

Description of a New *Pseudocoelolabus* (Coleoptera, Carabidae) from Fugong of Northwestern Yunnan, Southwest China

Yûki IMURA¹⁾ and Boleslav BŘEZINA²⁾

¹⁾ Shinohara-chô 1249–8, Kôhoku-ku, Yokohama, 222–0026 Japan

²⁾ Pod strání 9/2155, 100 00 Praha 10, Czech Republic

Abstract A new species of the subgenus *Pseudocoelolabus* of the genus *Carabus* (s. lat.) is described from Fugong of northwestern Yunnan, Southwest China, under the name *Carabus (Pseudocoelolabus) zuzkae*.

Pseudocoelolabus is a unique component of the carabid ground beetles, which is currently recognized as one of the subgenera of the grand genus *Carabus* (=subtribe Carabina). It was originally established by REITTER (1896, p. 95) for a single Chinese species, *Carabus taliensis* FAIRMAIRE, 1886, and totally eight species have been known up to the present (IMURA, 2011).

We recently had an opportunity to examine a pair of strange specimens apparently belonging to this subgenus collected from the high altitudinal area of the Nu Shan Mountain Range near Fugong in northwestern Yunnan. After a careful examination, we have come to the conclusion that the Fugong race is distinguishable from all the hitherto known members of the subgenus *Pseudocoelolabus* and worth describing as the ninth representative. In the following lines, we are going to describe it under the name of *Carabus (Pseudocoelolabus) zuzkae* sp. nov. Key to all the known species of *Pseudocoelolabus* is given at the end of the text.

Before going into further details, we wish to thank Messrs. Igor BELOUSOV (St. Petersburg) and Ilya KABAK (Almaty) for their kind cooperation in various ways. Thanks are also due to Dr. Shun-Ichi UÉNO (National Museum of Nature and Science, Tokyo) for critically reading the manuscript of this paper.

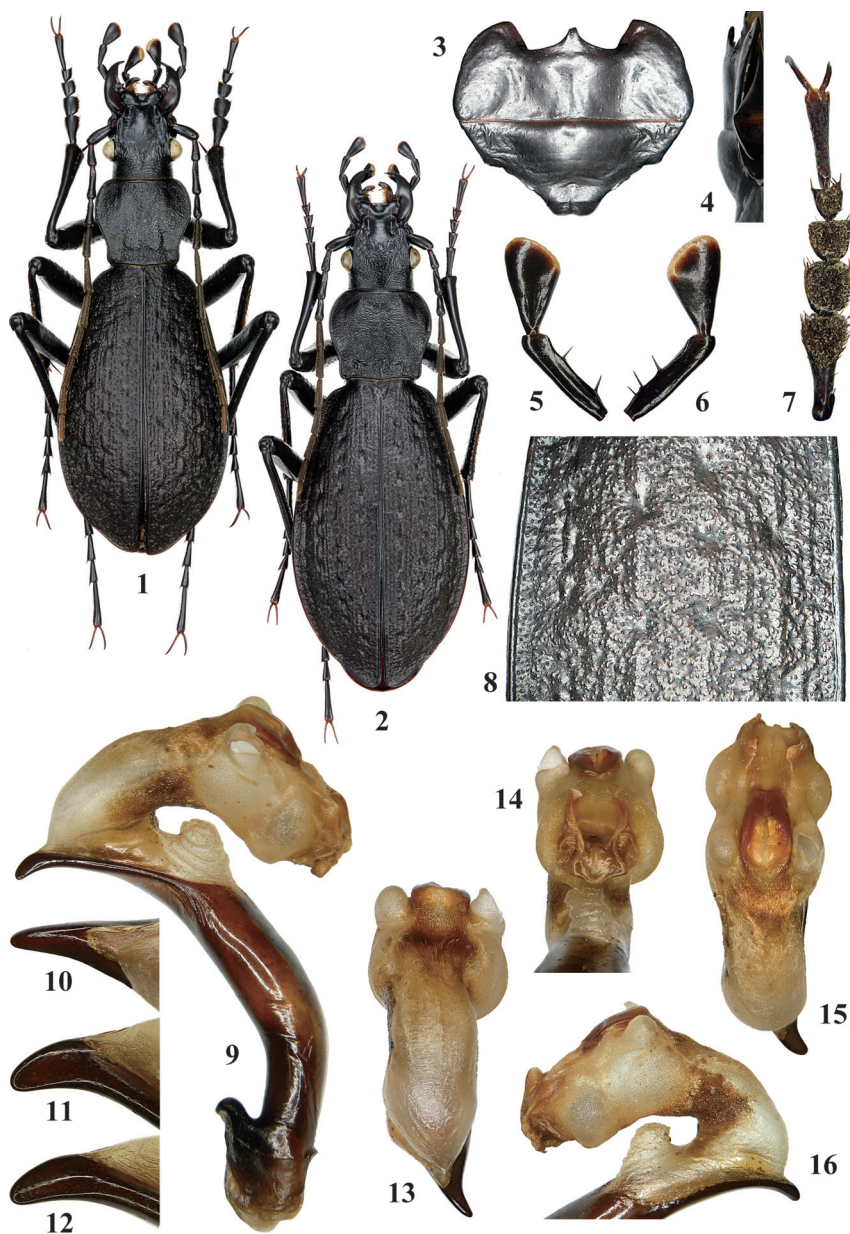
Carabus (Pseudocoelolabus) zuzkae IMURA et BŘEZINA, sp. nov.

