

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

By

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Abstract A second species of the trechine genus *Queinnectrechus* is described from Mt. Gongga Shan in western Sichuan, Southwest China. It seems related to the type species of the genus, but is readily recognized on the different number of setiferous dorsal pores of elytra. The new name given is *Queinnectrechus smetanai*. Some comments are given on its affinity in comparison with *Kozlovites yuae*, and a new genus, *Deuveotrechus*, is erected for the latter and *Stevensius gregoryi*.

The trechine genus *Queinnectrechus* was erected by DEUVE (1992 a, p. 354) for *Q. excentricus* DEUVE from the Min Shan Mountains in northern Sichuan, Southwest China. The original descriptions of both the genus and species are preliminary, being based upon a single female specimen and only summarizing diagnostic characters of the beetle. Nothing was said about its systematic position nor even its supposed affinity, but a sketch of its habitus published later (DEUVE, 1992 b, p. 182, fig. 22) clearly shows that the species belongs to the *Kozlovites* lineage of the *Agonotrechus* series.

Kozlovites itself is a poorly known genus. Its type species, *K. caviceps* JEANNEL (1935, p. 280, fig. 9), was described on a single female from the Dza-tshu (=Za Qu) Valley in easternmost Tibet, and was originally supposed to have some relationship to *Duvalius*. Later in 1937, the same author described *Stevensius gregoryi* (JEANNEL, 1937, p. 87, fig. 8), again on a single female, from Kari (=Geng-li) in northwestern Yunnan, and commented that though intermediate between *Stevensius* and *Kozlovites*, the Yunnanese species could be placed near the former, and that the latter also probably belongs to the same lineage as the Himalayan genus. I have examined the types of these problematical species, at Sankt-Peterburg and London, respectively, and confirmed the reasonability of JEANNEL's discussion.

One more species of the same lineage was recently described by DEUVE (1992 b, p. 171, figs. 1, 12) from northwestern Yunnan under the name of *Kozlovites yuae*. He correctly regarded it as a relative of *Stevensius gregoryi*, but placed both the species in the genus *Kozlovites* on the authority of JEANNEL's comment (1962, p. 184). His generic assignment can be disputed, since JEANNEL

only stated that “le *S. Gregoryi* JEANN. doit très probablement être rapproché du *Kozlovites caviceps* JEANN. du Thibet” and did not actually transfer the former to the genus *Kozlovites* (cf. UÉNO & YIN, 1993, p. 358). Through the courtesy of Professor YU Peiyu, I have seen the paratype of *Kozlovites yuae* and confirmed its affinity to *S. gregoryi*, but the species seems to me to be generically different from *Kozlovites caviceps*, which is a large long-legged species with the side borders effaced in the posterior parts of prothorax and the prehumeral parts of elytra. I have already suggested that *S. gregoryi* may belong to a new genus (cf. UÉNO 1987, pp. 335, 338), and to avoid further confusion, I am going to erect *Deuveotrechus* in the present paper for the two Yunnanese species.

On the other hand, I was given by Dr. A. SMETANA an opportunity to examine an interesting trechine beetle from Mt. Gongga Shan in western Sichuan, which no doubt belongs to *Queinnectrechus*, though it does not accord in several points with DEUVE’s generic description. Most striking is its male genitalia, which show a combination of much reduced aedeagus and unusually developed copulatory pieces. The former character state makes a sharp contrast with the remarkably modified aedeagus of *Deuveotrechus yuae*, but the latter is shared by the Yunnanese trechine. Thus, *Queinnectrechus* is more closely related to *Deuveotrechus* than to *Stevensius*, especially in view of the fact that SMETANA’s species resembles the members of *Deuveotrechus* in the elytral chaetotaxy. In the present paper, I am going to describe it under the name of *Q. smetanai* and to give some comments on the affinity of *Queinnectrechus*, especially in comparison with *Deuveotrechus yuae*.

