



New species and new records of the genus *Hexarhopalus* Fairmaire, 1891 (Coleoptera: Tenebrionidae: Cnodalonini) from China

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Abstract

Two new species of the subgenus *Leprocaulus* Fairmaire, 1896 within the genus *Hexarhopalus* Fairmaire, 1891 from China are described and figured: *H. (L.) medogensis* sp. nov. (Xizang), and *H. (L.) umbratus* sp. nov. (Yunnan). New records of its congeners are also given and figured: *H. (L.) binhanus* (Pic, 1922) and *H. (L.) pacholatkoii* Bečvář & Purchart, 2008 are reported as new to China (Yunnan); *H. (L.) bisinuatus* Ren & Xu, 2011 is reported from Chongqing and Guangxi for the first time; and *H. (L.) nanlingensis* Jiang, Li, Ji, Engel & Wang, 2021 is reported from Guangxi for the first time. All Chinese species of the subgenus *Leprocaulus* are keyed.

Key words: darkling beetles, *Leprocaulus*, Oriental Region, Stenochiinae

Introduction

The darkling beetle genus *Hexarhopalus* Fairmaire, 1891 belongs to the tribe Cnodalonini Oken, 1843 of the subfamily Stenochiinae Kirby, 1837 (Bouchard *et al.* 2021). The genus *Hexarhopalus* is a relatively large group, comprising a total of 63 species, including 29 species in the nominate subgenus and 34 species in the subgenus *Leprocaulus* (Purchart 2025). The latest contribution to the Chinese *Hexarhopalus* species was provided by Jiang *et al.* (2022). Currently, a total of 17 *Hexarhopalus* species have been recorded from China, including ten species belonging to the nominate subgenus and seven species to the subgenus *Leprocaulus* (Jiang *et al.* 2022; Purchart 2025).

In this paper, two new species of the subgenus *Leprocaulus* are described, and two species are recorded from China for the first time, increasing the total species number of *Leprocaulus* from China to eleven.

Material and Methods

The specimens were examined and dissected using a Nikon SMZ800 Stereo microscope, and images were taken using a Canon EOS 5DSR with Laowa 25mm f/2.8 2.5-5X Ultra Macro lens, Laowa 100mm f/2.8 2x Ultra Macro APO. Aedeagi were detached from the body with tweezers and insect pins. Specimens examined in this study are deposited at the Museum of Hebei University, Baoding, China (MHBUS).

Taxonomy

Descriptions of new species

Hexarhopalus (Leprocaulus) medogensis sp. nov.

(Figs 1, 3A)

Type material. HOLOTYPE: CHINA: ♀, Dagmo Township, Mêdog County, Xizang, 29.489712°N, 95.463623°E, 1490 m, 13.V.2023, Xing-Long Bai, Quan-Yu Ji & Kai-Xuan Liu leg. (Figs 1, 3A).

Diagnosis. The new species resembles *H. xui* Ren & Xu, 2011, *H. xuhaoi* Jiang, Bai, Ren & Wang, 2020, and *H. arunachalpradeshensis* Purchart, 2025, but can be readily distinguished from them by the following points: (1) head and pronotum brown, antennae, palpi, elytra and leg reddish brown (body black in *H. xuhaoi*); (2) head covered with light setae (glabrous in *H. arunachalpradeshensis*); (3) frontoclypeal suture nearly arcuate (nearly trapezoidal in *H. xuhaoi*); (4) pronotum pubescent (not mentioned as pubescent in the original description in *H. arunachalpradeshensis*), with irregular, block-like rugose elevations without distinct punctures medially (pronotum with shallow and messy wrinkles, and covered with small and sparse punctures in *H. xuhaoi*); (5) entire surface of pronotum irregularly and coarsely punctate (with punctures diameter slightly larger than eye facet in *H. arunachalpradeshensis*); (6) ocular sulcus deep, running completely around eyes (nearly invisible in *H. xui*); (7) elytral striae distinct, composed mostly of deep and elongate large punctures (not so large in *H. xui* and *H. arunachalpradeshensis*).

