

On the occurrence of *Spinucella reimersi* (von Koenen 1872) (Gastropoda: Muricidae) in the Late Miocene Gram Clay of Denmark, and an emended description of the species

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The very rare gastropod species *Spinucella reimersi* (von Koenen 1872) from the Gram Clay, southern Denmark, has for many years been more or less overlooked in the palaeontological literature. Schnetler (2005) monographed the mollusc fauna of the Gram Clay and gave a description and an illustration of the holotype, housed in the von Koenen collection in the Georg-August-University, Göttingen. In 2008 and 2011 two further specimens were found in the clay pit at Gram. The occurrence of the species is described. The new specimens have allowed an emended description of the species.

Keywords: Gastropoda, Muricidae, *Spinucella reimersi*, Gram Formation, Late Miocene, Denmark.

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The mica-rich clay at Gram in southern Denmark (Fig. 1) has been known since 1848, and digging of a pit for brick-making started after 1857 (L.B. Rasmussen 1968,



Fig. 1. Map of Denmark with the location of the Gram clay pit indicated. GPS coordinates 55.329608°N, 09.049985°E. Courtesy of Jesper Milàn, Geomuseum Faxe.

p. 10). The collecting of molluscs started soon thereafter, and Semper (1861) studied material from Gram. Further studies in the second half of the 19th century, including material from Gram, were made by von Koenen (1872, 1882) and Mörch (1874). A description of the geological setting of the Gram Clay is found in E.S. Rasmussen (2005). For further references to the fauna, see Schnetler (2005).

The physician Martin Reimers started as a general practitioner in Gram in 1841 and was a keen and skillful collector of fossils in the clay pit; without doubt this caught the interest of the professional palaeontologists. *Carinastarte vetula reimersi* (Ravn 1907), the most common mollusc species in the Gram Clay, was named in honour of Martin Reimers by Semper in an unpublished manuscript. The present study describes Martin Reimers' connection to a very rare and almost neglected gastropod species, *Spinucella reimersi*, which since the first finding in 1862 has only been encountered twice. Furthermore, two new specimens have allowed an emended description of the species.

Previous work

Martin Reimers treated his material with great care and placed it at the disposal of the palaeontologists.

Bendix-Almgreen (1986) illustrated a letter from Martin Reimers, posted November 4th 1862, to Professor G. Forchhammer in Copenhagen. In this letter he listed 33 species, which he at the same time had sent to the Mineralogical Museum in Copenhagen. According to the letter these specimens have the numbers 1862.715–747 in the accession record of the museum. Reimers listed 29 additional species of which he had only a few specimens, and *Purpura praecedens* Semper was one of these species. Strangely enough, this species name could not be found in any paper by Semper. According to L.B. Rasmussen (1968, p. 112) Reimers later lent his whole collection to von Koenen, who was working on his 1872 monograph on Miocene gastropods from northern Germany. Von Koenen stated (1872, p. 142) that Reimers had lent him some especially rare and interesting specimens and we may presume that *Purpura reimersi* was one of these specimens.

In a little known biography of Martin Reimers (Reimers 1984) the stories of his collection and contacts to the palaeontologists J.C. Semper and A. von Koenen and the malacologist O. Mörch were told. The two specimens of *Purpura reimersi* described by von Koenen (1872) were also mentioned (Reimers 1984, p. 54).

Von Koenen monographed the molluscan fauna of the Miocene of northern Germany in 1872 and included the localities in southern Jutland, which since 1864 had been part of Germany. It is evident that he had received material from Martin Reimers for his studies, as he established and described the new species *Purpura reimersi*, named after Martin Reimers (p. 202, pl. 1, figs 8a–b). According to Reimers (1984) Martin Reimers sent von Koenen two specimens for study and von Koenen mentioned these specimens, one from each of the localities Spandet (11 km west-south-west of Gram) and Gram, with the name Reimers in a parenthesis. The specimen from Gram had a defective labrum and the smaller one from Spandet had a defective body whorl. Both specimens lacked the protoconch and the first teleoconch whorl. There seems to be no doubt that the specimen from Gram is the same as *Purpura praecedens* Semper in the letter mentioned above. This specimen was never returned and the specimen from Spandet seems to have disappeared (H. Jahnke, personal communication 2000).

