

A NEW SPECIES OF CYCLOPHORID SNAIL (MOLLUSCA: PROSOBRANCHIA) FROM TERENGGANU, PENINSULAR MALAYSIA

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ABSTRACT. — A new species of land snail belonging to the family Cyclophoridae is described from a non-karstic hill dipterocarp forest in Peninsular Malaysia. *Pearsonia tembatensis* new species, differs from other congeners by its wrinkled shell surfaces, glossy top whorls and a short sutural tube just behind the peristome. Based on comparisons with other cyclophorids, we assign this species to the genus *Pearsonia*—this represents a new record for this genus in Peninsular Malaysia and also extends the southern limit of its distribution on mainland Southeast Asia.

KEY WORDS. — gastropod, new species, Cyclophoridae, *Pearsonia*, taxonomy, Malaysia, mollusc

INTRODUCTION

Members of the family Cyclophoridae comprise the largest group of terrestrial prosobranch snails in tropical and subtropical regions of Africa, Asia, and Australia (Kobelt, 1902). The group consists of approximately 300 taxa in 34 genera grouped into four subfamilies (Wu et al., 2008). To date, 13 genera consisting of 70 species within Cyclophoridae have been recorded from Peninsular Malaysia, making it the most diverse terrestrial prosobranch family after Diplommatinidae in this region (see <http://malaypeninsularsnail.lifedesks.org>).

Here, we describe a new species of cyclophorid and justify why it belongs to the genus *Pearsonia* (Kobelt, 1902), a new genus record for Peninsular Malaysia, and probably the first record for Sundaland. *Pearsonia*, formerly known as *Spiraculum* Pearson, 1833, is distributed from the Western Indian region to the eastern regions of China (Morlet, 1892; Kobelt, 1908; Gude, 1921; Yen, 1939). The most recent cyclophorid described from Peninsular Malaysia is *Alycaeus carinata*, an endemic microlandsnail from Kuantan, Pahang (Maassen, 2006).

Although cyclophorids have been recorded mainly from karstic forests with alkaline soils (e.g., de Morgan, 1885; Tweedie, 1961; Berry, 1963), they can still be found in non-

karstic forests (see <http://malaypeninsularsnail.lifedesks.org>). Our discovery of this new species from non-karstic forests is not surprising given that recent malacological surveys were concentrated in karstic forests (e.g., Clements et al., 2008a), where new karst-endemic species continue to be described (e.g., Clements et al., 2008b; Vermeulen & Clements, 2008). However, when controlled for abundance, there appears to be no significant difference in land snail diversities between karstic and non-karstic forest (Liew et al., 2008). Therefore, non-karstic forests should not be neglected by malacologists and the recent discovery of a new land snail genus (Clements & Tan, 2012) from this habitat highlights their potential to yield new species discoveries.

MATERIAL AND METHODS

Descriptions of *Pearsonia tembatensis*, sp. nov., are based solely on conchological characters of two living individuals. The type material were deposited in Zoological Reference Collection, Mollusc Section, Raffles Museum of Biodiversity Research, National University of Singapore (ZRC.MOL) and the first author's private collection, Malaysia (ME). Abbreviations are used in the text: SH. = shell height; SW. = shell width; ex. = example.

SYSTEMATICS

Family Cyclophoridae Fischer, 1885

Genus *Pearsonia* Kobelt, 1902

Type species. — *Spiraculum hispidum* Pearson, 1833

Pearsonia tembatensis, new species

(Figs. 1, 2)

Material examined. — Holotype – 1 ex. SH. 8.6 mm × SW. 23.8 mm (ZRC.MOL.3074), on leaf litter near waterfall, Tembat Forest Reserve (5°03'55.9"N, 102°31'31.9"E), Terengganu, Peninsular Malaysia, coll. M. E. Marzuki & R. Clements, May 2011.

Paratype — 1 ex. SH. 11.8 mm × SW. 27.0 mm (ME2011/0186), on leaf litter, Tembat Forest Reserve (5°03'55.9"N, 102°31'31.9"E), Terengganu, Peninsular Malaysia, coll. M. E. Marzuki & R. Clements, May 2011.

Diagnosis. — Shell medium-sized, widely umbilicated, dextral, rather thick. Colour brown, translucent, shiny, crossed by narrow peripheral band. Whorls five, slowly

increasing; periphery rounded. Radial sculpture ornamented with fine, irregularly growth lines below suture and around umbilicus; spiral sculpture absent. Apex smooth, more or less rounded with inconspicuous growth lines. Wrinkled, irregular diffuse blotches appear after 3½ whorl, becoming inconspicuous after 4½ whorls. Spire flatly discoid, very low, slightly raised above body whorl, ornamented with faint, pale brown stripe at 4½ whorl. Suture deeply impressed; sutural tube short, opening slightly backwards behind peristome, about 2 mm in length. Aperture circular, oblique, white with double peristome; inner thickened while outer peristome reflected and expanded at suture forming an open descending wing identical to *Pterocyclos*. Operculum corneous, roundly convex, multispiral, ciliated on raised edge, smooth at centre. Animal grey, spotted, foot light brown.

