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Notes on the Trechine Fauna (Coleoptera, Trechinae) of the Diancang Shan Mountains in Western Yunnan, Southwest China[1)]

Shun-Ichi UÉNO

Department of Zoology, National Science Museum (Nat. Hist.),
3–23–1 Hyakunin-chô, Shinjuku, Tokyo, 169 Japan

and

YIN Wen-ying

Shanghai Institute of Entomology, Academia Sinica,
Shanghai, 200025 China

Abstract Two species of trechine beetles are recorded from the Diancang Shan Mountains in western Yunnan, Southwest China. One of them is identified with *Trechus macrops* JEANNEL, a poorly known species tentatively revived from the synonymic list. The other one is a remarkable new species of the *Agonotrechus* series, for which a new genus is erected. The new name given is *Junnanotrechus microps*.

Participating in a second expedition of a Sino-Japanese joint party of entomologists to Yunnan, Southwest China, made in late August and September 1993, the authors had an opportunity to visit the Dali area in the western part of the province and to collect many samples of soil-living animals. Unfortunately, their activities were much hindered by bad weather quite unusual for that season, and were limited to the Diancang Shan Mountains stretching from north to south at the western side of Dali. Even on this range of mountains, the alpine zone above 3,000 m in altitude was always enveloped in heavy cloud, which prevented investigators from climbing up to the tops of peaks. In spite of such an unfavourable condition, a few members including UÉNO once succeeded in attaining to a height of 3,600 m and collected samples in shrubberies of rhododendrons and *Abies*. Thus, the authors were able to obtain two different species of trechine beetles on these mountains.

One of the two species is fully winged and widely distributed in the Dali area. It accords well with *Trechus macrops* JEANNEL described from Yun-Nan, and though it was synonymized by the French author himself with *T. indicus* PUTZEYS, the present authors tentatively regarded it as a full species. The other species obtained by the expedition is an apterous member of the *Agonotrechus* series and looks like a small

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species of *Stevensius*. It is, however, peculiar in the elytral chaetotaxy and conformation of the male genitalia. It should belong to a new genus, which will be described in the present paper. The abbreviations used herein are the same as those explained in previous papers of UÉNO's. The specimens examined are preserved in the collection of the Shanghai Institute of Entomology, Academia Sinica, and of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

The authors are deeply indebted to the members of the expedition for their help extended to them during the survey, above all to Professor Yasuaki WATANABE and Messrs. ZHAO Li-Jun and XIAO Ning-Nian for their kind assistance in the field.

Trechus (s. str.) ***macrops*** JEANNEL, 1927

Trechus (s. str.) *macrops* JEANNEL, 1927, Abeille, Paris, **33**, pp. 157, 160, figs. 533–536; type area: Yun-Nan. —— CSIKI, 1928, Coleopt. Cat., (98), p. 246.
Trechus macrops: ANDREWES, 1935, Fn. Brit. Ind., Coleopt. Carab., **2**, pp. 63, 67, fig. 10 [*partim*].
Trechus (s. str.) *indicus*: JEANNEL, 1935, Rev. fr. Ent., **1**, p. 275 [*partim*].

Specimens examined. 2 ♂♂, 3 ♀♀, Mt. Zhonghe Feng, 2,500 m alt., Diancang Shan Mts., Dali Shi, Yunnan, 4–IX–1993, S. UÉNO & Y. WATANABE leg.; 7 ♂♂, Qingbi Xi, 2,290 m alt., Diancang Shan Mts., Dali Shi, Yunnan, 31–VIII–1993, S. UÉNO & Y. WATANABE leg.; 2 ♀♀, Guantong Si, 2,230 m alt., Diancang Shan Mts., Dali Shi, Yunnan, 31–VIII–1993, S. UÉNO leg.; 1 ♂, 1 ♀, Mt. Xiaojin Shan, 2,140 m alt., above Jingzai Zhuang, Diancang Shan Mts., Dali Shi, Yunnan, 3–IX–1993, S. UÉNO leg.; 1 ♀, Mt. Laohu Shan, 2,200 m alt., Dali Shi, Yunnan, 3–IX–1993, Y. WATANABE leg.; 2 ♂♂, 1 ♀, Mt. Laotai Shan, 1,810 m alt., Shazhi, Binchuan Xian, Yunnan, 30–VIII–1993, Y. WATANABE leg.

