Semiricinula preturbinoides spec. nov., a new species from the Miocene of Java (Gastropoda, Muricidae)

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A new species of *Semiricinula*, *S. preturbinoides* spec. nov. is described from the Langhian Middle Miocene of Java, Indonesia, as part of a series describing the assemblage found at Wonosari, and the presence of *Taurasia striata* (de Blainville, 1832) is recorded from these same beds.

Key words: Muricoidea, *Semiricinula*, Miocene, Indonesia, Java, new species.

INTRODUCTION

In this paper we continue the work of Dekkers et al. (2020) and Landau et al. (2020) 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 two new fossil rapanines. As discussed by Dekkers et al. (2020: 2), although the exact locality is unknown, the deposit is dated accurately to the Langhian.

Raven (2016) revised extant and fossil members of the rapanine genus *Semiricinula* Martens, 1904 in NW Borneo, providing an updated revision on which to base the description of this new species from Wonosari. We also take the opportunity to report *Taurasia striata* (de Blainville, 1832) from these same beds.

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).

MATERIAL AND METHODS

The material described here is deposited in the Natural History Museum Vienna (NHMW). We have used the terminology introduced by Merle (1999, 2001) for Muricidae. In the present group the most important terms are P1 (first pri-

mary spiral cord placed at the shoulder), P2–P6 (primary spiral cords below the shoulder), ID (infrasutural denticle), and D1-D6 (abapical denticles).

SYSTEMATIC PART

Subclass Caenogastropoda Cox, 1960
Order Neogastropoda Wenz, 1938
Superfamily Muricoidea Rafinesque, 1815
Family Muricidae Rafinesque, 1815
Subfamily Rapaninae Gray, 1853

Genus *Semiricinula* E. von Martens, 1879

Semiricinula E. von Martens, 1879: 728. Type species (by monotypy): *Purpura muricina* de Blainville, 1832. Note: previously considered to be introduced by von Martens (1904: 95, 137), but this is not correct.

Semiricinula preturbinoides spec. nov.
(Figs 1-3)

? *Purpura* sp. — Dharma, 2005: 340, pl. 135, fig. 12.

Type series and dimensions. — Holotype NHMW 1901/0034/0077, height 33.2 mm, width 26.5 mm (Fig. 1); paratype 1 NHMW 1901/0034/0078, height 26.3 mm, width 16.8 mm (Fig. 2); paratype 2 NHMW 1901/0034/0079, height 28.2 mm, width 16.4 mm (Fig. 3); paratype 3 NHMW 1901/0034/0080, height 28.0 mm, width 20.0 mm; paratype 4 NHMW 1901/0034/0081, height 28.4 mm, width 20.5 mm.

Other material. — NHMW 1901/0034/0082 (1).

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

Type stratum. — Langhian portion of NN5, lower middle Miocene.

Etymology. — Prefix '*pre-*', meaning coming before, denoting close similarity to *S. turbinoides* (de Blainville, 1832), whilst only being known from older strata, derived from Latin.

