

Penemuan Kembali Siput Pohon *Bulimus appressus* von Martens, 1867, dengan *Bulimus perversus tener* von Martens, 1867 ditempatkan sebagai subspecies *Amphidromus courtus* (Mousson, 1849) (Gastropoda: Camaenidae)

(Rediscovery of the tree snail *Bulimus appressus* von Martens, 1867, with *Bulimus perversus tener* von Martens, 1867 placed as subspecies of *Amphidromus palaceus* (Mousson, 1849) (Gastropoda: Camaenidae))

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ABSTRACT

Bulimus appressus von Martens, 1867 was described without shell image with the type locality "Java". In 1890, Boettger placed it under the genus *Amphidromus* Albers, 1850 as *Amphidromus appressus* (von Martens, 1867); then Fulton, 1896 placed it as a variety of *Amphidromus palaceus* (Mousson, 1849). This variety status was followed by Pilsbry, 1900; van Benthem Jutting, 1950; and Laidlaw & Solem, 1961. The aims of this study is to determine the distribution of 3 types of mollusks in Java. The method of this study is by collecting molluscs that are found in Bogor, West Java, Indonesia. Distribution, habitat, material examined, and specimens descriptions were recorded. The second author rediscovered several specimens in Cipayung, Bogor, West Java in April 2022. The shape of the shell is elongated, the spire is slightly tapered, the aperture is small, monochrome yellow or white in colour, without varices, and the sutures are appressed; based on these characteristics this variety is placed as a subspecies of *Amphidromus palaceus* (Mousson, 1849) as *Amphidromus palaceus appressus* (von Martens, 1867). Three specimens are deposited in MZB, Cibinong, Bogor, Indonesia. It is compared to the nominate subspecies *Amphidromus palaceus palaceus* (Mousson, 1849) and to *Amphidromus toncruzi* Dharma, 2012 from the Philippines whose suture of the last whorl is appressed to the penultimate whorl for 1.5 mm. This paper also discusses *Bulimus perversus tener* von Martens, 1867 from Mount Gedeh (Gede), West Java (Jutting, 1950); the shell is small, relatively thin with a slightly tapered spire, monochrome light yellow in colour, without varices. Herein also this taxon is placed as subspecies of *Amphidromus palaceus* (Mousson, 1849), that is *Amphidromus palaceus tener* (von Martens, 1867). Compared with the nominate subspecies that has medium shell thickness and slightly convex spire. In conclusion, tree snail *Bulimus appressus* von Martens, 1867, with *Bulimus perversus tener* von Martens, 1867 has been found in Bogor, West Java, Indonesia.

Keywords: *Amphidromus*, Java, *palaceus*, *appressus*, *tener*, subspecies

ABSTRAK

Bulimus appressus von Martens, 1867 dideskripsikan tanpa citra cangkang dengan tipe lokalitas "Jawa". Pada tahun 1890, Boettger menemukannya di bawah genus *Amphidromus* Albers, 1850 sebagai *Amphidromus appressus* (von Martens, 1867); kemudian Fulton, 1896 menemukannya sebagai varietas *Amphidromus palaceus* (Mousson, 1849). Status keragaman ini diikuti oleh Pilsbry, 1900; van Benthem Jutting, 1950; dan Laidlaw & Solem, 1961. Tujuan penelitian ini adalah untuk mengetahui sebaran 3 jenis moluska di Pulau Jawa. Metode penelitian ini adalah dengan mengumpulkan moluska yang ditemukan di Bogor, Jawa Barat, Indonesia. Distribusi, habitat, bahan yang diperiksa, dan deskripsi spesimen dicatat. Penulis kedua menemukan kembali beberapa spesimen di Cipayung, Bogor, Jawa Barat pada April 2022. Bentuk cangkang memanjang, puncak menara agak meruncing, bukaan kecil, warna monokrom kuning atau putih, tanpa varises, dan jahitan dihargai; Berdasarkan ciri-ciri tersebut varietas ini ditempatkan sebagai subspecies dari *Amphidromus palaceus* (Mousson, 1849) sebagai *Amphidromus palaceus appressus* (von Martens, 1867). Tiga spesimen disimpan di

