

The Group of *Trichotichnus leptopus* (Coleoptera, Carabidae) of Japan

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Abstract Harpaline carabid beetles belonging to the group of *Trichotichnus leptopus* (BATES) are enumerated from Japan. *Trichotichnus leptopus* is redescribed on the basis of the type series and newly obtained specimens. Twenty species are new to science and described under the names of *T. hisakoeae*, *T. alpinus*, *T. abei*, *T. armiger*, *T. imurai*, *T. eikoeae*, *T. kosakai*, *T. yoshiroi*, *T. yatsuensis*, *T. furihatai*, *T. hirasawai*, *T. kishimotoi*, *T. silvestris*, *T. hiranishi*, *T. gracilis*, *T. ohkawai*, *T. higonis*, *T. narukawai*, *T. asper* and *T. hayakawai*.

Introduction

The members of the genus *Trichotichnus* are widely distributed throughout the world with the exception of Australia, and are classified into three subgenera, *Trichotichnus*, *Bellogenus* and *Harpaloxenus*. This genus has been represented by more than one hundred species. An outline of the genus was delineated by NOONAN in 1985.

In the Japanese Islands, this genus is one of the most important harpaline genera, since it includes the species with reduced hind wings, which are much localized in mountainous areas. Besides, they are very closely similar to one another not only in their external morphology but also in genitalic features, making it quite difficult to determine them.

Needless to say, the first species of this group known to science is *Trichotichnus leptopus* (BATES), originally described in 1883 from Nikkô, Central Japan. It was re-described by HABU (1961, p. 150) in his revisional study of the genus *Trichotichnus*, but his careful account was based on eleven specimens from five localities, one of which was sent to London and was compared by BRITTON with the type of *T. leptopus*. Unfortunately, there was a grave fault in the procedure for identification of HABU's specimen, since the direct comparative study was based only on their external morphology. The same view was still held by HABU in 1973, when a monograph of harpaline carabids was published. After this pioneer work, the same author added one new species, *T. kasaharai* from Central Japan.

More than ten years ago, KASAHARA redescribed *T. yukihikoi* and *T. leptopus*, and their collecting data were shown. At that time, I had an impression that the latter con-

sisted of at least four different species based on the extremely variable characters in their body size and the shape of aedeagus. In the past few years, KASAHARA described several new species from Central Japan. Recently, KASAHARA and ITÔ described two more new species from Shikoku. Since all of them are both taxonomically and geographically remote from *T. leptopus*, these species are valid, even though their own view of *T. leptopus* was based on HABU's inadequate treatment. Last year, several species mainly related to *T. pacificatorius* HABU were described by N. ITO. In my opinion, it is premature to study the group of *T. leptopus* from West Japan without a critical study of all the known members of this group from Central and North Japan. After all, taxonomy of the Japanese members of *T. leptopus* is not well worked out, though a total of twelve species have been described since HABU's monograph.

To undertake this task, I have to give a full redescription of *T. leptopus* and to bring its true systematic position to light. Then, twenty new species and nineteen hitherto known species will be reported.

Materials

This study is based on examination of approximately 800 specimens. Most of them were collected by friends of mine and by myself. The type specimens of *Trichotichnus leptopus* were borrowed from the Natural History Museum, London. HABU's specimens were studied in the National Institute of Agro-environmental Sciences, Tsukuba. For comparison, specimens from Korea and Primorskij Territory were offered from Dr. IMURA and Mr. AKITA, respectively.

Method

Since the members of the group of *T. leptopus* are moderately large, it is relatively easy to remove the genitalia of a thoroughly relaxed specimen. When separating the parameres from the aedeagus, a careful operation is required, since the proximal part of aedeagus is transparent and fragile. In order to study structure of the copulatory piece, the dorsal membraneous part should be cut open from the proximal part to the apical orifice with a sharp pin and the inner sac is taken out.

Only when the copulatory piece is removed from the inner sac and mounted on a slide with a few drops of lactic acid, its detailed structure can be observed. After a careful examination and drawing, the genitalia are preserved in individual vials in 70% alcohol.

Abbreviations

In the description, the following abbreviations are used: L—body length, measured from apical margin of clypeus to apices of elytra; HW—greatest width of head; PW—greatest width of pronotum; PL—length of pronotum, measured along the me-

dian line; PA – width of pronotal apex; PB – width of pronotal base; EB – width of elytral base, measured between lateral ends of basal border; EW – greatest width of elytra; EL – greatest length of elytra; WL – greatest length of hind wing; TL – length of metatarsus; TV – length of claw segment of metatarsus; TI – length of segment I of metatarsus; FL – length of metafemur; MTL – length of metatrochanter; M – arithmetic mean; NHM – Natural History Museum, London; NSMT – National Science Museum (Nat. Hist.), Tokyo; NAS – National Institute of Agro-environmental Sciences, Tsukuba.

Acknowledgments

I wish to express my deep gratitude to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for critically reading the manuscript of this paper. Thanks are also due to Dr. Nigel STORK and Dr. Stuart HINE of the Natural History Museum, London, for loan of type material under their care, and to Dr. Takeshi MATSUMURA and Dr. Koji YASUDA of the National Institute of Agro-environmental Sciences, Tsukuba, for giving me the opportunity of reexamining the material studied by HABU.

My deep indebtedness is also due to the following colleagues and friends, whose kind aid and support enabled me to complete this study: Dr. Yûki IMURA, Dr. Kazuyoshi KUROSA, Dr. Yoshiro KUROSA, Dr. Kimio MASUMOTO, Dr. Gerald R. NOONAN, Dr. Katsuyuki TERADA, Dr. Shin-ichi YOSHIMATSU, the late Mr. Atsuo IZUMI, Messrs. Azuma ABE, Hideto ARAMAKI, Hirofumi FUJIMOTO, Takashi FUNAKOSHI, Michiaki HASEGAWA, Hirofumi HAYAKAWA, Katsuo HIRAI, Yukihiro HIRANO, Hanmei HIRASAWA, Fuminori HIROKAWA, Katsuhiko HORI, Noboru ITO, Yoshiyuki ITÔ, Sumao KASAHARA, Toshio KISHIMOTO, Takuya KURITA, Kazushige KUSANO, Kôichi MATSUI, Yutaka MIYAZAWA, Keiichi MATSUMOTO, Mitsuyasu NISHIDA, Masaaki NISHIKAWA, Hideo OHKAWA, Isao OHTSUKA, Toshihiro OZAKI, Masahiro SAITÔ, Shohei SHIMIZU, Tôru SUDA, Yûji TOMISHIMA, Koji TOYODA, Teruhisa UENO, Satoshi YAMAUCHI, Masataka YOSHIDA, and Naohiro YOSHIZAWA.

I am also indebted to my wife, Eiko, for her aid in searching for carabid beetles in the field.

Classification of the Group of *T. leptopus*

Body size. L: 8–14 mm. The body size shows rather a narrow range within a single population.

Colour. Colour black to blackish brown; elytra with iridescent lustre; appendages blackish brown to reddish brown.

Coloration on the dorsal side and legs furnishes an important clue for identification.

Head. Head moderately convex, with shallow frontal furrows; lateral grooves deep and usually straight; eyes rather flat to moderately convex; microsculpture not

sharply impressed though consisting of isodiametric or wide meshes, partially obliterated; apex of labrum and shape of mentum tooth variable within a single population.

It is very difficult to detect slight differences of head without toptotypical specimens.

Pronotum. Pronotum transverse; apical margin emarginate or almost straight; apical angles a little produced and rounded at the tips; sides arcuate, convergent towards base, and then weakly sinuate before hind angles, which are dentate, sharp or a little produced laterally; basal foveae shallow to deep, and with coarse punctures; median line clearly impressed; base almost straight, or slightly emarginate at median part and slightly oblique just inside hind angles, and bordered throughout; surface densely and coarsely punctate, though minutely so on the disc and almost obsolete along apical margin and median line; microsculpture composed of wide or transverse meshes.

The pronotum is mutually similar to species belonging to the same complex so that slight differences cannot be expressed by the standard ratios of parts.

Hind wings. The state of reduction of hind wings is one of the most important characters for separating complexes. So far as I am aware, it is almost constant within a species.

Elytra. Elytra oval, ovate, elongated oval, or elongated ovate, moderately convex, and widest at about middle or a little behind middle; sides gently or narrowly arcuate, and slightly sinuate before apices; intervals slightly convex to flat; striae impunctate; basal border weakly curved or almost straight; interval 3 with a dorsal pore, adjoining stria 2; marginal series variable in the number of pores.

The shape of elytra gives an important clue for separating complexes.

Male genital organ. Aedeagus elongate; basal part large and transparent; right wall higher than the left; apical margin of membranous dorsal part simply to widely rounded, or slightly emarginate at apex in dorsal view; apical lobe moderately to strongly produced, and almost straight or inclined to the right in dorsal view; apex thick or bordered above, sometimes interrupted at middle in dorsal view; viewed ventrally, apex almost flat, thick, or bordered at the sides and notched at middle.

Male genitalia serve as one of the most important characteristics for identification. However, dorsal margin of the aedeagus is usually slightly reduced in dried specimens (cf. Figs. 6 a, 12 c).

Structure of aedeagus. Inner sac covered with scales and armed with a copulatory piece, and sometimes with a mat of spinules near the basal part of copulatory piece; copulatory piece variable in size and shape within a single population, and hollow and open at the base. (This was observed under a magnification of at least 100 diameters.)

If the copulatory piece is large in size, it furnishes an important clue for identification.

Unfortunately, recent authors including myself have not been able to show reliability of both external and genitalic characters for separating species. However, six

groups based on the shape of body, apex of aedeagus and state of reduction of hind wings are recognizable as follows:—

I. The *leptopus* complex: Body relatively small (L: 7.7–10.8 mm); elytra oval and ovate; WL/EL 0.20–0.27; apical lobe of aedeagus almost straight or slightly curved ventrad in lateral view; apex of aedeagus thin to thick, not bordered in ventral view.

II. The *hirasawai* complex: Body medium to large (L: 10.2–12.5 mm); elytra elongated ovate; WL/EL 0.24–0.28; aedeagal apical lobe slightly curved ventrad in lateral view; apex rather thin, not bordered in ventral view.

III. The *kasaharai* complex: Body large (L: 11.0–14.5 mm); elytra elongated ovate; WL/EL 0.20–0.25; aedeagal apical lobe strongly produced and reflexed, or robust and thick in lateral view; apex thick and not or slightly bordered in ventral view.

IV. The *tranquillus* complex: Body small (L: 8.4–9.5 mm); elytra ovate; WL/EL 0.30–0.37; aedeagal apical lobe slightly reflexed in lateral view; apex thin and not bordered in ventral view.

V. The *daibosatsunis* complex: Body medium-sized (L: 9.5–11.0 mm); elytra elongated oval; WL/EL 0.60–0.73; aedeagal apical lobe elongate and reflexed or produced in lateral view; apex not bordered in ventral view.

VI. The *pacificatorius* complex: Body medium to large (L: 9.5–12.5 mm); elytra elongated oval; WL/EL 0.50–0.68; aedeagal apical lobe rather elongate and produced in lateral view; apex thick, bordered at the sides, and notched at middle, each side of the notch dentate, sometimes obtuse in ventral or apical view.

Complex of *Trichotichnus leptopus*

Trichotichnus (Trichotichnus) imafukui HABU

[Japanese name: Imafuku-tsuya-gomokumushi]

(Figs. 1–2)

Trichotichnus (Trichotichnus) imafukui HABU, 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13) : 134, 151, 169, figs. 7, 38, 39; type locality: Mt. Nishikoma-ga-take; 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 285, figs. 515, 521, 530, 535, 540, pl. 19–4.

Trichotichnus imafukui: KASAHARA, 1985, Coleopt. Japan Col., Osaka, 2: 147.

Diagnosis. Body small and robust; sides of pronotum less sinuate before hind angles; elytra oval; legs brown to reddish brown; aedeagus tubular; ventral surface of apical lobe almost flat.

Description. L: 8.22–8.74 mm. Colour black; ventral side blackish brown to black; legs brown to reddish brown.

Head weakly convex; frontal furrows very shallow and not reaching lateral grooves; eyes rather flat; mentum tooth rounded at the tip; apex of labrum emarginate at the median part, or almost straight; dorsal surface finely or microscopically and sparsely punctate; PW/HW 1.38 in the holotype, 1.35 in 1 ♂, 1.36, 1.40 in 2 ♀♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.53 :

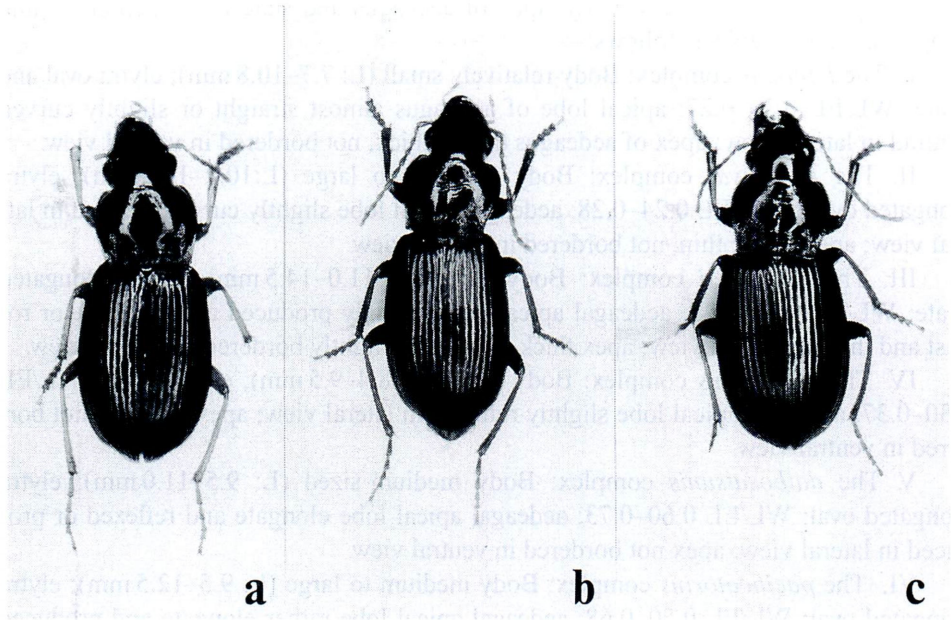


Fig. 1. *Trichotichnus* (*Trichotichnus*) spp. — a, *T. (T.) imafukui* HABU from Mt. Kisokoma-ga-take; b, *T. (T.) hisakoeae* MORITA, sp. nov., from Mt. Senmai-dake; c, *T. (T.) alpinus* MORITA, sp. nov., from Mt. Sugoroku-dake.

0.89 : 0.89 : 0.90 : 0.91 : 1.09.

Pronotum transverse and flat; PW/PL 1.38 in the holotype, 1.38 in 1 ♂, 1.38, 1.45 in 2 ♀♀; PW/PA 1.43 in the holotype, 1.38 in 1 ♂, 1.36, 1.39 in 2 ♀♀; PW/PB 1.22 in the holotype, 1.20 in 1 ♂, 1.23, 1.24 in 2 ♀♀; PA/PB 0.86 in the holotype, 0.87 in 1 ♂, 0.88, 0.91 in 2 ♀♀; sides weakly arcuate, convergent towards base, and then very weakly sinuate just before hind angles, which are dentate; marginal gutter close to side margin from apical angle to the widest part, and then becoming narrowly distant posteriad and obliterated at about 1/4 from base; anterior marginal seta situated at the widest part; basal foveae moderately deep, but rather shallow in ♀; anterior transverse impression shallow but obsolete at the sides; basal transverse impression obsolete; base almost straight, or slightly emarginate at median part and slightly oblique just inside hind angles, and bordered throughout; microsculpture composed of wide meshes on the apical part, and of fine transverse ones on the disc and the basal part.

Elytra oval, moderately convex, widest at about middle; EW/PW 1.25 in the holotype, 1.25 in 1 ♂, 1.28, 1.33 in 2 ♀♀; EL/EW 1.53 in the holotype, 1.46 in 1 ♂, 1.41, 1.48 in 2 ♀♀; shoulders rounded, EB/EW 0.70 in the holotype, 0.68 in 1 ♂, 0.66, 0.70 in 2 ♀♀; sides rather strongly arcuate, slightly sinuate before apices; scutellar striole short, impunctate and free at the posterior end, and with basal pore; intervals rather flat and almost smooth; apices separately and simply rounded; basal border weakly curved or

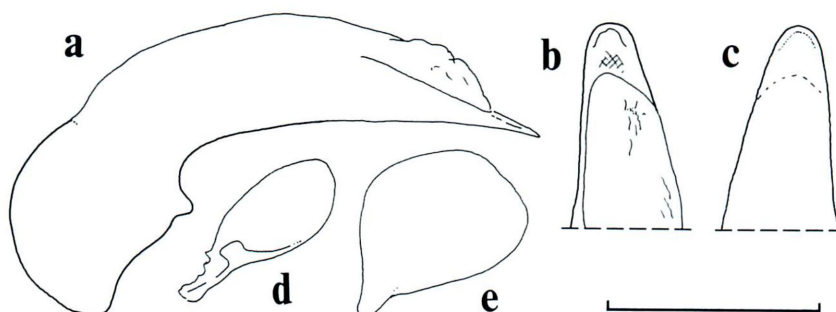


Fig. 2. Male genital organ of *Trichotichnus (Trichotichnus) imafukui* HABU from Mt. Kisokoma-ga-take. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, apical part of aedeagus, ventral view; d, right paramere, left lateral view; e, left paramere, left lateral view. Scale: 1 mm.

almost straight, and joining stria 1, or close to scutellum; marginal series composed of 19–23 pores. WL/EL 0.24.

Prosternum ciliate; apical part of mesepisterna, metepisterna and sides of metasternum sparsely punctate; basal two sternites rugose; median part of sternites 2 and 3, and apical part of metasternum ciliate.

Legs moderately long; TL/HW 1.03 in 1 ♂, 0.92, 0.93 in 2 ♀♀; protibiae sulcate on the external face; MTL/FL 0.44 in 1 ♂, 0.43, 0.45 in 2 ♀♀.

Aedeagus tubular and elongate, almost straight in dorsal view; ventral margin slightly arcuate in lateral view; apical lobe simply rounded in dorsal view; ventral surface of apical lobe almost flat (not concave); copulatory piece small or cone-shaped (cf. HABU, 1961, fig. 39).

Specimens examined. 1 ♂ (holotype), “VII. 18, 1958, Mt. Nishikomaga-take, Nagano P. S. Imafuku”/“20 pores”/“Holotype *Trichotichnus imafukui* Habu” (NAS); 1 ♂, same data as for the holotype (NAS); 1 ♂, 2 ♀♀, Mt. Kisokoma-ga-take, Nagano Pref., 26–VII–1976, S. MORITA leg.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. The specimens collected by myself were obtained from the subalpine zone of Mt. Kisokoma-ga-take.

***Trichotichnus (Trichotichnus) hisakoe* MORITA, sp. nov.**

[Japanese name: Ashiguro-tsuya-gomokumushi]

(Figs. 1, 3)

Trichotichnus imafukui: MORITA, 1986, Shizuoka-no-Kôchû, Shizuoka, 4: 1, 3.

Diagnosis. Small species with narrow elytra; body black; femora blackish brown; tarsi and tibiae more or less lighter than femora; basal foveae of pronotum small and linear at the bottom.

Description. L: 7.71–8.86 mm. Small species with narrow elytra; body black; palpi, antennae, labrum and mandibles brown; femora blackish brown; tarsi and tibiae more or less lighter than femora.

Head as in *T. imafukui*, but the genae are less convex; PW/HW 1.35–1.40 (M 1.37) in 10 ♂♂, 1.33 in 1 ♀; eyes rather flat; antennae relatively thick; relative lengths of antennal segments as follows:— I:II:III:IV:V:VI:XI=1:0.50:0.94:0.87:0.93:0.87:1.08.

Pronotum convex; PW/PL 1.35–1.41 (M 1.40) in 10 ♂♂, 1.36 in 1 ♀; sides weakly arcuate in front, and usually weakly sinuate a little before hind angles, or rarely convergent towards hind angles; basal foveae small and linear at the bottom, a little diverging anteriorly; PW/PA 1.36–1.44 (M 1.42) in 10 ♂♂, 1.39 in 1 ♀; PW/PB 1.22–1.34 (M 1.26) in 10 ♂♂, 1.23 in 1 ♀; PA/PB 0.86–0.96 (M 0.89) in 10 ♂♂, 0.88 in 1 ♀.

Elytra oval; sides gently arcuate, very shallowly sinuate before apices; apices weakly produced; EW/PW 1.23–1.30 (M 1.28) in 10 ♂♂, 1.26 in 1 ♀; EL/EW 1.45–1.54 (M 1.51) in 10 ♂♂, 1.49 in 1 ♀; EB/EW 0.66–0.71 (M 0.69) in 10 ♂♂, 0.70 in 1 ♀; microsculpture composed of fine transverse meshes or partially obliterated. WL/EL 0.20.

Protibiae usually sulcate on the external face, rarely vestigial; TI/TV 1.10–1.25 (M 1.17) in 5 ♂♂, 1.20 in 1 ♀; TL/HW 0.95–1.05 (M 1.00) in 5 ♂♂, 0.85 in 1 ♀; MTL/FL 0.42–0.44 (M 0.43) in 5 ♂♂, 0.48 in 1 ♀.

Aedeagus small and robust, high at about middle in lateral view; apical lobe slightly inclined to the right and moderately rounded at the tip; apex slightly concave in ventral view; copulatory piece very small.

Type series. Holotype: ♂, allotype: ♀, Mt. Senmai-dake, 22~23-VII-1981, S. MORITA leg. (NSMT). Paratypes: 7 ♂♂, Mt. Chausu-dake, 21~23-VII-1978, S. MORITA leg.; 71 ♂♂, Mt. Senmai-dake, 22~23-VII-1981, S. MORITA leg.; 1 ♂, 2 ♀♀, Mt. Nitta-dake, 22-VII-1981, S. MORITA leg.

Localities. Mt. Senmai-dake (type locality), Mt. Chausu-dake and Mt. Nitta-dake, Shizuoka-shi, Shizuoka Prefecture, Central Japan.

Further specimens examined. 1 ♂, 3 ♀♀, Mt. Kita-dake, alt. 2,300 m, Ashiyasumura, Yamanashi Pref., 31-VII-1982, S. MORITA leg.; 1 ♂, Mt. Toyoguchi-yama, Ooshika-mura, Nagano Pref., 25-VII-1993, N. YOSHIKAWA leg.

Range. Chûbu District (Shizuoka Pref., Nagano Pref., and Yamanashi Pref.), Central Japan.

Notes. Of the 72 ♂♂ from the type locality, two specimens have an additional lateral seta on one side of pronotum. Five specimens have no dorsal pore on the elytra. Eleven specimens have an ordinary pore on one side of the elytra. Only a specimen has an ordinary pore on interval III of the left elytron. As for the chaetotaxy of the anal sternite, only three specimens bear an additional seta on one side.

The specimens from Mt. Kita-dake are slightly different from the type series: the elytra are wider, EL/EW 1.42–1.48 (M 1.45) in 3 ♀♀, and the legs are lighter. Other standard ratios of their body parts are included within the ranges of those in the type series. Only a single specimen from Mt. Toyoguchi-yama is relatively large (L:

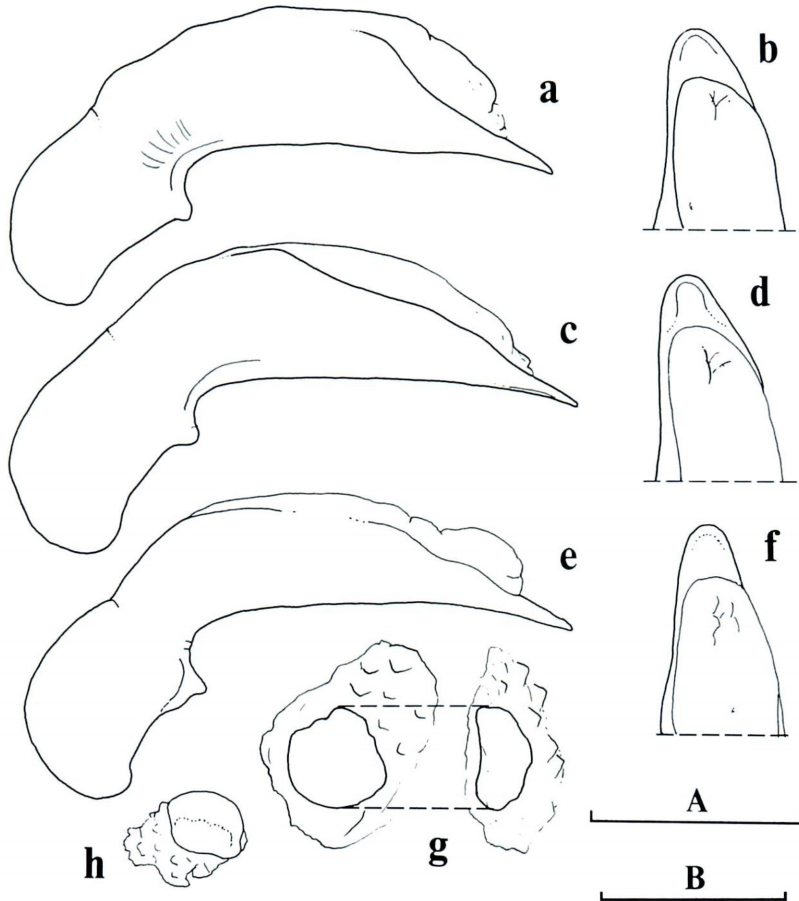


Fig. 3. Male genital organ of *Trichotichnus (Trichotichnus)* spp. — a–d, g, *T. (T.) hisakoeae* MORITA, sp. nov.; e–f, h, *T. (T.) alpinus* MORITA, sp. nov. — a, c, e, Aedeagus, left lateral view; b, d, f, apical part of aedeagus, dorsal view; g–h, copulatory piece. — a–b, g, Specimen from Mt. Senmai-dake; c–d, specimen from Mt. Chausu-dake; e, f, specimen from Mt. Sugoroku-dake; h, specimen from Mt. Nishihodaka-dake. Scale: A – 1 mm for a–f; B – 0.2 mm for g–h.

8.86 mm) and the base of pronotum has denser and coarser punctures.

The ample type material was found from under stones lying at the sides of a mountain path, together with *Armatoleirides asymmetricus* TANAKA.

After seventeen years of fighting against oral cancer, my mother, Hisako, passed away on December 8, 1996, at the age of 69. This remarkable new species is named to her memory, as she had watched my study of carabid beetles for a long time with both affection and encouragement.

Trichotichnus (Trichotichnus) alpinus MORITA, sp. nov.

[Japanese name : Takane-tsuya-gomokumushi]

(Figs. 1, 3)

Diagnosis. Similar to *T. hisakoe* in coloration, especially of legs, but closer to *T. imafukui* in the shape of prothorax. From the former, it is distinguished by the following points: the body is robust, the sides of pronotum are suddenly sinuate before hind angles, which are dentate, the median line of pronotum is deeper, the elytra are wider, and the aedeagus is slenderer.

