

Contribution to the Knowledge of the Carabid Fauna
(Coleoptera, Carabidae) in Southern Gansu and
Western Yunnan, China

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Abstract Two new species and three new subspecies of the subtribe Carabina are described from southern Gansu and western Yunnan, China, under the names *Tibetorinocarabus laotse meloculus* subsp. nov., *Tachycarabus kabaki* sp. nov., *Hypso-carabus igori* sp. nov., *Pseudocoptolabrus branaungi liukuensis* subsp. nov., and *Calo-carabus linxiaensis qiagaianus* subsp. nov.

In the past three years (2004–'06), a long series of carabid specimens were obtained from the alpine regions of southern Gansu, northern Sichuan and western Yunnan of China, and all the examples belonging to the tribes Cychrini and Carabini were brought to me for identification and taxonomical study. The collection contains more than forty species of the subtribe Carabina, and I have already described some remarkable new taxa in my previous papers (IMURA, 2005 a, b, '06, '07; IMURA & KALÁB, 2006). In the present paper, I am going to introduce into science two new species and three new subspecies included in the same collection.

In the following lines, I will adopt the higher classification of the Carabina proposed by myself (IMURA, 2002 b). Abbreviations used in the text are the same as those explained in my previous papers (cf. IMURA, 1990, p. 139; 2002 a, p. 130).

Before going further, I wish to express my cordial thanks to Messrs. Igor BELOUSOV (St. Petersburg, Russia), Ilya KABAK (Almaty, Kazakhstan), Boleslav BŘEZINA (Prague, Czech Republic) and Pierfranco CAVAZZUTI (Pagno, Italy) for their kind cooperation in various ways. Thanks are also due to Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo) for reviewing the manuscript of this paper.

1. *Tibetorinocarabus laotse meloculus* IMURA, subsp. nov.

(Fig. 1)

Length (including mandibles): ♂, 19.0–22.1 mm, ♀, 21.6–24.0 mm. Of the totally five subspecies of *T. laotse* (BEHEIM & BREUNING, 1943, p. 11), this new race is most closely allied to *pseudominshanensis* (DEUVE, 1992, p. 268, figs. 4, 9, type locality: Gansu, environs de Wen Xian), but readily distinguishable from that subspecies in

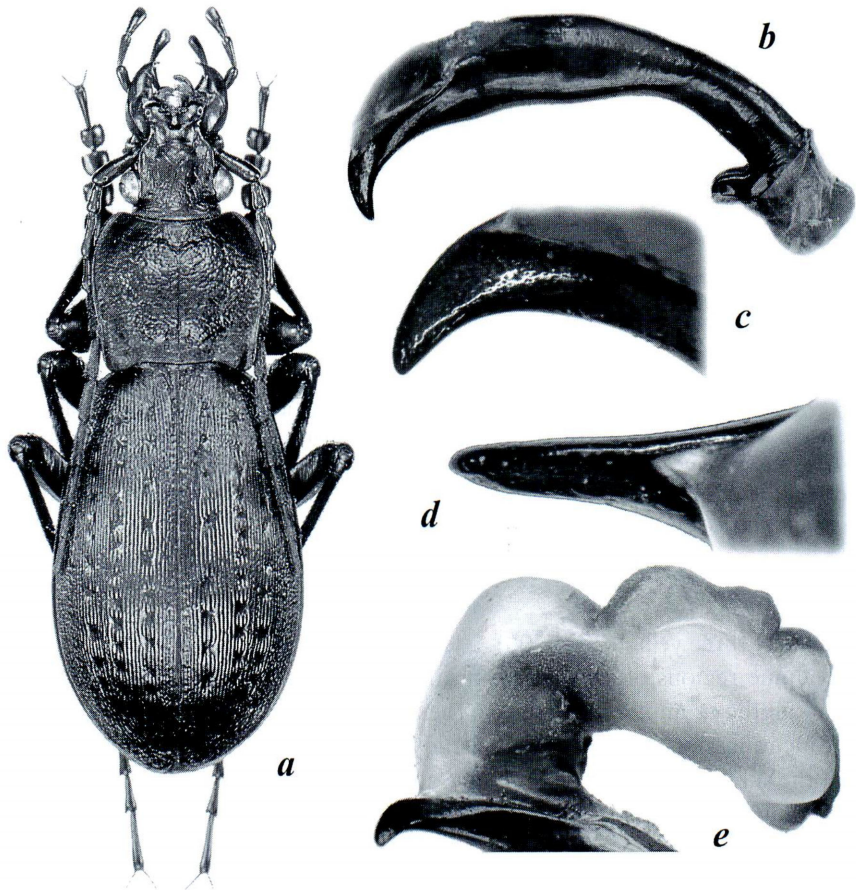


Fig. 1. *Tibetorinocarabus laotse meloculus* subsp. nov. from southeast of Guazigou in Zhugqu Xian of southern Gansu. — a, Habitus (♂, holotype) in dorsal view; b, aedeagus in right lateral view; c, apical part of aedeagus in the same view; d, ditto in dorsal view; e, endophallus in right lateral view.

