Linzer biol. Beitr.	55/2	705-711	29.12.2023

Contribution to the knowledge of the subgenus *Homalopus* CHEVROLAT, 1837 of *Cryptocephalus* GEOFFROY, 1762 from China (Coleoptera, Chrysomelidae, Cryptocephalinae)

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A b s t r a c t : A new species of the genus *Cryptocephalus* GEOFFROY, 1762 is described from China: *Cryptocephalus hengduanensis* nov.sp.. The new species is placed in the subgenus *Homalopus*, these are the first records of the subgenus from Sichuan and Yunnan. General view and aedeagus are illustrated as well as the related species *Cryptocephalus siedei* WARCHAŁOWSKI, 2001. The distributions of the Chinese species of *Homalopus* are listed.

K e y w o r d s : Coleoptera, Chrysomelidae, Cryptocephalinae, *Cryptocephalus*, *Homalopus*, China, Sichuan, Yunnan, new species.

Introduction

The genus *Cryptocephalus* belongs to the tribe Cryptocephalini, one out of four tribes in the subfamily Cryptocephalinae (GÓMEZ-ZURITA & CARDOSO 2021). Currently eight subgenera of *Cryptocephalus* are accepted, one out of these is the subgenus *Homalopus* CHEVROLAT, 1837. In this subgenus, 27 species and subspecies are placed. In Europe and Asia, 16 and 12 species were recorded, respectively. One species, *C. coryli* LINNAEUS, 1758, is widely distributed. Otherwise the subgenus is especially species-rich in the European (nemoral) and Mediterranean regions with 12 and 15 species, respectively (SCHÖLLER 2023). From China, five species were recorded so far only. In the present contribution, the first species extending its distribution to the Oriental region, i.e. to Yunnan, is described.

Material and methods

All measurements were made using an ocular grid mounted on MBS-20 stereomicroscope. Measurements of all segments were taken at their widest part, unless otherwise specifically stated. All proportions of antennomeres and tarsomeres are given in standard units (1 standard unit = 0.025 mm). All photos of the new species described in this article were taken by Romantsov. Photographs of the habitus were taken using a Canon EOS 80D digital camera with a combined Canon EF 70–200 mm f/4.0L IS USM and inverted Olympus OM-System Zuiko Auto-T 100 mm f/ 2.8. Photographs of aedeagus were taken using a Canon EOS 80D digital camera with a combined Canon EF 70–200 mm f/4.0L IS

USM and inverted Canon EF-S 24 mm F2.8 STM lenses. Images at different focal planes were combined using Zerene Stacker Professional 1.04 software. Photographs of *Cryptocephalus siedei* WARCHAŁOWSKI, 2001 were taken by Keita Matsumoto from the Natural History Museum London. The exact label data (including spacing of letters) are cited for each type specimen; a single forward slash (/) separates data on different rows and a double forward slash (//) separates labels. The data are printed and the labels are white if not mentioned otherwise, the author's remarks are presented in brackets. The following abbreviations are used for depositories of types:

MS – private collection of Matthias Schöller (Berlin, Germany);

NHM – Natural History Museum, London, United Kingdom;

PR – private collection of Pavel Romantsov (St. Petersburg, Russia);

ZIN – Zoological Institute of the Russian Academy of Sciences (St. Petersburg, Russia).

Taxonomy

***Cryptocephalus* (*Homalopus*) *hengduanensis* nov.sp.**

H o l o t y p e : ♂ (ZIN): // CH, Yunnan, NW Shangri-La/ 3.35 km ENE Nixi / 28°04'41" N 99°31'35" E / 14.06.2019, H=3865 m / Belousov, Davidian, Kabak leg. // Holotypus / *Cryptocephalus hengduanensis* / des. Romantsov & Schöller [red] /.

