

Micropeplus shergyla sp. nov., the first species of Micropeplinae from Tibet (Coleoptera: Staphylinidae)

Author: Yin, Zi-Wei

Source: Revue suisse de Zoologie, 129(2) : 323-327

Published By: Muséum d'histoire naturelle, Genève

URL: <https://doi.org/10.35929/RSZ.0079>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Micropeplus shergyla sp. nov., the first species of Micropeplinae from Tibet (Coleoptera: Staphylinidae)

Zi-Wei Yin

Laboratory of Environmental Entomology, College of Life Sciences, Shanghai Normal University, 100 Guilin Road, Xuhui District, Shanghai 200234, China; pselaphinae@gmail.com; <https://orcid.org/0000-0001-6659-9448>

Abstract: *Micropeplus shergyla*, a new species of the Staphylinoides group and the first species of Micropeplinae from Tibet, is described, illustrated, and compared with geographically close and morphologically similar congeners.

Keywords: Taxonomy - rove beetles - micropeplines - Xizang - China.

INTRODUCTION

The Chinese fauna of the staphylinid subfamily Micropeplinae is represented by 26 species and one subspecies in three genera, i.e., *Cerapeplus* Löbl & Burckhardt and *Peplomicrus* Bernhauer each with a single species, and *Micropeplus* Latreille containing 24 species and one subspecies (e.g., Löbl 1997; Li *et al.*, 2019). Grebennikov & Smetana (2015) identified a potentially diverse micropepline fauna from southwestern China based on applications of BINs (Barcode Index Numbers), GDTCS (Geographically Delimited Terminal Clades), and OTUs (Operational Taxonomic Units), and questioned the monophyly of *Micropeplus*. Morphologically, more than half of the known Chinese *Micropeplus* species (14 spp. and 1 subsp.) belong to the diverse Holarctic Staphylinoides group (for a diagnosis and a description of the group see Campbell, 1992): *M. longipennis* Kraatz from Heilongjiang, *M. fulvus* Erichson from Liaoning, *M. shanghaiensis* L.-Z. Li & Zhao from Shanghai, *M. fulvus japonicus* Sharp, *M. sinensis* Watanabe, and *M. unicornis* X.-K. Yang from Zhejiang, *M. clypeatus* Campbell, *M. spinatus* Campbell, *M. taiwanensis* Campbell, and *M. yushanensis* Campbell from Taiwan, and *M. liweiae* Wang, Jiang & Zhu, *M. nomurai* Watanabe, *M. songi* Zheng, Y.-J. Li & Yan, *M. uenoi* Watanabe, and *M. xiaoae* Zheng, Yan & Y.-J. Li from Sichuan (Watanabe & Luo, 1991; Campbell, 1992, 1995; J.-K. Li & Chen, 1993*; Yang, 1995; Watanabe, 2000; L.-Z. Li & Zhao, 2001; Tronquet, 2008; Wang *et al.*, 2018; Zheng *et al.*, 2013, 2014). [*The identification of all staphylinids in the book by J.-K. Li & Chen should be considered doubtful due to inadequate descriptions

and their insufficient knowledge of the group.] With few exceptions, most of these species are regionally or locally endemic, and usually prefer more northern temperate regions (e.g., in Liaoning and Heilongjiang), or inhabit high-altitude montane environments in subtropical areas (e.g., in Taiwan and Sichuan).

During a 2021 expedition to Tibet accompanied by my colleague Zhong Peng and MA student Wen-Xuan Zhang, two specimens of an interesting new species of *Micropeplus* were collected at high altitude at Shergy La (mountain pass) in Nyingchi, which represents the first record of the subfamily Micropeplinae in Tibet. In this paper, the new species is described and separated from geographically close and morphologically similar congeners.

MATERIAL AND METHODS

The type material of the new species described in this paper is deposited in the Insect Collection of Shanghai Normal University, Shanghai, China (SNUC). The text of the specimen label is quoted verbatim in quotation marks (‘’).

Dissected parts were preserved in Euparal on plastic slides that were placed on the same pin with the specimen. The habitus image of the beetle was taken using a Canon 5D Mark III camera in conjunction with a Canon MP-E 65 mm f/2.8 1-5X Macro Lens, and a Canon MT-24EX Macro Twin Lite Flash was used as the light source. Images of the morphological details were produced using a Canon G9 camera mounted to an Olympus CX31 microscope under reflected or transmitted light. Zerene

Stacker (version 1.04) was used for image stacking. All images were modified and arranged into plates using Adobe Photoshop CC 2018.

The abdominal segments are numbered in Arabic (starting from the first visible segment) and Roman (reflecting true morphological position) numerals, *e.g.*, tergite 1 (III), or sternite 1 (III). Paired structures in species description are treated as singular, which are in telegraphic text, and treated as plural in the comparative notes.

