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Research Article  
原著論文

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Five new species of the genus *Trichotichnus* from Taiwan  
(Coleoptera, Carabidae, Harpalini)

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台湾からのツヤゴモクムシ属の5新種  
(コウチュウ目, オサムシ科, ゴモクムシ族)

伊藤 昇<sup>1,2</sup>

**抄録:** 台湾のツヤゴモクムシ属 (Gen. *Trichotichnus*) の *leptopus* species group のうち, *Trichotichnus lulinensis* および近似2既知種の図示とともに, 次の5新種を報告する: *Trichotichnus* (*Trichotichnus*) *allessmetanai* N. Ito, sp. nov. from Mt. Yushan [玉山], *T. (T.) fumiakii* N. Ito, sp. nov. from Tayulin [大萬嶺], *T. (T.) similaris* N. Ito, sp. nov. from Tsuifen [翠峰], *T. (T.) lishanensis* N. Ito, sp. nov. from Mt. Lishan [梨山], *T. (T.) nitidipennis* N. Ito, sp. nov. from Sungkang [松崗]. *T. allessmetanai* は, 2021年8月にご逝去された, ハネカクシ研究の世界的権威でいらったカナダの Dr. Aleš Smetana 氏に因む. 氏は多くの研究材料を著者の研究のために供与くださった. ご生前の多大なご功績称賛と標本ご供与への深謝の意を表して献名した.

**Abstract:** Among Taiwanese *leptopus* species group in genus *Trichotichnus*, known species related *Trichotichnus lulinensis* and two allied species are illustrated. Five new species of Harpaline genus *Trichotichnus*, *T. (Trichotichnus) allessmetanai* N. Ito, sp. nov. from Mt. Yushan [玉山], *T. (T.) fumiakii* N. Ito, sp. nov. from Tayulin [大萬嶺], *T. (T.) similaris* N. Ito, sp. nov. from Tsuifen [翠峰], *T. (T.) lishanensis* N. Ito, sp. nov. from type locality, Mt. Lishan [梨山], *T. (T.) nitidipennis* N. Ito, sp. nov. from Sungkang [松崗]. *Trichotichnus allessmetanai* is dedicated Dr. Aleš Smetana, Ottawa who was world famous authority of study on Staphylinidae and also offered many materials of carabid beetles for my study.

<http://zoobank.org/urn:lsid:zoobank.org:pub:C20879EF-9EE3-4A00-91E9-340929E096FF>

**Key words:** taxonomy; description; new species; *leptopus* group; Aleš Smetana

### Introduction

Species of the genus *Trichotichnus* are widely and mainly distributed in oriental Asia, tropical Asia, via Sunda Islands to Neu Guinea and several species are distributed in Europa and North America. In Taiwan, 14 species of and one subspecies of the genus *Trichotichnus* are known, of which 6 belong to *leptopus* species group (Habu, 1979; 1980; Ito, 1997; 2021). Based on specimens collected in central area of Taiwan in 70's and 80's, the author recognized 5 undescribed species. These species together with other 3 previously described species viz. *Trichotichnus lulinensis* Habu, 1979; *Trichotichnus yushanensis* Habu, 1979; *Trichotichnus nenkaoshanensis* N. Ito, 1997 are different from *T. teradai* in not elongate body and shorter legs. Three members of *T. teradai* relatives including two species (Ito, 2021) are closely related to Japanese members of the *leptopus* species group as elongate body and long legs. In this paper I am going to illustrate three known species, *T. lulinensis* Habu and its relatives and to describe five new species in the taxon.

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Dr. Aleš Smetana, Ottawa passed away in August 2021. He kindly offered numerous specimens which collected in Taiwan, Nepal, and Borneo for my study. He was famous and great entomologist of Staphylinidae and his death is large deprivation in entomology. I would like to express my cordial thanks and my deep condolence by dedication of his name to the new species.

All holotypes described here will be preserved in the Osaka Museum of Natural History. Now paratypes are kept in my collection and will be preserved in the same museum collection in future.

### Material and methods

*Condition of material.* Collected individuals were treated in Ethyl Acetate and dried in usual room condition.

*Preparation of aedeagi.* Bodies were softened in 60% ethyl alcohol and aedeagi are extracted from body with tweezers. The aedeagi were immersed in absolute ethyl alcohol for several days. Then alcohol was permuted by 100% xylene and the aedeagi were enclosed in Canada Balsam.

*Observation of material.* Specimens and aedeagi were observed with a microscope of Nikon SMZ10 at 10–80× magnifications.

*Measurement of body parts.* The length of body: the distance between the apex of clypeus 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 eye length: the longitudinal distance viewed in dorsal aspect. The pronotal width: the maximal transverse distance between sides. The pronotal length: the distance from apical edge to basal edge along the middle. The elytral length: the distance between the basal border and the apices along the suture. The elytral width: the maximal transverse distance between sides.

*Terminology.* Technical terms are referred to Beutel and Leschen (2005), and Lawrence and Ślipiński (2013).

### Result and description

#### *Trichotichnus leptopus* species group, sense Habu, 1973

Metepisterna a little longer to slightly shorter than wide; hind wings more or less vestigial; 7 abdominal sternite uniseotse in male and bisetose in female.

In Taiwan, *Trichotichnus* (*Trichotichnus*) *teradai* Habu and two species (Ito, 2021) similar to Japanese species of the group are known and three somewhat different shaped species which are not elongate and have shorter legs, *T. (T.) luliensis* Habu 1979, *T. (T.) yushanensis* Habu 1979, and *T. (T.) nenkaoshanensis* N. Ito, 1997 are known. In this paper species allied to the latter three species are dealt.

