

Taxonomy of the genus *Schizotus* (Coleoptera: Pyrochroidae) from China, with description of a newly recorded species

Zhao PAN, Guodong REN^①

The Key Laboratory of Zoological Systematics and Application, College of Life Sciences, Hebei University, Baoding, Hebei 071002, China

Abstract: The genus *Schizotus* Newman, 1838 is circumboreal in distribution. Two species of this genus, *S. cardinalis* (Mannerheim, 1853) and *S. yamaguchii* Kôno, 1936 are reported from China. The former one is newly recorded in China and redescribed and illustrated in this paper. A key to the known *Schizotus* species from China is presented.

Key words: Tenebrionoidea; taxonomy; key

中国裂赤翅甲属分类及一中国新纪录种（鞘翅目：赤翅甲科）

潘昭，任国栋^①

河北大学生命科学学院 河北省动物系统学与应用重点实验室，河北 保定 071002

摘要：裂赤翅甲属 *Schizotus* Newman, 1838 环北方分布。本文记述中国裂赤翅甲属 2 种，即深红裂赤翅甲 *S. cardinalis* (Mannerheim, 1853) 和山口裂赤翅甲 *S. yamaguchii* Kôno, 1936，前者为中国新纪录种。提供了中国已知种类的分种检索表，以及深红裂赤翅甲的形态描述、整体照和形态特征图。

关键词：拟步甲总科；分类；检索表

Introduction

Schizotus Newman, 1838, is a minor genus of the subfamily Pyrochroinae, exhibits a circumboreal distribution (Young & Pollock 2010). Four species are described from Palaearctic Region. Among them, only one species was previously recorded from China (Pollock & Young 2008). Blair (1914) revised this genus, including four species worldwide, and provided a key. The genus *Schizotus* is easily distinguishable from all other pyrochroine genera by the character of the head having cranial pits behind the level of the eyes in males (Blair 1914). Kôno (1936) described *S. yamaguchii* from Taiwan, meanwhile, representing the first record *Schizotus* from China.

While working on the specimens from Hebei University Museum (MHBU), we found the species of *S. cardinalis* (Mannerheim, 1853), which was collected from Hebei Province, China, making it the second species of *Schizotus* from China. This newly recorded species has only been briefly described by Mannerheim (1853), so it is redescribed and illustrated

presently. The other member of *Schizotus* from China is also briefly described, and a key is provided to separate these two known species in China. All examined specimens are deposited in MHBUS.

Taxonomy

Genus *Schizotus* Newman, 1838

Schizotus Newman, 1838: 374. Type species: *Schizotus cervicalis* Newman, 1838, by monotypy.

Pyrochroella Reitter, 1911: 385. Type species: *Pyrochroa pectinicornis* Linnaeus, 1758, by original designation.

Diagnosis. This genus is very similar to the genera *Dendroides* and *Pseudopyrochroa*. It had been completely misunderstood by previous entomologists before Blair (1914). The combination of the following characters supports the diagnosis of the genus: head subrectangular or suboval, with a pair of cranial pits in the middle of base, behind eyes in male; eyes moderate, separated in male by a space at least as wide as one of them; temple distinct, but not prominent.

Distribution. Palaearctic Region; Nearctic Region.

A key to the known *Schizotus* species from China

1. Head black, with a dark reddish spot on frons or without; the cranial pits of male completely separated by medial ridge, positioned behind the level of eyes; elytra without costae..... *S. cardinalis* (Mannerheim)
- . Head red; the cranial pits of male not separated, positioned interocularly; elytra with weak longitudinal costae..... *S. yamaguchii* Kôno

1. *Schizotus cardinalis* (Mannerheim, 1853) (Figs. 1–8), new record to China

Pyrochroa cardinalis Mannerheim, 1853: 302 (Type locality: East Siberia, Russia. Type deposition: Finnish Museum of Natural History, Helsinki, Finland); Gemminger & Harold, 1870: 2103.

Schizotus cardinalis: Pic, 1904: 36; Blair, 1914: 317; Pollock & Young, 2008: 416.

Schizotus cardinalis var. *innotaticeps* Pic, 1904: 26 (Type locality: Siberia, Russia. Type deposition: Muséum National d'Histoire Naturelle, Paris, France).