TAXONOMY

Micropeplus shergyia sp. nov.

Figs 1, 2

Chinese common name: 色季拉铠甲

Type material: HOLOTYPE; ♂; CHINA, 'China: Xizang, Nyingchi City, Shergy La, Lulang tourist center, 29°37'2"N, 94°41'55"E, 4300 m, 14.vii.2021, Peng, Yin & Zhang, 色季拉游客中心北坡' (SNUC). PARATYPE; 1 ♂; CHINA, same collection data as of holotype (SNUC).

Description: Habitus (Fig. 1A) elongate-oval, slightly convex in profile view. Body length (from anterior margin of frons to posterior margin of abdomen) 2.3–2.6 mm, width (maximum width of pronotum) 1.1–1.2 mm. Head black; antennae with antennomeres 1–8 reddish-brown, 9 dark brown for basal 2/3 and reddish-brown for apical 1/3; pronotum blackish, with lateral lobes reddish-brown; elytra black, with posterior margin reddish-brown; scutellum black at base, reddish brown medially at apex; abdominal tergites 1–4 (III–VI) black, 5 (VII) black along base, becoming lighter toward posterior margin, 6 (VIII) reddish-brown; paratergites black with reddish-brown lateral margins; femora and tibiae reddish-brown; genital segments, mouthparts and tarsi yellowish.

Head (Fig. 1B) strongly transverse, length from anterior margin of clypeus to anterior margin of pronotum 0.36–0.39 mm, maximum width across eyes 0.58–0.59 mm; dorsal surface with dense reticulate microsculpture, lacking punctation, almost devoid of pubescence; vertex with basally divergent mediobasal ridge extending anteriorly to vertex, with one distinct glandular pore on each side of base of ridge, areas lateral to ridge shallowly impressed and with raised outer edges, with transverse ridge mesal to raised inner margin of each eye demarcating anterior and posterior impressed areas; frons broadly and conspicuously impressed between weakly raised dorsal surface of antennal insertions, anterior margin not sexually dimorphic; clypeus demarcated from frons by frontal-clypeal ridge, anterior margin of clypeus broadly arcuate and moderately raised. Venter with fine reticulate or transverse linear microsculpture, with multi ridges separating impressed areas; submentum with one oval, admesal impression on each side near base. Eyes

prominent. Antennae short, length 0.63 mm, sparsely pubescent except for antennomere 11; antennomere 1 large, convex on mesal margin; 2 broadened at basal half and narrowing apically; 3 as long as 2, basally narrowed; 3–8 successively shorter; 9 slightly transverse; 11 largest, suboval, truncate at base, with dense pubescence; length/width of antennomeres 1–11 including basal stalks (holotype; in mm): 1 0.11/0.06, 2 0.07/0.05, 3 0.07/0.04, 4 0.06/0.04, 5 0.05/0.03, 6 0.04/0.03, 7 0.04/0.03, 8 0.03/0.04, 9 0.14/0.10.

Pronotum (Fig. 1B) distinctly transverse, length at midline 0.52–0.54 mm, maximum width 1.11–1.14 mm, greatest width at subbasal marginal teeth; sides evenly convex, lateral margins with 3–4 teeth, basal teeth larger than apical ones; anterior margin weakly convex between lateral lobes which extend anteriorly to level of eyes; posterior broadly convex at middle, laterally evenly emarginate to round posterolateral angles; disc moderately convex, much lower than profile of elytra, median area with closed cells arranged as in Fig. 1B, with two large glandular pores at outer sides of each lateral carina; reticulate microsculpture present on disc, inner margins of cells and outer 2/3 of explanate lateral areas; posterolateral area flattened, translucent. Hypomera with reticulate microsculpture lateral and posterior to large, deep, oval cavities. Proventral carina narrow, present only on anterior half; proventral process broad.

Scutellum (Fig. 1C) slightly convex, shield-shaped, 1.42–1.46 times as broad as long, with fine microsculpture at middle. Elytra (Fig. 1C) subquadrate, parallel sided, length along suture 0.68–0.71 mm, maximum width 1.10–1.13 mm, widest at approximately posterior 1/5, at widest point about as wide as pronotum, in profile view broadly convex and above plane of pronotum; each elytron with two large glandular pores at base, with inner discal costa slightly sinuate, outer discal costa slightly curved at base, pseudopleural costa almost straight, separated anteriorly and posteriorly from epipleural costa; discal area of pseudopleuron slightly flared externally so that pseudopleural costa visible from dorsal view; epipleuron narrow, with row of coarse punctures; elytral intervals with punctures moderately coarse and deeply impressed, separated by average distance distinctly greater than diameter of puncture, surface between intervals smooth, lacking microsculpture; punctures evenly distributed over intervals, first interval approximately three punctures wide, second approximately 5 punctures wide and third interval six to seven punctures wide. Metathoracic (hind) wings fully developed.