The name *Purpura praecedens* is consequently a *nomen nudum*, as it was never published by Semper. The common bivalve species *Carinastarte vetula reimersi* was also never published by Semper, but first described and illustrated by Ravn (1907). He credited Semper as author, because Semper had suggested the name in an unpublished manuscript (see Reimers 1984). Schnetler (2005) finally stated that Ravn (1907) was the author of *Carinastarte vetula reimersi*.

Mörch (1874) listed the molluscs from the Danish Tertiary, and in the list of the species from the mica clay from southern Jutland he mentioned *Purpura* (*Stramonita*?) *reimersi* von Koenen from Gram and Spandet (p. 287), with the name Reimers in a parenthesis. In the list Mörch indicated species that were not present in the collections of the Mineralogical Museum of Copenhagen with an asterisk (*). *Purpura* (*Stramonita*?) *reimersi* was not marked in this way and it would seem that the species was present in the museum when Mörch studied the collections. However, the species has never been located in the museum (Sten Lennart Jakobsen, personal communication 2010). We may therefore presume that Mörch simply forgot to indicate the species with an asterisk. Since then, the species has only been sporadically mentioned in the geological literature. Ravn (1907) carefully described all mollusc species from the Tertiary of Jutland, but *Purpura reimersi* seems to have been completely forgotten.

L.B. Rasmussen (1956) monographed the molluscan fauna of the Gram Clay and listed (1956, p. 19) the species from Gram mentioned by von Koenen (1872, 1882). *Purpura reimersi* appeared in this list, but the species was not treated in the systematical part. The reason might be that the species is not represented in the Danish collections, but it seems more reasonable that the species simply has been forgotten, as it was not mentioned at all in the systematical part of the final monograph by Rasmussen (1966, 1968). Yet Rasmussen (1966) quoted the letter from 1862 from Martin Reimers to Professor Forchhammer with the list of material, including *Purpura praecedens* Semper.

Material and Methods

During the study of material and literature for the revision of the Gram fauna (Schnetler 2005), I became aware of the specimens of *Purpura reimersi* mentioned by von Koenen (1872). I contacted the Georg-August-University in Göttingen, where the von Koenen collection is housed, to find out whether the specimens of *Purpura reimersi* were still in the collection. The museum helpfully replied that only the holotype from Gram was still in the collection and placed photos of it at my disposal (H. Jahnke, personal communication 2000). This holotype was described and illustrated in Schnetler 2005 (p. 99, pl. 6, figs 5a–b). The genus name *Purpura* has been replaced by *Spinucella*, established by Vermeij (1993).

Almost 150 years after the collection of the first specimen of *Purpura reimersi* a new specimen was found. A school class visited the clay pit in 2008,

under supervision of Martin Abrahamsson from Midtsønderjyllands Museum, Gram, and a 9-year-old boy found the specimen. Martin Abrahamsson immediately realised that the specimen was remarkable and sent me photos of it. A study demonstrated that it was a specimen of *Spinucella reimersi*. In 2009 the specimen was declared danekræ (DK 582, MGUH 33326). The specimen is slightly larger than the holotype and some characters are better preserved. The sculpture is more distinct and the axial ribs are more prominent.

A third specimen was collected in 2011. Except for a small part of the canal it is completely preserved. In 2011 the specimen was declared danekræ (DK 674, MGUH 33327). Both the second and the third specimens were found on the surface of the clay, which makes the stratigraphic position uncertain. Especially the third specimen is somewhat weathered due to pyrite disintegration.

Abbreviations

DK: Acronym for specimens in the Danekræ Collection, Natural History Museum of Denmark, Copenhagen. The Danekræ fossil trove are objects of geological, botanical or zoological fossil or subfossil nature, or meteorites found in Denmark, with unique scientific or exhibition value. MGUH: Natural History Museum of Denmark, Copenhagen, Denmark.

Emended description of *Spinucella reimersi* (von Koenen 1872)

The shell is rather large (26.0–28.6 mm high) and elongate-ovate (Fig. 2). The height/width ratio varies

