

Communication

Description of a new *Kenyirus* species (Pulmonata: Camaenidae) from Kedah, Peninsular Malaysia

Siong Kiat Tan^{1,5}, Sow Yan Chan² and Junn Kitt Foon^{3,4}¹Lee Kong Chian Natural History Museum, National University of Singapore,²Conservatory Drive, Singapore 117377, Republic of Singapore; nhmtsk@nus.edu.sg²VBox 888313, Singapore 919191, Republic of Singapore; chansowyan@gmail.com³Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia; jkfoon.research@gmail.com⁴Rimba, 18E Kampung Basung, 21700 Kuala Berang, Terengganu, Malaysia⁵Corresponding author

Abstract

A new species of the camaenid genus *Kenyirus* is described from Baling, Kedah, Peninsular Malaysia. *Kenyirus balingensis*, new species, has a thin subglobose-trochoidal shell, with a depressed apex. It resembles *Kenyirus sheema* Foon, Tan & Clements, 2015, in shell shape, but can be distinguished by its much smaller size, proportionately lower spire, presence of an indistinct groove just above the suture, and a more prominent peripheral keel. *Kenyirus balingensis* also has a generally uniform coloured shell.

<http://zoobank.org/urn:lsid:zoobank.org:pub:33A8FAA3-DE27-4034-AE68-52D4A4F1A679>

Introduction

Presently, the camaenid genus *Kenyirus* Clements & Tan, 2012, consists of two species from Perak and Terengganu in the northern part of Peninsular Malaysia (Clements & Tan, 2012; Foon et al., 2015). A weathered specimen collected in the 1990s from Bukit Baling in Kedah, north-western Peninsular Malaysia, was found to closely resemble *Kenyirus sheema* Foon, Tan & Clements, 2015. Although it was clearly much smaller and has less number of whorls, it remained uncertain if the specimen could represent an aberrant dwarf individual of *K. sheema* until a second specimen was recently collected from the same locality. A new species of *Kenyirus* is herein proposed based on the two specimens. The new species appears to have a highly localised distribution and can be distinguished from its closest congener *K. sheema* by its distinctly smaller size and other conchological characteristics

Materials and Methods

Description of *Kenyirus balingensis*, new species, is based on conchological characters. Types and comparative material examined are from the following collections, indicated with abbreviations: BOR

(BORNEENSIS collection, Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah), ZRC (Zoological Reference Collection of the Lee Kong Chian Natural History Museum, National University of Singapore), and CSY (private collection of S.Y. Chan, Singapore). Other abbreviations used are: SH (Shell height), SW (Shell width), DFW (Diameter of the first whorl), DSW (Diameter of the second whorl), DTW (Diameter of the third whorl), AH (Aperture height), AW (Aperture width), SH: SW (Shell height to shell width ratio). Shell height was measured from the apex to the lowest part of the peristome parallel to the coiling axis and shell width was measured at the widest section perpendicular to the coiling axis. Aperture height was measured from the uppermost edge to the basal edge of the peristome parallel to the coiling axis. Aperture width was measured from the columellar edge to the outer edge of the peristome perpendicular to the coiling axis. The diameters of the first three whorls were measured at the start of the whorl (after Vermeulen & Whitten, 1998). All measurements units are in millimetres (mm). Measurements are rounded up to the nearest 0.1 millimetre. The shell height to shell width ratio is used to gauge the shell profile whereby a higher number means a shell has taller spire relative its width.

Taxonomic account

Family Camaenidae Pilsbry, 1895

Genus *Kenyirus* Clements & Tan, 2012

Type species. *Kenyirus sodhii* Clements & Tan, 2012 by original designation.

To cite this publication:

Tan SK, Chan SY & Foon JK (2017) Description of a new *Kenyirus* species (Pulmonata, Camaenidae) from Kedah, Peninsular Malaysia. Occasional Molluscan Papers, 6: 1-4.

