

Description of a new species of *Amphidromus* Albers, 1850 from Sumba, Indonesia (Gastropoda Pulmonata Camaenidae)

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ABSTRACT

The camaenid *Amphidromus* (*Syndromus*) *iunior* n. sp. from an isolated forest in the east of Sumba island in the Indonesian archipelago is described. Its closest named relative is *Amphidromus* (*Syndromus*) *abbasi* Chan et Tan, 2010, and some conchological features are common for both species. However, the new species is smaller, with consistent differences in shell thickness, pattern and pigmentation.

KEY WORDS

Camaenidae; *Amphidromus iunior* n. sp.; Sumba; Indonesia.

Received 16.01.2013; accepted 14.04.2013; printed 30.06.2013

INTRODUCTION

The polyphyletic family Camaenidae Pilsbry, 1895 (Scott, 1996) is distributed in three distinct clades (Wade et al., 2007), geographically separated mainly by the Pacific Ocean. Synapomorphies amongst the members of the different clades are absent, and the family is characterized by the absence of vaginal accessory organs found in other members of the otherwise monophyletic Helicoidea Rafinesque, 1815 (Wade et al., 2006). According to molecular techniques employed by Wade et al. (2007), the Australasian fraction of this family was found to be synonymous with Bradybaenidae Pilsbry, 1934.

Amongst the most speciose genera in this Australasian clade is the arboreal *Amphidromus* Albers, 1850. Extending over a wide geographical area from India to Australia (Laidlaw & Solem, 1961; Solem, 1983), it is divided into two or three subgenera historically differentiated mostly through conchological characteristics. Of these, the subgenus *Syndromus* Pilsbry, 1900 (comprising the newly described species discussed herein) consists of animals with small shells (20-40 mm high, 10-25 mm wide) and a short epiphallic caecum, which according to Lok & Tan (2008) includes one dex-

tral, one enantiomorphic, and 44 sinistral taxa. New species have recently been assigned to this subgenus by Severns (2006), Dharma (2007) and Chan & Tan (2010), though Scucharit & Panha (2006) shed doubt on the taxon's monophyly. A new species of *Syndromus* collected on east Sumba is described herein.

ABBREVIATIONS. Depositories: BP = collection of Barna Páll-Gergely, Mosonmagyaróvár, Hungary; DC = collection of David P. Cilia, Santa Venera, Malta; FMNH = Field Museum of Natural History, Chicago, Illinois; HJ = Hebrew University of Jerusalem, Israel; JA = collection of John Abbas, Jakarta, Indonesia; MNHN = Muséum National d'histoire Naturelle, Paris, France; NHMUK = Natural History Museum, London, United Kingdom; NMNH = National Museum of Natural History, Mdina, Malta; TAU = Zoological Department of Tel Aviv University, Israel. Morphology and anatomy: D = diameter; H = height; H/D = height to diameter ratio; min. = minimum value; med. = median value; max. = maximum value.

MATERIALS AND METHODS

The mean value of two readings for height (in-

cluding the reflected peristome), width (including the reflected peristome) and oblique apertural height for a random selection of 21 adult specimens was taken using a dial caliper of a resolution of 50 µm. Results were rounded off to the nearest 0.1 mm. Whorls were counted, including the nucleus. Statistical data was formulated and used together with peculiar morphological characteristics to differentiate the new species from similar ones, most significant of which is the geographically and phylogenetically close *A. abbasi* Chan et Tan, 2010. Topotypical adult shells of the latter were similarly measured and morphometrically compared to those of the new species. Systematics in the present paper follow Bouchet & Rocroi (2005).

SYSTEMATICS

Superfamily Helicoidea Rafinesque, 1815

Family Camaenidae Pilsbry, 1895

Subfamily Camaeninae Pilsbry, 1895

Genus *Amphidromus* Albers, 1850

Subgenus *Syndromus* Pilsbry, 1900

Type species *Helix contraria* Müller, 1774

Amphidromus (Syndromus) iunior n. sp.

EXAMINED MATERIAL. Holotype: small forest close to Mangili village, east part of Sumba Island, East Nusa Tenggara, Indonesia (-10°05'32"N, 120°42'08"E), at an altitude of about 560 m above sea level, leg. JA: MNHN 23265. Paratypes (20 specimens): same data as holotype: DC RG217 (3); HUI 53490 (2); JA unreg. (3); MNHN 23266 (2); FMNH 328102 (2); TAU 75175 (1); NHMUK 20120044 (3); NMNH unreg. (2); BP unreg. (2).

