

Claibornicardia aalterensis n. sp., a new carditid species from the Eocene of the Southern North Sea Basin

M. Vervoenen¹ & F.A.D. van Nieulande²

¹Beekstraat 86A, B-9300 Aalst, Belgium

²Scheldepootstraat 56, 4339 BN Nieuw-en-St-Joosland, The Netherlands. E-mail: frvannieul@zeelandnet.nl

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An intermediate-sized Eocene carditid species from the southern North Sea Basin classically indicated as '*Venericardia*' *carinata* Sowerby, 1820, turned out to be different than the material from the Eocene Hampshire Basin on which the taxon was based. Here we described the species that are both attributed to the genus *Claibornicardia* Stenzel & Krause, 1957.

KEY WORDS – Carditidae, *Claibornicardia*, Eocene, Europe, revision, new species

Introduction

Carditid bivalves form an important part of Eocene faunas of northwestern Europe. However, the systematic status of Eocene European carditids is poorly understood. The identity of a common Eocene species found at beaches in the southern Netherlands and outcrops in northern Belgium, commonly referred to as *Venericardia carinata* Sowerby, 1820, was evaluated as part of a revision of the entire fossil bivalve faunas from the Dutch beaches. The beach specimens turned out to belong to a different, yet unnamed species. Very few specimens of the same species were recovered in Late Ypresian/Early Lutetian deposits of Aalter (Prov. West Vlaanderen, Belgium) and Lutetian deposits in the vicinity of Brussels. Furthermore, doubts arose about the generic identity of *V. carinata* as well as the new species. Here we describe the new species and attribute it to the genus *Claibornicardia* Stenzel & Krause, 1957.

Abbreviations – To denote the repositories of material referred to in the text, the following abbreviations are used:

FN	F.A.D. van Nieulande, Nieuw & St. Joosland, The Netherlands
KBIN	Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium
KZGW	Collection Koninklijk Zeeuwsch Genootschap der Wetenschappen (collection housed in the Zeeuws Museum, Middelburg, The Netherlands)
MV	M. Vervoenen, Aalst, Belgium
RGM	Nationaal Natuurhistorisch Museum, Naturalis, dept. Fossil Mollusca, Leiden, The Netherlands.

H Height, LV left valve, RV right valve, SD semidiameter.

The hinge terminology follows Moore (1969), all dimensions are in mm.

Systematic palaeontology

Family Carditidae Fleming, 1828

Genus *Claibornicardia* Stenzel & Krause, 1957

Type species – *Claibornicardia alticosta* (Conrad, 1833) from the Gulf coast Eocene of the United States.

Diagnosis – Robuste small-large sized semicircular to ovate carditid with well-developed radial ribs that may become occupied by well developed spines; umbo prosogyrate; lunule short, little depressed and cardinal 2 well developed.