#### *Trichotichnus* (*Trichotichnus*) *lulinensis* Habu, 1979

(Figs. 1 and 9)

*Trichotichnus luliensis*: Habu, 1979, 34.

Figure is Holotype specimen. The location Mt. Lulinshan [鹿林山] is near Mt. Alishan [阿里山].

The species is rather small and somewhat similar in shape to *Trichotichnus* (*Trichotichnus*) *congruus* (Motschulsky, 1863) but the pronotum and elytra are more convex, hind wings vestigial and metepisterna are shorter.

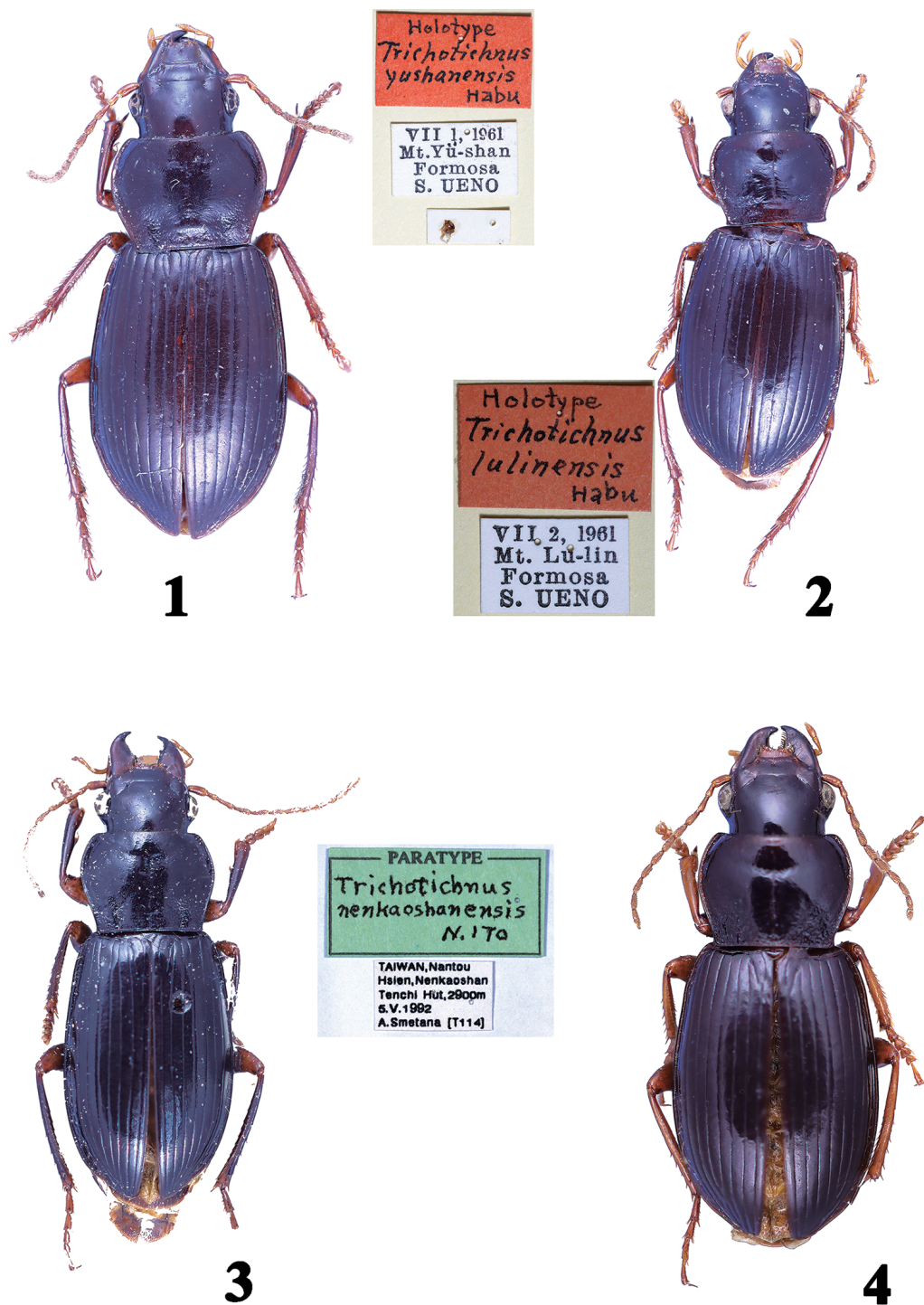
#### *Trichotichnus* (*Trichotichnus*) *yushanensis* Habu, 1979

(Fig. 2)

*Trichotichnus yushanensis*: Habu, 1979, 37, Mt. Yushan [玉山]

Figure is Holotype specimen. Detailed location is not clear.

The species resembles *T. lulinensis*, but the body is larger in size and the pronotum is more contracted.



Figs. 1-4. Habitus of *Trichotichnus* spp. 1. *Trichotichnus* (*Trichtotichnus*) *yushanensis* Habu and type and data label (Holotype); 2. *T. (T.) lulinensis* Habu and its type and data labels (Holotype); 3. *T. (T.) nenkaoshanensis* N. Ito and its type label and data label (Paratype); 4. *T. (T.) alessmetanai* N. Ito, sp. nov. (Holotype).



Figs. 5-8. Habitus of *Trichotochinus* spp. 5. *T. (T.) fumiakii* N. Ito, sp. nov. (Holotype); 6. *T. (T.) similaris* N. Ito, sp. nov. (Holotype); 7. *T. (T.) lishanensis* N. Ito, sp. nov. (Holotype); 8. *T. (T.) nitidipennis* N. Ito, sp. nov. (Holotype).