Description. Body elongate, dorsal side convex, surface dull, head, pronotum brown, antennae, palpi, elytra, legs reddish brown.



FIGURE 1. Characters of *Hexarhopalus medogensis* sp. nov. (female, holotype). A. Head and pronotum. B. Oblique indentation of pronotum. C. Ovipositor. Scale bars: 2 mm.

Female. *Head*. Surface shagreened, covered with light-colored setae and dense punctures; ratio of length to width about 0.83. Frontoclypeal suture sub-arcuate, distinctly marked, complete; frontoclypeal area slightly depressed. Labrum transverse, with punctures and dense setae. Eyes transverse, subreniform, projecting outward beyond genae; ocular sulcus deep, running completely around eyes; interocular distance approximately 1.85 times eye width. Antennae filiform, pubescent, longer than base of pronotum; apical four antennomeres slightly dilated.

Pronotum. Surface rough, subquadrate (length/width ratio about 0.93), widest near middle; surface covered with round microsculpture and pubescence; disc bearing irregular block-like wrinkles without distinct large punctures or mid-longitudinal groove, only few small punctures laterally. Base of pronotum bordered, with complete subapical deep groove; anterior margin of pronotum nearly straight, unbordered. Anterior angles rounded, obtuse; posterior angles nearly rectangular. Oblique indentation in posterior angles relatively deep, becoming gradually shallower, flattened anteriorly. Prothoracic hypomerion smoother than pronotum, shagreened, setose, with larger punctures and wrinkles. Prosternum coarsely wrinkled, narrow between procoxae; prosternal process short, obtuse.

Pterothorax. Elytra shagreened, with sparse short setae, much longer than wide (length/width ratio about 1.88), widest at 2/3 of length. Posterior slope of elytra before apex moderate. Elytral striae distinct, composed mostly of deep and elongate large punctures; interstriae convex, carinate, bearing irregular tubercles. Base slightly wider than pronotal base, slightly concave; humeri well developed and swollen. Hind wings fully developed. Scutellum subliguliform, with sparse punctures and setae. Mesosternum densely pubescent and punctate, coarsely wrinkled. Metasternum coarsely wrinkled between mid coxae, gradually becoming flattened posteriorly.

Abdomen. Abdominal ventrites slightly convex, densely punctate throughout; first ventrite nearly rectangular between hind coxae.

Legs. Relatively slender, pubescent. Femora slightly expanded, tibiae covered with brown setae at apex. Tarsi slender, pubescent, last tarsomere longest.

Male. Unknown.

Measurements. Body length: ♀ 11.4 mm; width: ♀ 4.1 mm.

Etymology. The species epithet is derived from the type locality, Mêdog, which is a treasure trove of biodiversity.

Distribution. China: Xizang.

Hexarhopalus (Leprocaulus) umbratus sp. nov.

(Figs 2, 3B)

Type material. HOLOTYPE: CHINA: ♂, Nongmeng Village, Yingjiang County, Dehong Prefecture, Yunnan, 1800 m, 17.V.2024, Shao-Fu Chen leg. (Figs 2, 3B). PARATYPE: CHINA: 1 ♂, Mt. Weibao, Weishan County, Yunnan, 2238 m, 13.VII.2016, Xiao-Dong Yang leg.

Diagnosis. The new species resembles *H. andoi* Bečvář & Purchart, 2008, *H. cameroni* Bečvář & Purchart, 2008, *H. qiujianyueae* Jiang, Bai, Ren & Wang, 2020, and *H. bisinuatus* Ren & Xu, 2011, but can be readily distinguished from them by the following points: (1) body matte, shagreened (shiny in *H. qiujianyueae*, *H. bisinuatus* and *H. cameroni*); (2) ocular sulcus wide and deep (narrower and shallow in *H. qiujianyueae* and *H. bisinuatus*; narrow, fine but well visible in *H. cameroni*); (3) male protibiae without teeth (with a tooth-like projection in *H. qiujianyueae* and *H. bisinuatus*); (4) dorso-lateral swellings on the pronotum developed (having two large longitudinal dorso-lateral swellings on the pronotum in *H. andoi*; pronotum very flat in *H. cameroni*); (5) elytral interstriae carinate (nearly flat in *H. andoi*; flattened or weakly convex in *H. cameroni*).

