

Four New Species of the Genus *Trichotichnus* (Coleoptera, Carabidae, Harpalini) from China

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Abstract Four new species of the genus *Trichotichnus* are described from China as following: *Trichotichnus (Amaroschesis) marginicollis* and *T. (A.) arcipennis* from Yunnan; *T. (Trichotichnus) iridulus* from Sichuan; *T. (T.) ellipticus* from Yunnan. Systematic position of *T. (T.) ellipticus* is discussed.

Species-diversity of the genus *Trichotichnus* MORAWITZ, 1863 in China is high and 57 species have been known. Recently I found four undescribed species in the collections of the National Museum of Nature and Sciences and mine.

In this paper, I am going to describe the new species from Yunnan and Sichuan and to discuss briefly its systematic position of one of them.

I would like to express my cordial thanks to Dr. Shun-Ichi UÉNO of the National Museum of Nature and Science, Tsukuba for his kind offering of invalid material. Also I heartily thank Dr. Kiyoshi ANDO of Ehime University, Matsuyama, for his kindly taking beautiful picture of habitus.

I employ the following abbreviations for the type depositories: NSMT (collection of the National Museum of Nature and Science, Tsukuba); OMNH (collection of the Osaka Museum of Natural History, Osaka); NI (collection of the author, Kawanishi.).

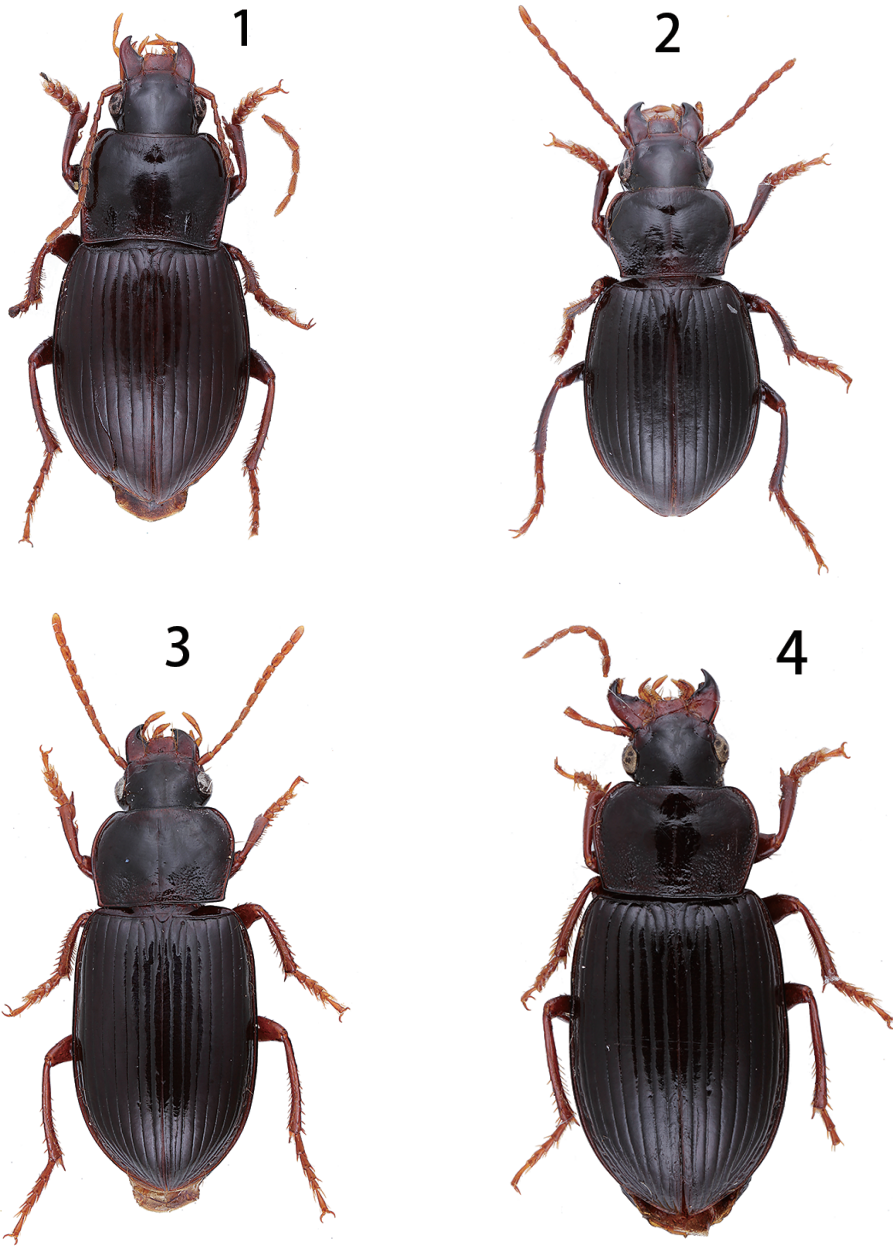
Body parts are measured as follows: The length of body: the distance between the apex of labrum and the apices of elytra; the width of body: the maximal transverse distance of body; the width of head: the maximal transverse distance including compound eyes; the width of pronotum: the maximal transverse distance between sides; the length of pronotum: the distance from apical edge to basal edge along the middle; the length of elytra: the distance between the basal border and the apices along the suture; the width of elytra: the maximal transverse distance between sides.