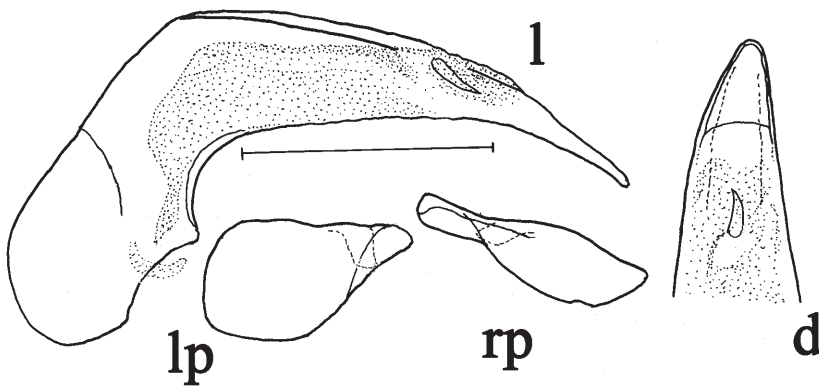


Fig.9. Male genitalia of *Trichotichnus* (*Trichotichnus*) *lulinensis* Habu (Holotype). l: lateral aspect; d: dorsal aspect; rp: right paramere; lp: left paramere. Scale: 1mm.

*Trichotichnus* (*Trichotichnus*) *nenkaoshanensis* N. Ito, 1997

(Fig. 3)

*Trichotichnus nenkaoshanensis*: N. Ito, 1997, 59, Mt. Nenkaoshan [能高山]

Figure is Paratype. Location is near Tayulin [大萬鎮]. The species is flatter than the former two species and largest among the known species.

**Description**

*Trichotichnus* (*Trichotichnus*) *alessmetanai* N. Ito, sp. nov

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(Figs. 4 and 10)

Body oblong, black, shiny, iridescent on elytra; labrum and buccal parts light brown, mandibles yellowish brown to brown, legs yellowish brown to brown.

Head rather well raised, very sparsely and microscopically punctate; labrum transversely quadrate, more or less deeply emarginate at apex; clypeus smooth or rarely with longitudinal grooves only near sides; clypeal suture straight or weakly arcuate, thin, shallow to somewhat deep; frontal impressions arcuately divergent to each other, rather deep compared with other species of subgenus *Trichotichnus* in some individuals, abruptly shallowed near supraorbital grooves; interocular space more or less wide, 0.73-0.75 times as wide as the width of head; eyes more or less large, rather convex; temples long, about 0.4 times as long as eye length; supraorbital seta situated at hind level of genuine margin of eye; antennae weakly moniliform, short, attaining elytral bases, 3rd segment pubescent in apical three-fifths, almost as long as the 4th and three-fifths longer than the 4th; ligula weakly widened forwards, truncate or hardly emarginate at apex, sharp at apical corners; paraglossae weakly arcuate at outer margins, a little surpassing beyond ligular apex; 3rd segment of labial palpi fairly tumid, blunt at apex, one-seventh longer than the 2nd; mentum shallowly concave besides middle, clearly sutured with submentum, epilobes narrow and slightly widened forwards, slightly surpassing beyond lateral lobes, median tooth regular-triangular, narrowly rounded at apex; microsculpture more or less clear, observable as mixture with isodiametric and transverse meshes.

Pronotum subcordate, fairly declivous apico-laterad, widest near apical two-fifths, about 1.41-1.47 times as wide as long; surface widely impunctate, sparsely and coarsely punctate in basal area, with several short and transverse wrinkles; sides gently arcuate in apical half thence linearly oblique, a little strongly convergent apicad than basad from the widest point, fairly deeply sinuate just before base; apex rather deeply emarginate, bordered only near sides; base 1.04-1.06 times as wide as apex, feebly emarginate in middle, very weakly arcuate at sides, entirely and rather thickly bordered; apical angles weakly protruding, more or less narrowly rounded; basal angles sharp, triangularly protruding laterad;

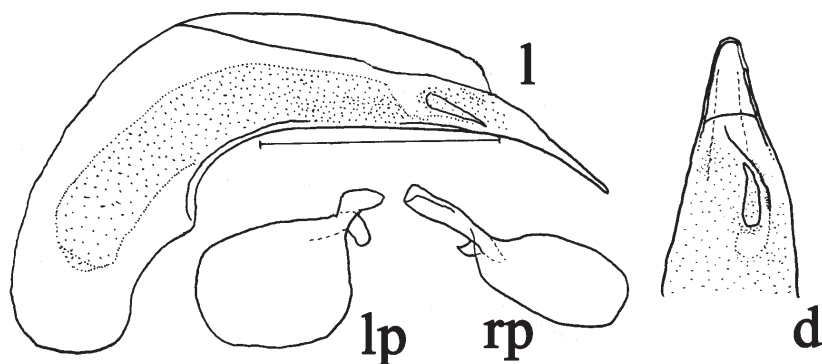


Fig. 10. Male genitalia of *Trichorichnus* (*Trichotochnus*) *alessmetanai* N. Ito, sp. nov. (Holotype). l: lateral aspect; d: dorsal aspect; rp: right paramere; lp: left paramere. Scale: 1mm.

lateral furrows not widened, wholly carved in a line; basal foveae not concave, only flattened; front transverse impression shallow to somewhat deep; hind transverse impression short and vague; median line thin, short, lying between both the impressions; microsculpture partly visible, not clear in flat areas, clear near wrinkles and punctures, consisting of minute isodiametric meshes there and of transverse meshes in smooth portions.

