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A new species of *Diartiger* Sharp from Sichuan, China (Coleoptera: Staphylinidae: Pselaphinae)

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Abstract: *Diartiger wangzheni* Yin & He, sp. nov. is diagnosed, described, and illustrated based on a male specimen collected in Sichuan, southwestern China. The new species was found in association with *Lasius* ants (Hymenoptera: Formicidae) under a flat rock. An updated key to the males of *Diartiger* species known from China is provided.

Keywords: Taxonomy - Clavigeritae - myrmecophile - *Lasius* ant - key - Asia.

INTRODUCTION

The pselaphine genus *Diartiger* Sharp, 1883 of the obligately myrmecophilous supertribe Clavigeritae contains twelve species and eight subspecies distributed in Japan (5 spp. & 8 subspp.), Korea (1 sp. & 1 subsp. shared with Japan), China (6), and Vietnam (1) (Newton, 2020). Since Nomura (1997) described the first Chinese species from Kunming, Yunnan, five more congeners have been reported from Beijing, Anhui, Zhejiang, and Jiangxi (Yin *et al.*, 2010; Yin & Li, 2013, 2014; Yin, 2018). The diversity of *Diartiger* in China seems to be underexplored probably due to the lack of specific collecting efforts in most areas (*i.e.*, a majority of the species can be collected only by searching ant colonies nesting under rocks or in decomposing logs), especially in the tropical regions of the country.

In the present paper, a seventh *Diartiger* species of China is described from Sichuan and distinguished from its Chinese 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 (").

The genital parts were dissected and preserved in Euparal on a plastic slide that was placed on the same pin with the specimen; four individuals of host ants were glued on a broad card and pinned under the beetle. The habitus

image was taken using a Canon 5D Mark III camera in conjunction with a Canon MP-E 65mm 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 optimized and grouped into plates using Adobe Photoshop CC 2018.

The abdominal tergites and sternites are numbered following Chandler (2001) in Arabic (starting from the first visible segment) and Roman (reflecting true morphological position) numerals, e.g., tergite 1 (IV), or sternite 1 (III).

TAXONOMY

Diartiger wangzheni Yin & He, sp. nov.

Figs 1-3

Type material: Holotype; ♂; CHINA, 'China: Sichuan, Chengdu, Dujiangyan, Zipingpu Town, Ling-yan-guan-yin-shan Park, 31°1'48.48"N, 103°36'47.12"E, 1190 m, 2.V.2020, Z. Wang, L. He & C. Zhou leg., under rock with *Lasius* ants, 四川成都都江堰紫坪铺镇灵岩观音山景区' (SNUC).

Type locality: Ling-yan-guan-yin-shan Park, Zipingpu Town, Dujiangyan, Chengdu, Sichuan, China.

Diagnosis: Male body length 2.2 mm. Anterior margin of clypeus roundly angulate at middle. Antennomeres 4 slightly more than 1.4 times as long as antennomeres 3.

Meso- and metatrochanters with large triangular spine; mesofemora angulate at middle of ventral margin. Aedeagus with small 'apical part'. Female unknown.

Description: Male. Body (Fig. 1A) length 2.2 mm; reddish brown. Head (Fig. 1B) longer than wide, length from anterior margin of clypeus to head base (excluding occipital constriction) 0.43 mm, width across eyes 0.29 mm; anterior margin of clypeus angulate,

pointed at middle; each eye composed of about 20 facets; antennomeres 3 and 4 each much longer than antennomeres 1 and 2 (Fig. 2A); length of antennomeres 2-4 0.05, 0.23, 0.33 mm, respectively; antennomeres 4 slightly more than 1.4 times as long as antennomeres 3, broadening from base toward apex, apically truncate. Pronotum (Fig. 1B) subglobose, about as long as wide, length along midline 0.44 mm, maximum width