MZB, Cibinong, Bogor, Indonesia. Hal ini dibandingkan dengan subspecies yang dicalonkan *Amphidromus palaceus palaceus* (Mousson, 1849) dan *Amphidromus toncruzi* Dharma, 2012 dari Filipina yang jahitan lingkaran terakhirnya ditekan ke lingkaran kedua dari belakang sebesar 1,5 mm. Tulisan ini juga membahas *Bulimus perversus tener* von Martens, 1867 dari Gunung Gedeh (Gede), Jawa Barat (Jutting, 1950); cangkangnya kecil, relatif tipis dengan puncak agak meruncing, berwarna kuning muda monokrom, tanpa varises. Di sini pula takson ini ditempatkan sebagai subspecies dari *Amphidromus palaceus* (Mousson, 1849), yaitu *Amphidromus palaceus tener* (von Martens, 1867). Dibandingkan dengan subspecies nominasi yang mempunyai ketebalan cangkang sedang dan puncak menara agak cembung. Kesimpulannya, siput pohon *Bulimus appressus* von Martens, 1867, dengan *Bulimus perversus tener* von Martens, 1867 telah ditemukan di Bogor, Jawa Barat, Indonesia.

Kata Kunci: *Amphidromus*, Jawa, *Palaceus*, *Apressus*, *Tener*, *Subspecies*

INTRODUCTION

The distribution area of *Amphidromus palaceus* (Mousson, 1849) and its subspecies is Java and southern Sumatra. The four known subspecies of *Amphidromus palaceus* (Mousson, 1849) are *Amphidromus palaceus palaceus* (Mousson, 1849) from Java, *A. p. tanggamusensis* Dharma, 2007 from Lampung, Sumatra, *A. p. lemongensis* Dharma, 2007 from Lampung, Sumatra, and *A. p. taloensis* Dharma, 2007 from Bengkulu, Sumatra. Two additional subspecies are discussed in this paper, *Amphidromus palaceus appressus* (von Martens, 1867) and *A. palaceus tener* (von Martens, 1867), both originating from West Java. The colour form *subaurantius* (von Martens, 1876) has a light pink or orange shell ornated with a reddish-brown band on the periphery. In the form *purus* (Mousson, 1849), the shell peristome is wider and the radial striae are coarser. Besides *A. palaceus*, other species of *Amphidromus* s.s. that live on Java are *Amphidromus perversus* (Linnaeus, 1758), *A. javanicus* (Sowerby, 1841), *A. winteri* (Pfeiffer, 1849), *A. heerianus* (Pfeiffer, 1871), *A. alticolus* Fulton, 1896, and *A. sancangensis* Dharma, 2007.

Bulimus appressus von Martens, 1867 was described from Albert Mousson's collection with the type locality "Java" and without any image (p. 353). The name *Bulimus appressus* is also used by Tenison-Woods, 1888 (p. 232). The first illustration of *Amphidromus appressus* (von Martens, 1867) was given by Boettger, 1890 (p. 145, pl. 5, figure 8) who stated that the shell is elongated and the aperture is small. Also Boettger, 1890 placed "appressus" in the genus *Amphidromus* Albers, 1850. Fulton, 1896 (p. 72) for the first time placed it as a variety: *Amphidromus palaceus* var. *appressa*. Pilsbry, 1900 (p. 136; pl. 46, figure 15; pl. 47, figure 7) also placed it as variety *appressus* of *Amphidromus palaceus* (Mousson, 1849) and showed images of the shell; note that pl. 46, figure 15 is the same specimen as pl. 5, figure 8 of Boettger, 1890; while pl. 47, figure 7 is a different specimen. Its status as *Amphidromus palaceus* var. *appressus* was followed by van Benthem Jutting, 1950 (p. 481) and Laidlaw & Solem, 1961 (p. 557, 600).

METHODS

The rediscovery was made and collected by the authors. The specimen was collected from Bogor, West Java, Indonesia. Distribution, habitat, material examined, and specimens descriptions were recorded.

