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A New Species of Fossil *Bistolida* (Gastropoda: Cypraeidae) from the Miocene of West Java, Indonesia

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ABSTRACT A new species of *Bistolida* Cossmann, 1920 is described from the Miocene of the Cibalong area, Tasikmalaya Regency of western Java, Indonesia. Morphological analyses of the shell dimensions, outline, extremities, aperture shape, and apertural teeth shows a combination of characters that are typical of the genus *Bistolida.* Although the genus has not previously been reported from Java, its presence in the Miocene fossil record is supported by the six specimens that are shown here.

KEY WORDS Gastropoda, Cypraeidae, *Bistolida, Bistolida barbieriae*, Miocene, Cibalong, Tasikmalaya, Java, Indonesia

INTRODUCTION

The cypraeid subfamily *Erroneinae* Schilder, 1927 contains eighteen living genera, including the genus *Bistolida* Cossmann, 1920, which has over twenty described species. (see WoRMS, 2023) The genus *Bistolida* is characterized by small-sized (length < 35 mm) and robust shells, short-cylindrical to elongate-oval shells, umbilicate spire, with rather strong but often numerous teeth, which often extend across the base.

In Indonesia, six living species and two undescribed fossil species of *Bistolida* have been previously reported (Dharma, 2005, Table 139 figs. 16-17). The new species is not abundant in the sediments examined, with only six specimens having been collected in the Cibalong area. Unlike the Pliocene species shown by Dharma, the new *Bistolida* was collected in Miocene sediments and occurs in a lower geological horizon. In this paper, the new species *Bistolida barbieriae,* is described.

ABBREVIATIONS

MDC Matteo Dovesi collection (Bologna, Italia)
IGF Firenze Natural History Museum (Firenze, Italia)

MATERIAL EXAMINED

The material examined in the present study consists of six specimens found in the Miocene sediments in Cibalong area of Tasikmalaya Regency (West Java, Indonesia). All the shells were found in a sandstone substrate.

SYSTEMATICS

Class: Gastropoda Cuvier, 1795
Subclass: Caenogastropoda Cox, 1960
Order: Littorinimorpha Golikov & Starobogatov, 1975
Superfamily: Cypraeoidea Rafinesque, 1815
Family: Cypraeidae Rafinesque, 1815
Subfamily: Erroneinae Schilder, 1927
Genus: *Bistolida* Cossmann, 1920

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Bistolida barbieriae new species† Dovesi, 2023
(Plates 1 to 3)

Description. Shell small (17.5 to 24.8 mm), robust in shape; elongated-oval shell outline without callus, small umbilicated spire, dorsal profile slightly rounded with highest point about in middle of length; labrum margin curved, smooth, more curved from center to posterior side; columella margin oval, posterior columellar margin edge angling in moderately, ending with sharp curve at posterior extremity; anterior columellar margin edge slightly curving; ventrum slightly curved at extremities, labrum flat, columella flat to slightly bulbous; aperture narrow, curved, of same width along entire length, posterior side curving slightly, anterior side straight; labral teeth moderately large, extending across labrum smoothing out towards margin; columellar teeth small, thin, not extending to columella margin; small teeth present on columella ridge; small teeth present on fossula; absent pattern, without mantle lines.

Type Material. Holotype IGF 105196, measuring 17.5 mm in length, 9.5 mm in width, in the Museo di Scienze Naturali dell'Università di Firenze (Firenze, Italia) (Plate 1). Paratype A= length 20.5 mm, width 11.5 mm (shown on Plate 2) in the research collection of the author. Paratypes B= length 17.8 mm, width 10.2 mm; C= length 20.6 mm, width 12.0 mm; D= length 24.8 mm, width 13.4 mm; E= length 20.5 mm, width 12.0 mm (shown on Plate 3) in the research collection of the author.

Type Locality and Stratigraphic Range. Based on physiography, van Bemmelen (1949) divided West Java into four zones: Jakarta Zone, Bogor Zone, Bandung Zone, Southern Mountains Zone. The Cibalong area, where the presented material was discovered, is in south of Tasikmalaya in the Southern Mountains Zone, which has a plateau with Miocene sedimentary rock (Sampurno, 1976). Cibalong is located 30 km south of Tasikmalaya city, Tasikmalaya Regency, West Java Province, Indonesia (Figure 1). The Cibalong area is characterized by hill with forest and some small rivers at 500-700 meters altitude, hills with deep fissures are characterized by exposed sandstone where many fossils have been found. The fossils

Figure 1. Map of Java, Indonesia. The red point indicates the study site, Cibalong area (OrangeSmile, 2023).

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studied in this work belong to the Early-Middle Miocene, 23-11.6 million years ago, in agreement with Soeria-atmadja *et al.* (1994) and van Bemmelen (1949). At the research site, *Bistolida barbieriae* n. sp. was found with other *Cypraeidae* fossils in sandstone including *Barycypraea* spp., and other gastropod genera such as *Ancilla, Cymatium, Melongena, Nassarius* and *Vasum*.