Elytra oblong, weakly arcuate in middle of sides, gently convex, not punctate; sides fairly rounded in humeri, clearly curved in apical third, shallowly sinuate preapically; apices rather protruding backwards and narrowly rounded at tips in male and more weakly protruding and somewhat more widely rounded in female, narrowly separate at tips; bases very weakly emarginate, humeral corners rounded and very larger than right angle; striae more or less deep and wide, scutellar striole short to moderate in length, sometimes attaining 2nd striae; intervals almost flattened on disc, a little convex apically and basally, a setiferous pore of 3rd interval situated a little before apical two-fifths along 2nd stria; marginal series rather widely interrupted in middle, composed of (7-8) + (8-9) umbilicate pores; vague, consisting of transverse meshes. Hind wings vestigial, a little less than one-third as long as elytra length.

Ventral surface coarsened on prosternum and prepisterna, coarsely punctate on lateral portions of metaventrite; metepisterna short, 1.10 times as long as wide; 7th abdominal sternite bisetose in both sexes at each side, slightly arcuate in male and gently so in female at apical margin.

Legs relatively short; fore tibiae more or less widened apicad, trispinous along each apico-external margin; hind tarsus 0.79-0.82 times in male and 0.70-0.72 times in female as long as the width of head, claw segment trisetose along inner and bisetose along outer ventral margin.

Aedeagus (Fig. 10) stout, curved before basal bulb, gradually thinned apicad in lateral view; apical orifice widely open; apical lobe narrowly triangular, one-third longer than wide, narrowly rounded at distal margin; inner sac bearing slim sclerite.

Length: 8.4-8.8 mm. Width: 4.3-4.7 mm.

Holotype: ♂, Mt. Yushan [玉山], Nantou Hsien, Taiwan, 20. V. 1981, N. Ito leg. Paratypes: 1 ♂, same data as the holotype; 1 ♂, 2 ♀, same locality and date as the holotype, T. Ito leg.; 2 ♂, 1 ♀, same locality and collector as the holotype, 19. V. 1981; 1 ♂, 1 ♀, same locality and collector as the holotype, 21. V. 1981; 1 ♀, same locality as the holotype, 21. V. 1981, T. Ito leg. 1 ♀, same locality and collector as the holotype, 2. VIII. 1974.

*Remarks.* This new species is similar to *Trichotichnus* (*Trichotichnus*) *lulinensis* Habu, from Mt. Lulinshan, but the clypeus is not rugose, the pronotum is more deeply sinuate at sides before base and more coarsely punctate in basal foveae, the elytra are more convex on intervals, and the claw segment is trisetose along inner ventral margin but not bisetose.

This new species somewhat resembles to *Trichotichnus yushanensis* Habu, but the body is smaller in size and the pronotum are more sparsely punctate in basal foveae. The sides of pronotum are more weakly arcuate and linearly oblique in basal area, the elytra are a little less arcuate.

*Etymology.* The specific name is dedicated to the late Dr. Aleš Smetana.

*Trichotichnus (Trichotochnus) fumiakii* N. Ito, sp. nov.

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(Figs. 5 and 11)

Body more or less widely oblong, black, shiny, iridescent on elytra; antennae lateral margins of pronotum and legs brown, labrum dark brown, palpi light brown.

Head rather convex on vertex, rather wide, 0.73-0.76 times as wide as pronotal width, very sparsely and minutely punctate, with short, shallow and transverse rugosities in individuals; labrum weakly trapezoidal, rounded at apical corners, more or less deeply emarginate at apex; clypeus shallowly emarginate, smooth or sometimes weakly coarsened near apex and longitudinally rugose only near sides; clypeal suture relatively deep, slightly arcuate backwards; frontal impressions linearly divergent, relatively deep in apical halves, thence abruptly shallowed basad and reduced near supraorbital grooves; interocular space wide, 0.75-0.77 times as wide as the width of head; each supraorbital seta situated near hind level of eye; eyes relatively prominent; temples slightly arcuate, 0.38 times as long as eye length; space between buccal fissures and genuine ventral margins of eyes a little wide, coarsened; antennae submoniliform, 3rd segment pubescent in apical three-fifths, as long as the 4th and about three-fifths longer than the 2nd; ligula wedge-shaped, straight at apex, acute at lateral corners; paraglossae narrow, surpassing a little ligula; 3rd segment of labial palpus tumid, narrow at apex, one-fourth longer than 2nd; mentum more or less concave besides middle, median tooth narrow, long, blunt at apex, slightly arcuate at sides, epilobes narrow, not surpassing beyond apices of lateral lobes, suture between mentum and submentum clear; submentum bearing large and deep concavity at each side; microsculpture obscure, partly visible as transverse meshes.

Pronotum subcordiform, gently convex in disc, widest a little before two-fifths, more strongly arcuate convergent apicad from the widest point than basad, sinuate just before base; lateral setae each situated in lateral furrow near the widest point; apex shallowly emarginate, unbordered in middle; base about one-tenth wider than apex, straight or weakly arcuate in lateral fifth, brokenly and rather thickly bordered; apical angles weakly protruding forwards, widely rounded; basal angles weakly protruding laterad, sharp at tips; lateral furrows each engraved in a line throughout, isolated from basal fovea by weak hump; front transverse impression long, wide and shallow, the hind one short and very obscure; median line rather clear, reduced near both the impressions; surface widely impunctate, sparsely and somewhat coarsely punctate near basal foveae, with several transverse wrinkles near the median line; microsculpture partly visible, detected as transverse meshes near the wrinkles and punctures.

