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A Second Species of the Trechine Genus *Uenotrechus* (Coleoptera, Trechinae)

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Abstract A second species of the trechine genus *Uenotrechus* is described from a limestone cave at the southeastern part of Guizhou in South China, under the name *U. hybridiformis*. It looks like a hybrid of *Uenotrechus* and *Sinaphaenops*, being similar to the former in the dense bristly hairs covering the body surface and the peculiar elytral chaetotaxy, and to the latter in the highly modified facies and the absence of the marginal setae on the pronotum. However, its male characteristics are identical with those of the former, which is considered an infallible indication of its true affinity.

Introduction

In the course of seeking the true type locality of *Uenotrechus liboensis* DEUVE et TIAN (in DEUVE, TIAN & RAN, 1999, p. 133, figs. 2, 6; UÉNO & RAN, 2001, p. 12, figs. 1–3), RAN, KISHIMOTO and I made a faunal survey of the limestone cave called Bonong Dong on October 1, 2001, which lies in the central part of the Maolan National Nature Reserve at the southeastern part of Guizhou in South China. Being only 3.5 km distant to the south by west from the supposed type locality of the trechine beetle in question, this cave was surmised possibly to be inhabited by the same species. There I came across a very strange trechine beetle at a spot only 100 m or so removed from the entrance. It looked like a hybrid of *Sinaphaenops* and *Uenotrechus* by possessing *Sinaphaenops*-like facies and *Uenotrechus*-like coarse elytra covered densely with short bristly hairs and bearing peculiar chaetotaxy. Realizing the superior importance of the species, we revisited the cave on the next day and set baited traps for attracting additional material. Unfortunately, however, it became apparent after a week that our attempt was not repaid at all.

Though it was difficult to conclusively determine the true affinity of the beetle on the basis of the single available female, I tentatively regarded it as an aberrant member of *Sinaphaenops* somehow acquiring the elytral peculiarities of *Uenotrechus*, in view of the close similarity in the body form and in the absence of marginal setae on the pronotum (cf. UÉNO & RAN, 2001, pp. 7, 12). I was, however, never satisfied with this tentative conclusion, and paid a third visit to the cave on May 20, 2002, or seven and a half months later, with the hope that we could obtain some additional specimens including males. This trip was more successful than the previous one, since two speci-

mens of the same trechine were found within a few metres from the first collecting site, one from a crevice of yellowish clay deposited at the upper part of a side wall and the other running on a small stalagmite just under the wall. We set many baited traps in that place about 3 m^2 in area, and were disappointed again one week later in finding that all the traps were empty so far as concerned with the trechine beetle. To our utmost surprise, however, five specimens of the beetle were found from beneath fist-sized stones lying in the small area in which we set traps. Since they were not found under the same stones only a week before, it was most probable that they may have been attracted by the bait but did not come so close as to drop in the plastic bottles.

All the eight specimens thus at hands appeared to be females when they were examined in a hotel room, because no secondary sexual characters were detected with a magnifying glass. This was most unexpected, since a series of eight individuals found in the practically same place should contain at least one or two males, and since the male protarsal segments should be evidently modified in *Sinaphaenops* though simple in *Uenotrechus*. It was found out by later examination that the series contained only one male specimen, in which the protarsal segments were not modified as in the female and the anal ventrite bore two pair of marginal setae also as in the female. Thus, the Bonong Dong trechine must belong to *Uenotrechus* however similar to *Sinaphaenops* in general appearance and however different from *U. liboensis* in the configuration of the head and prothorax.

In the present paper, I am going to describe the very interesting trechine beetle under the name of *Uenotrechus hybridiformis* in view of the peculiar condition delineated above. The abbreviations employed herein are the same as those explained in previous papers of mine.

Before going into further details, I wish to express my hearty thanks to Dr. Toshio KISHIMOTO for his unfailing help in searching for cave trechines, and to Messrs. RAN Jingcheng and CHEN Huiming for their kind help in exploring the caves in the Maolan National Nature Reserve. Deep indebtedness should also be expressed to Mr. FAN Ting of the Academia Sinica and the authorities of the Maolan Reserve for their kind arrangement and permission to make investigations in this first-class reserve.

Uenotrechus hybridiformis S. UÉNO, sp. nov.

(Figs. 1–3)

Length: 7.10–8.10 mm (from apical margin of clypeus to apices of elytra); 7.75–8.90 mm (including mandibles).

