

Three New Species of the Genus *Chydaeus* (Coleoptera, Carabidae, Harpalini) from China

Noboru ITO

1–7–18 Higashiuneno, Kawanishi City, Hyôgo Pref., 666–0117 Japan

Abstract Three new species of the genus *Chydaeus* CHAUDOIR are described as *Chydaeus kasaharai* from Hubei, and *C. convexus* and *C. nigricans* from Yunnan in China. *Chydaeus kasaharai* is peculiar in the 4th mid tarsal segment of the male and *C. nigricans* in the aedeagal shape.

Five species of the harpaline genus *Chydaeus* CHAUDOIR have hitherto been known from China. I obtained opportunities to examine some specimens of the genus collected in China and found three new species among them.

In this paper, I am going to describe the species under the names *Chydaeus kasaharai* from Hubei, and *C. convexus* and *C. nigricans* from Yunnan. *Chydaeus kasaharai* is remarkable in the 4th mid tarsal segment of the male not bearing any adhesive hairs. *Chydaeus nigricans* has a peculiar aedeagus which does not prolong like sword at the apex. *Chydaeus convexus* and *C. nigricans* must be sympatrical.

Before going into further details, I would like to express my deep gratitude to Dr. Shun-Ichi UENO of the National Science Museum, Tokyo for his kind offer of material and Dr. Fritz GUSENLEITNER of the Oberösterreichisches Landesmuseum, Linz for his kind loan of SCHAUBERGER's type under his care.

The specific name, *kasaharai*, is dedicated to the late Mr. Sumao KASAHARA who had vigorously carried on systematic studies on the family Carabidae, in particular on the genus *Pterostichus*, in spite of being an amateur, and kindly helped me in loaning material.

For measurement of body parts, refer to the previous papers of mine. The abbreviations of the depositories are as follows:

NSMT: the National Science Museum (Nat. Hist.), Tokyo

OMNH: the Osaka Museum of Natural History, Osaka

NIc: N. ITO collection.

Chydaeus (Chydaeus) kasaharai N. ITO, sp. nov.

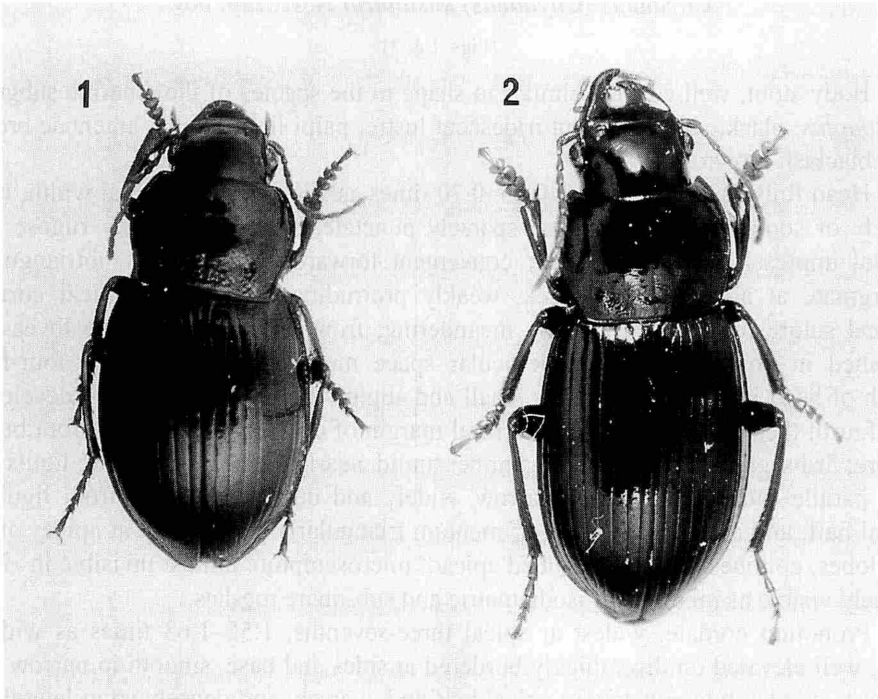
(Figs. 1 & 3)

Body stout, well convex, similar in shape to the species of the amarine subgenus *Curtonotus*, black, shiny, without iridescent lustre; palpi light brown, antennae brown, tarsi blackish brown.