Elytra widely oblong, widest a little behind middle, about one-fourth wider than pronotal width, 1.39-1.43 times as long as wide, fairly convex, impunctate; sides gently rounded in humeri, weakly arcuate in middle, clearly curved in apical fourth, shallowly sinuate preapically; apices more or less protruding in male and weakly so in female, separately rounded; bases shallowly emarginate, fairly larger than right angle and not rounded at humeral angles; striae more or less wide and deep, minutely crenulate in bottoms, scutellar striae relatively short, not reaching 2nd stria; intervals hardly

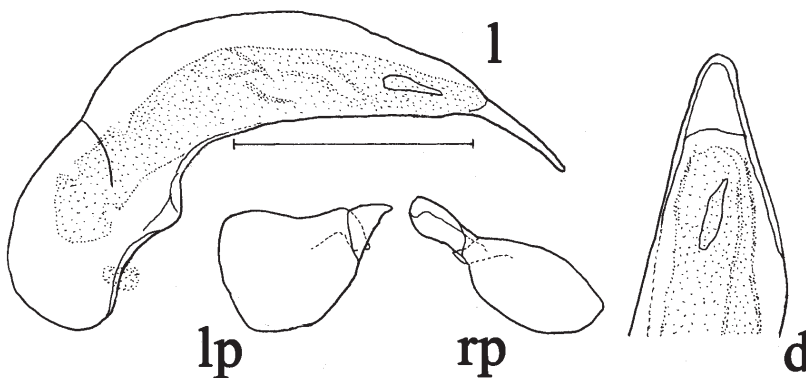


Fig. 11. Male genitalia of *Trichotichnus (Trichotochnus) fumiakii* N. Ito, sp. nov. (Holotype). 1: lateral aspect; d: dorsal aspect; rp: right paramere; lp: left paramere. Scale: 1mm.

convex on disc, gradually becoming more convex apicad and basad, 3rd interval with a setiferous pore near apical two-fifths; marginal series rather widely interrupted medially, consisting of (7-8) + (7-8) umbilicate pores; microsculpture somewhat clear, visible as transverse lines. Hind wings vestigial, thin, one-third times as long as the elytral length.

Ventral surface almost impunctate, with several vague puncture on lateral portions of metaventrite; metepisterna short, one-tenth wider than long; 7th abdominal sternite bisetose at each side in both sexes, slightly arcuate in male and a little more clearly so in female than in male.

Legs rather short; fore tibiae each rather thick, mono-spinose at apico-lateral margin, not sulcate, with two or three seriate setae dorsally; hind tarsus 0.78 times in male and 0.72 times in female as long as the width of head, 1st segment one-tenth shorter than the 2nd and 3rd taken together, a half longer than the 2nd and three times as long as the 4th, 5th segment trisetose along each ventral margin.

Aedeagus (Fig. 11) thick in middle, clearly arcuate dorsally, abruptly thinned forwards in apical portion; apical orifice not directed to left; inner sac bearing a short and elongate sclerite; apical lobe rather elongate-triangular, almost as long as wide, narrowly rounded at distal margin.

Length: 7.9-8.3 mm. Width: 3.3-3.5 mm.

Holotype: ♂, Tayulin [大萬嶺], Hualian Hsien, Taiwan, 23. VII. 1984, F. Kimura leg. Paratypes: 4 ♂♂, 1 ♀, same data as the holotype.

*Remarks.* This new species is similar to the former species *Trichotichnus* (*Trichotichnus*) *alessmetanai* N. Ito, sp. nov. in the shape of pronotum. But the new species is distinguished from the latter by the pronotum more minutely punctate in basal foveae and a little more weakly prominent at basal angles, and fore tibia monospinose but not trispinose along apico-external margin, and the aedeagus not directed to right in apical orifice.

The type locality of the species is near that of *T. nenkaoshanensis* N. Ito, but the new species is easily distinguished from the latter by the smaller body, the more convex pronotum and elytra.

*Etymology.* The species is named after Dr. Fumiaki Kimura of Kashiara City Museum of Insect, Kashiara who collected specimens of the type series.

***Trichotichnus* (*Trichotichnus*) *similaris* N. Ito, sp. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:DA96A290-6B9E-4FC4-A44B-30CCFD89A0EF>

(Figs. 6 and 12)

Body oblong, black, shiny, with iridescent lustre on elytra; antennae, palpi and tibiae light brown, legs except for tibiae brown.

Head fairly convex, very sparsely and microscopically punctate, large, 0.72 times as wide as the pronotal width, with interocular space wide and 0.70 times as wide as the width of head; labrum subtransversely quadrate, triangularly emarginate at apex, narrowly rounded at apical corners; clypeus weakly depressed and briefly and longitudinally rugose near lateral pores; clypeal suture almost straight, rather deep; frontal impressions linearly divergent to each other, fairly deep in apical halves, thence gradually shallowed, reaching supraorbital grooves; antennae submoniliform, short, reaching elytral bases, 3rd segment pubescent in apical half, as long as the 4th and one-third longer than the 2nd; eyes fairly large, weakly convex; temples short, one-fourth as long as eye length; supraorbital seta situated at level of middle of temple; ligula abruptly widened preapically, arcuate at apex, sharp at apical corners; palpi more or less wide, 3rd segment of labial palpus one-third longer than the 2nd; mentum shallowly concave besides middle, median tooth narrowly triangular, acute at apex, epilobes not surpassing lateral lobes; microsculpture vague, partly visible as minute transverse meshes.