RESULTS AND DISCUSSION

Since Pilsbry, 1900, there are no records of additional specimens of *Amphidromus palaceus* var. *appressus* being found. In April 2022, the second author unexpectedly found several specimens of *Amphidromus palaceus* var. *appressus* (von Martens, 1867) around the villa area in Cipayung, Bogor, West Java at about 600 m asl. Because of its elongated shell shape, Laidlaw & Solem, 1961 noted the similarity with the other *Amphidromus* with elongated shell that lives in Java, *Amphidromus winteri* (Pfeiffer, 1849); but then still consider a variety of *A. palaceus*. Though its main characters clearly place it in *Amphidromus palaceus*, its elongated shell shape, slightly tapered spire, small aperture, monochrome yellow or white colour, lack of varices, and depressed sutures, set it apart as subspecies *Amphidromus palaceus appressus* (von Martens, 1867).

Von Martens, 1867 (p. 350) described *Bulimus perversus tener* as a subspecies of *Bulimus perversus* Linnaeus, 1758. He did not provide an image or locality. Fulton, 1896 (p. 67) placed it as *Amphidromus perversus*

var. *tenera* (von Martens, 1867) and described the shell as very thin and pale yellow in colour. Pilsbry, 1900 (p. 136, pl. 46, figs 16-18) placed it as a subspecies of *Amphidromus palaceus* (Mousson, 1849) and mentioned the thin shell, but the images did not represent this subspecies. van Benthem Jutting, 1950 (p. 483) placed it as a variety of *A. palaceus*: *A. palaceus* var. *tenera*. Laidlaw & Solem, 1961 (p. 557, 666, figure 22) also placed it as *A. palaceus* var. *tener*, described as having a thin and smooth shell, and with an image representing such shell. Based on van Benthem Jutting, 1950 (p. 491) who stated that *A. alticolus* could be found in Puncak, West Java at 1,400 m asl., Dharma, 1992 (p. 116, pl. 36, figure 5) mistakenly recorded *A. palaceus* var. *tener* (von Martens, 1867) from Puncak, West Java as *A. alticolus* Fulton, 1896. In fact *A. alticolus* has never been found in Puncak, West Java, but lives at 1,600-2,000 m asl. Dharma, 2005 (p. 230, pl. 90, figure 7) and 2021a (p. 37) classified it as *Amphidromus palaceus tener* (von Martens, 1867), with its small shell, thin, smooth shell surface, slightly tapered spire, monochrome light yellow colour, lack of varices differentiating it from the other subspecies.

ABBREVIATION

MZB : Museum Zoologicum Bogoriense, Cibinong, Bogor, Indonesia
 BD : collection of Bunjamin Dharma
 IW : collection of Irwan Wipranata

SYSTEMATICS

Family : Camaenidae Pilsbry, 1895
 Subfamily : Camaeninae Pilsbry, 1895
 Genus : *Amphidromus* Albers, 1850

***Amphidromus palaceus palaceus* (Mousson, 1849)** (Figure 3A, 7A-E)

Description, distribution, discussion, fossils, and other data regarding *Amphidromus palaceus palaceus* (Mousson, 1849), *A. p. tanggamusensis* Dharma, 2007, *A. p. lemongensis* Dharma, 2007, and *A. p. taloensis* Dharma, 2007, are provided in Dharma, 2007 (p. 61-66; pl. 9, figs 23-24; pl. 10, figs 1-19). The radial brown streaks are not found in the shell of subspecies of *Amphidromus palaceus* (Mousson, 1849) that live in Sumatra; only *A. p. palaceus* from Java that occasionally can be found with radial brown streaks, while the other two subspecies *A. p. appressus* and *A. p. tener* both have a monochrome colour. The colour form *subaurantius* (von Martens, 1876) has a shell with light pink or orange colour and a reddish-brown band on the periphery. The form *purus* (Mousson, 1849) has a wider peristome whilst the radial striae are coarser. Two species of *Amphidromus* s.s. from West Java were recently described, namely *Amphidromus jeffabbasorum* Thach, 2016 with type locality Banten, West Java, and *Amphidromus andytani* Thach & Abbas, 2017 with type locality Ujung Kulon, West Java. The shell of *A. jeffabbasorum* has a variable colour pattern, but the shell characteristics clearly place it in *A. palaceus palaceus* (Mousson, 1849) and therefore it is considered a junior synonym. No material was available for *A. andytani*, but based on the published description and figures it is a form of *A. palaceus* (Mousson, 1849).