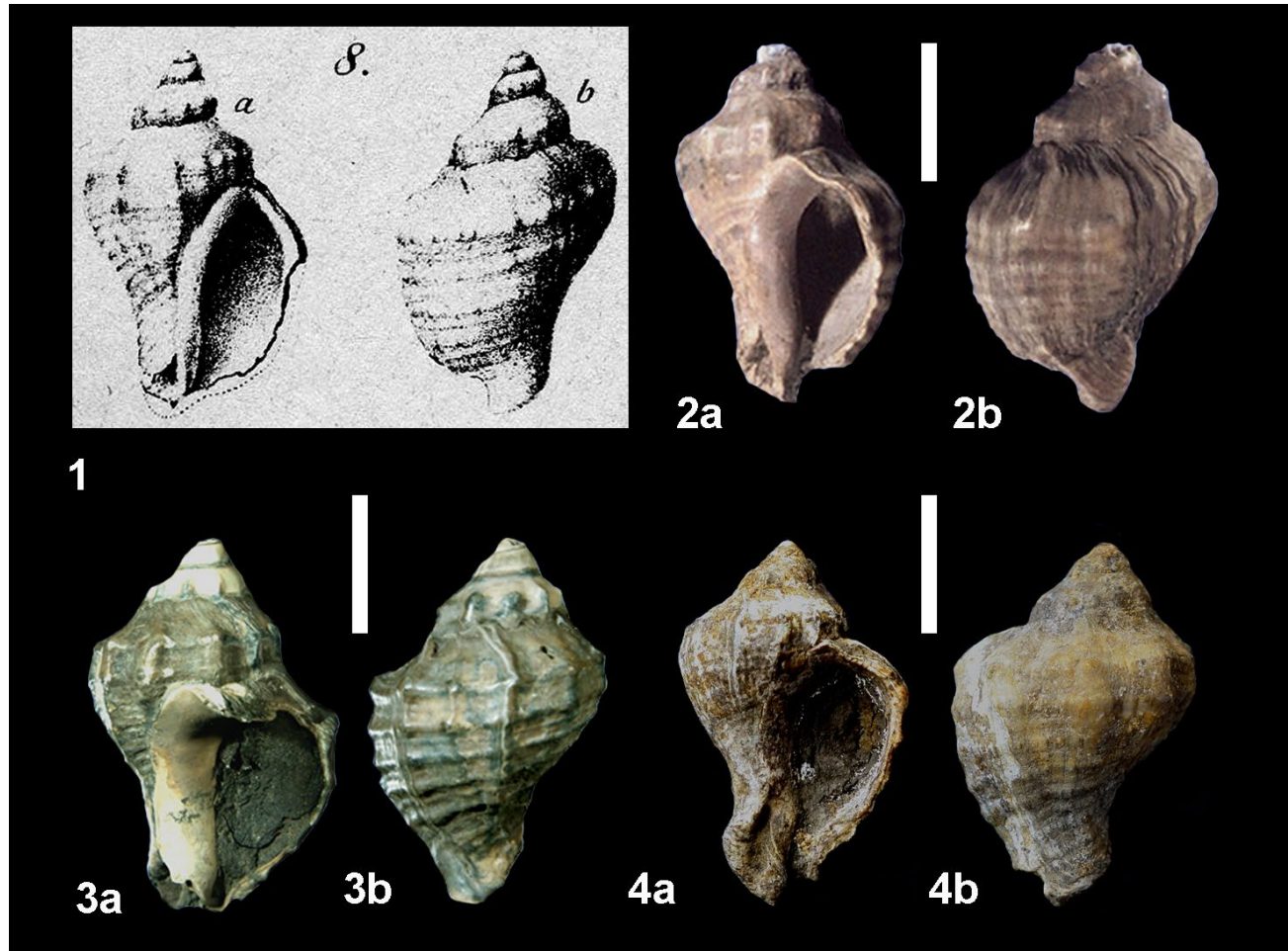


Fig. 2. The three known specimens of *Spinucella reimersi* (von Koenen 1872). 1: Reproduced segment of plate 1, figs 8a–b in von Koenen (1872), showing the holotype. 2a–b: The holotype, Collection von Koenen, Original Catalogue Nr. 454–78–1, Georg-August-Universität, Göttingen. Photo by Dr H. Jahnke, Göttingen. Height 26.0 mm, width 17.5 mm. 3a–b: The specimen leg. Erik Muurmann 2008; DK 582, MGUH 33326. Height 28.6 mm, width 18.0 mm. Photo by Martin Abrahamsson. 4a–b: The specimen leg. Stefan Eisenmann 2011; DK 674, MGUH 33327. Height 26.4 mm, width 17.2 mm. Photo by Martin Abrahamsson. Scale bars equal 10 mm.

from 1.49 to 1.59, the body whorl is *c.* 0.8 times the total shell height and the aperture and canal vary from 0.63 to 0.70 times the total shell height. On all specimens the protoconch and first teleoconch whorl are broken off.

