


First reliable record of Paludomidae (Gastropoda: Cerithioidea) from Yunnan, China, with the description of a new species


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Abstract. Paludomidae Stoliczka, 1868 are a group of freshwater snails widely distributed in Africa, South Asia, and Southeast Asia. In China, this family has only been recorded from southern Zangnan, Xizang Autonomous Region. Here we report the first reliable record of Paludomidae from the Irrawaddy River Basin in Yingjiang County of Yunnan Province, China. Based on an integrative study of morphology, anatomy and molecular phylogenetic analyses using COI markers and partial mitochondrial genomes, a new species of *Paludomus*, *Paludomus jingpo* Zhang **sp. nov.**, is described and compared with related *Paludomus* species from Myanmar, especially *Paludomus regulata*.

Key words. Freshwater snail, Irrawaddy River Basin, molecular phylogeny, *Paludomus*, taxonomy

Introduction

Paludomidae Stoliczka, 1868 is a group of freshwater snails widely distributed in the Nile Valley, most of tropical sub-Saharan Africa, Madagascar, the Seychelles, as well as South and Southeast Asia (Neiber & Glaubrecht, 2019a). Neiber and Glaubrecht (2019a) provided a complete catalogue of Paludomidae and recognised 46 genera and 463 species names. Lake Tanganyika in East Africa harbours the highest diversity of Paludomidae (Wilson *et al.*, 2004). The Bayesian analysis based on molecular markers 16S and 28S by Strong *et al.* (2011) revealed that Paludomidae comprises two main clades (African clade and Asian clade) and is the sister group to the family Thiaridae Gill, 1871.

Paludomus Swainson, 1840 is the type genus of the family and exhibits high diversity from India, Sri Lanka, and mainland Southeast Asia, especially Myanmar (Subba Rao, 1989; Neiber & Glaubrecht, 2019b). Compared to species of Paludomidae from Africa, the paludomid snails from Asia remain poorly studied and lack taxonomic revisions. Glaubrecht *et al.* (2026) revised two *Paludomus* species from Thailand based on a comprehensive study. In China, a total of nine nominal species of *Paludomus* were described from the Changjiang River Basin and Fujian coastal rivers (Gredler, 1885, 1886, 1889; Chen, 1937; Liu *et al.*, 1994; Cai *et al.*, 2017). However, nearly all of them are now considered probable misidentification of species of *Hua* Chen, 1943 or *Koreoleptoxis*

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Burch & Jung, 1988 (family Semisulcospiridae Morrison, 1952), or even species of *Bakyietaia* Zhang, Yen & von Rintelen, 2025 (family Viviparidae Gray, 1847) (Chen, 1943; Du *et al.*, 2019; Du & Yang, 2023; Zhang *et al.*, 2025). To date, reliable records of Paludomidae from China are restricted to the lowlands in Southern Zangnan of Xizang Autonomous Region. Three valid *Paludomus* species have been recorded from the Yarlung Zangbo River Basin in Zangnan (Gurumayum, 2023): *Paludomus aborensis* Godwin-Austen, 1918, *Paludomus blanfordiana* G. Nevill, 1877, and *Paludomus rotungensis* Preston, 1915.

Yunnan Province in southwestern China harbours a high diversity of freshwater snails (Zhang *et al.*, 2015). Chen (1937) described *Paludomus yunnanensis* Chen, 1937 from the Changjiang River Basin in Zhaotong, northern Yunnan. This species has been considered a likely member of Semisulcospiridae rather than Paludomidae in recent studies (Du *et al.*, 2019; Chen, 2025). To date, there are no reliable records of Paludomidae from Yunnan. In February 2026, we collected freshwater snails from the Irrawaddy River Basin in Yingjiang County of Yunnan, near the border between China and Myanmar. One of the collected species is considered a potential new species of Paludomidae. Here, we conduct an integrative study combining morphology and molecular phylogenetic analyses to test whether this species represents a previously undescribed species.

Materials and Methods

Materials and examination of morphology

Specimens for study were collected from Yingjiang County, Yunnan, China (Fig. 1), in February 2026, and from a spring near Inle Lake, Shan State, Myanmar, in July 2024, by hand collection. The animals were observed in the aquarium and later fixed in analytical-grade pure ethanol. The type specimens of new species and other materials are deposited in the collection of Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China (KIZ).

TABLE 1. Previously published sequences included in the COI and mitogenomic phylogenetic analyses, with GenBank accession numbers.

COI analysis		Mitogenomic analysis	
Species	GenBank ID	Species	GenBank ID
<i>Paludomus stomatodon</i>	PV435136	<i>Pseudocleopatra dartevellei</i>	MN082637
<i>Paludomus annandalei</i>	PV435135	<i>Hua aristarchorum</i>	OR522724
<i>Paludomus sp.</i>	PV435133	<i>Koreoleptoxis friniana</i>	OR522723
<i>Paludomus siamensis</i>	MK094075	<i>Tylomelania sarasinorum</i>	NC_030263
<i>Paludomus petrosa</i>	MF983661	<i>Turritella bacillum</i>	NC_029717
<i>Pseudocleopatra dartevellei</i>	MN082637 extracted	<i>Semisulcospira libertina</i>	NC_023364
<i>Leloupiella minima</i>	AY456572	<i>Tarebia granifera</i>	MZ662113
<i>Cleopatra johnstoni</i>	AY456536	<i>Melanoides tuberculata</i>	MZ321058
<i>Thiara amarula</i>	MK879289	<i>Pirenella pupiformis</i>	LC648322
<i>Elimia virginica</i>	MH087702	<i>Epitonium scalare</i>	MK251987