Notes. In the present paper, the name *macrops* is adopted with some reservation for the Yunnanese populations of the alate trechine. It was given by JEANNEL (1927) to a single male specimen from an unspecified locality in Yun-Nan, and later (1935) synonymized by himself with *T. indicus* PUTZEYS with comment that "le *T. macrops* Jeann., du Yun-Nan, correspond à de grands exemplaires, à yeux très développés, du *T. indicus*." According to ANDREWES (1935, p. 68), JEANNEL was then "of opinion that the type [of *T. macrops*] was incorrectly labelled and that the species is an Indian one." However, it now becomes evident that "Yun-Nan" is not a mislabelling and that the species occurs rather commonly in the Dali area. Our specimens perfectly agree with the type except that the aedeagus always bears a well developed sagittal aileron. UÉNO has seen many specimens of *T. indicus* from the Himalayas including Bhutan, and is satisfied at present that though rather subtle, the differences pointed out by JEANNEL (1927) between *T. indicus* and *T. macrops* are truly diagnostic. It is possible that the Yunnanese populations merely represent an eastern geographical race of *T. indicus*, but the materials now at our hands are not sufficient for drawing a final conclusion.

In the Dali area, *Trechus macrops* usually occurs in shrubberies along narrow streams from near the foot to middle altitude of mountains (1,800–2,500 m above sea-

level). It can be sifted out from heaps of dead leaves and is seldom found from beneath stones. Even in dry pine forests which prevail in the vicinities of Dali, the trechine beetle dwells in small wet spots covered with broadleaved undergrowths. It is not a quick runner, but appears to take wing at night. This is probably why it has been able to colonize in isolated spots within a seemingly unfavourable area.

Genus ***Junnanotrechus*** S. UÉNO et YIN, nov.

Type species: *Junnanotrechus microps* S. UÉNO et YIN, sp. nov.

Belonging to the *Agonotrechus* series and remotely related to *Lamprotrechus* S. UÉNO (1975, p. 144) and *Taiwanotrechus* S. UÉNO (1987, p. 335), but readily distinguished from them by the presence of one dorsal pore of the external series and of the preapical pore, the externally grooved protibiae devoid of pubescence on the anterior face, and the unique conformation of the male genitalia to be described later. Besides, it is different from *Taiwanotrechus* in the complete lateral borders of pronotum bearing two pair of marginal setae. From *Stevensius* JEANNEL (1923, p. 432; UÉNO, 1977, p. 246), it is discriminated by different chaetotaxy of the elytra, the free mentum, and the unique conformation of the male genitalia.

Somewhat myrmecoid in facies; body well constricted between pro- and mesothoraces, and with strongly convex hind part; surface glabrous and polished on both dorsum and venter, without microsculpture except on head, where vestiges of fine transverse lines are partially perceptible; colour brown to dark brown, with more or less lighter appendages; inner wings absent.

Head large and wide, with very small but distinct eyes and tumid genae sparsely covered with erect hairs; frontal furrows deep throughout, not angulate at middle though widely divergent behind towards deep neck constriction; two pair of supraorbital pores present on lines subparallel to each other, the anterior pair being deeply foveolate; labrum rather deeply emarginate at apex; mandibles stout though fairly slender in arcuate apical parts, a distinct premolar tooth present on the right one; mentum free, with the tooth simply triangular; submentum quadrisetose, lacking in the median pair of setae; ligula and paraglossae as in *Taiwanotrechus*; palpi short and stout, structurally similar to those in *Taiwanotrechus*, but the penultimate segment is completely glabrous in maxillary palpus; antennae short and stout, subfiliform, segments 3–10 subequal in length to one another.