© the Author(s) and this is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (CC-BY-NC-SA 4.0), which permits the copying, distribution and transmission of the work as long as the original source is cited.

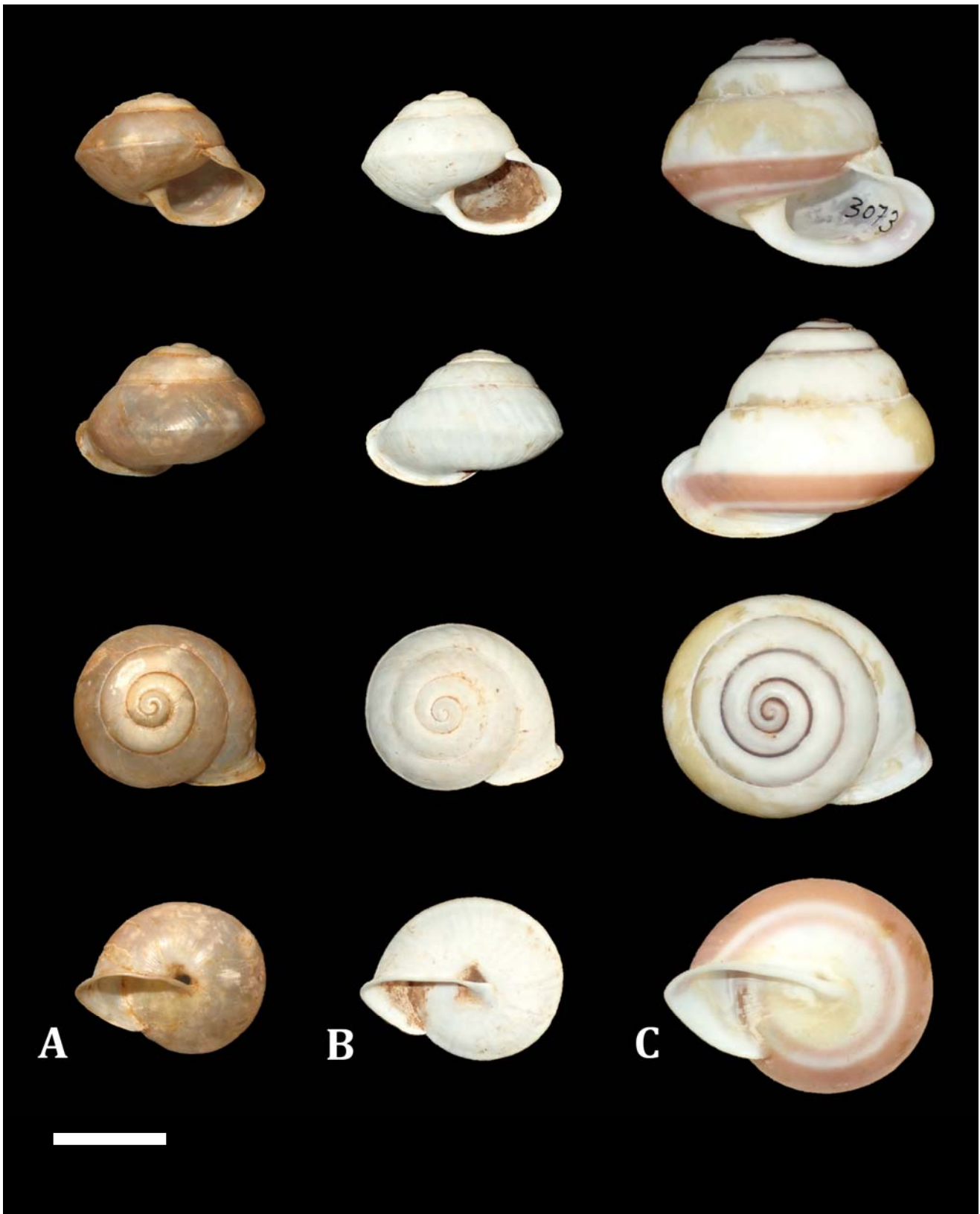


Fig. 1. *Kenyirus* species: A, *Kenyirus balingensis*, new species: A, holotype (SH 12.3 × SW 17.3) (BOR/MOL 8099); B, *Kenyirus balingensis*, paratype (SH 13.4 × SW 18.2) (ZRC.MOL.9355); C, *Kenyirus sheema* Foon, Tan & Clements, 2015 (SH 21.0 × SW 24.3) (ZRC.MOL.3073). Scale bar = 10 mm.