differently shaped aedeagal apex which is more strongly bent ventrad with the apical tip much more sharply pointed in lateral view. From other four subspecies (*laotse* BEHEIM et BREUNING, 1943, p. 11, type locality: Waszuko bei Tatsienlu (Prov. Szetchuan, West-China); *qinghaiensis* DEUVE et KALÁB, 1992, p. 302, type locality: Qinghai, Yushu; *paralaotze* KLEINFELD, 2000, p. 68, figs. 5, 6, type locality: S-Sichuan, Mianning; *zamtangensis* KALÁB, 2002, p. 111, figs. 5–7, type locality: NW Sichuan, valley 20 km SSE Zamtang), the new race is easily discriminated by differences in both external and male genitalic features.

Type series. Holotype: ♂, ca. 8.5 km southeast of Guazigou [瓜子沟] ($33^{\circ} 18' 59''$ N/ $104^{\circ} 44' 25''$ E), 2,575 m in altitude, in the southeastern part of Zhugqu Xian [舟曲县] near the borders of Wudu Xian [武都县] and Wen Xian [文县], of southern Gansu,

China, 11–VII–2004, preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo (=NSMT). Paratypes: 31♂♂, 21♀♀, same data as for the holotype, separately preserved in the collections of the Zoological Institute of Academy of Sciences (St. Petersburg), Y. IMURA (Yokohama) and B. BŘEZINA (Prague).

Notes. In the type locality, Guazigou Valley, this new subspecies was obtained together with the following species: *Hypsocarabus mikhaili mikhaili* (DEUVE et MOURZINE, 1997), *Archaeocarabus pseudolatipennis wenzianensis* (DEUVE, 1992), *Aristocarabus romanovi andreii* (IMURA, 1998), *Eccoctolabrus exiguus wudumontanus* (IMURA, 1998), *Calocarabus sementivus* (IMURA, 2005 a), *C. nevestimus* (*Idem.*), *Pseudocranion benjamini meissonieri* (DEUVE et MOURZINE, 1997) and *P. wenzianicola wuduensis* (DEUVE, 1997).

The name of the new subspecies comes from its type locality, Guazigou, which means the Valley of Melon Seed or of Small Melon in Chinese.

2. *Tachycarabus kabaki* IMURA, sp. nov.

(Figs. 2–3)

Length (including mandibles): 19.9 mm in both sexes. Upper surface of body dark reddish coppery to dark brown and not strongly polished; venter and appendages brownish black, though tibiae and basal parts of mandibles, palpi and antennae are a little more strongly reddish.

Head not hypertrophic in both sexes, with large and strongly protruded eyes; frons weakly convex above, with the surface roughly rugulose and partly scattered with minute punctures; frontal furrows not so wide and not deeply concave, and obliquely rugulose on the surface; vertex to neck irregularly and roughly wrinkled; retinaculum of right mandible narrower and smaller than that of the left, with the anterior tooth a little larger and longer than the posterior on both sides; terminal segments of palpi not remarkably dilated in both sexes; penultimate segment of labial palpus basically bisetose, though exceptionally trisetose on right side in the holotype specimen; median tooth of mentum shorter than lateral lobes, slightly protruded ventrad, and triangularly shaped though not sharply pointed at the tip; submentum bisetose; antennae moderate in length, not reaching the middle of elytra in male and reaching basal quarter in female; hairless ventral depression, or thiridium, of male antennae apparently recognizable from segment 5 to 9 and vaguely so on segment 10.

Pronotum subcordate, 1.35 times as wide as long in the holotype specimen and widest near apical third; apical margin weakly emarginate, front angles obtusely rounded and weakly protruded anteriorly; lateral sides distinctly margined and rather widely reflexed above throughout, gently rounded in front and either sinuately or nearly straightly narrowed towards hind angles which are subtriangularly produced posteriorly with blunt tips; disc weakly convex above, with the surface weakly wrinkled and vaguely punctate; basal foveae very small and hardly concave, median longitudinal line very