Etymology. — This new species is named after its type locality, Tembat Forest Reserve, Terengganu. We chose this name to highlight the biological importance of this forest reserve, portions of which are currently being cleared for a dam.

Remarks. — Based on our comparisons with a fairly complete collation of cyclophorid literature (i.e., Morlet, 1892; Kobelt, 1902, 1908; Gude, 1921; Yen, 1939), we assigned our new species to the genus *Pearsonia* based on a general agreement with the original shell description in German (translated by F. Köhler) by Kobelt (1902): “Shell discoid, with thick, sometimes hairy periostracum. Aperture circular with thin small tubular pore behind the lip opening backwards. Operculum, non-calcareous, multispiral, outside convex, inside flat. Outer whorls flaring.”

Pearsonia (and our new species) can be differentiated from *Pterocyclos* (Benson, 1832) and *Crossopoma* (Martens, 1891) by the presence of a sutural tube just behind the aperture (Kobelt, 1902; Gude, 1921). *Pearsonia* is clearly distinct from *Cyclotus* (Swainson, 1840), which does not have a sutural tube. Although both *Pearsonia* and *Opisthophorus* (Benson, 1851) possess a sutural tube, the tube of the latter genus is significantly longer, and turns either upwards or downwards as it decreases in length. Unlike *Pearsonia* (Godwin-Austen, 1889; Stoliczka, 1872), the edges of the operculum in *Cyclotus* and *Opisthophorus* are not raised.

There is no other representative of *Pearsonia* from Malaysia for comparison. Among Malaysian cyclophorids, *P. tembatensis* new species, has the closest affinity with *Cyclotus umbraticus* Benthem-Jutting, 1949 from Larut hill [Pahang], but again, the latter species does not have a sutural tube and its shell sculpture has a zigzag-like pattern.

Within *Pearsonia*, *P. tembatensis* is closely related to *P. putaoensis* (Godwin-Austen, 1915) and *P. minimum* (Godwin-Austen, 1915) from the Indian region. However, the shells of the latter two species are significantly smaller and their shell sculpture comprises fine transverse striae on the epidermis. Furthermore, the outer peristome of *P.*

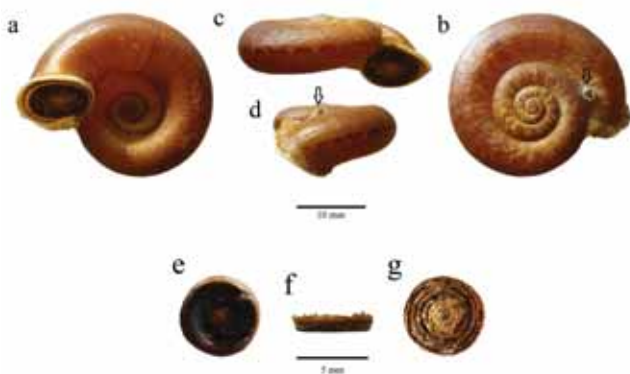


Fig. 1. Shell of *Pearsonia tembatensis*, new species, Terengganu, Peninsular Malaysia. Holotype (ZRC.MOL.3074): a, ventral view; b, dorsal view; c, aperture view; d, side view; e, interior view of operculum; f, side view of operculum; and g, exterior view of operculum. Arrow indicates position of sutural tube.



Fig. 2. Animal of *Pearsonia tembatensis*, new species, Terengganu, Peninsular Malaysia. The body is grey and spotted and the foot is lightish brown. (Photograph by: Tan Siong Kiat).

minimum is very simple and only slightly reflected. We hope that future phylogenetic studies incorporating molecular, conchological and anatomical data on cyclophorids will include this new species in order to validate our hypothesis.

Based on the geographical distribution of *Pearsonia*, it is highly likely that our new species belongs to this genus. To date, there are 22 species in the genus *Pearsonia* found mostly within the Indo-Malayan region. This new species represents the southernmost extent of *Pearsonia*'s distribution in Indo-Malaya (Fig. 3).