***Kenyirus balingensis* sp. nov.**
(Fig. 1A, B)

Material examined. Holotype: (BOR/MOL 8099), Peninsular Malaysia, Kedah, northern slope of Bukit

Baling (5°41'07.9"N 100°54'46.7"E), on ground under shrub, along track to summit, coll. J.K. Foon, 24 May 2016. Paratype: 1 ex. (ZRC.MOL.9355 [ex CSY 409.106.6.0]), Peninsular Malaysia, Kedah, Bukit Baling, coll. S.Y. Chan, 6 Dec.1996.

Comparative material. *Kenyirus sheema* Foon, Tan & Clements, 2015: Holotype (SH 21 mm, SW 24.3 mm; DFW 3.1 mm, DSW 7.2 mm, DTW 12.5 mm; AH 9.3 mm, AW 17.1 mm; SH: SW = 0.864; number of whorls 4¾–5) (ZRC.MOL.3073), Peninsular Malaysia, Perak, south of Royal Belum State Park, forest at Km 59 of Federal Route 4 [now known as Amanjaya Forest Reserve; gazetted on 9th May 2013], opposite Works Department temporary shelter (5°35'21.3"N, 101°29'52.8"E), coll. G. R. Clements, 17 Feb.2009.

Description. Shell subglobose-trochoidal, thin, relatively solid, dextral; SH 12.3–13.4 mm, SW 17.3–18.2 mm; DFW 2.2–2.4 mm, DSW 5.2–5.4 mm, DTW 10.1–10.5 mm; AH 6.9–7.3 mm, AW 11.1–11.6 mm; SH: SW = 0.723 (mean); number of whorls 4–4¼. Apex depressed, spire whorls convex in profile, suture impressed, indistinct furrow present just above suture; body whorl slightly deflected downwards just aft of aperture; peripheral keel prominent. Aperture rhomboidal, angled at the point where it meets the columella; peristome margins expanded and reflexed; umbilicus small, partially obscured by expanded edge of lower lip. Shell colour uniformly pinkish-brown, translucent, brown sub-sutural line sometimes present in first 2½ whorls; periostracum thin, yellow brown.

Etymology. The species is named after the type locality Bukit Baling, with the Latin suffix '-ensis' added to mean originating from.

Distribution. This species is thus far known only from the type locality.

Cross diagnosis. The new species resembles *Kenyirus sheema* Foon, Tan & Clements, 2015, in general shell shape but can be separated by its distinctly smaller sized shell and a more prominent peripheral keel. The keel appears as an indistinct furrow just above the suture on the penultimate and earlier whorls. The shell of *Kenyirus balingensis* has about ¾ of a whorl less compared to *K. sheema*. This has also led to a difference of 1.141 in the shell height to shell width ratio between *K. balingensis* and *K. sheema*. Diameters of the first, second and third whorls for *K. balingensis* are consistently smaller than *K. sheema* by about 0.9 to 1.3 mm. In addition, the shell of *K. balingensis* is mostly uniform in colour and lacks spiral bands except for the occasional brown sub-sutural band at the first few whorls.

Discussion

The ecology, biology and phylogenetic relationships of all *Kenyirus* species remain unknown as no live specimen has been collected to date. Their known distribution is based only on a few shell records scattered across the northern states of Peninsular Malaysia (see Clements & Tan, 2012; Foon et al., 2015; this study).