Description. Body elongate, convex, black, dull.

Male. *Head*. Surface shagreened, finely punctate and haired, transverse, length/width ratio about 0.66. Frontoclypeal suture distinct, complete; fronto-clypeal area slightly convex. Clypeus transverse, densely punctate and pubescent, relatively short, truncate, anterior margin broad, nearly straight. Labrum transverse, sublinguiform, densely pubescent. Eyes transverse, subreniform, projecting outward; interocular distance about 1.28 times eye diameter. Ocular sulcus nearly invisible anteriorly, deep on inner side, reaching behind eyes. Antennae filiform, longer than pronotum, apical four antennomeres dilated, forming clavate apex. Maxillary palpi subtriangular.

Pronotum. Nearly as long as wide (length/width ratio about 1.0), densely pubescent and punctate; disc with distinct dorsolateral swellings, depressed posteriorly towards pronotal base, with coarser punctures and wrinkles near pronotal base; median groove indistinct. Basal margin of pronotum with complete deep groove. Anterior

angles rounded and obtuse; posterior angles nearly rectangular. Oblique indentation deeply incised at base, gradually obliterated towards middle, forming large open depression. Prosternum slightly shiny, densely punctate and pubescent, wrinkled, raised between procoxae, depressed posteriorly; prosternal process rounded, with central groove.

Pterothorax. Elytral base slightly wider than pronotum, sides nearly parallel, much longer than wide (length/width ratio about 1.93), widest at about 2/3 of length; surface with sparse pubescence and small punctures, denser pubescence near apex. Elytral striae composed of deep, rounded punctures; interstriae weakly carinate, gradually flattening towards apex. Base slightly concave; humeri swollen. Hind wings fully developed. Scutellum subtriangular, shagreened, with sparse punctures and pubescence. Mesosternum narrow, densely punctate and pubescent, finely wrinkled. Metasternum distinctly convex medially, smooth and pubescent near mesocoxae, posteriorly becoming glabrous with indistinct wrinkles.

Abdomen. Abdominal ventrites slightly convex, densely punctate and pubescent, with indistinct wrinkles; first ventrite acutely produced between metacoxae.

Legs. Slightly shiny. Femora clavate, densely punctate and pubescent. Tibiae densely punctate and pubescent, slightly curved, broadened near apex and covered with dense setae. Tarsi slender, pubescent, last tarsomere longest, claws simple.

Aedeagus. Nearly symmetrical; lateral lobes sub-lanceolate, curved ventrally; ratio of base to lateral lobes about 1: 1.

Female. Unknown.

Measurements. Body length: ♂ 13.7–13.8 mm; width: ♂ 4.9–5.0 mm.

Etymology. The species epithet is derived from the Latin word “*umbratus*”, referring to the matte, shagreened appearance of the species.

Distribution. China: Yunnan.



FIGURE 2. Characters of *Hexarhopalus umbratus* sp. nov. (male, holotype). **A.** Head and pronotum. **B.** Oblique indentation of pronotum. **C–E.** Aedeagus in ventral, dorsal and lateral view, respectively. Scale bars: 2 mm.

