar 1 cm. All dredged from the Westerschelde and presumably of an Early Pliocene age. (1) RGM 566382a (holotype), RV, Westerschelde near Ellewoutsdijk (Prov. Zeeland, The Netherlands), leg. A.C. Janse: (a) external view, (b) internal view, (c) frontal view, (d) detail of frontal view. (2) RGM 566381 (paratype), RV, Westerschelde near Baarland (Zeeland, The Netherlands), leg. P.W. Moerdijk: (a) external view, (b) internal view. (3) RGM 566382b (paratype), from type locality, leg. A.C. Janse: (a) internal view, (b) external view, (c) frontal view.

The commarginal sculpture is overlain by a pattern of faint radial riblets of variable dimensions (Fig. 1d). Where the outer layer is eroded, the surface of the shell is covered with a fine regular radial sculpture. The base of the hinge plate is markedly curved upward behind the cardinal part of the hinge. The right valve (RV) hinge contains three cardinal teeth of which the anterior lateral tooth is poorly

developed. The left valve (LV) also contains three cardinal teeth, the middle of which contains a radial groove. The anterior lateral tooth on the LV has a reduced knob-like outline. Adductor scars are about equal in size. The pallial sinus is triangular and short. The interior of the ventral margin is finely crenulated.

Dimensions – All dimensions are in mm. RGM 566382a: H 27; W 27; SD (semidiameter) 10; RGM 566382b: H 34; W 35.5; SD 14; RGM 566381: H 25; B 25; SD 12.

Derivatio nominis – Named after mr. H.A.A. (Bart) de Jong (Middelburg, The Netherlands), a collector of fossil shells who showed us the shell that convinced us that this species is not identical with *Venus casina pseudoturgida* (d'Orbigny, 1852).

Type locality and stratum typicum – The holotype derives from the Westerschelde near Ellewoutsdijk (prov. Zeeland, The Netherlands), coordinates approximately 51°22' N, 3°50' E. Since the material is suckerdredged, its stratigraphic provenance is uncertain. Based on the preservation (see Discussion below) an Early Pliocene age is most likely, although a Late Miocene age cannot be ruled out.

Differentiation – Several authors have included Pliocene venerids from the North Sea Basin in their work (Sowerby, 1812-1846; Nyst, 1845, 1881; Wood, 1856; Heering, 1950; Glibert, 1945, 1958, Janssen *et al.*, 1984). They all mention some venerid species resembling venerids found in the Dutch Westerschelde. These are *Clausinella imbricata* (Sowerby, 1826) forma *gibberosa* (Wood, 1853), *Venus (Dosina) casina pseudoturgida* (d'Orbigny, 1852) and *Venus (Ventricoloidea) multilamella* (Lamarck, 1818). *Globivenus barti* differs from all these species by the impressed, partly concave lunule and by the ornament. At least in the anterior part of the shell commarginal ripples instead of clear commarginal lamellae or ribs are present, as well as a faint but unmistakable radial pattern. The hinge of *G. barti* is quite similar to that of *V. casina* forma *pseudoturgida*, but it is less robust and the nymph is comparatively shorter. The anterior lateral tooth of the left valve is better developed in *G. barti* than in *Clausinella imbricata*, whereas it is shorter than in *V. multilamella*.

In extreme forms of *Clausinella imbricata* forma *gibberosa* and *Venus casina pseudoturgida* the lunule can also be somewhat concave, but never to such a degree as in the new species described here.

Similarities with the extant Mediterranean and Eastern Atlantic *Globivenus effossa* (Philippi, 1836) also exist. However, the lunula of the latter species is much deeper, whereas the ventral margin follows about 200° of a circle instead of c. 170° in *G. barti*. Furthermore, the umbo of *G. effossa* is broad and depressed and the shell is rather globular than heart-shaped in frontal view.

Discussion – Globose Venerinae are attributed to the genera *Ventricolaria* Keen, 1945, and *Globivenus*. According to Keen (1969), *Globivenus* differs from *Ventricolaria* by its channeled lunule, while the escutcheon is not bevelled in the left valve. Coan *et al.* (2000) consider *Ventricolaria* to be a synonym of *Globivenus* because of the minor differences between the genera. We follow their point of view here. The convex shell, the impressed lunule and the characters of the external sculpture of the discussed new spe-

cies all fit the genus *Globivenus*.

In the deeper parts the Westerschelde the Late Pliocene Oosterhout Formation and the Breda Formation, consisting of Miocene as well as Early Pliocene sediments, are exposed. Shell fishing in the Westerschelde supplies tertiary fossil shells of mainly Pliocene age. Middle Miocene and older shells occur as well, but they are very scarce. Fossils of a Late Miocene age are not rare, but less abundant than Pliocene shells. However, all alleged Late Miocene species are calcitic (*e.g.*, pectinid and gryphaeid species). That fauna lacks aragonitic species, such as the studied venerids. This decalcification is common feature in Late Miocene faunas found in outcrops in the Antwerp area (Belgium). The Westerschelde shells studied (18 specimens) are without exception bleached, decorticated and worn. This type of preservation of the shells is characteristic for fossil Westerschelde shells of an Early Pliocene age, such as *Glycymeris obovata ringelei* Moerdijk & Van Nieulande, 2000, *Astarte omalii omalii* (De La Jonkaiere, 1823) and *Venus casina pseudoturgida*. Stratigraphic younger shells from the Westerschelde are generally much better preserved. A Miocene origin cannot be excluded, but the most likely stratigraphic age of *G. barti* in consequence of the state of preservation is Early Pliocene.

Acknowledgements

We thank A.P. Goetheer (Ovezande), H.A.A. de Jong (Middelburg), F.A.D. van Nieulande and A.C. Rijken (Middelburg) for making their material available for study. We are thankful to A.C. Janse (Brielle) for providing two of the type-specimens. Dr. F. Wesselingh (Naturalis, Leiden) is thanked for improvements of earlier drafts of this paper, for literature and for the excellent photographs.

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