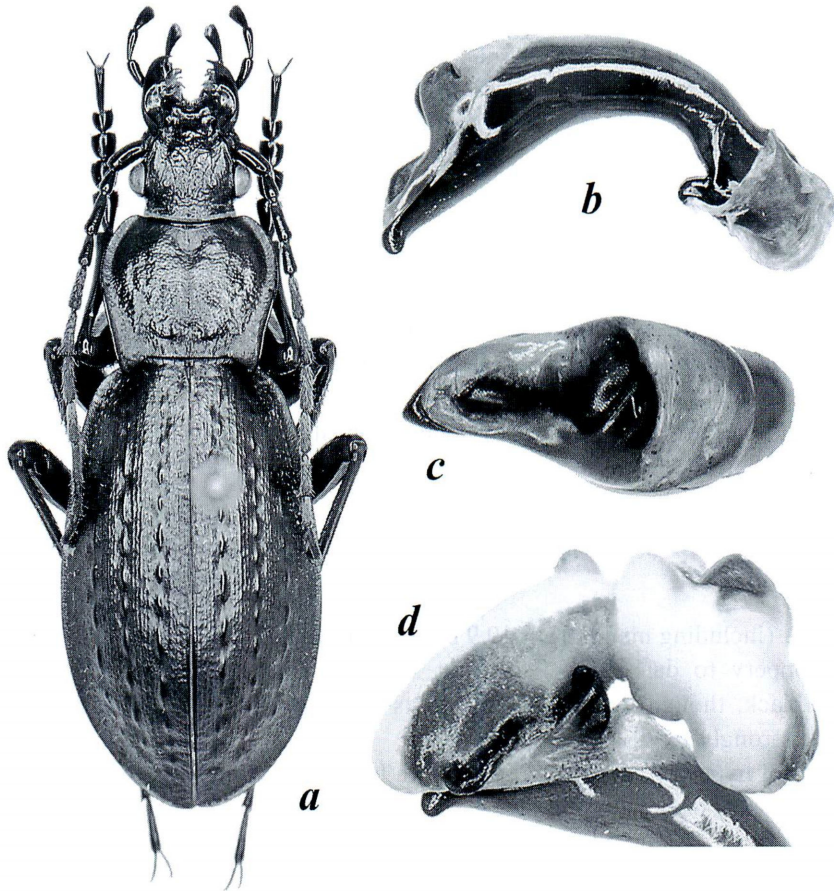
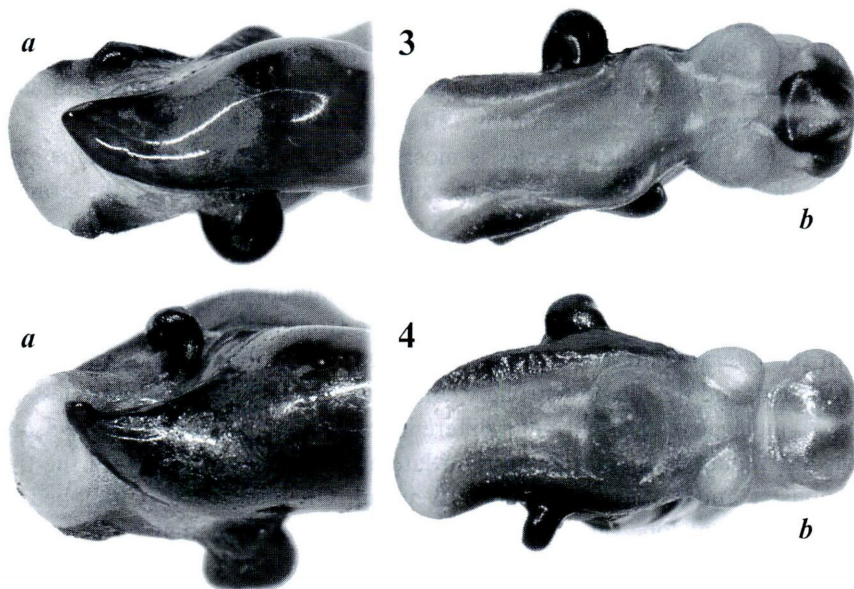


Fig. 2. *Tachycarabus kabaki* sp. nov. from south of Wushan in Wushan Xian of southern Gansu.
 — a, Habitus (♂, holotype) in dorsal view; b, aedeagus in right lateral view; c, apical part of aedeagus in the same view; d, ditto in dorsal view; e, endophallus in right lateral view.

narrow and partly unclear; two marginal setae inserted on either side of pronotum, one in median portion and one before hind angle.