Recognized at first sight on the *Sinaphaenops*-like facies. Different from the type species, *Uenotrechus liboensis* DEUVE et TIAN (in DEUVE, TIAN & RAN, 1999, p. 133, figs. 2, 6; UÉNO & RAN, 2001, p. 12, figs. 1–3), also in many peculiarities, above all in the larger size, very long head gradually narrowed posteriad and devoid of the posterior pair of supraorbital setae, short prothorax completely devoid of marginal setae on pronotum, more ovate elytra, and more robust aedeagus with ventrally curved apical

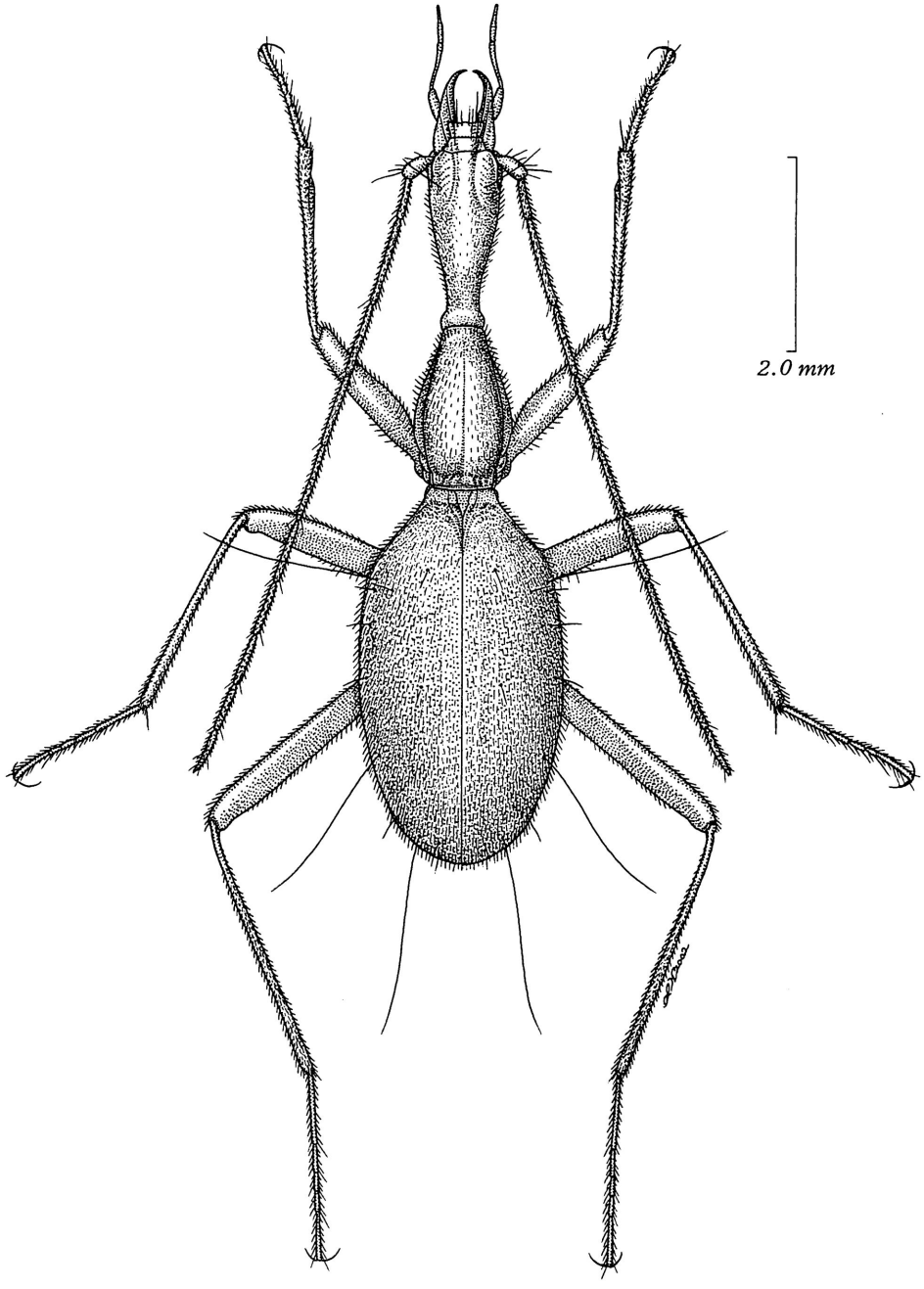


Fig. 1. *Uenotrechus hybridiformis* S. UÉNO, sp. nov., ♀, from Bonong Dong Cave in the Maolan National Nature Reserve, Southeast Guizhou.

lobe and very large, heavily sclerotized copulatory piece.

