

LYRIA (LYRIA) PICTURATA (DE GRATELOUP, 1834) FROM THE MIOCENE OF WINTERSWIJK-MISTE, THE NETHERLANDS, WITH NOTES ON RELATED TAXA (MOLLUSCA, GASTROPODA)

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A single specimen of the volutoid gastropod *Lyria (Lyria) picturata* (de Grateloup, 1834) is recorded from the Miocene (Hemmoorian) of Winterswijk-Miste, The Netherlands. A revision of related European taxa leads to the conclusion that *Voluta taurinia* Michelotti, 1847 is a junior subjective synonym of *V. picturata* de Grateloup. *Voluta oliva* de Grateloup, 1847 may be retained as a forma, of which *Lyria taurinia* var. *magnoventrosa* Sacco, 1904 is a junior synonym. The distribution pattern of *Lyria picturata* includes the North Sea Basin (forma *oliva* only), SW France, northern Italy, Turkey and the Paratethys.

Key words — Mollusca, Gastropoda, Volutoidea, *Lyria*, Miocene, taxonomy.

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CONTENTS

Introduction p. 117
 Systematic part p. 117
Lyria outside the North Sea Basin p. 119
 Conclusions p. 120
 References p. 120

INTRODUCTION

Subsequent to the publication of my paper on the Winterswijk-Miste molluscan fauna (Janssen, 1984) several new species have been found, as from time to time new exposures were made and large quantities of sediment processed. Since these new collections were not made by the Palaeontology Department of the Nationaal Natuurhistorisch Museum at Leiden (formerly 'Rijksmuseum van Geologie en Mineralogie, RGM), most of the new taxa are housed in private collections.

Several years ago, Mr B. van der Hoek (Twello, The Netherlands) demonstrated a specimen of the genus *Lyria*, hitherto known from the North Sea Basin Miocene only in one specimen from Hemmoor, F.R.G., published by Kautsky (1925, p.

132). Mr van der Hoek assented to a study of this specimen and to having a plaster cast made for the RGM collections.

The identification of this specimen necessitated a comparison with related forms from other European localities, which resulted in a taxonomic revision.

SYSTEMATIC PART

- Phylum Mollusca
- Classis Gastropoda
- Ordo Neogastropoda
- Superfamilia Volutoidea
- Familia Volutidae
- Genus *Lyria* Gray, 1847 s.str.

Type species: *Lyria (Lyria) nucleus* (Lamarck).

***Lyria (Lyria) picturata* (de Grateloup, 1834)**
 Pl. 1, Fig. 9

1820 *Voluta papillaris*. — Borson, p. 205, pl. 1, fig. 8 (non Gmelin).