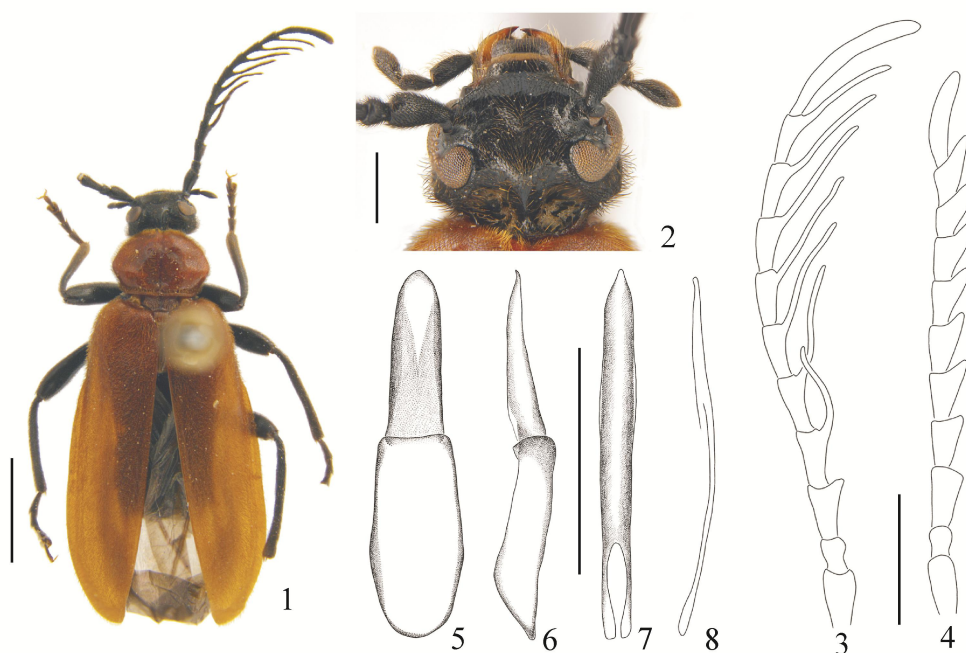
Redescription. Length from anterior of labrum to apex of elytra 7.8–10.1 mm; maximal elytral width 3.4–4.0 mm.

Male (Fig. 1). Color of mandibles and anterior margin of clypeus yellowish-brown, pronotum, scutellum and elytra orange-reddish, last two segments of abdomen yellowish; other parts of body black. Body with moderately erect yellow setae.

Cranial surface generally finely, sparsely shallow punctate. Vertex slightly transversely depressed between eyes, depression curved backward in the middle. Eyes moderately coarsely faceted. Cranial pits (Fig. 2) located in the middle at base, paired, completely separated by mesal ridge, deeply impressed, each with inwardly erect yellow to golden setae. Antennomeres (Fig. 3) coarsely faceted, densely clothed with short black setae and relatively longer yellow setae; pedicel small, moniliform, approximately two-thirds length of first flagellomere; flagellum pectinate, flagellomeres I–VIII similar in length, IX approximately triple length of VIII; ramus of each flagellomere evidently longer than that of the preceding flagellomere except that ramus of I very short and ramus of VIII shorter than length of IX.

Pronotum wider than head but narrower than elytra; smooth, densely, shallowly punctate; disc with a shallow subrounded depression on each side, a transverse furrow on basal margin, and a longitudinal furrow in the middle, furrow widened at base. Elytra elongate, covering abdomen, slightly wider apically, longitudinal costae obsolete. Legs slender; femora widened to apex; tibiae with two spurs at apex.

Eighth sternite narrowed apically, its distal margin broad and emarginate. Genitalia with tegmen dorsad the median lobe. Parameres completely fused apically (Fig. 5), recurved hooked at apex (Fig. 6). Penis somewhat dorsoventrally flattened, apically produced into a bluntly rounded, recurved hook (Figs. 7, 8).



Figures 1–8. *Schizotus cardinalis* (Mannerheim, 1853). 1. Habitus, male, dorsal view; 2. Head, male, dorsal view; 3. Antennae, male; 4. Antennae, female; 5. Tegmen, dorsal view; 6. Tegmen, lateral view; 7. Penis, dorsal view; 8. Penis, lateral view. Scale bars = 2 mm (Fig. 1); 0.5 mm (Fig. 2); 1 mm (Figs. 3–8).

Female. Similar, although slightly larger than male, lacking any signs of cranial pits. Frons with a dark reddish spot at center sometimes. Flagellum of antennae serrate, flagellomeres stockier than those of male; the ramus of each flagellomere evidently shorter than that of the preceding flagellomere (Fig. 4).

