

**Two *Ataxiocerithium* species from the Miocene of Belgium  
(Gastropoda Prosobranchia: Cerithiopsidae)**

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Two species of the genus *Ataxiocerithium* Tate, 1893, occur in the North Sea basin Miocene: *A. asperulatum* (Cossmann & Peyrot, 1922) in the Early Miocene and *A. christinae* (Boettger, 1901) in late Early and Middle Miocene deposits. They differ in details of protoconch and teleoconch sculpture, and in shell shape. Both species are recorded herein for the first time from the Miocene of Belgium.

Key words: Gastropoda, Prosobranchia, Cerithiopsidae, Miocene, Belgium.

Glibert (1952) mentioned only one member of the Cerithiopsidae from the Miocene of Belgium, a *Seila* sp. from which insufficient material has been present in the IRSNB collection to warrant description. After Glibert's publication, extensive works in and around Antwerp enabled the collection of large samples of Miocene Mollusca. The E3 Kleine Ring Motorway with the E3 Kennedy tunnel and subway construction works in and around Antwerp were executed between 1960 and 1987; their stratigraphy was described by Janssen & Van der Mark (1968), De Meuter, Wouters & Ringelé (1976), and Marquet (1991). Excavations by the 'Belgische Vereniging voor Paleontologie' between 1989 and 1995 in Edegem near Antwerp and in Zonderschot (Heist-Op-Denberg) East of Antwerp yielded further material. Hooyberghs (1996) discussed the stratigraphy of the Edegem site. A large number of micromollusca thus became available, among which many Cerithiopsidae. A note on *Cerithiella genei* (B. & M., 1840), the first species of this family treated herein, was published by Marquet (1997).

Abbreviations used. - RGM: collections Nationaal Natuurhistorisch Museum, formerly Rijksmuseum van Geologie en Mineralogie, Leiden, The Netherlands. IRSNB: collections Institut royal des Sciences naturelles de Belgique, Brussels, Belgium. RM: collection R. Marquet, Antwerp, Belgium.

*Ataxiocerithium asperulatum* (Cossmann & Peyrot, 1922), fig. 2

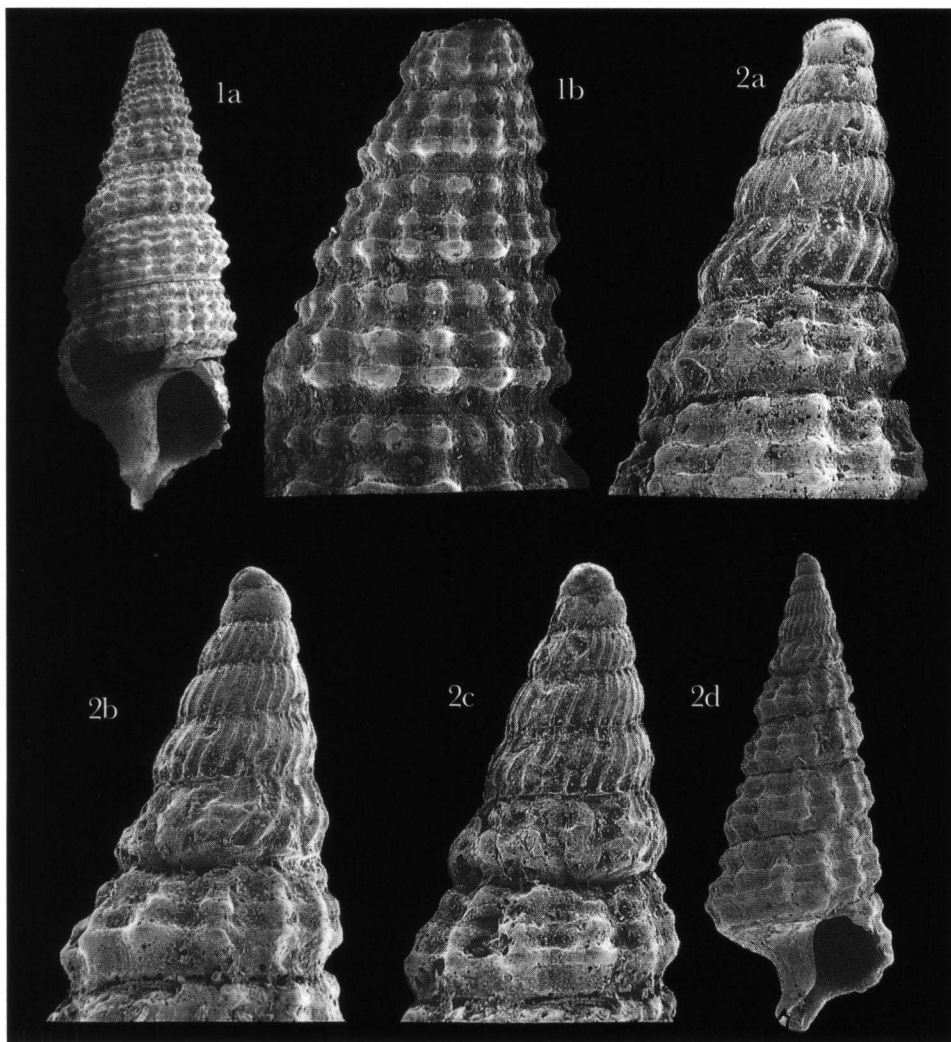
1922 *Bittium asperulatum*, Cossmann & Peyrot: 288, pl. 7 figs. 66-69.

