ISSN 2755-3531

Vol. 45, no. 5 **Journal of Conchology** 8 February 2026

Published by the Conchological Society of Great Britain and Ireland, established 1874

New species of *Moellendorffia* Ancey, 1887 and *Trichelix* Ancey, 1887 from China (Gastropoda: Eupulmonata: Camaenidae)

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Abstract. Two new Chinese camaenid species, *Moellendorffia daner* sp. nov. [儋耳多粒螺] from Hainan Province and *Trichelix gengqii* sp. nov. [耿齐绒粒螺] from Sichuan Province, are described in this paper. Photographs of the shells and the genitalia of these two new species are provided along with a distribution map of known *Moellendorffia* and *Trichelix* species from China and adjacent areas.

Key words. China, taxonomy, new species, anatomy, systematics

ZooBank identifier. urn:lsid:zoobank.org:pub:3033AD89-12AC-4B9A-B53B-7078500C45DD

DOI. https://doi.org/10.61733/jconch/4567

Introduction

Two camaenid genera *Moellendorffia* Ancey, 1887 and *Trichelix* Ancey, 1887, together with a related genus, *Moellendorffiella* Pilsbry, 1905, were systematically reviewed in a type catalogue by Sutcharit *et al.* (2020), and nine species and three subspecies of *Moellendorffia*, six species of *Trichelix* and two species of *Moellendorffiella* were recognised (Yen 1939, 1942; Schileyko 2003, 2011; Sutcharit *et al.* 2020). Thereafter, four *Moellendorffia*, two *Trichelix*, and one *Moellendorffiella* species were recorded from China (Lin & Lin 2022, 2025; Lin & Qiu 2024).

The genus *Moellendorffia* is characterised by having a depressed shell with a descending body whorl behind the detached aperture, which is usually heart-shaped and with three or four apertural teeth. Bristles of various lengths and tubercles are present in most species (Sutcharit *et al.* 2020; Lin & Qiu 2024). Among currently known *Moellendorffia* species, *Moellendorffia wuchaoi* R.-X. Lin & L. Qiu, 2024 is from Hainan Island in southern China, while others are all endemic to southern and eastern continental Asia (Sutcharit *et al.* 2020; Lin & Qiu 2024).

The genus *Trichelix* is remarkable for a slightly flattened to concave shell with elevated parietal callus and an anteriorly descending last whorl with external furrows. Most *Trichelix* species have bristles on the periostracum, and in some species the bristles will fall off when the shells reach full maturity (Lin & Lin 2025). *Trichelix* species are mainly distributed in eastern and southern continental Asia, while some occur on islands in eastern Asia. For those species from China, one occurs in Taiwan and the other four species, including the new species described herein, are distributed in narrow, scattered areas in Chongqing, Hunan, Guangxi, and Sichuan provinces of the Chinese mainland (Habe 1957; Hsieh *et al.* 2013; Sutcharit *et al.* 2020; Lin & Lin 2022, 2025). All known Chinese species of *Trichelix* exhibit rather low population densities (G.-Q. Zhang pers. comm.).

In this paper, a new species of *Moellendorffia* from Hainan and a new species of *Trichelix* from Sichuan are described. Images of the shells and genitalia are provided together with a distribution map of known *Moellendorffia* and *Trichelix* species from China and adjacent areas. The geographical range of *Trichelix* in China is extended westward to Sichuan, and knowledge of the diversity of *Moellendorffia* on Hainan Island is improved.

Materials and Methods

Empty shells were cleaned with 75% alcohol and air dried, and the separated animal tissues were dissected and fixed in 75% alcohol. Shells were photographed using a Nikon D80 camera with a Laowa 60 mm F2.8 Macro 2:1 lens. Pictures were modified in Adobe Photoshop CC 2019. The number of shell whorls was counted according to the method used by Kerney and Cameron (1979). Measurements were made by digital callipers. Specimens were deposited in the Mollusc Collection, Museum of Hebei University (HBUMM), Baoding, China. Higher level classification follows MolluscaBase (MolluscaBase Eds 2025).