P a r a t y p e s : 1♀ (PR), // CH, Sichuan, NW sl. Jiuding Shan / E Maoxian, 2.9 km E Heicitang / 31°40'09" N 103°54'05" E / 01.07.2019, H=2580 m / Belousov, Davidian, Kabak leg. //; 1♂ (MS): // CHINA Yunnan / 25 km E Zhongdian env. / Bita lake h=3500 m. / 22 vi 1998, leg. S. Murzin // all paratypes with our label // Paratypus / *Cryptocephalus hengduanensis* / des. Romantsov & Schöller [red] //.

D e s c r i p t i o n : Holotype. Body rather narrow, elongate (about 1.9 times as long as wide). Head lustrous, black with two small oblong yellow spots along upper inner part of eyes. Antennae black, underside of apex of antennomere I and antennomere II brown. Pronotum black with narrow anterior and wider lateral margins brown, but all narrow edgings remain black. Two small transverse spots in basal third brown. Elytra black with yellow-brown pattern consisting of narrow basal (interrupted on humeral tubercles), lateral and sutural borders merging with large apical spot (not reaching lateral edge); longitudinal middle stripe starting from basal border near scutellum and just not reaching apical spot; short transverse stripe connecting longitudinal middle stripe to sutural border. However, the narrow basal, lateral and sutural edgings of elytra remain black. Epipleurae brown. Legs black except for brown coxa and trochanter. Ventral side (including mesoepimera) and pygidium black. Body length 4.2 mm, width 2.2 mm. General view as in Fig. 1.

H e a d : Labrum with very shallowly concave anterior margin and rounded anterior angles; transverse; its surface covered with very fine punctures with several setae along anterior margin. Clypeus triangle with concave anterior margin; its surface almost impunctate with several setae. Terminal palpomere of labial palpi with truncate apex. Frontal tubercles slightly convex, oblong triangular, separated from each other by a thin deep impression; its surface with several oblique wrinkles. Eyes medium sized, slightly convex, elongate (2.2 times as long as wide) with rather deeply notched canthus; interocular space about 2.2 times as wide as transverse diameter of eye. Frons wide, flat, widely depressed in front of frontal tubercles, with narrow longitudinal sulcus in middle,

covered with small, dense punctures. Occiput convex with fine, sparse punctures. Antennae long, fine, 1.2 times shorter than body length, with short adpressed hairs. Antennomere I rather large, slightly club-shaped; antennomeres II–IV almost cylindrical, antennomeres V–X slightly widened toward apices, last antennomere pointed at apex. Length ratio of antennomeres I–XI as 12 : 5 : 10 : 12 : 15 : 15 : 15 : 16: 14 : 14 : 16.

T h o r a x : Pronotum strongly convex, narrowed from base to apex, transverse (about 1.52 times as wide as long). Pronotal surface shining, sparsely covered with very fine punctures. Anterior margin almost straight, narrowly bordered; posterior margin convex, unbordered, with teeth. Rounded lateral margins slightly flattened, separated from rest of pronotal surface by a thin groove bearing small punctures, bordered from outside with thin edging, in dorsal view visible in whole length. Anterior angles almost rectangular, posterior ones slightly obtuse. Prothorax black, hypomeron with longitudinal ridges, intercoxal prosternal process densely punctured, apically with a small acute tooth, laterally with distinct carinae, basally truncate. Scutellum elongate (about 1.65 times as long as wide), with widely rounded apex; its surface convex, smooth with several scattered, small punctures. Elytra subcylindrical, widened in middle in dorsal view, 2.24 times as long and 1.09 times as wide (across humeri) as pronotum. Each elytron about 2.5 times as long as wide, with rounded-blunt apex. Humeral calli well developed. Elytral surface shining, covered by rather large punctures, the puncturation tending to form longitudinal, semiregular rows (more noticeable along suture and on apical slope). Interstices transverse wrinkled. Epipleura rather convex, narrow even at base, disappearing approximately at the level of hind coxae. Epipleural surface lustrous, impunctate. Hind wings present. Legs rather robust, tibiae not curved. Protarsomere I enlarged, about 1.7 times as long as wide and 1.1 times narrower than protarsomere III. Ratio of length of protarsomeres as follows: 17 : 9 : 12 : 14. Mesotarsomere I elongated and slightly enlarged, about 2.3 times as long as wide; 1.33 times narrower than mesotarsomere III. Ratio of length of mesotarsomeres as follows: 17 : 8 : 10 : 12. Metatarsomere I relatively short and not enlarged, 2.33 times as long as wide; about 1.5 times narrower than metatarsomere III. Ratio of length of metatarsomere as follows: 14 : 8 : 9 : 12. Tarsal claws with very weak, low and obtuse tooth on base.