Elytra elongated oval, 1.65 times as long as wide in the holotype specimen, rather strongly convex above, widest obviously behind the middle, more gradually narrowed towards bases than towards apices, with the shoulders rather distinct; lateral sides gently arcuate throughout, with the margins narrowly reflexed above; sculpture heptaploide heterodyname:— primaries the strongest, almost regularly segmented by large and rather deep primary foveoles to form rows of narrow costae or of elongated tubercles; secondaries much narrower than primaries, indicated by irregularly interrupted costae or longitudinally arranged rows of small granules; tertiaries indicated by three rows of small granules which are a little weaker than in secondaries and not adhesive to the adjacent intervals; umbilicate series indicated by rather regularly and coarsely set rows



Figs. 3-4. Male genital organ of *Tachycarabus* spp., showing morphological differences between *T. kabaki* (3) and *T. gigoloides priapeius* (4). — a, Apical part of aedeagus in ventral view; b, endophallus in dorsal view.

of fine granules.

Episterna vaguely and sporadically punctate, sides of sternites very weakly wrinkled, sternal sulci unrecognized; metacoxa trisetose; basal four segments of male foretarsus dilated with hair pads on ventral surface.

Male genitalia as shown in Figs. 2 b-d and 3 a-b; viewed laterally, aedeagus rather robust, weakly bent ventrad in basal portion, gradually divergent towards apical quarter, then rather acutely narrowed towards apical lobe which is short, robust, rather acutely hooked ventrad and obtusely rounded at the tip; viewed dorsally, apical lobe of aedeagus subtriangularly shaped with wide base and not so sharply pointed tip; OL bilobed and not strongly protruded dorsad; ligulum strongly sclerotized and pigmented to form a distinct ridge; BL well developed and strongly pigmented on both sides:— right BL separated into two lobes with the basal one larger and more strongly protruded, apical one much smaller and less strongly protruded laterad, left BL recognized as a single large basal lobe with remarkable pigmentation; ML unrecognized, though basal part of endophallus near aedeagal apex strongly inflated; PRE indicated by a single hairy inflation located at left side; PAR not so large, indicated by symmetrically protruded hemispherical inflations on both sides; PP large and remarkably pigmented; both AL and PL unremarkable; AGG indicated by weakly sclerotized peripheral rim weakly projected apicad.

Type series. Holotype: ♂, 23.9 km south of Wushan [武山], (34°30'23"N/

104°49'48" E), 2,995 m in altitude, in Wushan Xian [武山县], of southern Gansu, China, 17–VI–2005, preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo (=NSMT). Paratype: 1♀, same data as for the holotype, preserved in the collection of Y. IMURA (Yokohama).

Notes. The present new species is most closely allied to *Tachycarabus gigoloides* (originally described as a member of the subgenus *Rhigocarabus* of the grand genus *Carabus*; CAVAZZUTI, 2000, p. 440, figs. 2, 5 c, d; type locality: Gansu meridionale, Colle a nord di Lazikou, 3,100–3,300 m), above all its subspecies *priapeius* (CAVAZZUTI, 2006, p. 249, figs. 5, 17, 18; type locality: Gansu centrale, Gauluo Xian, Riserva Naturale Yedi Guan, 2,800–3,000 m), but readily distinguishable from that race as follows: 1) pronotum with the lateral sides less acutely narrowed towards front angles which are more gently rounded, and the disc less strongly convex above; 2) elytral sculpture less strongly uneven; 3) male genital organ very different in shape as shown in Figs. 3 and 4:—aedeagus less remarkably emarginate right laterad in apical portion, with the tip much wider, robuster and less strongly hooked ventrad; OL bilobed (it is unilobed in *T. g. priapeius*), its apical lobe on the right side much flatter than that of *T. g. priapeius*; endophallus different in outline in dorsal view as shown in Figs. 3 b and 4 b, with PRE located apparently at the left side (it is situated at the middle in *T. g. priapeius*).

Together with *gigoloides*, this new species may be placed in their own genus seeing that it exhibits many peculiarities in the endophallic structure, but I tentatively regard them as members of *Tachycarabus* until we know the result of molecular phyloanalysis.

The new species is sympatric with such species as *Leptinocarabus zhubajie caeliaqualius* (IMURA, 2004), *Hypsocarabus igori* nov., *Scambocarabus shaanxiensis tianshuicus* (IMURA, 1995), *Pagocarabus crassesculptus* (allied to subsp. *rugosissimus* BREUNING, 1943), *Pseudocranion gansuensis* (allied to the nominotypical *gansuensis* SÉMÉNOW, 1887) and *Pseudocranion* sp. (allied to the species now under examination by a western entomologist).

This new species is named after Mr. Ilya KABAK (Almaty, Kazakhstan), one of my best colleagues, who always kindly helps my entomological work in various ways.

3. *Hypsocarabus igori* IMURA, sp. nov.