1960 *Cerithiella (Cerithiella) asperulata* - Anderson: 63, pl. 12 fig. 1.

Material. - RGM: Antwerp, Belgium (Kennedy-tunnel); Edegem Member, Berchem Formation, Early Miocene, Hemmoorian, Behrendorfian (level 3 to 5: see Janssen & Van der Mark (1968, p. 78)): 61 fr. RGM 182.541, RGM 396.196 (figured specimen); same locality and stratum, level 3: 7 fr. RGM 116.577; same locality and stratum, level 3: 39 fr. RGM 117.818. RM: same locality and level: 12 fr.

Type locality. - Moulin de Gamachot, Uzeste, dept. Gironde, France.

Stratum typicum. - Falun de Bazas, Aquitanian, Early Miocene.



Figs. 1-2. *Ataxiocerithium* shells. 1, *A. christinae* (Boettger, 1901), RGM 396.195, Bergebeekstraat, Zonderschot, Heist-Op-Den-Berg, prov. Antwerp, Belgium, Zonderschot Member, Berchem Fm., late Early Miocene; 1a, Apertural view of complete shell X 8; 1b - apical whorls X 28. 2, *A. asperulatum* (Cossmann & Peyrot, 1922), RGM 396.196, Kennedytunnel, Antwerp, Belgium, Edegem Member, Berchem Fm., Early Miocene; 2a, Protoconch X 53; 2b, Protoconch in apertural view, 90° to the left of fig. 2a, X 53; 2c, Protoconch 90° to the left of fig. 2b; 2d, Apertural view of complete shell X 20. All SEM photographs.

Description. - Small, nearly recticonical shell with six protoconch whorls and six teleoconch whorls in the most complete fragment studied. Protoconch nucleus smooth up to the end of the first  $1\frac{1}{2}$  whorl; other whorls with axial sculpture. Twentytwo to twenty five narrow opisthocline axial ribs present. On the last protoconch whorl, the axials become more strongly opisthocline and sinuous; a carina appears halfway on the whorl. Transition to the teleoconch not sharply marked. At the start of the teleoconch, the axials become even stronger but less sinuous. Furthermore, three spiral ribs appear close to each other, with very narrow intercostal spaces. They become quickly more widely spaced. The upper one lies close to the adapical suture. The abapical spiral is usually slightly stronger than the others, forming a more or less conspicuous carina. On the fourth teleoconch whorl, the space between the adapical and the second spiral becomes wider; on the fifth whorl, a new spiral appears in between; this latter spiral always remains weaker than the others. The teleoconch axial ribs are slightly weaker than the spirals and they form tubercles on the points of intersection. Spirals and axials form a reticulate sculpture, with the longer side of the rectangles in spiral direction. Suture deep, marked by the carina formed by the abapical spiral. Shell width 44 % of total shell height in most complete fragment (fig. 2d). Aperture square, with a clear callus, relatively small; never complete in the material studied. Siphonal canal long for a member of the Cerithiopsidae. Old apertures form broad, not well-delimited varices on the last whorl. No adult shell base observed. In the largest specimens the base is flat and smooth, except for axial growth lines. Two additional spirals are visible just adapical of the shell base: one is weak, but tuberculated, one (abapical) is smooth; both lie close to each other.

Dimensions of figured specimens. - Fig. 2: height 4.28 mm, diameter 1.86 mm; fig. 3: height 3.25 mm, diameter 1.2 mm, protoconch height 0.73 mm.