Trichotichnus (Amaroschesis) marginicollis N. ITO, sp. nov.

(Figs. 1 & 5)

Body convex, widely suboval, very slightly brownish black, with weakly iridescent lustre on elytra; labial and maxillary palpi light yellowish brown, labrum, mandibles, antennae and legs dark brown, lateral margins of pronotum brown.

Head moderate in width, 0.65 times as wide as the pronotal width, gently elevated, with very sparse and minute punctures near vertex; labrum triangularly emarginate at apex; clypeus almost straight apically, gently raised, narrowly depressed along apex; clypeal suture shallow but clear throughout; frontal impressions each engraved like fovea, reduced near supraorbital groove; eyes rather large, gently prominent; temples short, 0.13 times the eye length; space between buccal fissure and genuine ventral margins of eyes wide; mandibles stout, acute at tips; antennae short, hardly surpassing beyond pronotal base, 3rd segment pubescent in apical three-fifths, as long as the 4th and a half longer than the 2nd; labial palpi fairly long, 3rd segment more or less tumid and as long as the 2nd; ligula



Figs. 1–4. Habitus of the genus *Trichotichnus* spp. — 1, *T. (Amaroschesis) marginicollis* N. ITO, sp. nov.; 2, *T. (A.) arcipennis* N. ITO, sp. nov.; 3, *T. (T.) iridulus* N. ITO, sp. nov.; 4, *T. (Trichotichnus) ellipticus* N. ITO, sp. nov.

parallel in most area, acutely protrudent laterad at apical angles, straight at apex; paraglossae narrow, arcuate in apical parts, not prolonged beyond ligula; mentum well produced at median tooth, epilobes slightly expanded apicad; microsculpture clearly impressed, wholly consisting of isodiametric meshes.

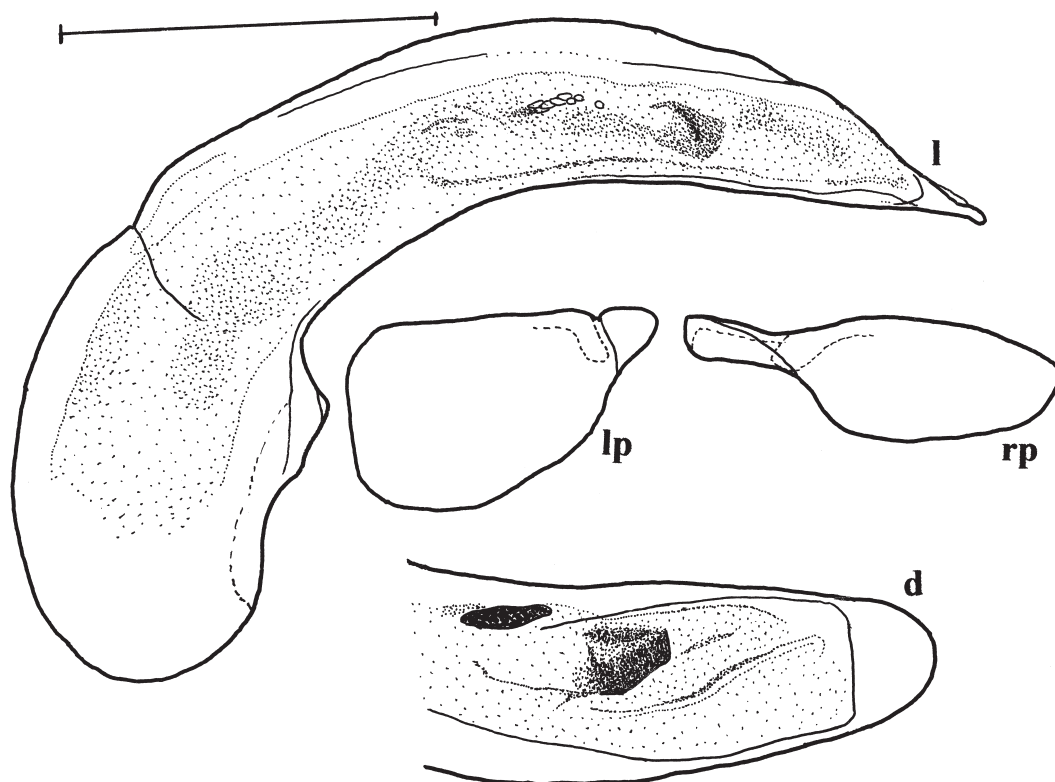


Fig. 5. Aedeagus of *Trichotichnus (Amaroschesis) marginicollis* N. ITO, sp. nov. — l, Left lateral view; d, dorsal view; lp, left paramere; rp, right paramere. Scale: 1 mm.

