Elytra, *Tokyo*, **31** (2): 285–287, November 22, 2003

A New Species of the Genus *Ulorhinus* (Coleoptera, Anthribidae) from Northeast Japan

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Abstract A new species of the anthribid genus *Ulorhinus* is described from Fukushima Prefecture in the northeastern part of Japan under the name of *U. saitoi*. It is related to *U. gokani* MORIMOTO, 1981, from Gunma Prefecture, Central Japan, and *U. akitai* SENOH, 1989, from the Islands of Tsushima, West Japan, but can be distinguished from them by the characteristic pronotum.

Through the courtesy of Mr. Shuji SAITO of Fukushima Prefecture, I have recently had an opportunity to examine a very peculiar anthribid collected by himself from his home ground. After a careful examination, it has become clear that this anthribid is a new species belonging to the genus *Ulorhinus*. It will be described in the present paper.

Before going further, I wish to express my sincere gratitude to Emeritus Professor K. MORIMOTO of Kyushu University for his constant guidance and encouragement, and to Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for kindly reading the original manuscript of the present paper. Deep appreciation is also due to Mr. S. SAITO, for his kindness in providing me with the specimen used in this research.

Ulorhinus saitoi SENOH, sp. nov.

[Japanese name: Munakubo-menaga-higenagazoumushi]

(Figs. 1, 4–6)

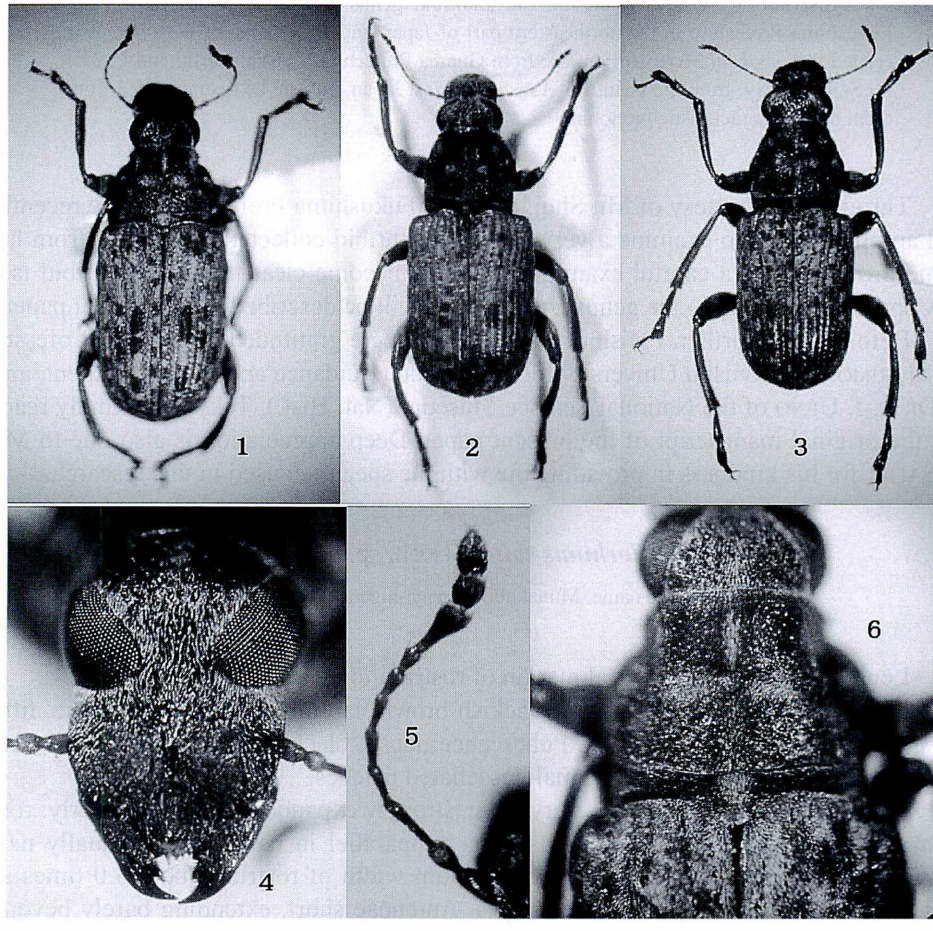
Length: 6.7 mm (from apical margin of rostrum to apices of elytra).