Description. L: 8.71–9.00 mm. Colour as in *T. hisakoe*; eyes rather flat; PW/HW 1.39, 1.45 in 2 ♂♂, 1.43 in 1 ♀; pronotum moderately convex; sides similar to those in *T. imafukui*; basal foveae large and shallow; apex widely emarginate; PW/PL 1.40, 1.47 in 2 ♂♂, 1.49 in 1 ♀; PW/PA 1.40, 1.44 in 2 ♂♂, 1.43 in 1 ♀; PW/PB 1.22, 1.26 in 2 ♂♂, 1.25 in 1 ♀; PA/PB 0.87, 0.87 in 2 ♂♂, 0.88 in 1 ♀.

Elytra broad; WL/EL 0.25; EW/PW 1.30, 1.32 in 2 ♂♂, 1.36 in 1 ♀; EL/EW 1.44, 1.47 in 2 ♂♂, 1.36 in 1 ♀; EB/EW 0.68, 0.70 in 2 ♂♂, 0.67 in 1 ♀; protibiae sulcate on external face; TI/TV 1.04–1.07 in 2 ♂♂ and 1 ♀; TL/HW 0.89–1.03 in 2 ♂♂ and 1 ♀; MTL/FL 0.41–0.46 in 2 ♂♂ and 1 ♀.

Aedeagus short but slender; viewed laterally, ventral margin of aedeagus almost straight from basal 1/3 to near apex; apical part slightly inclined to the right or almost straight; apex slightly bordered in dorsal view; ventral side of apical lobe narrowly concave; copulatory piece very small.

Type series. Holotype: ♂, Mt. Sugoroku-dake, 13–VIII–1981, S. MORITA leg. (NSMT). Allotype: ♀, Mt. Yumiori-dake, 13–VIII–1981, S. MORITA leg. Paratypes: 1 ♂, Mt. Yumiori-dake, 13–VIII–1981, S. MORITA leg.; 1 ♀, Mt. Nishihodaka-dake, Azumi-mura, Nagano Pref., 24–VIII–1985, S. MORITA leg.; 2 ♂♂, Mt. Nishihodaka-dake, Kamitakara-mura, Gifu Pref., 22–VI–1988, Y. KUROSA leg.

Localities. Mt. Sugoroku-dake, 2,660 m alt., Oomachi-shi, Nagano Pref.; Mt. Yumiori-dake, 2,300 m alt., Kamitakara-mura, Gifu Pref.; Mt. Nishihodaka-dake, Kamitakara-mura, Gifu Pref., and Azumi-mura, Nagano Pref., Central Japan.

Further specimen examined. 1 ♀, Kamikōchi, Nagano Pref., 9–10–VII–1983, S. MORITA leg.

Range. Chūbu District (Nagano Pref., Gifu Pref.), Central Japan.

Notes. To study copulatory piece, only a single male from Mt. Nishihodaka-dake was dissected. Another male has a teeth-patch in apical 1/5 of aedeagus. Unfortunately, the aedeagus was not cut open and not directly observed.

This new species was obtained from the alpine zone of the Northern Japanese Alps.

***Trichotichnus (Trichotichnus) leptopus* (BATES)**

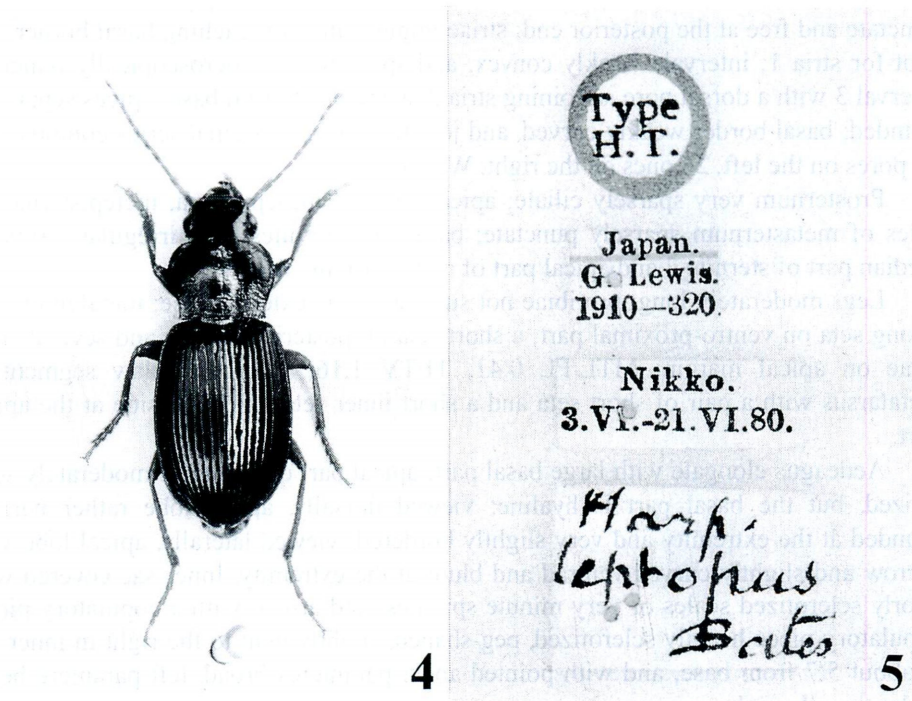
[Japanese name: Tsuya-gomokumushi]

(Figs. 4–7)

Harpalus leptopus BATES, 1883, Trans. ent. Soc. London, **1883**: 237; type locality: Nikko.*Trichotichnus leptopus*: TSCHITSCHÉRINE, 1900, Horae. Soc. ent. ross., **34**: 362 (foot-note).

Description based on the lectotype. L: 8.83 mm. Colour black, faintly brown under spotlight, shiny, weakly iridescent on elytra; ventral side blackish brown; sternites almost black; legs brown; palpi and antennae reddish brown; mandibles and labrum dark brown.

Head weakly convex; frontal furrows very shallow and short, almost reaching lateral grooves; eyes weakly convex; lateral grooves short and wide, becoming shallower near mid-eye level; genae oblique and short, and with oblique wrinkles in ventro-lateral sides; supraorbital seta located a little before the post-eye level; clypeal suture clearly impressed; mentum tooth simply rounded; apex of labrum slightly emarginate at median part; mandibles stout; dorsal surface sparsely and minutely punctate; PW/HW 1.43; microsculpture composed of wide or transverse meshes; antennae filiform, relatively short, reaching basal 1/15 of elytra; segment 1 with a long seta and 3 short setae at the apical part; segment 2 with 9 or 10 short setae at apical part; pubes-



Figs. 4–5. *Trichotichnus (Trichotichnus) leptopus* (BATES); 4, lectotype; 5, labels attached to the lectotype.

cent from basal 1/3 of segment 3; relative lengths of antennal segments as follows:— I: II: III: IV: V: VI: XI = 1: 0.53: 0.92: 1.00: 0.92: 0.92: 1.14 (right); 1: 0.50: 0.95: 0.90: 0.90: 0.88: 1.10 (left).

Pronotum transverse, PW/PL 1.40, widest at about 5/8 from base; PW/PA 1.47; PW/PB 1.22; apical margin slightly emarginate, PA/PB 0.83, and clearly bordered except for median part; apical angles a little produced and rounded at the tips; sides moderately arcuate, then weakly convergent posteriad and sinuate before hind angles, which are acute and a little produced laterally; marginal gutter close to side margin from apical angle to the widest part, and then becoming widely distant posteriad and obliterated at about basal 1/3; anterior marginal seta situated at the widest part; basal foveae large but very shallow, and with coarse punctures; median line shallow, reaching neither apex nor base; anterior transverse impression shallow and short, but obsolete at the sides; basal transverse impression obsolete; base slightly emarginate, briefly oblique just inside hind angles, and bordered throughout; surface rather densely and coarsely punctate though minutely so on the disc and almost obsolete along apical margin; microsculpture composed of wide meshes on the apical part, and of transverse ones on the disc and the basal part.

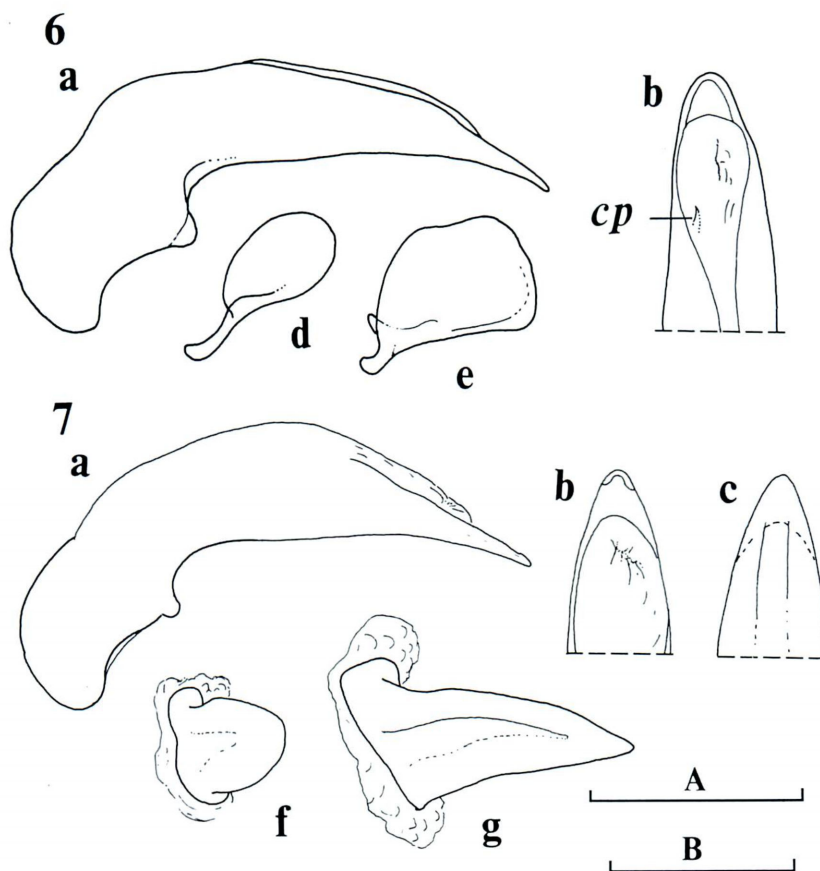
Elytra oval, moderately convex and widest at a level a little behind middle; EW/PW 1.29; EL/EW 1.46; shoulders rounded, but obtusely dentate; sides gently arcuate, slightly sinuate before apices; scutellar striole with basal pore, rather long, impunctate and free at the posterior end; striae impunctate, not reaching basal borders except for stria 1; intervals weakly convex, and sparsely and microscopically punctate; interval 3 with a dorsal pore, adjoining stria 2 at about 3/5 from base; apices separately rounded; basal border weakly curved, and joining stria 1; marginal series composed of 24 pores on the left, 26 ones on the right. Wings reduced.

Prosternum very sparsely ciliate; apical parts of mesepisterna, metepisterna and sides of metasternum sparsely punctate; basal two sternites with irregular wrinkles; median part of sternite 2 and apical part of metasternum ciliate.

Legs moderately long; protibiae not sulcate on the external face; metafemur with a long seta on ventro-proximal part, a short seta on posterior margin and several short setae on apical margin; MTL/FL 0.41; TI/TV 1.16; TL > HW; claw segment of metatarsus with a pair of short seta and a short inner seta on dorsal side at the apical part.

Aedeagus elongate with large basal part; apical part of aedeagus moderately sclerotized, but the basal part is hyaline; viewed dorsally, apical lobe rather narrow, rounded at the extremity and very slightly bordered; viewed laterally, apical lobe very narrow and slightly curved ventrad and blunt at the extremity. Inner sac covered with poorly sclerotized scales or very minute spinules, and armed with a copulatory piece; copulatory piece heavily sclerotized, peg-shaped, slightly bent to the right in inner sac at about 5/7 from base, and with pointed apex; parameres broad, left paramere being wider than the right.

Specimens examined. 1 ♂ (lectotype), "Type H. T."/"Nikko. 3.IV.–21.VI.80."/



Figs. 6-7. Male genital organ of *Trichotichnus (Trichotichnus) leptopus* BATES. — 6, Lectotype; 7, specimen from Umasaka-rindô. — a, Aedeagus, left lateral view; b, apical lobe, dorsal view; c, apical lobe, ventral view; d, right paramere, left lateral view; e, left paramere, left lateral view; f-g, copulatory piece, showing individual variation; cp, copulatory piece, showing position in aedeagus. Scale: A-1 mm for a-e; B-0.2 mm for f-g.

“Japan. G. Lewis, 1910-320”/“Harp. leptopus Bates” (NHM) ; 1 ♀, “Japan, G. Lewis. 1910-320.”/“Nikko. 3.VI.-21.VI.80.”/“Ex coll. Brit. Mus.”/“Co-type”/“*Trichotichnus leptopus* Bates”/“H. E. Andrewes Coll. B. M 1945-97.” (NHM); 1 ♂, (teneral) “Japan, G. Lewis. 1910-320.”/“Nikko. 3.VI.-21.VI.80”/“leptopus.” (NHM); 7 ♂♂, Umasaka-rindô, Mt. Taishaku-san, Tochigi Pref., 26-VI-1983, H. OHKAWA & K. KUSANO leg.

Range. Kwantô District (Tochigi Pref.), Central Japan.

Notes. The single female of the type series is distinguished from the lectotype by the following points: L 9.06 mm; apex of labrum widely emarginate; pronotum more convex; basal foveae deeper; scutellar striole shorter; elytra more convex and

widest at about middle; dorsal pore situated at about middle; PW/HW 1.40; PW/PL 1.44; PW/PA 1.52; PW/PB 1.23; PA/PB 0.81; EW/PW 1.28; EL/EW 1.44; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.53 : 1.05 : 0.92 : 0.84 : 0.84 : 1.11.

The remaining one male collected by LEWIS is distinguished from the lectotype by the following points: L 8.48 mm; apex of labrum deeply emarginate; pronotum rather flat; apex of pronotum deeply emarginate; elytral dorsal pore situated a little behind the middle; PW/HW 1.41; PW/PL 1.42; PW/PA 1.45; PW/PB 1.14; PA/PB 0.79; EW/PW 1.29; EL/EW 1.50.

A direct comparative study was made by myself between the type series and the specimens collected by OHKAWA and KUSANO. After LEWIS's discovery, their specimens make the only accurate record of this species. They agree with the lectotype of *T. leptopus* except for the following slight differences:— L 8.36–9.07 mm; apex of labrum variable in form, usually slightly emarginate, sometimes V-shaped; genae rarely distinct; hind angles of pronotum usually sharp, rarely dentate or acute; elytral dorsal pore usually situated a little before the middle, sometimes at about middle or a little behind middle, rarely at about basal 2/5. The standard ratios of their body parts are as follows: PW/HW 1.35–1.40 (M 1.39), PW/PL 1.38–1.45 (M 1.40), PW/PA 1.36–1.45 (M 1.42), PW/PB 1.20–1.24 (M 1.22), PA/PB 0.83–0.91 (M 0.86), EW/PW 1.24–1.33 (M 1.29), EL/EW 1.44–1.51 (M 1.48) in 7 ♂♂, relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.51 : 0.94 : 0.91 : 0.92 : 0.87 : 1.03; aedeagus small; ventral margin almost straight in profile; apical lobe narrow and rather short, and slightly curved ventrad. Besides, a very interesting observation was made on the shape of copulatory piece: one is hemispherical, the other is peg-shaped as shown in Fig. 7 g.

Trichotichnus (Trichotichnus) abei MORITA, sp. nov.

[Japanese name : Iwaki-tsuya-gomokumushi]

(Figs. 8–9)

Diagnosis. Small species; body broad; appendages brown; copulatory piece small and variable in form, usually peg-shaped, rarely hemispherical.

Description. L: 8.43–9.41 mm. Body black to blackish brown; appendages brown. Head as in *T. leptopus*; mentum tooth weakly porrect, rather wide and rounded at the tip; microsculpture weakly impressed, consisting of transverse meshes; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.52 : 0.99 : 0.91 : 0.94 : 0.92 : 1.10.

Pronotum as in *T. leptopus*, but the sides are more strongly arcuate; PW/HW 1.34–1.45 (M 1.40) in 10 ♂♂, 1.33–1.43 (M 1.38) in 5 ♀♀; PW/PL 1.39–1.51 (M 1.46) in 10 ♂♂, 1.43–1.52 (M 1.47) in 5 ♀♀; PW/PA 1.38–1.48 (M 1.43) in 10 ♂♂, 1.35–1.43 (M 1.39) in 5 ♀♀; PW/PB 1.22–1.34 (M 1.27) in 10 ♂♂, 1.24–1.30 (M 1.27) in 5 ♀♀; PA/PB 0.83–0.93 (M 0.89) in 10 ♂♂, 0.89–0.93 (M 0.91) in 5 ♀♀; apical angles rather widely rounded; hind ones a little acute, rarely almost rectangular.

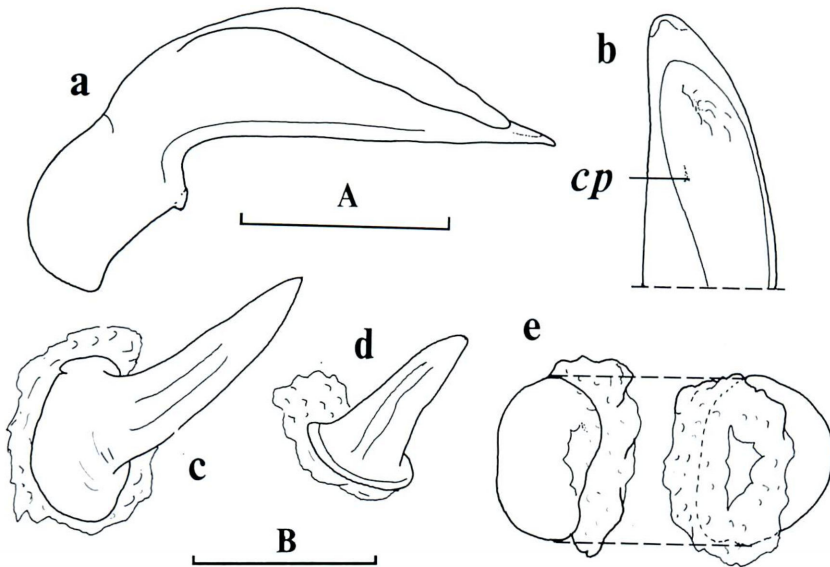


Fig. 8. Male genital organ of *Trichotichnus (Trichotichnus) abei* MORITA, sp. nov., from Mt. Iwaki-san. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c–e, copulatory piece, showing individual variation; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–b; B – 0.2 mm for c–e.

Elytra broad; WL/EL 0.20–0.23; EW/PW 1.27–1.33 (M 1.30) in 10 ♂♂, 1.28–1.34 (M 1.30) in 5 ♀♀; EL/EW 1.37–1.51 (M 1.42) in 10 ♂♂, 1.38–1.45 (M 1.42) in 5 ♀♀; EB/EW 0.68–0.72 (M 0.70) in 10 ♂♂, 0.67–0.71 (M 0.69) in 5 ♀♀.

Protibiae not sulcate on external face; TI/TV 1.00–1.27 (M 1.14) in 10 ♂♂ and 5 ♀♀; TL/HW 0.93–1.03 (M 0.98) in 10 ♂♂, 0.86–0.89 (M 0.87) in 5 ♀♀; MTL/FL 0.40–0.46 (M 0.43) in 10 ♂♂ and 5 ♀♀.

Male genital organ relatively small; aedeagus high at about middle; viewed laterally, ventral margin of aedeagus almost straight or slightly arcuate from basal 1/3 to near apex; apical part slightly inclined to the right in dorsal view; apex slightly curved in lateral view; viewed dorsally, apex very slightly bordered; ventral surface of apical lobe longitudinally concave or almost flat.

Copulatory piece small, situated at about apical 1/3 of aedeagus and a little to the right in inner sac, and variable in form, usually peg-shaped, rarely hemispherical.

Type series. Holotype: ♂, allotype: ♀, 20–VI–1985, T. OZAKI leg. (NSMT). Paratypes: 1 ♂, 9–VIII–1981, A. ABE leg.; 46 ♂♂, 7 ♀♀, 20–VI–1985, T. OZAKI leg.; 10 ♂♂, 1 ♀, 5–VII–1986, T. OZAKI leg.; 5 ♂♂, 17–VII–1988, Y. KUROSA leg.; 1 ♂, 26–VII–1992, S. MORITA leg.; 2 ♂♂, 3 ♀♀, 9–VI–1993, S. YAMAUCHI leg.; 3 ♂♂, 7–VII–1993, S. YAMAUCHI leg.; 10 ♂♂, 18 ♀♀, 4–VI–1994, S. YAMAUCHI leg.

Type locality. Mt. Iwaki-san, 1,300–1,400 m alt., Aomori Pref., North Japan.

Further specimens examined. 1 ♂, Mt. Oo-dake, 1,500 m alt., Hakkôda Mts.,

Aomori Pref., 28-VI-1987, A. ABE leg.; 2 ♂♂, same locality, 24-VII-1988, A. ABE leg.; 1 ♂, same locality, 9-VIII-1988, S. MORITA leg.; 1 ♂, 1 ♀, Mt. Yakeishi-dake, Iwate Pref., 8-VIII-1975, K. SHIRAHATA leg. (NAS); 1 ♂, 2 ♀♀, same locality, 3~4-VIII-1985, S. MORITA leg.

Range. Tôhoku District (Aomori Pref., Iwate Pref.), North Japan.

Notes. This new species is closely allied to *T. leptopus*. It is, however, distinguished from the latter by the following points: 1) body wider, 2) sides of pronotum less arcuate, 3) viewed laterally, ventral margin of aedeagus almost straight, and 4) apical part of aedeagus slightly inclined to the right.

The population from the type locality should be noted for rather frequent occurrence of chaetotaxially aberrant individuals. Of the 109 specimens of the type series, 18 specimens (10 ♂♂, 6 ♀♀), or 17%, are aberrant in the number or position of setiferous dorsal pores on the elytra. Six of them (4 ♂♂, 2 ♀♀) have an ordinary pore on interval 3 on one side. One female has an ordinary pore on interval 3 on each side. In 8 ♂♂ and 1 ♀, an ordinary pore is lacking on one side. Two females have an additional pore on stria 2 on one side.

This species is noticeable in showing various degrees of development of the copulatory piece as shown in Figs. 8c-e.

The specimens from Mt. Yakeishi-dake are different from the type series in larger aedeagus with large and elongate basal part. The standard ratios of body parts in 2 ♂♂ and 2 ♀♀ are as follows: PW/HW 1.42-1.44 (M 1.43), PW/PL 1.48-1.53 (M 1.51), PW/PA 1.40-1.46 (M 1.44), PW/PB 1.22-1.27 (M 1.24), PA/PB 0.84-0.88 (M 0.87), EW/PW 1.25-1.30 (M 1.27), EL/EW 1.38-1.44 (M 1.41).

The specimens from Mt. Oo-dake are different from the type series in narrower body: PW/PL 1.38, 1.47; EL/EW 1.40, 1.46 in 2 ♂♂.

Trichotichnus (Trichotichnus) armiger MORITA, sp. nov.

[Japanese name : Shiga-tsuya-gomokumushi]

(Figs. 9-10)

Diagnosis. Body robust and narrow; elytra with strongly iridescent lustre; legs brown; pronotum rather flat; apical part of aedeagus strongly produced in lateral view; viewed dorsally, apex of aedeagus hardly bordered.

Description. L: 8.71-9.43 mm. Body black; elytra with strongly iridescent lustre; appendages brown; body narrow; eyes flat; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.50 : 0.91 : 0.82 : 0.85 : 0.81 : 0.90.

PW/HW 1.41-1.45 (M 1.43) in 4 ♂♂, 1.44, 1.46 in 2 ♀♀; PW/PL 1.32-1.42 (M 1.38) in 4 ♂♂, 1.46, 1.51 in 2 ♀♀; PW/PA 1.39-1.47 (M 1.43) in 4 ♂♂, 1.43, 1.45 in 2 ♀♀; PW/PB 1.19-1.28 (M 1.26) in 4 ♂♂, 1.22, 1.24 in 2 ♀♀; PA/PB 0.86-0.90 (M 0.88) in 4 ♂♂, 0.85, 0.86 in 2 ♀♀.