The abbreviations used 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. A. SMETANA of the Biological Research Division, Agriculture Canada, for his kindness in giving me the opportunity to study on the very interesting species, to Professor YU Peiyu of the Institute of Zoology, Academia Sinica, Beijing, for her kind loan of the paratype of *Kozlovites yuae* and for giving me information on the exact location of “Kari”, the type locality of *Stevensius gregoryi*, to Dr. O. L. KRYZHANOVSKIJ of the Zoological Institute, Russian Academy of Sciences, Sankt-Peterburg, and Mr. P. M. HAMMOND of the Natural History Museum, London, for their kind help in reexamining the holotypes of JEANNEL’s species, and to Dr. Yûki IMURA for kindly carrying DEUVE’s paratype from Beijing to Tokyo.

Queinnectrechus smetanai S. UÉNO, sp. nov.

(Figs. 1–3)

Length: 3.80–4.20 mm (from apical margin of clypeus to apices of elytra).

Similar in facies to *Q. excentricus* DEUVE, the type species of the genus, but slightly larger with larger and shorter elytra. Recognized at first sight on the different number of elytral dorsal pores, which is four or five in *Q. smetanai* instead of three in *Q. excentricus*.

Body constricted between small narrow fore body and hemispherical hind one; surface glabrous and polished on both dorsum and venter; microsculpture practically vanished altogether, though vestiges of reticulation can be observed in limited portions of head and pronotum; inner wings absent. Colour brown, usually infuscated on elytra except for sutural intervals and reflexed margins as well as on venter of hind body except for epipleura; palpi, antennae, epipleura and legs more or less lighter than body in coloration, though not pale.

Head subquadrate, a little wider than long, with distinctly faceted eyes and very wide neck; frons and supraorbital areas moderately convex, the latter distinctly foveolate at the bases of anterior supraorbital setae; frontal furrows deep throughout, gently arcuate in anterior two-thirds and widely divergent behind towards neck constriction, which is distinct at the sides though not very deep; two pair of supraorbital setae lying on subparallel lines; eyes small and fairly flat though gently convex beyond the contour of genae, perfectly faceted; genae usually as long as eyes, sometimes a little shorter than the latter, moderately and evenly convex, and completely glabrous; labrum transverse, with distinctly emarginate apical margin; mandibles stout, sharply hooked at apices, right mandible distinctly tridentate; mentum fused with submentum, the former with a porrect tooth whose tip is evidently emarginate, the latter sexsetose; palpi short and stout, penultimate segments widely dilated towards apices, slightly shorter than apical segment in labial palpus, only two-thirds as long as apical segment in maxillary palpus, apical segments elongated subconical; antennae short and stout, subfiliform, usually reaching basal three-tenths of elytra, segment 2 about as long as 10 and the shortest, about four-fifths as long as 3, segments 4–9 gradually decreasing in length towards apex, each subcylindrical and more than twice as long as wide, terminal segment about as long as but narrower than scape, slightly longer than segment 3.

Pronotum small though still wider than head, only a little wider than long, usually widest at about two-thirds from base or a little before that level, and more gradually narrowed towards base than towards apex; PW/HW 1.20–1.24 (M 1.21), PW/PL 1.05–1.22 (M 1.14), PW/PA 1.37–1.46 (M 1.40), PW/PB 1.27–1.44 (M 1.38); sides rather strongly arcuate in front, deeply sinuate at a level between basal sixth and fifth, and then more or less divergent towards hind angles, with the borders narrow but complete in apical two-thirds and effaced behind; marginal setae ordinary in number, the posterior one inserted on the base of digitiform process of hind angle; apex slightly arcuate, with front angles rounded off; base about as wide as or slightly wider than apex, PB/PA 0.97–1.10