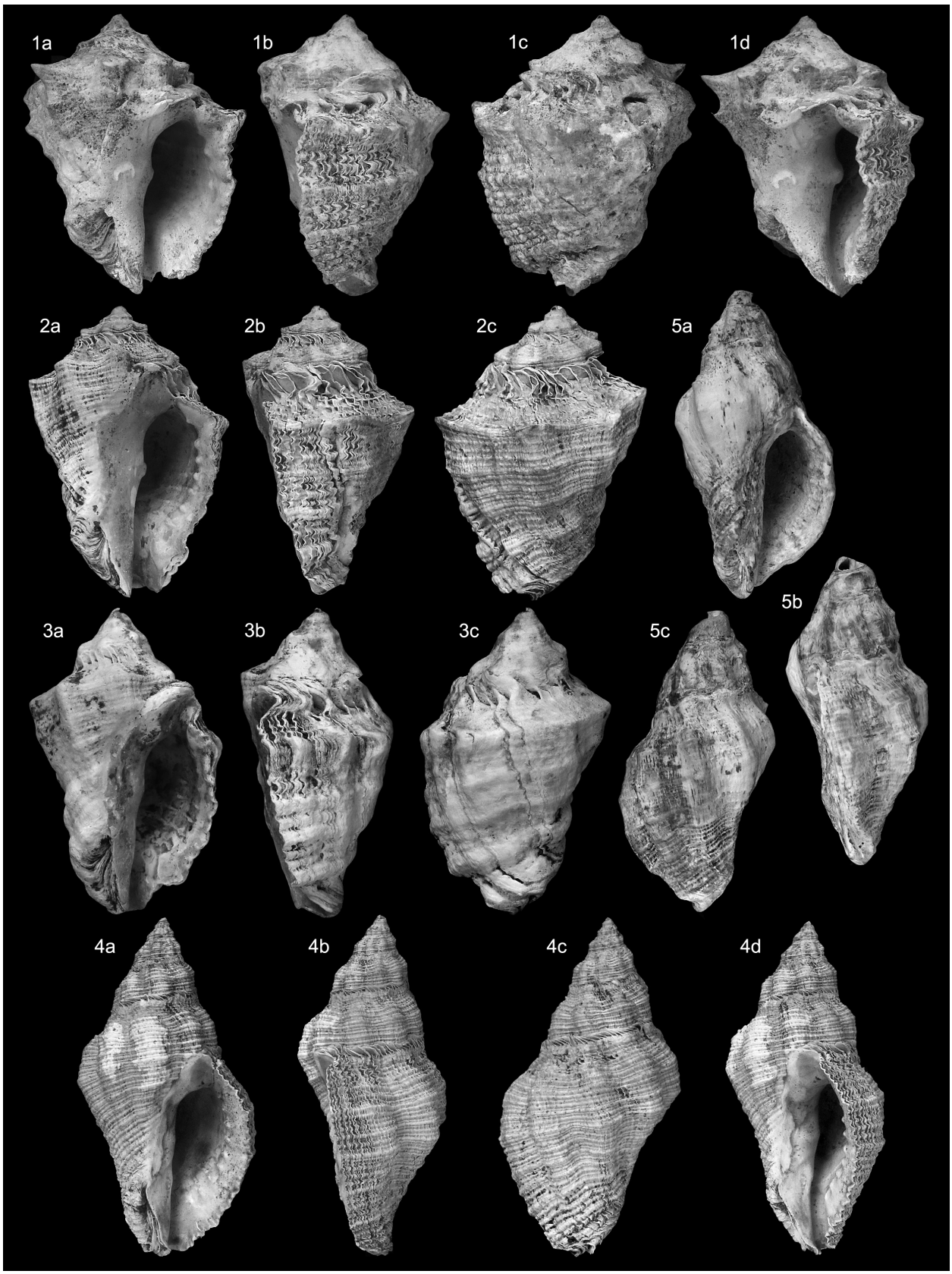
Diagnosis. — *Semiricinula* species of medium size, broad kite-shaped profile, low spire, short spines developed at angular shoulder, nine axial ribs only strongly developed at shoulder, last whorl P1-P4, P3 and 4 slightly weaker, with secondary and tertiary spirals in interspaces, IP, P1-P6 and labial tooth on outer lip, strong columellar fold mid-aperture.

Description. — Shell medium size for genus, stocky, very solid, broad kite shaped, with low spire. Protoconch and earliest teleoconch whorl not preserved. Teleoconch of 4-5 whorls. Spire whorls depressed, bearing broad shallow, concave subsutural ramp, angled at shoulder placed just above suture. Axial sculpture of nine prosocline ribs forming large, horizontally-elongated, short spines at shoulder; ribs broadest at shoulder, narrowing towards sutures. Axial sculpture of narrow cords, equal in width to their interspaces over entire surface; at shoulder two cords coalescent to form strengthened shoulder cord. Surface covered in crowded growth lamellae giving surface strongly squamous appearance. Axial lamellae strongly developed, in area just below suture, reflected backwards and adherent, forming small overlapping auricular projections, obscuring suture. Last whorl inflated, 85-89% of total height; adapical half of subsutural ramp occupied by auricular axial lamellae, obscuring suture and spiral sculpture, adapical half spirals visible; shoulder bearing nine short spines, weakly convex below; base weakly constricted; siphonal fasciole rounded, elevated, delimiting small (in most specimens) to relatively broad (in most gerontic) umbilicus. Sculpture of nine ribs only distinctly developed at shoulder, not developed over subsutural ramp and weakening rapidly towards base; spiral sculpture of four primary cords; P1 spinous at shoulder, P2-3 subequal and weaker, P4 stronger, forming small labial tooth. Secondary and tertiary spirals developed, all strongly squamous.

