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# A New Humicolous Species of the *Stevensius* Complex (Coleoptera, Trechinae) from Western Yunnan, Southwest China[1)]

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**Abstract** A new humicolous species of the carabid subfamily Trechinae is described from the alpine zone of the Diancang Shan Mountains in western Yunnan, Southwest China. It is tentatively placed in the genus *Deuveotrechus* of the *Stevensius* complex, though generic classification of this trechine group needs a thorough revision.

In the autumn of 1993, a strange species of trechine beetle was discovered by myself on Mt. Zhonghe Feng of the Diancang Shan Mountains stretching in the Dali area of western Yunnan, Southwest China, and was described under the name *Junnanotrechus microps* (UÉNO & YIN, 1993, p. 358, figs. 1–3). It was found at an altitude of 2,620 m, or at the lower periphery of the subalpine zone. Unfortunately, we were unable to make thorough investigation of higher places then because of unusually bad weather, though I once climbed up to the alpine zone.

Two years later, I was given an opportunity to make a faunal survey of the mountains once again, and succeeded in taking ample litter samples in the alpine zone. Nine specimens of a trechine beetle were sorted out from these samples and three more specimens of the same species were collected from beneath stones in nearby places. From this collection, it has become apparent that the alpine zone of the Diancang Shan Mountains harbours at least a new species of the *Stevensius* complex, which is utterly different from *Junnanotrechus* occurring at a lower elevation of the same mountain range.

This newly obtained species looks similar to *Deuveotrechus gregoryi* (JEANNEL, 1937, p. 87, fig. 8), but superficially varies towards *Queinnectrechus* (DEUVE, 1992 a, p. 354) in the configuration of its pronotal hind angles (cf. UÉNO, 1995, pp. 94–99). Besides, it is so strikingly different from *Deuveotrechus yuae* (DEUVE, 1992 b, p. 171, figs. 1, 12; UÉNO, 1995, p. 100, figs. 4–5), the type of the genus, in the conformation of its male genitalia, that its attribution to *Deuveotrechus* can be

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disputed. Unfortunately, *D. gregoryi* has been known from a single female, and so far as concerned with the prothoracic configuration, it is no doubt closer to *D. yuae* than to the present species. It is, however, undesirable to erect a new genus for the Diancang Shan species solely on the basis of its genitalic peculiarity, especially under the situation that aedeagal characters of *D. gregoryi* remain unknown.

In the present paper, therefore, I am going to place the new species tentatively in *Deuveotrechus* and to name it *D. yinae*, leaving the conclusive determination of its true affinity for future investigations. The abbreviations used herein are the same as those explained in previous papers of mine.

I wish herewith to express my deep indebtedness to the members of the 1995 expedition of the Sino-Japanese cooperative study on the soil fauna of Southwest China, above all to Professor YIN Wen-ying of the Shanghai Institute of Entomology and Professor ZHANG Han-yun of the Kunming Branch, Academia Sinica, for their kind help extended to me during the expedition. Hearty thanks are also due to Professor YU Peiyu of the Institute of Zoology, Academia Sinica, Beijing, for her kind help in the course of this study.

### ***Deuveotrechus yinae*** S. UÉNO, sp. nov.

(Figs. 1–3)

Length: 3.50–4.00 mm (from apical margin of clypeus to apices of elytra).

Similar in many respects to *D. gregoryi* (JEANNEL) from Kari (=Geng-li) in northwestern Yunnan, but smaller and less convex on dorsum, with larger prothorax whose basal area behind ante-basal sinuation of lateral sides is evidently longer mainly due to acutely protrudent hind angles.

Body short and broad, constricted between prothorax and hind body; surface glabrous and polished on both dorsum and venter; microsculpture practically vanished altogether, vestiges of fine transverse lines being discernible in some unspecified portions; inner wings absent. Colour blackish brown to black, anterior part of head, margins of each elytron, and epipleura almost always brownish, vertex, apical part and lateral margins of pronotum, and basal portions of elytra often also brownish; buccal appendages, antennae, and legs brown to dark brown.