Abbreviations. HBUMM: mollusc collection of the Museum of Hebei University (Baoding, China), LLW: collection of Li-Wen Lin (Fuzhou, China), LRX: collection of Ran-Xi Lin (Zhanjiang, China), ZGQ: collection of Geng-Qi Zhang (Shenzhen, China).

Systematics

Family Camaenidae Pilsbry, 1895

Subfamily Camaeninae Pilsbry, 1895

Genus *Moellendorffia* Ancey, 1887

Type species. *Helix trisinuata* E. von Martens, 1867, by subsequent designation (Pilsbry 1893–1895).

Moellendorffia daner sp. nov.

Figures 1, 2A–D

ZooBank identifier. urn:lsid:zoobank.org:act:C8F9F8BB-A1BF-41C4-B256-333B8ABB04A9

Type locality. Bawangling [霸王岭], Changjiang Li Autonomous County [昌江黎族自治县], Hainan Province, China, 19°7′N, 109°10′E.

Type material. Holotype: HBUMM10092. Major shell diameter 20.95 mm, shell height 9.00 mm, aperture height 8.45 mm, aperture width 9.80 mm, with dissected soft part preserved in 75% alcohol, leg. local residents, 28 September 2025.

Paratypes: 1 shell (HBUMM10093; diameter 21.50 mm, height 10.65 mm, aperture height 9.45 mm, aperture width 10.35 mm), with dissected soft part preserved in 75% alcohol, from type locality and with same data as holotype. 1 shell (LLW; diameter 20.80 mm, height 9.95 mm, aperture height 8.35 mm, aperture width 9.75 mm), Qiongzhong Li and Miao Autonomous County [琼中黎族苗族自治县], Hainan Province, China, leg. local residents.

Diagnosis. Shell depressed-conical, keeled. Keel with bristles. Aperture with one prominent nodule, one columellar lamella, and one elongate palatal lamella.

Description. Shell (Fig. 1) depressed-conical, lenticular, thin, reddish brown, with white spot near aperture, dextral, *c.* 4½ whorls. Suture rather deep. Spire low and domed. Periphery of last whorl strongly carinate, above middle, and clearly descending behind aperture. Protoconch with numerous regularly arranged elliptical granules. Teleoconch surface covered with bristles, longest on indistinct tubercles on keel of last whorl; long bristles about 1.0 mm long. Aperture vastly extended, squarish, free from preceding whorl. Peristome expanded, equally reflected. Parietal wall protruded to form prominent nodule; one columellar lamella slightly larger than prominent nodule; one elongated palatal lamella slightly depressed in middle. Umbilicus open, moderately wide and deep, approximately 30% of shell major diameter, with early whorls visible inside.

Genitalia (Fig. 2). Atrium short. Penis small, extremely inflated, smooth on outside; penial pilasters not visible through wall of penis; penis internally with bilobed verge and several axial pilasters. Penial retractor muscle attached at middle of epiphallus, threadlike. Epiphallus glossy, partly helicoid, and obviously longer than penis. Flagellum tube-shaped, terminally blunt, without appendix. Vas deferens of uniform thickness, connected to epiphallus. Vagina long, uniformly inflated, unpigmented. Spermoviduct rather thin, not easily seen. Bursa copulatrix duct oval, thick, and with a long and swollen pedunculus. Bursa copulatrix blunt, thinner than bursa-copulatrix duct, with ribbon-like ligament.

Shell measurements. Major diameter 20.80–21.50 mm, height 9.00–10.65 mm, aperture height 8.35–9.45 mm, aperture width 9.75–10.35 mm (n = 3).

Derivation of name. *Dan'er* refers to the decorative practice among ancient Hainan people of elongating and altering the shape of their earlobes by wearing heavy ear ornaments, and it became the name of a prefecture in western Hainan Island in Han Dynasty. Used as a noun in apposition, this name indicates both the type locality and the ear-shaped aperture of this species.