Amphidromus palaceus (Mousson, 1849) is similar to *A. felixi* Dharma, 2021 from Bengkulu, Sumatra, which has a small perch angle (24°-26°) and its habitat is thought to be attached to leaves.

***Amphidromus palaceus appressus* (von Martens, 1867)** (Figure 1, 2, 3B, 4-5, 7M-O)

Bulimus appressus von Martens, 1867, Java (Coll. Mousson).

Bulimus appressus —Tenison-Woods, 1888, p. 232.

Amphidromus appressus (Mart.) —Boettger, 1890, p. 145, pl. 5, figure 8.

Amphidromus palaceus var. *appressa* —Fulton, 1896, p. 72, Java.

Amphidromus palaceus (Mousson) var. *appressus* (Martens) —Pilsbry, 1900, p.136; pl.46, Figure 15; pl.47, Figure 7

Amphidromus palaceus var. *appressa* (Martens, 1867) —van Benthem Jutting, 1950, p. 481.

Amphidromus palaceus var. *appressus* (von Martens, 1867) —Laidlaw & Solem, 1961, p. 557, 600.

Type locality. Java.

Distribution. West Java.

Habitat. Various trees, also found in chayote plants growing along walls.

Material Examined. Cipayung, Bogor, West Java, 600 m asl.: 3 specimens MZB Gst. 12.158, 53.8 mm, 52.0 mm, 48.0 mm; 3 specimens BD, 57.8 mm, 56.8 mm, 52.4 mm; 5 specimens IW, 52.4 mm, 56.1 mm, 55.2 mm, 52.0 mm, 56.8 mm, 3 fragments, 5 juvenile.

Description. Shell size medium to large, height up to 57.8 mm, dextral or sinistral, high conical, elongate, spire slightly tapered. Thickness medium, slightly transparent and little shining. Whorls 6-7, somewhat convex, increasing regularly in size; perch angle 31° - 38°. Apex light yellow, smooth and shining. Radial striae rather coarse, spiral sculpture very weak. Ground colour monochrome yellow or white, varices absent. Suture shallow and appressed, bordered by a narrow white zone below. Aperture small, oblique, ovate; white or yellowish inside. Parietal wall overlaid by white callus. Peristome white, expanded; outer lip thickened, reflected. Columella thick, vertical. Umbilicus perforated or nearly closed, partly concealed by a fold and broadened columellar side. Dimension: height of shell (h)= 46.8-57.8 mm, width of shell (w)= 22.6-28.5 mm, height of aperture (ha)= 23.2-27.5 mm, height of body whorl (bw)= 33.3-38.6 mm, h/w= 1.93-2.26, ha/h= 0.43-0.49, bw/h= 0.63-0.71.

Amphidromus palaceus appressus (von Martens, 1867) is differentiated from the nominate subspecies by the appressed suture with more prominent radial growth lines (Figure 3B), elongated shape, slightly tapered spire, small aperture, somewhat convex whorls, height of the aperture less than half of the shell height, monochrome colour, and lack of varices. In *A. p. palaceus* (Mousson, 1849) the spire is not tapered, the whorls are more convex, and varices may be present. The shell of *A. p. appressus* from Cipayung, Bogor is dominantly dextral: of the 19 specimens found including fragments and juveniles, 17 are dextral and 2 are sinistral. *Amphidromus toncruzi* Dharma, 2012 from Mount Mantalingajan, Palawan Island, the Philippines, lives at 1,500 m asl., has a sinistral shell, appressed sutures, the suture of the last whorl is appressed 1.5 mm to the penultimate whorl (Figure 3C). Despite living in the highlands, the shell of *A. toncruzi* is large, shell height reaches 61.5 mm. The other *Amphidromus* with sinistral shell from Palawan Island, *Amphidromus entobaptus* Dohrn, 1889, which lives in the lowlands near sea level, only has a shell of up to 55 mm in height. Usually snails that live in the highlands have smaller and thinner shells, such as *Amphidromus alticolus* Fulton, 1896 which lives at 1,600-2,000 m asl. in some mountains in the south of West Java, the largest shell is only 37.8 mm in height.