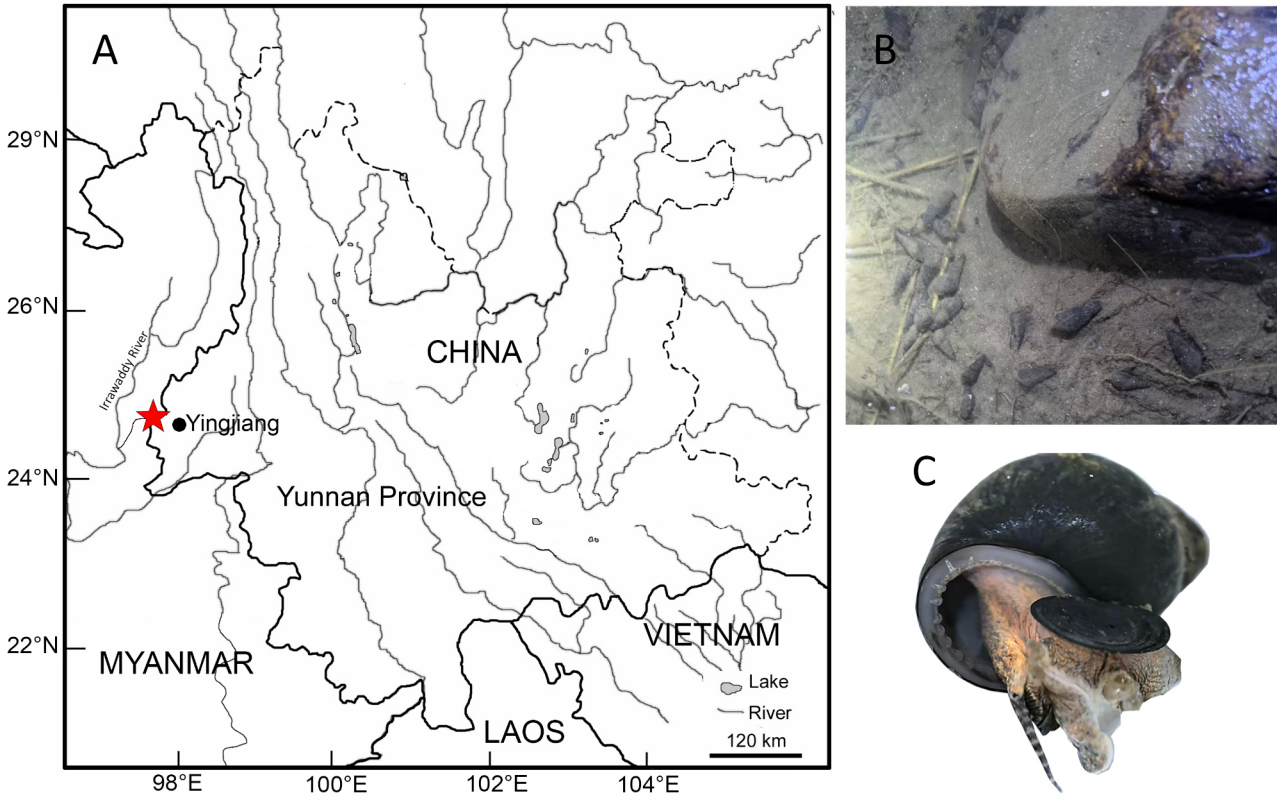


FIGURE 1. Collecting site, habitat, and living animal of *Paludomus jingpo* sp. nov. A. Map of Yunnan Province, China, showing the collecting site near Yingjiang County (red star; modified from Zhang *et al.* 2015). B. Habitat at the collecting site, with abundant *Brotia dautzenbergiana* (Morlet, 1885) and few *P. jingpo* sp. nov. C. Living animal of *P. jingpo* sp. nov.

The shell height (H) and width (W) were measured with a calliper to a precision of 0.1 mm. The specimens were photographed using focus stacking methods with a Nikon Z5 camera. Zerene Stacker software was used for focus stacking. Radulae were extracted through dissection; radulae were cleaned by boiling in 1% NaOH solution for half an hour and rinsed with distilled water. Radulae and protoconch were coated with gold before scanning electron microscopy with a Zeiss® EVO LS10 scanning electron microscope.

DNA extraction and sequencing

DNA for polymerase chain reaction (PCR) of 2 specimens from each location, namely, KIZ.2600005 and KIZ.2600006 from Yingjiang, Yunnan (as *Paludomus jingpo* 1 & 2 respectively, in Figs 2–3), and KIZ.2600010 and KIZ.2600011 from Shan State (as *Paludomus regulata* 1 & 2 respectively, in Fig. 2) was extracted from 10–20 mg of foot tissue from each snail using Vazyme FastPure Cell/Tissue DNA Isolation Mini Kit-box 1. A fragment of the mitochondrial cytochrome c oxidase subunit I (COI) gene was amplified through PCR with the primer pair LCO1490 and COX-B7R (Schultheiß *et al.*, 2011). PCR amplifications were conducted in 30 µl volumes under the following cycling conditions: initial denaturing step at 94 °C for 10 min, followed by 30 cycles of 94 °C for 1 min, 50 °C for 1 min, and 72 °C for 1 min, with a final extension step of 10 min at 72 °C. The purification and sequencing were conducted by Sangon Biotech, Shanghai, China.

Total DNA for genomic study of 2 specimens from Yingjiang was extracted from 10 to 20 mg of foot tissue of each snail, using Vazyme FastPure Cell/Tissue DNA Isolation Mini Kit-box 1. The