Head fully raised, not large, 0.65–0.70 times as wide as the pronotal width, moderately or sometimes coarsely and sparsely punctate, often transversely rugose near frontal impressions; labrum gently convergent forwards, deeply and subtriangularly emarginate at apex; clypeus thick, weakly protruding forwards at apical corners; clypeal suture fine, shallow, gently meandering; frontal impressions each fovea-like, vanished in posterior halves; interocular space moderately wide, about four-fifths width of head including eyes; eyes small and slightly bulging; temples not developed, one-fourth the eye length; genuine ventral margin of eyes widely isolated from buccal fissure; 3rd segment of labial palpus rather tumid, nearly as long as the 2nd; ligula narrow, parallel-sided; paraglossae narrow, widely and deeply separated from ligula in apical half, and a little surpassing it; mentum triangularly protuberant at apices of lateral lobes, epilobes weakly expanded apicad; microsculpture almost invisible in ♂ and vaguely visible as mixtures of isodiametric and subsquare meshes.

Pronotum cordate, widest at apical three-sevenths, 1.55–1.63 times as wide as long, well elevated on disc, thickly bordered at sides and base, smooth in narrow central area, moderately punctate in apical half and coarsely and densely so in lateral furrows and basal foveae where the punctures are partly fused; sides gently arcuate in apical four-fifths, sinuate before base; apex fairly emarginate, finely and obscurely bordered only at sides; base one-fifth wider than apex, slightly bisinuate; apical angles narrowly rounded; basal angles rectangular, hardly to rather protruding laterad; lateral furrows each engraved in a line in apical half, fused with basal fovea in basal half; basal foveae ill-defined, longitudinally grooved in middle; front transverse impression shallow, the hind one obsolete; median line fine but clear, apart from apex and reaching base; microsculpture more obscure than that on head, partly visible in ♀ as transverse meshes near punctures in lateral furrows and basal foveae and hardly visible in ♂.

Elytra ovate, comparatively wide, 1.22–1.30 times as long as wide and 1.28–1.33 times as wide as the pronotal width, uniformly well convex, minutely and sparsely punctate; sides more or less arcuate medially, gently convergent in apical portions, barely sinuate preapically; apices gently curved, with tips fully rounded and widely separated from each other; bases mostly straight, abruptly curved just before lateral ends; humeral angles acute, well protrudent forwards; striae fine, shallow, minutely and seriatly punctate, and vaguely crenulate, scutellar striole short; intervals quite flat, feebly raised near apices; marginal series interrupted by rather a narrow space, composed of (7–10)+(8–11) umbilicate pores; microsculpture clearer in ♀ than in ♂, observed as transverse meshes.



Figs. 1–2. Habitus of the genus *Chydaeus* spp. — 1, *Chydaeus (Chydaeus) kasaharai* N. ITO, sp. nov.; 2, *Chydaeus (C.) convexus* N. ITO, sp. nov.

Ventral surface coarsely punctate medially on prosternum and sparsely so on metasternum; metepisternum one-fifth wider than long; 6th abdominal sternite in both sexes quadrisetose at apical margin, almost truncate in ♂ and widely arcuate in ♀ at apex.

Hind femur bisetose near hind margin; fore tibia furnished with several setae at medio-apical portion, bi- to trispinous apico-externally, terminal spur short and lanceolate; tarsi not so wide and dorsally covered with long pubescence, mid tarsal segment in ♂ bearing ventral adhesive hairs only apically in 1st segment and wholly on 2nd and 3rd ones, claw segment trisetose along each ventral margin.

Aedeagus (Fig. 3 A) robust, large in basal half, then gradually tapered apicad, weakly warped dorsad in apex; apical orifice wide, inner sac with a cluster of small sclerites like squamae in middle; apical lobe short, triangular, narrowly rounded, without border; ventral surface even, unbordered. Stylus (Fig. 3 S) almost straight, a seta situated at apical fifth; basal segment not bearing any setae; valvifer with a short and fine seta at apex.