Pronotum subquadrate, 1.44 times as wide as long, more strongly convergent apicad and basad from apical third, feebly sinuate before base, a little declivous apico-laterad, smooth centrally, very sparsely and minutely punctate near apex, coarsely so in lateral furrows and basal foveae; apex fairly emarginate, entirely and clearly bordered; base 1.30 times as wide as apex, shallowly emarginate, clearly bordered throughout; lateral furrows narrow in apical two-thirds, thence slightly widened backwards; apical angles rather produced, widely rounded; basal angles right, slightly protrudent laterad at tips; basal foveae each flattened, with a longitudinal elliptic groove; front transverse impression long and shallow, the hind one shallower; median line clearly and thinly engraved, obliterated near apex and base; microsculpture more or less clear, consisting of transverse meshes.

Elytra widely oval, 1.37 times as long as wide, 1.31 times as wide as the pronotal width, well convex, impunctate; sides gently arcuate, somewhat deeply sinuate preapically; apices fairly produced backwards, narrowly and separately rounded at tips; bases mostly straight, weakly oblique near lateral ends, humeral angles very obtuse and pointed at tips; striae comparatively wide, moderately deep, minutely and rather vaguely crenulate, scutellar striole long; intervals flat on disc, slightly becoming convex apicad and basad, 3rd interval with a discal pore near apical two-fifths; marginal series continuous, composed of 24 umbilicate pores; microsculpture relatively clear, a little clearer in female than in male, composed of transverse lines. Hind wings obliterated.

Ventral surface largely smooth, rather coarsely and sparsely punctate on mesepisterna and lateral

portions of metaventrite, the punctures more indistinct in female than in male; metepisterna comparatively long among species of the subgenus, 0.83 times as long as wide; apical margin of 7th abdominal sternite in both sexes bisetose at each side, in male slightly and widely rounded and in female more strongly rounded at distal margin.

Legs moderately long; fore tibiae each not sulcate, with two or three spines along apico-external margin; hind tarsi slightly longer in both sexes than the width of head (1.03 in ratio), 1st segment short, 0.67 times as long as the 2nd and 3rd taken together, 1.44 times as long as the 3rd and 2.30 times as long as the 4th, claw segment quadrisetose along each ventral margin.

Aedeagus (Fig. 5) large in basal bulb, gently arcuate, feebly curved at tip; apical orifice widely open; inner sac with two clusters of micotrichia; apical lobe a half wider than long, clearly rounded at distal margin.

Length of body: 9.0–9.2 mm. Width of body: 3.9–4.2 mm.

Holotype: ♂, Jade Dragon Shan, 26°48'N, 100°16'E, alt. 3,000 m, Dayan env., Yunnan Prov., China, 10–VI–1998. (preserved in OMNH). Paratype: ♀, Mt. Jade Dragon, alt. 3,200 m, N. Lijang, NW Yunnan, China, 12–VI–1998, A. GORODINSKI leg. (preserved in NI).

Remarks. This new species resemble *Trichotichnus (Amaroschesis) taichii* KATAEV et N. ITO, 1999, but the head is smaller, the pronotum is more weakly convergent basad, more widely rounded at apical angles, more clearly bordered at apex and base, and with microsculpture consisting of not isodiametric but transverse meshes, and the aedeagus is less thinned at apex and more widely rounded at distal margin of apical lobe.

Etymology. The specific name is derived from thickly bordered pronotal margins in Latin.

***Trichotichnus (Amaroschesis) arcipennis* N. ITO, sp. nov.**

(Figs. 2 & 6)

Body oval, fairly convex, shiny, hardly iridescent on elytra; appendixes of buccal part light yellowish brown, tarsi, antennae and lateral margins of pronotum light brown, tibiae and femora blackish brown.

Head large, 0.72–0.75 times as wide as the pronotal width, fairly convex, impunctate, interocular space wide, 0.72–0.74 times as wide as the width of head; labrum widely rounded at apical corners; clypeus very shallowly emarginate, elevated in basal two-thirds; clypeal suture very thin, weakly arcuate; frontal impressions each obliquely and linearly running outwards, shallowed in basal half; eyes rather large, gently prominent; temples not developed, somewhat long, 0.30 times the eye length; genuine ventral margins of eyes widely separated from buccal fissure; mandibles stout, thick, blunt at tips; antennae submoniliform, 3rd segment pubescent almost in apical three-fifths, as long as the 4th and twice the 2nd; 3rd segment of labial palpus rather tumid and 1.13 times as long as the 2nd; ligula parallel-sided, slightly expanded just behind apex, rather clearly rounded; paraglossae narrow, not prolonged forwards beyond ligula; mentum not pointed and less than 60° at tip of median tooth, epilobes gradually widened forwards; microsculpture clearly impressed, composed of isodiametric meshes.