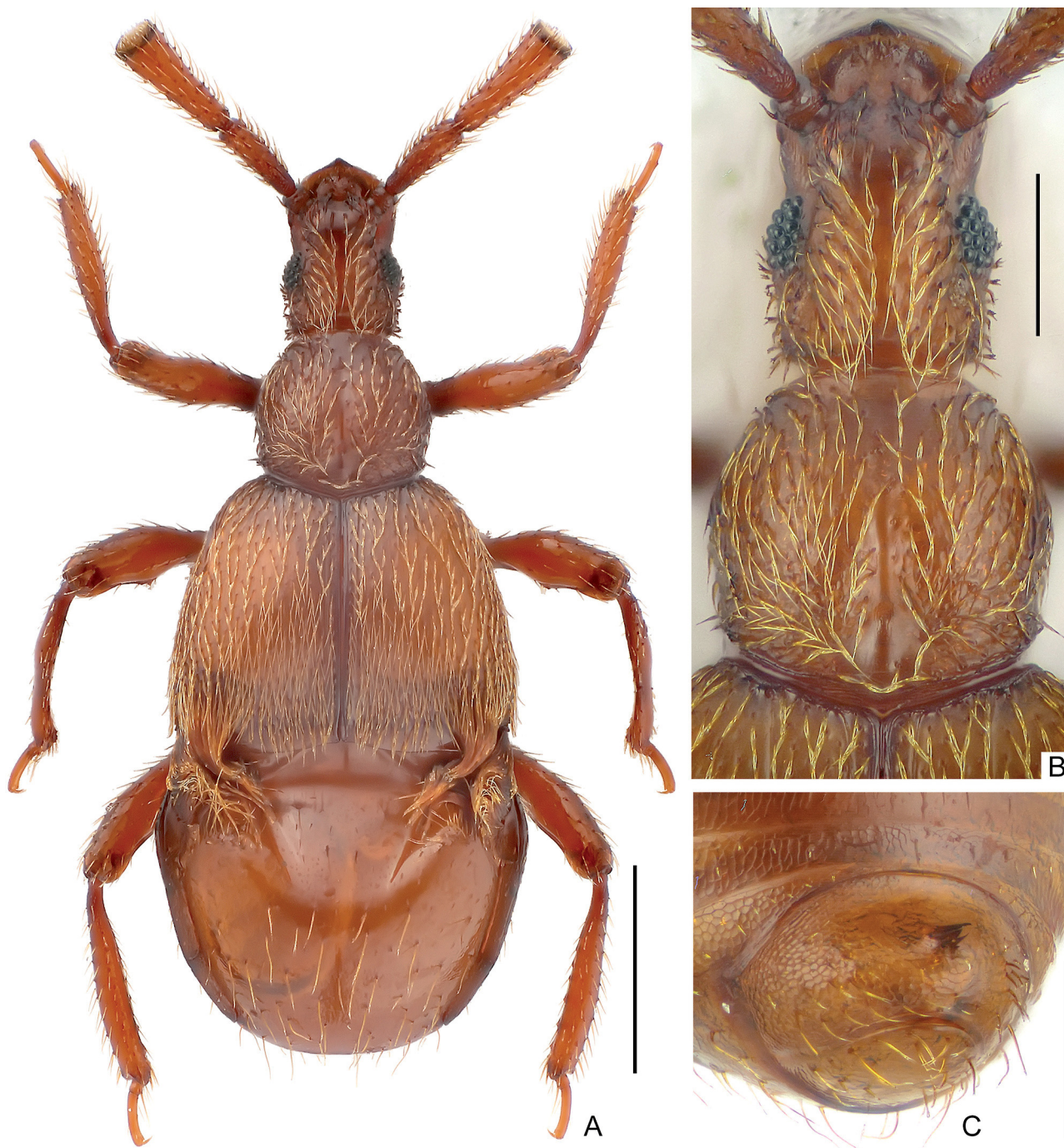


Fig 1. *Diartiger wangzheni* sp. nov. male. (A) Dorsal habitus (B) Head dorsum and pronotum. (C) Tergite 5 (VIII) and sternite 6 (VIII), showing black thickened setae at middle. Scale bars: 0.5 mm in A; 0.2 mm in B-C.