- (1825) *Voluta taurinia* Bonelli, Catalogus no. 2532 (unpublished).
 1827 *Voluta mitraeformis*, de Grateloup, p. 16 (non Lamarck).
 *1834 *Voluta picturata* [...] Nob., de Grateloup, p. 293.
 1837 *Voluta magorum* Broc. var. — Pusch, p. 117, pl. 11, fig. 2a-b (non Brocchi).
 1840 *Voluta picturata*. Grat. — de Grateloup, pl. 39 (*Voluta* II), figs 5-11.
 1844 *Voluta papillaris*. Borson. — Deshayes & Milne Edwards, p. 431.
 1847 *Voluta oliva*. Grat., de Grateloup, pl. 46 (Supplément I), fig. 8.
 1847 *Voluta Taurinia*. Bon., Michelotti, p. 319.
 1852 *Voluta picturata*, Grateloup (*sic* !), 1845. — d'Orbigny, p. 9 (26e étage no. 142).
 1852 *Voluta Taurina*, Bonelli. — d'Orbigny, p. 53 (26e étage no. 885).
 [1852 *Voluta oliva*. — d'Orbigny (26e étage no. 898) (mentioned only in the index on p. 188; the texts of nos 891 to 899, obviously belonging to the genus *Mitra*, are missing on page 53)].
 1852 *Voluta taurinia* Bon. — Hoernes, p. 95, pl. 9, figs 14-16.
 1853 *Voluta papillaris* Bors. — von Eichwald, p. 197.
 ?1866 *Voluta taurina* Bon. var. — Speyer, p. 13, pl. 1, fig. 6a-d.
 1880 *Voluta taurinia* Bon. — Hoernes & Auinger, p. 72.
 1890 *Lyria taurinia* (Bon.) var. A et B. — Bellardi & Sacco, p. 8, pl. 1, fig. 5a-b.
 1890 *Lyria taurinia* (Bon.) var. C. — Bellardi & Sacco, p. 8, pl. 1, fig. 6.
 1896 *Voluta taurinia* Bon. — Boettger, p. 58.
 1899 *Voluta picturata* Grat. — Cossmann, p. 114.
 1899 *Voluta taurinia* Bon. — Cossmann, p. 114.
 1904 *Lyria taurina* (Bon.) var. *subplanulata* Sacc. — Sacco, p. 89.
 1904 *Lyria taurina* (Bon.) var. *perventrosa* Sacc. — Sacco, p. 89.
 1904 *Lyria taurina* (Bon.) var. *magnoventrosa* Sacc. — Sacco, p. 89.
 1906 *Voluta taurinia* Bon. — Boettger, p. 5.
 1912 *Lyria taurinia* Bon. — Friedberg, p. 121, pl. 6, fig. 8a-b.
 1925 *Lyria taurinia* Bon. — Kautsky, p. 132, pl. 9, fig. 12.
 1928 *Lyria picturata* Grateloup. — Peyrot, p. 145, pl. 10, figs 38-44.
 1928 *Lyria picturata* (Grateloup) mut. *primitiva* nov. mut., Peyrot, p. 147, pl. 11, figs 9-10.
 1928 *Lyria oliva* (Grateloup). — Peyrot, p. 147, pl. 11, figs 4-6.
 1938 *Lyria taurinia* Bon. — Friedberg, p. 135.
 1955 *Lyria (Lyria) taurinia* Bon. — Korobkov, pl. 77, fig. 1a-b.
 1956 *Lyria taurinia* (Bonelli). — Csepregy-Meznerics, p. 415, pl. 9, figs 9, 10.
 1958 *Lyria taurinia* (Bonelli). — Erünal-Erentöz, p. 86, pl. 15, figs 5-8.
 1960 *Lyria picturata* Grateloup, sp. 1833. — Glibert, p. 60.
 1960 *Lyria taurinia* Bonelli, sp. 1825. — Glibert, p. 60.
 1966 *Lyria taurinia* Bonelli, 1826. — Strausz, p. 374, pl. 41, figs 11-14.

- 1982 *Lyria taurinia* (Michelotti, 1847, Bonelli m.s.). — Ferrero Mortara *et al.*, p. 173.
 1982 *Lyria taurinia* (Michelotti, 1847, Bonelli m.s.) var. *perventrosa* Sacco, 1890. — Ferrero Mortara *et al.*, p. 173.
 1982 *Lyria taurinia* (Michelotti, 1847, Bonelli m.s.) var. *magnoventrosa* Sacco, 1890. — Ferrero Mortara *et al.*, p. 173.

Material studied — A single adult specimen with slightly corroded apical whorls in the collection of Mr B. van der Hoek, Twello (The Netherlands), collected in 1983 (registration no. M 02-339). A plaster replica of this specimen is housed in the RGM collections, registration no. RGM 229 799.
Description — Shell solid, medium-sized, fusiform to mitraeform, about 2½ times as high as wide. The apex is worn, somewhat more than eight post-embryonal whorls are preserved. The relatively high whorls are slightly convex, without any thickening below the sutures. The body whorl comprises about three quarters of the entire shell height. Below the periphery the shell gradually tapers towards the relatively short and wide canal. A slightly thickened siphonal belt is present. There is no pseudumbilicus.

The aperture is long and narrow, widest in its upper third. There is no distinct boundary at the transition into the canal. The apertural margin is slightly thickened externally. No internal thickening or denticles are present. The columella is massive, with a distinctly separated, but unthickened callus. Three columellar folds are present, the middle one of which is the strongest. The lower one coincides with the left margin of the canal. Two very weak columellar folds are vaguely discernible above the stronger ones, and a further one near the upper corner of the aperture.