Pronotum transversely quadrate, widely well convex on disc, gently arcuately convergent apicad and linearly so basad, weakly reflexed baso-laterad, rather coarsely and sparsely punctate in apical area and densely so in lateral furrows and basal area, longitudinally rugose in apical area, transversely wrinkled on disc in individual; apex very shallowly emarginate, brokenly bordered; base approximately as wide as apex (1.03–1.05 in ratio), clearly bordered throughout, feebly arcuate at sides, almost straight between the arcs; apical angles weakly protrudent, narrowly rounded; basal angles a little

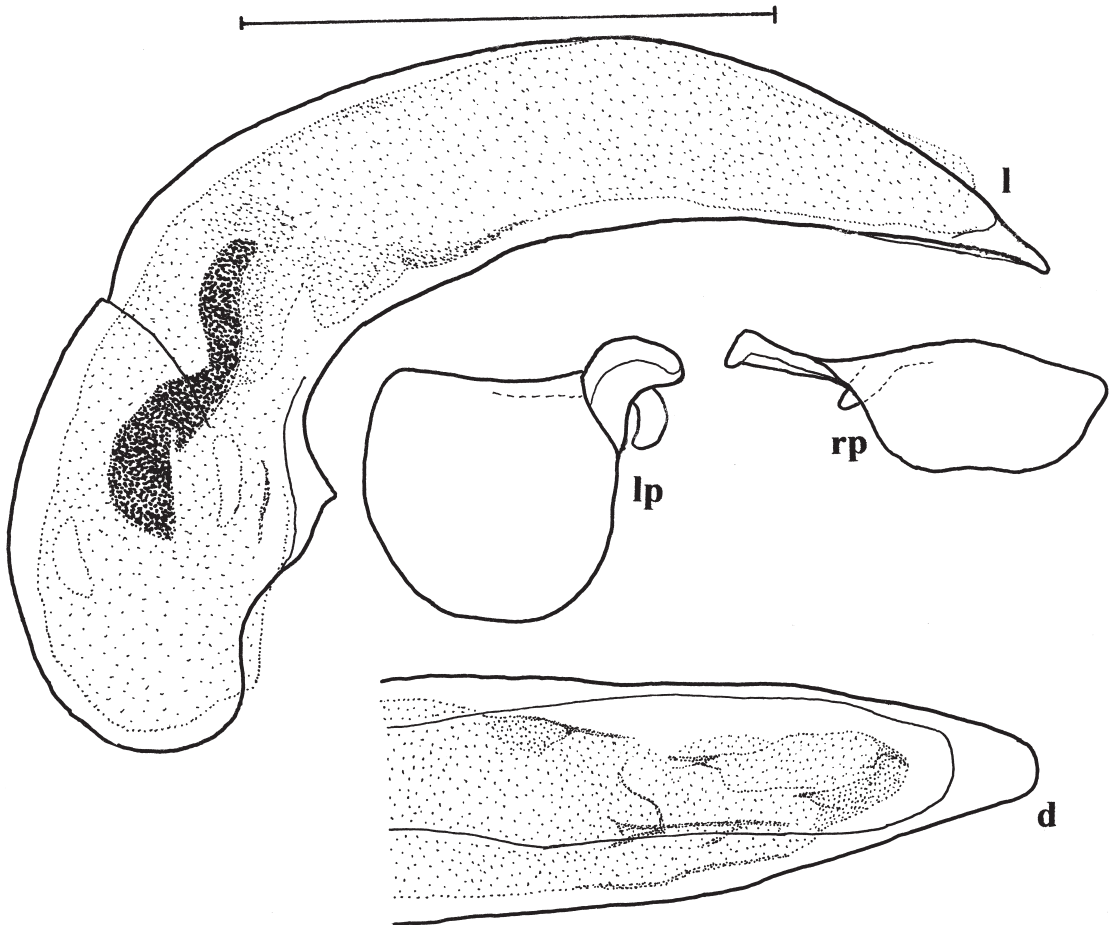


Fig. 6. Aedeagus of *Trichotichnus (Amaroschesis) arcipennis* N. ITO, sp. nov. — l, Left lateral view; d, dorsal view; lp, left paramere; rp, right paramere. Scale: 1 mm.

larger than right, feebly blunt-prominent laterad; lateral furrows narrow in apical half, thence gradually widened basad; basal foveae small, transversely triangular and shallow; front transverse impression v-shaped and shallow, the hind one very short and shallow; median line thin, entire or broken; microsculpture distinctly clear, consisting of isodiametric meshes.