Length: 8.8–9.5 mm. Width: 4.1–4.4 mm.

Holotype: ♂, Mt. Dashennongjia, 31.5 N, 110.3 E, alt. 2,800–3,000 m, W. Hubei,

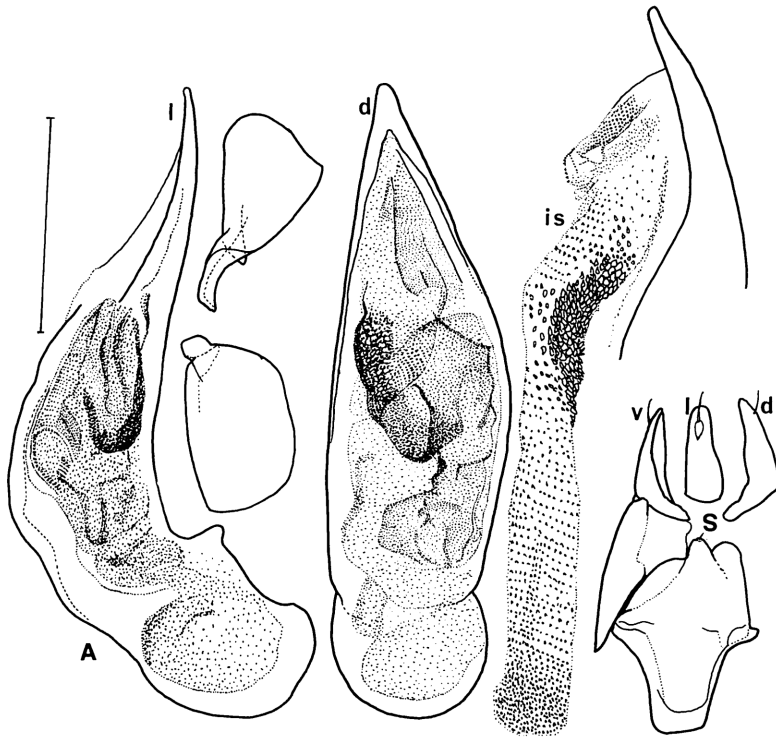


Fig. 3. Genitalia of *Chydaeus (Chydaeus) kasaharai* N. ITO, sp. nov; A, aedeagus; S, stylus; d, dorsal aspect; l, lateral aspect; v, ventral aspect; is, everted inner sac. Scale: 1 mm.

China, 15–VI–2000, Jaroslav TURNA leg. (preserved in OMNH). Paratypes: 52 ♂♂, 43 ♀♀, same data as the holotype (preserved in NIC).

This new species is easily distinguished from all the other species of the genus by the body wide, stout and *Curtonotus*-like. The new species is somewhat similar to *Chydaeus (Chydaeus) schaubergeri* JEDLIČKA, but the body is smaller in size, the head is narrower and has larger eyes, and the pronotum is unisetose at each side instead of being plurisetose. Lacking of adhesive hairs in the 4th mid tarsal segment of the male is not found in other species of the subgenus.

***Chydaeus (Chydaeus) convexus* N. ITO, sp. nov.**

(Figs. 2 & 4)

Body oblong, convex, black or very slightly brownish, shiny, without iridescent lustre; buccal parts except for black mentum, antennae and tarsi brown, labrum and tibiae blackish brown.

Head moderately large, approximately 0.7 times as wide as the pronotal width,

strongly elevated in frons, minutely and sparsely punctate, with wide interocular space four-fifths the width of head; labrum subtrapezoidal, well protruding at apical corners; clypeus shallowly emarginate, linearly engraved behind apex so that the apex is seemingly bordered; clypeal suture clearly and somewhat deeply engraved; frontal impressions shallow, linearly divergent behind, vanished near supraorbital grooves; eyes small, relatively prominent; temples more or less developed, a half as long as the eye length; distance between genuine ventral margin of eye and buccal fissure fully long; labial palpi slender; ligula narrow and wedge-shaped, two long setae situated behind apex; paraglossae narrowly oblong, adnate with ligula to the middle, not surpassing ligula; epilobes of mentum sharply protruding forwards, narrow and weakly expanded medially; microsculpture almost invisible in ♂ and clearly visible in ♀ as isodiametric meshes.