DESCRIPTION OF HOLOTYPE (Figs. 1-6). Sinistral, conical, thin, smooth, glossy and translucent shell, 14 mm wide and 28 mm tall. Dull yellow base colour intensifying towards the ultimate whorl, with brown markings in the form of two well-defined subperipheral spiral striae, faint subordinate ones, and blurred spaced vertical columns featuring a reduction in their colour intensity and frequency towards the final whorl. These columns are interrupted halfway through by a perpendicularly crossing spiral band lacking in pigment, another of which is present just beneath the suture. Nucleus dark purple-brown, its colour descending and fading out along the apical whorl just above the suture,

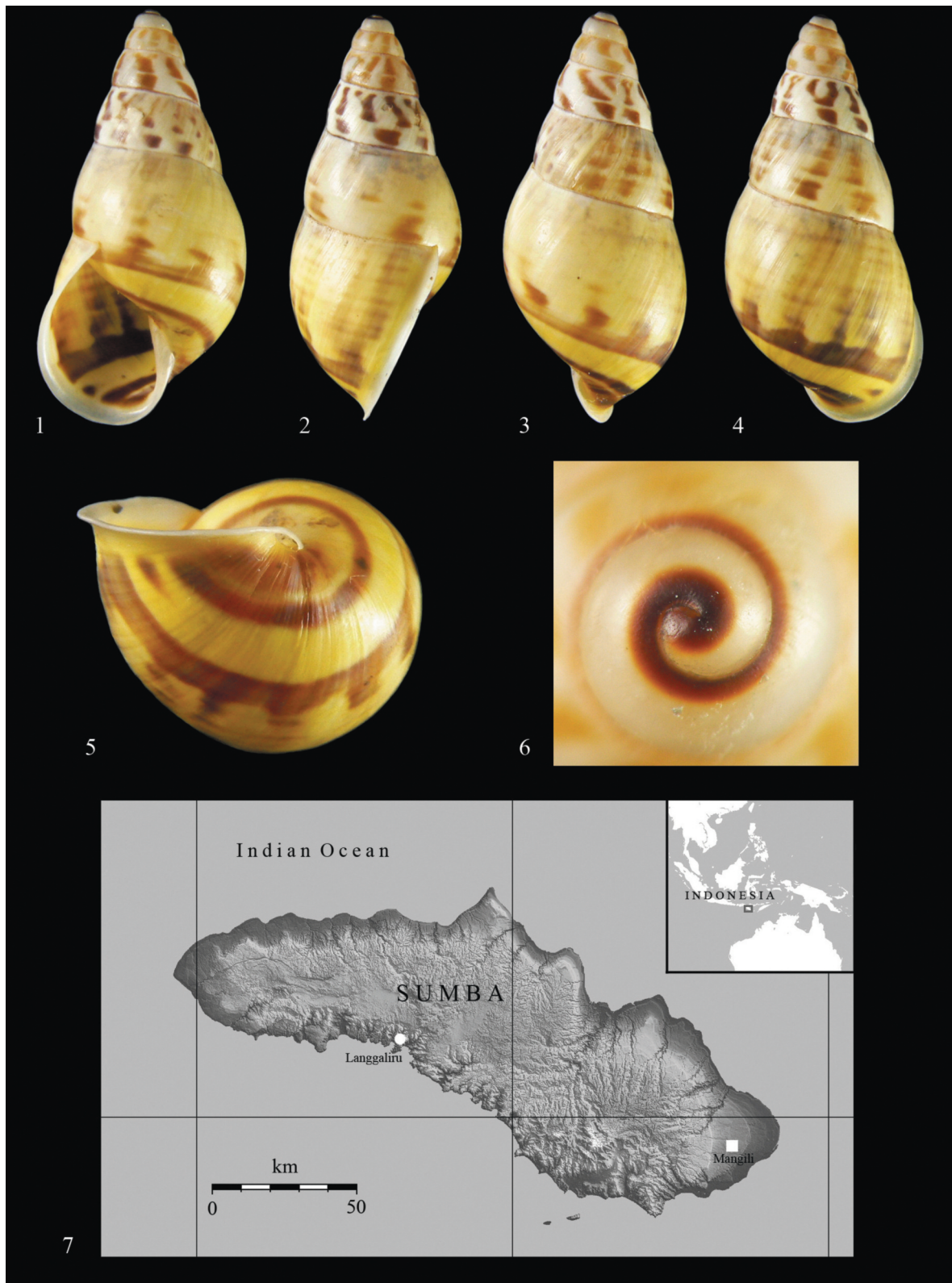
appearing in top view as a dark spiral over the pale base. The number of the moderately convex whorls is between six and seven, the final of which is smoothly rounded. Aperture is vertically elongated and teardrop-shaped, its height constituting about 40% of the shell's total. Peristome fragile and expanded, only thickened and reflected at its columellar side. The reflected segment is not completely fused to the base of the ultimate whorl, in most cases leaving an obliquely oriented pinhole umbilicus. Internal aspect glossy, with the brown markings showing through.