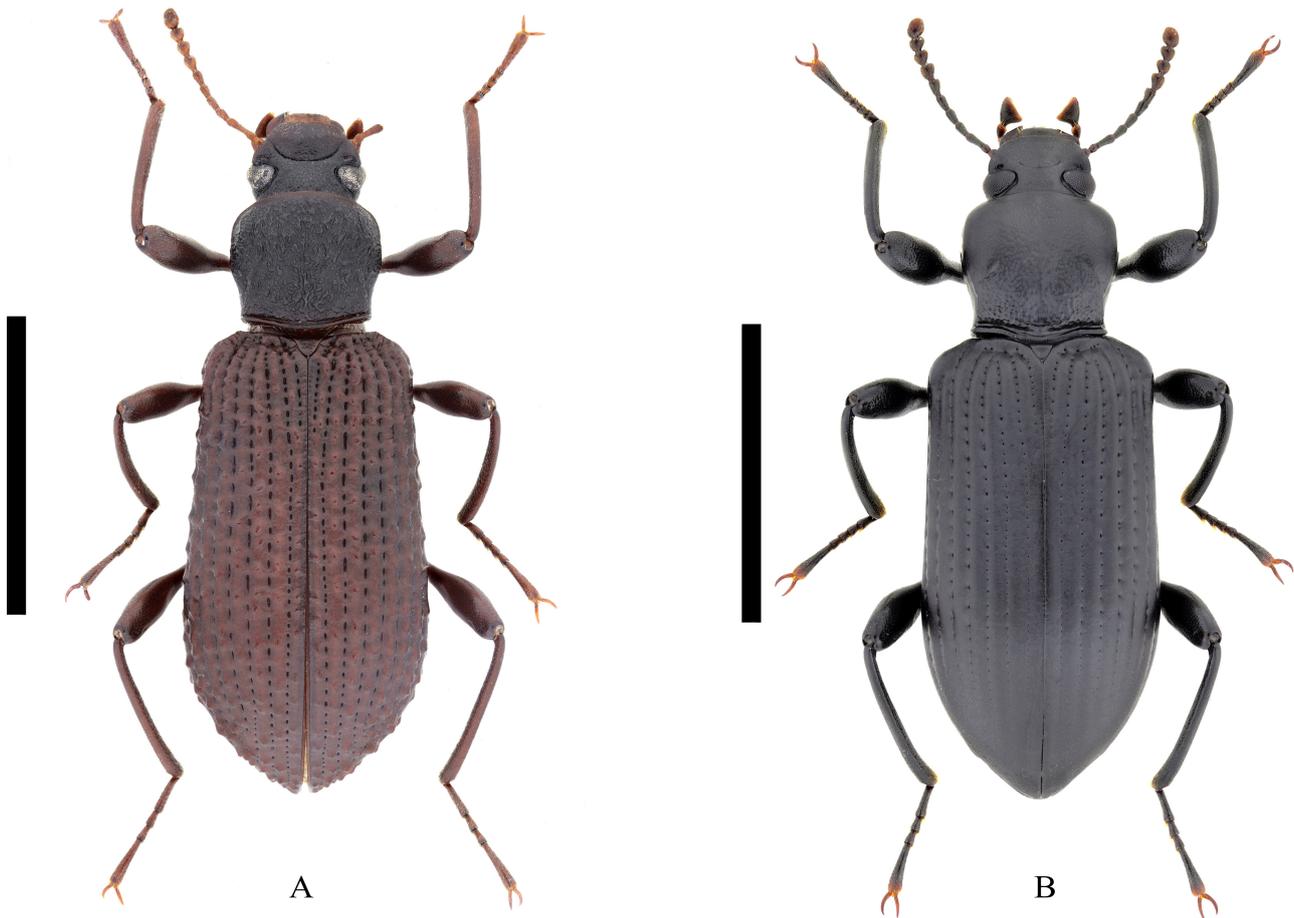


FIGURE 3. Habitus of *Hexarhopalus* species. **A.** *H. medogensis* sp. nov. (female, holotype). **B.** *H. umbratus* sp. nov. (male, holotype). Scale bars: 5 mm.

New faunistic records

Hexarhopalus (Leprocaulus) binhanus (Pic, 1922)

(Fig. 4C)

Derosphaerus binhanus Pic, 1922: 26; Gebien 1941: 353 (648).

Hexarhopalus (Leprocaulus) binhanus: Purchart 2025: 128 (figs 4a–d, 6a, i).

New material examined. China (Yunnan): 1 ♂, Bubang Village, Mengla County, Xishuangbanna Prefecture, 20.V.2017, Zhao-Xu Li leg. (Fig. 4C).