Geographic range. This species is known from the type locality and Qiongzhong Li and Miao Autonomous County, Hainan Province, China. This species may live widely in mountains between Changjiang and Qiongzhong according to several eyewitness records (X. Zhang pers. comm.; Fig. 4).

Habitat. This species lives under fallen tree trunks and branches in the forest.

Remarks. Another *Moellendorffia* species from Hainan

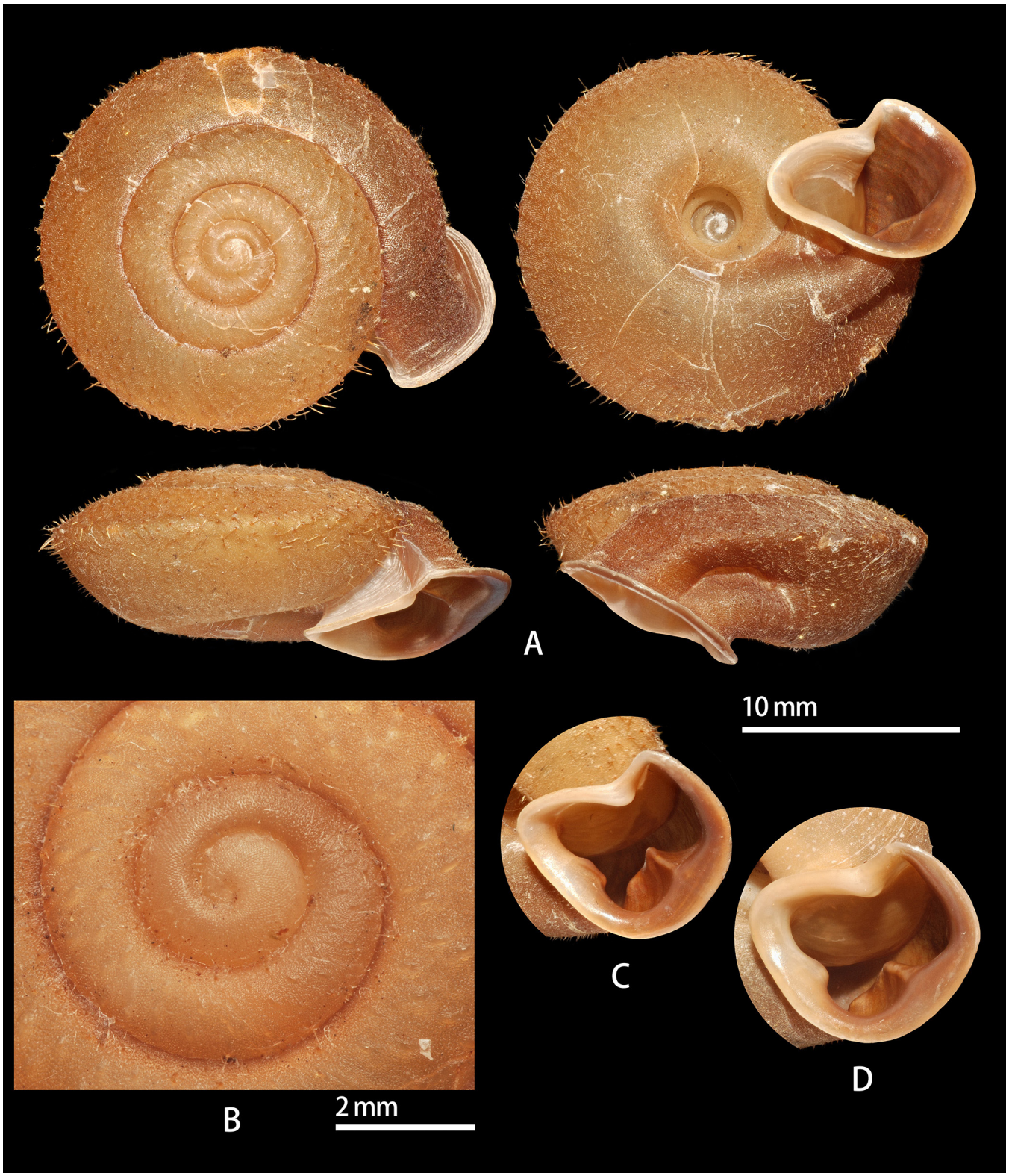

Figure 1. *Moellendorffia daner* sp. nov. **A**–**C**, holotype, HBUMM10092, from Bawangling, Changjiang Li Autonomous County, Hainan Province, China). **D**, paratype, HBUMM10093, same data as holotype. Photographer Li- Wen Lin.