Elytral dorsal pore situated at basal 2/5-3/5; EL/EW 1.45-1.50 (M 1.48) in 4 ♂♂, 1.44, 1.49 in 2 ♀♀; EB/EW 0.67-0.71 (M 0.69) in 4 ♂♂, 0.69, 0.70 in 2 ♀♀; EW/PW

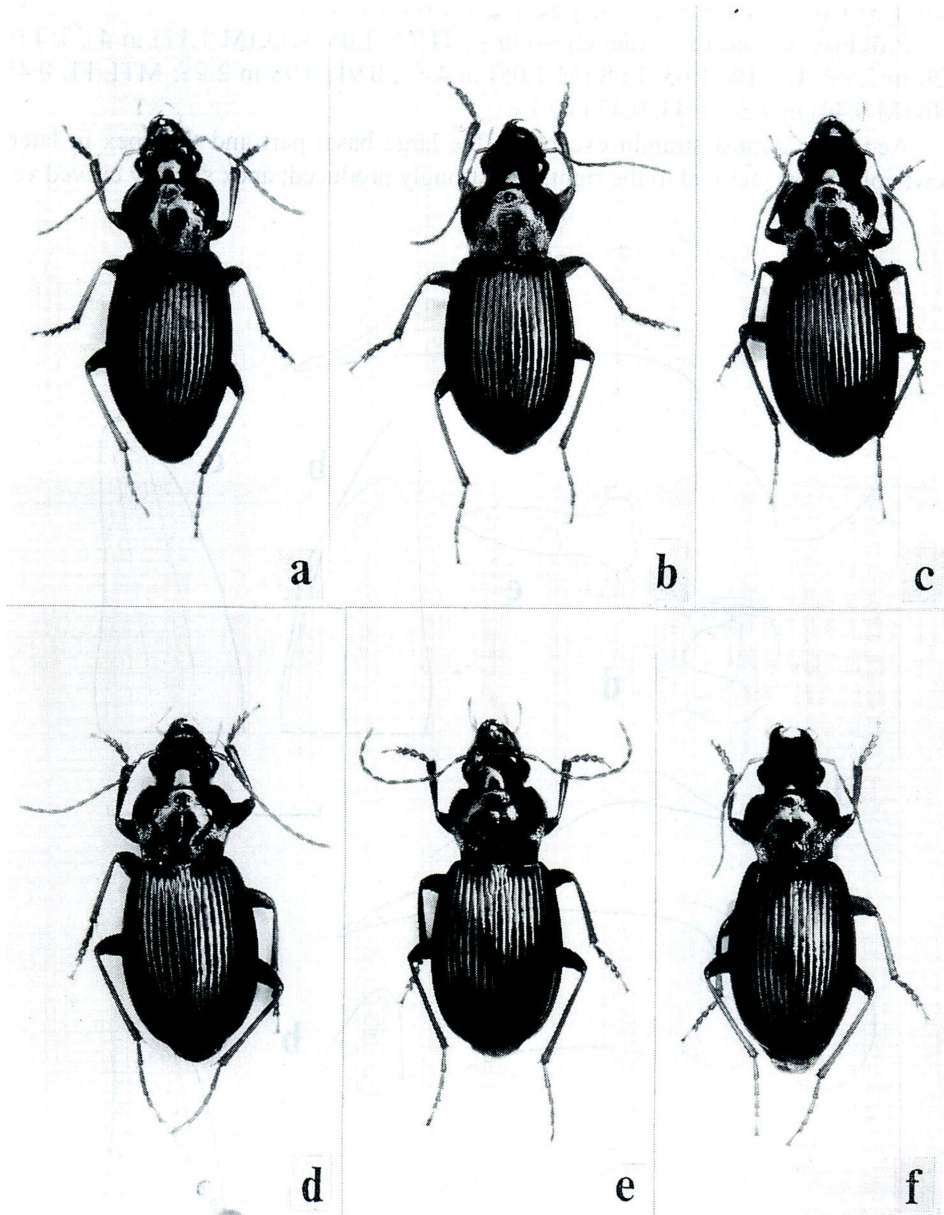
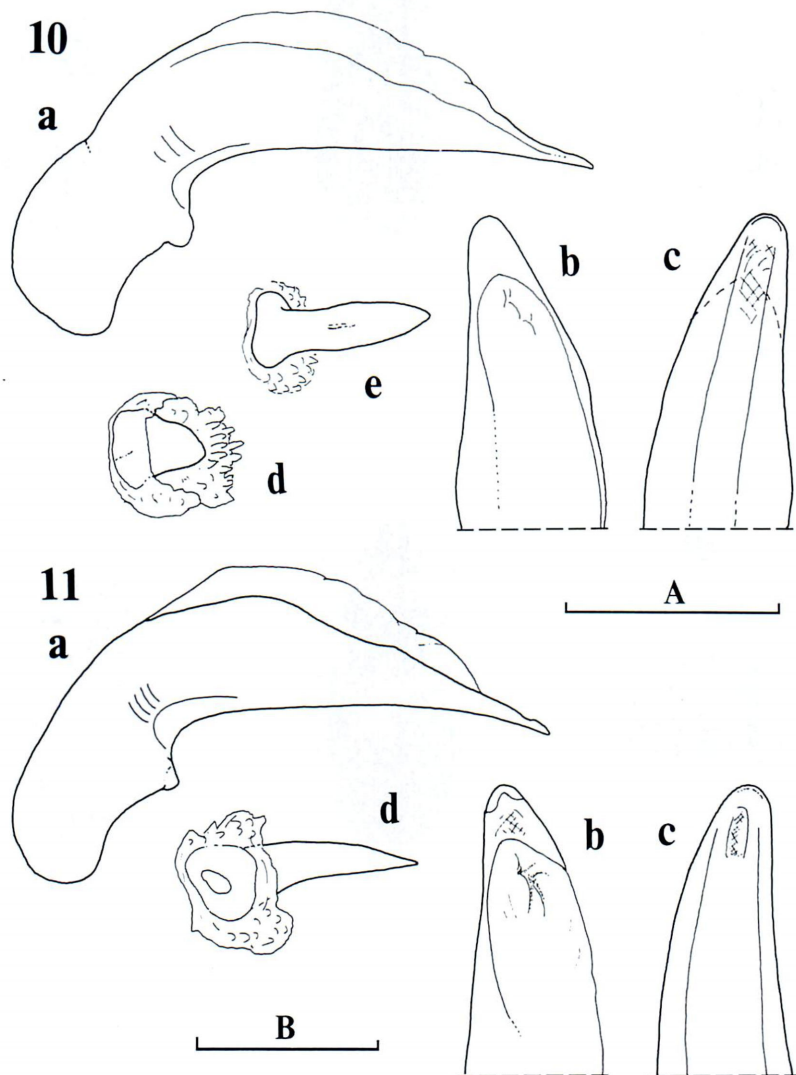


Fig. 9. *Trichotichnus (Trichotichnus)* spp. — a, *T. (T.) armiger* MORITA, sp. nov., from Ichinose; b, *T. (T.) abei* MORITA, sp. nov., from Mt. Iwaki-san; c, *T. (T.) kosakai* MORITA, sp. nov., from Azusayama; d, *T. (T.) eikoeae* MORITA, sp. nov., from Marunuma; e, *T. (T.) yoshiroi* MORITA, sp. nov., from Mt. Mizumatsu-yama; f, *T. (T.) furihatai* MORITA, sp. nov., from Nakabusa-onsen.

1.26–1.32 (M 1.29) in 4 ♂♂, 1.24, 1.32 in 2 ♀♀. WL/EL 0.21.

Protibiae sulcate in ♀, vaguely so in ♂; TI/TV 1.05–1.13 (M 1.11) in 4 ♂♂, 1.09, 1.20 in 2 ♀♀; TL/HW 1.03–1.08 (M 1.05) in 4 ♂♂, 0.91, 0.98 in 2 ♀♀; MTL/FL 0.41–0.46 (M 0.44) in 4 ♂♂, 0.43, 0.47 in 2 ♀♀.

Aedeagus almost straight except for the large basal part and the apex in lateral view; apical part inclined to the right, and strongly produced; apex slightly curved ven-



Figs. 10–11. Male genital organ of *Trichotichnus* (*Trichotichnus*) spp. — 10, *T. (T.) armiger* MORITA, sp. nov., from Ichinose; 11, *T. (T.) imurai* MORITA, sp. nov., from Mt. Kurosawa-dake. — a, Aedeagus, left lateral view; b, apical lobe, dorsal view; c, apical lobe, ventral view; d–e, copulatory piece, showing individual variation. Scale: A–1 mm for a–c; B–0.2 mm for d–e.

trad, flat and hardly bordered on dorsal side; ventral side of apical lobe longitudinally concave; copulatory piece peg-shaped or very small.

Type series. Holotype: ♂, allotype: ♀ (NSMT), paratypes: 6 ♂♂, 1 ♀, 17–VI–1995, S. MORITA leg.

Type locality. Ichinose, 1,650 m alt., Shiga-kôgen, Nagano Prefecture.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. This new species is closely allied to *Trichotichnus leptopus*. It is, however, distinguished from the latter by the following points: 1) more convex eyes, 2) almost smooth elytra, and 3) apical lobe of aedeagus very narrow and strongly produced.

Of the nine specimens, one male has no dorsal pore on the right elytron and one female has an additional pore on the stria 2 on the right elytron. Another aberrancy is found in anal sternite: two males have an additional seta on one side.

***Trichotichnus (Trichotichnus) imurai* MORITA, sp. nov.**

[Japanese name : Imura-tsuya-gomokumushi]

(Fig.11)

Diagnosis. Microsculpture sharply impressed on head and pronotum; apex of aedeagus strongly bordered on dorsal side.

Description. L: 9.14–9.71 mm. Colour as in *T. armiger*, but the legs are darker in coloration; head as in *T. armiger*; eyes moderately convex; PW/HW 1.37–1.41 (M 1.38) in 3 ♂♂, 1.36–1.40 (M 1.38) in 3 ♀♀; PW/PL 1.40–1.46 (M 1.43) in 3 ♂♂, 1.42–1.45 (M 1.44) in 3 ♀♀; PW/PA 1.36–1.46 (M 1.45) in 3 ♂♂, 1.37–1.44 (M 1.40) in 3 ♀♀; PW/PB 1.23–1.29 (M 1.27) in 3 ♂♂, 1.24–1.26 (M 1.25) in 3 ♀♀; PA/PB 0.85–0.90 (M 0.88) in 3 ♂♂, 0.87–0.92 (M 0.89) in 3 ♀♀.

Elytra oval; EW/PW 1.32–1.36 (M 1.34) in 3 ♂♂, 1.33–1.35 (M 1.34) in 3 ♀♀; WL/EL 0.21–0.27; dorsal pore situated from a little before the middle to basal 3/5 of elytra; EL/EW 1.36–1.43 (M 1.41) in 3 ♂♂, 1.38–1.44 (M 1.41) in 3 ♀♀; EB/EW 0.67–0.70 (M 0.68) in 3 ♂♂, 0.65–0.71 (M 0.68) in 3 ♀♀.

Protibiae not sulcate on external face; TI/TV 1.08, 1.11 in 2 ♂♂, 1.07, 1.13 in 2 ♀♀; TL /HW 1.05–1.07 (M 1.06) in 3 ♂♂, 0.91, 0.93 in 2 ♀♀; MTL/FL 0.40–0.46 (M 0.44) in 3 ♂♂ and 2 ♀♀.

Aedeagus small; apical lobe narrowly rounded and rather strongly bordered in dorsal view; viewed laterally, apical part slightly bent ventrad; copulatory piece peg-shaped and surrounded by poorly sclerotized scales.

Type series. Holotype: ♂ (NSMT), allotype: ♀, paratypes: 1 ♂, 2 ♀♀, 4–IX–1988, Y. IMURA leg.

Type locality. Mt. Kurosawa-dake, 2,000 m alt., Myôkôkôgen-machi, Niigata Prefecture.

Further specimen examined. 1 ♂, Mt. Hiuchi-yama, 2,300 m alt., Niigata Pref., 16–VIII–1967, K. BABA leg. (NAS).

Range. Chûbu District (Niigata Pref.), Central Japan.

Notes. This species is closely related to *T. armiger*. It is, however, distinguished from the latter by the following points: 1) legs darker in coloration, 2) less robust body, 3) more strongly impressed microsculpture on head and pronotum, 4) less convex pronotum, 5) deeper basal foveae, 6) sharp hind angles, 7) basal part of pronotum not coarsely and densely punctate, 8) rather strongly produced elytral apices, and 9) strongly bordered apex of aedeagus.

***Trichotichnus (Trichotichnus) eikoeae* MORITA, sp. nov.**

[Japanese name: Nikkô-tsuya-gomokumushi]

(Figs. 9, 12)

Diagnosis. Hind body broad; pronotum with more strongly arcuate sides; basal foveae of pronotum very large and rather deep; aedeagus robust and usually high at about middle in lateral view; copulatory piece small, not peg-shaped.

Description. L 9.33–9.68 mm. Body black; appendages dark brown, but the femora are more or less darker in coloration than tibiae and tarsi. Head as in *T. leptopus*; eyes moderately convex; microsculpture composed of isodiametric or wide meshes; PW/HW 1.40–1.50 (M 1.44) in 20 ♂♂; lateral grooves deep and straight throughout, and extending a little beyond the level of supraorbital pores; relative lengths of antennal segments as follows:— I:II:III:IV:V:VI:XI=1:0.51:1.01:1.00:0.97:0.95:1.12.

Pronotum transverse, PW/PL 1.40–1.57 (M 1.46), PW/PA 1.45–1.53 (M 1.49), PW/PB 1.20–1.32 (M 1.24) in 20 ♂♂; apex slightly emarginate, PA/PB 0.78–0.89 (M 0.83) in 20 ♂♂; sides strongly arcuate, and usually deeply sinuate before hind angles; marginal gutter close to side margin near apical angle, then becoming widely distant posteriad, and merging into bottom of basal fovea on each side; anterior marginal seta widely distant from the side on each side; basal foveae very large and rather deep; hind angles acute and a little produced laterally; microsculpture composed of fine transverse meshes.

Elytra ovate; EB/EW 0.65–0.70 (M 0.68), EW/PW 1.27–1.37 (M 1.32), EL/EW 1.36–1.46 (M 1.40) in 20 ♂♂; sides gently arcuate, slightly sinuate before apices; basal border usually weakly curved or almost straight; scutellar striole variable in length, usually long; dorsal pore usually situated at basal 11/25–14/25; marginal series composed of 25–29 pores. WL/EL 0.24.

Genae with fine transverse wrinkles on ventral sides; mesepisterna, metepisterna and sides of metasternum sparsely punctate; basal two sternites irregularly wrinkled; median part of sternites 2 and 3 and apical part of metasternum ciliate; protibiae not sulcate on external face; TI/TV 1.07–1.31 (M 1.21) in 10 ♂♂; TL/HW 1.04–1.20 (M 1.12) in 19 ♂♂; metatrochanter short, MTL/FL 0.36–0.43 (M 0.40) in 10 ♂♂.

Aedeagus robust and high at about middle in lateral view; apical part of aedeagus inclined to the right; viewed ventrally, apical part of aedeagus slightly and longitudinally concave; viewed dorsally, apex rounded and slightly bordered; copulatory piece

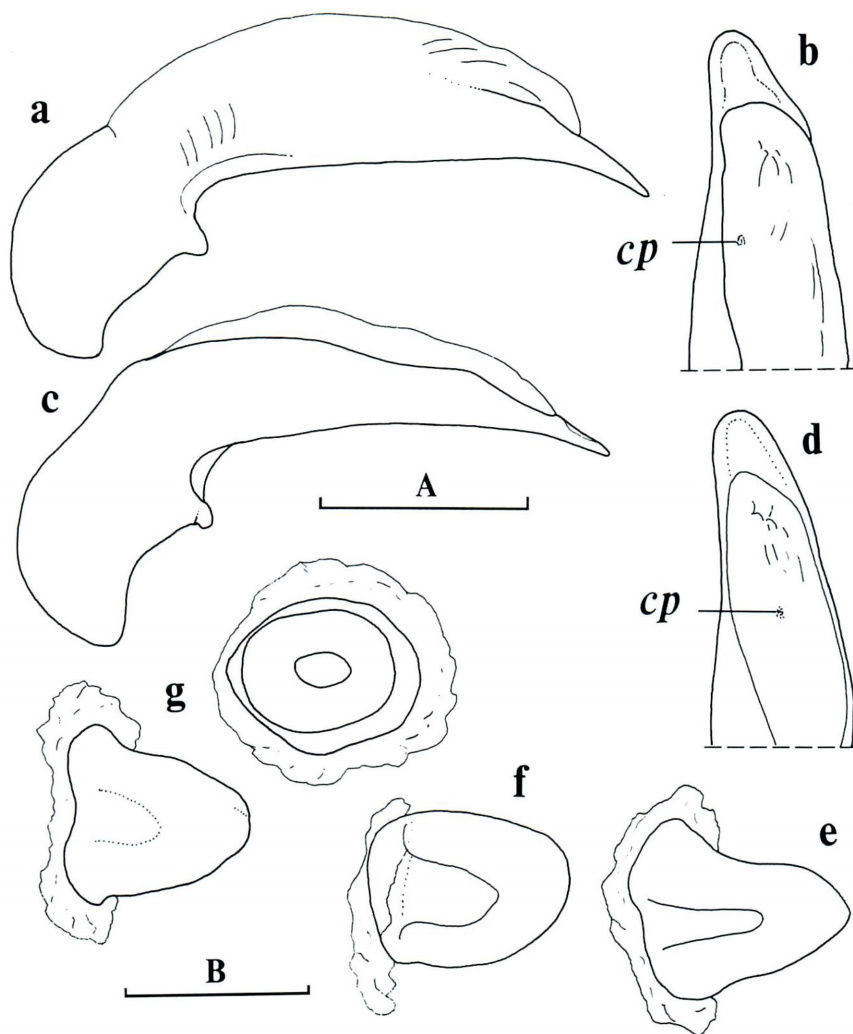


Fig. 12. Male genital organ of *Trichotichnus (Trichotichnus) eikoei* MORITA, sp. nov. — a, c, Aedeagus, left lateral view; b, d, apical part of aedeagus, dorsal view; e–g, copulatory piece, showing individual variation; cp, copulatory piece, showing position in aedeagus. — a, b, e, f, Specimen from Marunuma, c, d, g, specimen from Sandogoya-onsen. Scale: A – 1 mm for a–d; B – 0.2 mm for e–g.

small, hemispherical or cone-shaped.

Type series. Holotype: ♂, Marunuma, 1,600 m alt., 21–VI–1982, S. & E. MORITA leg. (NSMT). Paratypes: 4 ♂♂, Marunuma, 22–VI–1975, S. SHIMIZU leg.; 1 ♂, Konsei-tôge, 3–VI–1978, Y. KUROSA leg.; 116 ♂♂, Marunuma, 21–VI–1982, S. & E. MORITA leg.; 1 ♂, Shirane-zawa, 1,700–1,900 m alt., 12–VII–1991, H. OHKAWA leg.; 1 ♀, Konsei-tôge, 2,020 m alt., 13–IX–1992, H. OHKAWA leg.

Localities. Marunuma, Okunikkô, Gunma Pref.; Shirane-zawa and Konsei-tôge,

Okunikkô, Tochigi Prefecture.

Further specimens examined. 7 ♂♂, 1 ♀, Mt. Oga-dake, Kuroiso-shi, Tochigi Pref., 11-VI-1995, H. OHKAWA & T. SUDA leg.; 4 ♂♂, 1 ♀, Sandogoya-onsen, 1,400–1,500 m alt., Nasu-machi, Tochigi Pref., 9-IX-1979, S. MORITA leg.; 2 ♂♂, 1 ♀, same locality, 24-VIII-1983, S. MORITA leg.

Range. Kwantô District (Tochigi Pref., Gunma Pref.), Central Japan.

Notes. A direct comparative study was made by myself between the lectotype of *T. leptopus* and the type material of this new species, and the following differences were observed. This species has broader body, especially pronotum and elytra, and deeper preapical sinuation of elytra.

Chaetotaxial aberrancy is observed in the type series: in 2 ♂♂, the dorsal pore of the left elytron is lacking; in 1 ♂, the pore is situated on interval 3 on each side.

On the other hand, aberrancy of anal sternite is found in this series: three males have an additional seta at the right side; only a single male has a pair of additional setae; all the additional setae are almost of the same size.

It seems that the actual population density of this new species is considerably high in the early summer, since my wife and I once took a long series of this species in a narrow area within 2 hours. Most specimens of the type series were found from beneath wet dead leaves in broadleaved forests.

The specimens from Mt. Oga-dake agree well with the type series with the exception of the less convex eyes, narrower neck and rather flat aedeagus. However, the aedeagal difference seems to be due to the immaturity of specimens, so as to reduce the lateral walls inwards and to make the dorsal membranous part dented. The standard ratios of their body parts are as follows: PW/HW 1.38–1.44 (M 1.41) in 6 ♂♂, 1.44 in 1 ♀; PW/PL 1.39–1.53 (M 1.46) in 6 ♂♂, 1.44 in 1 ♀; PW/PA 1.43–1.51 (M 1.46) in 6 ♂♂, 1.43 in 1 ♀; PW/PB 1.22–1.27 (M 1.25) in 6 ♂♂, 1.21 in 1 ♀; PA/PB 0.84–0.87 (M 0.86) in 6 ♂♂, 0.85 in 1 ♀; EW/PW 1.29–1.35 (M 1.32) in 6 ♂♂, 1.31 in 1 ♀; EL/EW 1.34–1.44 (M 1.40) in 6 ♂♂, 1.42 in 1 ♀; EB/EW 0.66–0.71 (M 0.68) in 6 ♂♂, 0.67 in 1 ♀. Relative lengths of antennal segments are as follows:— I:II:III:IV:V:VI:XI=1:0.49:0.93:0.94:0.95:0.95:1.06.

The specimens from Sandogoya-onsen have relatively narrow body. The standard ratios of their body parts are as follows: PW/HW 1.39–1.45 (M 1.41) in 6 ♂♂, 1.37, 1.39 in 2 ♀♀; PW/PL 1.40–1.46 (M 1.43) in 6 ♂♂, 1.45, 1.46 in 2 ♀♀; PW/PA 1.40–1.46 (M 1.44) in 6 ♂♂, 1.42 in 2 ♀♀; PW/PB 1.18–1.26 (M 1.23) in 6 ♂♂, 1.20, 1.25 in 2 ♀♀; PA/PB 0.82–0.90 (M 0.86) in 6 ♂♂, 0.84, 0.88 in 2 ♀♀; EW/PW 1.29–1.39 (M 1.33) in 6 ♂♂, 1.31, 1.35 in 2 ♀♀; EL/EW 1.41–1.45 (M 1.43) in 6 ♂♂, 1.41, 1.45 in 2 ♀♀; relative lengths of antennal segments as follows:— I:II:III:IV:V:VI:XI=1:0.44:0.93:0.91:0.92:0.94:1.07 in 6 ♂♂, 1:0.39:0.92:0.90:0.85:0.96:1.05 in 2 ♀♀.

This new species is dedicated to my wife, Eiko, since we collected ample material during our honeymoon.



Fig. 13. Aedeagi of *Trichotichnus (Trichotichnus)* spp., left lateral view. — a, *T. (T.) kosakai* MORITA, sp. nov., from Azusayama; b, *T. (T.) yatsuensis* MORITA, sp. nov., from Inagoyu; c, *T. (T.) yoshiroi* MORITA, sp. nov., from Mt. Mizumatsu-yama; d, same species from Mt. Toridani-yama; e, same species from Mt. Ryôgami-san. Scale: 1 mm.

Trichotichnus (Trichotichnus) kosakai MORITA, sp. nov.

[Japanese name: Chichibu-tsuya-gomokumushi]

(Figs. 9, 13–14)

Trichotichnus sp.: KASAHARA, 1990, Coleopt. News, Tokyo, (92): 9.

Diagnosis. Body robust; femora usually blackish brown, tibiae and tarsi slightly lighter than femora; elytra broad; ventral margin of aedeagus slightly arcuate in lateral view.

Description. L: 9.88–10.71 mm. Body black to blackish brown; iridescent lustre of elytra weaker than in *T. eikoeae*; femora usually blackish brown, tibiae and tarsi slightly lighter than femora; palpi and antennae brown; mandibles, labrum and clypeus dark brown.

Head as in *T. eikoeae*; PW/HW 1.40–1.49 (M 1.44) in 9 ♂♂, 1.39–1.42 (M 1.40) in 3 ♀♀; eyes rather flat; microsculpture composed of wide or transverse meshes on vertex and neck, but partially disordered or obliterated; antennae filiform, relatively short; segment 1 with a long seta and 1 or 2 short seta(e) at the apical part; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.47 : 0.93 : 0.93 : 0.94 : 0.92 : 1.02.

Pronotum transverse, widest at about 5/8 from base; PW/PL 1.40–1.50 (M 1.45) in 9 ♂♂, 1.42–1.47 (M 1.44) in 3 ♀♀; PW/PA 1.40–1.57 (M 1.45) in 9 ♂♂, 1.40–1.45 (M 1.43) in 3 ♀♀; PW/PB 1.21–1.38 (M 1.27) in 9 ♂♂, 1.24–1.34 (M 1.28) in 3 ♀♀; PA/PB 0.84–0.90 (M 0.88) in 9 ♂♂, 0.88–0.93 (M 0.90) in 3 ♀♀; sides strongly arcuate, then convergent posteriad and sinuate before hind angles, which are acute and a little produced laterally; basal foveae rather deep; other pronotal features as in *T. eikoeae*.

Elytra ovate, moderately convex, widest at a level a little behind middle; WL/EL 0.25; EW/PW 1.25–1.31 (M 1.28) in 9 ♂♂, 1.25–1.32 (M 1.28) in 3 ♀♀; EL/EW 1.39–1.49 (M 1.44) in 9 ♂♂, 1.44–1.52 (M 1.47) in 3 ♀♀; basal border weakly curved or almost straight; EB/EW 0.65–0.69 (M 0.67) in 9 ♂♂, 0.68–0.70 (M 0.69) in 3 ♀♀; sides rather strongly arcuate, slightly sinuate before apices; intervals weakly convex and almost smooth; a dorsal pore situated at a level from a little before the middle to basal 3/5; apices usually weakly produced; marginal series composed of 24–27 pores.

Protibiae sulcate on the external face of basal part; metatrochanter rather short, MTL/FL 0.38–0.41 (M 0.39) in 5 ♂♂ and 3 ♀♀; TL/HW 1.05–1.14 (M 1.10) in 5 ♂♂, 0.98–1.02 (M 1.00) in 3 ♀♀; TI/TV 1.10–1.27 (M 1.19) in 5 ♂♂, 1.22–1.37 (M 1.29) in 3 ♀♀.

Aedeagus rather small; dorsal membranous part wide; viewed dorsally, apical margin of membranous part widely rounded, usually slightly emarginate at middle; ventral margin slightly arcuate in lateral view; apical lobe slightly curved ventrad; apex moderately arcuate and weakly bordered in dorsal view; viewed ventrally, apical part longitudinally concave; copulatory piece small and cone-shaped, and with rounded apex.

Type series. Holotype: ♂, allotype: ♀, Azusayama, 25–V–1995, T. KOSAKA leg.

(NSMT). Paratypes: 3 ♂♂, Azusayama, 29-V-1994, H. HIRASAWA & S. FURIHATA leg.; 18 ♂♂, 3 ♀♀, Azusayama, 25-V-1995, T. KOSAKA leg.

Type locality. Azusayama, 1,500–1,600 m alt., Kawakami-mura, Nagano Prefecture, Central Japan.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. Because of the body form and the shape of aedeagus, this new species is doubtless closely related to *T. eikoeae*. It is, however, distinguished from the latter by the following points: 1) eyes less convex; 2) pronotum more transverse; 3) sides of pronotum more strongly arcuate; 4) basal foveae of pronotum deeper; and 5) aedeagus smaller.

***Trichotichnus (Trichotichnus) yoshiroi* MORITA, sp. nov.**

[Japanese name: Okutama-tsuya-gomokumushi]

(Figs. 9, 13–14)

Trichotichnus (Trichotichnus) leptopus: KASAHARA, 1991, Elytra, Tokyo, **19**: 113, fig. 2.

Diagnosis. Medium-sized species; eyes large and convex; legs usually dark brown; elytra rather elongate; aedeagus large; ventral margin of aedeagus almost straight; viewed dorsally, apical margin of membranous part widely rounded.

Description. L: 9.43–10.14 mm. Legs dark brown to brown; femora sometimes blackish brown, and tibiae and tarsi slightly lighter than femora; head as in *T. kosakai*, but the eyes are larger and the lateral grooves are wide at about mid-eye level; PW/HW 1.37, 1.42 in 2 ♂♂ from Mt. Mizumatsu-yama; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.48 : 0.94 : 0.98 : 0.98 : 0.98 : 1.08.

Pronotum as in *T. kosakai*, but the sides are less deeply sinuate before hind angles, which are usually less sharp, the basal foveae are deep, and the sides of the basal foveae are flat; PW/PL 1.42, 1.47, PW/PA 1.44, PW/PB 1.27, PA/PB 0.88 in 2 ♂♂ from Mt. Mizumatsu-yama.

Elytra very similar to those in *T. kosakai*, but the shape is wider on an average and the intervals are more convex; EW/PW 1.29, 1.32, EL/EW 1.37, 1.41, EB/EW 0.66, 0.67 in 2 ♂♂ from Mt. Mizumatsu-yama. WL/EL 0.24.

Protibiae sulcate on the external face of basal part, usually clearly impressed in ♀ than in ♂; TI/TV 1.17, 1.19, TL/HW 1.03, 1.14, MTL/FL 0.39, 0.40 in 2 ♂♂ from Mt. Mizumatsu-yama.

Aedeagus rather small; basal part large; ventral margin very slightly arcuate in lateral view; viewed dorsally, apical margin of membranous part widely rounded; apical lobe slightly curved ventrad; apex moderately arcuate and almost flat in dorsal view; viewed ventrally, apical part narrowly concave; copulatory piece small and cone-shaped, and with rounded apex.

Type series. Holotype: ♂, Mt. Mizumatsu-yama, 21-V-1994, Y. KUROSA leg. (NSMT). Paratypes: 1 ♂, 4 ♀♀, Mt. Toridani-yama, 5-V-1991, Y. KUROSA leg.; 2 ♂♂,

Mt. Mizumatsu-yama, 21-V-1994, Y. KUROSA leg.

Localities. Mt. Mizumatsu-yama and Mt. Toridani-yama, Okutama-chô, Tokyo.

Further specimens examined. 2 ♂♂, Mt. Ryôgami-san, Ryôgami-mura, 1,200 m alt., Saitama Pref., 11~12-VI-1978, S. MORITA leg.; 1 ♂, Nikkawa-rindô, Enzan-shi, Yamanashi Pref., 29-VIII-1987, M. HASEGAWA leg.