Colour dark reddish brown, moderately shiny; elytra less reddish, and opaque, sometimes wholly brownish. Body surface wholly covered with fairly long pubescence, which are particularly long on pronotum, dense and rather bristly on elytra, and not reduced even on the ventral surface of head and lateral parts of ventrites. Microsculpture mostly composed of fine transverse lines on head and pronotum, mal-defined on elytra, which are densely covered with coarse hair-bearing punctures.

Head very long and narrow, widest at the level of antennal articulation, and gradually narrowed posteriad to neck constriction which is shallow but distinct, with the sides either straight or slightly curved; HL/HW 2.47–2.77 (M 2.64), HL/PL 1.08–1.19 (M 1.13); neck convex, ring-shaped, with the anterior constriction about three-sevenths as wide as the widest part; dorsum well convex, with gently convex frons and rather depressed supraorbital areas; frontal furrows short but deep, only slightly arcuate; anterior pair of supraorbital pores widely spaced, located just behind the level of antennal articulation; posterior supraorbital pores absent, though exceptionally present in a paratype at about posterior third; genae either straight or very slightly curved in dorsal view; mandibles slender, inwardly arcuate in apical third and acute at the apices; mentum imperfectly fused with submentum though the trace of labial suture is usually traceable throughout, moderately concave, with the apical tooth more or less bifid at the tip; submentum provided with a transverse row of eight to ten setae. Antennae long and slender though not exceeding elytral apices, reaching apical tenth of elytra in ♂, apical fourth to sixth of elytra in ♀; scape very short, about six-sevenths as long as pedicel, which is only two-fifths as long as segment 3, segment 4 about as long as 5 or 6 and slightly shorter than 3, segments 7–10 gradually decreasing in length towards apex, all cylindrical and about nine times as long as wide in segment 5, segment 10 about a half as long as 3, terminal segment about as long as segment 9 and about three-fifths as wide as scape.

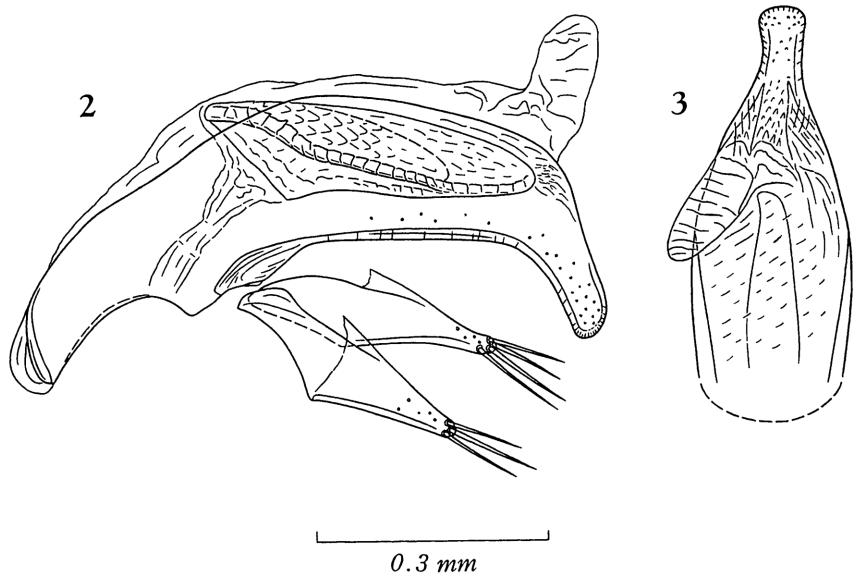
Prothorax elongated subovate, a little shorter but evidently wider than head, widest at about two-fifths from base, and much more gradually narrowed towards apex than towards base; PW/HW 1.32–1.40 (M 1.36), PL/PW 1.68–1.74 (M 1.72); apical third of propleura not visible from above. Pronotum elongate, widest at about middle, and more straightly narrowed towards apex than towards base; PNW/HW 1.07–1.15 (M 1.11), PL/PNW 2.03–2.14 (M 2.09), PNW/PA 1.71–1.88 (M 1.81), PNW/PB 1.19–1.28 (M 1.22); sides finely bordered throughout, very feebly arcuate at middle, and very briefly and almost invisibly sinuate just before hind angles; apex obviously narrower than base, arcuate, with rounded front angles, PB/PA 1.39–1.56 (M 1.48); base either straight or slightly arcuate, distinctly bordered, hind angles usually subrectangular though not so sharply defined, sometimes narrowly rounded at the corners; dorsum convex, basal transverse impression deep though uneven; basal area longitudinally notched.