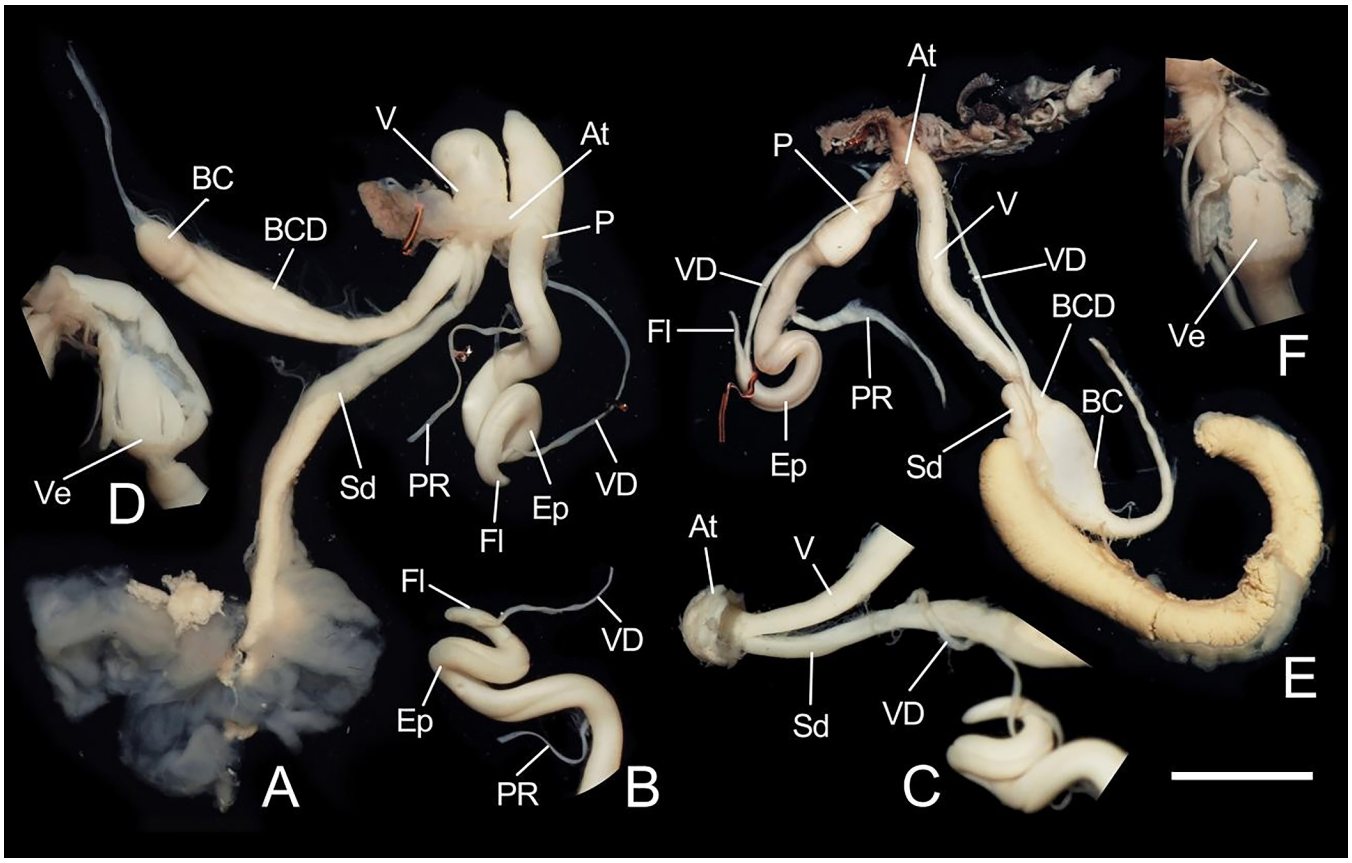

Figure 2. Genitalia. **A**–**D**, *Moellendorffia daner* sp. nov.: (**A**–**C**) holotype, HBUMM10092; (**B**) detail of flagellum and epiphallus; (**C**) intersection of vagina and spermoviduct with atrium partly cut off; (**D**) paratype, HBUMM10093, interior of penis. **E**, **F**, *Trichelix gengqii* sp. nov., paratype, LRX): (**F**) interior of penis. Abbreviations: At = Atrium; BC = bursa copulatrix; BCD = bursa copulatrix duct; Ep = epiphallus; Fl = flagellum; P = penis; PR = penial retractor muscle; Sd = spermoviduct; V = vagina; VD = vas deferens; Ve = verge. Photographer Li-Wen Lin. Scale bar: A–C, E = 5 mm; D, F = 2 mm.

Island, *M. wuchaoi* Lin & Qiu, 2024, has a well-rounded body whorl and two sharp palatal lamellae inside the aperture. The new species is conchologically similar with three carinal species with depressed shape, *M. kuguaheshang* Lin & Lin, 2022, *M. qinglongi* Lin & Lin, 2022, and *M. gulinensis*. Lin & Qiu, 2024. *Moellendorffia kuguaheshang* is smaller and with a strongly tubercular keel and a weaker columellar lamella; *M. qinglongi* has almost no bristles and a more rounded aperture; *M. gulinensis* is larger, with distinct round tubercles on the keel and without bristles. In addition, these three species have more flattened spires.