Remarks - This species is new for the Miocene of Belgium. Most younger records of this species from the North Sea basin belong to the next species. From the Early Miocene Hemmoorian only few shells of *Ataxiocerithium* are known; the genus seems to be absent in the well-sampled Antwerpen Member and Aalten Member (Miste Bed). Anderson (1960) figured a specimen from the Hemmoorian, which could, because of its less distinct carina, belong to this species, but this is not certain. '*Bitium*' *asperulatum* Cossmann & Peyrot, 1921, was described from the French Aquitaine Early Miocene, but neither protoconch nor aperture of the holotype are known. The relatively broad teleoconch, the teleoconch sculpture with four ribs and the depression near the suture allow to define the species. The species is here included in the genus *Ataxiocerithium* Tate, 1893, as redescribed by Gründel (1980), formerly known from the Eocene to the Oligocene, because of its multispiral protoconch with smooth nucleus and conspicuous axial sculpture, but without spirals and because more than three teleoconch spirals are present.

#### *Ataxiocerithium christinae* (Boettger, 1901)

1901 *Cerithiella christinae* Boettger: 133, no. 411.

1934 *Cerithiella christinae* - Zilch: 225, pl. 9 fig. 54.

1944 *Cerithiella* (? *Cerithiella*) *kostejana* - Van Voorthuysen: 29, pl. 12 fig. 25-26.

1959 *Cerithiopsis subsoluta* - Dittmer: 14.

1964 *Cerithiella asperulata* - Anderson: 210.

1967 ? *Cerithiopsis* (s. lat.) *asperulata* - Janssen: 138, pl. 11 fig. 4.

1975 ? *Cerithiella christinae* - Bahuk: 164, pl. 19 fig. 25.

Material. - RM: Heist-op-den-Berg, prov. Antwerp, Belgium (BVP-pit in Bergebeekstraat, Zonderschot); Zonderschot Member, Berchem Formation, late Early Miocene, Hemmoorian, Oxlundian: 55 fr. RGM: same locality and stratum: RGM 396.195 (figured specimen). RM, Dingden, Westfalen, Germany, Köningsbach, see Janssen (1967); Dingdener Feinsand, Dingdener Schichten, Reinbekian, Middle Miocene: 3 fr.

Type locality. - Kostej (= Costejul de Sus), Banat, Rumania.

Stratum typicum. - Badenian, Middle Miocene.

Description. - Rather small shell, with nine rounded teleoconch whorls with a clear sutural depression. Protoconch (figured by Janssen, 1967) 0.71 mm high, consisting of six glossy whorls, with sharp transition to teleoconch. Nucleus smooth till end of first  $1\frac{1}{2}$  whorl. Other protoconch whorls with 23 sinuous, opisthocline axial ribs; these axial ribs become gradually stronger towards the end of the protoconch. Last protoconch whorl with abapical carina. The transition into the teleoconch is not clearly marked; the shell surface becomes less glossy, three spiral ribs appear close to each other and the axial sculpture becomes straight and nearly orthocline. Middle spiral slightly weaker than both others. The abapical spiral forms a very conspicuous keel, marking a deeply incised suture. The distance between the adapical and the second spiral is always wider than that between second and abapical. Between the fourth and the sixth teleoconch whorl a further rib appears between second and third spiral; it always remains the weaker of the four. On the last whorl, two strong, smooth further spirals are visible, while six much weaker spirals are present on the shell base. Siphonal canal smooth. Fifteen axial ribs are present on the last whorl; they are weaker than the spirals and they become obsolete near the aperture. On the points of intersection with the spirals, tubercles are formed. On the upper spiral, often more tubercles than crossing axial ribs can be observed. The spaces between spirals and axials are nearly quadrangular. Shell width 36% of total height in most complete specimen (fig. 1a). Siphonal canal long for a member of the Cerithiopsidae. Aperture (see figs. 25-26 in Van Voorthuysen, 1944) square, with a clear callus. Older apertures form broad, not well delimited varices on the last whorl.

Dimensions of figured specimen. - Fig. 1: height 8.00 mm, diameter 2.87 mm.