Elytra oblong-ovate, widest at about or a little before middle, and much less narrowed towards broad humeral parts than towards apices, which are conjointly rounded;

EW/PW 1.99–2.14 (M 2.04), EL/PL 2.13–2.27 (M 2.21), EL/EW 1.81–1.91 (M 1.86); shoulders distinct though very obtuse; prehumeral borders oblique though evidently less so than in *U. liboensis*, nearly straight though sometimes slightly outcurved in proximal portions; sides finely bordered throughout, minutely serrulate and ciliated, nearly straight or very slightly sinuate behind humeral angles, then feebly arcuate to the level of the seventh umbilicate pore of the marginal series, and then moderately arcuate to rather narrowly rounded apices without preapical emargination; dorsum hemispherically convex, more strongly convex than in *U. liboensis*, and steeply declivous at the marginal parts, above all at the sides; basal areas depressed on each side of suture, scutellar area distinctly convex before the depressions, the convexity sometimes continuing onto the basal parts of sutural intervals as a carina; surface densely and coarsely punctate, sometimes subvariolate, and densely covered with bristly hairs, which do not form regular rows; striation effaced altogether though vague longitudinal depressions probably representing the vestiges of inner striae are sometimes perceptible on the disc; two short dorsal setae present on the site of stria 3 at 1/6–1/5 and 5/9–3/5 from base, respectively; preapical seta also short, located on the apical declivity near to apex and almost equally distant from apex and suture. Marginal umbilicate pores similar in arrangement to those of *U. liboensis*, particularly in the position of the fifth pore, which is nearer to the fourth pore than to the sixth, though the first pore is located either on the level of the third or on a level between the second and third.

Ventral surface as in *U. liboensis*. Legs longer than in *U. liboensis*, metatibia three-fourths to four-fifths as long as elytra and hardly outcurved in apical part; tarsi long, about two-thirds as long as respective tibiae in both midle and hind legs; protarsomere 1 unusually long, about six times as long as wide in both ♂ and ♀, much longer than protarsomeres 2–4 combined, and not modified in ♂; tarsomere 1 also long in meso- and metatarsi and obviously longer than tarsomeres 2–4 combined.

Male genital organ very small and rather lightly sclerotized, strikingly differing in configuration from that of the type species (cf. UÉNO & RAN, 2001, p.14, figs. 2–3). Aedeagus only one-fifth as long as elytra, short, lightly depressed, highest at about middle, gradually narrowed towards the base of apical lobe in profile, and widely membraneous on dorsum, with long basal part and ventrally produced apical lobe; basal part nearly straight though gently curved ventrad behind the level of parameral articulation, with very large basal orifice, whose sides are deeply emarginate posteriad; sagittal aileron small though distinct; viewed laterally, apical lobe abruptly bent ventrad at the base, straightly produced ventro-apicad, and gradually narrowed towards widely rounded extremity, which is more widely rounded on the dorsal side than on the ventral; viewed dorsally, apical part broad at the sides of apical orifice, rather abruptly narrowed apicad, and produced into a rather wide lobe very slightly dilated towards the tip, which is widely rounded or rather subtruncate; ventral margin straight behind middle in profile. Inner sac armed with a very large, heavily sclerotized copulatory piece, which is about three-fifths as long as aedeagus, spatulate as a whole, narrowly rounded at the apex, and covered with variously formed scales, with an additional lamella nar-



Figs. 2–3. Male genitalia of *Uenotrechus hybridiformis* S. UÉNO, sp. nov., from Bonong Dong Cave in the Maolan National Nature Reserve, Southeast Guizhou; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

rowly rounded at the apex on the right side; sac membrane covered with minute, poorly sclerotized scales near apical orifice. Styles small, subequal in size, devoid of ventral apophyses, and tapered to narrow apices; in the holotype, the right style bears four short apical setae of different length, while the left style bears only three apical setae.