(Fig. 5)

Length (including mandibles): ♂, 17.7–18.2 mm ♀, 17.9–20.6 mm. Smallest species of the genus, with the external features similar to those of the type species, *H. latro* (SEMENOV, 1898), but definitely different from it in configuration of the male genital organ, above all in the endophallic structure. Upper surface dark brownish- to dark reddish coppery, bearing a faint greenish tinge according to individuals; venter and appendages dark reddish brown.

Head relatively small, with large and strongly protruded eyes; frons rather strongly convex above, irregularly rugulose and scattered with minute punctures; frontal furrows not so deeply concave, with the surface usually smooth though rather remarkably

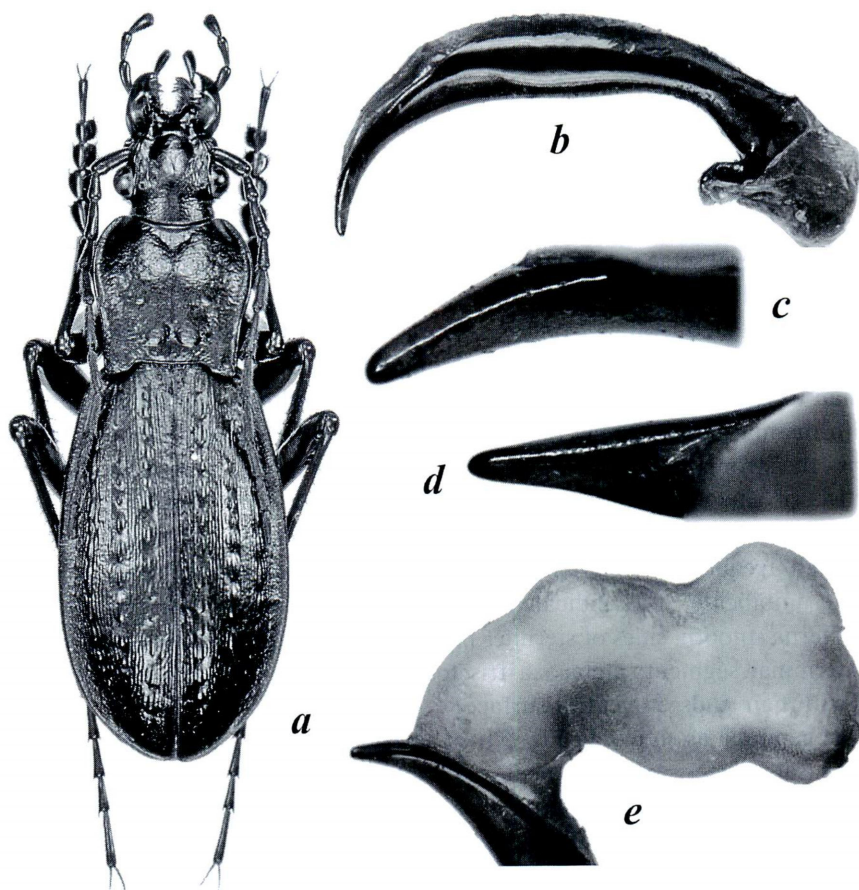


Fig. 5. *Hypsocarabus igori* sp. nov. from south of Wushan in Wushan Xian of southern Gansu. — a, Habitus (♂, holotype) in dorsal view; b, aedeagus in right lateral view; c, apical part of aedeagus in the same view; d, ditto in dorsal view; e, endophallus in right lateral view.

rugoso-punctate in some individuals; vertex and posterior parts of frontal furrows remarkably rugoso-punctate; retinaculum of mandible bidentate, the right one being narrower and smaller than the left, with the anterior tooth almost equal in length to the posterior on both sides; terminal segments of palpi not strongly dilated in both sexes; penultimate segment of labial palpus bisetose; median tooth of mentum almost equal in length to lateral lobes, with the apex sharply pointed in ventral view and apparently protruded ventrad in lateral view; submentum asetose; antennae barely reaching the middle of elytra in male and reaching basal third in female; hairless ventral depression, or thiridium, of male antennae distinctly recognizable from segment 5 to 8 and vaguely so on segment 9.

Pronotum subcordate or subquadrate, about 1.2 times as wide as long in the holotype specimen, widest near apical third, with the apical margin strongly emarginate;

front angles obtusely rounded and weakly protruded anteriorly; lateral sides gently rounded in front and sinuately narrowed towards hind angles which are subtriangularly produced posteriorly, with the inner margins weakly but apparently tuberculate at middle; disc strongly convex above except for triangularly shaped depressed parts near apex and base, with the surface either almost smooth or weakly rugoso-punctate, the sides distinctly margined and rather narrowly reflexed above throughout; basal foveae hardly recognizable, median longitudinal line very finely impressed and partly unclear; three to four pairs of lateral setae inserted on both sides, two to three in median portion and one before hind angles.