Elytra oval, 1.35–1.41 times as long as wide, 1.35–1.39 times as wide as the pronotal width, well convex; sides clearly rounded in humeri, gently arcuate in middle, preapically with very shallow sinus; apices not produced backwards, separately and rather narrowly rounded; bases each almost linear, slightly oblique near lateral end, forming a very obtuse and pointed angle with lateral margin; striae fairly wide, moderately deep to rather shallow, scutellar striole long and reaching 1st striae; intervals weakly convex on disc, becoming a little more convex apicad and basad, 3rd interval bearing a discal pore between middle and apical two-fifths; marginal series medially interrupted, continuous in one individual, composed of 10+(10–14) umbilicate pores; microsculpture distinct, composed of mixture with square and transverse meshes. Hind wings rudimentary.

Ventral surface mostly smooth, very sparsely and rather coarsely punctate on lateral portions of

metaventrite and metepisterna; metepisterna short, 0.83 times as long as wide; apical margin of 7th abdominal sternite in both sexes bisetose at each side, gently arcuate in male and a little more clearly so in female.

Legs long; fore tibiae each not sulcate, bearing a series of several setae, trispinose along apico-external margin; hind tarsi one-tenth in male and one-fourth shorter than the width of head, 1st segment 0.60–0.63 times as long as the 2nd and 3rd taken together, a half longer than the 3rd and nearly twice the 4th, claw segment trisetose along each ventral margin.

Aedeagus (Fig. 6) fairly arcuate, gradually thinned apicad, not thickened at tip, with large basal bulb; apical orifice rather wide, inner sac darkened in a belt from end of apical part to middle of basal bulb; apical lobe a little wider than long, rounded at distal margin.

Length of body: 7.8–8.2 mm. Width of body: 3.4–3.8 mm.

Holotype: ♂, Pass near Deqen City, alt. 4,200 m, Yunnan, China, 14–VII–2009, A. GORODINSKI leg. (preserved in OMNH). Paratypes: ♀, same data as the holotype; 1 ♀, Baimaxue Pass, 4,000 m, S of Deqen, NW Yunnan, China, 26–VI–1998, A. GORODINSKI leg.; 1 ♂, Deqen City env., 3,300 m, NW Yunnan, China, 1–VII–2000, A. GORODINSKI leg. (preserved in NI).

Remarks. This new species resembles *Trichotichnus (Amaroschesis) minor* N. ITO, 1998, but is distinguished from the latter by the body smaller in size, the head wider at interocular space and with frontal impressions not fovea-like frontal but linear, the pronotum more convex on disc, weakly reflexed baso-laterad and more clearly microsculptured, the elytra more clearly microsculptured, and the aedeagus with partly darkened on inner sac in basal bulb.

Etymology. The specific name means arcuate elytra in Latin.

Trichotichnus (Trichotichnus) iridulus N. ITO, sp. nov.

(Figs. 3 & 7)

Body widely oblong, fairly thick, black, shiny, rather clearly iridescent on elytra; labrum, appendices of buccal part, antennae, and legs more or less dark brown, mandibles dark reddish brown.

Head relatively wide, 0.70 times as wide as the pronotal width, wide at interocular space 0.73 times the width of head, gently convex, very sparsely and microscopically punctate; labrum sub-square, shallowly emarginate, weakly angulate at bottom of the emargination; clypeus more or less thick, weakly raised, mostly smooth, with a longitudinal groove at each side; clypeal suture relatively deep, straight; frontal impressions deep and wide in apical halves, thence abruptly obliterated backwards; eyes large, gently prominent; temples rather long, 0.46 times as long as the eye length; space between buccal fissure and genuine ventral margins of eyes moderate in width; ligula fairly and gradually widened apicad, hardly arcuate at apex; paraglossae narrow, small, not prolonged forwards beyond ligula; 3rd segment of labial palpus rather tumid, one-third longer than the 2nd; mentum regular-triangularly toothed at apex, epilobes slim, not widened apicad; microsculpture partly visible as mixture with vague and minute isodiametric and square meshes.