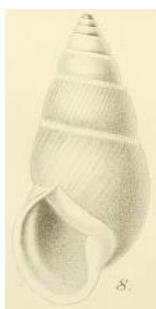


Figure 1. *Amphidromus appressus* (von Martens, 1867) in Boettger, 1890, pl. 5, figure 8



Figure 2. *Amphidromus palaceus* var. *appressus* (von Martens, 1867) in Pilsbry, 1900, pl. 47, figure 7

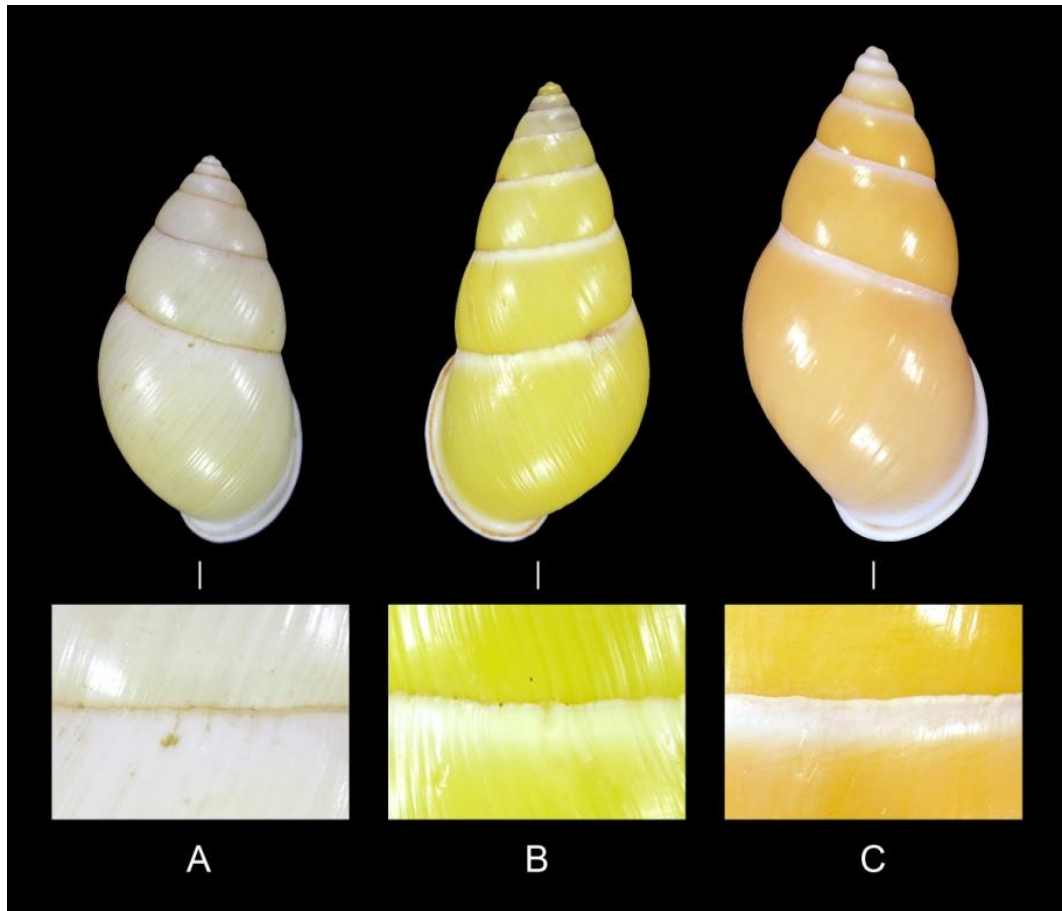


Figure 3. Suture detail: **A.** *Amphidromus palaceus palaceus* (Mousson, 1849), Cibareno, West Java, 45.4 mm. **B.** *Amphidromus palaceus appressus* (von Martens, 1867), Cipayung, Bogor, West Java, MZB Gst. 12.158, 53.8 mm. **C.** *Amphidromus toncruzi* Dharma, 2012, Mt. Mantalingajan, Palawan Island, the Philippines, 1,500 m alt., 58.2 mm.