Pronotum not cordate, arcuate lengthwise at sides, widest at apical four-ninths, 1.36–1.41 times as wide as long, steeply declivous apico-laterad; apex shallowly and inverse-trapezoidally emarginate, unbordered in middle; base not more than 1.05 times as wide as apex, hardly arcuate, thickly bordered as lateral margins; lateral furrows wholly carved in a line; basal foveae each not depressed, with a small excavation at inner side; front and hind tranverse impressions vague; median line fine, shallow, and lying between the impressions; dorsal punctures sparse and minute on disc and in apical area, rather coarse and moderate in lateral furrows and basal foveae; microsculpture much clearer in ♀ than in ♂, consisting of transverse meshes in ♀ and partly detected only in basal area in ♂.

Elytra ovate, 1.32–1.51 times as long as wide and one-fifth to one-fourth wider than the pronotal width, uniformly strongly convex, sparsely and microscopically punctate; sides arcuate, rather deeply sinuate before apices which are widely rounded and separated from each other; bases each gently emarginate, forming a sharp and obtuse angle with lateral border; striae deep and finely crenulate, scutellar striole short; intervals slightly convex on disc, becoming more convex towards surrounding portions; marginal series rather widely interrupted in middle, composed of (7–9)+(9–11) umbilicate pores; microsculpture clearly observable in ♀ as mixtures of isodiametric and subsquare meshes and vaguely and partly so in ♂ as transverse meshes. Hind wings vestigial, one-tenth the elytral length.

Ventral surface impunctate, mostly glabrous, with several short and fine setae at apex of prosternal process; metepisternum short, one-fifth shorter than wide; 6th abdominal sternite in both sexes quadrisetose along apical margin, truncate in ♂ and widely rounded in ♀ at apex.

Hind femur bisetose along hind margin; fore tibia short-setose on inner half of apical area, apico-externally armed with one or two very short spines, terminal spur edentate, though expanded in middle; tarsi short, fairly expanded, mid tarsus in ♂ bearing adhesive hairs on 2nd to 4th segments, hind tarsus seven-tenths times in ♂ and two-thirds times in ♀ as long as the width of head, 1st segment seven-tenths the 2nd and 3rd taken together and one-fifth longer than the 2nd, 3rd a half longer than the 4th,