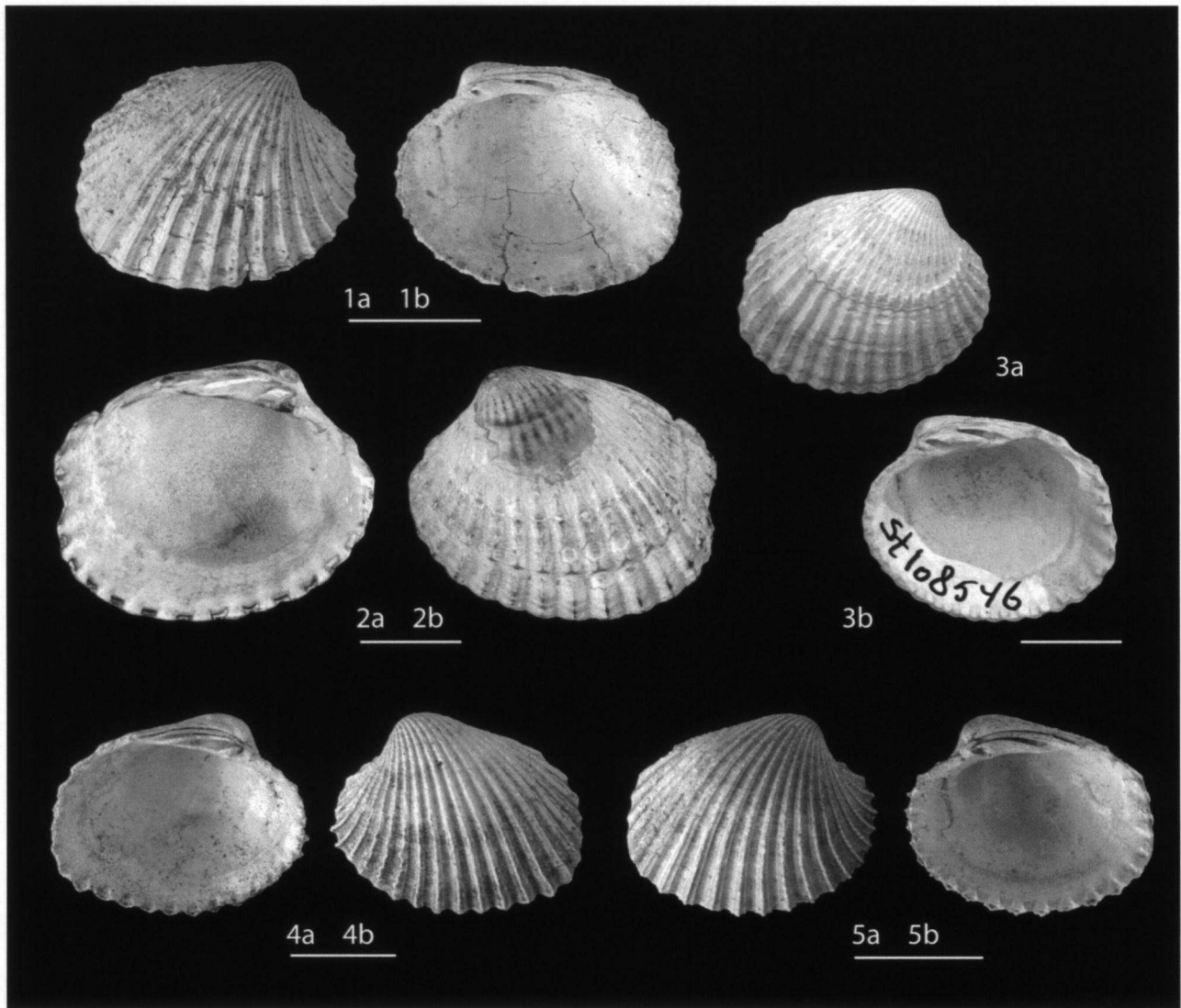
Claibornicardia aalterensis n. sp.

Figures 1-3

1972 *Venericardia* (*Glyptoactis*) *carinata* – Janssen & Van der Slik, p. 177, pl. 32, fig. 86.

1985 *Venericardia carinata* – Glibert, p. 286, pl. 3, figs. 4a, c (*non* fig. 4b).

Type material – RGM 607.101 (holotype, fig. 1), RV from temporary construction site in the Molenstraat, Aalter (Prov. Oost-Vlaanderen Belgium), Aalter Formation, top



Figures 1-3. *Clabornicardia aalterensis* n. sp. (1) RGM 607.101, holotype, RV. Aalter (Oost Vlaanderen, Belgium), construction pit Molenstraat. Aalter Formation (Eocene). (a) exterior view, (b) interior view. (2) RGM 183.969, LV. Domburg (Zeeland, The Netherlands), washed ashore. (a) interior view, (b) exterior view. (3) RGM 108.546, RV. Same locality. (a) exterior view, (b) interior view. All scale bars denote 1 cm.