Elytra elongated oval, 1.7 times as long as wide in the holotype specimen, weakly convex above, widest obviously behind the middle, more gradually narrowed towards bases than towards apices, with effaced shoulders; lateral sides gently arcuate throughout, with the margins narrowly reflexed above; sculpture heptaploide heterodyname:—primaries the strongest, almost regularly segmented by not so large primary foveoles to form rows of short costae or of tubercles; secondaries much weaker than primaries, indicated by weakly raised narrow costae partly discontinuous; tertiaries as in secondaries, though frequently interrupted by primary foveoles in the rows adjoining the primaries; umbilicate series indicated by irregularly set rows of fine granules.

Episterna smooth, sides of sternites partly uneven, sternal sulci weakly recognizable on the terminal segment; metacoxa trisetose; basal four segments of male foretarsus dilated with hair pads on ventral surface.

Male genitalia as shown in Fig. 5 b–e; aedeagus slender, only slightly bent ventrad at about basal quarter, widest in median portion, and rather remarkably bent ventrad in apical portion; apical lobe long and slender, about 2.5 times as long as wide, gently arcuate throughout and gradually tapered towards apex which is not so sharply pointed at the tip. OL vestigial, barely recognizable as very small membranous protrusion; ligulum indicated by longitudinally set rows of granules to form a narrow ridge; BL recognized on both sides, with the left lobe a little larger than the right; ML unrecognized; PRE not inflated, indicated by flat hairy area before PP; PAR unclear; PP rather strongly inflated and not pigmented at all; apical portion of endophallus very short, neither AL nor PL developed; AGG well recognizable, indicated by a pair of small terminal plate weakly pigmented.

Type series. Holotype: ♂, 22.6 km south of Wushan (34° 30' 58" N/104° 50' 42" E), 2,490 m in altitude, in Wushan Xian, of southern Gansu, China, 14–VI–2005, preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo (=NSMT). Paratypes: 2♂♂, 1♀, same data as for the holotype; 3♂♂, 5♀♀, same area (23.9 km south of Wushan, 34° 30' 23" N/104° 49' 48" E, 2,995 m in altitude), 17–VI–2005; separately preserved in the collections of the Zoological Institute of Academy of Sciences (St. Petersburg), Y. IMURA (Yokohama) and B. BŘEZINA (Prague).

Notes. The present new species is closely allied to *H. latro* and its close relative, *H. qinlingensis* (IMURA, 1993, p. 366, figs. 2. 8), but readily distinguishable from them