All three specimens have *c.* four convex whorls, which are medium convex and more or less angulated due to two strong spiral bands. The whorls are separated by a deep suture and there is a more or less well-defined, concave to almost flat, subsutural ramp. The convex base is gradually constricted into a rather short siphonal canal, which is turned to the left. The canal is open and there is a distinct fasciole on the exterior of the shell, separated from the base by a pseudumbilical slit. The aperture is wide and oval, the labrum is slightly thickened and partly broken off on two of the specimens. The third specimen (Fig. 2, nos 4a–b) has an almost complete labrum and an internal groove spine near the anterior end of the siphonal canal. The columella is straight, without folds.

There are two strong primary spirals, of which the adapical is strongest and situated a little below the middle of the whorl, thus demarcating the concave to slightly convex adapical subsutural ramp. On this ramp there are three weak spiral cords visible from the second teleoconch whorl. The adapical spiral cord is situated immediately below the suture, while the following two are close-set and situated near the middle of the ramp. On the last whorl the adapical ramp becomes slightly convex and the spiral cords are very indistinct, but visible on Fig. 2, nos 2b and 4b. However, these weak cords on the infrasutural ramp are too poorly developed to be distinguishable.

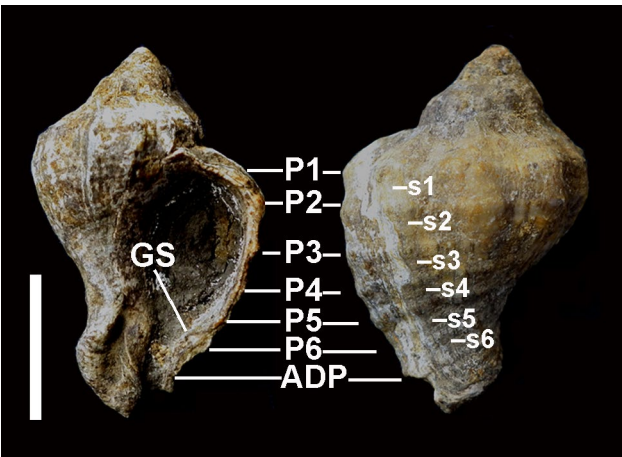


Fig. 3. The specimen DK 674, MGUH 33327 with the spiral cords and the groove spine indicated, following the terminology of Merle (2001, 2005). **P1**: shoulder cord. **P2–P6**: primary cords of the convex part of the teleoconch whorl. **s1–s6**: secondary spirals. **ADP**: adapical siphonal primary cords. **GS**: groove spine. Photo by Martin Abrahamsson. Scale bar equals 10 mm.

The abapical, almost perpendicular part of the whorl has two spiral cords (Fig. 3, P1 and P2), of which the adapical shoulder cord P1 is the strongest and carina-like. Below these cords there are four additional spiral cords (P3–P6) with decreasing strength. Secondary spirals are inserted. On the rear side of the last whorl there are 11 spiral cords of varying strength (Fig. 3, P1–P6 and s1–s5) and three cords on the neck of the canal. The spirals are intersected by almost orthocline axial ribs, about 9–10 on each whorl. The radial ribs disappear on the abapical part of the whorl. On the holotype two former apertures are indicated by numerous close-set growth lines which form weak spines on the spirals. The specimen illustrated in Fig. 2, no. 3a–b has a somewhat damaged aperture, probably made by a decapod, and the damage has not been repaired by the gastropod.

Table 1. Measurements of the three known specimens of *Spinucella reimersi* (von Koenen 1872)

	Height mm	Width mm	H/W	Body whorl mm	Aperture mm
Holotype	26.0	17.5	1.48	21.8	17.5
DK 582	28.6	18.0	1.59	23.7	18.0
DK 674	26.4	17.2	1.52	22.7	18.5

DK: Danekræ numbers

Discussion

The three specimens show some variation. Fig. 2, nos 2 and 3 have rather angular whorls and a well-developed adapical, concave ramp, while no. 4 has more convex whorls and a slightly convex adapical ramp on the body whorl. This specimen has an almost completely preserved canal, while the two other specimens have the anterior tip of the canal broken off. On Fig. 2, nos 2 and 3 the labrum is partly broken off, but on the third specimen (Fig. 2, nos 4a–b; Fig. 3) the diagnostic groove spine on the internal side of the labrum is visible between spiral cords P5 and P6. In all features the specimens match the description and diagnosis of the genus *Spinucella* Vermeij 1993. The species has some resemblance to the Pliocene species *Spinucella tetragona* (Sowerby 1825), which has a large range of variety, see e.g. Marquet 1998, p. 130, fig. 140. Merle (2005) provided a figure showing in detail the spiral sculpture of *Spinucella tetragona*. For further discussion of the spiral cords of the Muricidae, see Merle (2001, 2005).