Mesoventrite (Fig. 2A) with reticulate microsculpture at middle and at inner margins of impressed cells; mesoventral process broad, convex on posterior margin. Metaventrite (Fig. 2A) narrowly and shallowly impressed along midline from anterior 1/4 to near posterior margin, followed by slightly transverse, suboval, moderately impression just anterior to posterior margin; with shorter, broader and shallow parallel impression on each side of



Fig. 1. *Micropeplus shergyla* sp. nov., male: (A) Dorsal habitus. (B) Head and pronotum. (C) Elytra. Scale bars: 0.5 mm in A; 0.3 mm in B, C.

medial impression slightly posterior to middle of disc; with broadly triangular impression on anterior margin at middle; with obliquely oval impression posterior to mesocoxa, with large glandular pore posterior to mesocoxal cavity but lacking pores at anterior margin of metaventral intercoxal process; with two longitudinal impressions on each side of lateral area; microsculpture of metaventricle mostly confined to impressions, lacking pubescence or punctures.

Abdomen slightly wider than long, length at midline 0.88–1.03 mm, maximum width (at lateral margins of segment 1) 1.03–1.12 mm; tergites (Fig. 2B) and sternites (Fig. 2C) successively narrowing posteriorly; microsculpture present on ridges, accompanying paratergites and lateral areas of sternites; all segments asetose. Tergite 1 (III) with one short, thin median carina, 2–4 (IV–VI) each

with broad median and pair of slightly narrower lateral carinae extending from anterior margin to posterior margin (middle carinae) or near posterior 3/5 of tergite (lateral carinae); tergite 5 (VII) with three short carinae extending to basal 1/3 of tergite; median carina of tergite 5 slightly declivous in lateral view. Sternite 1 (III) with ten, 2–5 (IV–VII) each seven short carinae along basal margin, 5 with carinae present only at base, with broad, triangular impression on intercoxal process.

Male. Protibia lacking tooth on mesal margin; mesal margins of meso- and metatibia (Fig. 1A) each with acute triangular tooth posterior to middle. Posterior margin tergite 6 (VIII) evenly and slightly curved. Posterior margin of sternite 6 (VIII) roundly emarginate at middle, with transverse row of short subbasal setae. Aedeagus (Fig. 2D, E) short and broad, length 0.52 mm,



Fig. 2. *Micropeplus shergyla* sp. nov., male: (A) Meso- and metaventrals. (B) Tergites. (C) Sternites. (D, E) Aedeagus, ventral (D) and lateral (E). Scale bars: 0.3 mm in A-C; 0.2 mm in D, E.

with subparallel sides; median lobe with apex broad and strongly emarginate; parameres fused to median lobe, in lateral view narrowing apically and acute at apex, each side with two long subapical setae; endophallus symmetric, composed of three pairs of elongate sclerites. *Female*. Unknown.

Comparative diagnosis: This species is morphologically similar to *M. liweiae*, *M. songi*, and *M. xiaoae* from Sichuan regarding the dark coloration of the body, and a sexually unmodified (evenly convex) anterior margin of the male frons. *Micropeplus shergyla* differs from *M. liweiae* by more evenly convex lateral margins

of the pronotum (nearly straight for most of the length in *M. liweiae*), less convex lateral margins of the elytra, and much thinner posterior halves of the median carinae of tergites 2-4 (IV-VI) and thinner median carina of tergite 5 (VII); and from both *M. songi* and *M. xiaoae* by the incomplete lateral carinae of tergites 2-4 (IV-VI) (all three carinae extending through whole length of tergites 2-4 in *M. songi* and *M. xiaoae*). The apical structure of the aedeagal median lobe and the shape of the endophallus of *M. shergyla* are also characteristic. Two other species from Sichuan, *M. uenoi* and *M. nomurai*, both having the male frons protruding anteriorly at middle, can be readily separated from

M. shergyla. There are three more *Micropeplus* species from the Himalayan range (Schülke & Smetana, 2015; Newton, 2018): *M. editus* Herman (replacement name for *M. maillei* Laporte) from Nepal, *M. vulcanus* Fauvel from northern India, and *M. sikkimi* Fauvel from northern India and Pakistan. Neither of these belongs to the Staphylinoides group, their body sizes fall out of the range of the group and are much shorter (ca. 1.5 mm long) than in *M. shergyla*.

Distribution and habitat: China: Tibet. Both individuals were collected by sifting leaf litter in a *Rhododendron* dominant forest at an altitude of 4300 m.

Etymology: This species is named after its type locality, i.e., Shergy La ('La' means 'a mountain pass' in Tibetan).