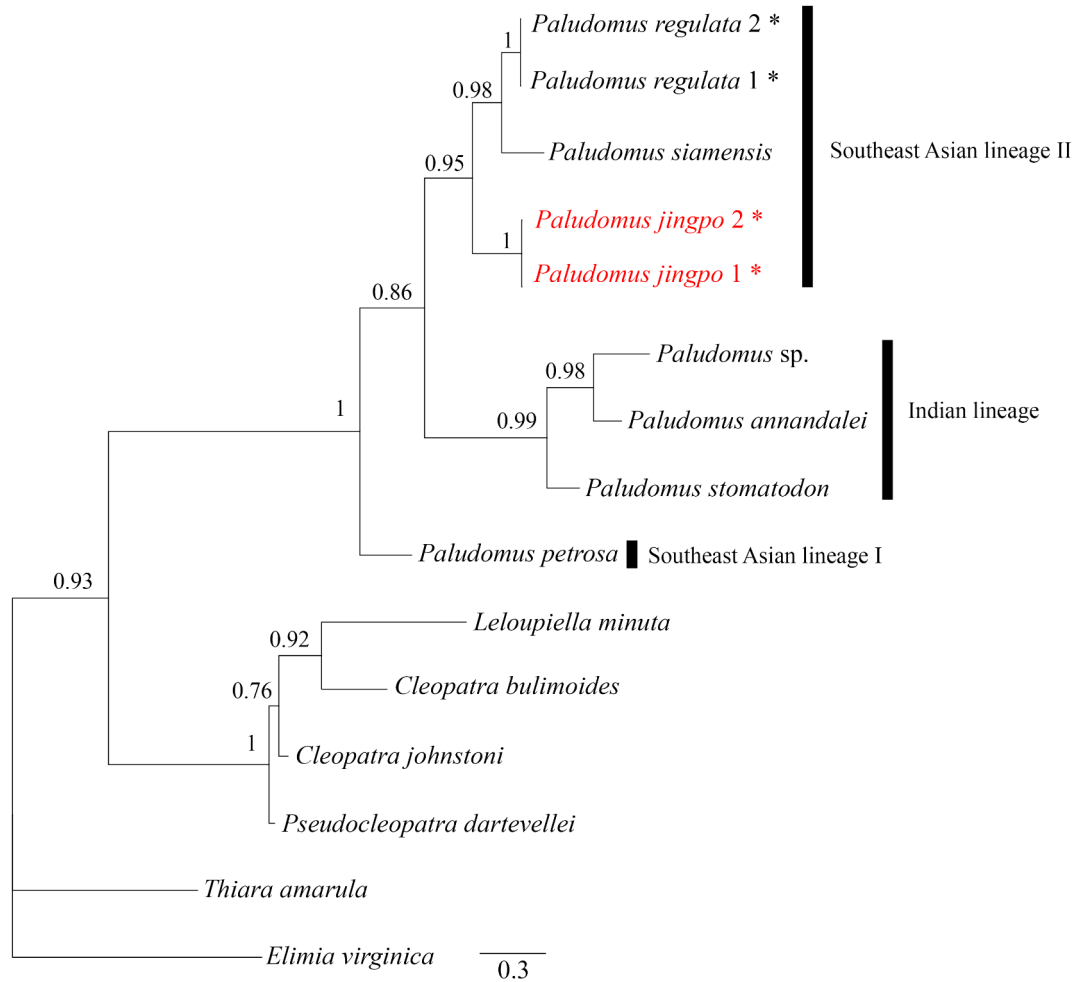


FIGURE 2. Bayesian-inference phylogram of selected Paludomidae based on partial COI sequences. Values above branches are Bayesian posterior probabilities. The new species is shown in red; newly sequenced individuals are marked with asterisks.

quality of DNA extraction was detected by 0.8% agarose gel electrophoresis, and DNA was quantified by a UV spectrophotometer. DNA libraries were prepared following Illumina's instructions for the TruSeq DNA PCR-Free kit. Prior to sequencing, the libraries were quality checked on an Agilent Bioanalyzer using the Agilent High Sensitivity DNA Kit. The libraries were then quantified on a Promega QuantiFluor fluorescence quantification system using the Quant-iT PicoGreen dsDNA Assay Kit. The libraries were sequenced on an Illumina NovaSeq Xplus platform (2 × 150 bp). The raw sequencing data were filtered to produce high-quality data using fastp (v0.20.0): (1) removal of splice contamination, removing splice contamination from the 3' end; (2) quality filtering using the sliding window method with a window size of 9 bp and a step size of 1 bp. Each time a base was moved forward, the average Q value of the window was calculated for nine bases. If the Q value of the last base ≤ 20 , only the bases before that position were retained; if the average Q value of the window ≤ 20 , only the second last base of the window and the bases before it were retained; (3) if the number of N > 5, the double-end reads were removed. The sequencing procedure was conducted by Personalbio, Shanghai, China.

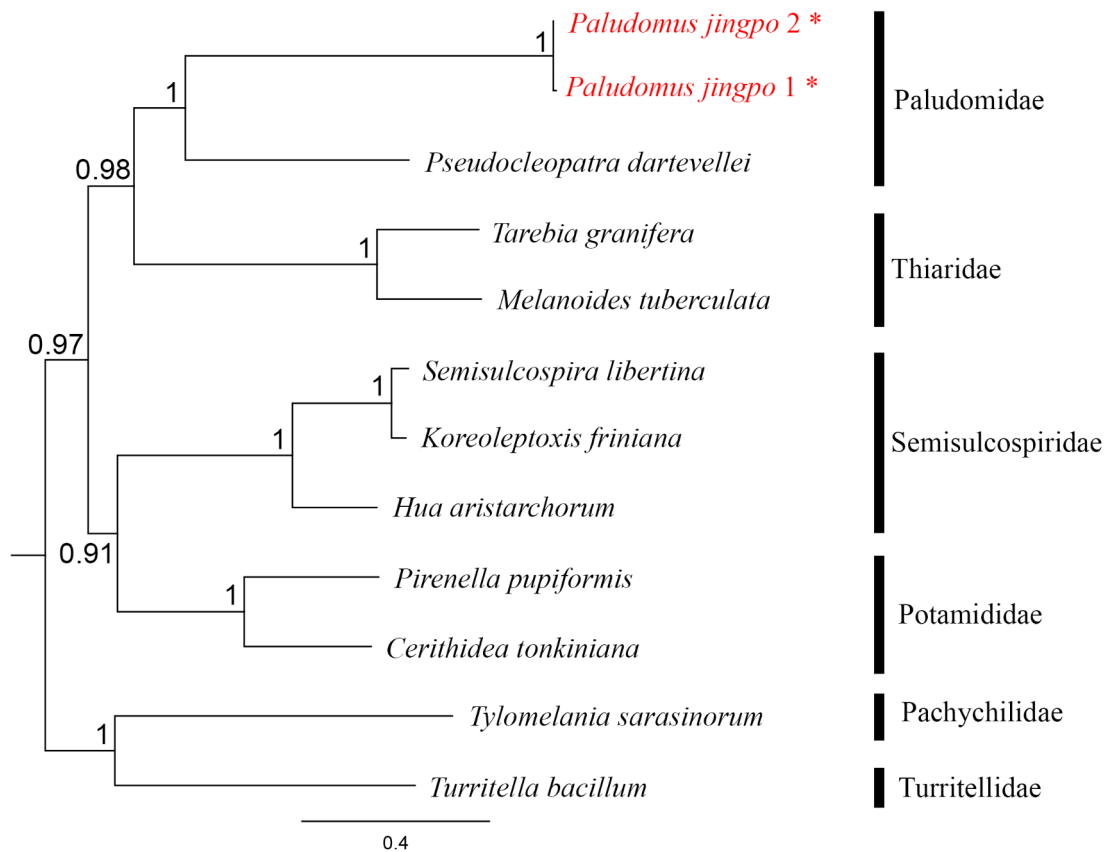


FIGURE 3. Bayesian-inference phylogram of selected families of Cerithioidea based on partial mitochondrial genomes. Values above branches are Bayesian posterior probabilities. The new species is shown in red; newly sequenced individuals are marked with asterisks.

COI phylogenetic analysis.

Four new COI sequences (Supplementary file 1) and 11 previously published sequences (Table 1), including 9 sequences of paludomid species, were included in the present study. The sequence of one species within the family Pleuroceridae, *Elimia virginica* (Gmelin, 1791) (GenBank ID: MH087702), was chosen as the outgroup according to Glaubrecht *et al.* (2026).

Sequences were aligned using MUSCLE as implemented in Geneious Prime 2020. Uncorrected p-distances were calculated using MEGA X (Kumar *et al.*, 2018). The best-fit model of sequence evolution for the dataset was selected using the Akaike Information Criterion in MEGA X (Kumar *et al.*, 2018). A Bayesian inference (BI) analysis was performed with MrBayes v.3.2.6 (Ronquist *et al.*, 2012) as implemented in Geneious Prime 2020 with four independent chains for 10,000,000 generations, sample freq = 2000, burnin = 25%, and we confirmed that convergence was reached based on the trace plots generated in Geneious Prime 2020. Nodal support was assessed by estimating posterior probabilities (pp).