Etymology. Named in honour of Ombretta Barbieri (1951-2023†).

DISCUSSION

The genus *Bistolida*, on the Java Island, was reported by Dharma, with two undescribed specimens coming from the Sangiran area in the Central Java region, belonging to the Late Pliocene Epoch. (Dharma, 2005, Plate 139 figs.16-17.) The species shown in Dharma, 2005 at figure 16 measures 13 mm in length and have very incised and extended columellar teeth, the species represented in figure 17 measures 21 mm in length and has columellar teeth extending beyond half of the columellar labrum. Unlike previous reports, this new species comes from the area of the Southern Mountains of West Java characterized by Miocene sediments. By contrast, the shell characteristics of the new species *B. barbieriae* are classic for the genus, with a small shell having an elongated-oval outline without callus, umbilicated spire (Plate 2-d), labrum margin curved and smooth, columella margin oval, ventrum slightly curved, aperture narrow and curved, labral teeth moderately large and extending across labrum, columellar teeth small and thin (Plate 2-e), not extended. (see generally Plates 1-3) The small, thin columellar teeth of the species described here are very different from the species that was reported and not described in Dharma, 2005. This set of morphological characters described above differentiate the new species *Bistolida barbieriae* n. sp. Based upon the sediments where these specimens were found, it is presumed that the new species originates from the Early-Middle Miocene Epoch of Cibalong area, southern of Tasikmalaya in West Java, Indonesia.

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Plate 1. Holotype of *Bistolida barbieriae* n. sp., 17.5 mm in length (IGF 105196).

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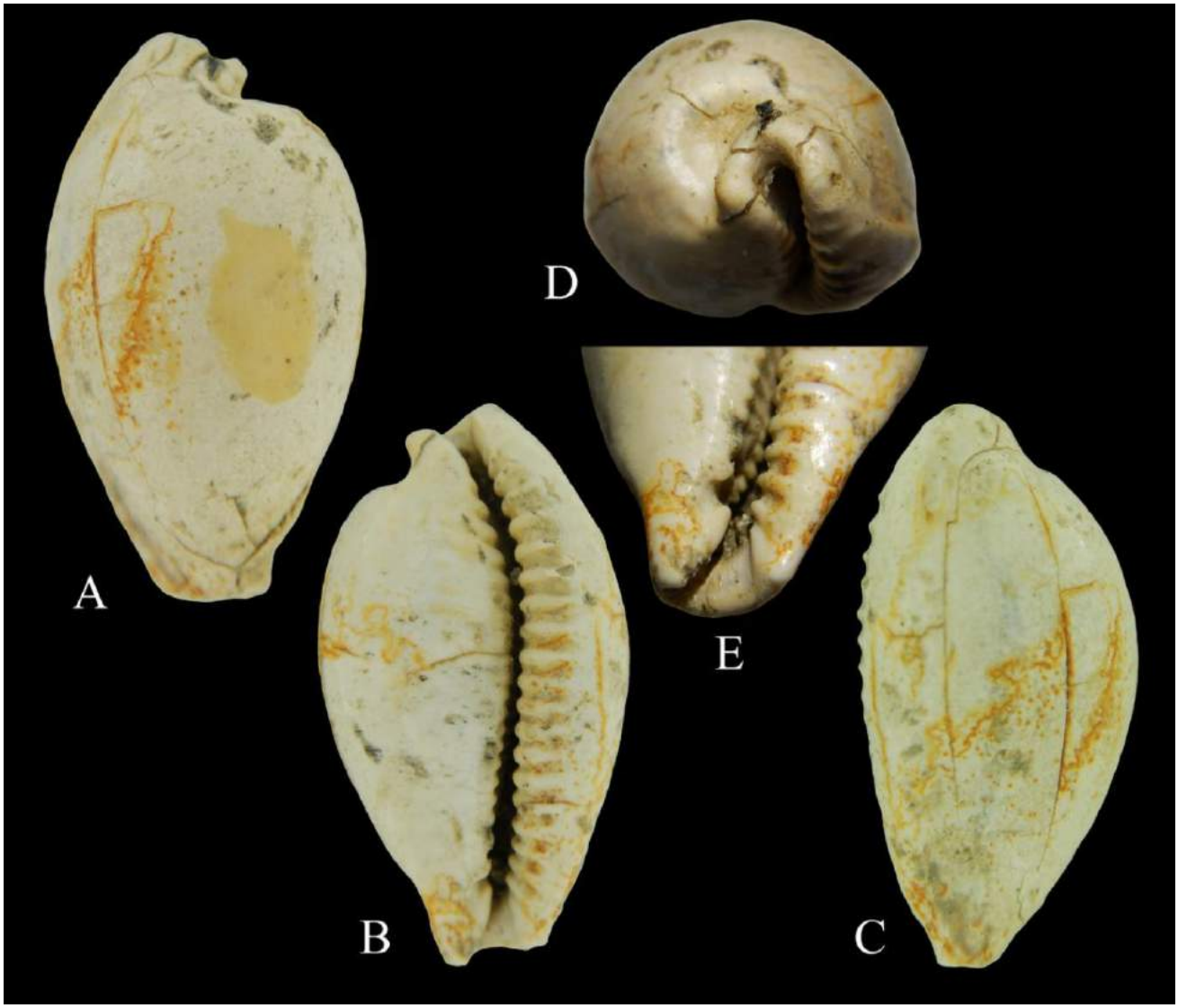