Pronotum subcordate and convex, completely bordered at the sides, and briefly subpedunculate at the base; front angles rounded off, hind angles obtuse and rounded at the corners; both lateral and postangular setae present, the latter being either on hind angle or slightly removed forwards; surface smooth, without discal setae; median line deeply impressed though reaching neither apex nor base; basal transverse impression sulciform and arcuate, basal foveae not sharply defined; basal area narrow and smooth.

Elytra oval, much wider than prothorax, and strongly convex though longitudi-

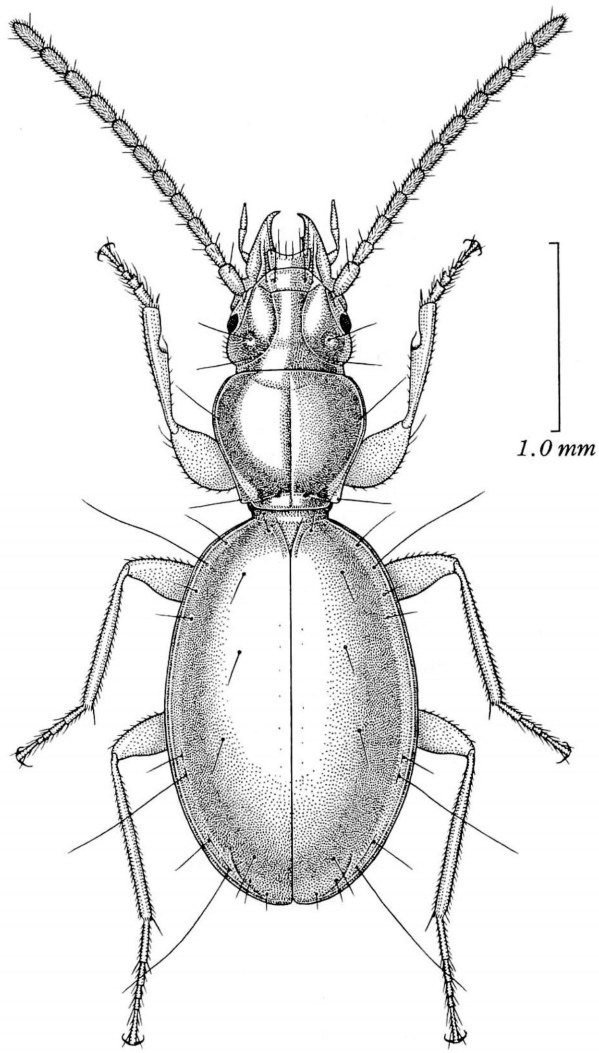


Fig. 1. *Junnanotrechus microps* S. UÉNO et YIN, gen. et sp. nov., ♂, from Mt. Zhonghe Feng of the Diancang Shan Mountains.

nally depressed on the disc along suture; sides narrowly bordered throughout, the border becoming narrower and finer before shoulder but complete to basal peduncle; shoulders widely rounded; striae evanescent altogether, though their sites are partially indicated by rows of fine indistinct punctures, stria 8 impressed only near the umbilicate pores of the middle and apical sets; scutellar striole clearly impressed along scutellum; apical striole short but distinct, widely curved and directed to the site of stria 7; apical carina very obtuse; two setiferous dorsal pores present on the site of stria 3 before middle, and one just behind middle on interval 5 close to the site of stria 4; preapical

pore present just before the level of the terminus of apical striole, evidently more distant from apex than from suture, and closer to apical striole than to suture; apical pores normal; marginal umbilicate pores nearly regular, but the four pores of the humeral set are not perfectly aggregated, rather widely spaced, sometimes equidistant but more frequently somewhat irregularly ranged.

Ventral surface smooth; anal sternite with the apical margin more strongly arcuate in ♂ than in ♀, anal setae normal as in *Taiwanotrechus*. Legs short and fairly stout; protibiae nearly straight, moderately dilated towards apices, longitudinally grooved on the external face, and glabrous on the anterior face even at the apical portion; tarsi fairly stout, segment 1 about as long as segments 2 and 3 together in mesotarsus, slightly longer than that in metatarsus, segment 4 with a hyaline ventral apophysis in pro- and mesotarsi; in ♂, two proximal segments of each protarsus moderately dilated, stoutly denticulate inwards at apices, and furnished beneath with sexual adhesive appendages.