Range. Kwantô District (Saitama Pref., and Tokyo); Chûbu District (Yamanashi Pref.), Central Japan.

Notes. This new species is also similar to *T. eikoeae*, but the elytra are more convex, the legs are darker, the ventral margin of aedeagus is very slightly arcuate, and the basal part of aedeagus is larger.

Two males, 9.57 and 10.14 mm in body length, from Mt. Ryôgami-san, have the following differences from the type series: the sides of pronotum are more contracted towards hind angles, the elytra are more convex in lateral view, and in 1 ♂, the basal foveae of pronotum form linear bottoms. Standard ratios are: PW/HW (M 1.42),

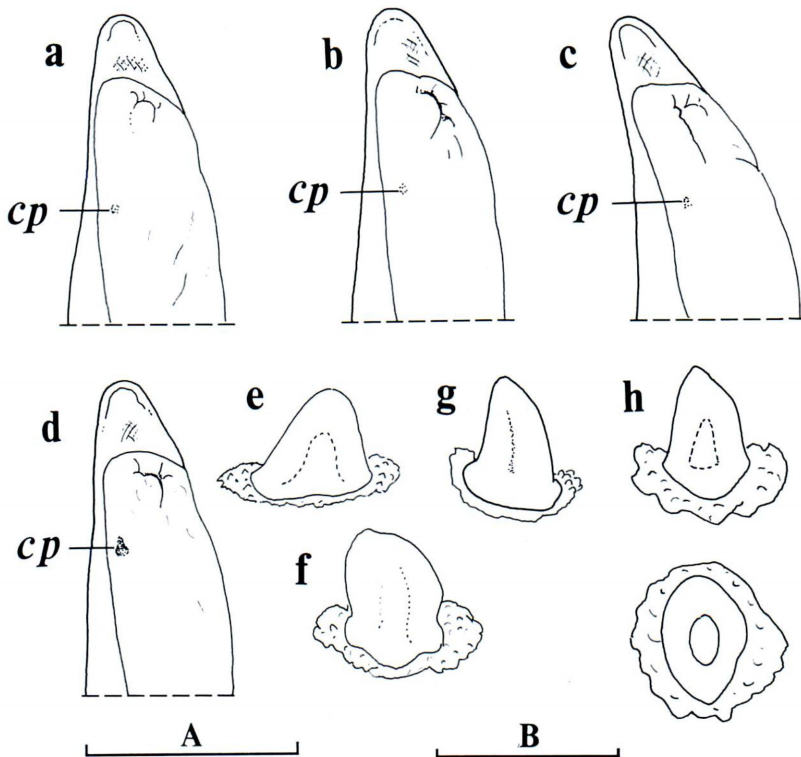


Fig. 14. Male genital organ of *Trichotichnus* spp. — a, e–f, *T. (T.) kosakai* MORITA, sp. nov., from Azusayama; b, g, *T. (T.) yoshiroi* MORITA, sp. nov., from Mt. Mizumatsu-yama; c, same species from Mt. Toridani-yama; d, h, *T. (T.) yatsuensis* MORITA, sp. nov., from Inagoyu. — a–d, Apical part of aedeagus, dorsal view; e–h, copulatory piece, showing individual variation; cp, copulatory piece, showing position in aedeagus. Scale: A—1 mm for a–d; B—0.2 mm for e–h.

PW/PL (M 1.44), PW/PA (M 1.45), PW/PB (M 1.31), PA/PB (M 0.91), EW/PW (M 1.33), EL/EW (M 1.38) in 2 ♂♂, WL/EL 0.25 in 1 ♂; TI/TV (M 1.12); TL/HW (M 1.10); MTL/FL (M 0.45).

The taxonomic status of a single known specimen from Nikkawa-rindô is questionable: the body is rather flat in lateral view; the eyes are rather flat; the basal foveae of pronotum are shallow. However, I regard the specimen in question as *T. yoshiroi*. Standard ratios are: PW/HW 1.41, PW/PL 1.48, PW/PA 1.44, PW/PB 1.30, PA/PB 0.91, EW/PW 1.28, EL/EW 1.41, EB/EW 0.67.

***Trichotichnus (Trichotichnus) yatsuensis* MORITA, sp. nov.**

[Japanese name: Yatsu-tsuya-gomokumushi]

(Figs. 13–14)

Diagnosis. Medium-sized species; eyes small but convex; legs usually dark brown to brown; aedeagus small; ventral margin of aedeagus almost straight or slightly arcuate; apex of aedeagus weakly bordered above; viewed dorsally, apical margin of membranous part widely rounded.

Description. L: 9.43–9.71 mm. Body blackish brown to black; femora brown to blackish brown; tibiae and tarsi slightly lighter than femora; head as in *T. kosakai*, but the eyes are larger and the microsculpture is not impressed on dorsal side; PW/HW 1.39–1.42 (M 1.41) in 4 ♂♂, 1.36, 1.47 in 2 ♀♀; relative lengths of antennal segments as follows:— I:II:III:IV:V:VI:XI=1:0.53:1.01:0.99:1.00:0.98:1.10.

Pronotum as in *T. kosakai*, but the sides are less deeply sinuate before hind angles, which are usually less sharp and less protrudent, the basal foveae are shallower, the sides of the basal foveae are flat, and the reflexed lateral borders are very narrow; PW/PL 1.45–1.49 (M 1.47) in 4 ♂♂, 1.47 in 2 ♀♀; PW/PA 1.43–1.49 (M 1.46) in 4 ♂♂, 1.44, 1.45 in 2 ♀♀; PW/PB 1.25–1.29 (M 1.27) in 4 ♂♂, 1.25, 1.27 in 2 ♀♀; PA/PB 0.86–0.89 (M 0.87) in 4 ♂♂, 0.87, 0.88 in 2 ♀♀.

Elytra very similar to those in *T. kosakai*, but the shape is narrower on an average, the shoulders are more rounded and the intervals are less convex; WL/EL 0.22–0.23; EW/PW 1.27–1.33 (M 1.30) in 4 ♂♂, 1.26, 1.30 in 2 ♀♀; EL/EW 1.42–1.47 (M 1.44) in 4 ♂♂, 1.43, 1.46 in 2 ♀♀; EB/EW 0.66–0.68 (M 0.68) in 4 ♂♂ and 2 ♀♀.

Protibiae sulcate on the external face; segments I and V of metatarsus variable in length, TI/TV 1.11–1.37 (M 1.24) in 4 ♂♂ and 2 ♀♀; TL/HW 1.01–1.12 (M 1.07) in 4 ♂♂, 0.97, 1.02 in 2 ♀♀; MTL/FL 0.40–0.43 (M 0.42) in 4 ♂♂ and 2 ♀♀.

Aedeagus rather elongate; basal part elongate; ventral margin very slightly arcuate in lateral view; viewed dorsally, apex of dorsal membranous part widely rounded; apical lobe slightly curved ventrad; apex moderately arcuate and almost flat in dorsal view; viewed ventrally, apical part narrowly concave; copulatory piece small and cone-shaped, and with rounded apex.

Type series. Holotype: ♂, Inago-yu, 3–VI–1994, H. HIRASAWA leg. (NSMT). Allotype: ♀, Inago-yu, 4–IX–1994, H. OHKAWA leg. (NSMT). Paratypes: 1 ♂, Shibuno-yu,

Table 1. Characteristics of *Trichotichnus* (*Trichotichnus*) spp.

	<i>T. kosakai</i>	<i>T. yoshiroi</i>	<i>T. yatsuensis</i>
L	9.88–10.71 mm	9.43–10.14 mm	9.43–9.71 mm
Eyes	large but less convex	large and convex	small but convex
Pronotum	moderately convex	moderately to strongly convex	moderately to strongly convex
Basal foveae	rather deep	deep	rather deep
Punctuation of pronotum	coarsely punctate	coarsely punctate	moderately to finely punctate
Marginal gutter of pronotum	becoming widely distant posteriad	becoming widely distant posteriad	becoming narrowly distant posteriad
Elytra	convex and broad	more convex and broad	convex and narrow
Dorsal side of aedeagal apex	slightly bordered	almost flat	almost flat

6~7-VII-1979, S. MORITA leg.; 5 ♂♂, 2 ♀♀, Inago-yu, 4-IV-1994, H. OHKAWA leg.

Localities. Inago-yu and Shibuno-yu, Yatsuga-take Mts., Nagano Pref., Central Japan.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. This and the preceding two species are very similar to one another. The differences are as shown in Table 1.

***Trichotichnus* (*Trichotichnus*) *furihatai* MORITA, sp. nov.**

[Japanese name: Hosotsuya-gomokumushi]

(Figs. 9, 15)

Diagnosis. Legs reddish brown to brown; antennae thin; apical lobe of aedeagus narrow.

Description. L: 9.71–10.6 mm. Colour black to blackish brown; appendages reddish brown to brown.

Head as in *T. eikoeae*, but the lateral grooves are narrow and deep; mentum tooth variable in form; apex of labrum usually notched at the median part, rarely emarginate; PW/HW 1.37–1.44 (M 1.41) in 5 ♂♂, 1.37, 1.41 in 2 ♀♀; antennae thin, reaching basal 1/5 of elytra; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI :

XI=1:0.53:0.98:0.88:0.83:0.79:0.88.

Pronotum moderately convex; PW/PL 1.41–1.45 (M 1.43) in 5 ♂♂, 1.43, 1.46 in 2 ♀♀; PW/PA 1.38–1.47 (M 1.44) in 5 ♂♂, 1.42, 1.42 in 2 ♀♀; PW/PB 1.21–1.29 (M 1.26) in 5 ♂♂, 1.19, 1.23 in 2 ♀♀; PA/PB 0.83–0.90 (M 0.88) in 5 ♂♂, 0.84, 0.86 in 2 ♀♀; sides moderately arcuate in front, then convergent posteriad and sinuate before hind angles, which are acute and a little produced laterally; marginal gutter shallow; basal foveae shallow; microsculpture composed of fine transverse meshes, but partially obliterated in ♂, and of transverse lines in ♀.

Elytra elongate and with narrow basal part; shoulders distinct; basal border weakly curved; WL/EL 0.26; EW/PW 1.29–1.33 (M 1.31) in 5 ♂♂, 1.33, 1.34 in 2 ♀♀; EL/EW 1.42–1.53 (M 1.47) in 5 ♂♂, 1.47, 1.48 in 2 ♀♀; EB/EW 0.66–0.70 (M 0.68) in 5 ♂♂, 0.66, 0.68 in 2 ♀♀; dorsal pore situated at basal 2/5 to the middle; apices strongly produced.

Protibiae sulcate on the external face at the basal part; TI/TV 1.11–1.19 (M 1.16) in 4 ♂♂, 1.15, 1.27 in 2 ♀♀; TL/HW 1.00–1.11 (M 1.08) in 4 ♂♂, 0.98 in 2 ♀♀; MTL/FL 0.38–0.43 (M 0.41) in 4 ♂♂, 0.41, 0.42 in 2 ♀♀.

Aedeagus moderately arcuate in lateral view, and with large basal part; viewed dorsally, apical part of aedeagus almost straight or slightly inclined to the right; apical lobe narrow; apex weakly bordered above; copulatory piece peg-shaped.

Type series. Holotype: ♂, allotype: ♀, 5–VI–1994, S. FURIHATA & K. MATSUI leg. (NSMT). Paratypes: 2 ♂♂, 20–V–1993, S. FURIHATA leg.; 1 ♂, 8–V–1994, H. HIRASAWA leg.; 3 ♂♂, 1 ♀, 5–VI–1994, S. FURIHATA & K. MATSUI leg.; 2 ♂♂, 1 ♀, 27–V–

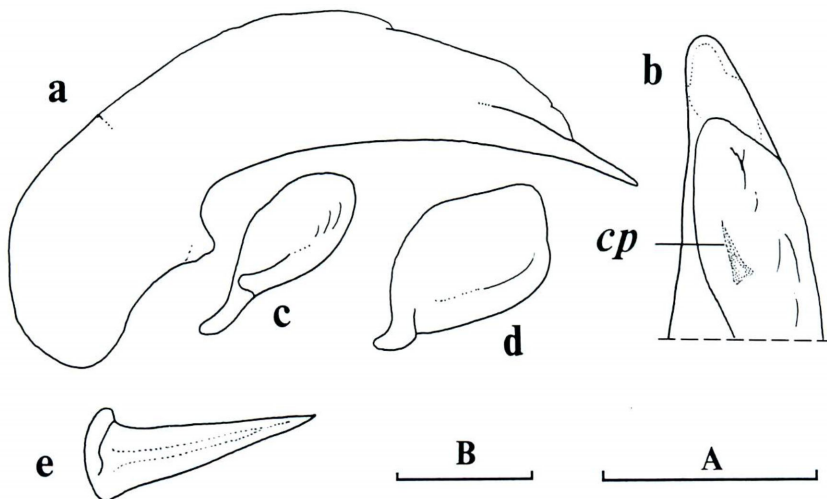


Fig. 15. Male genital organ of *Trichotichnus (Trichotichnus) furihatai* MORITA, sp. nov., from Nakabusonsen. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, right paramere, left lateral view; d, left paramere, left lateral view; e, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–d; B – 0.3 mm for e.

1995, S. FURIHATA leg.

Type locality. Nakabusa-onsen, 1,500 m alt., Hodaka-chô, Nagano Prefecture, Central Japan.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. This new species is closely allied to *T. eikoeae*, but is distinguished from the latter by the following points: 1) legs reddish brown to brown, 2) antennae thin, 3) basal foveae of pronotum shallower, 4) marginal gutter of pronotum shallower, 5) basal part of pronotum more densely and coarsely punctate, 6) elytra elongate, 7) elytral apices strongly produced, 8) apical lobe of aedeagus narrow in dorsal view, and 9) copulatory piece peg-shaped.

Complex of *Trichotichnus hirasawai*

Trichotichnus (Trichotichnus) hirasawai MORITA, sp. nov.

[Japanese name: Otari-tsuya-gomokumushi]

(Figs. 16–18)

Trichotichnus sp.: KASAHARA, 1994, Coleopt. News, Tokyo, (108): 5.

Diagnosis. Large species; eyes flat; elytral sides gently arcuate; aedeagus large, and with large basal part; apical lobe very narrow in dorsal view; apex of aedeagus thin and bordered on dorsal side.

Description. L: 10.48–11.89 mm. Colour black to blackish brown, weakly iridescent on elytra; sides of pronotum and ventral side usually blackish brown; legs, palpi and antennae brown; mandibles, labrum and clypeus dark brown.

Head moderately convex; frontal furrows deep and becoming shallower towards lateral grooves; eyes flat; a small rounded fovea between eye and vertex rarely present on each side; lateral grooves deep, straight and extending beyond the post-eye level; genae oblique and short in dorsal view, and almost smooth or slightly rugose on ventral side; mentum tooth simply rounded or moderately so at the tip; apex of labrum notched at the median part, and rounded or almost straight at the sides; dorsal surface microscopically and sparsely punctate; dorso-lateral sides of neck depressed; PW/HW 1.37–1.47 (M 1.44) in 10 ♂♂, 1.36–1.45 (M 1.41) in 4 ♀♀; microsculpture composed of wide or transverse meshes; segment 1 with a long seta and 1 to 3 short seta(e), rarely 4 setae at the apical part; relative lengths of antennal segments as follows:— I: II: III: IV: V: VI: XI=1: 0.47: 0.94: 0.95: 0.90: 0.93: 0.97.

Pronotum flat, and rarely with small depression between anterior marginal seta and median line on each side, widest at about 2/3 from base; PW/PL 1.41–1.51 (M 1.46) in 10 ♂♂, 1.45–1.48 (M 1.47) in 4 ♀♀; PW/PA 1.39–1.46 (M 1.42) in 10 ♂♂, 1.35–1.40 (M 1.38) in 4 ♀♀; PW/PB 1.20–1.29 (M 1.24) in 10 ♂♂, 1.19–1.26 (M 1.23) in 4 ♀♀; apical margin widely emarginate; PA/PB 0.85–0.90 (M 0.88) in 10 ♂♂, 0.86–0.93 (M 0.89) in 4 ♀♀; apical angles produced and widely rounded; sides moderately arcuate, then convergent posteriad and sinuate before hind angles, rarely almost

straightly convergent towards hind angles; marginal gutter deep and somewhat close to side margin from apical angle to the widest part, and then becoming widely distant posteriad; hind angles sharp, usually not dentate; anterior marginal seta situated at the widest part; basal foveae large and shallow; median line strongly impressed; anterior transverse impression clearly impressed and with coarse punctures, but obsolete at the sides; basal transverse impression usually distinct; base slightly emarginate or almost straight, slightly oblique just inside hind angles, and bordered throughout; surface densely and coarsely punctate though minutely so on the disc and almost obsolete on median part of apex; microsculpture composed of fine transverse meshes.

Elytra elongated ovate, moderately convex, widest at about middle; WL/EL 0.25–0.28; EW/PW 1.28–1.36 (M 1.32) in 10 ♂♂, 1.34–1.46 (M 1.38) in 4 ♀♀; EL/EW 1.44–1.52 (M 1.47) in 10 ♂♂, 1.45–1.51 (M 1.48) in 4 ♀♀; shoulders rounded; EB/EW 0.65–0.69 (M 0.67) in 10 ♂♂, 0.66–0.69 (M 0.67) in 4 ♀♀; sides gently arcuate, slightly sinuate before apices; scutellar striole rather short; intervals slightly convex; dorsal pore situated at 11/25–11/20 from base (usually a little before the middle); apices weakly produced, and separately and simply rounded; basal border slightly curved; marginal series composed of 23 to 27 pores; microsculpture almost vanished or partially composed of fine, irregularly transverse lines or meshes.

Prosternum ciliate; apical parts of mesepisterna, metepisterna and sides of

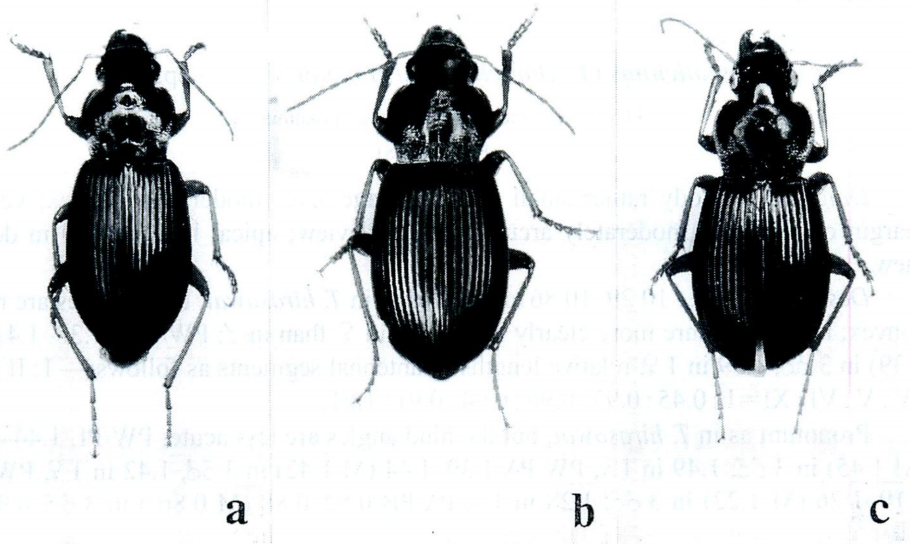


Fig. 16. *Trichotichnus (Trichotichnus)* spp. — a, *T. (T.) hirasawai* MORITA, sp. nov., from Otari-onsen; b, *T. (T.) kishimotoi* MORITA, sp. nov., from Renge-onsen; c, *T. (T.) silvestris* MORITA, sp. nov., from Kamikōchi.

metasternum sparsely punctate; basal two sternites rugose; median part of sternites 2 and 3, and apical part of metasternum ciliate.

Legs moderately long; MTL/FL 0.40–0.45 (M 0.42) in 7 ♂♂, 0.42–0.45 (M 0.44) in 2 ♀♀; TL/HW 1.09–1.19 (M 1.15) in 6 ♂♂, 0.96–1.03 (M 1.00) in 4 ♀♀; TI/TV 1.11–1.29 (M 1.22) in 4 ♂♂ and 3 ♀♀; protibiae sulcate on the external face of basal part, sometimes obscure, rarely almost vanished; claw segment of metatarsus with a pair of seta and a few short setae on dorsal side.

Aedeagus elongate with large basal part and gently arcuate in lateral view; apical lobe very narrow and inclined to the right in dorsal view; apex thin and moderately bordered above; apical lobe longitudinally concave in ventral view; copulatory piece peg-shaped and slightly bent near basal part.

Type series. Holotype: ♂, allotype: ♀, Otari-onsen, 4–IV–1994, H. HIRASAWA & T. FUNAKOSHI leg. (NSMT). Paratypes: 5 ♂♂, 1 ♀, Mt. Amakazari-yama, 23–VI–1990, S. MORITA leg.; 1 ♂, same locality, 6–IX–1990, S. MORITA leg.; 5 ♂♂, 4 ♀♀, Otari-onsen, 4–VI–1994, H. HIRASAWA, T. FUNAKOSHI & T. KISHIMOTO leg.; 1 ♂, Mt. Amakazari-yama, 7–VI–1994, S. KASHIWABARA leg.; 11 ♂♂, 1 ♀, Otari-onsen, 18–VI–1994, H. HIRASAWA & T. FUNAKOSHI leg.; 1 ♂, 1 ♀, Yaodaira, 29–V–1993, H. HIRASAWA leg.

Localities. Otari-onsen, 850 m alt., Mt. Amakazari-yama, 1,100 m alt., and Yaodaira, Otari-mura, Nagano Prefecture.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. From the distributional knowledge available at present, it is possible that another species, probably *T. imurai*, will be discovered at a high altitude of Mt. Amakazari-yama.

***Trichotichnus (Trichotichnus) kishimotoi* MORITA, sp. nov.**

[Japanese name: Renge-tsuya-gomokumushi]

(Figs. 16–18)

Diagnosis. Body rather small on an average; eyes moderately convex; ventral margin of aedeagus moderately arcuate in lateral view; apical lobe narrow in dorsal view.

Description. L: 10.29–10.86 mm. Head as in *T. hirasawai*, but the eyes are more convex; microsculpture more clearly impressed in ♀ than in ♂; PW/HW 1.38–1.41 (M 1.39) in 3 ♂♂, 1.39 in 1 ♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.45 : 0.93 : 0.96 : 0.94 : 0.91 : 1.01.

Pronotum as in *T. hirasawai*, but the hind angles are less acute; PW/PL 1.44–1.45 (M 1.45) in 3 ♂♂, 1.49 in 1 ♀, PW/PA 1.39–1.44 (M 1.42) in 3 ♂♂, 1.42 in 1 ♀, PW/PB 1.19–1.26 (M 1.22) in 3 ♂♂, 1.28 in 1 ♀, PA/PB 0.82–0.88 (M 0.86) in 3 ♂♂, 0.90 in 1 ♀.

Elytra as in *T. hirasawai*, but the apices are more acute; WL/EL 0.24; EW/PW 1.26–1.33 (M 1.31) in 3 ♂♂, 1.28 in 1 ♀; EL/EW 1.47–1.52 (M 1.50) in 3 ♂♂, 1.48 in 1 ♀; EB/EW 0.63–0.68 (M 0.65) in 3 ♂♂, 0.65 in 1 ♀.

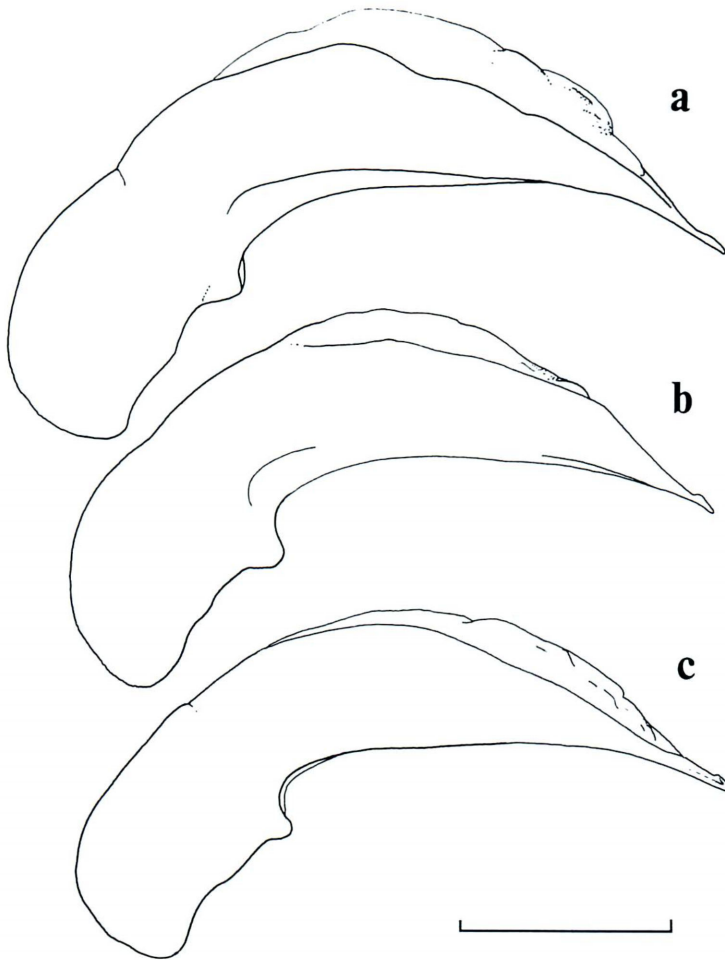


Fig. 17. Aedeagi of *Trichotichnus (Trichotichnus)* spp., left lateral view.—a, *T. (T.) hirasawai* MORITA, sp. nov., from Otari-onsen; b, *T. (T.) kishimotoi* MORITA, sp. nov., from Renge-onsen; c, *T. (T.) silvestris* MORITA, sp. nov., from Kamikôchi. Scale: 1 mm.

Protibiae usually not sulcate on the external face, but rarely vaguely sulcate in basal parts; TI/TV 1.14–1.20 (M 1.17) in 3 ♂♂ and 1 ♀; TL/HW 1.04–1.14 (M 1.09) in 3 ♂♂, 0.97 in 1 ♀; MTL/FL 0.38–0.44 (M 0.40) in 3 ♂♂.

Aedeagus robust; ventral margin moderately arcuate in lateral view; viewed dorsally, apical lobe narrow, with apex strongly and widely bordered; apical margin of membranous part widely arcuate, and narrowly emarginate at middle in dorsal view; ventral side of apical lobe longitudinally concave; copulatory piece peg-shaped.

Type series. Holotype: ♂, allotype: ♀, 6–VI–1990, T. KISHIMOTO leg. (NSMT). Paratypes: 1 ♂, 11–VII–1975, S. MORITA leg.; 3 ♂♂, 6–VI–1990, T. KISHIMOTO leg.

Type locality. Renge-onsen, 1,500 m alt., Itoigawa-shi, Niigata Pref., Central Japan.

Range. Chûbu District (Niigata Pref.), Central Japan.

Notes. This new species is closely related to *T. hirasawai*. It is, however, easily distinguished from the latter by smaller body, more convex eyes, and rather wide aedeagal apical lobe.

Most specimens of this new species are usually less transverse in the shape of pronotum than the type series of *T. hirasawai*, but numerical representation of the difference is partially overlapped.