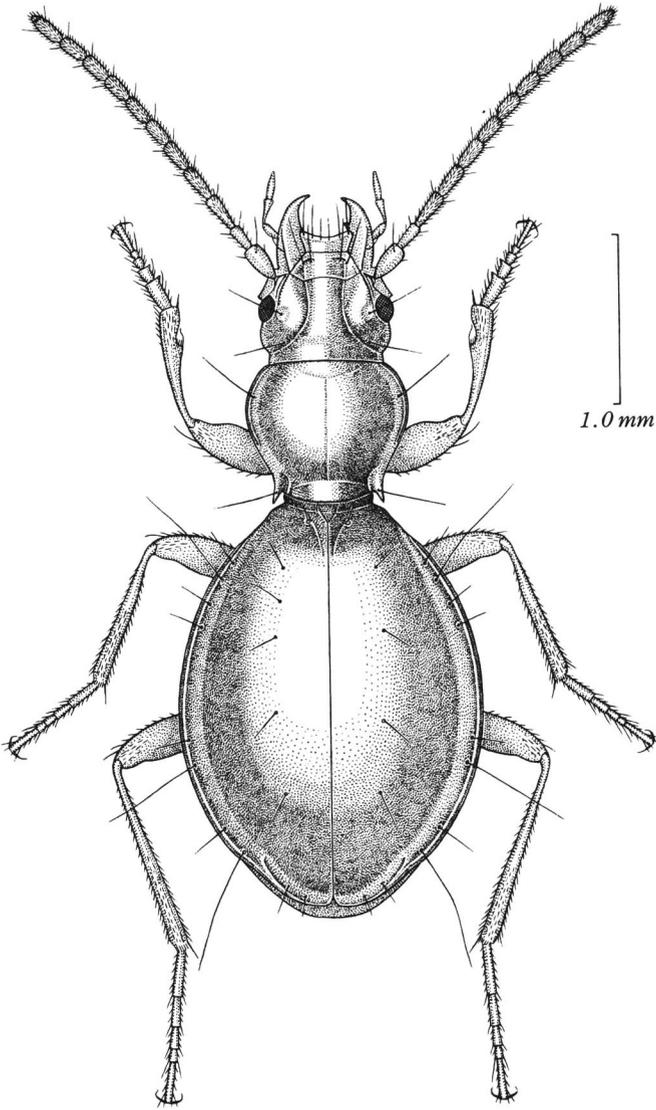


Fig. 1. *Queinnectrechus smetanai* S. UÉNO, sp. nov., ♂, from Mt. Gongga Shan in western Sichuan.

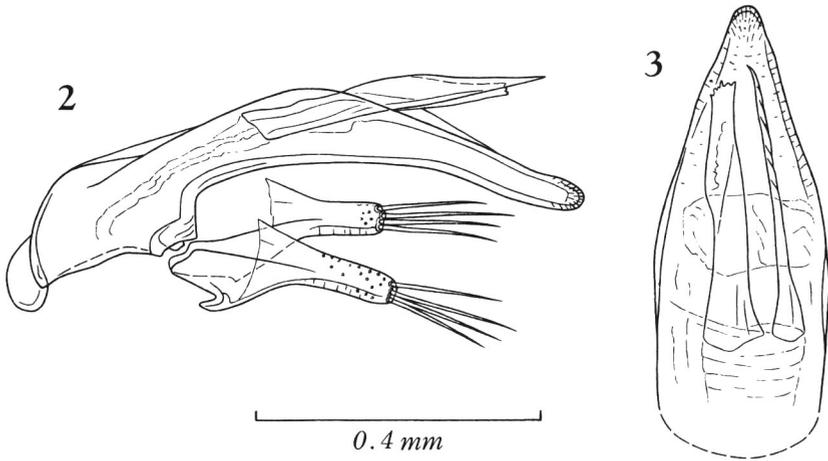
(M 1.01), slightly arcuate at middle but briefly oblique on each side just inside hind angle, which forms a digitiform process protrudent postero-laterad; disc strongly convex, with very shallow median line; apical transverse impression vague though perceptible; basal transverse impression continuous though mal-defined, laterally joining basal foveae, which are small but deep, smooth at the bottom; anterior continuation of postangular digitiform process obtusely cari-

nate; basal area narrow and smooth.

Elytra short obovate, widest at about or a little behind middle, or rarely at about apical two-fifths, and a little more gradually narrowed towards bases than towards apices; EW/PW 1.81–1.96 (M 1.91), EL/EW 1.32–1.39 (M 1.36); shoulders completely effaced; humeral borders very oblique, becoming finer anteriorly and obsolete under the convexity of prehumeral areas before reaching basal peduncle; sides rather widely reflexed, gently arcuate before the widest part, more strongly so behind, and almost conjointly rounded at apices; disc hemispherically convex though narrowly depressed along suture; no appreciable striae; scutellar striole only indicated by a fine internal ridge along scutellum; apical striole very short but distinct, only slightly curved, and free at the anterior end; apical carina very obtuse; four setiferous dorsal pores usually present on the site of stria 3 at about 1/12, 1/4, 2/5 and 2/3 from base, respectively, though the position varies to some extent with individuals, a fifth pore often present between the third and fourth ones on one elytron, rarely on both the elytra; preapical pore absent; two apical pores present along apical striole; marginal umbilicate pores aggregated and almost regular, though the four pores of the humeral set are not perfectly equidistant.