Figure 4. *Amphidromus palaceus appressus* (von Martens, 1867), Cipayung, Bogor, West Java, 600 m asl.



Figure 5. *Amphidromus palaceus appressus* (von Martens, 1867), Cipayung, Bogor, West Java, 600 m asl.

***Amphidromus palaceus tener* (von Martens, 1867)**

(Figure 6, 7P)

Bulimus perversus tener von Martens, 1867, p. 350.

Amphidromus perversus var. *tenera* (Martens) —Fulton, 1896, p. 67.

Amphidromus palaceus tener (Martens) —Pilsbry, 1900, p. 136, pl. 46, figs 16-18 (error).

Amphidromus palaceus var. *tenera* (Martens) —van Benthem Jutting, 1950, p. 483.

Amphidromus palaceus var. *tener* (von Martens, 1867) —Laidlaw & Solem, 1961, p. 557, 666, Figure 22.

Amphidromus alticola Fulton, 1896 —Dharma, 1992, p. 116, pl. 36, Figure 5.

Amphidromus palaceus tener (von Martens, 1867) —Dharma, 2005, p. 230, pl. 90, Figure 7.

Amphidromus palaceus tener (von Martens, 1867) —Dharma, 2021a, p. 37, Figure

Type locality. Unknown.

Distribution. West Java.

Habitat. On various trees, found hiding under leaves avoiding birds of prey, live at 1,200 - 1,400 m asl.

Material Examined. Puncak, Bogor, West Java, 1,400 m asl.

Description. Shell small or medium size, height up to 47.4 mm, dextral or sinistral, high conical with slightly tapered spire. Thin, little transparent and little shining. Whorls 5½-6, somewhat convex, increasing regularly in size; perch angle 31°-35°. Apex yellowish, smooth and shining. Radial striae fine or slightly coarse, spiral sculpture very weak. Ground colour monochrome light yellow or white, without varices. Suture shallow, bordered by a narrow white or whitish zone below. Aperture oblique, ovate; white or yellowish inside. Parietal wall overlaid by thin white callus, rather transparent. Peristome white, expanded; outer lip thickened, rather reflected. Columella thick, vertical. Umbilicus closed or nearly closed, partly concealed by a fold and broadened columellar side. Dimension: height of shell (h)= 42.4-47.4 mm, width of shell (w)= 21.0-26.2 mm, height of aperture (ha)= 22.7-29.1 mm, height of body whorl (bw)= 31.1-34 mm, h/w= 1.81-2.02, ha/h= 0.53-0.72, bw/h= 0.72-0.73.

Discussion. The main characteristics of *Amphidromus palaceus tener* (von Martens, 1867) that set it apart from the other subspecies are its small shell, thin, slightly tapered spire with somewhat convex whorls, monochrome light yellow colour, and lack of varices. To avoid its main predator, birds, the snails often hide under leaves on trees. In the forest side in Puncak, Bogor, West Java, a group of shell fragments was found near a rather large rock, the birds banged the shells to take out their soft parts (Dharma, 2021a, p. 37, Figure). *Amphidromus palaceus palaceus* (Mousson, 1849) has a larger shell, thicker, more convex whorls, coarser radial striae, whereas varices may be present. *Amphidromus palaceus appressus* (von Martens, 1867) on average has a larger shell, thicker, coarser radial striae, appressed suture, and relatively small aperture. *Amphidromus alticolus*

Fulton, 1896 lives at 1,600 - 2,000 m asl., higher than *A. p. tener* that lives at 1,200 - 1,400 m asl. The shell of *A. alticolus* is relatively smaller and thinner than that of *A. p. tener*; the shell of *A. alticolus* is the smallest amongst *Amphidromus* s.s. with a shell height of only 30-37.8 mm. The several relatively small specimens of *Amphidromus* (shell height of 46.0-50.8 mm) found at Salabintana, Sukabumi, West Java; Situ Gunung, Sukabumi, West Java; and Taman Safari, Cisarua, West Java, are *Amphidromus palaceus palaceus* (Mousson, 1849), as is evidenced by their slightly convex whorls and the presence of varices in some of the specimens.