Distribution. China: Yunnan; Laos, Thailand, Vietnam. **New country record for China.**

Hexarhopalus (Leprocaulus) bisinuatus Ren & Xu, 2011

(Fig. 4A)

Hexarhopalus (Leprocaulus) bisinuatus Ren & Xu, 2011: 28 (figs 8–16, 18); Jiang *et al.* 2020: 296 (figs 18, 19, 20B, 21G).

New material examined. China (Chongqing): 3 ♂♂, Mt. Jinpo, Nanchuan District, 1300–1500 m, 30.VI.2022, Tian-Xuan Gu leg. **China (Guangxi):** 1 ♂, Luoyinggou, Mt. Dayao, Jinxiu County, 1370 m, 25.VII.2017, J.-T. Zhao leg.; 1 ♂, Laoshan Forest Farm, Mt. Dayao, Jinxiu County, 15.IX.2017, J.-T. Zhao leg.; 1 ♂, Mt. Daming, Nanning City, 27.VII.2024, Quan-Yu Ji leg. (Fig. 4A).

Distribution. China: Chongqing, Fujian, Guangxi, Guizhou, Hunan, Sichuan. **New provincial record for Chongqing and Guangxi.**

***Hexarhopalus (Leprocaulus) nanlingensis* Jiang, Li, Ji, Engel & Wang, 2021**

(Fig. 4B)

Hexarhopalus (Leprocaulus) nanlingensis Jiang, Li, Ji, Engel & Wang, 2021: 594 (figs 6, 7).

New material examined. China (Guangxi): 1 ♀, Gubaotun, Mt. Dayao, Jinxiu County, 700 m, 14.IV.2018, J.-T. Zhao leg. (Fig. 4B).

