Gourmya magnifica sp. nov. (Gastropoda: Cerithiidae), a new species from the Miocene of Java

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ABSTRACT

***Gourmya* belongs to a group of molluscs, which originated during the Paleogene in the Western Tethys and along the Eastern Atlantic coast but then established in the IWP Region during the Neogene. Similar patterns have been observed by Harzhauser et al. (2007, 2008) for tridacnine bivalves and certain strombids. In this paper we describe an extremely large species from the Middle Miocene Langhian of Java; *Gourmya magnifica* sp. nov.**

Key words – Cerithioidea, *Gourmya*, Miocene, Indonesia, new species, taxonomy

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INTRODUCTION

In this paper we continue the work of Dekkers et al. (2020), Merle et al. (2020), and Landau et al. (2020a, b) on the gastropod assemblage occurring at a locality close to the village of Wonosari, Gunung Kidul Regency, Special Region of Yogyakarta, Java, Indonesia in describing a remarkable large new cerithiid. As discussed by Dekkers et al. (2020: 2), although the exact locality is unknown, the deposit is dated accurately to the Langhian.

Houbrick (1984) gave the genus *Gourmya* as an example of a 'living fossil', represented today by a single species *G. gourmyi* (Crosse, 1861), living today on subtidal coral reefs around New Caledonia in the southwest Pacific, the sole survivor of a Tethyan lineage.

The genus appeared in the Rupelian (Early Oligocene) where it is represented along the European Atlantic Frontage by two species, according to Magne & Vergneau-Saubade (1972): *G. labrosa* (Grateloup, 1845) [= *Cerithium koninckii* Grateloup, 1845, non d'Archiac, 1843; = *Cerithium ocirrhoe* d'Orbigny, 1852, replacement name for *Cerithium koninckii* Grateloup, 1845, non d'Archiac, 1843; for synonymy see Pacaud (2019: 106)] and *G. gaasense* Magne & Vergneau-Saubade, 1972. In the Lower Miocene Aquitanian and Burdigalian by *Gourmya tuberosa* (Grateloup, 1846) and by *Gourmya delbosi* (Michelotti, 1861) [= *Cerithium romeo* Bayan, 1870] in the western Tethys, documented from Italy (Fuchs, 1870; Oppenheim, 1900; Cossmann, 1906; Menegatti, 1978), Macedonia (Gripp, 1922) and Greece (Harzhauser, 2004). Harzhauser (2004) treated both taxa as separate species based on the second row of tubercles of *G. tuberosa*, but it is possible all occurrences represent a single polymorphic species.

Records of this genus from the Eocene of Turkey, described by Gürsoy & Taner (2012), are based on misidentifications. Similarly, the Eocene records mentioned by Cossmann (1906) from Vicentin in Italy are based on erroneous stratigraphic correlation of the Rupelian locality Trinita di Montecchio Maggiore.

Both species persist in their distribution areas into the Aquitanian (Sacco, 1895; Magne & Vergneau-Saubade, 1972; Lozouet et al., 2001) and may form large populations in nearshore settings (e.g., Sivas Basin, Turkey, own data M.H.). The last occurrences of *Gourmya* in Europe are reported from the Burdigalian of Italy (Sacco, 1895). We can find no Atlantic Burdigalian records for the genus (see Magne & Vergneau-Saubade, 1972; Lozouet et al., 2001).

The genus expanded its range into the Indo-Pacific prior to the closure of the Tethys Seaway during the Early Miocene (Harzhauser et al., 2007), and is known as a fossil in Java from the Lower Miocene Nyalingdung Formation [*G. njalindungense* (Martin, 1921)] and unnamed beds from the Upper Miocene [*G. parungpontengense* (Martin, 1899)] (see Leloux & Wesselingh, 2009). In this paper we complete this stratigraphic gap by describing an extremely large species from the Middle Miocene Langhian of Java.

Abbreviations:
NHMW – Natural History Museum Vienna (Vienna, Austria).