Aperture large, 62-65% total height, angled at shoulder, convex below, with finely crenulated edge. Lip denticulate a short distance within edge; ID, D1-D6 of variable strength, plus labial tooth, all denticles persist into aperture as lirae. Anal canal forming narrow well developed, abaxially pointing channel occupying adapical portion of subsutural platform. Siphonal canal short, open, twisted backwards and abaxially. Columella straight bearing robust fold mid-height. Columellar callus thickened, sharply delimited, abapically erect, forming medial border of umbilicus, adapically adherent, expanded over medial portion of whorl, slightly thickened and expanded adapically in parietal portion, weak parietal pad.

Variability. — The holotype (Fig. 1) is larger than any of the paratypes (Figs 2-3) and is considered a fully grown adult specimen. It is broader, with larger spines produced at the shoulder and a wide umbilicus. Development of outer lip denticles is variable, so that paratype 1 (Fig. 2) has stronger denticles than the holotype (Fig. 1). However, denticles are present and lirate in all specimens. The mid-columellar fold is invariably strongly developed in all specimens.

Discussion. — *Semiricinula preturbinoides* spec. nov. is most similar to *S. turbinoides* (de Blainville, 1832) from Indonesia, that also has a fossil record in the upper Miocene of Sarawak (Raven, 2016: 93). That species is highly variable, and the new species is particularly similar to the broad, low-spired kite-shaped form illustrated by Raven (2016, fig. 12), however, this specimen is exceptional, and most speci-



Figs 1-5. *Semiricinula* and *Taurasia* from Wonosari. **1-3**. *Semiricinula preturbinoides* spec. nov. **1**. Holotype NHMW 1901/0034/0077, height 33.2 mm, width 26.5 mm. **2**. Paratype 1 NHMW 1901/0034/0078, height 26.3 mm, width 16.8 mm. **3**. Paratype 2 NHMW 1901/0034/0079, height 28.2 mm, width 16.4 mm. **4-5**. *Taurasia striata* (de Blainville, 1832). **4.** NHMW 1901/0034/0084, height 38.7 mm, width 19.1 mm. **5.** NHMW 1901/0034/0083, height 30.4 mm, width 14.5 mm.

mens are higher-spired (Houart, 2008: 214, pl. 402 figs 4-8) than *S. preturbinoides*. The most important difference is the much stronger columellar fold seen in *S. preturbinoides*; in *S. turbinoides* the fold is at most subobsolete. In both species the shape of the aperture is variable, but in *S. preturbinoides* the part between P4 and the siphonal canal is generally wider than in *S. turbinoides* which gives the latter a more pointed outline.

Other present-day Western Pacific species, *S. muricina* (de Blainville, 1832), *S. muricoides* (de Blainville, 1832) and *S. konkanensis* (Melvill, 1893) all differ in having more fusiform or biconical shells, with a taller spire.

Dharma (2005: pl. 135 fig. 12) illustrated a shell from the middle Miocene of Nyalingdung (West Java) probably also representing this species. It differs in having the parietal callus far more strongly developed and expanded adapically than in any specimen we have seen from Wonosari. We therefore include it in the chresonymy and distribution with reservation.

Distribution. — Middle Miocene: Yogyakarta, central Java (this paper); ?Nyalingdung, West Java (Dharma, 2005).

In order to cover the same genera as those revised by Raven (2016) in the Wonosari assemblage, we record the presence of the shallow water species *Taurasia striata* (de Blainville, 1832) in these beds (Figs 4-5). This species is highly variable in sculpture and the Wonosari specimens have broad, rounded, elevated radial ribs and weakly developed spiral ribs similar to specimens figured by Raven (pl. 2 figs 5, 7). It is also known from the middle Miocene Preangerian Nyalindung Formation, West Java (Dharma, p. 338, pl. 134 fig. 18a-b), but in those specimens the radial ribs are weaker, whereas in the specimen of fig. 18b on each radial rib the spiral ribs are more prominent, giving the impression of elongated spines. For further discussion, description and distribution see Raven (2016).

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