Head wide, depressed above, with deep frontal furrows widely divergent in front and behind, and sometimes obtusely subangulate at middle; frons and supraorbital areas moderately convex, the latter distinctly foveolate at the bases of anterior supraorbital setae, whose mutual distance is, though variable, usually a little larger than that of the posterior; eyes somewhat variable in both size and convexity, though always small and flat, distinctly faceted; genae gently convex and perfectly glabrous, a half to two-thirds as long as eyes; neck fairly wide, neck constriction distinct at the sides; labrum transverse, anteriorly dilated, and rather deeply emarginate at apex; mandibles stout, briefly and sharply hooked at apices,

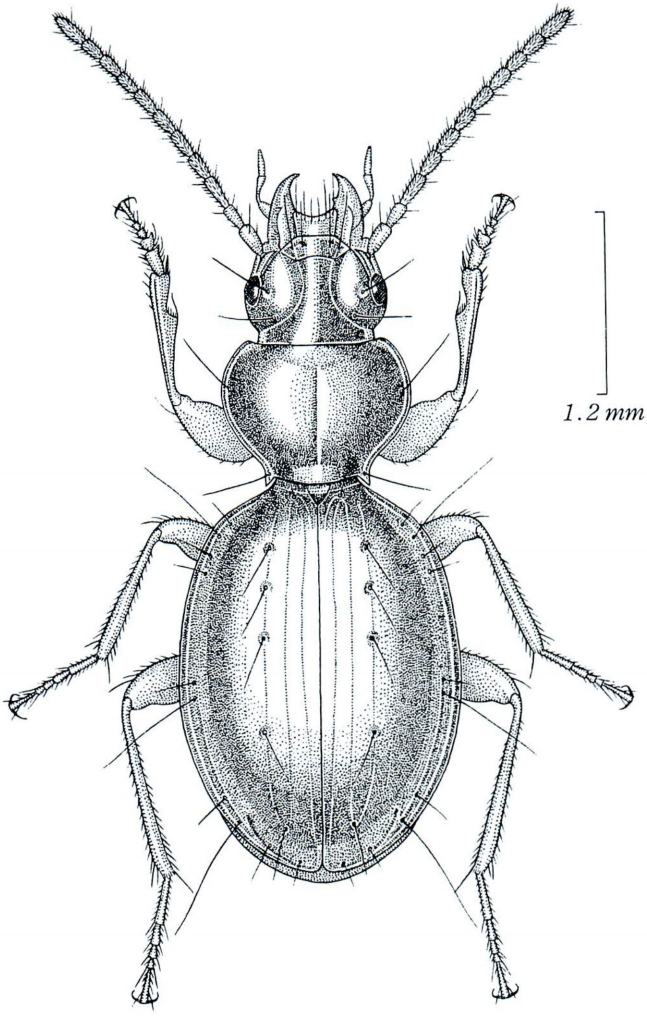


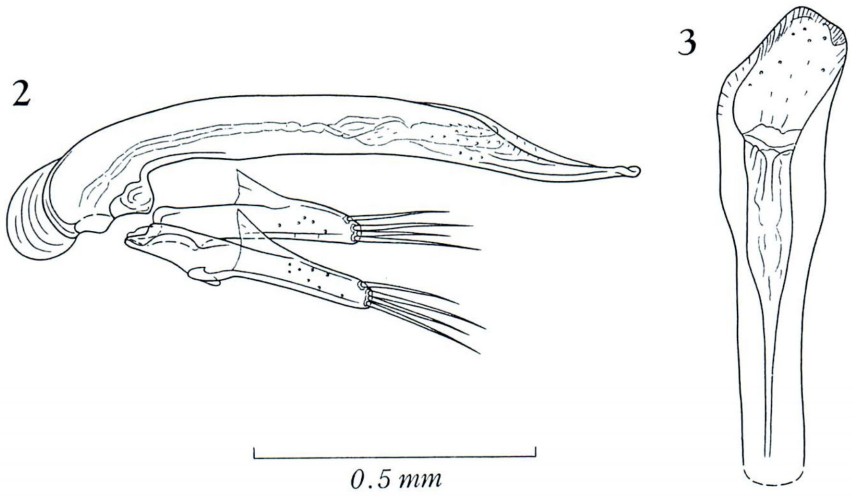

Fig. 1. *Deuveotrechus yinae* S. UÉNO, sp. nov., ♂, from Mt. Xueren Feng of the Diancang Shan Mountains in western Yunnan.