Specimens examined. **China**, Hebei Province, Weichang County, 1♂, Saihanba, Disanxiang, Beicha, N42°18.411', E117°27.768', Elev. 1669 m, 26-V-2015; 1♂, Jizi, Toudaocha, N41°49'24.8", E117°37'28.4", Elev. 1547 m, 26-V-2015, Shengguo CAI leg.; 1♀, Mt. Longtoushan, Jizi, Toudaocha, N41°57'36.1", E117°45'25.4", Elev. 1258 m, 26-V-2015, Di LI leg.; 1♀, Zhongmiaochang, Chazi, Xiaoquangou, N42°5'34.9", E117°25'5.5", Elev. 1288 m, 27-V-2015, Jingjing MA leg.; 2♀, Xinfeng, Guapaishu, Toudaowa, N41°42'59.8", E118°2'2.9", Elev. 1260 m, 28-V-2015, Li MA & Jingjing MA leg.; 1♀, Taoshan, Liutangzi, Dadouzigou, N42°4'3.4", E117°18'34.9", Elev. 1306 m, 01-V-2015, Ensheng ZHANG leg.;

1♀, Siheyong, Huzi, Beicha, N41°51'39.2", E117°18'34.9", Elev. 1151 m, 03-V-2015, Li MA leg.

Distribution. China (Hebei); Russia (East Siberia, Far East).

Remarks. This species is relatively widely distributed across the Palaearctic Region, especially from Siberia of Russian and North China. Presently, we only have a few specimens from northern Hebei Province, China. In the communication with Prof. Daniel K Young, he told the authors that he also had some specimens collected from Shaanxi Province, China. Without examining Young's specimens, this geographic record is not included in the present paper.

2. *Schizotus yamaguchii* Kôno, 1936

Schizotus yamaguchii Kôno, 1936: 1 (Type locality: Taiwan, China. Type deposition: Hokkaido University, Sapporo, Japan); Pollock & Young, 2008: 417.

Diagnosis. Length from anterior of labrum to apex of elytra 10.0–11.0 mm. Body dark brown to black; color of pronotum, scutellum and elytra red, head red to dark red. Male cranial pits horseshoe-shaped, positioned interocularly, deeply depressed. Antennae pectinate; flagellomere I longer than II, ramus of I short, ramus of II longer than its length. Pronotum with a broad posterior furrow in the middle. Each elytrum with 4–5 weak longitudinal costae. (Kôno 1936).

Distribution. China (Taiwan).

Remarks. According to the original description of *S. yamaguchii* Kôno, 1936, the cranial pits are positioned interocularly. However, this feature does not conform to the definition of the genus *Schizotus*, so we question the generic placement of *S. yamaguchii*; it looks more like a member of the genus *Pseudopyrochroa* Pic, 1906 or *Dendroides* Latreille, 1810. This will require confirmation after examination of the type specimens in the future.

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References

- Blair KG. 1914. A revision of the family Pyrochroidae (Coleoptera). *The Annals and Magazine of Natural History* (8), 13: 310–326.
- Gemminger M & Harold E von. 1870. Familia LVII. Pyrochroidae. In: Gemminger M & Harold E von (Eds.), *Catalogues Coleopterorum Hucusque Descriptorum Synonymicus et Systematicus. Tom. VII. Tenebrionidae, Nilionidae, Pythidae, Melandryidae, Lagriidae, Pedilidae, Anthicidae, Pyrochroidae, Mordellidae, Rhipidophoridae, Cantharidae, Oedemeridae*. E. Deyrolle fils, Paris/Williams & Norgate, London, pp. 2103–2105.

- Kôno H. 1936. Über die Käfersammlung des Museums "Umeno Konchû Kenkiujo" I. Pyrochroidae, Meloidae, Rhipiphoridae. *Bulletin of the Umeno Entomological Laboratory, Kurume*, 3: 1–6.
- Mannerheim CG von. 1853. Insectes coléoptères de la Sibérie orientale, nouveaux ou peu connus. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 25(4) [1852–1853]: 273–309.
- Newman E. 1838. Entomological notes. *The Entomological Magazine*, 5: 372–402.
- Pic M. 1904. Diagnoses de coléoptères asiatiques provenant surtout de Sibéria. *L'Échange, Revue Linnéenne*, 20: 25–27.
- Pollock DA & Young DK. 2008. Family Pyrochroidae Latreille, 1807. In: Löbl I & Smetana A (Eds.), *Catalogue of Palaearctic Coleoptera (Vol. 5: Tenebrionoidea)*. Apollo Books, Stenstrup, pp. 414–417.
- Reitter E. 1911. *Fauna Germanica. Die Käfer des Deutschen Reiches. Nach der analytischen Methode bearbeitet. III. Band.* K. G. Lutz, Stuttgart, 436 pp.
- Young DK & Pollock DA. 2010. Pyrochroidae Latreille, 1807. In: Leschen RAB, Beutel RG & Lawrence JF (Eds.), *Handbook of Zoology. Coleoptera, Beetles. Vol. 2. Morphology and Systematics (Elateroidea, Bostrichiformia, Cucujiformia partim)*. Walter de Gruyter GmbH & Co. KG, Berlin/New York, pp. 715–721. <http://dx.doi.org/10.1515/9783110911213.681>