The spermoviduct of this new species is much longer than that of *Moellendorffia eastlakeana* (Möllendorff, 1882) and *Moellendorffia trisinuata* (E. von Martens, 1867), and the vagina is shorter (Panha *et al.* 2010; Schileyko 2003).

Genus *Trichelix* Ancey, 1887

Type species. *Helix horrida* L. Pfeiffer, 1863, by original designation.

Trichelix gengqii sp. nov.

Figures 2E, F, 3

ZooBank identifier. urn:lsid:zoobank.org:act:C14B46FE-B5B9-45D5-84DD-4606F7B3EAD5

Type locality. Yezu Township [野租乡], Huidong County [会东县], Liangshan Yi Autonomous Prefecture [凉山彝族自治州], Sichuan Province, China, 26°29′N, 102°41′E.

Type material. Holotype: HBUMM10094. Fresh, mature shell, major diameter 17.00 mm, shell height 8.35 mm, aperture height 3.90 mm, aperture width 7.95 mm; leg. Hui-hui Tang, 26 September 2025. **Paratypes:** 1 shell (HBUMM10095; diameter 17.75 mm, height 8.80 mm, aperture height 4.05 mm, aperture width 7.95 mm); 3 broken shells (HBUMM10096); 2 shells (LLW; diameter 17.30–18.15 mm, height 8.15–8.90 mm, aperture height 4.00–4.25 mm, aperture width 7.85–8.20 mm); 1 shell (LRX; diameter 18.01 mm, height 8.85 mm, with dissected soft part preserved in 75% alcohol); 1 shell (ZGQ; diame-