The collabral ornament of the shell is restricted to the upper two of the preserved whorls, on which some 10 to 12 ribs are present, rather indistinct due to the poor condition of the apical shell. This sculpture rapidly disappears on the younger volutions, which are entirely smooth. On the body whorl, especially near the canal, a very vague spiral striation is visible in favourable light. Orange-coloured, narrow and widely spaced spiral lines are present on the two youngest whorls: 5 on the penultimate one and 14 on the body whorl, the lower one being just above the siphonal belt.

The growth lines are distinct but not accentuated. They run almost perpendicular or are only slightly curved backwards between the sutures.

On the body whorl they are flexuous, curving backwards on the canal, with a distinct separate curve on the siphonal belt.

Remarks — The shell described here is the only one known from the Miste locality¹. A further specimen from the Miocene of the North Sea Basin was mentioned, as *Lyria taurinia*, from the famous Hemmoor locality by Kautsky (1925, pl. 9, fig. 12). This specimen (judging from the illustration) agrees perfectly with the Miste shell in size and overall form, but apparently the colour pattern is not preserved. It is undoubtedly conspecific with the Miste shell.

Additional records of Miocene *Lyria* from the North Sea Basin were given by Gripp (1915, p. 26, as *Voluta taurinia* Bon.) from several Early Miocene localities. These records could not be checked, as the whereabouts of the material are unknown. Specimens from one of these localities (Segeberg) studied by Kautsky (1925, p. 132), however, proved to belong to another group of volutoid species, related to *V. suturalis* Nyst.

The Late Oligocene *Lyria* (*Lyria*) *tumida* (von Koenen, 1909) (Pl. 1, Fig. 12) is known from several localities (Freden, Volpriehausen and Ahnetal, all F.R.G.). This species was well illustrated by R. Janssen (1979, pl. 16, fig. 33). It differs from the Miocene form by its slender shell, its somewhat shorter apical shell part and, especially, by the development of the collabral sculpture, which frequently persists until the body whorl. Also, the columellar folds seem to be somewhat better developed in *L. tumida*.

A further Late Oligocene *Lyria* record concerns a juvenile specimen (Pl. 1, Fig. 11a-c) described by Speyer (1866, p. 13, pl. 1, fig. 6a-d) as *Voluta taurina* Bon. var. R. Janssen (1979), who compared this shell with Miocene specimens of *Lyria taurinia*, found several differences and regarded Speyer's specimen to be not conspecific with that species, and referred to it as *Lyria* (*Lyria*) sp. ex aff. *taurinia* (Bonelli 1825).

LYRIA OUTSIDE THE NORTH SEA BASIN

Forms related to the shells from Miste and Hemmoor have frequently been mentioned from localities outside the North Sea Basin (Aquitaine Basin, northern Italy, Turkey, and various Paratethys localities: Romania, Hungary, Austria, Poland).

From Saubrigues (Aquitaine Basin), *Lyria oliva* (de Grateloup) was described (Pl. 1, Fig. 7), based on a single shell. This specimen (see photograph in Peyrot, 1928, pl. 11, figs 4-6) agrees well with the North Sea Basin shells, in sculpture as well as in overall form. The French specimen might be slightly broader, but it has a similarly elongate apical part. According to Peyrot this *L. oliva* is closely related to another *Lyria* from the Aquitaine Basin, viz. *L. picturata* (de Grateloup) (Pl. 1, Figs 1, 2a-c), which is, in several varieties, also known from Saubrigues and a number of other localities. The differences between *L. oliva* and *L. picturata* are to be found mainly in the shell's proportions, *L. picturata* having a relatively shorter apical shell part, resulting in a more thick-set shell form. The shell wall in *L. picturata* is also stated to be slightly produced below the sutures, thus making the spira somewhat scalariform. Judging from Peyrot's illustrations, however, this latter feature is hardly recognisable.