right mandible with a distinct premolar tooth; mentum not fused with submentum, with distinct labial suture, the former with a broad porrect tooth usually subtruncate at the apex, the latter sexsetose; palpi short and stout, penultimate segments widely dilated towards apices, especially in maxillary palpus, about as long as apical segment in labial palpus, and slightly shorter than that in maxillary palpus; antennae short and stout, subfiliform, reaching basal two-ninths to one-fourth of elytra in ♂, reaching basal fifth of elytra or a little shorter than that in ♀, segment 2 about as long as segment 9 and about four-fifths as long as 3,

segment 4 about as long as 5, shorter than 3 but slightly longer than 2, the remaining segments gradually decreasing in length towards segment 10 which is the shortest, each suboval and slightly less than twice as long as wide, terminal segment slightly longer than 3, about as long as but obviously narrower than scape.

Pronotum fairly large, transverse cordate, obviously wider than head, wider than long in a similar proportion, widest at about two-thirds from base, and much more strongly contracted at base than at apex; PW/HW 1.26–1.37 (M 1.32), PW/PL 1.27–1.37 (M 1.32), PW/PA 1.41–1.56 (M 1.46), PW/PB 1.67–1.89 (M 1.77); sides rather narrowly bordered throughout, strongly rounded in front, less so behind, deeply sinuate at about basal eighth or a little before that level, and then usually dilated towards hind angles though sometimes subparallel, with two pair of marginal setae, the posterior one of which is a little distant from hind angles; apex nearly straight, evidently wider than base, PA/PB 1.17–1.28 (M 1.22) [PB/PA 0.78–0.85 (M 0.82)], front angles very obtuse, only slightly advanced; base slightly arcuate at middle, briefly but distinctly emarginate on each side just inside hind angle, though the emargination varies to some extent in both size and depth due to individual difference in length and dilatation of hind angles; hind angles always sharp, usually acute, usually protrudent more or less postero-laterad but sometimes only posteriad; dorsum well convex, median line deeply impressed on the disc, but neither deepened nor widened in basal area; apical transverse impression shallow and irregular, though discernible; basal transverse impression continuous, foveolate on each side of median line and laterally merging into basal foveae, which are small but deep; postangular carinae absent; basal area smooth.

Elytra short, oval, much wider than prothorax, widest at about middle, and equally narrowed towards bases and apices; EW/PW 1.48–1.59 (M 1.56), EL/PL 2.62–2.82 (M 2.69), EL/EW 1.26–1.35 (M 1.31); shoulders widely rounded, almost effaced; prehumeral borders oblique, either very slightly arcuate or straight, diminished proximally and ending in a fine point on each side; sides rather widely reflexed, regularly arcuate from shoulders to slight preapical emargination; apices widely rounded, forming a small re-entrant angle at suture; dorsum convex, especially at the lateral parts, though longitudinally depressed on the disc, apical declivity rather gentle; scutellar striole short but distinctly impressed; striae deeply impressed and crenulate on the disc but obsolete at the side, 1–2 deep throughout, 3 shallower than the inner ones and disappearing near the two ends, 4 still shallower than 3 and obsolete in basal sixth, 5 very fine and fragmentary, 6–7 absent, 8 distinctly impressed behind the middle set of marginal umbilicate pores; apical striole short but deeply impressed, moderately arcuate, free at the anterior end though seemingly directed to the site of stria 5; intervals feebly convex only near suture, apical carina prominent though short; stria 3 with four or five setiferous dorsal pores between basal ninth and apical third (4 pores on both the elytra in 4 specimens (2♂♂, 2♀♀), 4 pores on the left elytron and 5 pores on the right in




Figs. 2–3. Male genitalia of *Deuveotrechus yinae* S. UÉNO, sp. nov., from Mt. Xueren Feng of the Diancang Shan Mountains; left lateral view (2), and apical part of aedeagus, dorsal view (3).