Type series. Holotype: ♂, 20–V–2002, S. UÉNO leg. Allotype: ♀, 1–X–2001, S. UÉNO leg. Paratypes: 1 ♀, 20–V–2002, S. UÉNO leg.; 5 ♀♀, 27–V–2002, S. UÉNO & T. KISHIMOTO leg. All deposited at present in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Bonong Dong, 740 m in altitude, at Liangzaixin of Weng'ang Xiang in Libo Xian, at the southeastern part of Guizhou in South China.

Notes. As was repeatedly mentioned, this remarkable new species shows an intermediate state between *Uenotrechus liboensis* and *Sinaphaenops wangorum* S. UÉNO et RAN (1998, pp. 52, 53, figs. 1, 4–5), the latter of which occurs in the same cave, Bonong Dong. It is intermediate between them in the size, body form and the length of the antennae and legs, and is, if anything, nearer to the latter. Only the exceptions are the dense pubescence covering the body surface, chaetotaxial peculiarity of the elytra, and the unmodified protarsomeres in the male.

What seems worth noting on *U. hybridiformis* is the reduction of the dorsal and preapical setae and the peculiar position of the anterior (fifth) umbilicate pore of the

middle set of the marginal series. Both the dorsal and preapical pores are small and bear unusually short setae, only twice as long as the dense hairs arising from coarse punctures covering the elytra, so that it is not easy to recognize them even in fresh specimens. The two umbilicate pores of the middle set are usually located close to each other and are clearly isolated from the pores of the humeral and apical sets. This ordinary arrangement of marginal umbilicate pores is observed in all the known species of *Sinaphaenops* (cf. UÉNO, 2002; UÉNO & WANG, 1991; UÉNO & RAN, 1998). In *U. hybridiformis*, however, the anterior pore of the middle set is removed forwards, widely distant from the posterior pore of the middle set and nearer to the fourth pore of the humeral set, an exceptional character state also found in *U. liboensis*.

On the other hand, the male genitalia of *U. hybridiformis* are quite unique, neither similar to those of *U. liboensis* nor to those of any known species of *Sinaphaenops*. It is therefore possible to recognize a new subgenus for *U. hybridiformis*, but I do not prefer to take such an action for the time being, since our present knowledge is still inadequate about the variability of cave trechines from China.

Bonong Dong Cave, the type locality of *U. hybridiformis*, lies in the central part of the Maolan National Nature Reserve, about 3.5 km south by west of Bimang Dong Cave, the probable type locality of *U. liboensis*, and about 7.8 km northwest of Dazhu Dong Cave, from which was recorded *U. liboensis* with certainty (cf. UÉNO & RAN, 2001, pp. 14–15). The entrance to the cave is open in a subtropical forest and leads to the rather dry entrance room. There are two crawls lying side by side at the innermost of the entrance room, leading to the humid main part of the horizontal cave, which is roughly distinguished into three zones, solution passage in continuation of the entrance room, boulder room formed by collapse of the ceiling, and the innermost part decorated with stalagmites and flowstones. Of the three species of eyeless trechines known from this cave, *Uenotrechus hybridiformis* and *Libotrechus nishikawai* are found in the solution passage, while *Sinaphaenops wangorum* has been known from only the stalagmitic room at the innermost. As was noted in the introduction of this paper, *Uenotrechus hybridiformis* has been met with only in a small area at the right side less than ten metres removed from the crawls. In contrast to this, the second species seems to occur everywhere in the first zone, even in coexistence with the first, though by no means common.

要　　約

上野俊一：ウエノメクラチビゴミムシ属の第二の種．—— 中国貴州省南東部の茂兰国家級自然保护区内にある波弄洞から，ウエノメクラチビゴミムシ属の第二の種を記載し，これに *Uenotrechus hybridiformis* S. UÉNO という新名を与えた．この新種は，一見 *Sinaphaenops* 属の種にそっくりの外見をもちながら，体表の微細印刻や細毛の状態，剛毛の発達程度と剛毛式などは *Uenotrechus* に一致し，雄に二次性徴が現われない点でも後者に等しい．このように雑種的な特徴をもつ新種が，ふたつの属の分布域が重なり合う場所に出現したことは，両属の類縁関係や分化の過程を考察するうえでひじょうに興味深く，また重要な手掛りになるものと考えら

れる．いずれにしても，これらの 2 属が近縁のものであることに疑いの余地がなくなったことは，今後の研究発展に資するところが大きい．

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