A b d o m e n completely black with adherent white setae. Ventrite V with a shallow, shiny pit. Pygidium slightly convex with rounded-blunted apex. Aedeagus (Figs 5–7) bifurcate at apex with two slightly curved thin lobes in dorsal view. In lateral view aedeagus curved, expanded before forming of lobes. Underside of aedeagus longitudinally concave with complex sculpture and tufts of setae at sides. Length of aedeagus about 2.1 mm, width 0.55 mm.

F e m a l e : Similar to male but with larger brown spots on pronotum and partially reduced longitudinal stripe and perpendicular stripe on elytra (Fig. 2). Propleurae sparsely punctate with longitudinal wrinkles. Intercoxal process of prothorax wide and slightly concave, its posterior margin concave with sharp angles. Intercoxal process of mesothorax rectangular with rounded-triangular anterior edge contacting with concavity of intercoxal process of prothorax. Meso- and metathorax, episterna and epimera with fine microsculpture and few setae. Protarsomere I not enlarged. Abdomen with five visible ventrites of which ventrite I is largest, ventrite II medium sized, ventrite III narrow, ventrite IV strongly compressed, not visible at middle. Ventrite V large, with deep, lonitudinal oval egg-hollow. Body length 5.2 mm.

Variability. In the male paratype, the yellowish pronotal spots are sightly larger compared to the holotype, and antennomere III is light brown as in the female. Tarsi are brown. Body length is 4.5 mm, width 2.4 mm, length of aedeagus 2.2 mm.

D i f f e r e n t i a l d i a g n o s i s : The new species is most similar to *C.* (*Homalopus*) *siedei*. From *C. siedei*, *C. hengduanensis* nov.sp. differs by the denser puncturation of the pronotum (sparse in *C. siedei*), coarse puncturation of the elytra (finer in *C. siedei*), yellow labrum (black in *C. siedei*), broadened fore-tarsi in male (fore- and mid-tarsi similar in *C. siedei*, Fig. 4), broad antennomeres in male (slender antennomeres in *C. siedei*, Fig. 4), dense and coarse puncturation of fore-tibia and fore-femur (puncturation sparse and finer in *C. siedei*), pronotum with yellow apical and lateral margins (completely black in *C. siedei*, Fig. 4), more elongate pronotum with ratio length : maximum width 1.0 : 1.5 (1.0 : 1.6 in *C. siedei*), colouration of elytra (yellow with black margins and humeral spot black in *C. siedei* only, Fig. 4), parallel-sided scutellum (triangular in *C. siedei*), elytron plain lateral to scutellum (elytron elevated, swollen lateral to scutellum in *C. siedei*), dorsal side of aedeagus smooth (with transverse wrinkles in *C. siedei*, Fig. 8), central aedeagal apical denticle broader, and lateral lobes of aedeagus thinner and in lateral view in axis of aedeagal lobe (central aedeagal apical denticle narrower, especially at base (Fig. 10), and lateral lobes of aedeagus thinner and in lateral view bent upwards in *C. sidei*, Fig. 9). In *C.* (*Homalopus*) *tarsalis*, the lateral aedeagal appendices are shorter and more triangular, among several other differential characters. *C. cunctatus* is smaller, the scutellum is triangular (parallel-sided in *C. hengduanensis* nov.sp.), and the elytra are reddish.