(Figs. 1–16, 18)

Length (including mandibles): ♂, 23.3 mm; ♀, 26.8 mm. Entirely black with a faint dark bronze tinge.

Readily recognized by small body size, long antennae, strongly cordate pronotum, uniquely profiled elytra, characteristically featured male protarsus and penis.

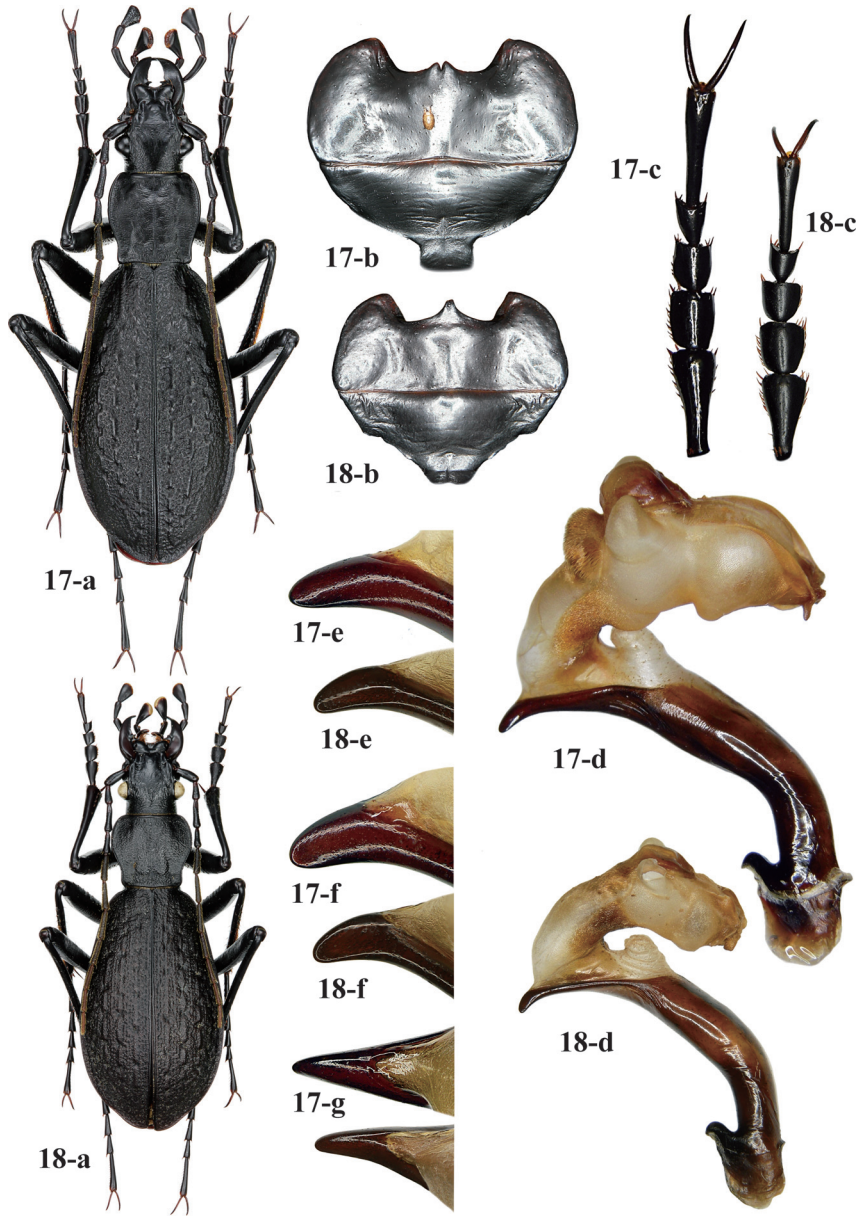
Head almost normal or somewhat hypertrophic; dorsal surface of frons to neck moderately rugulose, vertex minutely punctate; frontal furrows widely guttered but not so deep; retinacula of both mandibles bidentate, with the posterior tooth longer than the anterior; terminal segments of palpi a little more strongly dilated in male than in female; penultimate segment of labial palpus basically bisetose, though the left one of male holotype has the third, accessory seta near the base, maybe due to malformation (Fig. 6); mentum sporadically scattered with small granules, with the median tooth apparently shorter than lateral lobes, its apex vaguely re-entrant at middle in ventral view and not protruded ventrad in lateral view; submentum asetose; antennae very long in male, obviously extending beyond basal four-sevenths of elytra, much shorter in female, not reaching