Ventral surface smooth; anal sternite bisetose in ♂, quadrisetose in ♀. Legs fairly slender though not particularly long; protibiae straight, gently dilated towards apices, longitudinally grooved on the external faces, and pubescent even on the anterior faces; tarsi fairly thin, tarsomere 1 about as long as tarsomeres 2 and 3 together in mesotarsus, slightly longer than that in metatarsus, tarsomere 4 with a hyaline ventral apophysis in pro- and mesotarsi; in ♂, two proximal protarsomeres gently dilated, minutely denticulate inwards at apices, and furnished beneath with adhesive appendages.

Male genital organ small though moderately sclerotized, showing a peculiar combination of much reduced aedeagus and unusually developed copulatory pieces. Aedeagus about one-third as long as elytra, depressed, spatulate, only slightly arcuate, and much wider than high, with lateral walls unusually reduced, though the basal part is completely closed at the proximal end and bears a small but distinct sagittal aileron; dorsal surface widely membraneous; viewed dorsally, apical lobe elongated triangular, with the tip narrowly rounded; viewed laterally, apical lobe elongate, parallel-sided, slightly curved ventrad at the base and slightly sinuate near apex, which is narrowly rounded; ventral margin only slightly emarginate at middle in profile. Inner sac armed with two elongate copulatory pieces, whose apical halves are protruded from apical orifice; left sclerite longer than the right, nearly five-ninths as long as aedeagus, vertically lamellar, and remarkably aciculate at the apical part; right sclerite obliquely broader than the left, subtruncate at the apex which is minutely serrulate; no patches of sclerotized teeth. Styles short and fairly broad, left style a little longer



Figs. 2-3. Male genitalia of *Queinnectrechus smetanai* S. UÉNO, sp. nov., from Mt. Gongga Shan in western Sichuan; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

than the right and with a recurved ventral apophysis, each bearing four setae at the apex.

Type series. Holotype: ♂, allotype: ♀, paratypes: 4 ♂♂, 3 ♀♀, Mt. Gongga Shan (above Camp 3), 3,300-3,350 m alt., western Sichuan, Southwest China, 23-VII-1994, A. SMETANA leg. The holotype and allotype are deposited in the Canadian National Collection of Insects, Ottawa. The paratypes are preserved in the collection of A. SMETANA and of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Further specimens examined. 2 ♂♂, same locality but 3,050 m alt., 22-VII-1994, A. SMETANA leg. (coll. SMETANA and NSMT).

Notes. Though differing in several points, this new species is no doubt congeneric with DEUVE's insect from the Min Shan Mountains in northern Sichuan, as is readily understood from the illustration of its habitus (DEUVE, 1992 b, p. 182, fig. 22). The differences are noted mainly in the state of labium and elytral chaetotaxy; the former is described by DEUVE (1992 a, p. 354) as "mentum et submentum non fusionnés" and the latter as "chétotaxie de l'élytre proche de celle du genre *Trechus*, la soie préapicale cependant avancée en position discale." In *Q. smetanai*, the labium is deeply concave, a state that is characteristic of the species in which the mentum is fused with the submentum. The elytral chaetotaxy is of the same type as *Q. excentricus*, but the number of setiferous dorsal pores is four or more instead of three. It should be noted here that the preapical pore is absent in *Queinnectrechus*; the pore regarded by DEUVE as "la soie préapicale avancée en position discale" must be the third dorsal pore, as is indicated by the condition found in *Q. smetanai*, especially in its quinque-

setiferous individuals. Besides, a shallow longitudinal groove exists on the external face of each protibia in *Q. smetanai*, though the protibia in *Q. excentricus* is described as "non sillonnés." All these points should be reexamined when ample additional specimens of the Min Shan species are available for comparative study in the future.