Pronotum subcordate, widest a little behind apical two-fifths, 1.34 times as wide as long, rather steeply declivous apico-laterad; sides gently arcuate in apical two-thirds, thence linearly oblique basad, very shallowly and briefly sinuate before base; apex shallowly emarginate, unbordered in middle seventh; base 1.13 times as wide as apex, bordered except for middle tenth, almost straight in middle, feebly arcuate at sides; lateral furrows each carved in a line throughout,



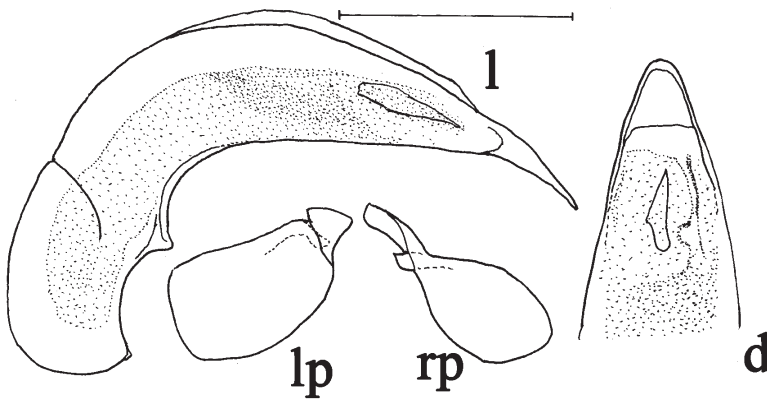


Fig. 12. Male genitalia of *Trichotichnus* (*Trichotochnus*) *similaris* N. Ito, sp. nov. (Holotype). l: lateral aspect; d: dorsal aspect; rp: right paramere; lp: left paramere. Scale: 1mm.

isolated from basal fovea by weak hump; basal foveae shallow, longitudinally and widely oblong; front transverse impression shallow and arcuate, the hind one reduced; median line reaching base and reduced near the front transverse impression; surface widely impunctate on disc, very sparsely and minutely punctate near apex, moderately and somewhat coarsely punctate in basal area, with several short and transverse wrinkles along median line; microsculpture more or less clear, consisting of short transverse meshes.

Elytra rather widely oblong, weakly convex on disc, fairly slant laterad, widest a little before middle, 1.26 times as wide as the pronotal width; sides weakly arcuate in humeri, slightly arcuate in middle, gradually strongly incurved apicad from the widest point, shallowly sinuate before apices; apices not produced, separately rounded, not angulate at sutural angles; bases very shallowly emarginate, with humeral angles acute and much larger than right angle; striae deep, clearly crenulate in bottoms, scutellar striole moderate in length, not reaching 1st striae; intervals flat on disc, a little convex in lateral and apical areas, a setiferous pore of 3rd interval situated at apical third; marginal series a little widely interrupted in middle, consisting of (7-8) + (7-8) umbilicate pores; microsculpture composed of short transverse lines. Hind wings vestigial but somewhat long in members of leptopus species group in Taiwan, 0.30 times as long as the elytral length.

Ventral surface minutely and sparsely punctate on prepisterna and coarsely and relatively densely so on metepisterna and lateral portions of mentaventricle; metepisterna wide, as long as wide; 7th abdominal sternite in male weakly at apical margin bisetose at each side.

Legs short; fore tibiae rather robust, not sulcate, with three seriate spines along each apico-lateral margin; hind tarsi in male short, 0.77 times as long as the width of head, 1st segment one-eighth shorter than the 2nd and 3rd taken together, three-fifths longer than the 2nd and 2.67 times as long as the 4th, 5th segment trisetose along outer ventral margin and bisetose along the inner margin.

Aedeagus (Fig. 12) robust, clearly arcuate in dorsal side and gradually thinned forwards in lateral view; apical lobe triangular, narrowly rounded at tip, in lateral view somewhat thick basally; dorsal orifice widely open, inner sac bearing relatively long sclerite which is acute at apex.

Female unknown.

Length: 8.8 mm. Width: 4.6 mm.

Holotype: ♂, Tsuifen (翠峰), Nantou Hsien, Taiwan, 3. V. 1982, F. Kimura leg. Paratype: 1 ♂, same locality and collector as the holotype, 23. IV. 1983.

*Remarks.* This new species resembles *Trichotichnus* (*Trihotochnus*) *fumiakii* N. Ito, sp. nov. in shape of body and convexity in pronotum, but the pronotum is more densely and coarsely punctate in basal area and with deeper basal foveae and the aedeagus bears sclerite of inner sac longer and acute at tip.

*Etymology.* The specific name means that this species is similar to *Trichotichnus fumiakii* in Latin.

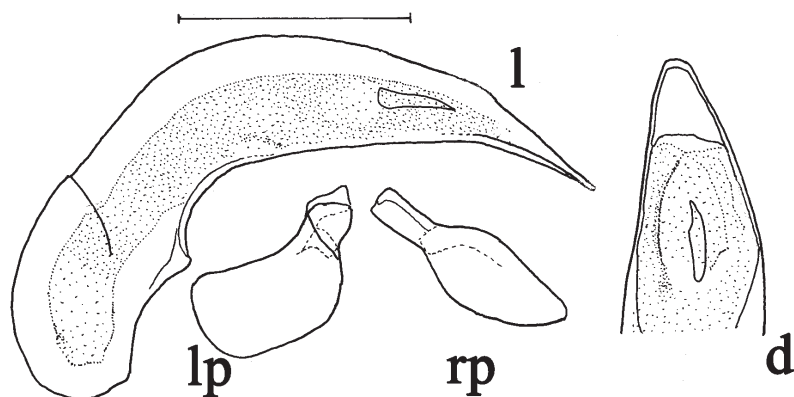


Fig. 13. Male genitalia of *Trichotichnus* (*Trichotichnus*) *lishanensis* N. Ito, sp. nov. (Holotype). l: lateral aspect; d: dorsal aspect; lp: left paramere; rp: right paramere. Scale: 1mm.