Figs. 1–16. *Carabus (Pseudocoptolabrus) zuzkae* IMURA et BŘEZINA, sp. nov. from Fugong of northwestern Yunnan, Southwest China. — 1, 3–16, ♂, holotype; 2, ♀, paratype; 3, mentum & submentum in ventral view; 4, ditto in left lateral view; 5, right labial palpus in ventral view; 6, left labial palpus in ventral view; 7, right protarsus in ventral view; 8, median part of left elytron; 9–16, male genitalia (9, penis & fully everted internal sac in right lateral view; 10, apical part of penis in dorsal view; 11, ditto in subdorsal view; 12, ditto in right lateral view; 13, internal sac in caudal view; 14, ditto in frontal view; 15, ditto in dorsal view; 16, ditto in left lateral view).

middle of elytra.

Pronotum relatively small and cordate, more remarkably so in male, 1.14 (male) to 1.17



Figs. 17–18. 17, *Carabus (Pseudocoptolabrus) watanabei* IMURA (holotype) from Imau Bum of northern Myanmar; 18, *C. (P.) zuzkae* IMURA et BRÉZINA, sp. nov. (holotype) from Fugong of northwestern Yunnan, Southwest China. — a, habitus; b, mentum & submentum in ventral view; c, right protarsus in dorsal view; d, penis & fully everted internal sac in right lateral view; e, apical part of penis in right lateral view; f, ditto in subdorsal view; g, ditto in dorsal view.

(female) times as wide as long, and widest apparently before middle; front angles obtusely rounded and not protruded anteriorly; lateral sides narrowly margined throughout, gently rounded in front, sinuately and rather strongly narrowed towards hind angles which are hardly produced

posteriad with rounded tips; disc weakly convex above, with the surface scabrous throughout, minutely and sporadically granulate in lateral portions, and vaguely punctate in frontal part of basal foveae; basal foveae very small and shallowly concave; median longitudinal line narrowly but clearly impressed throughout; only a single marginal seta inserted near middle of pronotum on each side.

Elytra not strongly adhered at sutural part, elongated oval in profile, widest obviously behind middle, more gradually narrowed towards bases than towards apices, with effaced shoulders; sculpture triploid heterodyname; primaries the strongest though not so remarkably convex above, rather irregularly segmented by large, deep primary foveoles to form rows of short costae; both secondaries and tertiaries much weaker than primaries, vaguely convex above, indicated by irregularly set rows of granules; striae between intervals indicated by irregularly set rows of vague punctures though often unclear; elytral disc and elevated part of each intervals coarsely scattered with small granules; umbilicate series indicated by irregularly and sporadically set rows of larger granules, becoming unclear in posterior half; preapical emargination shallowly but distinctly recognized in both sexes.