VARIABILITY. The width varies from 13 to 16 mm and the height from 23 to 34 mm (Figs. 8-22; Table 1). Whereas the subperipheral spiral striae are always present, very brief interruptions occasionally occur. Additional spiral striae may unusually take the form of parallel brown dashes that also coincide in a perpendicular direction, forming columns.

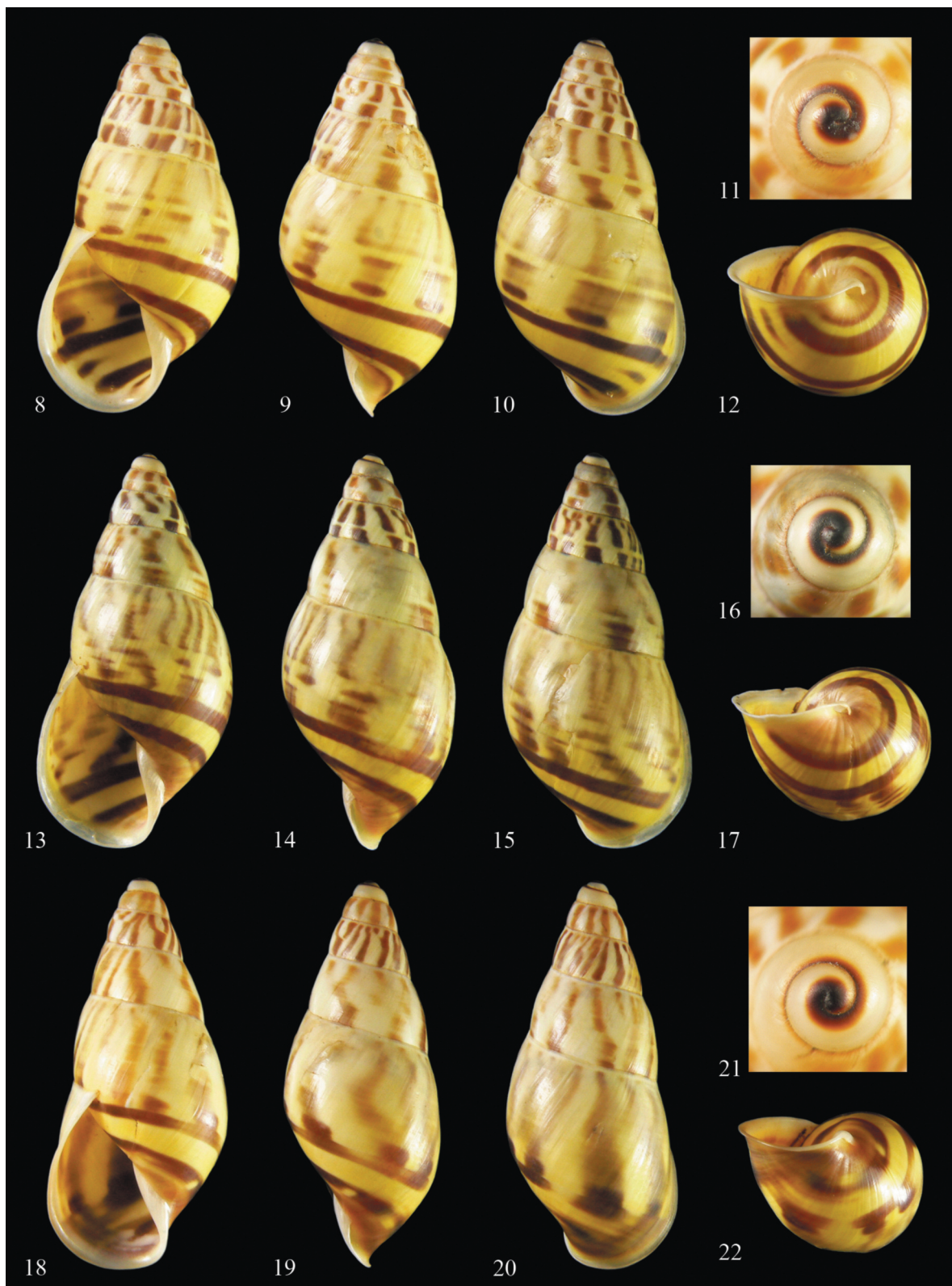
ETYMOLOGY. The species is named for the youngest son of John Abbas, who encountered this hitherto unrecorded species during one of his expeditions. Another species of *Amphidromus* named for John, *A. (S.) abbasi*, is closely related to this species, but is significantly larger, amongst other differences. The meaning of *iunior* therefore takes on another meaning, referring to the relative size of the snail (*iunior* is the comparative form of *iuvenis*, meaning young in Latin).