Male. Colour predominantly blackish brown, labrum, maxillae, antennae, fifth tarsal segments and claws lighter. Pubescence dense, black and dark gray; black and dark gray hairs on elytra forming small tessellated patches.

Head strongly punctate; eyes very large, strongly expanded latero-posteriorly; rostrum transverse, 1.8 times as wide as long, subparallel in basal half, gradually narrowed in apical half; disc almost flat; maximum width of rostrum about 3.0 times as wide as the shortest distance between eyes. Antennae short, extending barely beyond the anterior margin of pronotum, basal two segments ovate, 3rd the longest, 8th the shortest, 9th elongated triangular, very thin in basal half, 10th globular, 11th oval, but pointed at apex, proportions in length from 2nd to 11th about 1.4 : 2.4 : 1.4 : 1.2 : 1.2 :

1.0 : 0.8 : 2.2 : 1.2 : 1.9. Mandibles without hairs in basal half.

Pronotum transverse, about 1.34 times as wide as long, widest at middle; basal margin bisinuate; lateral sides strongly convergent in apical fourth; disc convex above; and with four conspicuous depressions before the middle; dorsal transverse carina broadly rounded, and roundly connected with each lateral carina, the latter declivous, extending to apical third of side margin; carinula absent. Scutellum small and rounded. Elytra oblong, about 1.55 times as long as wide, nearly parallel-sided in basal two-thirds, then narrowed posteriorly; basal margin of each elytron somewhat expanded over the base of pronotum; strial punctures small, deep, intervals somewhat elevated, distinctly wider than diameter of strial punctures, subbasal swelling weak. Pygidium subtriangular, vertical, about 1.2 times as wide as long, lateral margins gradually con-



Figs. 1–3. *Ulorhinus* spp. —— 1, *Ulorhinus saitoi* SENOH, sp. nov. (♂, holotype); 2, *U. gokani* MORIMOTO (♂); 3, *U. akitai* SENOH (♂, holotype). —— 4–6. *Ulorhinus saitoi* SENOH, sp. nov. (♂, holotype); 4, head; 5, left antenna, 6, pronotum.

vergent towards broadly rounded apex; disc swollen in apical three-fourths, and with two depressions in subbasal parts.

Prosternum coarse, deeply punctate; metasternum also deeply punctate. Sternites weakly punctate; viewed from side, 1st to basal third of 5th visible sternites conjointly horizontal, apical two-thirds of the 5th slanting. Legs relatively slender; anterior tibia nearly as long as the median which is shorter than the posterior.

Female. Unknown.

Holotype ♂, Moniwa Forestry Road (about 300 m alt.), Iizaka-machi, Fukushima City, Fukushima Prefecture, 2–VII–1998, Shuji SAITO leg. The holotype is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Distribution. Japan (Fukushima Pref.).

Notes. In the dorsal maculation, this species resembles *U. gokani* MORIMOTO, 1981, known from central Honshu (Fig. 2), and *U. akitai* SENOH, 1989, described from the Islands of Tsushima (Fig. 3), but can be distinguished from them by the following characteristics: pronotum transverse, strongly narrowed in apical fourth, and with four conspicuous depressions before the middle; dorsal transverse carina broadly rounded, and roundly connected with each lateral carina, and so on.

The specific name of this new anthribid is given in honour of Mr. Shuji SAITO who offered the valuable specimen for my research.

要　　約

妹尾俊男：福島市から発見された *Ulorhinus* 属ヒゲナガゾウムシの1新種．—— 1998年の夏に福島市飯坂町茂庭林道で，日本ゾウムシ情報ネットワークの斎藤修司氏により，前胸背板に著しい特徴をもつヒゲナガゾウムシが採集された．この種は，群馬県霧積から記載された *Ulorhinus gokani* MORIMOTO, 1981 (Fig. 2)，あるいは対馬から記載された *U. akitai* SENOH, 1989 (Fig. 3) にいくぶん似ているが，前胸背板は横長で，前方1/4は強く狭まり，中央やや前方に4つの顕著なくぼみをもち，さらに前胸背板横隆線は大きく丸まり側隆線につながる，などの特徴により容易に区別することができる．よってこの種を新種と認め，*Ulorhinus saitoi*（和名新称：ムナクボメナガヒゲナガゾウムシ）と命名し，記載した．

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Elytra, *Tokyo*, **31** (2): 288, November 22, 2003

Some Records of Anthribid Beetles (Coleoptera, Anthribidae) from Laos

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Recently Dr. Hiroyuki YOSHITOMI made a collecting trip to Laos and collected 15 specimens of anthribid beetles from the high altitude of Mt. Phu Pan, northeastern Laos. They were submitted to me for taxonomic research. After a careful examination, it became clear that the collection contained nine known and five unidentifiable species. All the collecting data of the specimens examined are as follows: Mt. Phu Pan (1,500–1,800 m in alt.), Ban Saleui, Houaphan Province, northeastern Laos, 28–IV～6–V–2002, H. YOSHITOMI leg.