***Trichotichnus (Trichotichnus) silvestris* MORITA, sp. nov.**

[Japanese name: Kamikôchi-tsuya-gomokumushi]

(Figs. 16–18)

Trichotichnus leptopus: HABU, 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13): 150 [*partim*]; 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 282 [*partim*].

Diagnosis. Body less convex; eyes rather flat; genae distinct; elytra with wide basal part; metatrochanter short; apical lobe of aedeagus short.

Description. L: 10.48–10.96 mm. Colour and head as in *T. kishimotoi*, but the genae are more convex. PW/HW 1.41–1.46 (M 1.44) in 3 ♂♂, 1.44 in 1 ♀; relative lengths of antennal segments as follows:— I:II:III:IV:V:VI:XI=1:0.53:0.97:0.96:0.96:0.94:1.01.

Pronotum as in *T. kishimotoi*, but the basal foveae are shallow; PW/PL 1.40–1.42 (M 1.41) in 3 ♂♂, 1.37 in 1 ♀; PW/PA 1.46–1.48 (M 1.47) in 3 ♂♂, 1.44 in 1 ♀; PW/PB 1.25–1.28 (M 1.27) in 3 ♂♂, 1.27 in 1 ♀; PA/PB 0.84–0.87 (M 0.86) in 3 ♂♂, 0.88 in 1 ♀; sides rather strongly arcuate, then convergent posteriad, rarely sinuate before hind angles; marginal gutters rather shallow; microsculpture composed of fine transverse meshes.

Elytra moderately convex; WL/EL 0.26–0.27; EW/PW 1.32–1.36 (M 1.33) in 3 ♂♂, 1.33 in 1 ♀; EL/EW 1.43–1.47 (M 1.45) in 3 ♂♂, 1.40 in 1 ♀; base wide; EB/EW 0.68–0.69 (M 0.68) in 3 ♂♂, 0.67 in 1 ♀; sides very slightly arcuate from behind shoulders, and moderately so from middle to apices; a dorsal pore situated at a level from basal 2/5 to a little behind the middle on each side; apices more produced than in *T. hirasawai*; basal border weakly curved; marginal series composed of 25–31 pores.

Legs moderately long; protibiae distinctly or obscurely sulcate on the external face; metatrochanter short, MTL/FL 0.39–0.41 (M 0.40) in 3 ♂♂ and 1 ♀; TL/HW 1.13–1.19 (M 1.16) in 3 ♂♂, 1.03 in 1 ♀; TI/TV 1.28–1.39 (M 1.34) in 3 ♂♂.

Aedeagus elongate; ventral margin slightly arcuate in lateral view; apical lobe short; viewed ventrally, apical lobe longitudinally concave; apex weakly bordered in dorsal view; copulatory piece small and cone-shaped.

Type series. Holotype: ♂, Kamikôchi, 2–VII–1976, S. MORITA leg. (NSMT). Allotype: ♀, Myôjin–Kamikôchi, 2–IX–1952, H. HASEGAWA leg. (NAS). Paratypes:

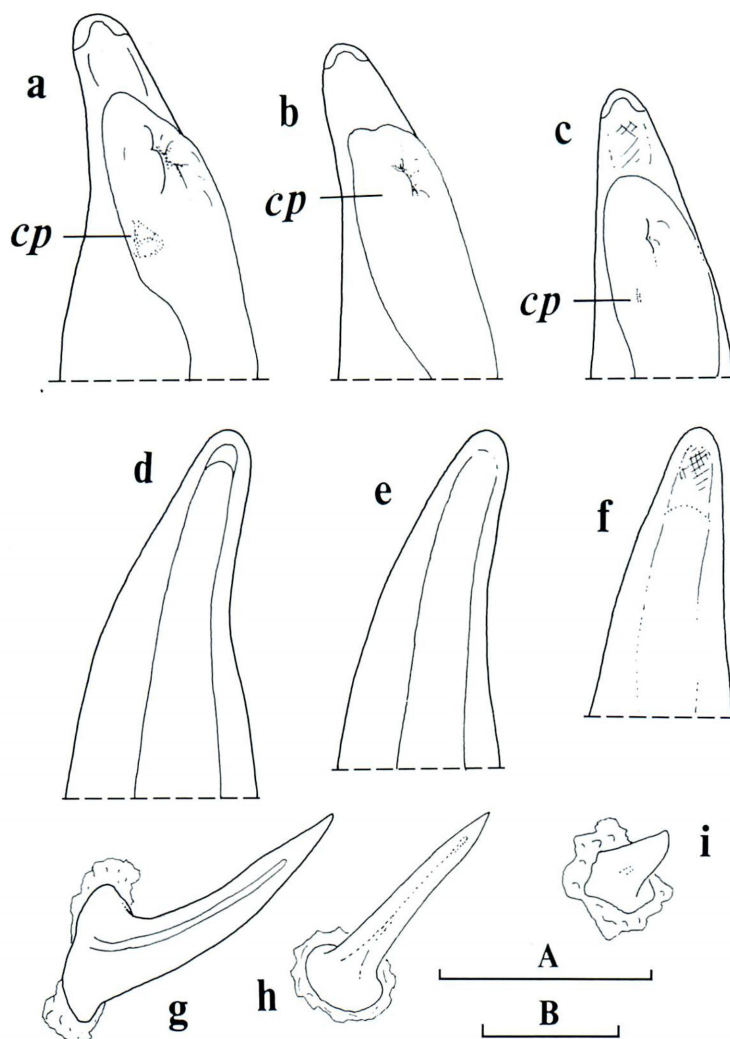


Fig. 18. Male genital organ of *Trichotichnus* spp. — a, d, g, *T. (T.) hirasawai* MORITA, sp. nov., from Otari-onsen; b, e, h, *T. (T.) kishimotoi* MORITA, sp. nov., from Renge-onsen; c, f, i, *T. (T.) silvestris* MORITA, sp. nov., from Kamikôchi. — a–c, Apical part of aedeagus, dorsal view; d–f, apical part of aedeagus, ventral view; g–i, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–f; B – 0.3 mm for g–i.

2 ♂♂, same data as for the holotype; 1 ♀, Kamikôchi, 1–VIII–1986, S. MORITA leg.

Type locality. Kamikôchi, 1,500 m alt., Nagano Prefecture.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. This species is closely related to *T. kishimotoi*. However, it is easily distinguished from the latter by the convex genae, the shallow basal foveae of pronotum

and rather short apical lobe of aedeagus.

Trichotichnus (Trichotichnus) hiranishi MORITA, sp. nov.

[Japanese name: Hakone-ootsuya-gomokumushi]

(Fig. 19)

Trichotichnus leptopus: KASAHARA, 1983. Kanagawa-Chûho, Yokohama, (69): 44, 45–47, fig. 2 a–c [*partim*].

Diagnosis. Large species; pronotum less transverse; male genital organ very large.

Description. L: 10.91–12.46 mm. Colour as in *T. hirasawai*, but the legs are somewhat darker. Head as in *T. hirasawai*, but the neck is wider, the frontal furrows are shallower and the lateral grooves are longer; PW/HW 1.35–1.40 (M 1.37) in 5 ♂♂, 1.30–1.39 (M 1.36) in 10 ♀♀ from Ubako, 1.34–1.42 (M 1.37) in 4 ♂♂, 1.33–1.40 (M 1.36) in 5 ♀♀ from Fudakake; antennal segment 1 with a long seta and 2 short setae, rarely with a long seta and 1 or 3 short seta(e); relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.48 : 0.98 : 0.92 : 0.91 : 0.82 : 1.01.

Pronotum as in *T. silvestris*, but the disc is more convex, the marginal gutters are deeper, the sides are less strongly arcuate in front and the basal foveae are deeper and larger; PW/PL 1.38–1.45 (M 1.41) in 5 ♂♂, 1.40–1.48 (M 1.43) in 10 ♀♀ from Ubako, 1.39–1.45 (M 1.43) in 4 ♂♂, 1.44–1.50 (M 1.47) in 5 ♀♀ from Fudakake; apex usually strongly emarginate, PW/PA 1.40–1.45 (M 1.43) in 5 ♂♂, 1.37–1.44 (M 1.40) in 10 ♀♀ from Ubako, 1.33–1.42 (1.39) in 4 ♂♂, 1.34–1.40 (M 1.37) in 5 ♀♀ from Fudakake; base variable, usually emarginate at middle and slightly oblique at the sides, sometimes weakly emarginate throughout, rarely almost straight; PW/PB 1.26–1.33 (M 1.29) in 5 ♂♂, 1.24–1.33 (M 1.29) in 10 ♀♀ from Ubako, 1.28–1.29 (M 1.29) in 4 ♂♂, 1.25–1.31 (M 1.29) in 5 ♀♀ from Fudakake; PA/PB 0.87–0.93 (M 0.90) in 5 ♂♂, 0.88–0.96 (M 0.93) in 10 ♀♀ from Ubako, 0.91–0.97 (M 0.93) in 4 ♂♂, 0.89–0.97 (M 0.93) in 5 ♀♀ from Fudakake.

Elytra convex, with ample apical part, widest at about middle; WL/EL 0.25; EW/PW 1.28–1.32 (M 1.30) in 5 ♂♂, 1.26–1.33 (M 1.30) in 10 ♀♀ from Ubako, 1.34–1.38 (M 1.36) in 4 ♂♂, 1.32–1.34 (M 1.33) in 5 ♀♀ from Fudakake; sides weakly arcuate behind shoulders, but strongly so from before middle to apices; EL/EW 1.47–1.60 (M 1.53) in 5 ♂♂, 1.44–1.53 (M 1.49) in 10 ♀♀ from Ubako, 1.45–1.48 (M 1.46) in 4 ♂♂, 1.42–1.57 (M 1.48) in 5 ♀♀ from Fudakake; base narrow, EB/EW 0.63–0.67 (M 0.65) in 5 ♂♂, 0.64–0.67 (M 0.65) in 10 ♀♀ from Ubako, 0.62–0.63 (M 0.63) in 4 ♂♂, 0.62–0.65 (M 0.63) in 5 ♀♀ from Fudakake; dorsal pore situated at 11/25–3/5 from base; scutellar striole longer than in *T. hirasawai* and *T. silvestris*; intervals flat or slightly convex; tip of each elytron more strongly rounded than in *T. hirasawai* and *T. silvestris*; basal border variable in form, usually moderately arcuate, sometimes nearly straight between suture and base of stria 4 and then strongly arcuate at the sides, rarely almost straight throughout; marginal series composed of 25–29 pores; microsculpture

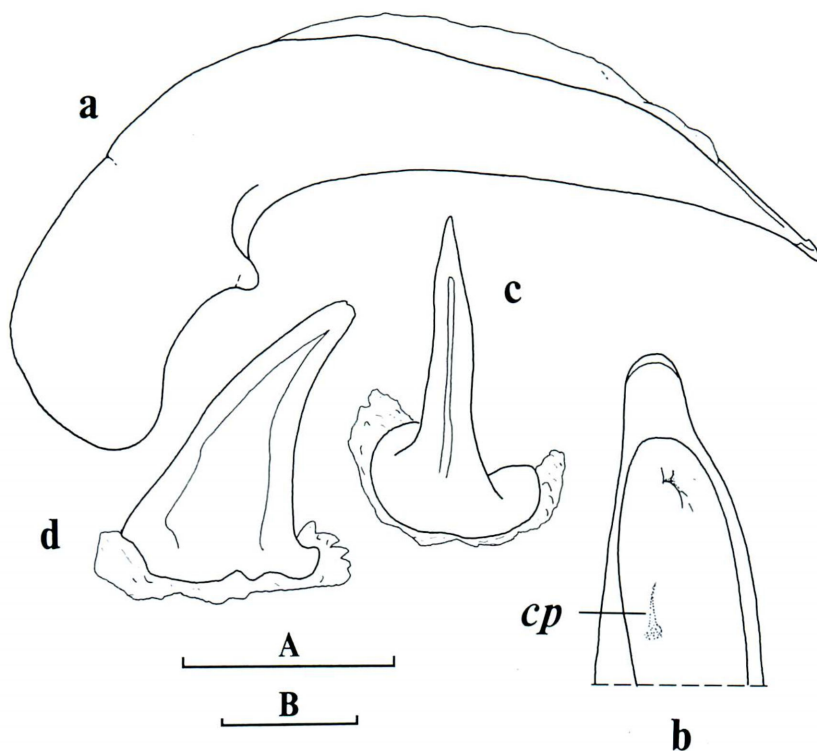


Fig. 19. Male genital organ of *Trichotichnus (Trichotichnus) hiranishi* MORITA, sp. nov. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, d, copulatory piece; cp, copulatory piece, showing position in aedeagus. — a-c, Specimen from Ubako, d, specimen from Fudakake. Scale: A — 1 mm for a-b; B — 0.3 mm for c-d.

almost vanished, partially composed of fine transverse lines or meshes.

Ventral side as in *T. hirasawai*, but basal two sternites with fine punctures. Protibiae sulcate on the external face; MTL/FL 0.42–0.46 (M 0.44) in 4 ♂♂, 0.40–0.45 (M 0.43) in 7 ♀♀ from Ubako, 0.42–0.46 (M 0.43) in 4 ♂♂, 0.40–0.45 (M 0.43) in 3 ♀♀ from Fudakake; TL/HW 1.03–1.11 (M 1.08) in 5 ♂♂, 0.93–1.00 (M 0.97) in 8 ♀♀ from Ubako, 0.97–1.11 (M 1.04) in 4 ♂♂, 0.95–1.00 (M 0.98) in 3 ♀♀ from Fudakake; TI/TV 1.09–1.24 (M 1.17) in 4 ♂♂, 1.10–1.24 (M 1.18) in 7 ♀♀ from Ubako, 1.12–1.20 (M 1.16) in 4 ♂♂, 1.19–1.27 (M 1.24) in 3 ♀♀ from Fudakake.

Male genital organ very large; aedeagus rather strongly bent at basal 1/3 and gently curved in lateral view; apical lobe narrow in the specimens from Ubako, rather wide in the specimen from Mt. Fuji-san; apex narrowly bordered above; inner sac armed with a copulatory piece, and rarely with one sclerotized part (not copulatory piece) at a position a little before the middle of the left wall; copulatory piece peg-shaped with large basal part in the population of Ubako, of conical form in the population of Fu-

dakake.

Type series. Holotype: ♂, allotype: ♀, Ubako, 23-IX-1976, S. MORITA leg. (NSMT). Paratypes: 1 ♂, Ôwakudani, 21-VIII-1975, Y. HIRANO leg.; 1 ♂, same locality, 19-IX-1976, Y. HIRANO leg.; 5 ♂♂, 11 ♀♀, Ubako, 23-IX-1976, S. MORITA leg.; 1 ♂, same locality, 8-V-1977, Y. HIRANO leg.; 1 ♂, same locality, 3-XI-1977, Y. HIRANO leg.; 1 ♂, same locality, 2-V-1978, Y. HIRANO leg.; 1 ♂, same locality, 9-IX-1978, Y. HIRANO leg.; 2 ♂♂, 1 ♀, same locality, 21-X-1978, Y. KUROSA leg.; 1 ♂, same locality, 8-V-1982, Y. HIRANO leg.; 1 ♂, same locality, 12-V-1985, Y. HIRANO leg.; 1 ♂, same locality, 8-VI-1986, A. IZUMI leg.; 1 ♂, 1 ♀, Mt. Kami-yama, 2-VII-1972, Y. HIRANO leg.; 1 ♂, same locality, 4-VI-1993, Y. HIRANO leg.; 1 ♂, Mt. Kintoki-yama, 25-V-1993, Y. HIRANO leg.; 1 ♂, same locality, 4-VI-1993, Y. HIRANO leg.; 1 ♂, Fudakake, 16-VIII-1981, Y. HIRANO leg.; 5 ♂♂, 7 ♀♀, same locality, 12-VI-1984, M. NISHIKAWA leg.; 1 ♂, same locality, 10-X-1986, Y. HIRANO leg.; 1 ♀, Yabitsu-tôge, 27-VIII-1977, S. MORITA leg.; 1 ♂, same locality, 10-V-1992, K. MATSUMOTO leg.; 2 ♀♀, Ôtanasawa, 13~14-X-1982, I. ARIGA leg.; 1 ♀, Mt. Ô-yama, 15-IX-1981, Y. HIRANO leg.; 2 ♂♂, Yûshin, 8-IX-1984, Y. HIRANO leg.; 1 ♂, Inugoeji, 5-X-1993, Y. HIRANO leg.; 1 ♀, Dôdaira, 3-X-1992, Y. HIRANO leg.; 1 ♀, same locality, 10-X-1992, Y. HIRANO leg.; 1 ♂, same locality, 1-VI-1993, Y. HIRANO leg.; 3 ♂♂, 2 ♀♀, same locality, 20-V-1994, Y. HIRANO leg.; 3 ♂♂, 4 ♀♀, Mt. Kyôga-dake, 14-V-1995, Y. KUROSA leg.; 1 ♂, 3 ♀♀, Mt. Fuji-san, 15-VIII-1971, K. MASUMOTO leg.

Localities. Hakone (Ubako, Ôwakudani, Mt. Kami-yama, and Mt. Kintoki-yama); Tanzawa (Fudakake, Ôtanasawa, Mt. Ô-yama, Mt. Kyôga-dake, Inugoeji, Dôdaira, Yûshin, Yabitsu-tôge); Mt. Fuji-san.

Further specimen examined. 1 ♀, Mt. Amagi-san, 8-V-1993, S. MORITA leg.

Range. Kwantô District (Kanagawa Pref.); Chûbu District (Yamanashi Pref., Shizuoka Pref.), Central Japan.

Notes. The specific name of this new harpaline beetle was formed by an arbitrary combination of letters taken from the names of two persons, *Hira-no* and *Nishi-kawa*, who offered many specimens of this species for my study.

Complex of *Trichotichnus kasaharai*

Trichotichnus (Trichotichnus) kasaharai HABU

[Japanese name: Kasahara-tsuya-gomokumushi]

(Figs. 20-22)

Trichotichnus (Trichotichnus) kasaharai HABU, 1983, Ent. Rev. Japan, Osaka, **38**: 1-4, figs. 1-4; type locality: Mt. Minobu. — KASAHARA, 1985, Coleopt. Japan Col., Osaka, **2**: 148.

Diagnosis. Large species (13.7-14.2 mm: HABU, 1983); apical lobe of aedeagus narrow and strongly produced in dorsal view; viewed laterally, apical lobe weakly reflexed.

Specimen examined. 1 ♂, "Mt. Minobu-san, Yamanashi Pref., 5-IX-1980, S.

KASAHARA leg.”/“Paratype *Trichotichnus kasaharai* HABU” (NAS).

Range. Known so far only from the type locality.

Notes. This is one of the largest species belonging to the Japanese members of *Trichotichnus* and is endemic to Mt. Minobu-san.

***Trichotichnus (Trichotichnus) watamukiensis* N. ITO**

[Japanese name: Watamuki-naga-tsuya-gomokumushi]

(Figs. 20–22)

Trichotichnus (s. str.) *watamukiensis* N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 122, 131, figs. 7, 13, 13 a–c, 21; type locality: Mt. Watamuki.

Diagnosis. Apical lobe of aedeagus rather strongly produced.

Description. L: 11.86–12.71 mm. Colour blackish brown, weakly iridescent on elytra; appendages brown; body robust.

Head similar to that of *T. kasaharai*, but the eyes are more convex. PW/HW 1.40–1.42 (M 1.41) in 3 ♂♂, 1.34–1.40 (M 1.37) in 5 ♀♀; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.47 : 1.04 : 0.96 : 0.94 : 0.91 : 1.04.

Pronotum similar to that of *T. kasaharai*, but less transverse in shape, with the basal part more coarsely punctate, and the basal foveae shallower. PW/PL 1.42–1.45 (M 1.43) in 3 ♂♂, 1.42–1.44 (M 1.43) in 5 ♀♀; PW/PA 1.40–1.46 (M 1.42) in 3 ♂♂, 1.39–1.41 (M 1.40) in 5 ♀♀; PW/PB 1.28–1.34 (M 1.31) in 3 ♂♂, 1.26–1.30 (M 1.28) in 3 ♀♀; PA/PB 0.88–0.95 (M 0.92) in 3 ♂♂, 0.91–0.93 (M 0.91) in 5 ♀♀; microsculp-

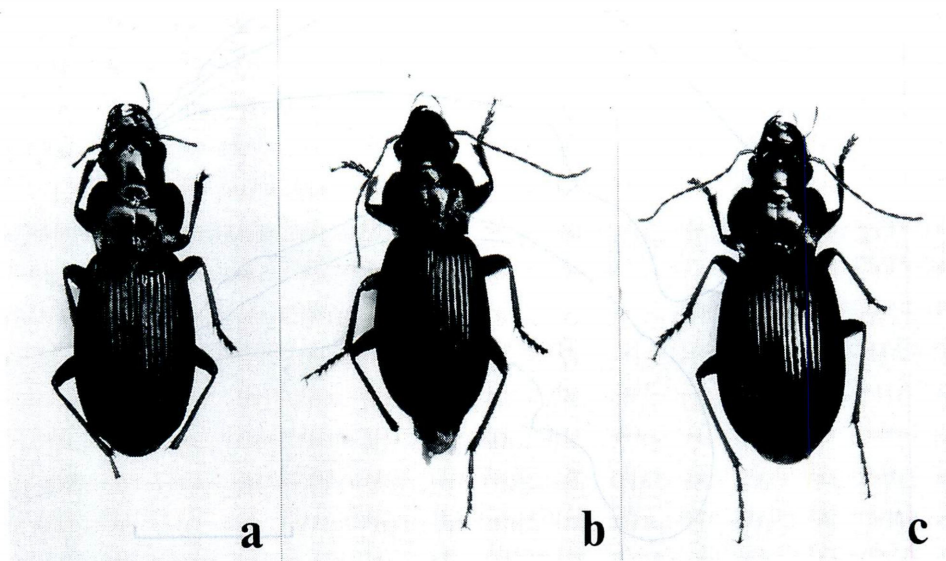


Fig. 20. *Trichotichnus (Trichotichnus)* spp. — a, *T. (T.) kasaharai* HABU from Mt. Minobu-san; b, *T. (T.) watamukiensis* N. ITO, from Shirafune-tôge; c, *T. (T.) spinifer* KASAHARA from Mt. Mitsumine.

ture composed of fine transverse meshes.

Elytra as in *T. kasaharai*. WL/EL 0.20–0.24; EW/PW 1.23–1.26 (M 1.25) in 3 ♂♂, 1.21–1.32 (M 1.26) in 5 ♀♀; EL/EW 1.52–1.60 (M 1.56) in 3 ♂♂, 1.47–1.58 (M 1.54) in 5 ♀♀; EB/EW 0.66–0.69 (M 0.67) in 3 ♂♂, 0.65–0.70 (M 0.68) in 5 ♀♀.

Protibiae sulcate on the external face in ♀, less so in ♂; TI/TV 1.13–1.31 (M 1.21) in 3 ♂♂, 1.15–1.29 (M 1.21) in 3 ♀♀; TL/HW 1.09–1.13 (M 1.11) in 3 ♂♂, 0.96–1.02 (M 0.99) in 5 ♀♀; MTL/FL 0.43–0.46 (M 0.45) in 3 ♂♂ and 5 ♀♀.

Aedeagus robust with narrow and rather strongly produced apical lobe; ventral margin slightly arcuate in lateral view; apex narrowly bordered above; copulatory piece peg-shaped.

Specimens examined. 3 ♂♂, 2 ♀♀, Shirafune-tôge, Fujiwara-chô, Mie Pref., 5–VIII–1979, N. NARUKAWA leg.; 3 ♀♀, same locality, 29–IV–1989, S. MORITA & N. NARUKAWA leg.

Notes. This species was regarded by ITO as a close relative of *T. daisenus* HABU.

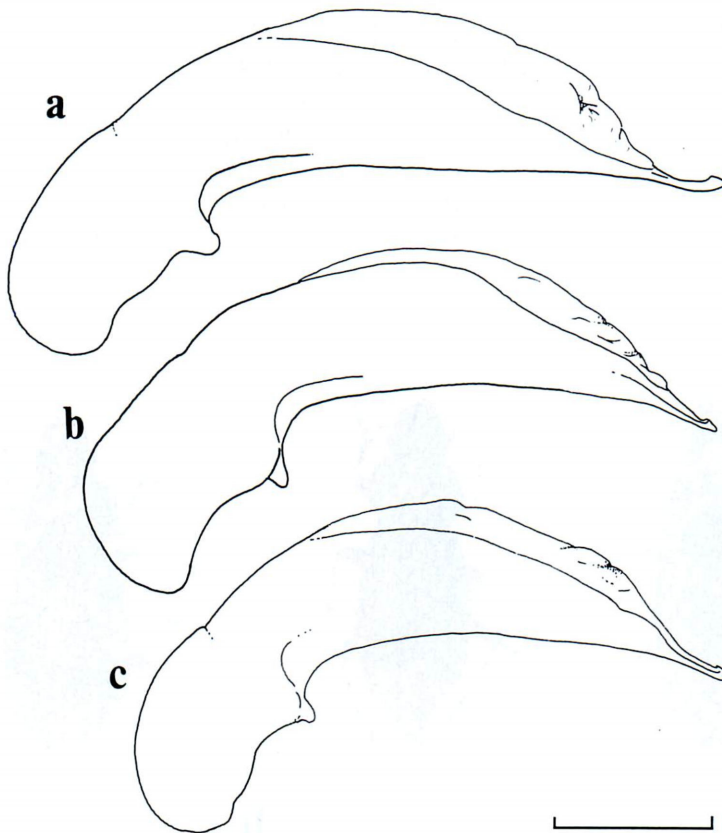


Fig. 21. Aedeagi of *Trichotichnus* (*Trichotichnus*) spp., left lateral view. — a, *T. (T.) kasaharai* HABU from Mt. Minobu-san; b, *T. (T.) spinifer* KASAHARA from Mt. Mitsumine, c, *T. (T.) watamukiensis* N. ITO, from Shirafune-tôge. Scale: 1 mm.

However, the former is a large species and has a strongly produced apical lobe of aedeagus. On the basis of this, I think it probable that this species is more closely related to *T. kasaharai* HABU. Besides, this species has strongly reduced hind wings, which he did not study.