Male genital organ rather short though tubular, obviously arcuate before middle, with short broad apical lobe whose tip is dorsally hooked; basal part flattened, widely open on the ventral side and devoid of sagittal aileron. Inner sac scaly though the scales are hardly sclerotized except for the left side; no differentiated copulatory piece. Styles small and strongly arcuate at middle, with unusually slender apical parts, which bear four short setae at each apex; ventral apophysis completely absent even in the left style.

Notes. This is an interesting genus most closely similar to *Stevensius* JEANNEL (1923, p. 432) of the Himalayas in general appearance, particularly in the characteristic configuration of the head, but is decisively different from it in the elytral chaetotaxy, above all in the presence of a setiferous dorsal pore of the external series. In *Junnanotrechus*, this pore is not yet settled on the fifth elytral stria; it lies on the fifth interval close to the fourth stria, a condition seldom found in the Trechinae. Although presence of dorsal pores on the fifth interval is quite exceptional for the members of the *Agonotrechus* series, it is known in the Japanese genus *Iga* S. UÉNO (1953, p. 30), in which a well-fixed setiferous pore exists on the site of the fifth stria near its base. As compared with external dorsal pores, the preapical pore has lesser importance from the taxonomic viewpoint. It is true that the preapical pore exists in *Junnanotrechus* and is generally absent in both *Stevensius* and *Iga*, but the pore asymmetrically appears on one elytron in certain aberrant individuals of *Stevensius* (cf. UÉNO, 1977, pp. 247, 252), which suggests that its absence is not definitely fixed as yet at least in the Himalayan genus.

Peculiarity of *Junnanotrechus* is more pronounced in the unique conformation of its male genitalia, not only in the absence of differentiated copulatory piece but also in the strangely shaped basal orifice, complete absence of the ventral apophysis on the left style, and the exceedingly thin apical parts of both the styles bearing unusually short apical setae. Male genitalia of similar type have not been known in other members of the *Agonotrechus* series, nor in any other genera of the Asian Trechinae.

This fact alone will suffice for erection of a new genus for the Yunnanese beetle.

When the genus *Taiwanotrechus* was erected by UÉNO (1987), genitalic features were unknown for two isolated species of the *Agonotrechus* series, that is, "*Stevensius*" *gregoryi* JEANNEL (1937, p. 87, fig. 8) and *Kozlovites caviceps* JEANNEL (1935, p. 280, fig. 9). Recently, an Yunnanese species related to the former was described by DEUVE (1992, pp. 171–172, figs. 1, 12) under the name of *Kozlovites yuae*, on the premise that the two species described by JEANNEL are congeneric. This opinion can be disputed, since "*S.*" *gregoryi* and *K. caviceps* seem generically different according to UÉNO's re-examination of their holotypes (cf. UÉNO, 1977, p. 246). JEANNEL (1962, p. 184) may have been right in considering that "le *S. Gregoryi* Jeann. doit très probablement être rapproché du *Kozlovites caviceps* Jeann. du Thibet," but he refrained from removing the former from *Stevensius* to *Kozlovites*, only stating that "la position systématique de *Kozlovites* restera mystérieuse tant que le mâle ne sera pas connu." Be that as it may, we have to thank DEUVE's deed in bringing the aedeagal features of "*K.*" *yuae* to light; the aedeagus is of the same basic type as that of *Stevensius*, though differing from the latter in the large hooked apical lobe and the long aciculate copulatory piece, and is utterly different from that of *Junnanotrechus*.