FIG. 22. *Amphidromus palaceus* var. *tener* von Martens. At Tjibodas, Java, 4,000 feet elevation. CNHM 72405 ex Fulton.

Figure 6. *Amphidromus palaceus* var. *tener* (von Martens, 1867) in Laidlaw & Solem, 1961, Figure 22.

REMARKS

Table 1. Comparison between subspecies of *Amphidromus palaceus* (Mousson, 1849).

characters	distribution	shell height (mm)	shape	thickness	radial striae	whorls
<i>A. p. palaceus</i>	Java	58.5	ovate conical to high conical, whorls little convex	medium or rather thick	fine or rather coarse	6½-7
<i>A. p. appressus</i>	West Java	57.8	high conical, elongate, spire slightly tapered	medium	rather coarse	06-Jul
<i>A. p. tener</i>	West Java	47.4	high conical, spire slightly tapered	Thin	fine or slightly coarse	5½-6
<i>A. p. tanggamusensis</i>	Lampung, Sumatra	59.6	ovate conical to high conical	medium	coarse	6-6½
<i>A. p. lemongensis</i>	Lampung, Sumatra	51.4	ovate conical, spire swollen	medium	rather coarse	5½-6
<i>A. p. taloensis</i>	Bengkulu, Sumatra	56.4	ovate conical to high conical	medium	fine	5½-6

Table 2. Key of subspecies of *Amphidromus palaceus* (Mousson, 1849).

<i>A. p. palaceus</i>	medium or rather thick, high conical or ovate conical, shell height up to 58.5 mm, radial striae fine or rather coarse, varices possible
<i>A. p. appressus</i>	thickness medium, high conical, elongate with slightly tapered spire, shell height up to 57.8 mm, aperture small, radial striae rather coarse, suture appressed, monochrome yellow or white, varices absent
<i>A. p. tener</i>	shell thin, high conical with slightly tapered spire, shell small with height up to 47.4 mm, radial striae fine or slightly coarse, monochrome light yellow or white, varices absent
<i>A. p. tanggamusensis</i>	thickness medium, ovate conical to high conical, shell height up to 59.6 mm, radial striae coarse, varices possible

<i>A. p. lemongensis</i>	thickness medium, ovate conical and spire swollen, shell height up to 51.4 mm, radial striae rather coarse, monochrome light yellow or white, varices absent
<i>A. p. taloensis</i>	thickness medium, ovate conical to high conical, shell height up to 56.4 mm, radial striae fine, varices absent