Incidentally, the drawing of aedeagus inserted in the original description given by N. ITO (1996, p.129, fig. 13.) is inadequate. A careful observation of the drawings in the original description shows that the copulatory piece extracted from the aedeagus in

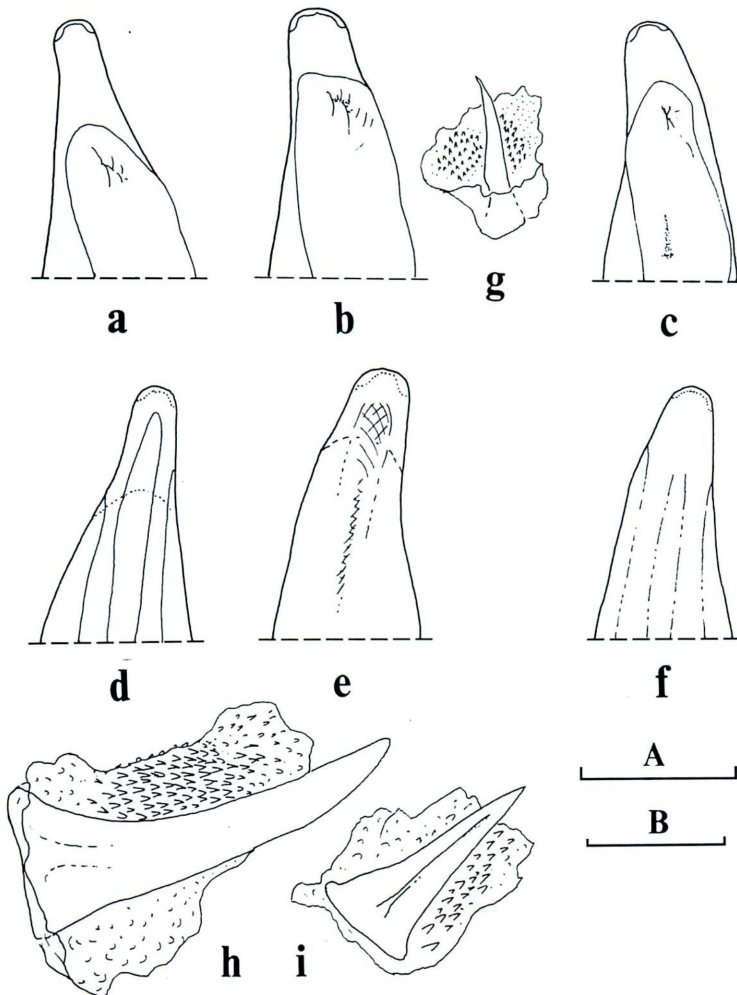


Fig. 22. Male genital organ of *Trichotichnus* spp. — a, d, *T. (T.) kasaharai* HABU from Mt. Minobu-san; b, e, g, h, *T. (T.) spinifer* KASAHARA from Mt. Mitsumine, c, f, i, *T. (T.) watamukiensis* N. ITO, from Shirafune-tôge. — a–c, Apical part of aedeagus, dorsal view; d–f, apical part of aedeagus, ventral view; g, copulatory piece, showing size against aedeagus; h–i, copulatory piece. Scale: A – 1 mm for a–g; B – 0.3 mm for h–i.

one drawing is much shorter than that inside the aedeagus in the other drawing. This is strange, since the copulatory piece lies obliquely in the aedeagus. He has given neither a scale nor an explanation as to the angle from which his observation was made. The Japanese name of this species was given by ITO.

***Trichotichnus (Trichotichnus) spinifer* KASAHARA**

[Japanese name: Tenryû-tsuya-gomokumushi]

(Figs. 20–22)

Trichotichnus (Trichotichnus) spinifer KASAHARA, 1994, Elytra, Tokyo, **22**: 73, 75–77, figs. 2, 4; type locality: Mt. Ryûtô-zan.

Diagnosis. Copulatory piece very large, and with a mat of spinules near the basal part.

Description. The standard ratios of body parts in 2 ♂♂ from Mt. Mitsumine are as follows: PW/HW 1.47, 1.49; PW/PL 1.41, 1.47; PW/PA 1.44, 1.45; PW/PB 1.27, 1.33; PA/PB 0.89, 0.91; EW/PW 1.24, 1.27; WL/EL 0.23; EL/EW 1.45, 1.46; EB/EW 0.69; TI/TV 1.24, 1.26; TL/HW 1.16, 1.17; MTL/FL 0.42, 0.44. Viewed ventrally, apical lobe of aedeagus longitudinally concave, becoming narrower and shallower towards base and apex, and not bordered though thick; copulatory piece very large, and with a mat of spinules near the base.

Specimens examined. 2 ♂♂, Mt. Mitsumine, Shizuoka-shi, Shizuoka Pref., 17–VIII–1988, K. HIRAI leg.; 2 ♂♂, Ôma-rindô, 29–V–1993, K. HIRAI leg.; 1 ♂, Mt. Ryûtô-zan, Sakuma-chô, Shizuoka Pref., 25–VIII–1995, K. HIRAI leg.

Range. Chûbu District (Shizuoka Pref.), Central Japan.

Notes. This species is unique in having a long copulatory piece, which has not been found in any other species of *Trichotichnus*.

***Trichotichnus (Trichotichnus) edai* JEDLIČKA**

[Japanese name: Yamato-tsuya-gomokumushi]

(Fig. 23)

Velimius edai JEDLIČKA, 1952, Acta Mus. Silesiae, **2** (A): 51; type locality: Mt. Kongo [sic]; 1961, Acta ent. Mus. natn. Pragae, **34**: 160. — NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., Tokyo, **2**: 43, pl. 22, fig. 2.

Trichotichnus edai: UÉNO, 1954, Shin Konchû, Tokyo, **7** (6): 53.

Trichotichnus (Velimius) edai: HABU, 1955, Bull. natn. Inst. agric. Sci., Tokyo, (C), (5): 156; 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13): 154–156, fig. 8.

Trichotichnus (Trichotichnus) edai: HABU, 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 236, 299, 300, figs. 519, 527, 545, 547, pl. 20–4.

Trichotichnus (s. str.) *edai*: N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 121, 133, fig. 22.

Diagnosis. Elytra densely punctate.

Specimens examined. 1 ♀, Mt. Iwawaki-san, Osaka Pref., 14–X–1981, S.

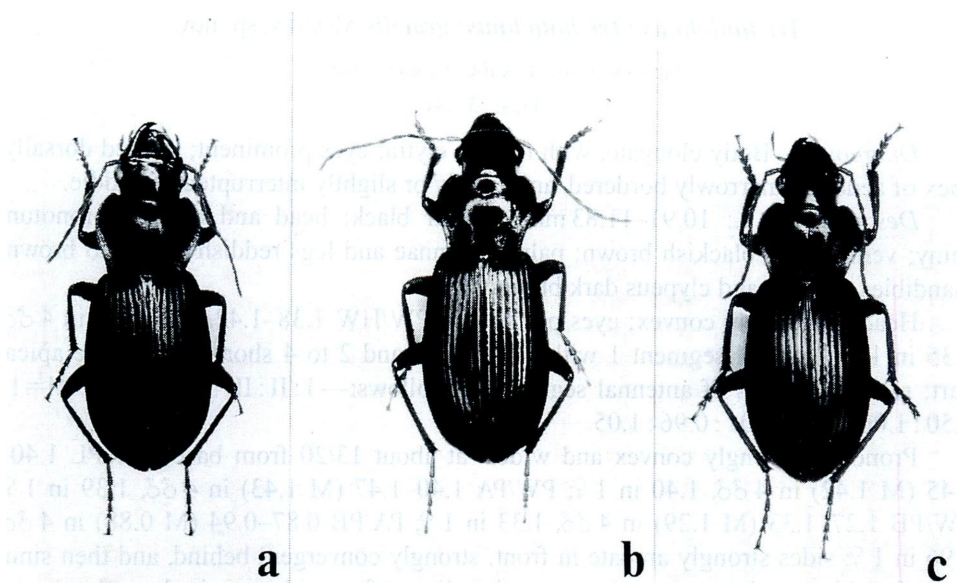


Fig. 23. *Trichotichnus* (*Trichotichnus*) spp. — a, *T. (T.) edai* JEDLIČKA from Mt. Kongô-zan; b, *T. (T.) gracilis* MORITA, sp. nov., from Mt. Kanmuri-yama; c, *T. (T.) daisenus* HABU from Mt. Daisen.

MORITA leg.; 1 ♂, 1 ♀, Mt. Ohdaigahara-zan, 1,500 m alt., Nara Pref., 21-IX-1986, Y. KUROSA leg.; 1 ♂, 5 ♀♀, Mt. Kongô-zan, Nara Pref., 12-VI-1988, Y. KUROSA leg.; 1 ♂, Hirakura, Misugi-mura, Mie Pref., 31-VIII-1983, K. AKITA leg.

Range. Kinki District (Osaka Pref., Mie Pref., Nara Pref.), Central Japan.

Notes. This species is remarkable in bearing punctations on the elytra. However, it has been well known that such a character state is also found in the members of the genus *Harpalus* in Japan.

Trichotichnus (*Trichotichnus*) *latemarginatus* N. ITO

[Japanese name: Hiromizo-naga-tsuya-gomokumushi]

Trichotichnus (s. str.) *latemarginatus* N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 122, 127, figs. 3, 11, 11 a-c, 19; type locality: "Mt. Mikuni".

Diagnosis. Apical half of aedeagus straight in dorsal view; apex of aedeagus widely bordered throughout.

Notes. I have not seen this species. The reduced state of the hind wings should be examined.

Though the aedeagal apical lobe illustrated by ITO is straight, I regarded it as a member of the *hirasawai* complex.

Trichotichnus (Trichotichnus) gracilis MORITA, sp. nov.

[Japanese name: Fukui-tsuya-gomokumushi]

(Figs. 23–24)

Diagnosis. Body elongate, with narrow elytra; eyes prominent; viewed dorsally, apex of aedeagus narrowly bordered, and clearly or slightly interrupted at middle.

Description. L: 10.91–11.83 mm. Colour black; head and disc of pronotum shiny; ventral side blackish brown; palpi, antennae and legs reddish brown to brown; mandibles, labrum and clypeus dark brown.

Head moderately convex; eyes prominent; PW/HW 1.38–1.42 (M 1.39) in 4 ♂♂, 1.35 in 1 ♀; antennal segment 1 with a long seta and 2 to 4 short setae at the apical part; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.50 : 1.06 : 0.99 : 1.01 : 0.96 : 1.05.

Pronotum strongly convex and widest at about 13/20 from base; PW/PL 1.40–1.45 (M 1.42) in 4 ♂♂, 1.40 in 1 ♀; PW/PA 1.40–1.47 (M 1.43) in 4 ♂♂, 1.39 in 1 ♀; PW/PB 1.27–1.33 (M 1.29) in 4 ♂♂, 1.33 in 1 ♀; PA/PB 0.87–0.94 (M 0.88) in 4 ♂♂, 0.96 in 1 ♀; sides strongly arcuate in front, strongly convergent behind, and then sinuate before hind angles; marginal gutter rather distant from side margin throughout; surface rather sparsely and strongly punctate though minutely so on the disc and almost obsolete on median part of apex; microsculpture composed of fine transverse meshes.

Elytra elongate, moderately convex, and widest at a level a little behind the middle; EW/PW 1.21–1.28 (M 1.25) in 4 ♂♂, 1.21 in 1 ♀; EL/EW 1.59–1.73 (M 1.63) in 4 ♂♂, 1.59 in 1 ♀; EB/EW 0.68–0.78 (M 0.71) in 4 ♂♂, 0.70 in 1 ♀; sides very slightly arcuate or almost straight from behind shoulders to the widest part, and moderately arcuate from the middle to apices, and very shallowly sinuate before apices; scutellar striole rather long; intervals weakly convex and finely punctate; a dorsal pore situated at a level from basal 9/20 to a little behind the middle on each side; marginal series composed of 24 to 27 pores; microsculpture composed of fine transverse meshes but partially obliterated. WL/EL 0.25.

Protibiae sulcate on the external face in ♀, obscurely so in ♂; MTL/FL 0.41–0.44 (M 0.42) in 3 ♂♂, 1 ♀; TL/HW 1.10–1.13 (M 1.11) in 3 ♂♂, 0.95 in 1 ♀; TI/TV 1.14–1.20 (M 1.16) in 3 ♂♂ and 1 ♀.

Aedeagus robust; apical lobe short and rather wide; ventral side of apical lobe longitudinally concave, the concavity becoming shallower towards base; apex clearly bordered above, very narrowly so as shown in Fig. 24 d, or rather widely so as shown in Fig. 24 b, and clearly or slightly interrupted at middle; viewed ventrally, apex not bordered; copulatory piece long with pointed apex.

Type series. Holotype: ♂, 23–IX–1988, S. MORITA leg. (NSMT). Allotype: ♀, 28–V–1989, Y. KUROSA leg. Paratypes: 2 ♂♂, 23–IX–1988, S. MORITA leg.; 2 ♂♂, 28–V–1988, Y. KUROSA leg.

Type locality. Mt. Kanmuri-yama, Ikeda-chô, Fukui Prefecture, Central Japan.

Range. Chûbu District (Fukui Pref.), Central Japan.

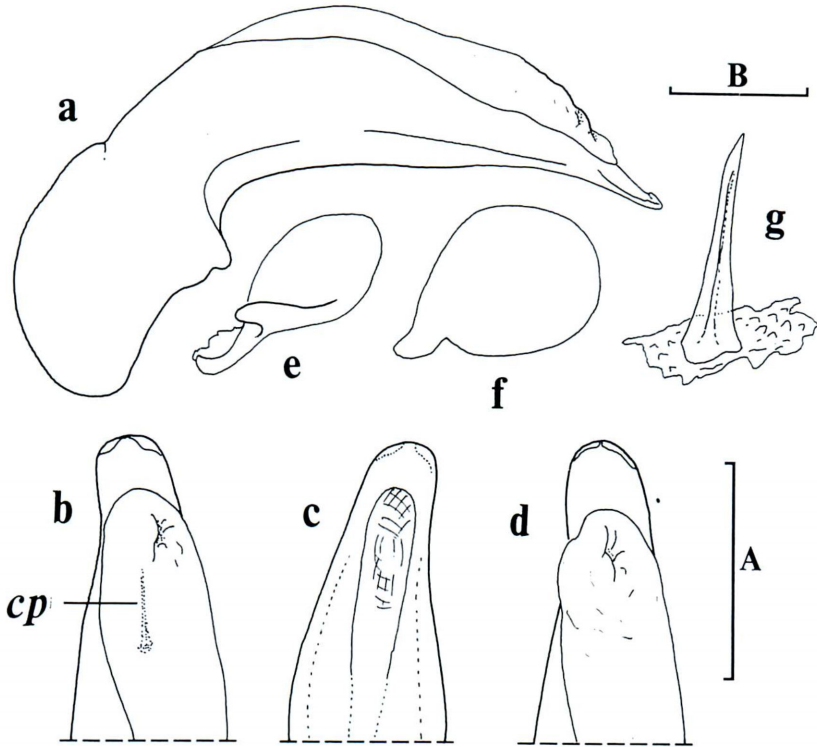


Fig. 24. Male genital organ of *Trichotichnus (Trichotichnus) gracilis* MORITA, sp. nov., from Mt. Kanmuri-yama. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, apical part of aedeagus, ventral view; d, apical part of aedeagus, dorsal view in another specimen, showing individual variation; e, right paramere, left lateral view; f, left paramere, left lateral view; g, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–f; B – 0.3 mm for g.

Notes. This new species is peculiar in the shape of elytra, which are elongate and have very narrow basal part. Its closest relative must be *T. latemarginatus* N. ITO known from Mt. Mikuni. However, the latter species has a widely and clearly bordered apex of the aedeagus.

Trichotichnus (Trichotichnus) daisenus HABU

[Japanese name: Daisen-tsuya-gomokumushi]

(Figs. 23, 25)

Trichotichnus (Trichotichnus) daisenus HABU, 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 236, 296, 298, figs. 526, 544, 546, pl. 20–3; 1980, Ent. Rev. Japan, Osaka, **34**: 77, fig. 2.

Trichotichnus (s. str.) *daisenus*: N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 130, figs. 4, 14–15, 22.

Trichotichnus daisenus: KASAHARA, 1985, Coleopt. Japan Col., Osaka, **2**: 147. — TERADA, 1995, Hiroshima-Mushinokai-Kaihō, (34): 36.

Diagnosis. Body blackish to dark brown; WL/EL 0.24–0.27; aedeagus robust; apical lobe rather short.

Description. Body blackish brown to dark brown; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.45 : 0.96 : 0.94 : 0.93 : 0.95 : 0.99. The standard ratios of body parts are as follows: PW/HW 1.40–1.47 (M 1.43) in 5 ♂♂, 1.42–1.45 (M 1.43) in 4 ♀♀; PW/PL 1.40–1.47 (M 1.44) in 5 ♂♂, 1.41–1.43 (M 1.42) in 4 ♀♀; PW/PA 1.43–1.56 (M 1.50) in 5 ♂♂, 1.38–1.45 (M 1.43) in 4 ♀♀; PW/PB 1.37–1.44 (M 1.40) in 5 ♂♂, 1.36–1.42 (M 1.38) in 4 ♀♀; PA/PB 0.91–0.98 (M 0.94) in 5 ♂♂, 0.94–1.03 (M 0.97) in 4 ♀♀.

Elytra narrow and elongate; EW/PW 1.11–1.25 (M 1.20) in 5 ♂♂, 1.25–1.28 (M 1.27) in 4 ♀♀; WL/EL 0.24–0.27; EL/EW 1.52–1.58 (M 1.56) in 5 ♂♂, 1.53–1.55 (M 1.54) in 4 ♀♀; EB/EW 0.66–0.76 (M 0.69) in 5 ♂♂, 0.65–0.67 (M 0.66) in 4 ♀♀.

TI/TV 1.11–1.29 (M 1.16) in 3 ♂♂ and 4 ♀♀; TL/HW 1.06–1.11 (M 1.09) in 3 ♂♂, 1.00–1.03 (M 1.01) in 4 ♀♀; MTL/FL 0.39–0.41 (M 0.40) in 2 ♂♂ and 3 ♀♀.

Aedeagus robust; apical lobe rather short; apex widely arcuate and strongly bordered in dorsal view; viewed ventrally, apex thick and very slightly concave at middle, and apical lobe with obtuse spinules; copulatory piece variable in form, peg- or corn-shaped.

Specimens examined. 5 ♂♂, 3 ♀♀, Mt. Daisen, 14–IX–1975, S. MORITA leg.; 5 ♂♂, 3 ♀♀, same locality, 13–14–IX–1980, T. SHIMOMURA leg.

Localities. Mt. Daisen, Tottori Pref.; Mt. Garyû-zan, Hiroshima Pref. (TERADA, 1995, p. 36); Mt. Jakuchi, Yamaguchi Pref. (HABU, 1980, p. 77).

Range. Chûgoku District (Tottori Pref., Hiroshima Pref., Yamaguchi Pref.), West Japan.

Notes. This species has a robust aedeagus and strongly reduced hind wings. For this reason, I consider this and the following two species to form a small group within the *kasaharai* complex.

Trichotichnus (Trichotichnus) chugokuensis N. ITO

[Japanese name: Wakasugi-naga-tsuya-gomokumushi]

Trichotichnus (s. str.) *chugokuensis* N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 122, 129, 130, 131, figs. 6, 12, 20, 22; type locality: Mt. Wakasugi.

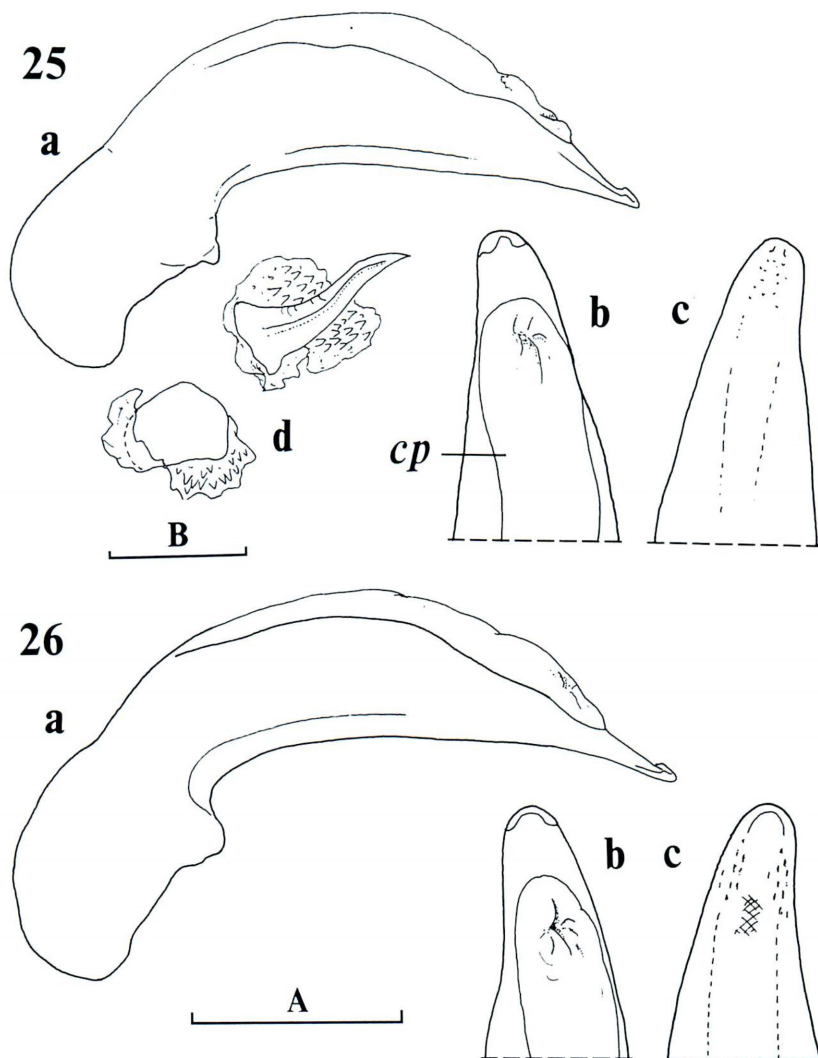
Diagnosis. “This species is different from *T. daisenus* HABU in having the pronotum more strongly convergent behind and sinuate before base, the elytra more strongly iridescent and with the interval not convex on disc and the sclerite of inner sac shorter.”

Notes. I have not seen this species.

Trichotichnus (Trichotichnus) uenorum KASAHARA et Y. ITÔ

[Japanese name: Ishizuchi-tsuya-gomokumushi]

(Fig. 26)

Trichotichnus (Trichotichnus) uenorum KASAHARA et Y. ITÔ, 1995, Spec. Bull. Jpn. Soc. Coleopterol.,

Figs. 25–26. Male genital organ of *Trichotichnus (Trichotichnus)* spp.—25, *T. (T.) daisenensis* HABU from Mt. Daisen; 26, *T. (T.) uenorum* KASAHARA et Y. ITÔ from Mt. Takanosu-yama. — a, Aedeagus, left lateral view; b, apical lobe, dorsal view; c, apical lobe, ventral view; d, copulatory piece, showing individual variation; cp, copulatory piece, showing position in aedeagus. Scale: A—1 mm for a–c; B—0.3 mm for d.

Tokyo, (4): 259, 261, 264, figs. 1, 3; type locality: Tsuchigoya.

Trichotichnus (s. str.) *uenorum*: N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 132.

Diagnosis. Body robust; eyes rather flat; ventral surface of aedeagus with obtuse spinules, and forming several chain lines.

Specimens examined. 1 ♂, Nikubuchi-dani, 1,150 m alt., Kisawa, Tokushima Pref., 15–VIII–1986, M. YOSHIDA leg.; 2 ♂♂, Mt. Takanosu-yama, 1,250 m alt., Hon-gawa, Kôchi Pref., 14~15–VIII–1988, M. YOSHIDA leg.

Range. Shikoku (Ehime Pref., Kôchi Pref., Tokushima Pref.), West Japan.

Complex of *Trichotichnus tranquillus*

Trichotichnus (*Trichotichnus*) *tranquillus* HABU

[Japanese name: Hikosan-hime-tsuya-gomokumushi]

(Figs. 27–28)

Trichotichnus tranquillus HABU, 1954, Mushi, Fukuoka, **26**: 55–56, pl. 5, fig. B; type locality: Mt. Hiko; 1954, Bull. natn. Inst. agric. Sci., Tokyo, (C), (4): 247, 260, pl. 1, fig. 8. — KASAHARA, 1985, Coleopt. Japan Col., Osaka, **2**: 147.

Trichotichnus (*Trichotichnus*) *tranquillus*: HABU, 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13): 135, 150, figs. 40, 58; 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 291, figs. 518, 524, 533, 537, 542, pl. 20–1.

Trichotichnus (s. str.) *tranquillus*: N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 132.

Diagnosis. Small species; basal foveae very shallow; aedeagus small; apical lobe of aedeagus rather wide; ventral surface of apical lobe with spinules.

Description. L: 8.43 mm. WL/EL 0.37. Aedeagus small with elongate basal part; apical lobe slightly produced dorsad in lateral view; apex bordered, or bordered at the sides and slightly so at middle; ventral side of apical lobe with spinules; inner sac armed with a mat of moderately sclerotized scales and a copulatory piece; copulatory piece peg-shaped, and with wide basal part.

Specimens examined. 1 ♂, Mt. Hiko-san, Fukuoka Pref., 3–XI–1950, A. HABU leg. (NAS); 1 ♂, Takachiho, Mt. Hiko-san, Fukuoka Pref., X–1954 (NAS).

Range. Kyushu District (Fukuoka Pref.), West Japan.

Trichotichnus (*Trichotichnus*) *yukihikoi* HABU

[Japanese name: Hakone-tsuya-gomokumushi]

(Figs. 27, 29)

Trichotichnus (*Trichotichnus*) *yukihikoi* HABU, 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13): 134, 153–154, fig. 34; type locality: Kojiri; 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 288, figs. 516, 522, 536, 541, pl. 19–3. — KASAHARA, 1983, Kanagawa-Chûhû, Yokohama, (69): 45–47, fig. 1 a–d.

Trichotichnus yukihikoi: KASAHARA, 1985, Coleopt. Japan Col., Osaka, **2**: 147.

Diagnosis. L: 8.43–9.43 mm; WL/EL 0.34; aedeagal apical lobe narrowly pro-

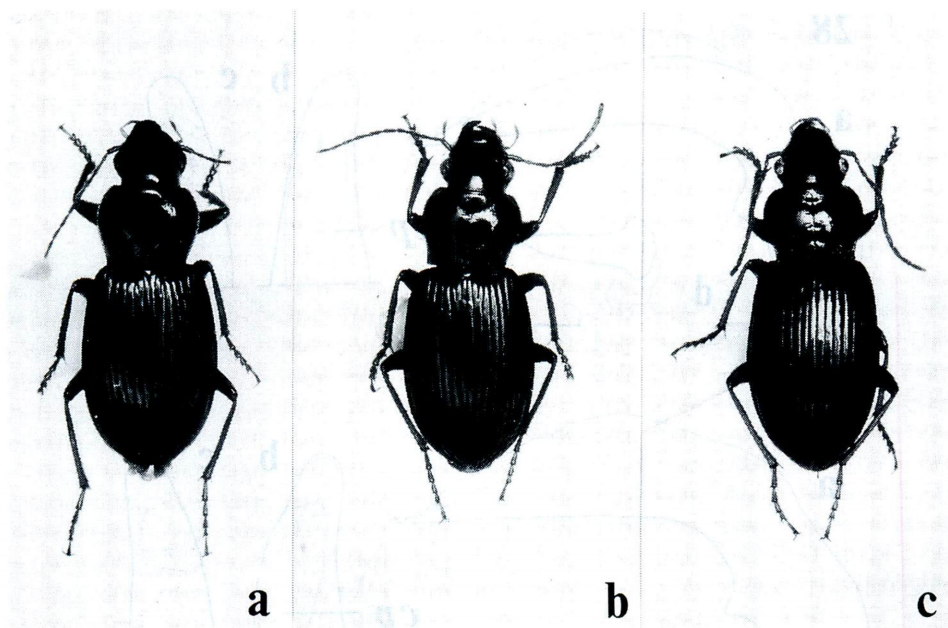


Fig. 27. *Trichotichnus* (*Trichotichnus*) spp. — a, *T. (T.) tranquillus* HABU from Mt. Hiko-san; b, *T. (T.) yukihihikoi* HABU from Mt. Takao-san; c, same species from Kouyama.

duced in dorsal view; ventral side of aedeagus rather convex and without spinules.