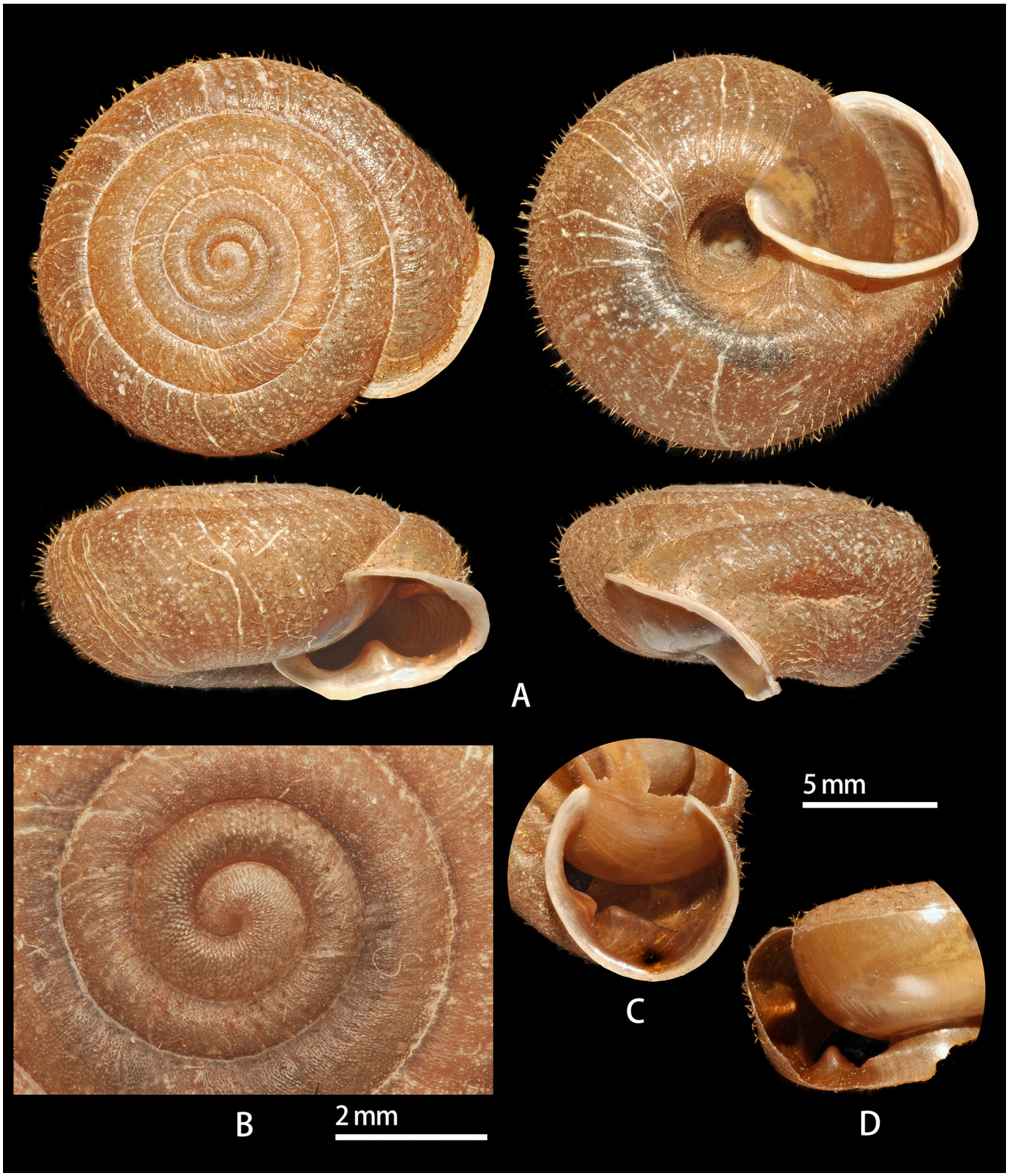

Figure 3. *Trichelix gengqii* sp. nov. **A**, **B**, holotype, HBUMM10094, from , Yezu Township, Huidong Xian, Liangshan Yi Autonomous Prefecture, Sichuan Province, China). **C**, **D**, broken shell showing denticles, paratype, HBUMM10096, same data as holotype. Photographer Li- Wen Lin.