Distribution. China: Guangdong, Guangxi. **New provincial record for Guangxi.**

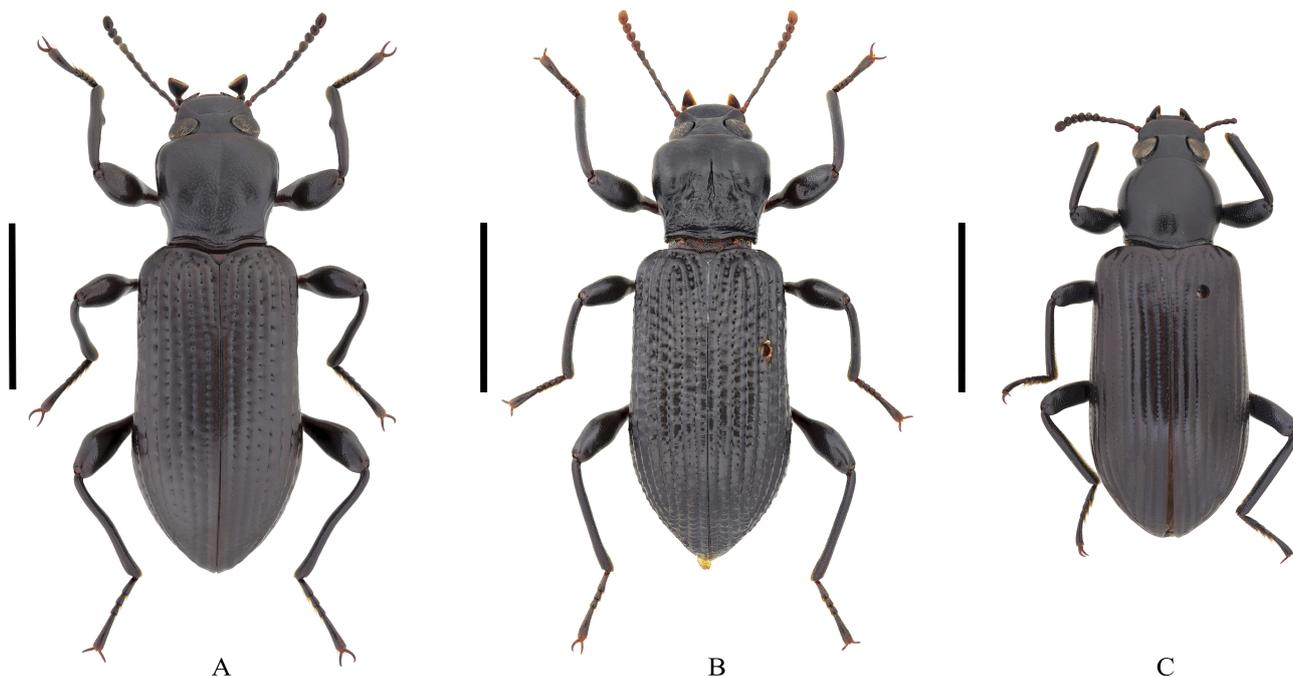


FIGURE 4. Habitus of *Hexarhopalus* species. **A.** *H. bisinuatus* (male). **B.** *H. nanlingensis* (female). **C.** *H. binhanus* (male). Scale bars: 5 mm.

***Hexarhopalus (Leprocaulus) pacholatkoï* Bečvář & Purchart, 2008**

(Fig. 5)

Hexarhopalus (Leprocaulus) pacholatkoï Bečvář & Purchart, 2008: 63 (fig. 17).

New material examined. China (Yunnan): 1 ♂, 1 ♀, Wenleng Village, Mangdong Town, Lianghe County, Dehong Prefecture, 1650 m, 8.VI.2023, Ying-Hui Lin leg. (fig. 5).

Distribution. China: Yunnan; Laos, Myanmar, Thailand. **New country record for China.**

Key to Chinese species of *Hexarhopalus (Leprocaulus)*

- 1. Pronotum relatively smooth, lacking distinct wrinkles except near base 2
- Pronotum distinctly wrinkled or rather rough 6
- 2. Male protibia toothed 3
- Male protibia not toothed 4
- 3. Inner projection of protibia situated in middle; punctures rather sparse in elytral striae *H. qiujianyueae*
- Inner projection of protibia situated before middle; punctures rather dense in elytral striae *H. bisinuatus*

4. Pronotum without swelling *H. binhanus*
 – Pronotum with two swellings 5
 5. Pronotum with deep mid-longitudinal groove *H. nanlingensis*
 – Pronotum lacking deep mid-longitudinal groove *H. umbratus* sp. nov.
 6. Pronotal lateral margin distinct and deep extending entirely from anterior border to base 7
 – Pronotal lateral margin shallow or indistinct, oblique indentation relatively deep 9
 7. Pronotum with deep mid-longitudinal groove *H. difformis*
 – Pronotum lacking deep mid-longitudinal groove 8
 8. Elytral interstriae bearing row of weak tubercles; humeri well developed and swollen, much broader than base of pronotum .
 *H. pacholatko*
 – Elytral interstriae with distinct tubercles; humeri slightly broader than base of pronotum *H. qiului*
 9. Body dark black; pronotum with shallow indistinct wrinkles *H. xuhaoi*
 – Body not entirely dark black; pronotum with distinct wrinkles 10
 10. Ocular sulcus deep, distinct, complete; punctures of elytral striae very deep and elongate *H. medogensis* sp. nov.
 – Ocular sulcus nearly invisible; punctures of elytral striae simple *H. xui*