Specimens examined. 1 ♂ (holotype), “3.X.1958 HAKONE. KOJIRI Coll. Y. Hirano” / “Holotype *Trichotichnus yukihihikoi* Habu” (NAS); 1 ♀, Minoge, Tanzawa, Kanagawa Pref., 3–XI–1973, S. MORITA leg.; 1 ♀, same locality, 27–I–1974, S. MORITA leg.; 1 ♂, Jadaki, Mt. Takao-san, Tokyo, 14–IX–1963, S. UENO leg. (NAS); 1 ♂, Kouyama, Gotenba-shi, Shizuoka Pref., 15–X–1989, A. IZUMI leg.

Range. Kwantô District (Tokyo, Kanagawa Pref.); Chûbu District (Shizuoka Pref.), Central Japan.

Notes. This species is no doubt a close relative of *T. tranquillus*, as is indicated by both the external and genitalic features.

Complex of *Trichotichnus daibosatsunis*

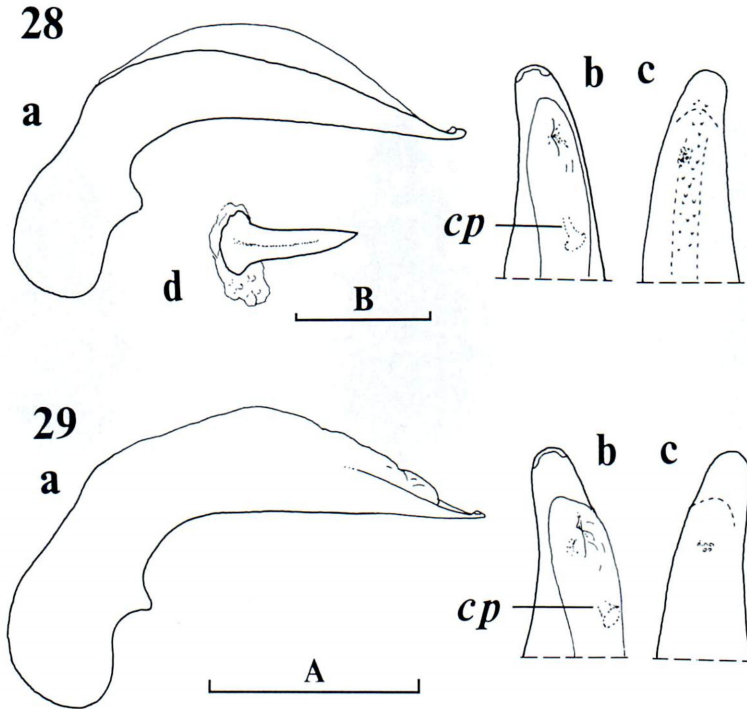
Trichotichnus (*Trichotichnus*) *daibosatsunis* KASAHARA

[Japanese name: Daibosatsu-tsuya-gomokumushi]

(Figs. 30–32)

Trichotichnus (*Trichotichnus*) *daibosatsunis* KASAHARA, 1991, *Elytra*, Tokyo, **19**: 111–114, figs. 1–2, 4; type locality: Nikkawa-dani.

Diagnosis. Medium-sized species; WL/EL 0.60–0.61; aedeagus with large basal



Figs. 28–29. Male genital organ of *Trichotichnus* (*Trichotichnus*) spp. — 28, *T. (T.) tranquillus* HABU from Mt. Hiko-san; 29, *T. (T.) yukihihikoi* HABU from Mt. Takao-san. — a, Aedeagus, left lateral view; b, apical lobe, dorsal view; c, apical lobe, ventral view; d, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–c; B – 0.3 mm for d.

part; apical lobe short and rather wide.

Supplementary description. Microsculpture composed of wide or transverse meshes on neck, of fine transverse ones on pronotum. The standard ratios in the specimens from Mt. Mitô-san are as follows: PW/HW 1.45 in 1 ♂, 1.37, 1.42 in 2 ♀♀; PW/PL 1.36 in 1 ♂, 1.33, 1.36 in 2 ♀♀; PW/PA 1.53 in 1 ♂, 1.45, 1.50 in 2 ♀♀; PW/PB 1.41 in 1 ♂, 1.37, 1.42 in 2 ♀♀; PA/PB 0.92 in 1 ♂, 0.95, 0.95 in 2 ♀♀; EW/PW 1.27 in 1 ♂, 1.32, 1.33 in 2 ♀♀; WL/EL 0.60–0.61 in 1 ♂ and 2 ♀♀; EL/EW 1.47 in 1 ♂, 1.48, 1.49 in 2 ♀♀; EB/EW 0.62 in 1 ♂, 0.62, 0.62 in 2 ♀♀. Microsculpture not sharply impressed though composed of fine transverse lines on elytra.

Protibiae with very shallow sulci on basal part in ♂, usually with very shallow sulci on the external face in ♀; TI/TV 1.02 in 1 ♂, 0.97, 0.98 in 2 ♀♀; TL/HW 1.21 in 1 ♂, 1.05 in 1 ♀; MTL/FL 0.42 in 1 ♂ 1.42, 1.43 in 2 ♀♀.

Specimens examined. 1 ♀, Mt. Kumotori-yama, 20~21–VIII–1976, S. MORITA leg.; 1 ♂, 3 ♀♀, Mt. Mitô-san, 9–VII–1978, S. MORITA leg.; 1 ♀, Mt. Mitake-san, 23–V–1980, S. MORITA leg.; 2 ♀♀, Nikkawa-rindô, 29–VIII–1987, M. HASEGAWA leg.

Range. Kwantô District (Tokyo); Chûbu District (Yamanashi Pref.), Central Japan.

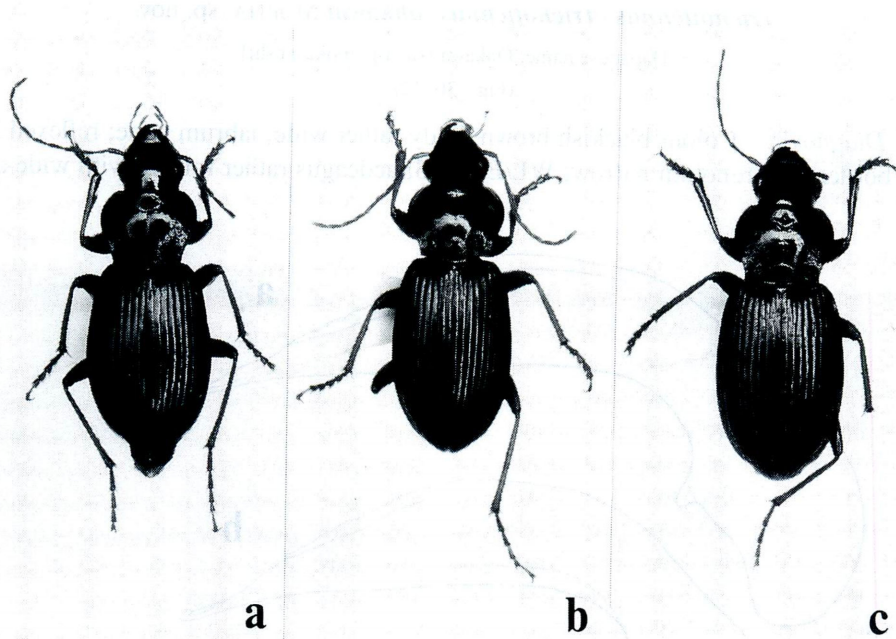


Fig. 30. *Trichotichnus* (*Trichotichnus*) spp. — a, *T. (T.) daibosatsunis* KASAHARA from Mt. Mitô-san; b, *T. (T.) kisonis* KASAHARA from Mt. Kisokoma-ga-take; c, *T. (T.) ohkawai* MORITRA, sp. nov., from Mt. Maruiwa-dake.

***Trichotichnus* (*Trichotichnus*) *kisonis* KASAHARA**

[Japanese name: Kiso-tsuya-gomokumushi]

(Figs. 30–32)

Trichotichnus (*Trichotichnus*) *kisonis* KASAHARA, 1995, *Elytra*, Tokyo, **23**: 99–101, figs. 4–5; type locality: Ohdaira-tôge.

Diagnosis. Body elongate; reflexed lateral borders of pronotum fine; WL/EL 0.67; protibiae not sulcate on external face; aedeagus slender; apical lobe of aedeagus strongly produced.

Specimens examined. 1 ♂, Ohdaira-tôge, 1,300 m alt., Nagiso-machi, Nagano Pref., 18–VI–1992, N. YOSHIKAWA leg.; 1 ♂, Mt. Oodanairi-yama, Shirakawa, 1,300 m alt., Narakawa-mura, Nagano Pref., 25–V–1994, S. FURIHATA leg.; 1 ♂, Mt. Kisokoma-ga-take, Miyata-mura, Nagano Pref., 28–VI–1995.

Notes. This and the following species show a moderate state of reduction of hind wings and the same type of peculiar shape of aedeagus as in *T. daibosatsunis*. In view of these peculiarities, this and the following new species are regarded as the members of the *daibosatsunis* complex, though their body form is elongate.

Trichotichnus (Trichotichnus) ohkawai MORITA, sp. nov.

[Japanese name: Ohkawa-tsuya-gomokumushi]

(Figs. 30–32)

Diagnosis. Colour blackish brown; body rather wide; labrum wide; reflexed lateral borders of pronotum narrow; WL/EL 0.73; aedeagus rather robust, with wide api-

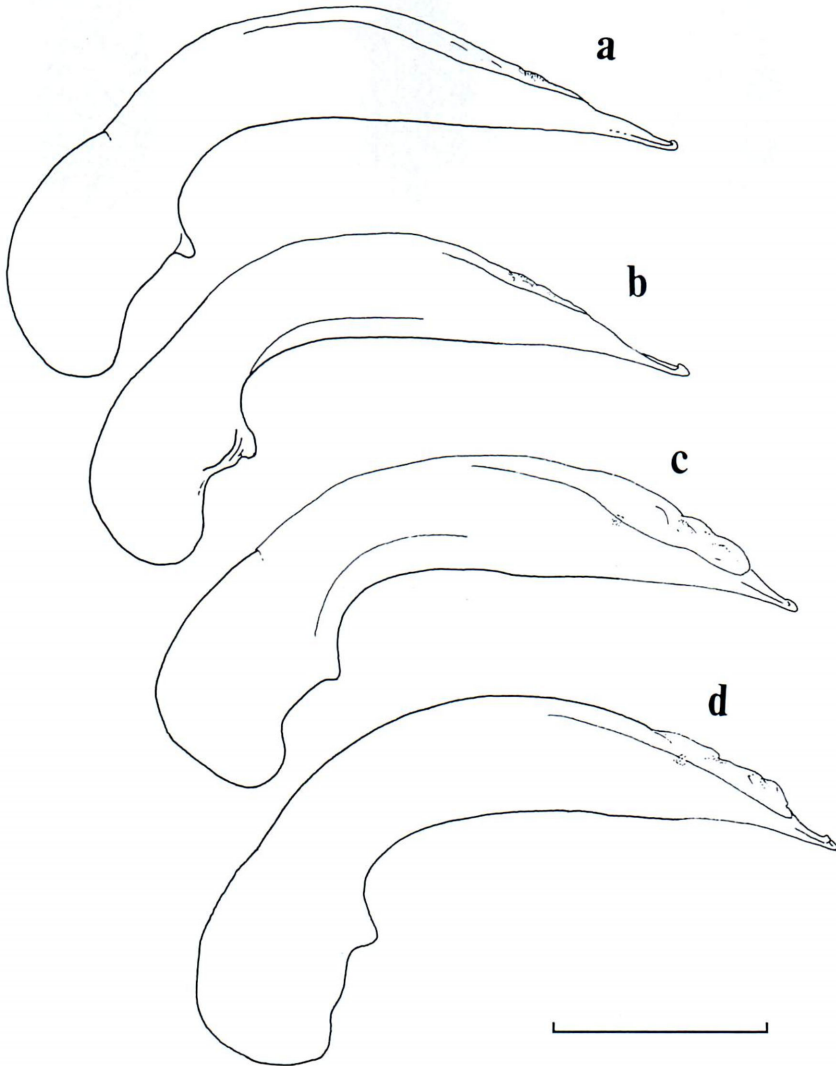


Fig. 31. Aedeagi of *Trichotichnus (Trichotichnus)* spp., left lateral view. — a, *T. (T.) daibosatsunis* KASAHARA from Mt. Mitō-san; b, *T. (T.) kisonis* KASAHARA from Mt. Kisokoma-ga-take; c, *T. (T.) ohkawai* MORITA, sp. nov., from Mt. Maruiwa-dake; d, same species from Marunuma. Scale: 1 mm.

cal lobe.

Description. L: 9.50–10.14 mm. Body blackish brown; legs brown; head as in *T. kisonis*, but the genae are more convex, the eyes are less convex, the labrum is transverse, and the lateral grooves are almost straight. Relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.47 : 0.96 : 0.89 : 0.85 : 0.89 : 0.96.

Pronotum similar to that of *T. kisonis*, but the disc is less convex, the reflexed lateral borders are wide, and the basal foveae are deeper and larger with coarse punctures; PW/HW 1.35, PW/PL 1.39, PW/PA 1.41, PW/PB 1.36, PA/PB 0.97 in the holotype.

Elytra wider than those of *T. kisonis*; WL/EL 0.73, EW/PW 1.33, EL/EW 1.48, EB/EW 0.67 in the holotype; protibiae not sulcate in external face; TI/TV 1.10, TL/HW 1.10, MTL/FL 0.44 in the holotype.

Male genital organ elongate; aedeagus slightly arcuate in lateral view; apical lobe slightly inclined to the right in dorsal view; ventral side of apical lobe longitudinally

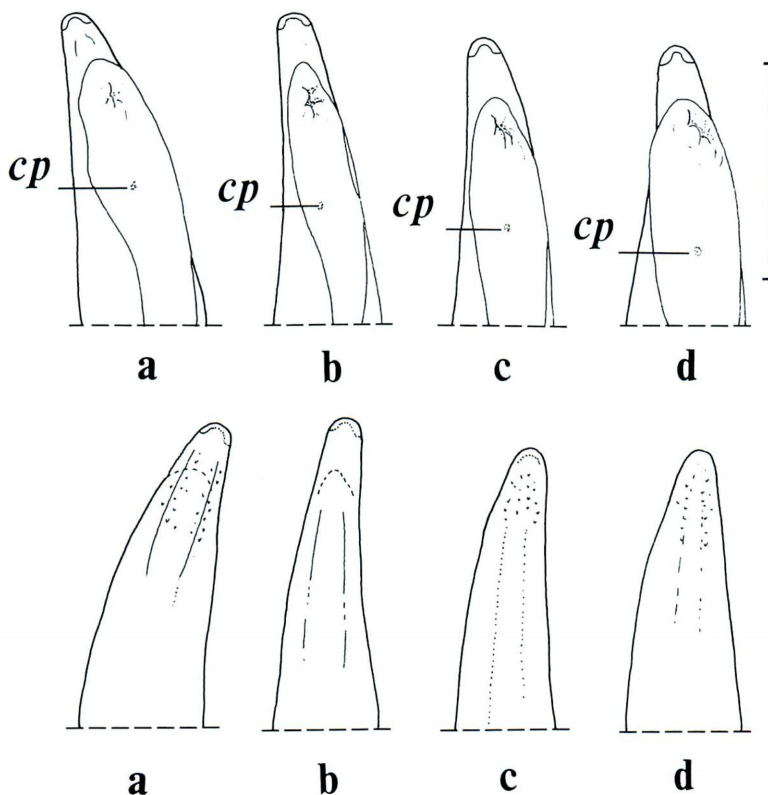


Fig. 32. Apical parts of aedeagi in *Trichotichnus* (*Trichotichnus*) spp. — a, *T. (T.) daibosatsunis* KASAHARA from Mt. Mitō-san; b, *T. (T.) kisonis* KASAHARA from Mt. Kisokoma-ga-take; c, *T. (T.) ohkawai* MORITA, sp. nov., from Mt. Maruiwa-dake; d, same species from Marunuma; cp, copulatory piece, showing position in aedeagus. Scale: 1 mm.

and slightly concave, and with spinules; apex thick, strongly and widely bordered above; copulatory piece very small; parameres moderately sclerotized.

Type series. Holotype: ♂, Marunuma, 22–VI–1975, S. SHIMIZU leg. (NSMT). Paratypes: 1 ♂, Meotobuchi-onsen, 1,200 m alt., 9–VII–1976, S. MORITA leg.; 1 ♂, Mt. Maruiwa-dake, 700 m alt., 27–XII–1982, H. OHKAWA leg.

Localities. Marunuma, Okunikkô, Gunma Pref.; Meotobuchi-onsen; Mt. Maruiwa-dake, Tanuma-chô, Tochigi Pref., Central Japan.

Range. Kwantô District (Gunma Pref., Tochigi Pref.), Central Japan.

Notes. Since only three males are available for this study, a detailed examination of copulatory piece has not been made. However, a careful examination with a few drops of lactic acid has revealed that the copulatory piece is not large and not peg-shaped.

The specimen from Meotobuchi-onsen has wider elytra, more convex eyes and relatively short antennal segment 1. The standard ratios are as follows: PW/HW 1.37, PW/PL 1.40, PW/PA 1.49, PW/PB 1.39, PA/PB 0.93, EW/PW 1.35, EL/EW 1.39, EB/EW 0.63, TI/TV 1.02, TL/HW 1.10, relative lengths of antennal segments as follows:— I : II : III : IV : V : VI = 1 : 0.52 : 1.07 : 1.00 : 1.02 : 0.95.

The standard ratios of the specimen from Mt. Maruiwa-dake are as follows: PW/HW 1.40, PW/PL 1.35, PW/PA 1.46, PW/PB 1.35, PA/PB 0.93, EW/PW 1.29, WL/EL 0.72, EL/EW 1.47, EB/EW 0.66.

Complex of *Trichotichnus pacificatorius*

Trichotichnus (Trichotichnus) pacificatorius HABU

[Japanese name: Naga-tsuya-gomokumushi]

(Figs. 33, 35)

Trichotichnus pacificatorius HABU, 1954, Mushi, Fukuoka, **26**: 53–55, pl. 5, fig. A; type locality: Mt. Hiko; 1954, Bull. natn. Inst. agric. Sci., Tokyo, (C), (4): 247, 259–260, fig. 9 (1), pl. 1, fig. 6. — KASAHARA, 1985, Coleopt. Japan Col., Osaka, **2**: 147.

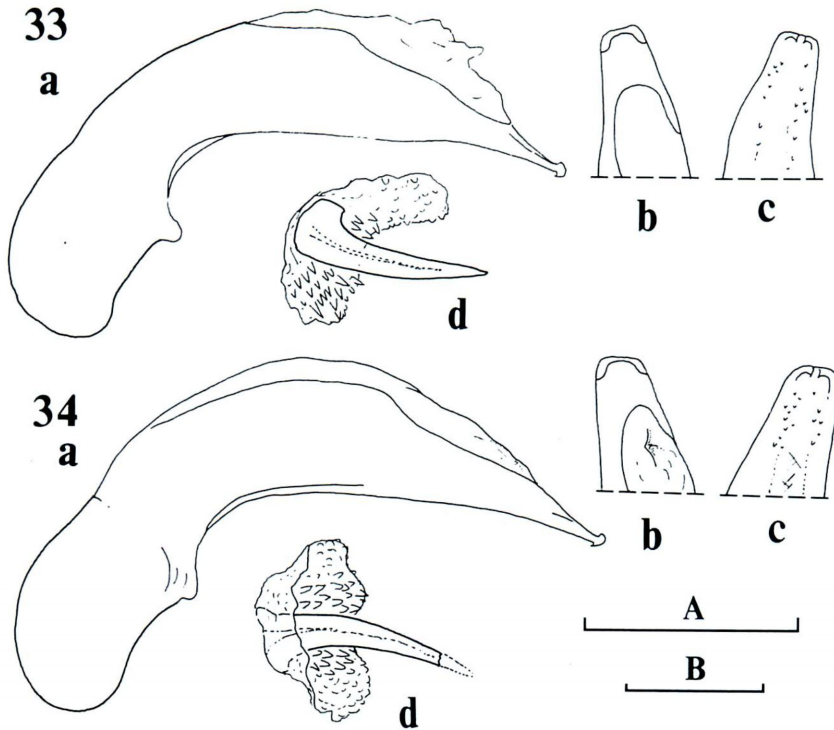
Trichotichnus (Trichotichnus) pacificatorius: HABU, 1961, Bull. natn. Inst. agric. Sci., Tokyo, (C), (13): 134, 150, figs. 37, 57; 1973, Carab. Harpalini in Fauna Japonica, Tokyo, 294, figs. 525, 532, 538, 543, pl. 20–2.

Trichotichnus (s. str.) pacificatorius: N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 123–125, figs. 1, 8, 16, 22.

Diagnosis. Relatively large species; eyes moderately convex; basal foveae of pronotum rather deep; elytra rather elongate; apical part of aedeagus narrow in dorsal view.

Supplementary description. Relative lengths of antennal segments as follows:— I : II : III : IV : V : VI = 1 : 0.58 : 1.08 : 0.98 : 1.02 : 0.92; PW/HW 1.31, PW/PL 1.44, PW/PA 1.38, PW/PB 1.38, PA/PB 1.00, EW/PW 1.28, EL/EW 1.59, EB/EW 0.67, TI/TV 1.17.

Aedeagus with rather small basal part; ventral side of apical lobe longitudinally and slightly concave, and with spinules; dorsal surface of apical lobe rough; apex nar-



Figs. 33–34. Male genital organ of *Trichotichnus (Trichotichnus)* spp. — 33, *T. (T.) pacificatorius* HABU from Mt. Hiko-san; 34, *T. (T.) higonis* MORITA, sp. nov., from Mt. Yamaingiri. — a, Aedeagus, left lateral view; b, apical lobe, dorsal view; c, apical lobe, ventral view; d, copulatory piece. Scale: A – 1 mm for a–c; B – 0.3 mm for d.

rowly bordered, but slightly emarginate at middle in dorsal view. Copulatory piece elongate with large basal part and partially surrounded by moderately sclerotized spinules.

Specimen examined. 1 ♂, Mt. Hiko-san, Fukuoka Pref., 10-X-1949, A. HABU leg. (NAS).

Notes. For comparison with its relatives, I examined only a single specimen of this species. It was already dissected by HABU: the hind wings, the genital organ and the copulatory piece of inner sac were extracted and mounted on the card. Therefore, the drawings shown by myself (Fig. 33) is slightly deformed, but the apical part of aedeagus and the copulatory piece are useful for taxonomic study.

***Trichotichnus (Trichotichnus) higonis* MORITA, sp. nov.**

[Japanese name: Kumamoto-tsuya-gomokumushi]

(Fig. 34)

Diagnosis. Relatively large species; eyes flat; apex of aedeagus widely bordered

in dorsal view.

Description. L: 10.28–12.00 mm. Head as in *T. pacificatorius*, but the eyes are flat. Relative lengths of antennal segments are as follows:— I:II:III:IV:V:VI:XI= 1:0.57:1.09:1.02:1.05:1.04:1.08.

Pronotum as in *T. pacificatorius*, but the reflexed lateral borders are wider; PW/HW 1.32–1.36 (M 1.34) in 4 ♂♂, 1.31–1.36 (M 1.34) in 5 ♀♀; PW/PL 1.38–1.47 (M 1.43) in 4 ♂♂, 1.38–1.47 (M 1.44) in 5 ♀♀; PW/PA 1.38–1.42 (M 1.41) in 4 ♂♂, 1.36–1.42 (M 1.39) in 5 ♀♀; PW/PB 1.33–1.40 (M 1.37) in 4 ♂♂, 1.34–1.38 (M 1.35) in 5 ♀♀; PA/PB 0.96–0.99 (M 0.97) in 4 ♂♂, 0.95–1.01 (M 0.98) in 5 ♀♀; EW/PW 1.28–1.30 (M 1.29) in 4 ♂♂, 1.23–1.32 (M 1.28) in 5 ♀♀.

Elytra as in *T. pacificatorius*, but the shoulders are more widely rounded; WL/EL 0.65; EL/EW 1.47–1.57 (M 1.52) in 4 ♂♂, 1.47–1.56 (M 1.51) in 5 ♀♀; EB/EW 0.64–0.65 (M 0.65) in 4 ♂♂, 0.64–0.68 (M 0.66) in 5 ♀♀.

TI/TV 0.98–1.07 (M 1.00) in 3 ♂♂ and 4 ♀♀; TL/HW 1.00–1.04 (M 1.03) in 4 ♂♂, 0.86–0.94 (M 0.91) in 5 ♀♀; MTL/FL 0.39–0.45 (M 0.41) in 4 ♂♂ and 4 ♀♀.

Aedeagus elongate, and with rather small basal part; ventral side of apical lobe longitudinally and weakly concave, and with spinules; dorsal side of apical lobe rough in the specimens from Mt. Yamaingiri, spinous in the specimen from Nihonsugi; viewed dorsally, apex widely bordered at the sides. Copulatory piece elongate with large basal part.

Type series. Holotype: ♂, Mt. Yamaingiri, 12~13-IX-1992, S. MORITA leg.

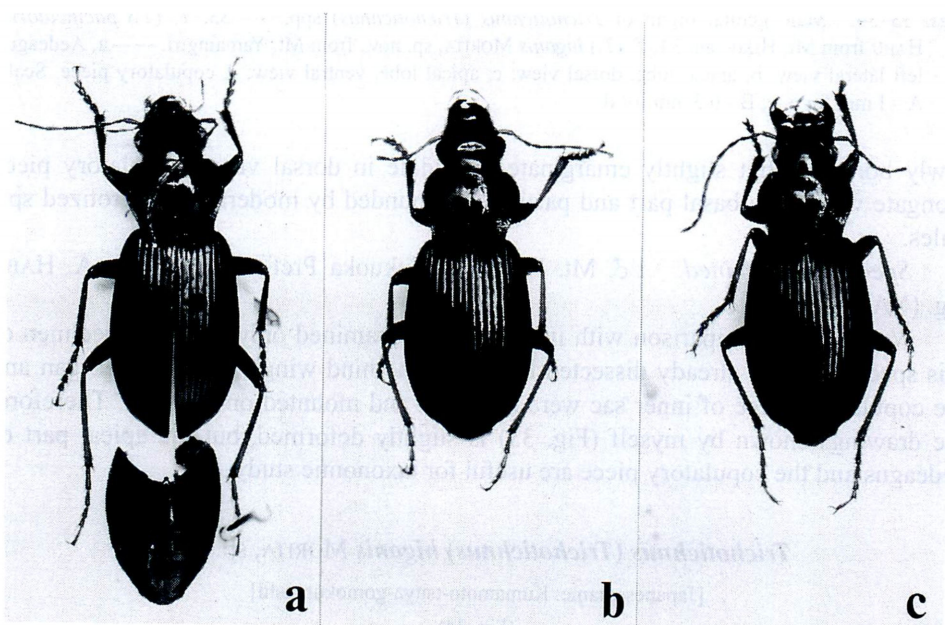


Fig. 35. *Trichotichnus (Trichotichnus)* spp. — a, *T. (T.) pacificatorius* HABU from Mt. Hiko-san; b, *T. (T.) ishidai* N. ITO from Mt. Kongô-zan; c, *T. (T.) narukawai* MORITA, sp. nov., from Shirafune-tôge.