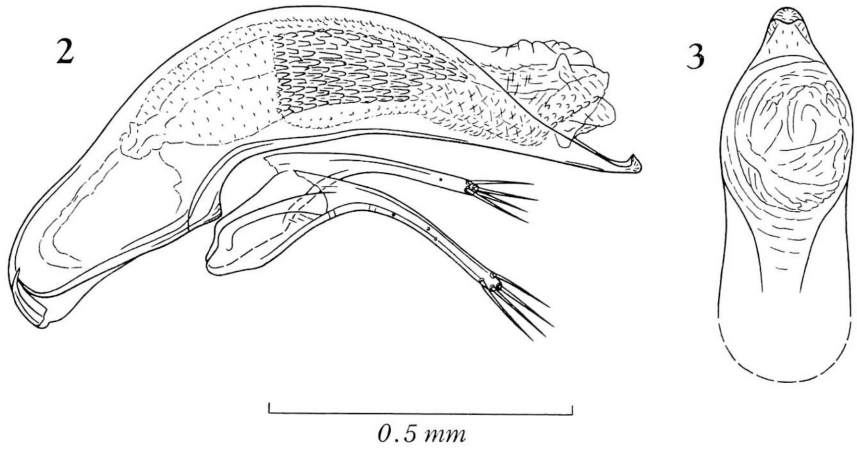
Junnanotrechus microps S. UÉNO et YIN, sp. nov.

(Figs. 1–3)

Length: 3.30–3.75 mm (from apical margin of clypeus to apices of elytra).

Colour brown to dark brown, very shiny and faintly iridescent on elytra, which are infuscated with the basal areas sometimes reddish; buccal organs, apical halves of antennae, and ventral surface usually dark reddish brown; palpi and legs more or less lighter than other parts.

Head large, wide, and depressed above, evidently wider than long, widest at about basal fourth or at the level of the top of strong genal convexity; frontal furrows deep, nearest to each other at the level of the anterior margins of eyes; frons longitudinally raised, usually with short transverse wrinkles at the sides; supraorbital areas ample, moderately convex and smooth, though deeply foveolate at the roots of the anterior pair of supraorbital setae; microsculpture rudimentary, only perceptible on clypeus and at the anterior portion of frons as obscure lines, which are irregularly transverse; eyes very small though gently convex and rather coarsely faceted, about two-thirds as long as genae in ♂, about five-ninths as long as genae in ♀, the distance between their external margins being obviously smaller than that between the tops of genal convexities; neck very wide, with the anterior constriction sharply impressed at the sides; palpi short and stout, with penultimate segments widely dilated towards apices and surmounted by elongated subconical apical ones; antennae reaching basal third of elytra in ♂, slightly shorter than that in ♀, scape thick, obviously thicker than terminal segment though about as long as the latter and about 1.3 times as long as each of segments 3–10, segment 2 slightly shorter than the following segment, seg-



Figs. 2–3. Male genitalia of *Junnanotrechus microps* S. UÉNO et YIN, gen. et sp. nov., from Mt. Zhonghe Feng of the Diancang Shan Mountains; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

ments 6–10 each suboval and nearly twice as long as wide.

Pronotum subcordate, wider than head, a little wider than long, widest at about two-thirds from base or a little behind that level, and more gradually narrowed towards base than towards apex; PW/HW 1.20–1.25 (M 1.22), PW/PL 1.07–1.13 (M 1.11), PW/PA ca. 1.36–1.44 (M ca. 1.41), PW/PB ca. 1.51–1.60 (M ca. 1.55); sides rather strongly rounded before the widest part but only feebly arcuate behind middle, and very slightly and briefly sinuate just before hind angles, which are obtuse and narrowly rounded at the corners; side borders complete though narrow in median third and widely reflexed near hind angles; apex gently and widely arcuate, more or less wider than base, PA/PB ca. 1.07–1.15 (M ca. 1.10), with front angles rounded off and not advanced; base briefly subpedunculate, either straight or slightly arcuate at middle, and deeply emarginate on each side just inside hind angle; surface convex and smooth, though usually with vague transverse striations, median line deeply impressed on the disc, apical transverse impression obvious though superficial, linear and more or less uneven; basal transverse impression sulciform, gently arcuate, foveolate on each side of median line, and more or less uneven at the bottom; basal foveae not sharply defined though extending anteriad towards the sides.

