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REVIEW OF THE SUBGENUS *HABRONYCHUS* (*MACROHABRONYCHUS*), WITH DESCRIPTIONS OF TWO NEW SPECIES (COLEOPTERA, CANTHARIDAE)¹

Yu-Xia Yang,^{2,3} Michel Brancucci,^{4*} and Xing-Ke Yang^{3*}

ABSTRACT: The validity of the genus *Habronychus* and its subgenus *Macrohabronychus* is discussed. The latter is reviewed in detail and *H. (M.) bicoloratus* sp. nov. (CHINA, Yunnan) and *H. (M.) parameratus* sp. nov. (NEPAL, Thodung) are described. A key for identification of the known world fauna is provided. The habitus, male genitalia and female 8th abdominal sternites of the new species are illustrated.

KEY WORDS: Coleoptera, Cantharidae, *Habronychus (Macrohabronychus)*, new species

The subgenus *Habronychus (Macrohabronychus)* was erected by Wittmer (1981) with *Anolisus parallelus* Champion, 1926 as the type species. Brancucci (2007) considered *Macrohabronychus* to be the valid genus name, because the description of the genus *Habronychus* (s.str.) was published a year later (Wittmer, 1982). Under this interpretation, *Habronychus* as the genus name appeared to be invalid. However, Kopetz (2008) restated the genus name *Habronychus*, considering the preliminary diagnosis given by Wittmer (1981) to be sufficient. In the latter study the author mentioned one species, *Anolisus rubincundus* Champion, 1926, which can therefore be considered the type species of the genus *Habronychus* by monotypy, although Wittmer (1982) explicitly designated another type species for that genus. Therefore, we follow Kopetz (2008) and use *Habronychus* Wittmer as the valid genus name, and *Macrohabronychus* Wittmer as one of its valid subgeneric names.

Nine species and subspecies of the subgenus *Habronychus (Macrohabronychus)* have been recognized to date; all are restricted to the Himalaya and adjacent areas.

In this study, we review the subgenus *Habronychus (Macrohabronychus)*, provide a key to all known species and describe two new species, *H. (M.) bicoloratus* sp. nov. (CHINA, Yunnan) and *H. (M.) parameratus* sp. nov. (NEPAL, Thodung). We also discuss relationships between the new and related species.

METHODS

The male genitalia were detached from the body under a stereoscopic microscope, cleared in 10% KOH solution for several minutes, then placed in a droplet

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of glycerol, and observed under a compound light microscope. Photographs of the types were taken with a Nikon Coolpix 5000 digital camera. The digital images were then imported into Adobe Photoshop 9.0 for labelling and composition into a plate. Line figures were drawn with the aid of a camera lucida mounted on a Leica MZ 12.5 stereomicroscope. The scanning electronic microscope photographs were edited in CorelDRAW 12.

The specimens examined in this study are dry mounted and deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZAS); Naturhistorisches Museum, Basel, Switzerland (NHMB); Coll. R. Constantin, Saint-Lô, France and Coll. A. Kopetz, Kerspleben, Germany.

SYSTEMATICS

Habronychus (Macrohabronychus) Wittmer, 1981

Habronychus (Macrohabronychus) Wittmer, 1981: 400. Type species: *Anolis parallelus* Champion, 1926. — Kopetz, 2008: 195.

Macrohabronychus s.str. Wittmer: Brancucci, 2007: 55; Kasantsev & Brancucci, 2007: 255.

Diagnosis. Head with a pair of smooth oval impressions near base of antennal sockets, a more or less distinct median longitudinal furrow extending from frons to vertex, antennae filiform, male with very narrow smooth longitudinal impressions on middle antennomeres, lacking in female; pronotum subquadrate, lateral margins slightly narrowed posteriorly; base of all tarsal claws with a pointed tooth in both sexes.

Other characters of this subgenus are the same as in the diagnosis of the genus, which can be found in Okushima and Satô (1999: 390).

Distribution. China (Yunnan and Xizang), India, Nepal, Bhutan, Sikkim.