GEOLOGICAL SETTING

The material originates from the area around the village of Wonosari, Gunung Kidul Regency, Special Region of Yogyakarta, 40 km SE of Yogyakarta, Java, Indonesia. The exact locality is unknown, but the deposits outcrop on the banks of a river or stream.

Based on calcareous nannofossils the age is attributed to NN5 zone (Martini, 1971), which comprises the Upper Langhian and lowermost Serravallian. However based on the similarity of our samples to the nannofossils association described by Marshall et al. (2015), our assemblages can be attributed to the Langhian part of NN5, lower Middle Miocene. The frequent occurrences of small reticulofenestrids (*Reticulofenestra minuta* Roth, 1970) and ascidian spicules together with discoasters point to shallow, well stratified, warm marine waters. For further discussion see Dekkers et al. (2020).

Figs 1-8. ***Gourmya magnifica*** sp. nov. 1-3. Holotype NHMW 1901/0034/0091, height 123.8 mm, width 50.5 mm. 4-5. Paratype 1 NHMW 1901/0034/0092, height 112.3 mm, width 47.7 mm. 6-7. Paratype 2 NHMW 1901/0034/0093, height 148.5 mm, width 59.9 mm. 8. Paratype 4 NHMW 1901/0034/0095, height 49.2 mm, width 23.5 mm (juvenile spire fragment).

MATERIAL AND METHODS

The material described here is deposited in the Natural History Museum Vienna (NHMW).

TAXONOMY

Subclass Caenogastropoda Cox, 1960
Order Caenogastropoda [unassigned]
Superfamily Cerithioidea Fleming, 1822
Family Cerithiidae Fleming, 1822
Subfamily Cerithiinae Fleming, 1822
Genus *Gourmya* P. Fischer, 1884

Type species (by monotypy): *Cerithium gourmyi* Crosse, 1861, present-day, New Caledonia.

Gourmya P. Fischer, 1884: 680.

Members of the cerithiid genus *Gourmya* P. Fischer, 1884 are easily recognized by their stocky, solid, moderately broad shells, with a large inflated last whorl and, most importantly, by their apertural characters; the outer lip thickened by a prominent labial varix, a deep anal canal and a centrally placed, tubular, straight siphonal canal, with an abapical extension of the outer lip curling around the ventral portion of the canal, but not attached to it.

Gourmya magnifica **sp. nov.**

(Figs. 1-8)
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?*Campanile gigas* (Mart.). Beets, 1941: 59, pl. 3, figs 106-114 (non *Telescopium gigas* Martin, 1883).

Description. – Shell large and tall-spired for genus, very solid, cerithiform, apical angle 31-34°. Protoconch and earliest teleoconch whorl not preserved. Teleoconch about ten whorls separated by weakly impressed, linear suture. Spire whorl profile flat-sided to slightly concave on penultimate whorl, with periphery at abapical suture. Sculpture of very fine, weak to subobsolete, crowded spirals roughly equal in width to their interspaces. Last whorl moderately inflated, 50-53% of total height; flattened ventrally, at periphery developing prominent, elevated, horizontally-elongated dorsal hump abapically, whorl profile concave adapically, roundly angled at hump, moderately constricted at base. Aperture ovate, 32-33% total height. Outer lip convex, strongly thickened by labial varix, smooth within, flared abapically with hook-like abapical extension of outer lip crossing siphonal canal, but not fused with it. Anal canal narrow, well developed, U-shaped notch, bordered medially by prominent, elevated parietal fold. Siphonal canal straight, relatively short, bent to left, tubular. Columella concave, more strongly excavated abapically, bearing abapical rounded fold

delimiting siphonal canal and parietal fold delimiting anal canal. Columellar callus thin, sharply delimited, adherent, moderately expanded over medial portion of whorl..
The color of the earlier whorls (after the dark colored first whorls) are almost the same as the first part of the body whorl, but there is a mid-whorl small dark grey band that becomes a broader band on the body whorl.

Variability. – Specimens in the type series are remarkably constant in shell shape and sculpture. The only notable difference is that in the holotype a slight ridge or hump is also present on the dorsum of the penultimate whorl. This is not an ontogenic character, as it is not present in the much larger paratype 1, nor the similarly sized paratype 2.