Pronotum transversely subcordate, 1.38 times as wide as long, gently convex, arcuately convergent forwards in apical half and linearly so backwards in basal half, hardly sinuate at sides just before base; apex moderately and weakly obtusely emarginate, entirely bordered though obscure in middle; base 1.30 times as wide as apex, clearly bordered throughout, hardly arcuate at sides; apical angles more or less produced forwards, rather narrowly rounded; basal angles each a little larger than right, with tiny tooth at tip; lateral furrows carved in a line; basal foveae each weakly elevated in lateral half, widely, shallowly and longitudinally elliptically concave; front transverse impressions shallow, the hind one obsolete; median line thin, shallow, reduced near both apex and base; dorsal surface

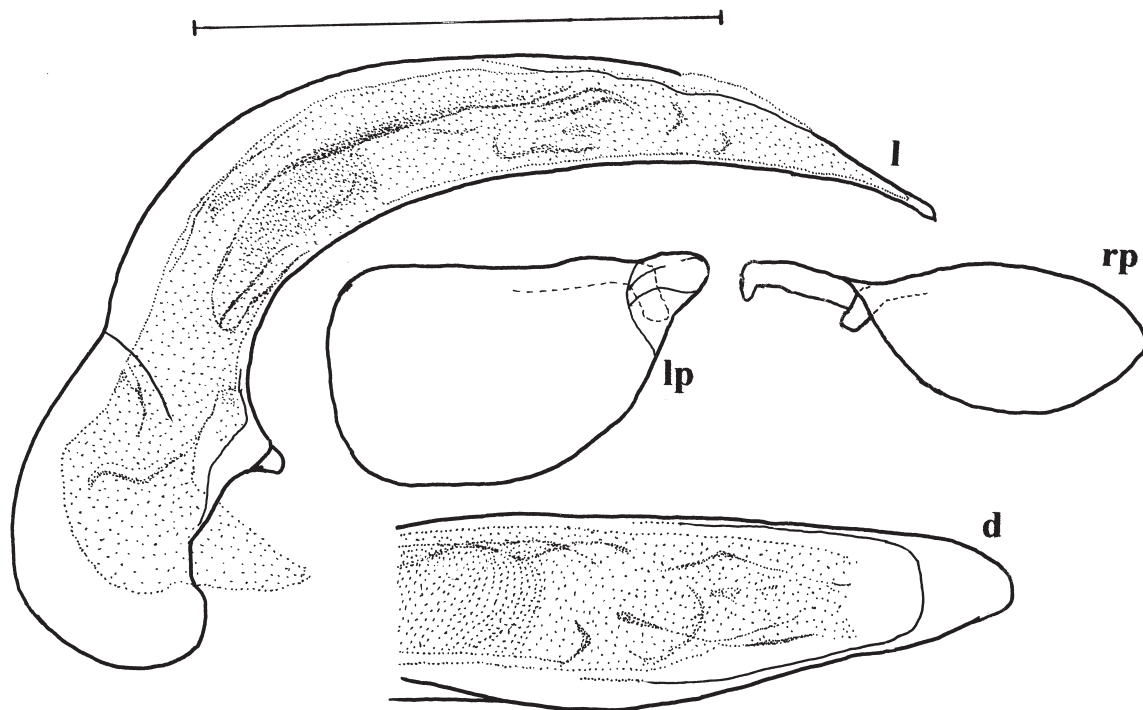


Fig. 7. Aedeagus of *Trichotichnus (Trichotichnus) iridulus* N. ITO, sp. nov. — l, Left lateral view; d, dorsal view; lp, left paramere; rp, right paramere. Scale: 1 mm.

bearing several minute or moderate punctures in apico-lateral areas and dense and somewhat coarse ones in basal foveae where the punctures are partly confluent; microsculpture partly visible, consisting of vague transverse meshes on disc and of isodiametric meshes near basal punctures.

Elytra widely oblong, 1.30 times as wide as the pronotal width, 1.42 times as long as wide, gently convex, almost flattened on disc, quite impunctate; sides gently arcuate in humeri, parallel to each other in middle, abruptly incurved in apical third, with very shallow preapical sinus; apices widely and weakly arcuate in margins, acute at sutural angles, closed to each other; bases each feebly emarginate, very obtusely and angularly meeting with lateral border, edentate at lateral end; striae wide and clearly crenulate in bottoms, scutellar striole somewhat short; intervals almost flat on disc and a little convex in apical and basal areas, 3rd interval with a discal pore situated near apical two-fifths; marginal series rather widely interrupted medially, consisting of 9+10 umbilicate pores; microsculpture obscurely visible as thin transverse lines. Hind wings fully developed.

Ventral surface sparsely punctate on metepisterna and lateral areas of metaventricle; metepisterna long, a half longer than wide; apical margin of 7th abdominal sternite in male bisetose at each side and truncate at tip.

Legs short; fore tibiae each not sulcate, trispinose along apico-external margin; hind tarsi short, 0.87 times as long as the width of head, 1st segment 0.72 times as long as the 2nd and 3rd taken together, 1.64 times the 3rd and three times the 4th, claw segment trisetose along each ventral margin.

Aedeagus (Fig. 7) fairly arcuate, gradually thinned, not thickened at tip; dorsal orifice wide, without any sclerites; apical lobe subtriangular, a little wider than long, rounded at distal margin.