Key to known species of the subgenus

Habronychus (Macrohabronychus) Wittmer

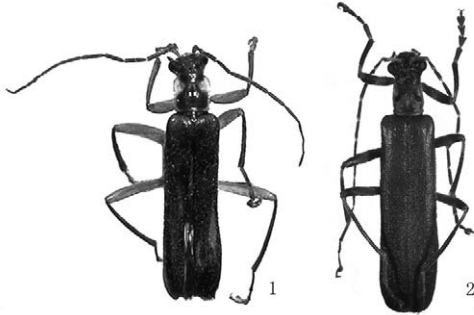
- 1. Pronotum uniformly yellow, without dark markings; dorsal plate of each paramere with apex widened and bent ventrally
*H. (M.) parallelus* (Champion, 1926)
- Pronotum never uniformly yellow, with at least one dark marking; dorsal plate of each paramere with apex narrowed, never bent ventrally as above ..
2
- 2. Pronotum yellow, with one large or 3 oblong dark markings; dorsal plate of each paramere reaching beyond apex of ventral process.....
*H. (M.) bicoloratus* sp. nov.
- Pronotum brown, with 3 to 7 small irregular dark markings; dorsal plate of each paramere not or just reaching apex of ventral process.....3

3. Dorsal plate of each paramere abruptly narrowed apically, laterophyse long4
 - Dorsal plate of each paramere gradually tapered apically, laterophyse short8
4. Dorsal plate of each paramere distinctly bent ventrally at apex, not reaching apex of ventral process of each paramere.....5
 - Dorsal plate of each paramere not distinctly bent ventrally at apex, reaching apex of ventral process of each paramere.....6
5. Elytra mostly darkened, more or less yellow at base
 -*H. (M.) multimaculatus* (Pic, 1916)
 - Elytra uniformly darkened
 -*H. (M.) multimaculatus lopchuensis* Wittmer, 1981
6. Elytra uniformly yellow; dorsal plates of parameres with inner margins almost parallel*H. (M.) septemnotatus* (Pic, 1907)
 - Elytra more or less darkened; dorsal plates of parameres with inner margins not parallel7
7. Elytra mostly yellow, with narrow darkened inner and outer margins; dorsal plate of each paramere slightly widened near apex
 -*H. (M.) inaequalis* (Pic, 1924)
 - Elytra more or less darkened, especially at apices, with narrow yellow outer margins; dorsal plate of each paramere not widened near apex
 -*H. (M.) limbatus* Wittmer, 1981
8. Ventral process of each paramere longer than dorsal plate.....
 -*H. (M.) parameratus* sp. nov.
 - Ventral process of each paramere shorter, at most as long as dorsal plate...9
9. Body smaller, 7.0–8.5 mm; head with a less distinct median longitudinal furrow; pronotum with anterior angles almost rounded; elytra darkened on apical half, with outer margins darkened on basal half
 -*H. (M.) harmandi* (Pic, 1924)
 - Body larger, 10.0–13.5 mm; head with a distinct median longitudinal furrow; pronotum with anterior angles distinctly angled; elytra uniformly darkened, at most with narrow yellow outer margins on basal half10
10. Femora mostly yellow, slightly dark at apices; apices of laterophyses tapered, strongly pointed*H. (M.) chaoi* Wittmer, 1997
 - Femora uniformly dark; apices of laterophyses regularly rounded, slightly pointed*H. (M.) biungulatus* (Champion, 1925)

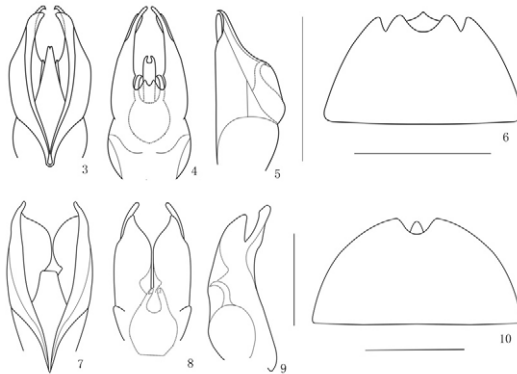
Habronychus (Macrohabronychus) bicoloratus sp. nov.

(Figs. 1, 3-6)

Diagnosis. This new species can be distinguished from all others in this subgenus by the yellow pronotum, with one large or three oblong dark markings. The ventral process of each paramere is shorter than the dorsal plate.



Figures 1-2. Habitus, dorsal view. 1. *Habronychus (Macrohabronychus) bicoloratus* sp. nov., 2. *Habronychus (Macrohabronychus) parameratus* sp. nov.