Plate 2. *Bistolida barbieriae* n. sp. paratype A; 20.5 mm in length, umbilicated spire (**d**) and fossula details (**e**).

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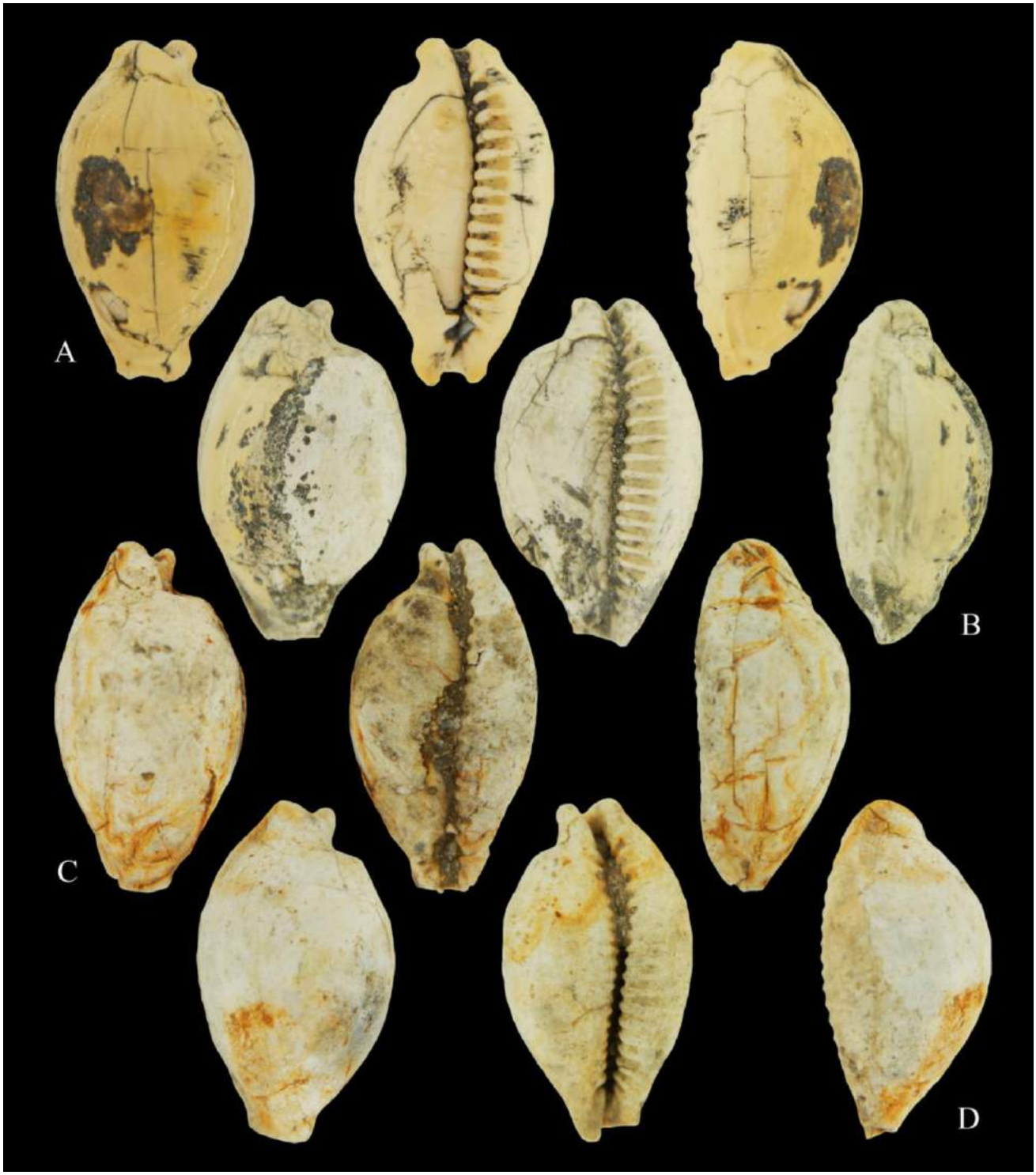

Plate 3. *Bistolida barbieriae* n. sp. paratypes and corresponding lengths: **B**= 17.8 mm; **C**= 20.6 mm; **D**= 24.8 mm; **E**= 20.5 mm.