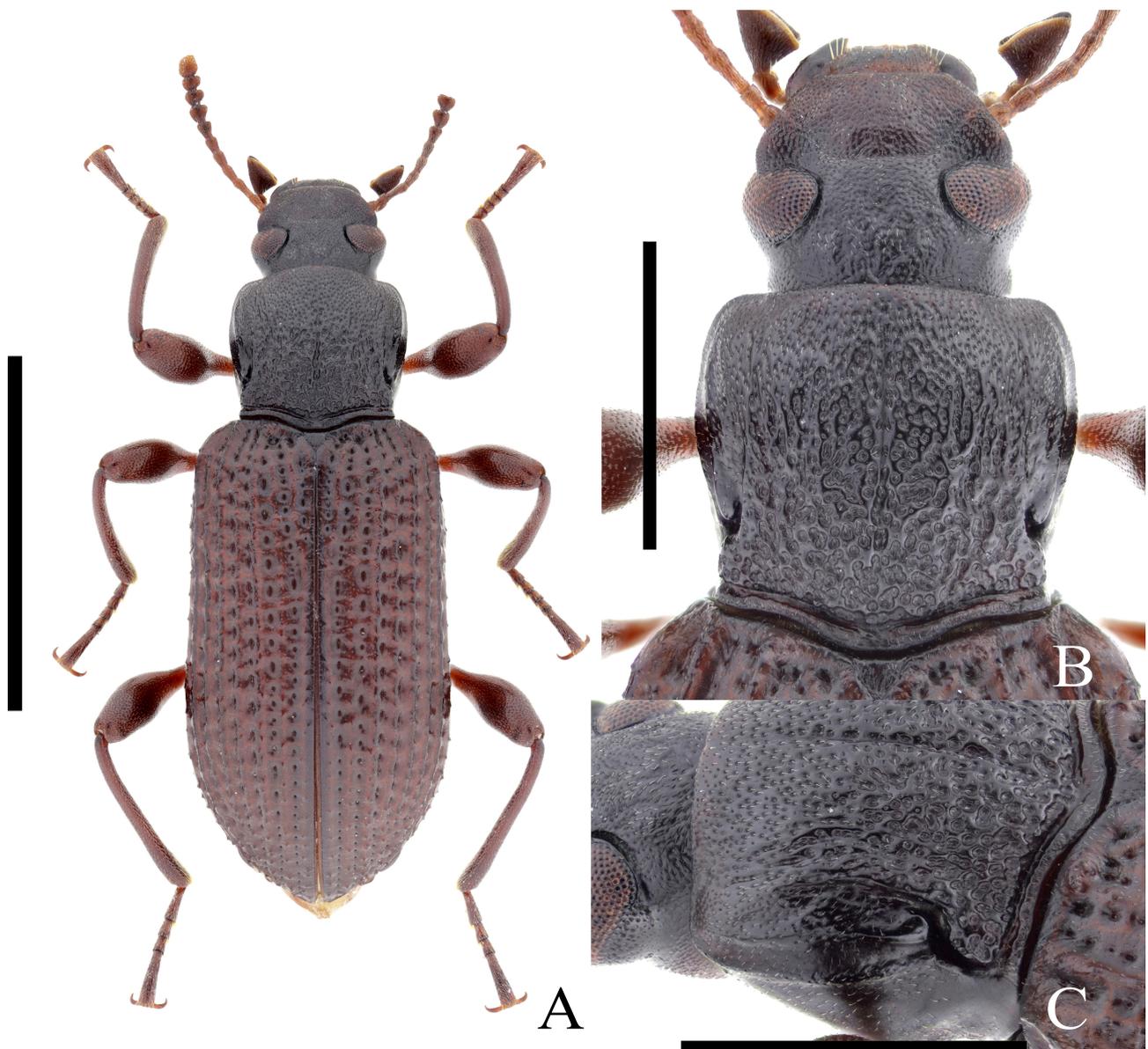


FIGURE 5. Habitus and characters of *Hexarhopalus pacholatko* (male). A. Habitus. B. Head and pronotum. C. Oblique indentation of pronotum. Scale bars: 5 mm (A); 2 mm (B, C).

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中国壑轴甲属*Hexarhopalus*新种和新纪录种（鞘翅目：拟步甲科：轴甲族）

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摘要: 描述中国壑轴甲属*Hexarhopalus*长壑轴甲亚属*Leprocaulus*两新种并附图: 墨脱壑轴甲*H. (L.) medogensis* sp. nov. (西藏) 和暗壑轴甲*H. (L.) umbratus* sp. nov. (云南)。同时, 也记述并图示了该亚属其他新纪录种: 中南壑轴甲*H. (L.) binhanus*和帕氏壑轴甲*H. (L.) pacholatkoii*为中国新纪录、双曲壑轴甲*H. (L.) bisinuatus*为重庆和广西首次记录、南岭壑轴甲*H. (L.) nanlingensis*为广西首次记录。还编制了长壑轴甲亚属中国种检索表。

关键词: 拟步甲; 长壑轴甲亚属; 东洋区; 树甲亚科