Figures 3-10. Male genitalia and female 8th abdominal sternite. 3-6. *Habronychus (Macrohabronychus) bicoloratus* sp. nov. 7-10. *Habronychus (Macrohabronychus) parameratus* sp. nov. 3, 7. male genitalia, ventral view. 4, 8. male genitalia, dorsal view. 5, 9. male genitalia, lateral view. 6, 10. female 8th abdominal sternite, ventral view. Scale bar: 1 mm.

Description. Male. Head black, mouthparts dark brown, antennae black, antennomeres I yellow, pronotum yellow, with a large dark brown marking in middle, extending from anterior to posterior margin and wider on posterior part than on anterior part, scutellum and elytra black, legs dark brown, femur yellow, ventral part of body black. Body covered with yellowish pubescence, slightly longer on legs and on ventral part of body.

Head: eyes moderately protruding, head across eyes wider than anterior margin of pronotum, head behind eyes narrowed posteriorly; surface with large and dense punctures, some confluent, convex at centre of vertex; apical maxillary palpomeres longest, widened in middle, rounded at apices; antennae extending to middle of elytra, antennomeres II twice as long as wide, IV–X each with a very narrow smooth longitudinal impression along inner margin.

Pronotum: longer than wide, anterior margin straight, anterior angles obtusely rounded, lateral margins obliquely narrowed posteriorly, posterior angles slightly protuberant, posterior margin straight; disc convex on posterior sides, with a distinct median longitudinal furrow from anterior one-third to posterior margin; surface finely and densely punctuate.

Elytra: about 6 times longer than pronotum, combined width at shoulder about one-third wider than posterior margin of pronotum, parallel-sided, disc with large and dense punctures, and two distinct longitudinal carinae.

Legs: basal teeth of tarsal claws very short, about one-third length of upper claws, widely separated from the latter at base.

Male genitalia: dorsal plate of each paramere strongly reduced; ventral process of each paramere stout, shorter than dorsal plate; laterophyse short.

Female. Eyes smaller and less protruding, head across eyes narrower than anterior margin of pronotum, antennae shorter and narrower; pronotum wider than long, lateral margins distinctly narrowed posteriorly. Posterior margin of eighth abdominal sternite widely and roundly emarginated in middle, deeply and narrowly emarginated on both sides; with a broad triangular sclerite behind the middle notch.

Variation in paratype series. In some specimens antennomeres I dark brown at middle or at apices; pronotum with 3 dark oblong markings, one in centre, the other two lateral; scutellum uniformly yellow; femora dark brown at apices or along upper margins. Body length: 8.6–11.4 mm, width: 1.7–2.5 mm.

Type Data. Holotype ♂, China: Yunnan: Lushui, Yaojiaping, 2500 m, 2 April 1981, coll. Shuyong Wang. Paratypes: China, Yunnan: 2 ♀♀, Lushui, Yaojiaping, 2500 m, 2 April 1981, coll. Shuyong Wang; 1 ♂, Lushui, Yaojiaping, 2500 m, 2 April 1981, coll. Xuezhong Zhang; 2 ♂♂, Lushui, Yaojiaping, 2500 m, 4 April 1981, coll. Subai Liao; 1 ♂, Lushui, Yaojiaping, 2500 m, 4 April 1981, coll. Xuezhong Zhang; 2 ♂♂, 1 ♀, Lushui, 2500 m, 4 April 1981, coll. Shuyong Wang; 1 ♂, 1 ♀, Lushui, Pianma, 2500 m, 30 May 1981, coll. Subai Liao; 1 ♂, Lushui, Pianma, 2500 m, 30 May 1981, coll. Xuezhong Zhang; 1 ♂, 2 ♀♀, mts. 60km E Tengchong, 2300m, 14–19 May 2006, leg. S. Murzin & I. Shokhin; 4 ♀♀, mts. 60km E Tengchong, 2300m, 19–22 May 2006, leg. S. Murzin & I. Shokhin. (Holotype in IZAS, paratypes in IZAS, NHMB, Coll. Constantin and Coll. Kopetz).

Etymology. The specific name is derived from the Latin *bi-* and *coloratus* (two (prefix) + coloured), referring to the yellow and dark coloration of the body.

Distribution. China (Yunnan).

Habronychus (Macrohabronychus) parameratus sp. nov.

(Figs. 2, 7–10)

Podabrus himalaicus Wittmer, 1965: 85; 1981: 403. parte.

Diagnosis. This new species is similar to *H. (M.) biungulatus*, but can be distinguished by the male genitalia. The ventral process of each paramere is longer than the dorsal plate, slightly widened near the apex in lateral view, and the dorsal plate of each paramere is tapered apically, not distinctly pointed.