Sequence assembly and mitochondrial phylogenetic analysis

Two sequencing datasets of specimens from Yingjiang were separately assembled and mapped to the reference mitochondrial genome of *Pseudocleopatra dartevellei* Mandahl-Barth, 1973 (GenBank ID: MN082637, Stelbrink *et al.*, 2019) using Geneious Prime 2020.

As for the mitochondrial phylogenetic analysis, except for the above two newly assembled partial mitochondrial genomes (Supplementary file 2), 10 additional mitochondrial genomes were obtained from GenBank (Table 1). The sequence of *Epitonium scalare* (Linnaeus, 1758) (GenBank ID: MK251987) was chosen as the outgroup according to Xu *et al.* (2025).

MUSCLE 5.1 (Edgar, 2004) implemented in Geneious Prime 2020 was used for the alignments. The mitochondrial genome alignment included the 13 protein-coding genes (ATP6, ATP8, COX1, COX2, COX3, CYTB, ND1, ND2, ND3, ND4, ND4-L, ND5, ND6) and two rRNA genes (12S, 16S). A Bayesian inference (BI) analysis was performed using MrBayes 3.2.6 (Ronquist *et al.*, 2012) as implemented in Geneious Prime 2020 with four independent chains for 1,000,000 generations, sample freq = 2,000, burnin = 25%, and it was confirmed that convergence was reached based on the trace plots generated in Geneious Prime 2020.

Results

The BI tree based on partial COI sequences (Fig. 2) supports the two main clades of Paludomidae, both with high support values (pp = 1): the African clade and the Asian clade. The Asian clade is further divided into three lineages: the Indian Lineage, including *Paludomus annandalei* Preston, 1909, *Paludomus stomatodon* (Benson, 1862) and *Paludomus* sp. (pp = 0.99); the Southeast Asian lineage I, including *Paludomus petrosa* (Gould, 1844); and the Southeast Asian lineage II, including *Paludomus regulata* Benson, 1856, *Paludomus siamensis* Blanford, 1903, and *Paludomus jingpo* **sp. nov.** (pp = 0.95). *Paludomus jingpo* **sp. nov.** forms an independent lineage (pp = 1) and is the sister species of the clade including *P. siamensis* and *P. regulata* (pp = 0.98). The range of COI p-distance between *P. jingpo* **sp. nov.** and its closest related species, *P. regulata*, is 12.6%–14.3%. The range of COI p-distance between *P. regulata* and *P. siamensis* is 10.2%–10.4%.

The BI tree based on partial mitochondrial genomes (Fig. 3) supports that *Paludomus jingpo* **sp. nov.** is clustered with another paludomid species, *Pseudocleopatra dartevellei*, supporting its placement within the family Paludomidae (pp = 1). Thiariidae is the sister group of Paludomidae (pp = 0.98).

Systematics

Family **Paludomidae** Stoliczka, 1868

Subfamily **Paludominae** Stoliczka, 1868

Genus ***Paludomus*** Swainson, 1840

Type species. *Melania conica* Gray, 1833 in Griffith and Pidgeon (1833–1834) by subsequent designation in Gray (1847: 155).

***Paludomus regulata* W. H. Benson, 1856**

齐纹沼蜷

(Figure 4L–M, Figure 5D–F)

Type materials. *Syntypes*. UMZC I.102900.A–B, deposited in the University Museum of Zoology, Cambridge, from Myanmar, Magway Region, Thayet.

Additional materials. 2 specimens, KIZ.2600010–2600011, from Myanmar, Shan State, a spring near Inle Lake, collected by Le-Jia Zhang in July 2024.

Revised diagnosis. Shell large, spire elevated obviously, shell surface with impressed spiral grooves, with four dark brown spiral bands, operculum concentric, radula with 7–8 cusps on outer marginal teeth.

Redescription. *Shell* (Fig. 4L–M) large for the genus (shell height: 24.5–25.2 mm, shell width: 16.3–18.0 mm), ovate, solid, with 6.5–7 whorls left, early whorls usually eroded. Body whorl relatively large, inflated, spire elevated obviously, conical. Periostracum olive, always with 4 dark brown spiral bands. Shell smooth, with fine growth lines and many impressed grooves covering whorls. Aperture oval, peristome sharp, columella arcuate and narrow, usually whitish.

Operculum corneous, dark red in colour, ovate, thin; nearly concentric, exterior surface with dense growth lines and a large subcentral nucleus close to inner margin; interior surface with a small rough scar region.

Radula (Fig. 5D–F) ($n = 2$) taenioglossate; central teeth with one broad trapeziform central denticle and 4–5 small cusps on either side; lateral teeth with one broad trapeziform central denticle, 2–3 small cusps on inner side and 4–5 small cusps on outer side; inner marginal teeth with 6–7 cusps, outer marginal teeth with 7–8 cusps.

***Paludomus jingpo* L.-J. Zhang sp. nov.**

景颇沼蜷

(Figure 1C, Figure 4A–J, Figure 5A–C)

Type materials. *Holotype*. KIZ.2600005, China, Yunnan Province, Dehong Dai and Jingpo Autonomous Prefecture, Yingjiang County, Nabang Town (那邦镇), an unnamed small creek near Mengnai River (勐乃河), 274 m a.s.l., collected by Le-Jia Zhang in February 2026. *Paratypes*. 4 specimens, KIZ.2600006–2600009, same data as the holotype.

Diagnosis. Shell small, spire elevated obviously, shell surface smooth, with 2–3 slightly impressed subsutural spiral lines, with three dark brown spiral regularly segmented bands, operculum with a large subcentral paucispiral nucleus, radula with 15–16 cusps on outer marginal teeth.

Description. *Shell* (Fig. 4A–C, G–J) small for the genus (shell height 10.4–11.2 mm, shell width 6.6–8.0 mm), ovate, solid, with normally 3 whorls left, early whorls usually eroded. Body whorl relatively large, not particularly inflated, spire elevated obviously, conical. Periostracum olive, always with 3 dark brown spiral regularly segmented bands, the first band under suture wide and forming a segmented, narrow vertical bands array. Shell smooth, with fine growth lines and 2–3 slightly impressed subsutural spiral lines, constricted beneath the suture. Aperture oval, peristome sharp, columella arcuate and narrow, usually whitish.