F e m a l e unknown.

Length of body: 8.5 mm. Width of body: 3.6 mm.

Holotype: ♂, Qionglai Shan Mts., Mahuang Gou, alt. 2,630 m, Yaoqi Xiang, Baoxing Xian, W. Sichuan, China, 2–X–1997, S. UÉNO leg. (preserved in NSMT).

Remarks. This new species resembles *Trichotichnus (Trichotichnus) congruus* (MOTSCHULSKY, 1886), but the body is larger in size, the pronotum is more weakly convergent basad and a little more convex in basal foveae, the elytra are a little shorter, and the metepisterna are longer.

Etymology. The specific name is derived from iridescent elytra in Latin.

Trichotichnus (Trichotichnus) ellipticus N. ITO, sp. nov.

(Figs. 4 & 8)

Body oblong, fairly convex, pitchy black, shiny, with very weakly iridescent lustre on elytra; appendixes of buccal part light yellow, labrum, mandibles, antennae and legs brown, lateral margins of pronotum dark brown.

Head moderate in largeness, two-thirds times as wide as the pronotal width, rather weakly convex, sparsely punctulate; labrum transversely quadrate, weakly and triangularly emarginate at apex; clypeus depressed in apical half and weakly raised in basal half, shallowly and uniformly emarginate; clypeal suture obscure, partly broken; frontal impressions relatively deep, subarcuate inwards and di-

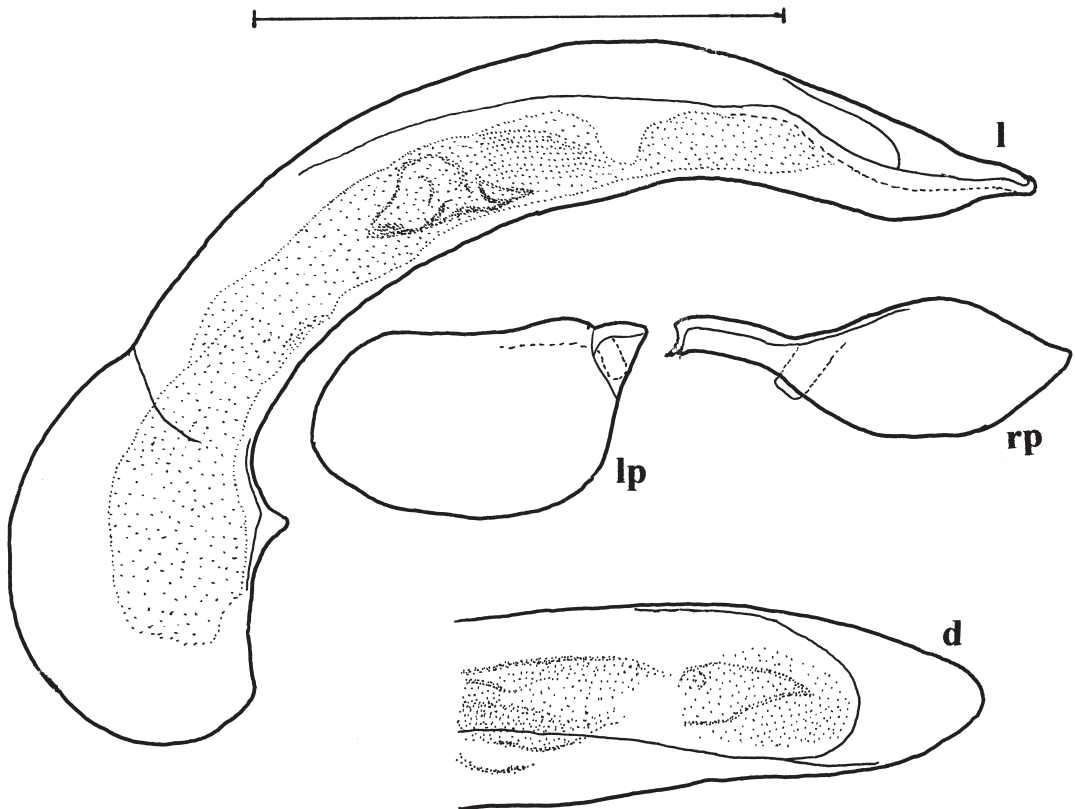


Fig. 8. Aedeagus of *Trichotichnus (Trichotichnus) ellipticus* N. ITO, sp. nov. — l, Left lateral view; d, dorsal view; lp, left paramere; rp, right paramere. Scale: 1 mm.

vergent to each other; eyes rather prominent; temples short, one-fourth the eye length; genuine ventral margins of eyes adjoining buccal fissure; mandibles stout, thick, pointed at tips; antennae submoniliform, surpassing a little beyond frontal base; ligula abruptly expanded forwards behind apex, truncate apically; paraglossae narrow, small, not surpassing beyond ligula; labial palpi short, 3rd segment more or less massive, 1.18 times as long as the 2nd; mentum elongate-triangularly toothed in middle, epilobes narrow; microsculpture consisting of mixtures with rather obscure isodiametric and transverse meshes.