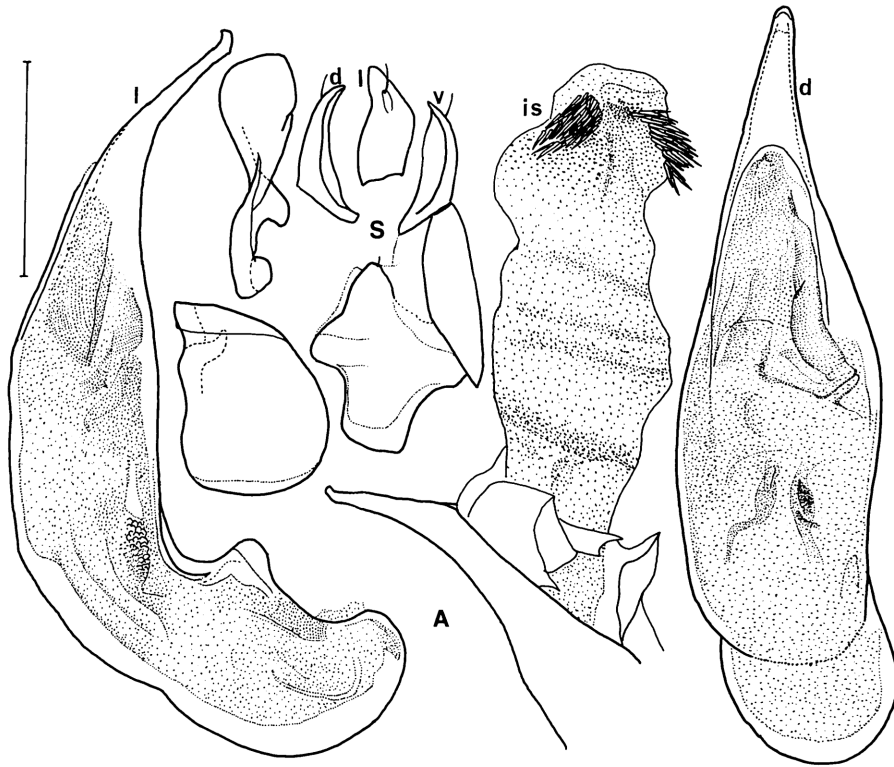


Fig. 4. Genitalia of *Chydaeus (Chydaeus) convexus* N. ITO, sp. nov.; A, aedeagus; S, stylus; d, dorsal aspect; l, lateral aspect; v, ventral aspect; is, everted inner sac. Scale: 1 mm.

claw segment trisetose ventrally along each margin.

Aedeagus (Fig. 4 A) robust, thickened medially; apex directed obliquely ventrad, curved horizontally and slightly reflexed at tip; apical orifice widely open, inner sac armed with two clusters of elongate and spinose sclerites near basal bulb. Stylus (Fig. 4 S) gently curved, with a short seta a little apart from tip, basal segment without any setae; valvifer unisetose at apex.

Length: 9.2–10.4 mm. Width: 4.0–4.5 mm

Holotype: ♂, Dabai, 2,220–2,300 m, Gaoligong Shan Mts., Tengchong Xian, Yunnan, China, 11–X–1996, S. UENO leg. (preserved in NSMT). Paratypes: 1 ♂, same data as the holotype; 1 ♂, Baihua Ling, 2,420 m, Gaoligong Shan Mts., Baoshan Xian, Yunnan, China, 16–X–1996, S. UENO leg.; 3 ♂♂, 3 ♀♀, Gaoligong Mts., 2,200–2,500 m, 24.57 N, 98.45 E, 8–16–V–1995, O. SEMELA leg. (preserved in NSMT and NIC).

This new species is easily distinguished from the other known species of the subgenus by the pronotum arcuate lengthwise at the sides. The new species more or less resembles *Chydaeus (Javanochydaeus) javanicus* SCHAUBERGER in general form, but in

addition to the subgeneric difference, the head is narrower and with larger eyes, the pronotum is less coarsely punctate and not humped in basal foveae, and the elytra bear flatter intervals.

Chydaeus (Chydaeus) nigricans N. ITO, sp. nov.

(Fig. 5)

This new species is allied to the previous new species, *Chydaeus (C.) convexus*, but the body is larger in size, the eyes are larger, the pronotum bears wider lateral furrows and is straightly convergent behind, the elytra are longer (ratio of length to width 1.40) and the microsculpture on the pronotum and elytra is clearer. The new species is also similar to *Chydaeus (C.) doiinthanonensis* N. ITO, but is easily distinguished from the latter by the eyes more prominent, the antennae longer, the pronotum wider in lateral furrows and more widely and densely punctate, and humeral angles more distinct. Further, the new species resembles *Chydaeus (C.) bedeli* (TSCHITSCHÉRINE), but the pronotum is more sparsely and finely punctate, not sinuate before the base and more obtuse at the basal angles, and the elytra are more widely rounded at the apices, a little more deeply sinuate preapically and clearly microsculptured.

Head 0.70 times as wide as the pronotal width, not well elevated; clypeal suture clear and hardly bisinuate; frontal impressions carved at the ends of suture, not prolonged backwards; eyes relatively large and convex; temples short; ligula wedge-shaped; microsculpture weakly visible as transverse meshes. Pronotum transversely subquadrate, 1.47 times as wide as long, weakly convex; apex rather deeply emarginate, straight in middle, mostly unbordered; base nearly equal in width to apex, feebly arcuate, thickly bordered; apical angles narrowly rounded; basal angles angulate and much larger than right angle; front transverse impression shallow and the hind one obsolete; microsculpture rather clearly detectable as fine transverse meshes. Elytra oblong, two-fifths longer than wide, one-fourth wider than the pronotal width, gently convex, impunctate; striae deep, clearly crenulate, scutellar striole somewhat long; intervals more or less convex on disc, becoming more convex basad and latero-apicad; marginal series divided into two groups, fore group composed of 10 umbilicate pores and the hind one of 13 pores; microsculpture consisting of fine and clear transverse meshes. Hind wings reduced, one-seventh the elytral length.