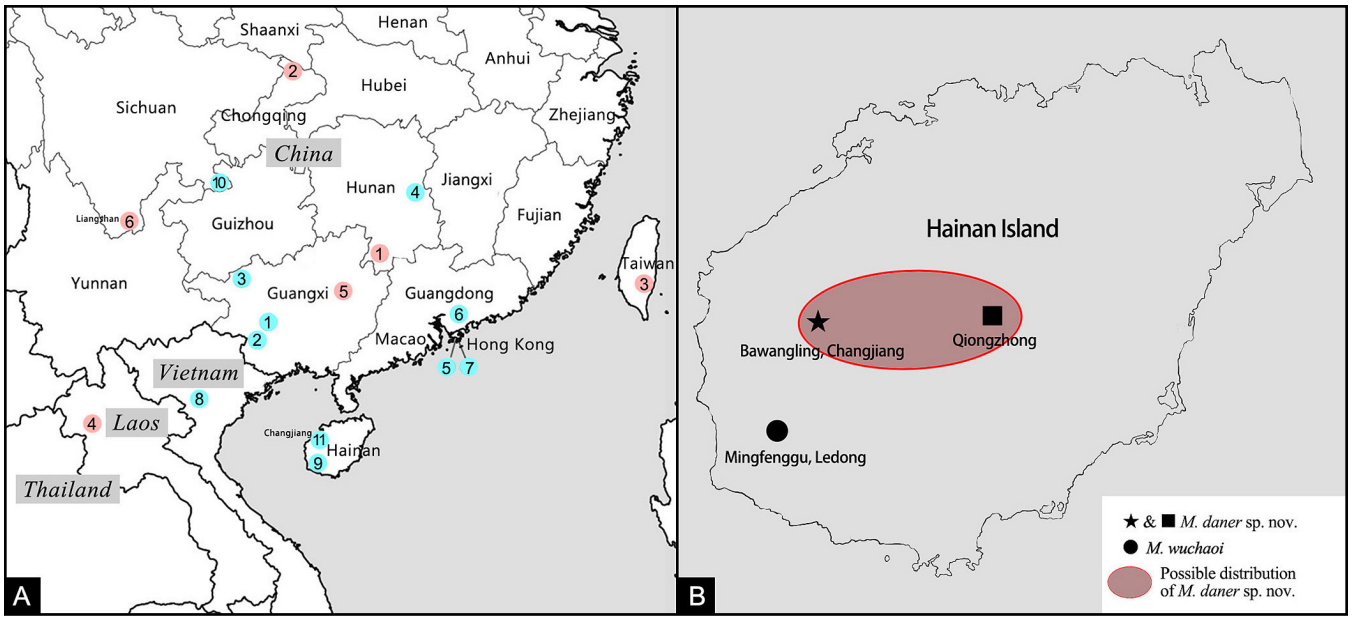

Figure 4. Distribution maps. **A**, type localities of *Moellendorffia* and *Trichelix* species from China and adjacent areas. Numbers in blue circles are for *Moellendorffia* spp., and in pink circles are for *Trichelix* spp. *Moellendorffia* spp.: 1 = *M. kuguaheshang*; 2 = *M. qinglongi*; 3 = *M. dengi*; 4 = *M. hensaniensis*; 5 = *M. trisinuata trisinuata*; 6 = *M. trisinuata sculpticoncha*; 7 = *M. eastlakeana*; 8 = *M. loxotata*; 9 = *M. wuchaoi*; 10 = *M. gulinensis*; 11 = *M. daner* sp. nov. *Trichelix* spp.: 1 = *T. xiaoxiang*; 2 = *T. biscalpta*; 3 = *T. hiraseana*; 4 = *T. horrida*; 5 = *T. yao*; 6 = *T. gengqii* sp. nov. **B**, known distribution of *Moellendorffia* in Hainan Island.

ter 19.00 mm, height 9.00 mm). All paratypes are from type locality and with the same data as the holotype.

Diagnosis. Shell depressed-globular with nearly flat spire. Body whorl well rounded, without keel. Aperture with two baso-palatal folds. Penial retractor muscle threadlike. Bursa copulatrix duct extremely oviform and inflated.