Operculum (Fig. 4D–E) corneous, dark red in colour, ovate, thin; exterior surface with dense concentric growth lines and a large subcentral paucispiral nucleus close to inner margin; interior surface with small rough scar region.

Radula (Fig. 5A–C) ($n = 2$) taenioglossate; central teeth with one broad trapeziform central denticle and 4–5 small cusps on either side; lateral teeth with one broad trapeziform central denticle, 3–4 small cusps on inner side and 5 small cusps on outer side; inner marginal teeth with 6–7 cusps, outer marginal teeth with 15–16 cusps.

Head-foot (Fig. 1C) yellow background, covered by sparse dark navy-blue pigmentation, tentacle with wide navy-blue annulated bands, snout almost completely covered by navy-blue

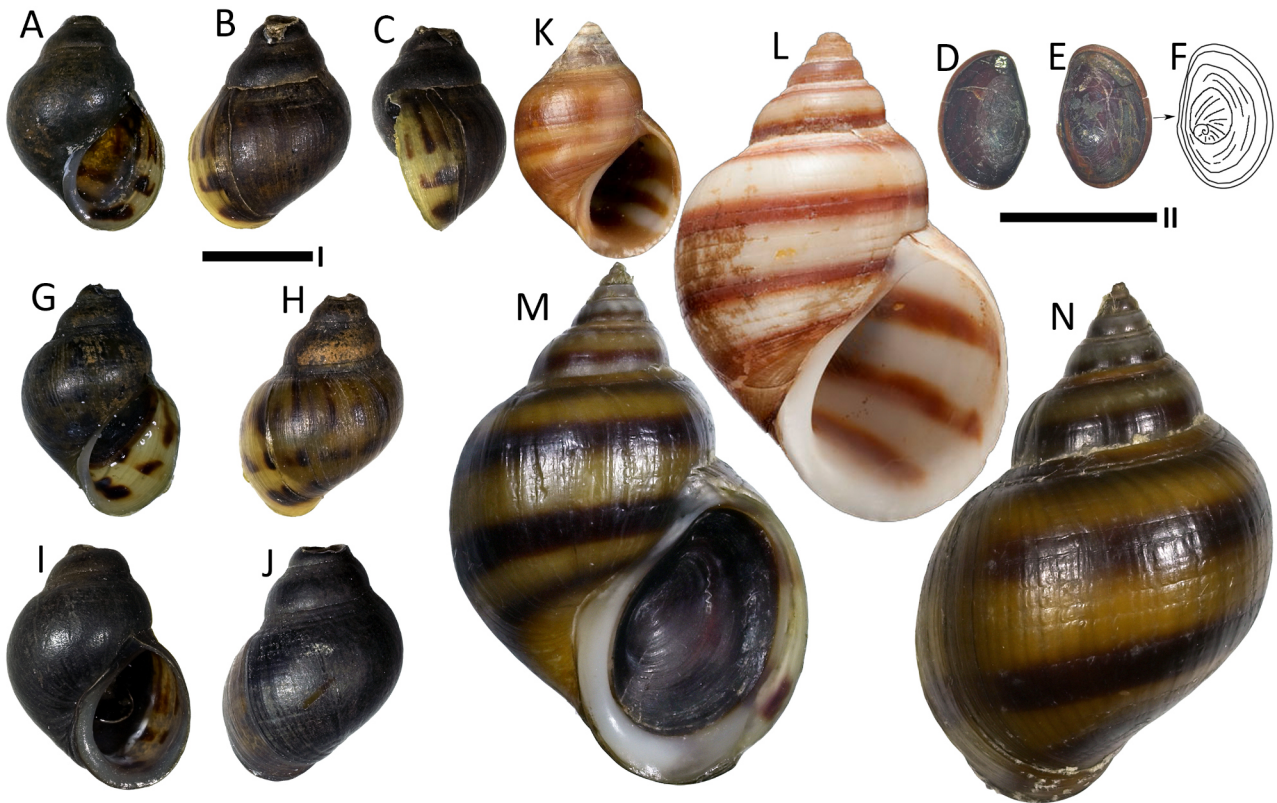


FIGURE 4. Shell and operculum morphology of *Paludomus* species. A–C. Shell of the holotype of *P. jingpo* sp. nov., KIZ.2600005. D–F. Operculum of the holotype of *P. jingpo* sp. nov. G–H. Paratype of *P. jingpo* sp. nov., KIZ.2600006. I–J. Paratype of *P. jingpo* sp. nov., KIZ.2600007. K. Syntype of *P. siamensis* Blanford, 1903, BMNH.1903.2.28.4–5 (photo: J. Ablett), adapted from Ablett *et al.* (2019). L. Syntype of *P. regulata* Benson, 1856, UMZC I.102900.A–B, ©University Museum of Zoology, Cambridge. M–N. Newly collected specimen of *P. regulata*, KIZ.2600010, collected near Inle Lake, Shan State, Myanmar. Scale bars: I = 5 mm (A–C, G–N); II = 5 mm (D–F).

pigmentation. Mantle with sparse yellow pigmentation, mantle edge with large papillae of subequal size.

Etymology. The new species is named after the local Jingpo ethnic group. The specific epithet is used as a noun in apposition.

Distribution and ecology. Only known from the type locality. Found in a mountain creek with sand and mud substrate, sympatrically with *Brotia dautzenbergiana* (Morlet, 1885) but much rarer.

Remarks. This species can be distinguished from other *Paludomus* congeners with elevated spire, especially *P. regulata* Benson, 1856 and *P. siamensis* Blanford, 1903, by the combination of following characters: shell much smaller, smoother shell surface without deeply impressed spiral grooves, constricted beneath the suture, special colour band pattern, operculum with a large subcentral paucispiral nucleus, and radula with 15–16 cusps on outer marginal teeth. *Paludomus regulata* has a much larger shell, obvious spiral grooves even at the juvenile stage, a different colour band pattern, a nearly concentric operculum without an obvious paucispiral nucleus, and a radula with 7–8 cusps on outer marginal teeth (Fig. 5F). *Paludomus siamensis* has obvious spiral grooves, a different colour band pattern, and a radula with 8–15 cusps on outer marginal teeth (Glaubrecht *et al.*, 2026). The molecular phylogeny based on the COI marker confirms that the new species is distinct from *P. regulata* and *P. siamensis*.