0.42 mm. Elytra (Fig. 1A) much wider than long, length along suture 0.58 mm, maximum width 0.84 mm; disc lacking linear microsculpture; with sub-triangular tufts of setae at posterolateral margins (Fig. 2B). Prosternum (Fig. 2E) roughly sculptured medially. Mesoventrite (Fig. 2E) with short intercoxal ridge. Metaventrite (Fig. 2E) convex, densely setose medially, lateral areas with distinct linear microsculpture. Mesotrochanters

(Fig. 2C) with large triangular ventral spine, mesofemora (Fig. 2C) angulate on ventral margin at middle; metatrochanters (Fig. 2D) with distinct ventral spine slightly smaller than that of mesotrochanters. Abdomen large, wider than long, much wider than elytra, length along midline 0.75 mm, maximum width 0.91 mm; composite tergite broadly and deeply concave mediobasally, with tufts of curved trichomes

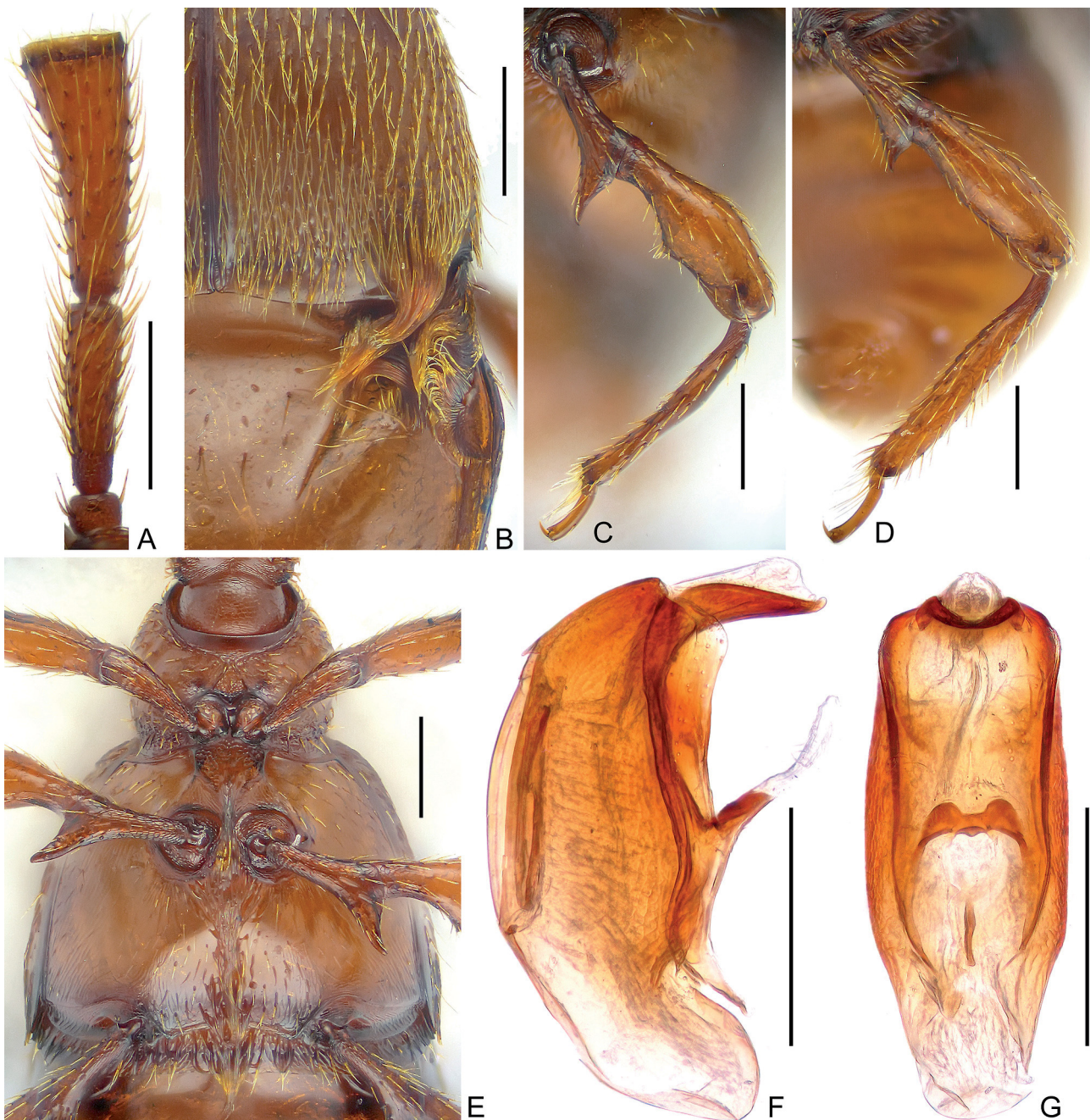


Fig 2. *Diartiger wangzheni* sp. nov. male. (A) Right antenna (B) Elytral apex and abdominal base, showing trichomes. (C) Right middle leg (D) Right hind leg (E) Prosternum and meso- and metaventrite. (F, G) Aedeagus, in lateral (F) and ventral (G) view. Scale bars: 0.2 mm.

at basolateral region (Fig. 2B), first pair of paratergites with curved trichome (Fig. 2B). Sternite 6 (VIII) with bunch of short, thick setae at middle. Aedeagus (Fig. 2F, G) moderately sclerotized, length 0.46 mm; median lobe at apex narrowing and strongly curved ventrad, with membranous part at dorso-apical side.

Female. Unknown.

Comparative notes: The males of the new species can be readily separated from those of all congeners by the relatively stouter habitus, the unique spination of the legs, and the configuration of the aedeagus. An identification key to males, updated from Yin & Li (2014), is provided below to aid in the discriminations of the Chinese species:

Biology: The male was found with *Lasius* ants (Fig. 3C) under a flat rock (Fig. 3B) in a mixed forest (Fig. 3A).

Distribution: China (Sichuan).

Etymology: The new species is named after Zhen Wang, one of the collectors of the holotype.

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|----|--|--|