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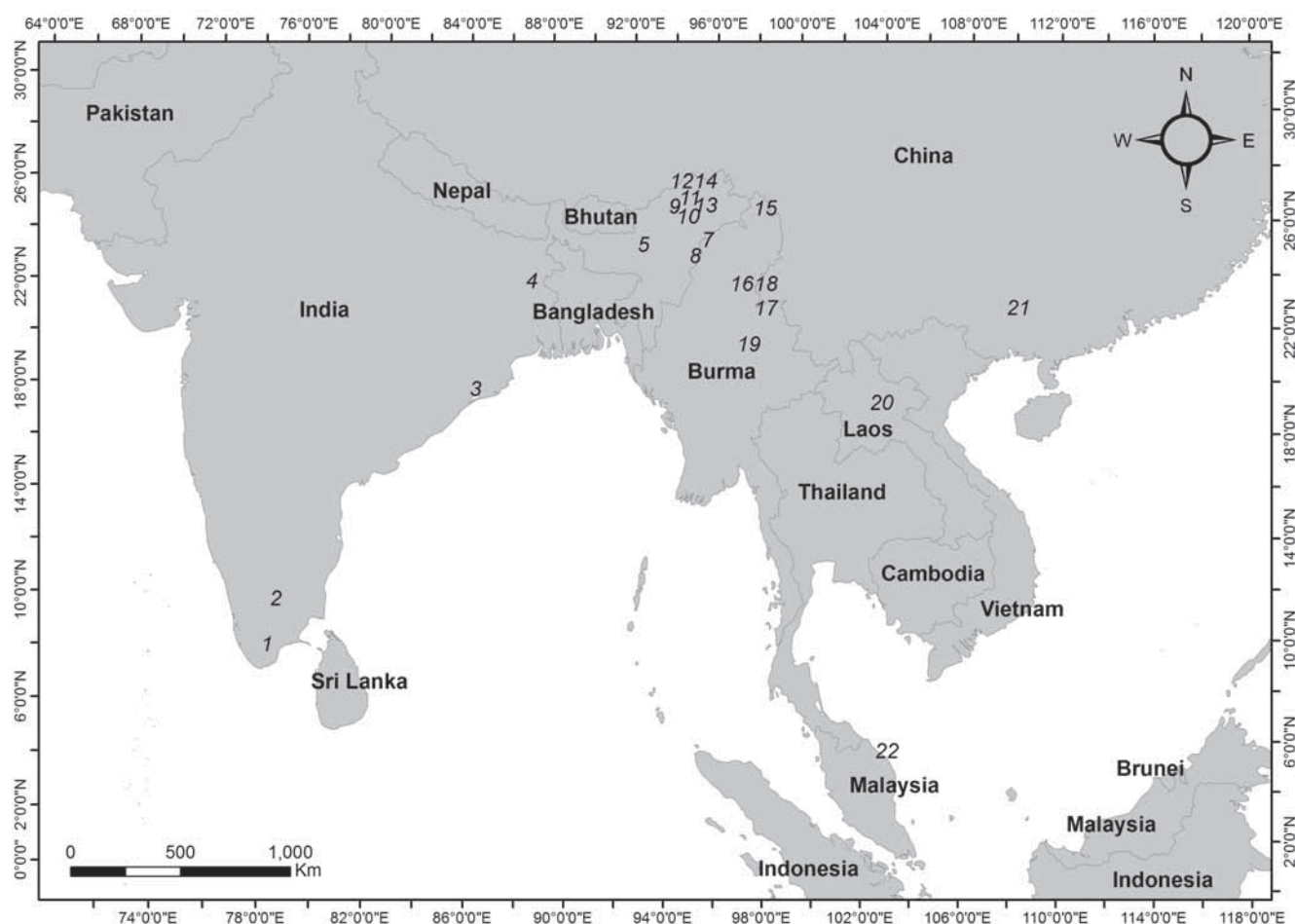


Fig. 3. Distribution of worldwide *Pearsonia* spp. based on approximate location of type localities: 1, *Pearsonia travancorica* (Blanford, 1880); 2, *P. fairbanki* (Blanford, 1869); 3, *P. beddomei* Blanford, 1866; 4, *P. hispida* (Pearson, 1833); 5, *P. assamensis* Fulton, 1900; 6, *P. nagaensis* (Godwin-Austen & Beddome, 1894); 7, *P. mastersi* (Hanley & Theobald, 1870); 8, *P. simplex* (Nevill, 1878); 9, *P. nevilli* (Godwin-Austen, 1876); 10, *P. plana* (Godwin-Austen, 1915); 11, *P. luyorensis* Godwin-Austen, 1915; 12, *P. oakesi* (Godwin-Austen, 1915); 13, *P. minima* (Godwin-Austen, 1915); 14, *P. kempfi* Godwin-Austen, 1915; 15, *P. putaoensis* (Godwin-Austen, 1915); 16, *P. andersoni* Blanford, 1869; 17, *P. bhamoensis* Theobald, 1876; 18, *P. bitubifera* Theobald, 1876; 19, *P. avana*; 20, *P. massiei* (Morlet, 1892); 21, *P. gredleri* Yen, 1939; and 22, *P. tembatensis* Marzuki & Clements, 2013.

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