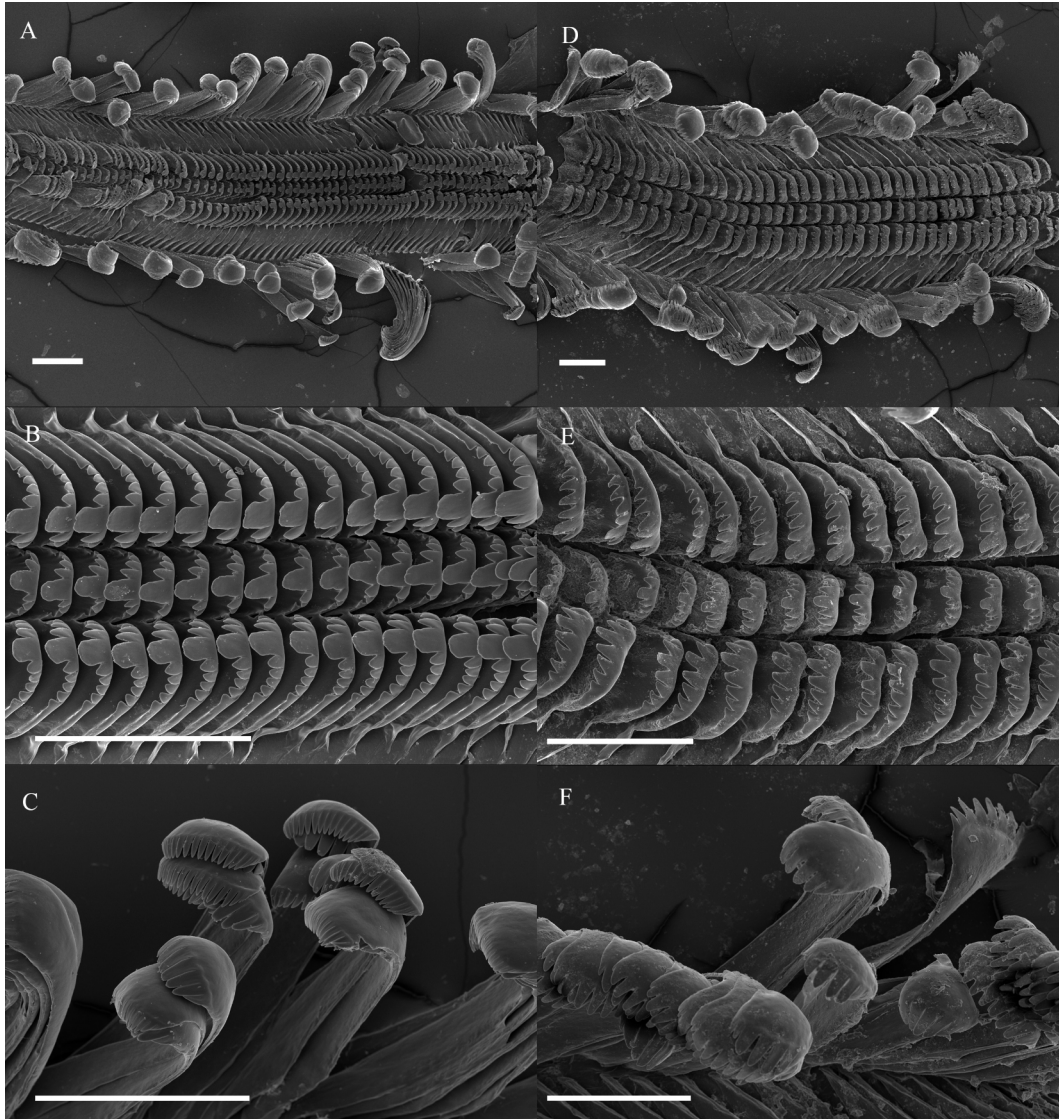


FIGURE 5. Radulae of *Paludomus jingpo* sp. nov. (A–C) and *Paludomus regulata* (D–F). Scale bar = 100 μ m.

Discussion

Here we report the first reliable record of Paludomidae from Yunnan, representing the first confirmed occurrence of this family in China outside southern Zangnan. Based on an integrative study combining morphology and molecular phylogenetic analyses, we describe a new *Paludomus* species, *Paludomus jingpo* sp. nov. This species can be readily distinguished from other congeners based on its unique shell morphology. The new species is currently known only from its type locality in Yingjiang County, Yunnan, near the China-Myanmar border, adjacent to Kachin State, Myanmar.

Paludomidae exhibits a relatively high diversity in Myanmar, but its taxonomy remains in need of comprehensive revision. *Paludomus regulata* is the most common and widespread species in Myanmar, occurring in Bago, Magway, Shan, Mandalay, Sagaing and Kachin (Nevill, 1877; Nevill, 1881; Srinivasa Rao, 1928). This species is characterised by a large shell with an elevated spire, four spiral coloured bands and distinct spiral grooves. The record of *Paludomus andersoniana* Nevill, 1877 from Bhamo in Kachin State (Nevill, 1877) represents the geographically closest record to our new species from Yunnan. However, *Paludomus andersoniana* has been regarded as a synonym of *P.*

regulata based on its distributions as well as shell and operculum morphology (Srinivasa Rao, 1928; Subba Rao, 1989). Here, we collected fresh specimens of *P. regulata* from Inle Lake in Shan State for comparison. *Paludomus regulata* can be distinguished from its sister species, *P. siamensis*, by its much larger shell and nearly concentric operculum without a distinct paucispiral nucleus, according to Glaubrecht *et al.* (2026). The shell, operculum and radula morphology, as well as molecular phylogenetic analyses, strongly support that *Paludomus jingpo* **sp. nov.** from Yunnan is distinct from *P. regulata* and *P. siamensis*.

Indawgyi Lake in Kachin State is a diversity hotspot of freshwater snails and lies approximately 130 kilometres in a straight line from the type locality of the new species. A total of three *Paludomus* species, including two endemic ones, have been recorded from the lake and its surrounding regions (Srinivasa Rao, 1929): *Paludomus regulata*, *P. crassicallosa* Srinivasa Rao, 1929 (endemic), and *P. kamaingia* Srinivasa Rao, 1929 (endemic). According to the original description and figures from Srinivasa Rao (1929), *P. crassicallosa* is characterised by a relatively low spire, a more inflated body whorl, grooved sculpture, and a thick convex columellar callus; *P. kamaingia* exhibits dense, deep grooves on all whorls, with sculpture as equally prominent in juveniles and adults. We conclude that *Paludomus jingpo* **sp. nov.** is a valid species clearly distinct from these two species based on substantial differences in morphology. Fresh specimens of the two endemic species from Indawgyi Lake should be collected for integrative morphological and molecular analyses in future studies.

Paludomus jingpo **sp. nov.** is currently known only from a single locality in a mountain creek in Nabang Town, near the China-Myanmar border. The population of this species appears to be much smaller than that of the sympatric *Brotia dautzenbergiana*. However, additional populations likely occur in the extensive primary rainforest through which the Mengnai River flows in both China and Myanmar. Since the upper Irrawaddy River Basin in Myanmar exhibits a high diversity of *Paludomus*, further fieldwork is needed in the Irrawaddy River Basin of western Yunnan, China, to assess the diversity of Paludomidae and determine whether additional species occur in the region.