From Italy a related *Lyria* species has been recorded under the name of *L. taurinia* from several Miocene localities in the Torino hills. Bonelli (1825, 1826 or even 1827) is usually cited as being the author of this taxon. Bonelli's paper, however, being a catalogue of the Torino museum, was never published. The first valid introduction of the name '*taurinia*' (as *Voluta taurinia*) is by Michelotti (1847), who recorded the species from 'La colline de Turin, Dax et la Pologne'. The first illustration of *L. taurinia* specimens from the type area is given in Bellardi & Sacco (1890, pl. 1, fig. 5a-b). This form (compare Pl. 1, Fig. 3a-b) corresponds closely with *L. picturata*. The relationship was recognised also by other authors, e.g. Peyrot (1928, p. 147). The differences between the two taxa, as given by that author, are partly based on an incorrect translation of Bellardi & Sacco's Latin diagnosis:

'[...] *Superficies* [...], *in anfractus mediis et ultimo levis, in primis quatuor vel quinque longitudinaliter costata; [...]*'.

¹ Just before submitting this paper I experienced that a second *Lyria* specimen was found at the same locality. It is in the private collection of Mr W. Peletier, at Winterswijk, The Netherlands (Dr P.A.M. Gaemers, personal communication).

Strausz (1966, p. 375) was correct in stating that this does not mean that there are four or five radial ribs on the first whorls, but that the first four or five whorls have radial sculpture. This could be verified on several specimens of *L. taurinia* from the type area present in the RGM collections. In these shells a collabral sculpture of some 10-13 ribs is present on the upper volutions. This means that *L. taurinia* (Michelotti, 1847) should be synonymised with *L. picturata* (de Grateloup, 1834).

When describing *Lyria taurinia*, Bellardi & Sacco distinguished three main varieties, A, B and C. Of these, only var. C was illustrated (pl. 1, fig. 6). This form (compare Pl. 1, Fig. 8) was named var. *magnoventrosa* by Sacco (1904). It closely resembles *L. oliva* from Saubrigues, SW France. The distinguishing features as given by Peyrot (1928, p. 148), in my opinion, do not justify the maintenance of two separate taxa.

Among the various *Lyria* forms known from European Oligocene and Early Miocene deposits especially the one described from the North Sea Basin, *L. (L.) tumida* (von Koenen, 1909) (Pl. 1, Fig. 12), resembles *L. picturata*. In particular, the elongate form and the reduction of collabral sculpture make it a likely candidate as predecessor of *L. picturata*. In northern Italy another species, *L. (L.) magorum* (Brocchi, 1814), which is characterised by a rather elongate, more or less ovoid shell and persistent collabral sculpture, co-occurs with *L. picturata* at several localities in the Torino hills (Rio del Batteria, Villa Forzano, Termo-fourà, Baldissero-torinese, Val Ceppi). Unlike *L. picturata*, *L. magorum* is also known from older, presumably Oligocene localities in Italy. Late Oligocene and Miocene forms, related to *L. magorum*, are known also from the Aquitaine Basin, like *L. subcostata* (d'Orbigny, 1852), *L. submitraeformis* (d'Orbigny, 1852) mut. *burdigalica* Peyrot, 1928, *L. subharpula* (d'Orbigny, 1852) mut. *aquitana* Peyrot, 1928, and *L. aturenensis* Peyrot, 1928.

CONCLUSIONS

To summarise there are very similar *Lyria* populations in SW France and northern Italy, and both comprise a shorter (*L. picturata* and *L. taurinia*, respectively) and a more elongate form (*L. oliva* and *L. magnoventrosa*, respectively). The only possible conclusion is that this complex should be interpreted as a single species demonstrating a wide

range of variation. The same conclusion was anticipated by Strausz (1966, p. 374) and, in fact, already by Deshayes & Milne Edwards (1844, p. 431), who stated sub *Voluta papillaris*: 'Fossile de Dax, et de la Superga, près Turin'.