1♀, 5 pores on the left elytron and 4 pores on the right in 3 specimens (2♂♂, 1♀), and 5 pores on both the elytra in 3♀♀), all remarkably foveolate at the roots, a sixth pore present on the right elytron in a female paratype, which bears 4 pores on the left elytron; preapical pore situated at the apical anastomosis of striae 2 and 3 or at its site within the field of apical striole, more distant from apex than from suture, and nearer to suture than to apical striole; marginal umbilicate pores aggregated and nearly regular.

Ventral surface smooth; anal sternite bisetose in ♂, quadrisetose in ♀. Legs rather short and stout; protibiae straight, moderately dilated towards apices, each longitudinally grooved on the external face, and pubescent on the anterior face; tarsi short, tarsomere 1 about as long as or slightly shorter than tarsomeres 2–3 together in mesotarsus, evidently longer than that but shorter than tarsomeres 2–4 together in metatarsus, tarsomere 4 with a long hyaline ventral apophysis in pro- and mesotarsi; in ♂, two proximal protarsomeres widely dilated, stoutly produced inwards at apices, and furnished beneath with adhesive appendages.

Male genital organ elongate and moderately sclerotized. Aedeagus nearly a half as long as elytra, almost straight, tubular in proximal half but dilated and flattened in apical third, with small basal part and peculiarly asymmetrical apical part; basal part briefly bent ventrad, with small basal orifice and large rounded sagittal aileron; viewed dorsally, apical lobe scalene subtriangular, rounded at every corner and inclined to the left, with the right margin about twice as long as the left, left aedeagal wall before apical lobe slightly emarginate; viewed laterally, apical part narrow, feebly sinuate, gradually tapered towards the tip of apical

lobe, which is briefly twisted; ventral margin slightly emarginate behind middle in profile. Inner sac inerm, though minutely scaly just inside apical orifice. Styles small, left style only a little longer than the right and with much reduced ventral apophysis, each bearing four apical setae.

*Type series.* Holotype: ♂, allotype: ♀, paratypes: 3♂♂, 7♀♀ (incl. teneral 1♂, 1♀), 27–X–1995, S. UÉNO leg. The holotype is deposited in the collection of the Shanghai Institute of Entomology, Academia Sinica, Shanghai. One paratype is preserved in the collection of the Institute of Zoology, Academia Sinica, Beijing. The remainings are in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Type locality.* Mt. Xueren Feng, 3,350 m (2♀♀) and 3,400 m (4♂♂, 6♀♀ incl. holo- and allotypes) in altitude, of the Diancang Shan Mountains, in Dali Shi of western Yunnan, Southwest China.

*Notes.* Though not unlike *D. gregoryi*, this new trechine is evidently different from that species in the configuration of its pronotal hind angles, which form acute teeth protrudent postero-laterad or posteriad. They remind us of the unique hind angles of the genus *Queinnectrechus*, but the conformation of hind angles is utterly different between them. In *D. yinae*, the marginal gutters extend to the basal border along the inner sides of the hind angles, which are sharply edged outwards, whereas in *Queinnectrechus*, the marginal gutters become effaced behind the middle and do not extend to the inner sides of the digitiform hind angles.

As was noted in the introduction, the present species is markedly different from the type of the genus in the conformation of its male genitalia. It is also different from the latter in the short broad facies. These facts seem to suggest that the two species actually belong to two different genera, but if such a view is adopted, we have to be confronted with a difficulty of placing *D. gregoryi* in its proper position. Generic classification of the *Stevensius* complex is already in confusion, since males of certain critical species have been unknown, *e.g.*, *Deuveotrechus gregoryi* (JEANNEL) and *Kozlovites caviceps* JEANNEL. For the time being, I prefer to refrain from proposing another new genus for *D. yinae*, especially in view that the trechine fauna of Southwest China has been rapidly clarified in recent years.