*Trichotichnus* (*Trichotichnus*) *lishanensis* N. Ito, sp. nov.

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(Figs. 7 and 13)

Body oblong, black, shiny, iridescent on elytra; antennae, palpi and legs light brown, labrum and inner basal parts of mandibles dark brown.

Head gently raised on vertex, very sparsely and microscopically punctate, relatively wide, 0.70 times as wide as pronotal width, with interocular space 0.68-0.71 times as wide as width of head; labrum quadrate or very weakly trapezoidal, shallowly emarginate, arcuate at sides, rounded at apical corners; clypeus smooth, not coarsened and rugose, narrowly depressed along apical margin; clypeal suture straight, shallow or somewhat deep; frontal impressions rather deep in apical two-thirds thence abruptly shallowed, not or hardly reaching supraorbital grooves; eyes rather large, relatively prominent; temples fairly steeply oblique, short, 0.15 times as long as eye length; supraorbital setae each situated at middle level of temple; antennae submoniliform, short, not reaching elytral bases, attaining basal tenth of pronotum, 3rd segment pubescent in apical two-thirds, almost as long as the 4th and twice the 2nd; space between buccal fissure and genuine ventral margins of eyes rather wide, minutely coarsened; ligula wedge-shaped, straight apically, sharply triangular at apical corners; 3rd segment of labial palpus voluminous in middle, blunt at apex, 1.12-1.14 times as long as the 2nd; mentum shallowly concave besides middle, clearly sutured with submentum, median tooth triangular, weakly arcuate at lateral margins, narrowly rounded at apex, epilobes narrow, hardly surpassing beyond lateral lobes; microsculpture largely unobserved, consisting of isodiametric in narrow apical area, partly and vaguely visible as transverse meshes.

Pronotum subcordiform, fairly steeply declivous apico-laterally, widest near apical two-fifths, about two-fifths wide than long; sides gently arcuate in apical half, then almost linearly oblique backwards, slightly and briefly sinuate before base; apex shallowly emarginate, unbordered in middle fifth; base slightly wider than apex (1.07-1.10 in ratio), thinly bordered, unbordered in middle sixth in one individual, hardly emarginate; lateral furrows each carved in a line throughout, widely isolated from basal fovea by a weak hump; basal foveae ill-defined, small, and very shallow; front transverse impression wide and shallow, the hind one short and vague; median line thin but clear, entire in two individuals and reduced near both the impressions in one individual; surface mostly impunctate, sparsely and moderately punctate near basal foveae and very sparsely and minutely so near front transverse impression.

Elytra rather widely elliptical, widest near middle, about a half longer than wide, one-fourth wider than the pronotal width, fairly convex, impunctate; sides gently rounded in humeri, weakly arcuate in middle, gradually strongly incurved apicad, shallowly sinuate perapically; apices weakly rounded, separating to each other, not angulate at sutural angles; bases almost straight, weakly oblique near humeral angles which are angulate and larger than right angle; striae more or less wide, rather deep and crenulate in bottoms, scutellar striole short or moderate in length; intervals almost flat on disc,

gradually raised apico-laterad, 3rd interval with a setiferous pore at apical third or near portion; microsculpture obscure, consisting of short transverse lines. Hind wings vestigial, 0.26 times as long as the elytral length.

Ventral surface rather coarsely and sparsely punctate on pro- and mesepisterna and lateral portions of metaventrite; metepisterna short, 1.17 times as long as wide; 7th abdominal sternite weakly and widely rounded in male and a little more strongly arcuate in female than in male at apical margin, bisetose in both sexes at each side of the outer margins.

Legs short; fore tibiae rather abruptly thickened apicad, trispinose along each apico-lateral margin; hind tarsi 0.78–0.80 times in male and 0.75 times in female as long as the width of head, 1st segment 0.94 times as long as the 2nd and 3rd taken together, 1.57 times as long as the 2nd and 2.56 times as long as the 4th, 5th segment trisetose along inner ventral margin and bisetose along the outer margin.

Aedeagus (Fig. 13) thick in middle, thence tapered forwards, very thin in apex; apical lobe somewhat elongate-triangular, almost as long as wide, narrowly rounded at distal margin; apical orifice not directed to left, wide, inner sac bearing a relatively long sclerite in apical forth.

Length: 8.5–9.0 mm. Width: 3.4–3.8 mm.

Holotype: ♂, Mt. Lishan [梨山], Taichung, Taiwan, 1. V. 1982, T. Ito leg. Paratypes: 1 ♂, 1 ♀, same locality as the holotype, 2. IV. 1974, N. Ito leg.

**Remarks.** This new species resembles *Trichotichnus* (*Trichotichnus*) *fumiakii* N. Ito, sp. nov. in shape and convexity of pronotum, but the pronotum is more weakly protruding at basal angles, and the ventral surface is more densely and coarsely punctate.

**Etymology.** The specific name is derived from type locality, Lishan.

***Trichotichnus* (*Trichtotichnus*) *nitidipennis* N. Ito, sp. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:508E26AE-3C09-4570-9717-D83F0DFB3F45>

(Figs. 8 and 14)

Body oblong, black, shiny, well iridescent on elytra; antennae and legs brown, labrum blackish brown, palpi light brown.