ACKNOWLEDGMENTS

I am grateful to Zhong Peng and Wen-Xuan Zhang for their companionship during the 2021 Tibetan expedition. Wa Da (Tibet Plateau Institute of Biology, Lhasa) provided logistical support to the field work. Volker Assing (Hannover, Germany) and an anonymous reviewer critically read the draft manuscript and provided helpful comments. The present study was supported by the National Natural Science Foundation of China (grant no. 31872965), the Second Tibetan Plateau Scientific Expedition and Research (grant nos. 2019QZKK0706, 2019QZKK05010603), and the Science and Technology Commission of Shanghai Municipality (grant no. 19QA1406600).

REFERENCES

- Campbell J. M. 1992. A review of the family Micropeplidae (Coleoptera) of Taiwan. *Bulletin of the National Museum of Natural Science* 3: 209-224.
- Campbell J. M. 1995. New species and records of Micropeplidae (Coleoptera) from Taiwan. *Bulletin of the National Museum of Natural Science* 5: 117-130.
- Grebennikov V. V., Smetana A. 2015. DNA barcoding and regional diversity of understudied Micropeplinae Coleoptera: Staphylinidae in Southwest China: phylogenetic implications and a new *Micropeplus* from Mount Emei. *Zootaxa* 3919: 583-599.
- Li J.-K., Chen P. 1993. Studies on fauna and ecogeography of soil animal (sic!). *Northeast Normal University Press, Changchun*, ii + 265 pp. (in Chinese, with English title).
- Li L.-Z., Zhao M.-J. 2001. *Micropeplus shanghaiensis*, a new species (Coleoptera, Staphylinidae) from East China. *Japanese Journal of Systematic Entomology* 7: 91-94.
- Li L.-Z. (chief Ed.), Hu J.-Y., Peng Z., Tang L., Yin Z.-W., Zhao M.-J. (eds). 2019. Catalogue of Chinese Coleoptera. Volume 3: Staphylinidae. *Science Press, Beijing*, xix + 720 pp.
- Löbl I. 1997. *Cerapeplus sinensis* n. sp. (Coleoptera: Staphylinidae: Micropeplinae) from China. *Serangga* 2: 137-142.
- Newton A. F. 2018. Staphyliniformia world catalog database. In: Bánki O., Roskov Y., Döring M., Ower G., Vandepitte L., Hobern D., Remsen D., Schalk P., DeWalt R. E., Keping M., Miller J., Orrell T., Aalbu R., Adlard R., Adriaenssens E., Aedo C., Aescht E., Akkari N., Alonso-Zarazaga M. A. et al. (eds), Catalogue of Life Checklist (November 2018). www.catalogueoflife.org/data/dataset/1204 (accessed 5 March 2022)
- Schülke M., Smetana A. 2015. Family Staphylinidae Latreille, 1802. In: Löbl I., Löbl D. (eds), Catalogue of Palaearctic Coleoptera. Vol. 2/1. Hydrophiloidea – Staphylinoida. Revised and updated edition. *Brill, Leiden and Boston*, pp. 304-1134.
- Tronquet M. 2008. Staphylinidae Micropeplinae de la faune de France et contrées voisines des genres *Arrhenopeplus* (Koch, 1937) et *Micropeplus* Latreille, 1809. *Revue de l'Association Roussillonnaise d'Entomologie* 16 (2007): 104-116.
- Wang C.-B., Jiang R.-X., Zhu J. 2018. *Micropeplus liweiae* sp. n., a new species from Sichuan, China (Coleoptera, Staphylinidae, Micropeplinae). *ZooKeys* 775: 97-102.
- Watanabe Y. 2000. Two new micropepline beetles (Coleoptera, Staphylinidae) from Sichuan Province, southwest China. *Elytra* 28: 45-53.
- Watanabe Y., Luo Z.-Y. 1991. The micropeplids (Coleoptera) from the Tian-mu Mountains in Zhejiang Province, East China. *Elytra* 19: 93-100.
- Yang C. 1995. Coleoptera: Micropeplidae. In: Wu H. (ed.), The series of the Bioresources Expedition to the Baishanzu Mountain nature reserve. *China Forestry Publishing House, Beijing*, pp. 218-219.
- Zheng F.-K., Yan X.-H., Li Y.-J. 2013. A new species of the genus *Micropeplus* Latreille from Sichuan, China (Coleoptera, Staphylinidae, Micropeplinae). *Acta Zootaxonomica Sinica* 38: 303-306.
- Zheng F.-K., Li Y.-J., & Yan X.-H. 2014. A new species of the genus *Micropeplus* Latreille (Coleoptera: Staphylinidae: Micropeplinae) from China. *Zoological Systematics* 39: 445-448.