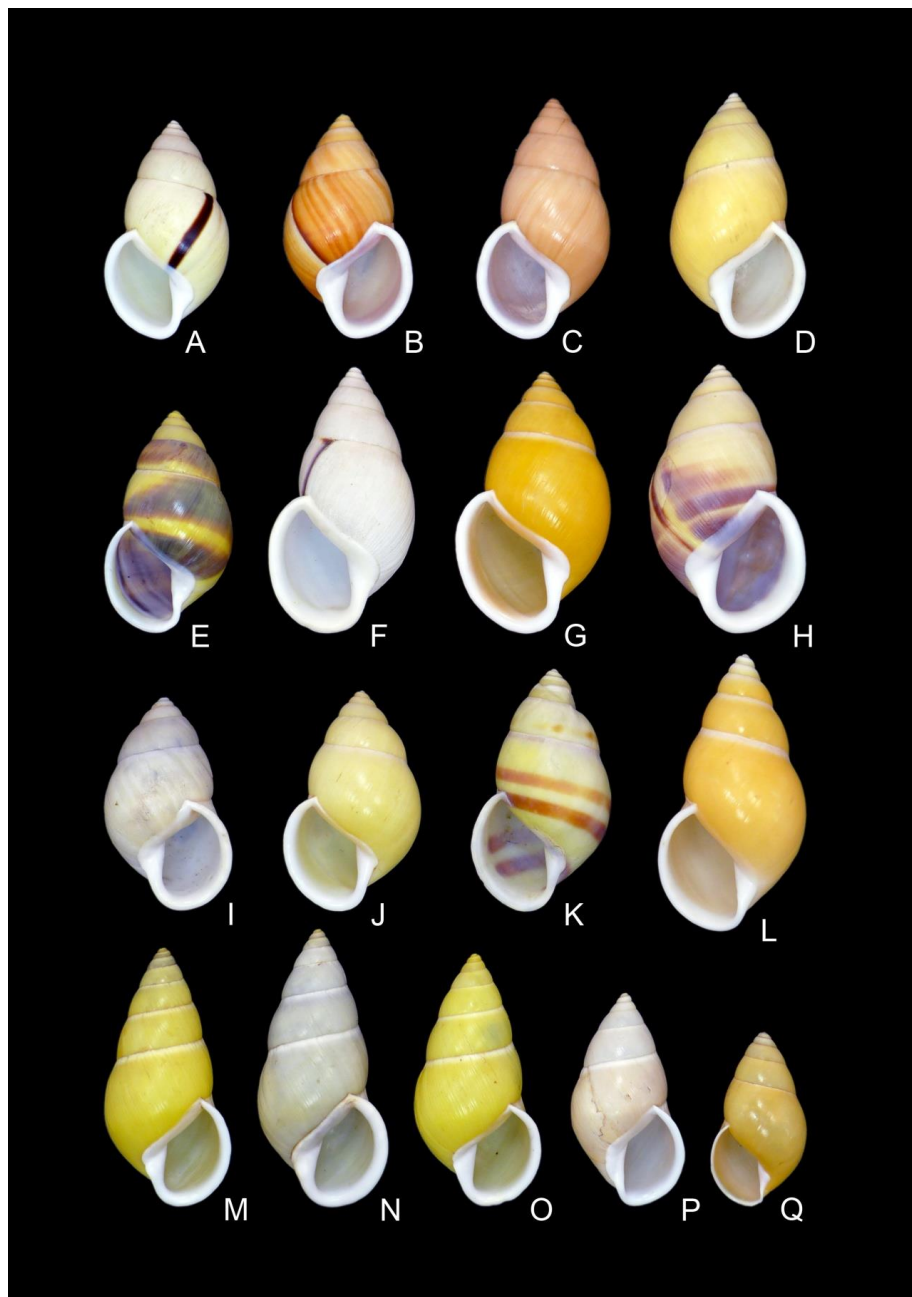


Figure 7. A-E. *Amphidromus palaceus palaceus*: **A-C.** Cibareno, West Java, 46.9 mm, 45.4 mm, 49.8 mm. **D.** Cijarian, West Java, 50.6 mm. **E.** var. *jeffabbasorum*, Banten, 46.9 mm. **F-H.** *A. p. tanggamusensis*, Bengkunt, Lampung, 56.5 mm, 55.1 mm, 56.6 mm. **I.** *A. p. lemongensis*, Lemong, Lampung, 44.9 mm. **J-K.** *A. p. taloensis*, Talo, Bengkulu, 46.5 mm, 51.2 mm. **L.** *A. toncruzi*, Mt. Mantalingajan, Palawan Isl., the Philippines, 1,500 m asl., 58.2 mm. **M-O.** *A. p. appressus*, Cipayung, Bogor, West Java, 600 m asl., MZB Gst. 12.158, 53.8 mm; BD, 57.8 mm; IW, 52.4 mm. **P.** *A. p. tener*, Puncak, West Java, 1,400 m asl., 43.8 mm. **Q.** *A. alticolus*, Pangalengan, West Java, 1,700 m asl., 35.9 mm.

CONCLUSIONS

Rediscovery of tree snail *Bulimus appressus* von Martens, 1867, with *Bulimus perversus tener* von Martens, 1867 has been found in Bogor, West Java, Indonesia. Total three specimens are deposited in Museum Zoologicum Bogoriense, Cibinong, Bogor, Indonesia.

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