Ventral surface mostly smooth; metepisternum comparatively long and abruptly convergent behind, 1.38 times as long as wide; 6th abdominal sternite in ♂ widely rounded at apex and bisetose at each side. Hind femur bisetose; tarsi short, fore and mid tarsi bearing three or four setae dorsally in 2nd and 3rd segments, 1st mid tarsal segment without any adhesive hairs, hind tarsus in ♂ four-fifths the width of head, 1st segment two-thirds the 2nd and 3rd taken together, 2nd segment one-third longer than the 3rd and twice the 4th.

Aedeagus (Fig. 5) stout, fairly curved, apex not elongate, not sword-shaped and weakly thickened at tip; apical orifice wide only near apex, narrowed backwards, inner

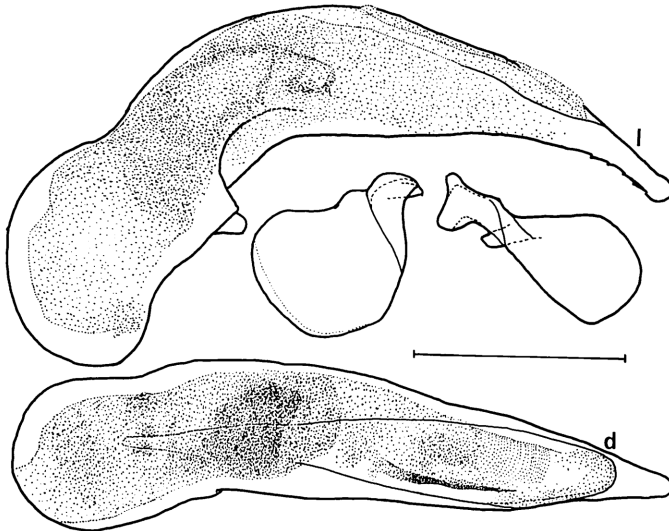


Fig. 5. Male genitalia of *Chydaeus (Chydaeus) nigricans* N. ITO, sp. nov.; d, dorsal aspect; l, lateral aspect; v, ventral aspect. Scale: 1 mm.

sac without sclerite; apical lobe narrowly triangular, not sword-shaped; ventral surface longitudinally depressed medially, ridged at sides, the ridge finely serrate.

Female unknown.

Length: 10.7 mm. Width: 4.5 mm.

Holotype: ♂, Gaoligong Mts., 2,200–2,500 m, 24.57 N, 98.45 E, Yunnan, China, 8~16-V-1995, O. SEMELA leg.

The aedeagus of *C. nigricans* is peculiar among the species of the genus in that the apex is rounded at the tip, not elongate like sword, and serrate at the sides of the ventral surface. These characteristics are usual in many other genera of the Harpalini and therefore must be plesiomorphic.

要 約

伊藤 昇：中国産 *Chydaeus* 属の3新種。——中国産の *Chydaeus* 属にはこれまで5種が知られていた。筆者はなん度か中国産 *Chydaeus* 属を検する機会があり、そのなかから新たに3新種を見いだした。本稿では、これらを *Chydaeus (Chydaeus) kasaharai* (湖北省), *C. (C.) convexus* (雲南省) および *C. (C.) nigricans* (雲南省) と命名し記載した。 *C. convexus* と *C. nigricans* は同所的に生息する。 *C. (C.) kasaharai* が雄の第4中付節に粘着毛を欠く点は、同亜属の他の種には見られない注目すべき特徴である。 *C. nigricans* は、その雄交尾器先端部が刀剣状に伸長せずかつその先が丸くなっている点で、本属の種としては特異である。ゴモクムシ族 Harpalini に属する他の種ではしばしば普通に見られることから、祖先的形質であろうと推測される。なお *C. kasaharai* は、オサムシ科とくにナガゴミムシの分類学的研究を精力的に進められ、また筆者には快く標本の貸与をして下さった故笠原須磨生氏に献名した。

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