Judging from the peculiar conformation of copulatory sclerites, *Queinnectrechus* seems related to *Deuveotrechus* to be described below, though the aedeagi themselves are considerably different between the two, much reduced in the former and remarkably developed in the latter. It resembles *Deuveotrechus* also in the disposition of setiferous dorsal pores of elytra, but is different from the latter in the absence of preapical pore. On the other hand, *Queinnectrechus* is unique in the digitiform hind angles of prothorax, whose side borders disappear along the anterior continuation of the processes. From *Stevensius* JEANNEL (1923, p. 432; UÉNO, 1977, p. 246) of the Himalayas, *Queinnectrechus* can be readily distinguished by the differences in prothoracic hind angles and state of side borders before them, elytral chaetotaxy, and conformation of male genitalia. *Queinnectrechus* is also similar in some respects to *Taiwanotrechus* S. UÉNO (1987, p. 335) from Taiwan, especially in the posteriorly effaced side borders of prothorax, anteriorly obsolete humeral borders of elytra, and very low aedeagus with widely membraneous dorsum. The Taiwanese genus is, however, different from the Sichuanese in the obtuse hind angles of prothorax, lesser number (two) of setiferous dorsal pores of elytra, instead of three or more, and the single copulatory piece not aciculate at the apical part.

According to Dr. SMETANA, the type specimens of *Q. smetanai* were collected by sifting moss and various debris in a mixed forest, particularly under the growths of large rhododendrons, together with several species of *Pterostichus* and *Quedius*, and many other staphylinids. The two additional specimens from the 3,050 m site were taken in a different forest habitat, which was characterized by thick moss mats covering the ground and all fallen trees. They are slightly different from the type series in the configuration of aedeagus, which is somewhat broader in dorsal view with the apical lobe more clearly produced from the median. The difference is, however, so minimal that no infraspecific taxon is required for the lower population.

Genus *Deuveotrechus* S. UÉNO, nov.

Type species: *Kozlovites yuae* DEUVE, 1992.

Related to *Stevensius* JEANNEL of the Himalayas, but readily distinguished from it by the larger number of setiferous dorsal pores of elytra, which is five instead of one, the presence of preapical pore, the remarkably developed apical lobe of aedeagus, and the presence of two aciculate copulatory pieces. Probably

closer to *Kozlovites* JEANNEL of eastern Tibet in view of the similarity in elytral chaetotaxy, but in this Tibetan genus, the side borders of prothorax are effaced in basal third and the prehumeral borders of elytra are also effaced anteriorly. Besides, *Kozlovites caviceps* is a large long-legged species of elongate body form not strongly convex on dorsum, which suggests that the trechine is neither humicolous nor saproxylophilous. It is most probably ground-living, so that the evolutionary trend is evidently different between *Kozlovites* and *Deuveotrechus*. From *Taiwanotrechus* S. UÉNO of the Island of Taiwan, *Deuveotrechus* is evidently different in the complete side borders of prothorax, the larger number of setiferous dorsal pores on elytra, the remarkably developed aedeagus with complete lateral walls, and the presence of two aciculate copulatory pieces.

Further accounts of this new genus should be given when additional specimens in a good condition become available by future investigations for the two species involved.

Range. Known so far only from the northwestern corner of Yunnan, China. Doubtless distributed over the neighbouring areas (southwestern Sichuan, southeastern Tibet, and northeastern Myanmar).

Notes. Only two species of *Deuveotrechus* have hitherto been known, *D. yuae* (DEUVE) and *D. gregoryi* (JEANNEL), but other congeneric species will be discovered in future when careful collectings are made by experienced entomologists in the areas concerned, which are not easily accessible even for Chinese researchers.

The new generic name is given after Dr. Th. DEUVE of the Muséum national d'Histoire naturelle, Paris, who first clarified the male genitalic feature of this problematical trechine group.