| 1A | Dorsal surface of head and pronotum with sparse, thick, and suberect setae (Yin <i>et al.</i> , 2010: fig. 1). Mesotrochanters lacking spine (Yin <i>et al.</i> , 2010: fig. 4); mesofemora with large, curved projection. (Zhejiang) | |
| | <i>D. songxiaobini</i> (Yin & Li, 2010) | |
| 1B | Dorsal surface of head and pronotum with dense, fine setae. Mesotrochanters with spine of various forms | 2 |
| 2A | Fourth antennomeres more than twice as long as third antennomeres | 3 |
| 2B | Fourth antennomeres less than twice as long as third antennomeres | 4 |
| 3A | Mesofemora with sharp ventral spine at base (Yin & Li, 2013: fig. 2C); mesotibiae with triangular tubercle near middle (Yin & Li, 2013: fig. 2C); mesal margin of metatibiae distinctly protuberant at basal 1/4, then strongly curved, curved area with very dense setae (Yin & Li, 2013: fig. 2D). (Anhui) | <i>D. dentatus</i> Yin & Li, 2013 |
| 3B | Ventral margin of mesofemora regularly protuberant at base, lacking spines (Yin & Li, 2014: fig. 2C); mesotibiae lacking tubercles near middle (Yin & Li, 2014: Fig. 2C); mesal margin of metatibiae moderately protuberant at basal 1/4, then moderately curved, curved area with relatively sparse setae (Yin & Li, 2014: Fig. 2D). (Zhejiang) | <i>D. zhejiangensis</i> Yin & Li, 2014 |
| 4A | Mesofemora angularly protuberant at middle (Fig. 2C). Sternite 6 (VIII) with bunch of short, thick setae at middle (Fig. 1C) (Sichuan) | <i>D. wangzheni</i> Yin & He, sp. nov. |
| 4B | Mesofemora smooth at middle, lacking protuberances nor tubercles or spines. Sternite 6 (VIII) lacking bunch of short, thick setae at middle | 5 |
| 5A | Anterior margin of clypeus distinctly angulate (Yin & Li, 2013: fig. 1B) (Anhui) | <i>D. yaoluopingensis</i> Yin & Li, 2013 |
| 5B | Anterior margin of clypeus approximately rounded | 6 |
| 6A | Mesotrochanters with large, long, and blunt ventral projection (Nomura, 1997: fig. 6km., km-a). Median lobe of aedeagus with large 'apical part', area near apex lacking dense setae (Nomura, 1997: fig. 12km.). (Yunnan) | <i>D. kunmingensis</i> Nomura, 1997 |
| 6B | Mesotrochanters with large and sharp ventral spine (Yin, 2018: fig. 2D). Median lobe of aedeagus with small 'apical part', area near apex with dense setae (Yin, 2018: fig. 2F, G) (Beijing) | <i>D. beijingensis</i> Yin, 2018 |