Supplementary data

Supplementary data are available from the *Cathaica* online journal webpage and Zenodo.

Supplementary file 1. partial COI sequences of newly collected *Paludomus* species.

Supplementary file 2. partial mitochondrial genome sequences of *Paludomus jingpo* **sp. nov.**

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References

- Ablett, J., Brown, C., Gallichan, J., Holmes, A. M., Oliver, P. G., Salvador, A. & Sutcliffe, R. (2019) Mollusca Types in Great Britain. Amgueddfa Cymru-National Museum Wales / Natural History Museum. Available from: <https://gbmolluscatypes.ac.uk> (16 April 2026).

- Benson, W. H. (1856) Descriptions of three new species of *Paludomus* from Burmah, and of some forms of *Stenothyra* (*Nematura*) from Penang, Mergui, etc. *Annals and Magazine of Natural History, Series 2*, 17 (102): 494–504.
- Benson, W. H. (1862) Description of a singular shell from Southern India, allied to *Tanalia*; with remarks on a Travancore *Batissa*, and on the Himalayan form *Tricula*. *Annals and Magazine of Natural History, Series 3*, 10: 414–416.
- Blanford, W. T. (1903) Notes on Mr. W. M. Daly's collection of land and fresh-water Mollusca from Siam. *Proceedings of the Malacological Society of London*, 5: 274–284.
- Burch, J. B. & Jung, Y. (1988) A new freshwater prosobranch snail (Mesogastropoda: Pleuroceridae) for Korea. *Walkerana*, 2 (8): 187–193.
- Cai, M.-R., Luo, J., Lin, G.-H., Huang, M.-S., Zhuo, M.-Y., Li, Y.-S. & Chen, Y.-Z. (2017) A new species of *Paludomus* Snail (Gastropoda: Pleurceridae). *Marine Sciences*, 41 (11): 134–137. [蔡茂荣, 罗垒, 林国华, 黄明松, 卓鸣莺, 李友松, 程由注. (2017) 沼蜷属螺一新种记述 (腹足纲: 黑贝科). 海洋科学, 41 (11): 134–137.]
- Chen, S.-F. (1937) Four new species of fresh-water mollusks from China. *Journal of the Washington Academy of Sciences*, 27 (10): 444–448.
- Chen, S.-F. (1943) Two new genera, two new species, and two new names of Chinese Melaniidae. *The Nautilus*, 57 (1): 19–21.
- Chen, Z.-Y. (2025) An expatriate and protégé: Chinese-American Malacologist Sui-Fong Chen (1906–1993) and his malacological contributions. *The Nautilus*, 139 (2): 82–88.
- Du, L.-N., Köhler, F., Yu, G.-H., Chen, X.-Y. & Yang, J.-X. (2019) Comparative morpho-anatomy and mitochondrial phylogeny of Semisulcospiridae in Yunnan, south-western China, with description of four new species (Gastropoda: Cerithioidea). *Invertebrate Systematics*, 33 (6): 825–848.
- Du, L.-N. & Yang, J.-X. (2023) Colored atlas of Chinese Melania. Henan Science and Technology Press, Zhengzhou, 225pp. [杜丽娜, 杨君兴. (2023) 中国黑螺原色图鉴. 河南科学技术出版社, 郑州, 225pp.]
- Edgar, R. C. (2004) MUSCLE: multiple sequence alignment with high accuracy and high throughput. *Nucleic Acids Research*, 32 (5): 1792–1797.
- Gill, T. (1871) Arrangement of the families of mollusks. *Smithsonian Miscellaneous Collections*, 227: xvi + 49 pp.
- Glaubrecht, M., Kaiser, N., Krailas, D., Dechraksa, W., Veeravechskij, N., Gimnich, F. & Neiber, M. T. (2026) Evolutionary Systematics of Two Co-Occurring Paludomid Freshwater Gastropods in Thailand (Cerithioidea: Paludomidae). *Zoologica Scripta*, 55 (2): 244–272.
- Gmelin, J. F. (1791) *Caroli a Linné Systema Naturae, ed. 13. Tome 1(6). Vermes*. Georg Emanuel Beer, Lipsiae [Leipzig], pp. 3021–3910.
- Godwin-Austen, H. H. (1918) Zoological results of the Abor Expedition, 1911–1912. XLIX. Mollusca, IX. *Records of the Indian Museum*, 8 (12): 601–621.
- Gould, A. A. (1844) [A continuation of an] account of the shells from Burmah, received from the Rev. Mr. Mason. *Proceedings of the Boston Society of Natural History*, 1: 144–145.
- Gray, J. E. (1847) A list of the genera of recent Mollusca, their synonyms and types. *Proceedings of the Zoological Society of London*, 15: 129–219.
- Gredler, V. (1885) Zur Conchylien-Fauna von China VII Stück. *Jahrbücher der Deutschen Malakozoologischen Gesellschaft*, 12: 219–235.
- Gredler, V. (1886) Zur Conchylien-Fauna von China IX Stück. *Malakozoologische Blätter*, 9: 1–20.
- Gredler, V. (1889) Zur Conchylien-Fauna von China XIV Stück. *Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft*, 21: 155–163.
- Griffith, E. & Pidgeon, E. (1833–1834) The Mollusca and Radiata. Vol. 12. In: Griffith, E. (1824–1835) *The*