Episterna smooth; sides of sternites weakly rugulose; sternal sulci unclear; metacoxa trisetose; male protarsus with second segment longer than wide, third one almost as long as wide, fourth one triangularly shaped with hair pads on whole area of its ventral surface.

Male genitalia as shown in Figs. 9–16; penis similar to that of *C. (P.) watanabei* (IMURA, 2003, p. 22), though the apex is a little slenderer and more strongly bent ventrad in lateral view, with the right side apparently emarginate in dorsal view; ostium lobe short, robust and not bilobed at tip; prepraeputal lobe not strongly protruded; aggonoporus not strongly sclerotized, though rather prominently protruded apicad.

Type series. Holotype: ♂, Northeast of Fugong [福贡], 3,440 m in altitude, 26° 57' 32" N/ 98° 56' 44" E, on the Nu Shan [怒山] Mountain Range, in Fugong Xian [福贡县], of Nujiang-lilizu-zizhizhou [怒江傈僳族自治州], northwestern Yunnan, Southwest China, 1–VI–2006, preserved in the Zoological Institute of Academy of Sciences, St. Petersburg, Russia. Paratype: 1 ♀, same locality, 31–V–2006, preserved in the collection of the first author, Y. IMURA (Yokohama).

Derivatio nominis. The present new species is named after Miss Zuzana BŘEZINOVÁ, a daughter of the second author, who goes by the name of Zuzka.

Notes. The present new species is morphologically most similar to *C. (P.) watanabei* described from Imau Bum of northern Myanmar, but readily discriminated from that species by the following respects: 1) size much smaller; 2) terminal segments of palpi less strongly dilated in male; 3) penultimate segment of labial palpus bisetose, though it is quadrisetose in *C. (P.) watanabei*; 4) pronotum with a pair of marginal setae, though it is asetose in *C. (P.) watanabei*; 5) legs apparently shorter; 6) third segment of male protarsus almost as long as wide, while it is apparently longer than wide in *C. (P.) watanabei*; 7) fourth segment of male protarsus with hair pads on ventral surface, while they are completely absent in *C. (P.) watanabei*; 8) penis and internal sac different in profile. All the nine species of *Pseudocoptolabrus* including the present new species are distinguished from one another by the following key.

Key to the Species of *Pseudocoptolabrus*

1. Second segment of male protarsus longer than wide. 2
- Second segment of male protarsus wider than long. 3
2. Third segment of male protarsus longer than wide; body larger (ca. 29–33 mm); terminal