Kenyirus balingensis is the latest land snail species described from Bukit Baling since van Benthem Jutting (1950). As of now, four species, namely *Odontartemon balingensis* Tomlin, 1948, *Alycaeus balingensis* Tomlin 1948, *Paraboyssidia serpa* van Benthem Jutting, 1950, and *K. balingensis*, new species, were described and known only from Bukit Baling. However, it is premature to conclude that these species are very short range endemics pending geographically wider surveys.

To date, about eight malacologists have reported land snails from the interior of Kedah and Perak (e.g. Collinge, 1902; Sykes, 1903; Godwin-Austen, 1909; Laidlaw, 1928; Tomlin, 1948; van Benthem Jutting, 1950; Davison, 1995; Clements et al., 2008). Yet, discoveries such as the new species described herein suggest that the terrestrial malacofauna in this region remains little known. Notably, there have only been few historical surveys of non-limestone areas on the Bintang mountain range, including the Skeat Expedition which reported 10 new taxa from Gunung Inas and Ulu Selama (Sykes, 1903; Godwin-Austen, 1909). Future intensive malacofaunal studies in these areas could help address this knowledge gap.

Acknowledgements

Thanks are due to A.S. Mena and her team for fieldwork accommodation and hospitality, G.R. Clements and M.E. bin Marzuki for discussions on the new species and related groups. J.K. Foon would like to thank the Department of Wildlife and National Parks (Research permit JPHL&TN(IP):100-34/1.24Jld 6(14)). Comments and suggestions from T.S. Liew greatly improved the manuscript.

References

- Clements GR, Ng PKL, Lu XX, Ambu S, Schilthuizen M, Bradshaw CJA (2008) Using biogeographical patterns of endemic land snails to improve conservation planning for limestone karsts. *Biological Conservation*, 141: 2751–2764.
- Clements GR & Tan SK (2012). A new genus and species of camaenid snail (Mollusca: Pulmonata) from Terengganu, Peninsular Malaysia. *Raffles Bulletin of Zoology*, Supplement 25: 259–263.
- Collinge WE (1902) On the non-operculate land and freshwater Molluscs collected by the members of the 'Skeat-Expedition' in the Malay Peninsula, 1899-1900. *The Journal of Malcology*, 9: 71–95.
- Davison GWH (1995) The terrestrial mollusca fauna of Temengor Forest Reserve, Hulu Perak, Malaysia. *Malayan Nature Journal*, 48: 233–248.
- Foon JK, Tan SK & Clements GR (2015) A new species of *Kenyirus* (Pulmonata, Camaenidae) from Peninsular Malaysia. *Journal of Tropical Biology and Conservation*, 12: 25–34.
- Godwin-Austen HH (1909) Descriptions of the animals of two land shells from Perak. Skeat Expedition in the Malay Peninsula 1899-1900. *Proceedings of the Malacological Society of London*, 8: 365–368.

- Laidlaw FF (1928) A list of the land and fresh-water Mollusca of the Malay Peninsula with notes. *Journal of the Malayan Branch of the Royal Asiatic Society*, 6: 25–37.
- Pilsbry HA (1895) *Manual of Conchology. Second Series: Pulmonata*, ser. 2, 9: i–xlvi, 366, pls. 1–71.
- Sykes ER (1903) On the land operculate Mollusca collected during the 'Skeat Expedition' to the Malay Peninsula in 1899–1900. *Proceedings of the Zoological Society of London*, 1903: 194–199.
- Tomlin JR le B (1948) New Malay land-shells. *Proceedings of the Malacological Society*, 27: 224–226.
- Vermeulen JJ & Whitten AJ (1998) *Fauna Malesiana: Guide to the Land Snails of Bali*. Backhuys, Leiden, 164 pp.
- van Benthem Jutting WSS (1950) The Malayan species of *Boysidia*, *Paraboysidia*, *Hypselostoma* and *Gyliotrachela* (Gastropoda, Pulmonata, Vertiginidae) with a catalogue of all the species hitherto described. *Bulletin of the Raffles Museum*, 21: 5–47.
-