Fig. 3. Collection environment (A), habitat (B), and a living adult *in situ* (C) of *Diartiger wangzheni* sp. nov.

REFERENCES

- Chandler D. S. 2001. Biology, morphology, and systematics of the ant-like litter beetles of Australia (Coleoptera: Staphylinidae: Pselaphinae). *Memoirs on Entomology International* 15: 1-560.
- Newton A. F. 2020. StaphBase: Staphyliniformia world catalog database (version Nov 2018). In: Roskov Y., Ower G., Orrell T., Nicolson D., Bailly N., Kirk P. M., Bourgoin T., DeWalt R. E., Decock W., van Nieukerken E., Zarucchi J., Penev L. (eds), *Species 2000 & ITIS Catalogue of Life*, 2020-02-24. Digital resource at www.catalogueoflife.org/col. Species 2000 : Naturalis, Leiden, the Netherlands. (last accessed 2020-05-15)
- Nomura S. 1997. A systematic revision of the clavigerine genus *Diartiger* Sharp from East Asia (Coleoptera, Staphylinidae, Pselaphinae). *Esakia* 37: 77-110.
- Sharp D. 1883. Revision of the Pselaphidae of Japan. *Transactions of the Entomological Society of London* 1883: 291-331.
- Yin Z.-W. 2018. New species and records of myrmecophilous Pselaphinae (Coleoptera: Staphylinidae) from China. *Coleopterists Bulletin* 72(1): 161-165.
- Yin Z.-W., Li L.-Z. 2010. *Microdiartiger songxiaobini* sp. nov. In: Yin Z.-W., Li L.-Z., Zhao M.-J. 2010. Contributions to the knowledge of the myrmecophilous pselaphines (Coleoptera, Staphylinidae, Pselaphinae) from China. II. *Microdiartiger* (Pselaphinae, Clavigeritae) new to China, with description of a new species. *Sociobiology* 56(3): 639.
- Yin Z.-W., Li L.-Z. 2013. Notes on synonymy of *Diartiger* Sharp with *Microdiartiger* Sawada (Coleoptera: Staphylinidae: Pselaphinae), with description of two new species from East China. *Zootaxa* 3717(3): 369-376.

Yin Z.-W., Li L.-Z. 2014. A new species of *Diartiger* Sharp (Staphylinidae, Pselaphinae, Clavigeritae) from the Fengyangshan - Baishanzu Nature Reserve, East China. *ZooKeys* 419: 129-135.

Yin Z.-W., L.-Z. Li., M.-J. Zhao. 2010. Contributions to the knowledge of the myrmecophilous pselaphines (Coleoptera, Staphylinidae, Pselaphinae) from China. II. *Microdiartiger* (Pselaphinae, Clavigeritae) new to China, with description of a new species. *Sociobiology* 56(3): 637-643.