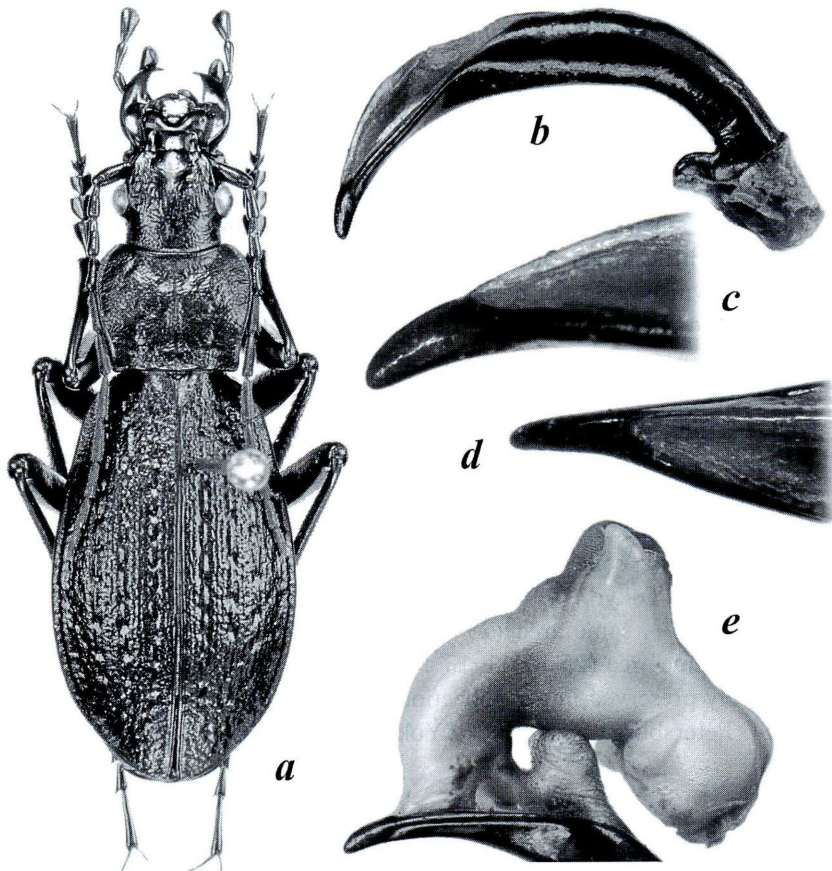


Fig. 6. *Pseudocoptolabrus branaungi liukuensis* subsp. nov. from south of Liuku in Lushui Xian of western Yunnan. — a, Habitus (♂, holotype) in dorsal view; b, aedeagus in right lateral view; c, apical part of aedeagus in the same view; d, ditto in dorsal view; e, endophallus in right lateral view.

mainly in differently shaped pronotal hind angles and aedeagus. Uniquely shaped endophallus is also diagnostic:— in the new species, nearly all the membranous inflations and protrusions are vestigial, making a striking contrast to those in *H. latro* (cf. IMURA *et al.*, 1998, p. 241, figs. 41 & 42) and *H. qinlingensis*. From *H. mikhaili* (DEUVE *et* MOURZINE, 1997, p. 147, figs. 1, 4), the new species is easily discriminated by differently shaped pronotum, aedeagus and endophallus.

For the sympatrically occurring species, see the section of *Tachycarabus kabaki*.

The new species is named after Mr. Igor BELOUSOV, a good friend of mine as well as I. KABAK, without whose kind cooperation this work could not have been accomplished.

4. *Pseudocoptolabrus branaungi liukuensis* IMURA, subsp. nov.

(Fig. 6)

Length (including mandibles): ♂, 19.0–22.6 mm, ♀, 22.4–24.7 mm. Distinguishable from the nominotypical subspecies (IMURA, 1999, p. 9, figs. 3–4, 10–12; type locality: ca. 28 km distant to north from Nitadi, on the western side of the Gaoligong Shan Mts., in the northern end of Myanmar near the Yunnan borders) in the following respects: 1) size a little larger on an average; 2) coloration of upper surface entirely black and not brownish as in the nominotypical subspecies; 3) pronotum a little more transverse, with the front angles more obtusely rounded and hind angles less prominently protruded posteriad; 4) elytra robuster, with the discal surface more roughly sculptured; 5) aedeagus a little slenderer, with the apical portion longer and more strongly bent ventrad in lateral view, slenderer and less strongly bent right laterad in dorsal view.

Type series. Holotype: ♂, south-southwest of Liuku [六庫], (25° 41' 31" N/98° 45' 47" E), 3,545 m in altitude, in Lushui Xian [泸水县], of western Yunnan, China, 19–V–2006, preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo (=NSMT). Paratypes: 21♂♂, 2♀♀, same data as for the holotype; 56♂♂, 20♀♀, same area (25° 42' 58" N/98° 45' 11" E, 3,640 m), 18 & 24–V–2006; 9♂♂, 3♀♀, same area (25° 41' 11–13" N/98° 45' 57"–46' 17" E, 3,690–3,815 m), 20–V–2006; separately preserved in the collections of the Zoological Institute of Academy of Sciences (St. Petersburg), Y. IMURA (Yokohama) and B. BŘEZINA (Prague).

5. *Calocarabus linxiaensis qiagaianus* IMURA, subsp. nov.

(Fig. 7)

Length (including mandibles): ♂, 18.0–18.5 mm, ♀, 19.5 mm. Most closely allied to the nominotypical subspecies (DEUVE, 1992, p. 55, figs. 6, 17; type locality: Gansu, montagne entre Linxia et Xiahe), but differs from it as follows: 1) hind angles of pronotum a little less prominently protruded posteriad; 2) elytra shorter and robuster, with the primary costae wider and flatter; 3) granules of secondaries and tertiaries smaller and less prominently raised; 4) aedeagus with the median portion a little longer, apical lobe shorter and more acutely narrowed towards apex which is more strongly bent right laterad in dorsal view.

Type series. Holotype: ♂, west-southwest of Qiagai [恰盖] (34° 49' 27–44" N/103° 23' 08–39" E), 3,643–4,018 m in altitude, in the northern part of Jonê Xian [卓尼县] of southern Gansu, China, 5–VII–2005, preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo (= NSMT). Paratypes: 1♂, 1♀, same data as for the holotype, separately preserved in the collections of the Zoological Institute of Academy of Sciences (St. Petersburg) and Y. IMURA (Yokohama).