DISTRIBUTION. Only known from the type locality.

COMPARATIVE NOTES. Two *Syndromus* (sensu lato) lineages are represented on the volcanic island of Sumba (Laidlaw & Solem, 1961; Chan & Tan, 2008, 2010). One lineage is represented by the *A. (S.) latestrigatus* Schepman, 1892 complex, including *A. (S.) latestrigatus sumbaensis* Fulton, 1896 and *A. (S.) floresianus* Fulton, 1897. The other lineage has only recently been discovered, with the first species described being *A. (S.) abbasi* (see Chan & Tan, 2008: p. 9, figs. 1.1-1.6; 2010: p. 247, figs. 1A-C). The new species, a second addition to this latter lineage, is currently only known from a patch of forest close to Mangili in eastern Sumba which lies on a Pleistocene limestone platform, and as such it is reproductively separated from *A. abbasi*, which is located at Langgaliru, about 122 km in a northwesterly direction, in another isolated forest patch, here on a late Cretaceous formation of sedimentary and volcanic origin (Lytwyn et al., 2001).



Figures 1-6. Shells of *Amphidromus iunior* n. sp., small forest close to Mangili village, east part of Sumba island, East Nusa Tenggara, Indonesia - holotype. Figure 7. Map of Sumba showing the type localities of *A. iunior* n. sp. (Mangili, marked with a white square) and of *A. abbasi* (Langgaliru, marked with a white circle). Inset map shows the Indonesian archipelago.



Figures 8-22. Shells of *Amphidromus iunior* n. sp., small forest close to Mangili village, east part of Sumba island, East Nusa Tenggara, Indonesia. Figs. 8-12: paratype (FMNH 328102). Figs. 13-17: paratype (NHMUK 20120044). Figs. 18-22: paratype (DC RG217).



Figures 23-32. Shells of *Amphidromus abbasi*, forest in Langgaliru, southwest part of Sumba island, East Nusa Tenggara, Indonesia (-09°45'44"N, 119°38'33"E) (DC RGA698).

	H (mm)				D (mm)				H/D
	mean	min.	med.	max.	mean	min.	med.	max.	
<i>A. iunior</i> n. sp. holotype	27.65	NA	NA	NA	14.25	NA	NA	NA	1.94
<i>A. iunior</i> n. sp. type series	27.70	23.30	27.65	33.80	14.31	12.65	14.25	15.75	1.93
<i>A. abbasi</i> topotype	37.78	35.60	38.00	39.50	18.86	18.00	18.95	19.65	2.01

Table 1. Condensed data for shell measurements of the type series of *A. iunior* n. sp. (21 specimens) and a topotypical sample of *A. abbasi* (6 specimens - DC R.GA698) for comparison. All measurements are in mm.

A number of morphological characteristics are valuable in differentiating between the two species. *A. abbasi* is larger, with its smallest specimens exceeding by about 2mm in width and in height the largest *A. iunior* n. sp. specimens encountered (Table 1). The degree of conchological intraspecific variability in *A. abbasi* significantly exceeds that of the *A. iunior* n. sp. population. It is also thicker-shelled, reaching a degree of opacity lacking in *A. iunior* n. sp. (Figs. 23-32). The two subperipheral brown spiral bands may be extremely faint or absent in *A. abbasi*, and considerable variation in base colour occurs in the topotypic population, with a spectrum ranging from pink to yellow-brown, whereas this is never the case for *A. iunior* n. sp. The columnar markings in the former are frequently resolved to a series of dashes, in the latter they are generally fused and continuous, apart from the one main perpendicular interruption through which the yellowish base colour appears. The peristome of *A. abbasi* is more strongly reinforced and its degree of fusion at the columellar side is rarely incomplete; in *A. iunior* n. sp., the umbilical zone is always narrowly perforated (closed in *A. abbasi*). Pigmentation of the nucleus, a feature of significant diagnostic value amongst Nusa Tenggara *Syndromus*, according to Goldberg & Severns (1997), is always restricted to a spot in *A. abbasi*, varying between pinkish and brown, while in *A. iunior* n. sp. it is always dark, descending and diminishing gradually along the first whorl in proximity of the suture.

ACKNOWLEDGEMENTS

The author would like to thank John Abbas (Jakarta, Indonesia), for making the specimens available for study, Fred Naggs and Jonathan Ablett (NHMUK), Jochen Gerber (FMNH), Philippe Bouchet and Virginie Héros (MNHN), John J. Borg (NMHM), and Henk Mienis (HUI) for technical assistance, Fabio Liberto and Salvatore Giglio (Cefalu, Italy) for photography and plate layout, and anonymous reviewers for their suggestions.

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