Pronotum transverse, 1.47 times as wide as long, fairly and widely convex, impunctate centrally, sparsely punctate in apical area, densely and rather coarsely so in lateral furrows and basal foveae where the punctures are partly confluent, transversely short-rugose near median line; sides comparatively thickly bordered, arcuate in apical half, obliquely linear in basal half, not sinuate; apex shallowly emarginate, clearly bordered; base 1.31 times as wide as apex, hardly arcuate, thickly bordered throughout; apical angles gently rounded, widely rounded; basal angles each a little obtuse, pointed, and with tiny tooth at tip; lateral furrows narrow apically, gradually widened basad, fused with basal foveae; basal foveae ill-defined, small and almost flattened; front transverse impression shallow, the hind one obsolete; median line thin, short, and shallow; microsculpture partly detected as vague isodiametric meshes near rugosities and punctures.

Elytra elliptical, one-third wider than the pronotal width, 1.47 times as long as wide, well convex, very sparsely and microscopically punctate; sides weakly arcuate in middle, somewhat deeply sinuate preapically; apices produced backwards, rather steeply obliquely arcuate in outer margins, acute at tip of right elytron and angularly rounded at left one; bases each very shallowly emarginate, with humeral angle obtuse, pointed and edentate; striae rather wide, minutely and clearly crenulate in bottoms, scutellar striole long; intervals gently convex even on disc, discal pore of 3rd interval situated a little before apical two-fifths; marginal series rather widely interrupted medially, composed of 9+8 umbilicate pores; microsculpture consisting of transverse lines. Hind wings entire.

Ventral surface sparsely and more or less coarsely punctate on propleura, basal area of mesoventrite, lateral portions of metaventrite, metepisterna, and lateral portions of 2nd and 3rd abdominal sternites; metepisterna 1.37 times as long as wide; 7th abdominal sternite in male unisetose at each side and weakly and widely rounded at distal margin.

Legs short; fore tibiae each not sulcate, unispinose apico-external corner; hind tarsi 0.84 times in male as long as the width of head, 1st segment 0.78 times as long as the 2nd and 3rd taken together, twice the 3rd and 2.6 times the 4th, claw segment bisetose along outer margin of and quadrisetose along inner margin of ventral surface.

Aedeagus (Fig. 8) rather thin, gently arcuate, tumid ventrad near apex, not thinned at tip; dorsal orifice wide, without any sclerites; apical lobe wide and long, deeply concave.

F e m a l e unknown.

Length of body: 8.5 mm. Width of body: 3.5 mm.

Holotype: ♂, Meili, Hengduan Mts. part, 28°06'N, 98°53'E, alt. 3,300 m, Yunnan, China, 8 to 10–VII–1996, O. SEMELA leg. (preserved in OMNH).

Remarks. Species group of this new species is not clear. The combination of elongate metepisterna, the entire hind wings and the fore tibiae not sulcate fit to characteristics of the *congruus* species group, sense HABU, (1961, 1973), but the 7th abdominal sternite is not bisetose but unisetose at each side of apical margin. Also characteristics of the pronotum are different from species of the *congruus* group as widely well convex, more narrowly flattened in basal area, not sinuate latero-basally, and thickly bordered. Therefore new species group should be established, but I reserve the systematic treatment because of being single species.

The new species resembles *Trichotichnus* (*Trichotichnus*) *fukuharai* HABU, 1957, but in addition to difference in the setation of abdominal sternite mentioned above, the body is much smaller in size, the pronotum is more transverse and more convex, the elytra are not widely rounded at distal margins, and the hind tarsi are shorter.

Etymology. The specific name is derived from the thick elytra in Latin.

要 約

伊藤 昇：中国産ツヤゴモクムシの4新種(鞘翅目オサムシ科)。—— 中国の雲南省から3新種 *Trichotichnus* (*Amaroschesis*) *marginicollis*, *T. (A.) arcipennis* および *T. (Trichotichnus) crassipennis*, 四川省から1新種 *T. (T.) iridulus* を記載した。 *Trichotichnus crassipennis* は, *congruus species group* の種に近いが, より横長でかつ広く顕著に隆起している前胸背板および第7腹板側縁の剛毛が4本ある点で明らかに異なる。しかしながらこのような特徴を持つのは本種1種のみであることから, 本論文では分類学的処置は保留した。

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Manuscript received 5 August 2014;
revised and accepted 1 November 2014.