Elytra oval, much wider than pronotum, and obviously longer than wide, widest at about middle, and equally narrowed towards bases and towards apices; EW/PW 1.58–1.66 (M 1.61), EL/EW 1.39–1.47 (M 1.43); shoulders widely rounded though not completely effaced, with prehumeral borders very slightly arcuate and not very oblique; sides moderately arcuate from shoulders to near apices, which are rather widely rounded and usually form a very obtuse re-entrant angle at suture, preapical emargination very slight; surface strongly convex, especially behind middle, though longitudinally

depressed along suture, with very steep apical declivity; striae evanescent as described under the genus, scutellar and apical strioles distinct also as described under the genus; two setiferous dorsal pores of the internal series usually situated at about 1/10 and 1/3 from base, respectively, though their position varies to some extent according to individuals, a single setiferous dorsal pore of the external series usually situated at about 5/9 from base; preapical, apical and marginal pores as described under the genus.

Legs short and fairly stout, of the conformation as described under the genus.

Male genital organ lightly sclerotized. Aedeagus about two-fifths as long as elytra, rather short and robust, moderately arcuate before middle though the basal part is straightly produced, with the dorsal margin semicircularly rounded at middle in profile; basal part elongate, with large horizontal basal orifice, whose right wall is ventrally produced at the proximal part; viewed dorsally, apical lobe short and broad, gradually narrowed towards the extremity, which is rather widely rounded; viewed laterally, apical lobe narrow, gradually tapered towards the extremity, which forms a small recurved hook; ventral margin slightly emarginate behind middle. Inner sac wholly covered with scales, which form a large patch of heavily sclerotized teeth at the left side just behind middle. Styles extremely narrow in apical halves, which are straight though almost rectangularly bent from the basal parts, left style being obviously longer than the right, each bearing unusually short apical setae.

Type series. Holotype: ♂, allotype: ♀, paratypes: 2 ♂♂, 1 ♀, 4–IX–1993, S. UÉNO & Y. WATANABE leg. The holotype is deposited in the collection of the Shanghai Institute of Entomology, Academia Sinica.

Type locality. Mt. Zhonghe Feng, 2,620 m in altitude, of the Diancang Shan Mountains, in Dali Shi of Yunnan, Southwest China.

Notes. Because of its peculiar facies similar to the members of *Stevensius*, this new species looks like an inhabitant of rotten logs lying or standing in thick subalpine forests. Actually, however, it is humicolous and highly hygrophilous, dwelling under wet dead leaves of arrow-bamboos, thistles and ferns. All the specimens of the type series were found by either sifting or drowning those materials accumulated on a very steep slope at the side of a cascade. This spot lay just at the meeting point of the upper limit of the pine zone and the lower limit of the arrow-bamboo and rhododendron zone, so that the beetle can safely be said subalpine in nature. It is unusually hygrophilous and appears to have little tolerance for drying, since it was always the first to become languished when caught in an aspirator.

要　　約

上野俊一・尹　文英：中国云南省大理白族自治州点苍山山地のチビゴミムシ相について．—— 中国云南省の西部，洱海の西側を南北に延びる点苍山山地からは，これまでにチビゴミムシ類の記録されたことがなかった．わたしたちは，1993 年の 8 月末から 9 月にかけて大理市に滞在し，この山地の土壌動物相を調査した．異常気象のために，高山帯の十分な調査はできなかったが，チビゴミムシ類については，低山性の有翅の 1 種と，亜高山性の無翅の 1 新種とを採集することができたので，ここ

に記録しておく.

有翅種は, JEANNEL が 1927 年に *Trechus macrops* という名を与えて記載したもので, その後ふたたび採集されたことがなく, ヒマラヤ産の種の同物異名として整理されてきた. しかし, 今回の調査でかなり多くの標本がえられた結果, いちおう独立種と認めておいてよかろうという結論になった. 無翅種のほうは, ハバビロチビゴミムシ群の一種で, 上翅の剛毛式や雄交尾器の構造が, 既知のどの属の場合とも大きく異なっている. それで, この種は新属を形成するものと認め, *Junnanotrechus microps* S. UÉNO et YIN と命名記載した.

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