Holotype. – Holotype NHMW 1901/0034/0091, height 123.8 mm, width 50.5 mm (Figs 1-3).

Paratypes. – All from the type locality. Paratype 1 NHMW 1901/0034/0092, height 112.3 mm, width 47.7 mm (Figs 4-5); paratype 2 NHMW 1901/0034/0093, height 148.5 mm, width 59.9 mm (Figs 6-7); paratype 3 NHMW 1901/0034/0094, height 98.1 mm, width 43.7 mm (adult spire fragment); paratype 4 NHMW 1901/0034/0095, height 49.2 mm, width 23.5 mm; (juvenile spire fragment; Fig. 8).

Type locality. – Wonosari, Gunung Kidul Regency, Special Region of Yogyakarta, Java, Indonesia.

Type stratum. – Langhian portion of NN5, Middle Miocene.

Distribution. — Middle Miocene: Yogyakarta, central Java (this paper). Miocene (indeterminate): Mangkalihat Peninsula, East Kalimantan (Beets, 1941).

Etymology. – Latin '*magnificus*, -a', adjective meaning splendid, magnificent, describing this large, sumptuous species. *Gourmya* gender feminine.

Other material. – Known from type series only. The material illustrated by Beets (1941, pl. 3, figs 106-114) has not been included as type material as it represents juveniles (maximum height 56 mm), and the synonymy is not absolutely certain.

Comparison. – *Gourmya magnifica* sp. nov. differs from the only known living species, *G. gourmyi* (Crosse, 1861) in being larger (maximum height 148.5 mm, missing abapical part of aperture; reconstructed height about 160-165 mm vs 30-63 mm for *G. gourmyi*, fide Houbrick, 1981:3), in having a narrower apical angle (31-34° vs 40-45°, fide Houbrick, 1981:3), in having straight sided as opposed to weakly convex whorls, in having the last whorl less strongly inflated, and most striking is the horizontal dorsal hump developed on the last whorl. Some specimens of *G. gourmyi* are weakly humped dorsally, but not as strongly as in this fossil species.
Beets (1941) figured some apical fragments identified as *Campanile gigas* (Martin, 1883) that very similar to the juvenile figured here (Fig. 8). The syntypes of C. gigas collected from unnamed beds from the Lower Miocene of Podjok, Java are all 'steinkerns', and in our

opinion it is impossible to characterize that species based on this material. Whatever Martin's species may be, it is not G. magnifica, as there is no trace on the moulds of a dorsal hump. In the Indo-Pacific record two species have been attributed to the genus; *G. parungpontengense* (Martin, 1899) from unnamed beds from the Upper Miocene of Java was based on an incomplete shell (height about 60 mm), missing its aperture. The spire is low for the genus, even squatter than in *G. gourmyi*, and the last whorl even more strongly inflated. There is also no dorsal hump developed. In these respects it is more similar to the living species than it is to *G. magnifica*. The second species, *G. njalindungense* (Martin, 1921) from the Lower Miocene Nyalingdung Formation of Java is immediately separated in having strongly tuberculose surface sculpture. In this respect it is reminiscent of *Gourmya tuberosa* (Grateloup, 1847) from the Atlantic Lower Miocene of France and *G. nimbata* (Rovereto, 1914) (possibly also be a synonym of *G. tuberosa*) from the Proto-Mediterranean Lower Oligocene of Italy, which both have tubercular sculpture.

Discussion. – Interestingly, Houbrick (1981: 9) noted that most live-taken specimens of *G. gourmyi* had *Capulus danieli* (Crosse, 1858) attached near the shell apex. We note a similar association in this Middle Miocene material in which at least twelve *Capulus* attachment scars are present on the upper spire in the holotype (Figs 1, 2). We have not seen specimens of *C. danieli* in the assemblage, but the hipponicid *Sabia conica* (Schumacher, 1817), which leaves similar attachment scars, is abundant.

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EDITORIAL NOTES
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