E t y m o l o g y : The name *hengduanensis* of the new species refers to the Hengduan mountains in the Chinese provinces of Sichuan and Yunnan, where the type specimens were collected.

D i s t r i b u t i o n : China (Sichuan, Yunnan).

***Cryptocephalus siedei* WARCHAŁOWSKI, 2001**

Cryptocephalus siedei WARCHAŁOWSKI, 2001: 81; LOPATIN et al. 2010: 605 (catalogue).

H o l o t y p e : ♂ (NHM): // CHINA (Shaangsi) / Tsinling mts. 1600 m. / Foping Nature reserve / 33°51'N, 107°57'E, 30. IV.1999 / leg. V. Siniaev et A. Plutenko // Specimen / pragaense in mercatu / 1999 / coemptum // *Cryptocephalus* / (*Heterichnus*) / *siedei* mihi / det. A. Warchałowski // Holotypus [red] // Prof. A. Warchałowski /collection / BMNH(E) 2017–191. // NHMUK014663044 [QR code] //.

Discussion

Including the species described here new to science, six species in the subgenus *Homalopus* are known from China. These occur in the following provinces:

C. coryli (LINNAEUS, 1758): Shanxi

C. cunctatus CLAVAREAU, 1913: Beijing, Hebei, Heilongjiang, Shandong

C. hengduanensis nov.sp.: Sichuan, Yunnan

C. macrodactylus GEBLER, 1830: Xinjiang

C. siedei WARCHAŁOWSKI, 2001: Shaanxi

C. tarsalis WEISE, 1887: Qinghai

The exact borders of the Oriental region are still subject to ongoing resarch, however, according to the traditional subdivision (EMELJANOV 1974), Yunnan is part of the Oriental region while the Chinese provinces listed above for the other Chinese species of *Homalopus* belong to the Palaearctic region. Therefore *C. hengduanensis* nov.sp. is the first species of *Homalopus* known extending its distribution to the Oriental region.

Acknowedgements

We express our sincere gratitude to I. Belousov, G. Davidian and I. Kabak (All-Russian Institute of Plant Protection, St Petersburg-Pushkin, Russia), and S. Murzin who collected this new species. The authors thanks M. Geiser and Keita Matsumoto (Natural History Museum, London, UK) who enabled us to study the holotype of *C. siedei* and took type photographs.

Zusammenfassung

Eine neue Art der Gattung *Cryptocephalus* GEOFFROY, 1762 wird aus China beschrieben: *Cryptocephalus hengduanensis* nov.sp.. Die neue Art wird in die Untergattung *Homalopus* gestellt, dies sind die ersten Nachweise dieser Untergattung aus Sichuan und Yunnan. Habitus und Aedeagus werden illustriert, ebenso die verwandte Art *Cryptocephalus siedei* WARCHAŁOWSKI, 2001. Die Verbreitung der chinesischen Arten von *Homalopus* wird aufgelistet.

Literature

EMELJANOV A.F. (1974): Proposals on the classification and nomenclature of ranges. — Entomologicheskoe Obozrenie **53**: 497-522.

GÓMEZ-ZURITA J. & A. CARDOSO (2021): Molecular systematics, higher-rank classification and Gondwanan origins of Cryptocephalinae leaf beetles. — Zoologica Scripta **50**/5: 529-688.

LOPATIN I., SMETANA A. & M. SCHÖLLER (2010): Tribe Cryptocephalini Gyllenhal, 1813, genus *Cryptocephalus* Geoffroy, 1762, pp. 580-606. — In: LÖBL I. & A. SMETANA (eds) Catalogue of Palaearctic Coleoptera, Volume 6, Chrysomeloidea. Apollo Books, Stenstrup, Denmark, 924 pp.

SCHÖLLER M. (2023): Diversity and distribution of the Palaearctic Cryptocephalini and Pachybrachini (Coleoptera: Chrysomelidae). — Faunistic Entomology **76**: 145-170.