The measurements of the three known specimens of *Spinucella reimersi* are given in Table 1.

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References

- Bendix-Almgreen, S.E. 1986: Skaller, skeletter og årmillioners ler. In: Christensen, L. B. (ed.), Midtsønderjyllands Museum på Gram Slot 76–86. Naturhistorie og geologi, 23–33. Amtsgården, Aabenraa.
- Marquet, R. 1998: De Pliocene gastropodenfauna van Kallo (Oost-Vlaanderen, België). Belgische Vereniging voor Palaeontologie, 246 pp.
- Merle, D. 2001: The spiral cords and the internal denticles of the outer lip of the Muricidae: terminology and methodological comments. *Novapex* 2(3), 69–91.
- Merle, D. 2005: The spiral cords of the Muricidae (Mollusca: Gastropoda): importance of ontogenetic and topological correspondences for delineating structural homologies. *Lethaia* 38, 367–379.
- Mörch, O. 1874: Forsteningerne i Tertiærlagene i Danmark. In: Beretning om det 11te skandinaviske Naturforskerskøde i Kjøbenhavn 1873, 274–298. J.H. Schultz, Kjøbenhavn.
- Rasmussen, E.S. 2005: The geology of the upper Middle – Upper Miocene Gram Formation in the Danish area. In: Roth, F. & Hoedemakers, K. (eds), *The Geology and Palaeontology of the Gram Formation (Late Miocene) in Denmark*, 1. *Palaeontos* 7, 5–16.
- Rasmussen, L.B. 1956: The Marine Upper Miocene of South Jutland and its Molluscan Fauna. *Danmarks Geologiske Undersøgelse* 2. Række (81), 1–166.
- Rasmussen, L.B. 1966: Molluscan Faunas and Biostratigraphy of the Marine Younger Miocene Formations in Denmark. Part I. Geology and Biostratigraphy. *Danmarks Geologiske Undersøgelse* 2. Række (88), 1–358.
- Rasmussen, L.B. 1968: Molluscan Faunas and Biostratigraphy of the Marine Younger Miocene Formations in Denmark. Part II. Palaeontology. *Danmarks Geologiske Undersøgelse* 2. Række (92), 1–265.
- Ravn, J.P.J. 1907: Molluskfaunaen i Jyllands Tertiæraflejringer. *Det Kongelige Danske Videnskabernes Selskabs Skrifter*, 7. Række, naturvidenskabelig og matematisk Afdeling III, 2, 215–386.
- Reimers, F. 1984: Fysikus Martin Reimers. *Sønderjydske Årbøger* 1, 49–58. <https://tidsskrift.dk/soenderjyskeaarboeger/article/view/80427>
- Schnetler, K.I. 2005: The Mollusca from the stratotype of the Gram Formation (Late Miocene, Denmark). In: Roth, F. & Hoedemakers, K. (eds), *The Geology and Palaeontology of the Gram Formation (Late Miocene) in Denmark*, 1. *Palaeontos* 7, 62–190.
- Semper, J.O. 1861: Beiträge zur Kenntniss der Tertiärformation. *Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg* 15, 221–409.
- Sowerby, J. de C. 1825: The mineral conchology of Great Britain, or coloured figures and descriptions of those remains of animals or shells which have been preserved at various times and depths in the earth. Part 5. Richard Taylor, London. 160 pp.
- von Koenen, A. 1872: Das Miocæn Nord-Deutschlands und seine Mollusken-Fauna I. *Schriften der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zur Marburg* 10, 137–262.
- von Koenen, A. 1882: Die Gastropoda holostomata und tectibranchiata, Cephalopoda und Pteropoda des Norddeutschen Miocäns. *Neues Jahrbuch für Mineralogie Beilage-Band II*, 223–363.
- Vermeij, G.J. 1993: *Spinucella*, a new genus of Miocene to Pleistocene muricid gastropods from the eastern Atlantic. *Contributions to Tertiary and Quaternary Geology* 30(1–2), 19–27.