Description. Male. Head dark red, with a black marking between eyes, antennae almost black, antennomeres I brown, slightly darkened apically, apices of II–X slightly brown, pronotum brown, with irregular dark markings close to anterior, posterior and lateral margins respectively, scutellum and elytra dark brown, legs black, femora extensively and tibiae slightly brown at base, ventral part of body black. Body covered with brownish pubescence.

Head: eyes moderately protruding, head across eyes wider than anterior margin of pronotum, head behind eyes narrowed posteriorly, surface finely and densely punctuate, slightly convex at centre of vertex; apical maxillary palpomeres longest, widened in middle, rounded at inner margins; antennae extending to two-thirds length of elytra, antennomeres II about three times as long as wide, IV–XI each with a very narrow smooth longitudinal impression along inner margins.

Pronotum: longer than wide, anterior margin rounded, anterior angles almost rounded, lateral margins slightly sinuate, posterior angles slightly protuberant, posterior margin almost straight; disc strongly convex, appearing depressed at anterior angles and close to posterior margins, with a median longitudinal shallow furrow from anterior one-third to posterior margin; surface finely and densely punctuate.

Elytra: about 4 times longer than pronotum, combined width at shoulders one-third wider than posterior margin of pronotum, parallel-sided, disc with large and dense punctures, without distinct longitudinal carinae.

Legs: basal teeth of tarsal claws longer, about half length of the upper claws, not widely separated from the latter at base.

Male genitalia: dorsal plate of each paramere well developed, with apex tapered and triangular; ventral process of each paramere longer than dorsal plate, slightly widened near apex in lateral view; laterophyse short.

Female. Eyes smaller and less protruding, antennae shorter, pronotum shorter and wider, slightly narrowed posteriorly. Posterior margin of eighth abdominal sternite widely and roundly emarginated in middle, almost smooth on both sides, with a small triangular sclerite behind the middle notch.

Variation in paratype series. In some specimens pronotum with dark confluent markings, femora uniformly black. Body length: 10.5–12.5 mm; width: 2.2–3.0 mm.

Type data. Holotype ♂, N. Nepal, Thodung via Those, 3100 m, 29–31 May 1976, 1♂, W. Wittmer & C. Baroni Urbani. Paratypes: 1♂, 1♀, Nepal, Thodung,

3100m, 1-3 June 1962, G. Ebert leg.; same data, 20-25 May 1962, 1♂, 2♀♀ (all in NHMB).

Etymology. The specific name is derived from the Latin *paramere* (lateral lobe) and refers to its paramere, which distinguishes it from related species.

Distribution. Nepal (Thodung).

DISCUSSION

During our study of the Chinese cantharids of IZAS, we were able to examine Wittmer's cantharid collection in NHMB. Our investigations revealed two new species of the subgenus *Habronychus* (*Macrohabronychus*) Wittmer.

H. (M.) bicoloratus sp. nov. can be easily distinguished from all other species in this subgenus by its body coloration and the male genitalia (see the above description and illustrations).

When studying the series of *H. (M.) biungulatus* (Gorham), we examined all the types of *Podabrus himalaicus* Wittmer. The latter was synonymized with *H. (M.) biungulatus* by Wittmer (1981). However, we discovered that the type series of *P. himalaicus* actually contains two species. The holotype (♂, Sikkim, Chunjom, 6800m, 23 April 1959, P. Schmid leg.) and some paratypes (8♂♂♀♀, Assam, Kameng, Talung Dzong, 7000m, 12 May 1961, P. Schmid leg.) are considered to be *H. (M.) biungulatus*. The remaining paratypes (5♂♂♀♀, Nepal, Thodung, 3100m, 20-25 May 1962 / 1-3 June 1992, G. Ebert leg.) should be regarded as a new species, *H. (M.) parameratus* sp. nov. This new species is similar to *H. (M.) biungulatus*, but clearly differs from the latter in the form of the male genitalia. The ventral process of each paramere is longer than the dorsal plate and slightly widened near the apex in lateral view. The dorsal plate of each paramere has a tapered apex, which is not distinctly pointed. In *H. (M.) biungulatus* the ventral process of each paramere is shorter, reaching the apex of the dorsal plate and is not widened near the apex in lateral view. The dorsal plate of each paramere has a very pointed apex.

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