WARCHAŁOWSKI A. (2001): *Cryptocephalus siedei* sp. nov., a new Asiatic representative of subgenus *Homalopus* Chevrolat, 1837 (Coleoptera: Chrysomelidae: Cryptocephalinae). — Annales Zoologici (Warszawa) **51**/1: 81-83.).

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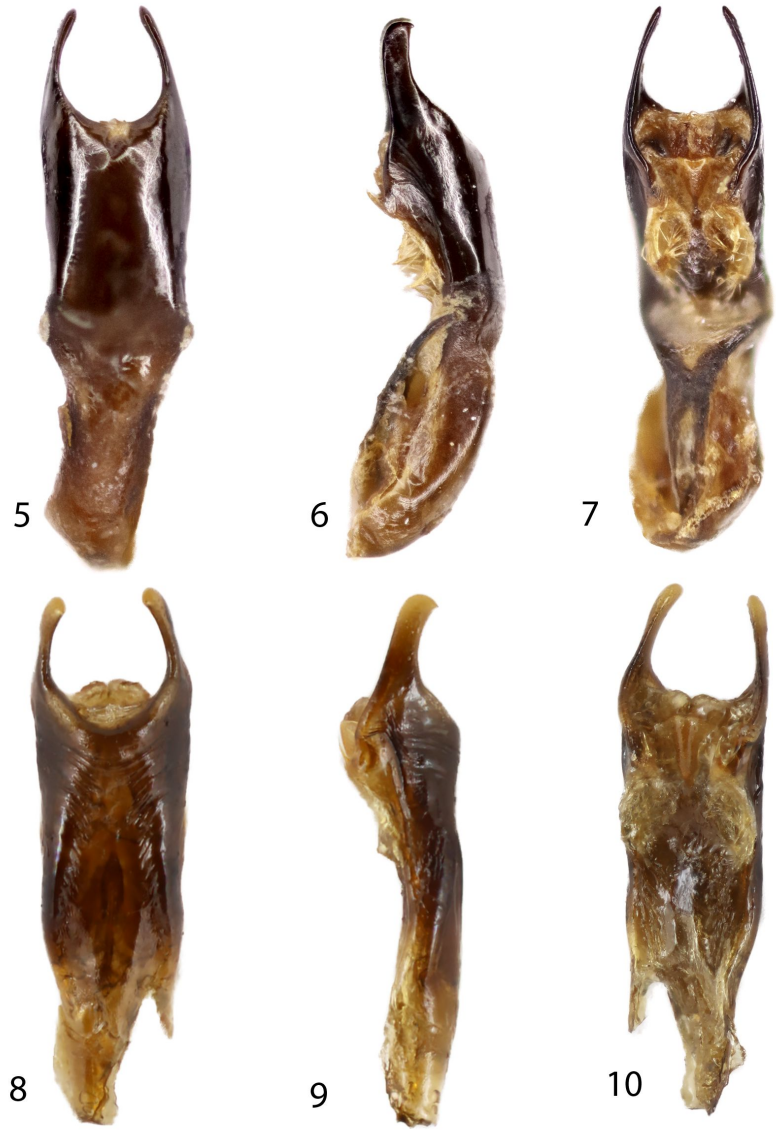
Figs 1-4: *Cryptocephalus* spp., general view and labels (**1**) *C. hengduanensis* nov.sp. habitus male, holotype; (**2**) *C. hengduanensis* nov.sp. habitus female, paratype; (**3**) *C. siedei*, labels male holotype; (**4**) *C. siedei*, habitus male holotype.



Figs 5-10: *Cryptocephalus* spp., aedeagi of holotypes (**5**) *C. hengduanensis* nov.sp. dorsal view; (**6**) *C. hengduanensis* nov.sp. lateral view; (**7**) *C. hengduanensis* nov.sp. ventral view; (**8**) *C. siedei* dorsal view; (**9**) *C. siedei* lateral view; (**10**) *C. siedei* ventral view.