Head fairly elevated, very sparsely and microscopically punctate, not rugose on clypeus, relatively wide, 0.70–0.71 times as wide as the pronotal width, with interocular space wide and 0.70–0.71 times as wide as width of head; labrum almost quadrate, more or less deeply and triangularly emarginate at apex, narrowly rounded at lateral corners; clypeus rather deeply and straight engraved in a line near apex, weakly raised behind the engraving; clypeal suture straight and rather deep; frontal impression relatively deep, shallowed near supraorbital grooves; each supraorbital seta situated near hind level of temple; eyes not large, rather well prominent; temples short, almost one-third the eye length; antennae

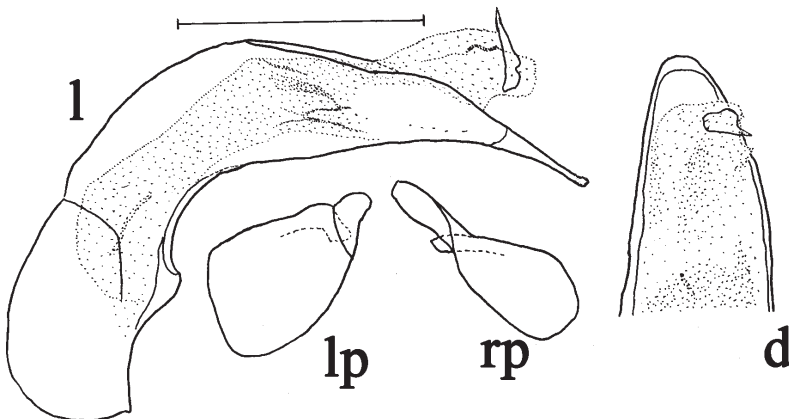


Fig. 14. Male genitalia of *Trichotichnus* (*Trichtotichnus*) *nitidipennis* N. Ito, sp. nov. (Holotype). l: lateral aspect; d: dorsal aspect; rp: right paramere; lp: left paramere. Scale: 1 mm.

submoniliform, short, attaining at basal tenth of pronotum, 3rd segment pubescent in apical two-thirds, 1.08 times as long as the 4th and twice the 2th; 3rd labial palpus massive in middle, blunt at apex, as long as the 2th; ligula moderately widened forwards, truncate at apex, sharp at apical corners; paraglossae narrow, isolated from ligula near apex, not surpassing beyond ligula; mentum shallowly concave besides the middle, median tooth regular-triangular and rounded at apex, epilobes slightly surpassing beyond lateral lobes; microsculpture vague, composed of minute isodiametric meshes near clypeal apex and observed as transverse meshes partly the remaining portion.

Pronotum subcordiform, fairly convex, the convexity approaching to lateral margins and therefore the furrow not widened and carved in a line, widest a little before middle, 1.36 times as wide as long; sides gently curved in apical half, thence linearly oblique backwards, feebly or weakly sinuate before base; apex shallowly emarginate, unbordered widely in middle; base 1.07-1.16 times as wide as apex, straight in middle half, very weakly arcuate at sides; apical angles weakly protruding, widely rounded; basal angles slightly larger than right angle, not or weakly triangularly protruding laterad; basal foveae each ill-defined, oblong, isolated from lateral furrow by weak hump; front transverse impression very shallow, the hind one vague or invisible; median line thin, reduced near both apex and base; surface largely impunctate, very sparsely and minutely punctate near apex and somewhat coarsely and sparsely so in basal area, with several short and transverse rugosities along median line; microsculpture widely absent, consisting of vague minute isodiametric meshes near punctures and rugosities.

Elytra somewhat elongate-oblong, widest slightly behind middle, 1.48-1.51 time as long as wide, not punctate; sides weakly curved in humeri, almost straight divergent to the widest point, thence gradually strongly arcuate backwards; apices relatively protruding backwards, narrowly rounded at distal margins, acute at sutural angle, closed to each other; bases very shallowly emarginate in middle four-fifths, clearly oblique in the remaining portions, humeral angles much larger than right angle and acute; striae rather wide, deep, minutely crenulate in bottoms, scutellar striae short in one individual and moderate in length in another one, not reaching 1st striae; intervals flat on disc, gradually becoming a little convex basad and apico-laterad, a setiferous pore of 3rd interval situated at apical third; marginal series widely interrupted in middle, composed of 10 + 10 umbilicate pores. Hind wings well vestigial, 0.23 times as long as elytral length.

Ventral surface largely impunctate, with several coarse punctures on metepisterna and lateral portions of metaventre; metepisterna short, nine-tenths shorter than wide; 7th abdominal sternite bisetose at each side in both sexes, almost truncate in male and moderately arcuate in female at apical margin.

Legs short; fore tibiae not sulcate, with three short setae arranged uniseriately, trispinose along each apico-lateral margin; hind tarsus 0.78 times in male and 0.74 times in female as long as the width of head, 1st segment as long as the 2nd and 3rd taken together, 2.20 times as long as the 3rd and 3.67 times as long as the 4th, 5th segment trisetose along each ventral margin.

Aedeagus (Fig. 14) thick, gradually thinned apicad from middle; apical orifice slightly directed towards left; apical lobe widely rounded at distal margin.

Length: 8.7-8.8 mm. Width: 3.8-4.0 mm.

Holotype: ♂, Sungkang [松崗], Nantou Hsien, Taiwan, 1. IV.1984, Y. Yamamoto leg. Paratype: 1 ♀, same locality as the holotype (described as FORMOSA on data label), 4. IV. 1971, H. Nomura leg.

*Remarks.* The new species resembles the former new species, *Trichotichnus* (*Trichotichnus*) *alessmetanai* N. Ito, sp. nov. in shape of body and more or less toothed basal angles of pronotum, but the pronotum is more weakly protruding at basal angles, the elytra are a little shorter, the mesepisterna are wider, and the 1st segments of hind tarsi are longer.

*Etymology.* The specific name is derived from black elytra.

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