Description. Shell rather thin and fragile, biconcave in shape, dark brown, with light brown outer lip, dextral, *c.* 5½ whorls. Suture moderately impressed. Spire extremely low and flattened. Body whorl convex and well rounded, without keel, clearly descending behind aperture. Protoconch surface with micro-granules. Teleoconch surface smooth, uniformly covered with bristles; long bristles about 0.6 mm in length. Aperture extended, oval, downward sloping, forming an angle with shell axis. Peristome expanded, reflexed, and slightly covering umbilicus. Aperture with two baso-palatal folds. Upper palatal fold prominent, situated at periphery, extending from aperture to a distance of around 1/10 of body whorl, internally highest near its end. Basal palatal fold short to form a pit just near aperture, corresponding with a protruding tooth inside aperture. Umbilicus open, wide, and deep, approximately 28% of shell diameter, with early whorls visible inside.

Shell measurements. Major diameter 17.00–19.00 mm, shell height 8.15–9.00 mm (n = 6); aperture height 4.00–4.25 mm, aperture width 7.85–8.20 mm (n = 4).

Genitalia. Atrium short. Penis obviously inflated, smooth on the outside, penial pilasters visible through the wall, internally with bilobed verge and several axial pilasters. Epiphallus glossy, with smooth pilaster structure. Penial retractor muscle attached to the epiphallus in the mid, threadlike and strong. Flagellum tube-shaped, terminally blunt and without appendix. Vas deferens long and columnar, connected on epiphallus. Vagina of uniform thickness and unpigmented. Spermoviduct moderately thin, obviously shorter than vagina. Bursa copulatrix duct very thin, indistinguishable. Bursa copulatrix extremely oviform and inflated, with long stalk.

Derivation of name. This species is named after Mr Geng-Qi Zhang, a land-snail enthusiast who assisted a lot in the acquisition of the type specimens.

Geographic range. This species is known from the type locality only (Fig. 4).

Habitat. This species was found living among rocks and soil in a bamboo forest. The bamboo forest has less humus, which in turn leads to the scarcity of this species and makes it difficult to find.

Remarks. This new species has two baso-palatal folds and therefore differs from *Trichelix eucharista* (Pilsbry, 1901)

and *T. tokunoensis* (Pilsbry & Y. Hirase, 1905) which have only one or no fold. Among species with two baso-palatal folds, this new species has the shortest baso-palatal fold and the most whorls (Minato 1980). Two *Trichelix* species from the Chinese mainland, *T. biscalpta* (Heude, 1885) and *T. yao* Lin & Lin, 2025 have a longer and stronger upper baso-palatal lamella of a different appearance, forming a long, deep furrow on the last whorl. A third mainland China species, *T. xiaoxiang* Lin & Lin, 2022 has a larger, biconcave shell with much shorter bristles. *Moellendorffiella faberiana* (Möllendorff, 1888), also from Liangshan, has a shell intermediate in shape between *Moellendorffiella* and *Trichelix*. However, the shell has fewer whorls (*c.* 4½) and more pronounced baso-palatal folds. In addition, the hairs of the periostracum are usually deciduous in *M. faberiana* in mature individuals.

The bursa copulatrix duct of this new species is inflated and the bursa copulatrix is longer and thinner than in *T. yao* and *T. eucharistis* (Schileyko 2003; Lin & Lin 2025).

Acknowledgements

We are grateful to Geng-Qi Zhang (Shenzhen, China) for his help in the acquisition of type materials of these two new species, to Xin Zhang (Haikou, China) for sharing the distribution information of *Moellendorffia daner*, to Zhe-Yu Chen (The University of Melbourne, Melbourne, Australia), Zhong-Guang Chen (Nanchang University, Nanchang, China) and Shu-Ping Wu (University of Taipei, Taipei, China) for assistance in writing and reviewing works. Special thanks are also due to the Biodiversity Heritage Library (https://www.biodiversitylibrary.org) for granting access to a wealth of rare literature.

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Manuscript submitted: 19 October 2025
Revised manuscript accepted: 2 February 2026
Associate editor: Zhe-Yu Chen