(NSMT); allotype: ♀, same data as for the holotype. Paratypes: 3 ♂♂, 4 ♀♀, Mt. Yamain-giri, 12~13-IX-1992, S. MORITA leg.; 1 ♂, Mt. Kunimi-dake, 1,500 m alt., 9-IX-1992, Y. KUROSA leg.; 2 ♂♂, Shiya-tôge, 1,400 m alt., 18-IX-1992, Y. KUROSA leg.; 1 ♀, Hagi, 8-X-1994, M. NISHIDA leg.; 1 ♂, 1 ♀, Nihonsugi, 9-X-1994, M. NISHIDA leg.; 1 ♂, 1 ♀, Hagi, 8-IX-1996, M. NISHIDA leg.; 1 ♀, Mt. Hakuchô-zan, 8~9-IX-1996, M. NISHIDA leg.; 1 ♀, Mt. Hakuchô-zan, 28-IX-1996, M. NISHIDA leg.

Localities. Mt. Yamaingiri, Nihonsugi, Hagi and Mt. Hakuchô-zan, Izumi-mura; Shiya-tôge, Yabe, Kumamoto Pref.; Mt. Kunimi-dake, Shiiba-son, Miyazaki Prefecture.

Range. Kyushu District (Kumamoto Pref., Miyazaki Pref.), West Japan.

***Trichotichnus (Trichotichnus) shikokuensis* KASAHARA et Y. ITÔ**

[Japanese name: Shikoku-tsuya-gomokumushi]

Trichotichnus (Trichotichnus) shikokuensis KASAHARA et Y. ITÔ, 1995, Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (4): 259, 262, 263, 264, figs. 2, 4; type locality: Meoto-ike, Mt. Tsurugi-san. — N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 123, 132.

Diagnosis. Eyes moderately convex; hind wings rather strongly reduced; apical lobe of aedeagus moderately rounded in dorsal view; apex bordered above.

Range. Shikoku (Tokushima Pref., Kôchi Pref., Ehime Pref.), West Japan.

Notes. I have not seen this species. A careful observation is required for the ventral surface of the aedeagus.

***Trichotichnus (Trichotichnus) ishidai* N. ITO**

[Japanese name: Ishida-naga-tsuya-gomokumushi]

(Figs. 35–36)

Trichotichnus (Trichotichnus) ishidai N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 123, 125, figs. 2, 9, 9 a, c, 17; type locality: Mt. Kongo [sic].

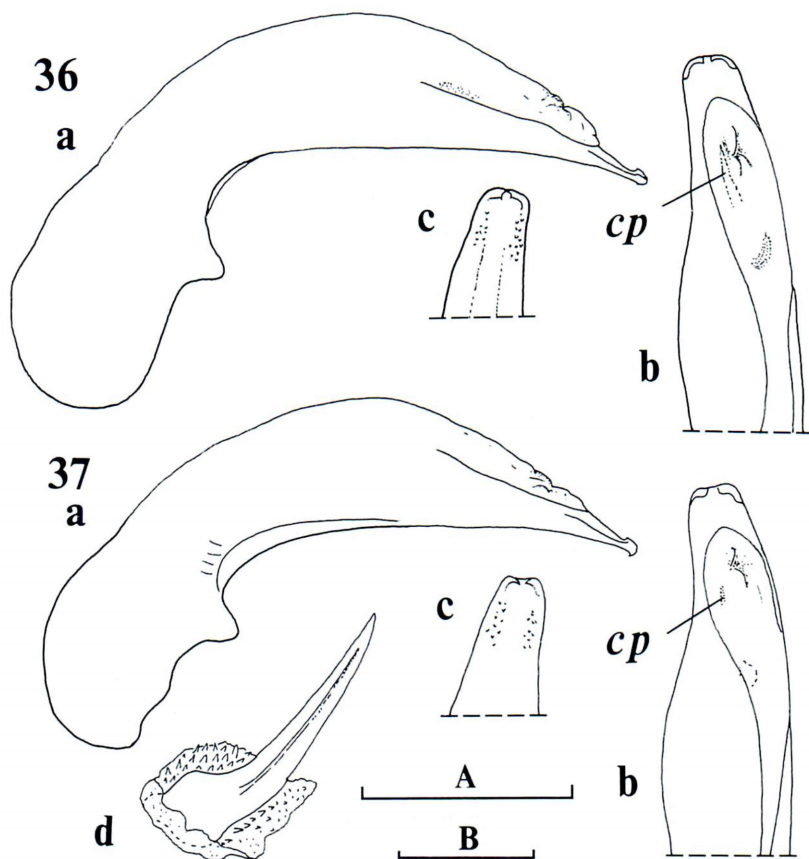
Diagnosis. Apical border of aedeagus interrupted at middle in dorsal view; copulatory piece relatively large.

Supplementary description. WL/EL 0.59. Aedeagus elongate; right wall of aedeagus high at apical 1/3; ventral surface with obtuse spinules at apical part.

Specimens examined. 1 ♀, Mt. Iwawaki-san, Osaka, 14-X-1981, S. MORITA leg.; 2 ♂♂, Mt. Kongô-zan, Chihayaakasaka, 12-VI-1988, Y. KUROSA leg.

Range. Kinki District (Osaka Pref.), Central Japan.

Notes. Since only two males are available for this study, their copulatory pieces have not been examined. Judging from the drawing given in its original description, the basal part of copulatory piece has a mat of minute spinules as in the case of *T. pacificatorius*.



Figs. 36–37. Male genital organ of *Trichotichnus (Trichotichnus)* spp. — 36, *T. (T.) ishidai* N. ITO from Mt. Kongō-zan; 37, *T. (T.) narukawai* MORITA, sp. nov., from Shirafune-tōge. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, apical lobe, ventral view; d, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A – 1 mm for a–c; B – 0.3 mm for d.

***Trichotichnus (Trichotichnus) narukawai* MORITA, sp. nov.**

[Japanese name: Narukawa-tsuya-gomokumushi]

(Figs. 35, 37)

Trichotichnus (s. str.) *ishidai* N. ITO, 1996, Ent. Rev. Japan, Osaka, **51**: 123, 125, figs. 2, 9, 9 a, c, 17 [partim].

Diagnosis. Apical part of aedeagus slightly emarginate; viewed ventrally, apex of aedeagus sharply dentate.

Description. L: 10.29–11.14 mm. Body black; appendages brown; relative lengths of antennal segments as follows:— I: II: III: IV: V: VI = 1: 0.49: 0.96: 1.01: 0.92: 0.96.

PW/HW 1.39–1.44 (M 1.41) in 3 ♂♂, sides of pronotum strongly arcuate in front,

then convergent posteriad and slightly sinuate before hind angles, which are acute; PW/PL 1.40–1.47 (M 1.44), PW/PA 1.39–1.48 (M 1.44), PW/PB 1.29–1.34 (M 1.31), PA/PB 0.87–0.96 (M 0.91) in 3 ♂♂.

Elytral intervals slightly convex and hardly punctate; EL/EW 1.43–1.46 (M 1.44), EB/EW 0.64–0.67 (M 0.66) in 3 ♂♂; WL/EL 0.61–0.65; TI/TV 1.00, 1.02, TL/HW 1.10, 1.19 in 2 ♂♂; MTL/FL 0.39–0.43 (M 0.41) in 3 ♂♂.

Aedeagus robust; apex widely and strongly bordered, slightly emarginate at middle; ventral side of apex sharply dentate; copulatory piece elongate with large basal part and partially surrounded by a mat of moderately sclerotized spinules.

Type series. Holotype: ♂, 20–IV–1980, N. NARUKAWA leg. (NSMT). Allotype: ♀, same data as for the holotype. Paratypes: 1 ♂, 5–VII–1979, N. NARUKAWA leg.; 1 ♂, 20–IV–1980, N. NARUKAWA leg.

Type locality. Shirafune-tôge, Fujiwara-chô, Mie Prefecture.

Range. Kinki District (Mie Pref.), Central Japan.

Notes. In general appearance, shape of pronotum and mode of elytral surface, this new species resembles *T. isamutanakai*, and the two can be distinguished with certainty only by the length of copulatory piece.

Trichotichnus (Trichotichnus) isamutanakai N. ITO

[Japanese name: Tanaka-naga-tsuya-gomokumushi]

Trichotichnus (Trichotichnus) isamutanakai N. Ito, 1996, Ent. Rev. Japan, Osaka, **51**: 123, 127, figs. 5, 10, 18; type locality: Kibune.

Diagnosis. “This species is similar to *T. ishidai*, but is distinguished from the latter by the pronotum more strongly contracted behind and with basal angles not produced laterad and minutely toothed at tips, the elytra not punctate, and the aedeagus bearing much shorter sclerite on inner sac.”

Notes. I have not seen this species.

Trichotichnus (Trichotichnus) ishikawai KASAHARA

[Japanese name: Ryûtô-tsuya-gomokumushi]

(Figs. 38–39)

Trichotichnus (Trichotichnus) ishikawai KASAHARA, 1992, Elytra, Tokyo, **20**: 28–30, figs. 9–10; type locality: Mt. Ryûtô-zan.

Diagnosis. Basal foveae of pronotum deep; aedeagus robust; ventral margin of aedeagus moderately arcuate in lateral view; copulatory piece very slender.

Specimens examined. 5 ♂♂, 7 ♀♀, Abe-tôge, Shizuoka Pref., 19–20–IX–1980, S. MORITA leg.; 1 ♂, 1 ♀, Mt. Ryûtô-zan, Shizuoka Pref., 7–X–1992, S. KASAHARA leg.; 1 ♂, Mt. Minobu-san, Yamanashi Pref., 3–4–IX–1983, S. MORITA leg.; 1 ♂, Shiokawa, Ooshika-mura, Nagano Pref., 13–VI–1993, N. YOSHIZAWA leg.; 3 ♂♂, Hodonooike,

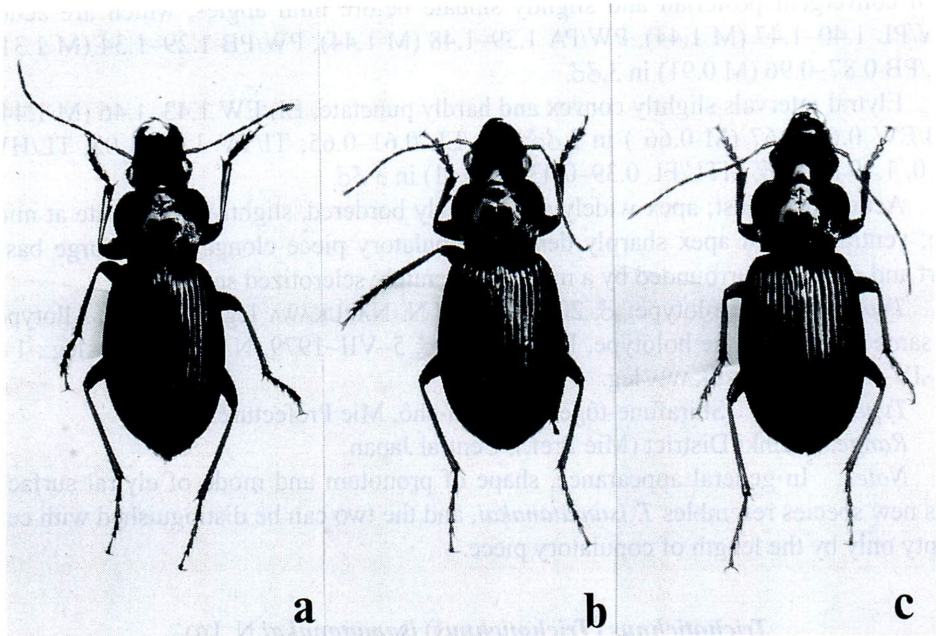


Fig. 38. *Trichotichnus (Trichotichnus)* spp. — a, *T. (T.) asper* MORITA, sp. nov., from Mt. Akaguna-yama; b, *T. (T.) hayakawai* MORITA, sp. nov., from Tobira-onsen; c, *T. (T.) ishikawai* KASAHARA from Mt. Ryûtô-zan.

Kami-mura, Nagano Pref., 3–VII–1993, N. YOSHIZAWA leg.; 1 ♂, same locality, 15–IX–1993, N. YOSHIZAWA leg.; 1 ♂, Mt. Toyoguchi-yama, Ooshika-mura, Nagano Pref., 5–VII–1993, N. YOSHIZAWA leg.; 1 ♂, same locality, 25–VII–1993, N. YOSHIZAWA leg.

Range. Chûbu District (Shizuoka Pref., Yamanashi Pref., Nagano Pref.), Central Japan.

***Trichotichnus (Trichotichnus) asper* MORITA, sp. nov.**

[Japanese name: Jôshû-tsuya-gomokumushi]

(Figs. 38, 40)

Diagnosis. Body elongate; sides of pronotum strongly arcuate; aedeagus elongate; apex of aedeagus heavily bordered at the sides in dorsal view; copulatory piece very small.

Description. L: 10.14–10.71 mm. Body black; appendages brown; head moderately convex; eyes weakly convex; frontal furrows very shallow; microsculpture composed of polygonal or wide meshes in ♂, of wide meshes in ♀; PW/HW 1.39–1.43 (M 1.41) in 3 ♂♂, 1.38, 1.43 in 2 ♀♀ from Mt. Akaguna-yama. Relative lengths of antennal

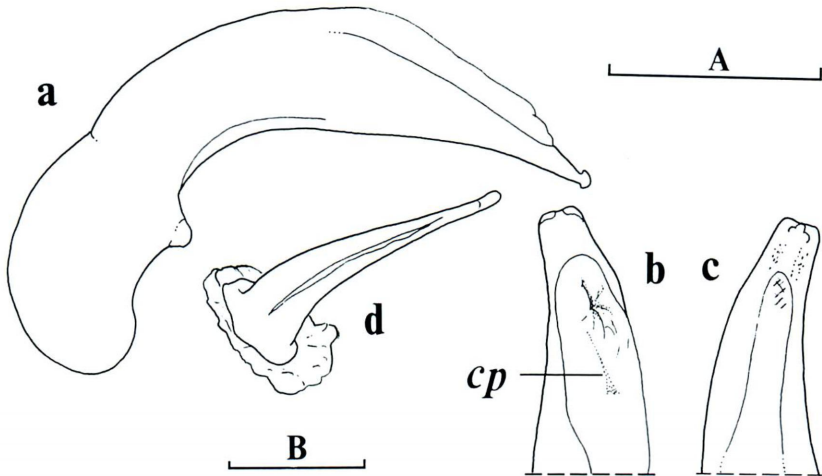


Fig. 39. Male genital organ of *Trichotichnus (Trichotichnus) ishikawai* KASAHARA from Mt. Toyoguchi-yama. — a, Aedeagus, left lateral view; b, apical part of aedeagus, dorsal view; c, apical part of aedeagus, ventral view; d, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A—1 mm for a–c; B—0.3 mm for d.

segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.53 : 1.07 : 1.02 : 1.02 : 1.00 : 1.06.

Pronotum as in *T. ishikawai*, but the sides are more strongly arcuate and more strongly convergent posteriad, and the basal parts are more coarsely punctate; PW/PL 1.34–1.39 (M 1.36) in 3 ♂♂, 1.37, 1.41 in 2 ♀♀; PW/PA 1.49–1.50 (M 1.49) in 3 ♂♂, 1.44, 1.46 in 2 ♀♀; PW/PB 1.35–1.39 (M 1.37) in 3 ♂♂, 1.35, 1.41 in 2 ♀♀; PA/PB 0.91–0.94 (M 0.92) in 3 ♂♂, 0.94, 0.96 in 2 ♀♀.

Elytra as in *T. ishikawai*, but the shoulders are distinct, the surface is more convex, the intervals are flat and the apices are short and rounded; EW/PW 1.28–1.32 (M 1.29) in 3 ♂♂, 1.31, 1.33 in 2 ♀♀; EL/EW 1.46–1.54 (M 1.50) in 3 ♂♂, 1.46, 1.47 in 2 ♀♀; EB/EW 0.64–0.67 (M 0.65) in 3 ♂♂, 0.63, 0.65 in 2 ♀♀. WL/EL 0.62.

Protibiae usually without inner sulcus in ♂, with inner sulcus in ♀; TI/TV 1.04–1.14 (M 1.09) in 4 ♂♂, 1.18 in 1 ♀; TL/HW 1.05–1.17 (M 1.12) in 4 ♂♂, 1.00 in 1 ♀; MTL/FL 0.44–0.46 (M 0.45) in 4 ♂♂ and 1 ♀.

Aedeagus elongate; viewed laterally, ventral margin almost straight or slightly arcuate; apical lobe slightly inclined to the right in dorsal view; apex wide, moderately bordered at the sides and narrowly so at middle in dorsal view; apical lobe of ventral surface with microscopical spinules; apex weakly bordered at the sides on the ventral side, and obtusely notched at middle, each side of the notch being obtuse; copulatory piece very small.

Type series. Holotype: ♂, allotype: ♀, Mt. Akaguna-yama, 19–IX–1992, S. MORITA leg. (NSMT). Paratypes: 3 ♂♂, 3 ♀♀, Mt. Akaguna-yama, 19–IX–1992, S. MORITA leg.; 2 ♂♂, 3 ♀♀, Mt. Hikage-yama, 19–IX–1992, S. MORITA leg.

Localities. Mt. Akaguna-yama, 1,400 m alt., Fujioka-shi; Mt. Hikage-yama,

1,180 m alt., Ueno-mura, Gunma Prefecture.

Range. Kwantô District (Gunma Pref.), Central Japan.

Notes. This and the following species can be regarded as forming a small group within the *pacificatorius* complex, mainly characterized by the elongate aedeagus and the structure of its apex on the ventral side.

***Trichotichnus (Trichotichnus) hayakawai* MORITA, sp. nov.**

[Japanese name: Tobira-tsuya-gomokumushi]

(Figs. 38, 41)

Diagnosis. Apex of aedeagus thick and heavily bordered.

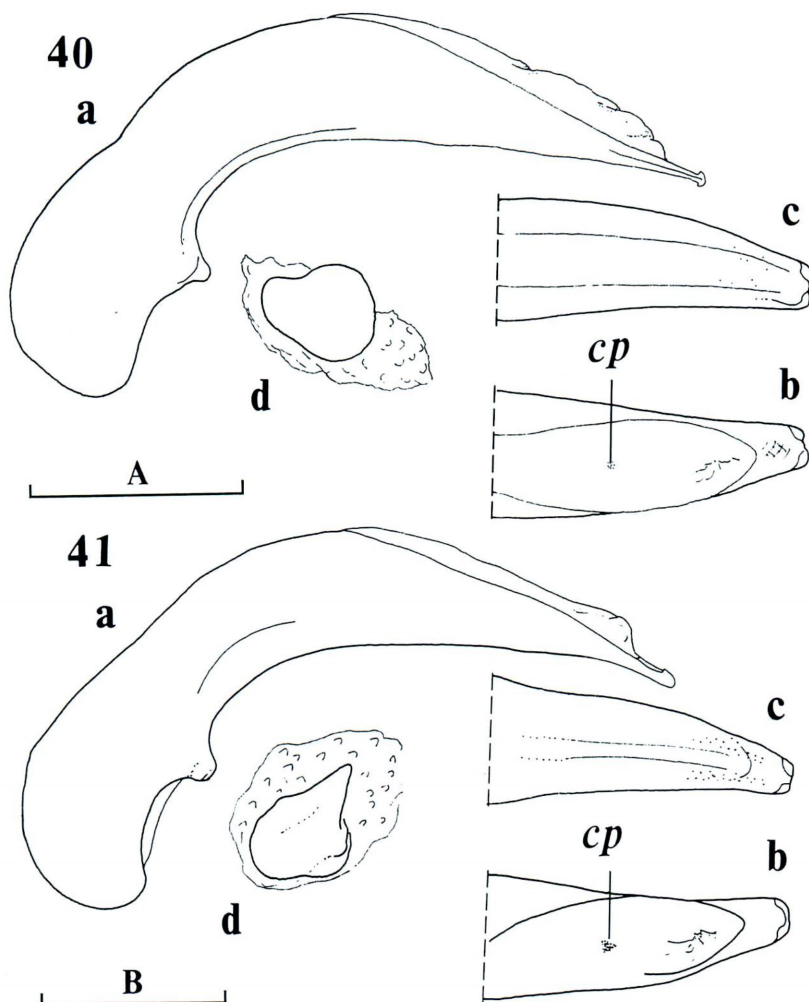
Description. L: 9.57–10.86 mm. Body black; legs reddish brown to brown; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI = 1 : 0.51 : 1.01 : 0.98 : 0.98 : 0.98 : 1.10.

Pronotum as in *T. asper*; PW/HW 1.35–1.49 (M 1.41) in 5 ♂♂, 1.34–1.41 (M 1.39) in 5 ♀♀; PW/PL 1.37–1.43 (M 1.40) in 5 ♂♂, 1.33–1.44 (M 1.38) in 5 ♀♀; PW/PA 1.48–1.52 (M 1.50) in 5 ♂♂, 1.38–1.45 (M 1.42) in 5 ♀♀; PW/PB 1.32–1.40 (M 1.36) in 5 ♂♂, 1.36–1.42 (M 1.38) in 5 ♀♀; PA/PB 0.90–0.92 (M 0.91) in 5 ♂♂, 0.94–0.98 (M 0.96) in 5 ♀♀.

EW/PW 1.24–1.32 (M 1.28) in 5 ♂♂, 1.31–1.37 (M 1.34) in 5 ♀♀; WL/EL 0.62–0.68; EL/EW 1.43–1.53 (M 1.49) in 5 ♂♂, 1.40–1.49 (M 1.45) in 5 ♀♀; EB/EW 0.66–0.69 (M 0.67) in 5 ♂♂, 0.62–0.66 (M 0.64) in 5 ♀♀; TI/TV 1.02–1.24 (M 1.13) in 3 ♂♂ and 4 ♀♀; TL/HW 1.11–1.15 (M 1.14) in 3 ♂♂, 0.94–1.04 (M 1.00) in 4 ♀♀; MTL/FL 0.41–0.43 (M 0.42) in 4 ♂♂ and 5 ♀♀.

Aedeagus as in *T. asper*, but the apical lobe is thick and the apex is strongly bordered on the ventral side; copulatory piece small.

Type series. Holotype: ♂, 10–IX–1992, H. HAYAKAWA leg.; allotype: ♀, 4–VII–1992, H. HAYAKAWA leg. (NSMT). Paratypes: 1 ♀, 16–VIII–1985, N. ITO leg.; 1 ♂, 10–VI–1992, H. HAYAKAWA leg.; 1 ♀, 2–VII–1992, H. HAYAKAWA leg.; 5 ♀♀, 29–VII–1992, H. HAYAKAWA leg.; 1 ♂, 2 ♀♀, 10–VIII–1992, H. HAYAKAWA leg.; 2 ♀♀, 19–VIII–1992, H. HAYAKAWA leg.; 1 ♀, 20–VIII–1992, H. HAYAKAWA leg.; 1 ♂, 2 ♀♀, 29–VIII–1992, H. HAYAKAWA leg.; 4 ♂♂, 2 ♀♀, 10–IX–1992, H. HAYAKAWA leg.; 1 ♂, 20–IX–1992, H. HAYAKAWA leg.; 2 ♂♂, 27–V–1993, H. HAYAKAWA leg.; 3 ♀♀, 24–VI–1993, H. HAYAKAWA leg.; 2 ♀♀, 25–VI–1993, H. HAYAKAWA leg.; 1 ♀, 27–VI–1993, H. HAYAKAWA leg.; 2 ♂♂, 2 ♀♀, 2–VII–1993, H. HAYAKAWA leg.; 1 ♂, 1 ♀, 8–VII–1993, H. HAYAKAWA leg.; 1 ♂, 12–VII–1993, H. HAYAKAWA leg.; 1 ♀, 13–VII–1993, H. HAYAKAWA leg.; 2 ♀♀, 14–VII–1993, H. HAYAKAWA leg.; 1 ♀, 28–VII–1993, H. HAYAKAWA leg.; 1 ♀, 4–VII–1994, H. HAYAKAWA leg.; 4 ♀♀, 10–VII–1994, H. HAYAKAWA leg.; 2 ♀♀, 17–VII–1994, H. HAYAKAWA leg.; 1 ♂, 21–VII–1994, H. HAYAKAWA leg.; 2 ♂♂, 31–VII–1994, H. HAYAKAWA leg.; 1 ♂, 2 ♀♀, 16–VIII–1994, N. ITO leg.; 2 ♂♂, 1 ♀♀, 21–VIII–1994, H. HAYAKAWA leg.; 2 ♀♀, 25–VIII–1994, H. HAYAKAWA leg.; 1 ♂, 2 ♀♀, 14–IX–1994, H. HAYAKAWA leg.; 1 ♂, 3 ♀♀, 13–IX–1995, H.



Figs. 40–41. Male genital organ of *Trichotichnus* (*Trichotichnus*) spp. — 40, *T. (T.) asper* MORITA, sp. nov., from Mt. Akaguna-yama; 41, *T. (T.) hayakawai* MORITA, sp. nov., from Tobira-onsen. — a, Aedeagus, left lateral view; b, apical part, dorsal view; c, apical part, ventral view; d, copulatory piece; cp, copulatory piece, showing position in aedeagus. Scale: A—1 mm for a–c; B—0.2 mm for d.

HAYAKAWA & N. ITO leg.

Type locality. Tobira-onsen, 1,100–1,300 m alt., Matsumoto-shi, Nagano Prefecture.

Range. Chûbu District (Nagano Pref.), Central Japan.

Notes. This species is closely allied to the preceding species. It is, however, distinguished from the latter by the following points: 1) eyes more convex, 2) genae less convex, 3) sides of pronotum usually strongly arcuate in front, 4) basal foveae shall-

lower, 5) elytral shoulders less prominent, 6) elytra wider, and 7) aedeagal apical lobe thicker.

Finally, a brief account of *Trichotichnus tsurugiyamanus* HABU (1959, p. 131) is given below.

It was described from Shikoku, West Japan based on a single female. Describing two new species from Shikoku, West Japan, KASAHARA and Y. ITÔ (1995, p. 259) regarded it as a member of the *leptopus* group (HABU, 1973, p. 282). Very recently, a single male of this species was recorded by N. ITO (1996, p. 132). He also placed it in the same group. Judging from the body form and the structure of the basal foveae of the pronotum given in the original description, it is possible that it belongs either to the *congruus* group (HABU, 1973, p. 248) or to the *tranquillus* complex.

要 約

森田誠司：日本産ツヤゴモクムシ群について。—— Nikkôより記載されたツヤゴモクムシ *Trichotichnus leptopus* (BATES)の後基準標本が直接に調べられることなく、HABU, KASAHARA, Y. ITÔ, N. ITOなどによって17種に及ぶ新種が記載されてきた。しかし、それらはすべてNikkôより遠く離れた産地のものに限られている。後翅が縮小しているため、それぞれの種の分布は局限されていると思われるので、種としての独立性を疑う余地はみあたらない。しかし、基準となるBATESの標本の調査を欠くままでは、この種群の分類の展開は考えられず、そのまま放置できない状況であった。そのため、筆者は数種の正基準標本を含むおよそ800頭におよぶ標本を、6コンプレックス、19既知種、20新種に分類し記載した。最後に、ツルギヤマツヤゴモクムシの所属について、すでにN. Itoにより雄が記録されているが、筆者の見解を述べておいた。

種々ご教示下さり原稿をご校閲下さった上野俊一博士をはじめ、手元の貴重な標本を快くご提供くださった多くの友人のご協力がなければ、この研究は完結し得なかったであろう。本文と重複するが、ここに深く感謝する次第である。

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