- segments of male palpi strongly dilated; penultimate segment of labial palpus quadrisetose; pronotum asetose; fourth segment of male protarsus without hair pads on ventral surface; N. Myanmar. *C. (P.) watanabei* IMURA, 2003
- Third segment of male protarsus almost as long as wide; body smaller (ca. 23–27 mm); terminal segments of male palpi weakly dilated; penultimate segment of labial palpus basically bisetose; pronotum setiferous, with a pair of median marginal setae; fourth segment of male protarsus with hair pads on ventral surface; NW. Yunnan. *C. (P.) zuzkae* sp. nov.
3. Penultimate segment of labial palpus multisetose. 4
- Penultimate segment of labial palpus bisetose. 6
4. Sternal sulci clearly impressed; S. Sichuan, NW. Yunnan, N. Myanmar. *C. (P.) taliensis* FAIRMAIRE, 1886
- Sternal sulci unclear. 5
5. Pronotum asetose; terminal segment of male palpi strongly dilated; penultimate segment of labial palpus usually quadrisetose; elytral surface remarkably rugged to form uneven sculpture; fourth segment of male protarsus without hair pads on ventral surface; S. Sichuan. *C. (P.) armiger* IMURA, 1997
- Pronotum with a pair of median marginal setae; terminal segment of male palpi not strongly dilated, almost as in female; penultimate segment of labial palpus usually trisetose; elytral surface not remarkably rugged; fourth segment of male protarsus with hair pads on ventral surface; S. Sichuan. *C. (P.) belousovianus* IMURA, 2011
6. Pronotum basically asetose; terminal segments of palpi moderately dilated; male antennae short, not reaching middle of elytra; N. Myanmar, E. Xizang. ...*C. (P.) nosei* IMURA, 1997
- Pronotum with a pair of median marginal setae; terminal segments of palpi not strongly dilated, almost as in female. 7
7. Male antennae very long, reaching basal three-fifths of elytra; hair pads of fourth segment of male protarsus wide, wholly recognized on ventral surface; N. Myanmar. *C. (P.) masahiroi* IMURA, 2006
- Male antennae short, not reaching or barely extending middle of elytra; hair pads of fourth segment of male protarsus narrow. 8
8. Male antennae not reaching middle of elytra; hair pads of fourth segment of male protarsus rudimentary; body smaller and robuster. N. Myanmar, NW. Yunnan. *C. (P.) branaungi* IMURA, 1999
9. Male antennae barely extending middle of elytra; hair pads of fourth segment of male protarsus recognized in basal half; body larger and slenderer; N. Myanmar. *C. (P.) burmanensis* BREUNING, 1932

DEUVE (1990, p. 2) described a strange alpine species, *Carabus businskyi* from Mt. Yulongxue Shan of Northwest Yunnan. It was originally described as a member of the subgenus *Acoptolabrus*, once transferred in the following year to a unique subgenus *Imaibiodes* (type species: *C. businskyi*, monotypical subgenus; DEUVE, 1991, p. 20), then combined to the subgenus *Pseudocoptolabrus* also by DEUVE (2004, p. 341, etc.). However, *C. businskyi* does not show any close affinity to *Pseudocoptolabrus* on the molecular genealogical tree constructed by using mitochondrial ND5 gene sequence (cf. KIM *et al.*, 2003, pp. 278–281, fig. 7). In our view, it should be placed again in the subgenus *Imaibiodes* which belongs to rather independent lineage in the procrustimorphous carabids (Neocarabi BENGTTSSON, 1927) of China. DEUVE's species is

therefore excluded from the present key. Anyway, *C. businskyi* is readily discriminated from all the known species of *Pseudocoelolabrus* by a remarkable macrocephalism, uniquely featured median tooth of the mentum and characteristically shaped internal sac of the male genital organ.

要 約

井村有希・Boleslav BŘEZINA: 中国云南省北西部福贡から発見されたヌバタマキンオサムシの1新種 (コウチュウ目オサムシ科). —— 中国云南省北西部福贡 Fugong 北東方の怒山 Nu Shan 山塊高所から得られたオサムシの一種を新種と認め, *Carabus (Pseudocoelolabrus) zuzkae* という名を与えて記載した (本論文では, 世界的にもっとも普遍的に採用されている上位分類体系, すなわちオサムシ亜族を広義の *Carabus* 属として扱い, その下に亜属を設ける方式に従った). *Pseudocoelolabrus* (ヌバタマキンオサムシ亜属) は中国西部からミャンマー北部にかけての山岳地帯に分布するヨロイオサムシ類の一群で, これまでに8種が知られている (ただし, DEUVE により *Pseudocoelolabrus* に置かれている *Carabus businskyi* は別の系統に属する種と考えられるため, ここでは除外した). 本新種はミャンマー北部の Imau Bum から記載された *C. (P.) watanabei* (IMURA, 2003) にもっとも類縁が近いと考えられるが, はるかに小型で, ♂ 口肢末端節の拡がりより弱く, 下唇肢末端節の剛毛は基本的に2本で, 下唇基節中央歯がより長く, 前胸背板の側縁には一對の剛毛をそなえ, ♂ 前付節の第4節が長幅ほぼ等しく, 鞘翅彫刻と陰茎先端, 内囊の形態も異なるので, 識別は容易である. 論文末尾に, 今回の新種を含むヌバタマキンオサムシ亜属全9種の検索表を示した.

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