The priority laws enjoin in this case that the correct specific name of this complex is *L. picturata* (de Grateloup, 1834). A lectotype was designated by Peyrot (1928, pl. 11, figs 38-40). Type locality of this taxon is Saubrigues in SW France (dép. Landes). Stratum typicum are the 'Marnes de Saubrigues' ('Faluns bleus de Saint-Jean de Marsac') of Miocene (Burdigalian/Langhian) age, which constitute part of a palaeocanyon fill.

The more elongate forms of *L. picturata* should be referred to as forma *oliva* (de Grateloup, 1847), of which *L. magnoventrosa* Sacco, 1904 is a junior synonym. The fact that the forma *oliva* apparently co-occurred with the typical form indicates that these are not subspecies, even when only the elongate form has so far become known from the North Sea Basin.

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- cipales espèces qui s'y rapportent; précédée d'une introduction offrant la détermination des caractères de l'animal, sa distinction du végétal et des autres corps naturels; enfin, l'exposition des principes fondamentaux de la zoologie. Deuxième édition, 10. Histoire des mollusques. Paris (Baillière), 638 pp.
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PLATE 1

Outlines (colour patterns omitted !) of *Lyria* species from various European Late Oligocene and Miocene localities.

Lyria (Lyria) picturata (de Grateloup, 1834)

- Fig. 1. Saubrigues (France, dép. Landes); Miocene (Burdigalian/Langhian). After de Grateloup (1834, pl. 39 = *Voluta* II, fig. 5; as *Voluta picturata* Grat.).
- Fig. 2. Lectotype. Saubrigues (France, dép. Landes); Miocene (Burdigalian/Langhian). After Peyrot [1928, pl. 11, figs 38-40; as *Lyria picturata* (Grat.)].
- Fig. 3. Colli Torinesi (Italy); Miocene ('Helvetiano'). After Bellardi & Sacco [1890, pl. 1, fig. 5a-b; as *Lyria taurinia* (Bon.)].
- Fig. 4. Szob (Hungary), Miocene ('Tortonian'). After Strausz (1966, pl. 41, figs 11, 12; as *Lyria taurinia* Bonelli, 1826) (the same specimen was also illustrated in Csepregy-Meznerics, 1956, pl. 9, figs 9, 10).
- Fig. 5. Lapugy (Rumania), Miocene ('Badenian'). After Strausz (1966, pl. 41, figs 11, 12; as *Lyria taurinia* Bonelli, 1826); specimen showing internal columellar folds.
- Fig. 6. Steinabrunn (Austria); Miocene ('Badenian'). After Hoernes (1852, pl. 9, fig. 14a; as *Voluta taurinia* Bon.).

Lyria (Lyria) picturata (de Grateloup, 1834) forma *oliva* (de Grateloup, 1847)

- Fig. 7. Holotype. Saubrigues (France, dép. Landes); Miocene (Burdigalian/Langhian). After de Grateloup (1847, pl. 46 = suppl. I, fig. 8; as *Voluta oliva* Grat.).
- Fig. 8. Rio della Batteria (Italy); Miocene ('Helvetiano'). After Bellardi & Sacco [1890, pl. 1, fig. 6; as *Lyria taurinia* (Bon.) var. C].
- Fig. 9. Winterswijk-Miste (The Netherlands). Miocene (Hemmoorian). After plaster replica in the Nationaal Natuurhistorisch Museum, dept. Cainozoic Mollusca no. RGM 229 799 (original in private collection of B. van der Hoek).
- Fig. 10. Hemmoor (F.R.G.), Miocene (Hemmoorian). After Kautsky (1925, pl. 9, fig. 12; as *Lyria taurinia* Bon.).

Lyria (Lyria) sp.

- Fig. 11. Göttrtrup (F.R.G.), Oligocene (Chatian). After Speyer (1866, pl. 1, fig. 6a-c; as *Voluta taurina* Bon.).

Lyria (Lyria) tumida (von Koenen, 1909)

- Fig. 12. Freden near Alfeld/Leine (F.R.G.), Oligocene (Chatian). After R. Janssen (1979, pl. 16, fig. 33).

Fig. 11c × 4, all other figures natural size.

PLATE 1