- Animal Kingdom arranged in conformity with its organization, by the Baron Cuvier*. Whittaker and Co., London, viii + 601 pp., 61 pls.
- Gurumayum, S. D. (2023) A preliminary report on freshwater mollusca of Arunachal Pradesh, Northeast India and first report of an exotic invasive species *Physella acuta* (Draparnaud, 1805) from the state. *Records of the Zoological Survey of India*, 123 (1): 109–115.
- Kumar, S., Stecher, G., Li, M., Knyaz, C. & Tamura, K. (2018) MEGA X: Molecular evolutionary genetics analysis across computing platforms. *Molecular Biology and Evolution*, 35 (6): 1547–1549.
- Linnaeus, C. (1758) *Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Laurentii Salvii, Holmiae [Stockholm], iii + 824 pp.
- Liu, Y.-Y., Zhang, W.-Z., Wang, Y.-X. & Duan, Y.-H. (1994) Eight new species of freshwater molluscs in southwest China (Gastropoda: Bivalvia). *Acta Zootaxonomica Sinica*, 19 (1): 25–36. [刘月英, 张文珍, 王耀先, 段毅豪. (1994) 中国西南地区淡水贝类八新种记述 (腹足纲, 瓣鳃纲). 动物分类学报, 19 (1): 25–36.]
- Mandahl-Barth, G. (1973) Descriptions of new species of African freshwater molluscs. *Proceedings of the Malacological Society of London*, 40: 277–286.
- Morlet, L. (1884) [1885] Description d'espèces nouvelles de coquilles recueillies par M. Pavie au Cambodge. *Journal de Conchyliologie*, 32 (4): 386–403.
- Morrison, J. P. E. (1952) World relations of the melanians. *The American Malacological Union, News Bulletin & Annual Report*, 1951, 28 Jan.: 6–9.
- Neiber, M. T. & Glaubrecht, M. (2019a) Annotated nomenclator of extant and fossil taxa of the Paludomidae (Caenogastropoda, Cerithioidea). *ZooKeys*, 850: 1–132.
- Neiber, M. T. & Glaubrecht, M. (2019b) Nomenclature of genus-group names of recent Asian Paludomidae (Gastropoda: Cerithioidea), with a revision of *Paludomus (Odontochasma) stomatodon* (Benson, 1862) from the Western Ghats, India. *Malacologia*, 62 (2): 329–344.
- Nevill, G. (1877) List of the Mollusca brought back to Mr. Anderson from Yunnan and upper Burma, with descriptions of new species. *Journal of the Asiatic Society of Bengal*, 46: 14–41.
- Nevill, G. (1881) New or little-known Mollusca of the Indo-Malayan fauna. *The Journal of the Asiatic Society of Bengal, Part II*, 50 (3): 125–167.
- Preston, H. B. (1909) Descriptions of two new shells from South India. *Records of the Indian Museum*, 3 (3): 277–278.
- Preston, H. B. (1915) Zoological results of the Abor expedition, 1911–12. XLIII. Mollusca, V. *Records of the Indian Museum*, 8 (8): 537–541.
- Ronquist, F., Teslenko, M., Van Der Mark, P., Ayres, D. L., Darling, A., Höhna, S., Larget, B., Liu, L., Suchard, M. A. & Huelsenbeck, J. P. (2012) MrBayes 3.2: Efficient Bayesian phylogenetic inference and model choice across a large model space. *Systematic Biology*, 61 (3): 539–542.
- Schultheiß, R., Wilke, T., Jørgensen, A. & Albrecht, C. (2011) The birth of an endemic species flock: Demographic history of the *Bellamya* group (Gastropoda, Viviparidae) in Lake Malawi. *Biological Journal of the Linnean Society*, 102 (1): 130–143.
- Srinivasa Rao, H. (1928) The aquatic and amphibious Mollusca of the Northern Shan States, Burma. *Records of the Indian Museum*, 30 (4): 399–468.
- Srinivasa Rao, H. (1929) The freshwater and amphibious gastropod molluscs of the Indawgyi Lake and of the connected freshwater areas in the Myitkyina District, Burma. *Records of the Zoological Survey of India*, 31(4): 273–299.
- Stelbrink, B., Kehlmaier, C., Wilke, T. & Albrecht, C. (2019) The near-complete mitogenome of the critically endangered *Pseudocleopatra dartevellei* (Caenogastropoda: Paludomidae) from the Congo River assembled from historical museum material. *Mitochondrial DNA Part B*, 4 (2): 3229–3231.

- Stoliczka, F. (1867–1868) Cretaceous fauna of southern India. *Palaeontologia Indica*, being figures and descriptions of the organic remains procured during the progress of the Geological Survey of India. Volume 2, The Gastropoda. Parts 1–4, pp. 1–204, pls 1–16 [1 April 1867]; Part 5, pp. 205–244, pls 17–18 [1 April 1868]; Part 6, pp. 245–284, pls 19–20 [1 July 1868]; Parts 7–10, pp. 285–498, pls 21–28 [1 October 1868]. *Memoirs of the Geological Survey of India*, 5: 1–498, pls 1–28.
- Strong, E. E., Colgan, D. J., Healy, J. M., Lydeard, C., Ponder, W. F. & Glaubrecht, M. (2011) Phylogeny of the gastropod superfamily Cerithioidea using morphology and molecules. *Zoological Journal of the Linnean Society*, 162 (1): 43–89.
- Subba Rao, N. V. (1989) *Handbook: freshwater molluscs of India*. Zoological Survey of India, Calcutta, 289pp.
- Swainson, W. (1840) *A treatise on malacology; or the natural classification of shells and shell-fish*. Longman, London, viii + 419 pp.
- Wilson, A. B., Glaubrecht, M. & Meyer, A. (2004) Ancient lakes as evolutionary reservoirs: evidence from the thalassoid gastropods of Lake Tanganyika. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 271 (1538): 529–536.
- Xu, Y., Meng, Y., Zeng, S., Yang, D., Zhong, S., Lin, Z., Chen, X., Zhang, Z., Wang, H. & Zheng, H. (2025) Three New Mitochondrial Genomes of Semisulcospiridae J.P.E. Morrison, 1952 (Caenogastropoda: Cerithioidea) from China and Insights into Their Phylogenetic Position. *Genes*, 16 (12): 1488: 1–13.
- Zhang, L.-J., Chen, S.-C., Yang, L.-T., Jin, L. & Köhler, F. (2015) Systematic revision of the freshwater snail *Margarya* Nevill, 1877 (Mollusca: Viviparidae) endemic to the ancient lakes of Yunnan, China, with description of new taxa. *Zoological Journal of the Linnean Society*, 174 (4): 760–800.
- Zhang, L.-J., Yen, Y.-H., Chen, Z.-Y., Du, L.-N., Ng, T.-H. & Von Rintelen, T. (2025) A new genus of river snails, *Bakyietaia* (Mollusca, Viviparidae), from South China and the Indochinese Peninsula. *European Journal of Taxonomy*, 1005: 1–64.

云南省沼蜷科的首次可靠记录及 一新种记述（腹足纲：蟹守螺超科）

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摘 要

沼蜷科 (Paludomidae) 是一类广泛分布于非洲、南亚和东南亚淡水螺, 在中国该科此前仅在西藏的藏南南部有记录。本文报道了云南省首次可靠记录的沼蜷科物种, 发现于盈江县的伊洛瓦底江流域。基于形态学、解剖学以及COI分子标记和部分线粒体基因组的系统发育分析的综合研究, 本文描述了一沼蜷科沼蜷属新物种——景颇沼蜷 *Paludomus jingpo* Zhang **sp. nov.**, 并将其与缅甸的相关种类, 特别是齐纹沼蜷 *Paludomus regulata*, 进行了比较。

关键词: 淡水螺, 伊洛瓦底江流域, 分子系统发育, 沼蜷属, 分类学