Remarks. - The two *Ataxiocerithium* species of the North Sea basin look very similar. *A. christinae*, however, is relatively broader than *A. asperulata*, with a more pronounced carina; the spaces in the teleoconch reticulate sculpture are square instead of rectangular and the axial sculpture of the last teleoconch whorl is weaker and less sinuous. Gründel (1980) placed the species tentatively in the genus *Eumetula* Thiele, 1912, but he did not study specimens with a complete protoconch. They are here considered to belong to *Ataxiocerithium*, because of the absence of spiral protoconch sculpture and because of the presence of more than three teleoconch spirals. *Ataxiocerithium christinae* and *Ataxiocerithium kostejana* are known from the Miocene of Rumania and Poland. Bałuk (1975) described both species from Poland and gave good illustrations. The protoconch of both is only partially known, but it is certainly multispiral and the later whorls are only ornamented with axial ribs. *A. kostejana* has originally also three teleoconch spirals, but the adapical one is thicker than both others, the whorls are not rounded and there is no carina present. *A. christinae* is found in the North Sea basin in the Zonderschot Member of the Berchem Formation (Hemmoorian, Oxlundian) in Belgium and in the Dingdener Feinsand (Reinbekian) in Germany. Van Voorthuysen (1944) recorded the species also from unspecified Middle Miocene of the Netherlands, but without locality indication (presumably Hemmoorian). Both *Ataxiocerithium* species seem to occur in

Belgium in rather clayey facies, such as found in the Edegem and Zonderschot Members, not in the more sandy Antwerp Member.

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#### REFERENCES

- ANDERSON, H.-J., 1960. Die Gastropoden des jüngeren Tertiärs in Nordwestdeutschland. Teil 2. Prosobranchia Mesogastropoda. 1. Littorinacea, Rissoacea, Cerithiacea.— *Meyniana* 9: 13-79.
- —, 1964. Die Miocene Reinbek-Stufe in Nord- und Westdeutschland und ihre Molluskenfauna.— *Fortschr. Geol. Rheinl. Westf.* 14: 31-368.
- BALUK, W., 1975. Lower Tortonian Gastropods from Korytnica, Poland. Part 1.— *Palaeont. Polon.* 32: 1-186.
- BOETTGER, O., 1901. Zur Kenntnis der Fauna der mittelmiozänen Schichten von Kostej im Krasso-Szörenyer Komitat.— *Verh. Mitt. Siebenburg. Ver. Naturw.* 51: 1-199.
- COSSMANN, M., & A. PEYROT, 1922. Conchologie néogénique de l'Aquitaine.— *Act. Soc. Linn. Bordeaux* 73: 5-321.
- DITTMER, E., 1959. Jungtertiäre Ablagerungen im westlichen Schleswig-Holstein.— *Meyniana* 8: 1-21.
- GLIBERT, M., 1952. Faune malacologique du Miocène de la Belgique. II. Gastropodes.— *Mém. Mus. r. Sci. nat. Belg.* 121: 1-197.
- GRÜNDEL, J., 1980. Bemerkungen zur Überfamilie Cerithiopsacea H.A. Adams, 1854 (Gastropoda) sowie zur Fassung einiger ihrer Gattungen.— *Zool. Anz.* 204: 209-264.
- HOOYBERGHS, H.J.F., 1996. The stratigraphical position of the Edegem Sands Member (Berchem Formation, Miocene) in its type area at Wilrijk (N Belgium), based on planktonic foraminifera.— *Geol. en Mijnb.* 75: 33-42.
- JANSSEN, A.W., 1967. Beiträge zur Kenntnis des Miozäns von Dingden und seiner Mollusken-Fauna, 2.— *Geol. Palaeont.* 3: 153-193.
- —, & D. VAN DER MARK, 1967. Einleitung zu den Beiträgen zur Kenntnis der Molluskenfauna des jüngeren Tertiärs im Nordseebecken.— *Basteria* 32: 76-82.
- MARQUET, R., 1991. Recent temporary exposures of the Antwerpen Sands in the Antwerp city area: stratigraphy and fauna.— *Contr. Tert. Quatern. Geol.* 28 (1): 9-12.
- —, 1997. *Cerithiella genei* (Bellardi & Michelotti, 1840), new for the Miocene of Belgium (Gastropoda Prosobranchia: Cerithiopsidae).— *Basteria* 61: 23-26.
- MEUTER, F. DE, K. WOUTERS, & A. RINGELÉ, 1976. Lithostratigraphy of Miocene sediments from temporary outcrops in the Antwerp city area.— *Belg. Geol. Dienst, Prof. Papers* 1976/3: 1-17.
- VOORTHUYSEN, J.H. VAN, 1944. Miozäne Gastropoden aus dem Peelgebiet (Niederlande) (Rissoidea-Muricidae, nach Zittel's Einteilung 1924).— *Meded. Geol. Sticht. (C-IV-1)* 5: 1-116.
- ZILCH, A., 1934. Zur Fauna des Mittel-Miocäns von Kostej (Banat). Typusbestimmung und Tafeln zu O. Boettger's Bearbeitungen.— *Senckenbergiana* 16: 193-302.