Figures 4, 5. *Clabornicardia carinata* (Sowerby, 1820) (4) RGM 607.104, LV. Bracklesham Bay (West Sussex, United Kingdom). Specimen from beach derived from Early Formation (early Lutetian). Leg. S. Tracey, 2001. (a) interior view, (b) exterior view. (5) RGM 607.105, RV, same locality. (a) exterior view, (b) interior view.

part of the section exposed in Aalter vicinity, Late Ypresian or Early Lutetian (Eocene: Vandenberghe *et al.*, 2004), leg. MV 1966; RGM 607.102 (paratypes), 3 LV and 2 RV, same locality; KBIN 5798, LV, Oedelem (Prov. West-Vlaanderen, Belgium), Aalter Formation, Oedelem Beds, Late Ypresian or Early Lutetian (Eocene), specimen published in Glibert (1985: pl. 3, fig. 4c) as *Venericardia carinata*; KBIN 5797, LV from the same locality (illustrated in Glibert, 1985, fig. 4a).

Other material studied – Material from beaches in prov. Zeeland, The Netherlands: KZGW 3392, one LV and one RV from the beach between Cadzand-Bad and the Zwin, leg. FN; RGM 108546, one RV, beach Cadzand, leg. Bootsgezel, 1962; RGM 183.969, one LV, beach Dom-

burg, leg. unknown; RGM n.n., 18 valves, Domburg, leg. M. Gerhard. RGM 607.103 (2 RV and 2 LV), Berg-Nederokkerzeel (Brabant prov., Belgium), Brussel Formation (Lutetian), leg. M. Vervoenen, 1994.

Diagnosis – Ovate intermediate-sized *Clabornicardia* with a marked horizontal posterodorsal margin, low umbo and short, rather deeply impressed lunula.

Description – It concerns an intermediate-sized ovate-elongate to trapezoid carditid with well-developed ribs. The umbo is located at circa one quarter from the anterior margin. The posterodorsal margin is at first straight and descends in the most posterior quarter. The postero-ventral margin is broadly acute. The shell contains a hint of a pos-

terior ridge. The largest shell H is located just behind the middle. About 23-27 well-defined radial ribs cover the shell. The ribs are evenly spaced and markedly trigonate in cross-section and have V-shape interspaces in cross-section. The ribs are tripartite: they have a narrow central keel that may be slightly knobby or contain spiny knobs are even serrate. The posterior ribs have a simple triangular cross-section. The anterior ribs are covered with thin, well elevated nodules. The lunule is short, very narrow and deeply sunken. The hinge plate is relatively thin. The cardinal 2 of the LV is slender, opisthocline. The LV cardinal 4b is thin, elongate and gently curved. The cardinal 3b of the RV has a broad base, but is sharply delimited at the dorsal side and slightly wavy. Just below the lunula a thin and elongate cardinal 3a stretches deep into the hinge plate margin. The RV cardinal 3b has a broad base, is thick and heavy, but becomes tapered at the top. The base reaches the base of the hinge plate. The pallial line and adductors are shallow. The pallial line is entire. The ovate-circular posterior adductor lies somewhat higher than the lunate anterior adductor. The anterior pedal retractor is a small pit. The lower margin is crenulated and ribs are visible on the shell's interior in part of the studied specimens.

Dimensions – RGM 607.101 (holotype): H 17, W 21; RGM 607.102 (LV paratype): H 23, W 26.5; RGM 607.102 (RV paratype): 24.5, W 29.5; KZGW 3392 (LV): H 23, W 26.5; KZGW 3392 (RV): H 24.5, W 29.5; RGM 183.969: H 25.5, L 29.

Distribution – Aalter Formation (late Ypresian – early Lutetian), northwestern Belgium; Brussel Formation (Lutetian), central Belgium; reworked on beaches of adjacent Netherlands.

Derivatio nominis – Named after the type locality.

Remarks – *Claibornicardia aalterensis* differs from the English *C. carinata* by its flatter and thinner shell, the more pronounced posterodorsal field, and the more triangular cross section of the ribs. The umbo of the latter species is more incurved.

The generic attribution of the new species follows that of Le Renard & Pacaud (1995). Reworked specimens of *C. aalterensis* are not uncommon on the beaches of Cadzand and Domburg in the Netherlands, yet it is a very rare species in the Aalter Formation deposits.

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