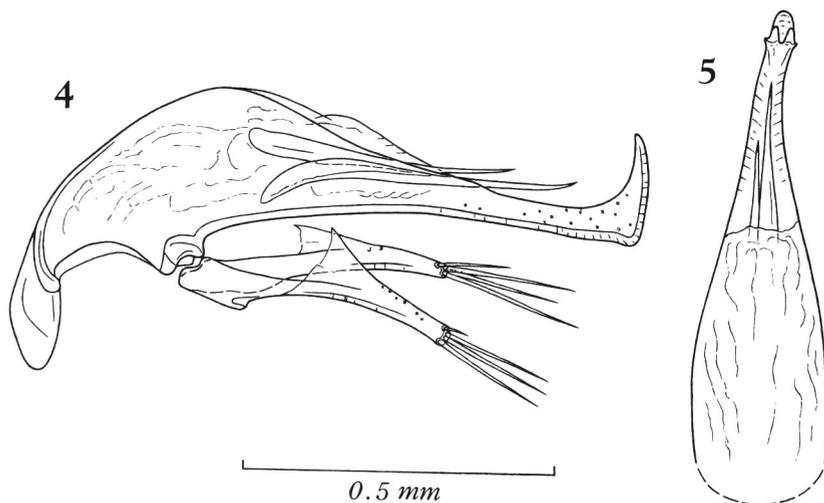
Deuveotrechus yuae (DEUVE, 1992), comb. nov.

(Figs. 4-5)

Kozlovites yuae DEUVE, 1992, Bull. Soc. ent. Fr., **97**, p. 171, figs. 1, 12; type area: Dêqên Xian in Yunnan.

As the paratype before me is rather badly damaged, it is impossible to prepare a detailed redescription, but almost all the important features, so far as examined, accord with DEUVE's original account. Only the exception is the size of eyes, which are nearly as long as the genae. Very large head, small prothorax and relatively depressed elytra make this species rather isolated in the *Kozlovites* complex. The standard ratios of body parts are as follows: PW/HW 1.06, PW/PL 1.26, PW/PA 1.34, PW/PB 1.59, PB/PA 0.84 (PA/PB 1.19), EW/PW 1.99, EL/PL 3.31, EL/EW 1.32. Length of body (measured from apical margin of clypeus to apices of elytra) 4.10 mm.

The male genitalia were not properly described in the original account,



Figs. 4-5. Male genitalia of *Deuveotrechus yuae* (DEUVE), paratype, from Dêqên Xian in northwestern Yunnan; left lateral view (4), and apical part of aedeagus, dorso-apical view (5).

though the aedeagus was illustrated. They are not so small, but rather lightly sclerotized. Aedeagus two-fifths as long as elytra, widely membranous on dorsum, highest at about basal three-tenths, and gradually narrowed towards apical lobe, which is very long, fairly stout, slightly curved to the left, and dorsally extending at the terminal part, which forms a large vertical hook pointed at the extremity; basal part hardly curved ventrad, with a fairly large basal orifice, whose sides are deeply emarginate; sagittal aileron remarkably developed, elongate, vertical, and solidly fused with the proximal end of aedeagus; in profile, ventral margin slightly emarginate at the base of apical lobe. Copulatory pieces long and very slender; left sclerite longer than the right and about a half as long as aedeagus, aciculate in apical part and slightly reflexed at the extremity; right sclerite about four-fifths as long as the left, also aciculate in apical part. Styles slender, left style a little longer than the right, with much reduced ventral apophysis, each style bearing three apical setae and a short additional one at the dorsal end, the one on the left style being extremely minute.

Specimen examined. 1 ♂ paratype without collecting data but bearing two labels "PARATYPE" and "*Kozlovites yuae* n. sp. / Th. DEUVE det. 1991".

Notes. It is unfortunate that the exact type locality of this interesting species is unknown. DEUVE (1992 b, p. 171) gave "Yunnan, Dêqên Xian, 4300-4680 mètres" as the type locality of *Kozlovites yuae*, but Dêqên Xian is a provincial name and does not specify a mountain. Anyway, Dêqên Xian lies near the Tibetan border at the northwesternmost part of Yunnan. Its centre, Dêqên, is

located about 155 km to the north of Geng-li (=Kari), a pass on the Nu Shan Mountains west of Wei-xi, from where *D. gregoryi* (JEANNEL) was described. Judging from the habitus, *D. yuae* may be a humicolous species occurring at high elevations, while *D. gregoryi* appears to be a saproxylophile living in subalpine forests. This may be the reason why the two species are fairly different in their facies.

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