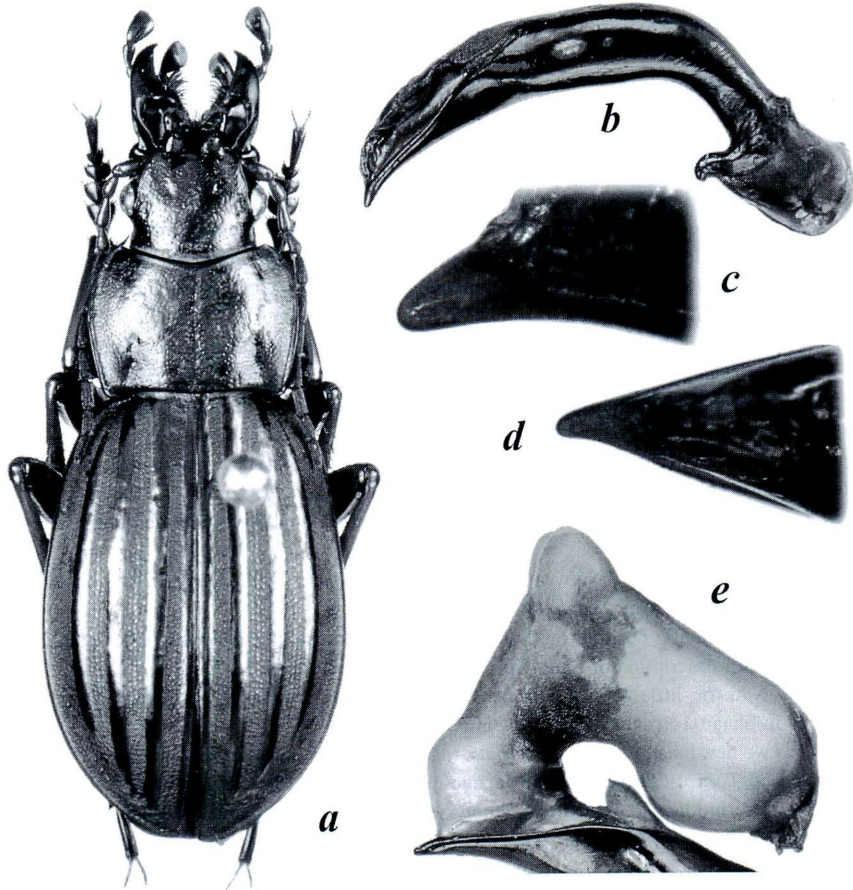


Fig. 7. *Calocarabus linxiaensis qiagaianus* subsp. nov. from west-southwest of Qiagai in Jonê Xian of southern Gansu. — a, Habitus (♂, holotype) in dorsal view; b, aedeagus in right lateral view; c, apical part of aedeagus in the same view; d, ditto in dorsal view; e, endophallus in right lateral view.

要 約

井村有希：中国甘肃省南部と云南省西部のオサムシに関する知見。—— 2004年から'06年にかけて、中国甘肃省南部、四川省北部および云南省西部の山岳地帯から多数のオサムシ標本が得られ、筆者はそれらの材料を分類学的に検討する機会を得た。この中には40種以上に及ぶオサムシ亜族が含まれており、そのうちとくに顕著なものについては拙著論文中ですでに紹介したが、本論文では、中国甘肃省南部と云南省西部から、あらたに2新種3新亜種を記載した。

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New Records of *Piptoncus duplex sobrinus* KURBATOV (Coleoptera, Staphylinidae, Pselaphinae) from Shikoku, Japan

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A pselaphine species, *Piptoncus duplex sobrinus*, belonging to the supertribe Euplectitae, tribe Trichonychini, subtribe Bibloporina, was described by KURBATOV (1991) from Kunashiri (Kunashir) Island of the Chishima (Kuril) Islands. It was discovered from Shikoku and is reported in the present paper as the first record from the Japanese mainland.

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Piptoncus duplex sobrinus KURBATOV, 1991

[Japanese name: Yokozuna-kikawa-arizukamushi]

(Figs. 1–3)

Piptoncus duplex sobrinus KURBATOV, 1991, *Zool. Zh., Moskva*, **70** (10): 73.

Specimens examined. 1 female, Mt. Takashiro, Kisawa-son, Tokushima Pref., 3–V–1978, M. YOSHIDA leg.; 1 male, same data as above, but 5–VI–2004; 2 males, 3 females, same data as above, but 3–VII–2004; Mt. Takashiro (1,280 m), Kisawa-son, Tokushima Pref., 29–XI–1998, M. YOSHIDA leg.; 2 females, Okuyarito, nr. Mt. Shinkurō, Kisawa-son, Tokushima Pref., 11–X–2004, M. YOSHIDA leg.; 2 females, same data as above, but 11–X–2004.