The peculiar aedeagus of *D. yinae* with tubular proximal half and strangely modified apical part reminds us of the unique diversification of the aedeagi in the genus *Luzonotrechus*. Dealing with the Philippine trechines, I noticed certain resemblance between *Luzonotrechus* and *Agonotrechus* (UÉNO, 1979, p. 29), and demonstrated later (UÉNO, 1987, p. 125, 1992, p. 194) that the ecological divergence of lineages in the Philippine genus is paralleled by the genera belonging to the *Agonotrechus* series and that the former may have a remote relationship to the latter. This view seems confirmed to some extent by the discovery of *D. yinae*, which belongs to the *Stevensius* complex of the *Agonotrechus* series, but in which the aedeagus shows a peculiar modification without developing copulatory

sclerite, just as in the case of *Luzonotrechus*.

Most specimens of the type series of this interesting species were sifted out from heaps of dead leaves accumulated among the roots of arrow-bamboos growing under rhododendron trees just below the timber-limit of a sparse *Abies* forest. It was already cold when the collecting was made, and the trechine beetle hardly moved even when sifted out. It is surprising that two teneral individuals were included in the collection, since this seems to mean that the beetles emerged not long before that time and entered into hibernation even in a teneral state. Three individuals of *D. yinae* were found out from beneath stones embedded in the ground, though it was not determined whether they dwelled there as one of their ordinary habitats or just took refuge beneath those stones for passing the winter.

This interesting, and problematical, species is dedicated to Professor YIN Wen-ying of the Shanghai Institute of Entomology, Academia Sinica, the most eminent soil zoologist of the People's Republic of China and the leading scholar of the proturan taxonomy in the world, who organized the project "Sino-Japanese Cooperative Study on the Soil Fauna of Southwest China" and always invited me to the project.


## 要　　約

上野俊一：中国云南省西部にすむ高山性ヒサゴチビゴミムシ類の1新腐植種．—— 中国云南省西部の大理地域にある点苍山脈では，亜高山帯の下部から，ヒサゴチビゴミムシ系列の*Junnanotrechus microps* S. UÉNO et YIN が先に報告されている．1995年の秋季に行われた現地調査で，この山脈の高山帯から，同じ系列のチビゴミムシの別新種が発見された．雄交尾器の形状が特異であるために，この種の所属にはかなり問題があるが，外形的には云南省北西部から記載された*Deuveotrechus gregoryi* (JEANNEL) に似ている点が多い．それで，いちおう同属のものとして*Deuveotrechus yinae* という新名を与え，この論文に記載した．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# Exact Localities of *Perileptus denticollis* (Coleoptera, Trechinae)[1)]

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*Perileptus denticollis* JEANNEL (1923, Ann. Mag. nat. Hist., (IX), **12**, pp. 397, 406; 1926, Abeille, Paris, **32**, pp. 408, 426, figs. 202–204) was described from five specimens (3♂♂, 2♀♀; not "quatre" though so-stated in the original description) collected by French missionaries in "Yun-Nan". I have seen them in the Muséum national d'Histoire naturelle, Paris, and the Natural History Museum, London, and six additional specimens (1♂, 5♀♀) preserved in the same museums, all simply labeled "Yun-Nan". They were collected at the beginning of this century, probably before 1907, and nothing new has been added to our knowledge of the species. I failed in finding it in Xishuangbanna (cf. UÉNO & YIN, 1993, Bull. natn. Sci. Mus., Tokyo, (A), **19**, p. 70), and also in the vicinities of Kunming.

Finally in the autumn of 1995, I was able to locate three habitats of the species in the Dali area of western Yunnan. Before giving its full account, I will record these exact localities of *Perileptus denticollis*, as follows:

1♂, 2♀♀, Maocaoshao, 1,590 m alt., Taiyi Xiang, Dali Shi, 26–X–1995, S. UÉNO leg.; 5♂♂, 4♀♀, Jinlong He River, Dianxincun, 2,100 m alt., Jinhe Cun, Dongling Xiang, Jianchuan Xian, 23–X–1995, S. UÉNO leg.; 1♂, Shazhi He River, 1,740 m alt., Shazhi Cun, Binchuan Xian, 25–X–1995, Y. WATANABE leg.

At every locality, the perileptine was found on gravelly banks of clear swift streams.

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