I wish to thank Dr. Hiroyuki YOSHITOMI of Sapporo, who has always offered anthribid specimens for my research.

Euparius sp., 1♂.
Phloeobius sp., 1♂.
Xylinada adductus (JORDAN), 1♀. Distribution: Laos.
Xylinada annulipes (JORDAN), 1♂. Distribution: Amami Is., Tonkin, Laos.
Xylinada rugiceps (JORDAN), 2♂♂. Distribution: Laos, Cambodia, Thailand.
Xylinada sp. 1, 1♀.
Xylinada sp. 2, 1♀.
Dendrotrogus perfolicornis (FABRICIUS), 1♂. Distribution: Tonkin, Laos.
Sympaector charopus JORDAN, 1♂. Distribution: Laos.
Litocerus sticticus JORDAN, 1♂. Distribution: Formosa, Tonkin, Laos (new record).
Tropideres poecilus JORDAN, 1♂. Distribution: Formosa, Laos (new record).
Tropideres verrucosus JORDAN, 1♀. Distribution: Tonkin, Laos (new record), Assam.
Habrissus omadioides PASCOE, 1♀. Distribution: Laos (new record), Sumatra, Singapore.
Habrissus sp., 1♀.

Elytra, *Tokyo*, **31** (2): 289–299, November 22, 2003

Taxonomic Notes on Clytine Longicorn Beetles (Coleoptera, Cerambycidae) from Korea

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Abstract New or little known clytine longicorn beetles are presented from South Korea. The genus *Perissus* is firstly recorded from the peninsula. *Perissus kimi* sp. nov. is a remarkable new species belonging to the same lineage as *P. kankauensis* SCHWARZER from Taiwan. *Perissus fairmairei* GRESSITT is also related to *P. kankauensis* and newly recorded from the Korean Peninsula. *Xylotrechus atronotatus subscalaris* PIC is rediscovered from Cheju-Do Island off southwestern part of the peninsula. Besides, *Clytus fulvohirticus* PIC is additionally recorded.

Introduction

Although LEE (1987) published an iconographical book for the cerambycid fauna of the Korean Peninsula and recorded 34 species belonging to 12 genera of the clytine beetles (Clytini and Anaglyptini), not a little additional knowledge has been obtained by repeated field surveys mainly made by Korean amateur entomologists in more than the past fifteen years. In the first part of our cooperative paper, we are going to introduce new and little known clytine species from Korea based on the specimens thus collected.

Perissus kimi sp. nov. from Mt. Naejang of Cholabuk-Do is a remarkable new species most probably belonging to the same lineage as *P. kankauensis* SCHWARZER from Taiwan, though having no close relatives within the genus. *Perissus fairmairei* GRESSITT is also a member of the same lineage as *P. kankauensis* and newly recorded from the Korean Peninsula, though it has so far been known to occur widely in southwestern to northeastern China. *Xylotrechus atronotatus subscalaris* PIC is rediscovered from Cheju-Do Island off the southwestern part of the peninsula, which marks the northernmost locality of the range of the species. This subspecies is closer to the nominotypical race from Taiwan than to the two Ryukyuan populations *X. a. angulithorax* GRESSITT and *X. a. generosus* MATSUSHITA. Besides, little known clytine

species, *Clytus fulvohirticus* PIC, is additionally recorded based on a pair of specimens.

Abbreviation. The following abbreviations are used in the descriptions and the depositories of specimens including type series. Description: HW – maximum width of head across eyes, FL – length of frons, FB – basal width of frons, PL – length of pronotum, PW – maximum width of pronotum, PA – apical width of pronotum, PB – basal width of pronotum, EL – length of elytra, EW – humeral width of elytra, M – arithmetic mean. Depository of specimen: NSMT – National Science Museum (Nat. Hist.), Tokyo, TN – T. NIISATO's private collection, SK – S. KOH's one, HK – H. KIM's one.

Xylotrechus atronotatus subscalaris PIC, 1917

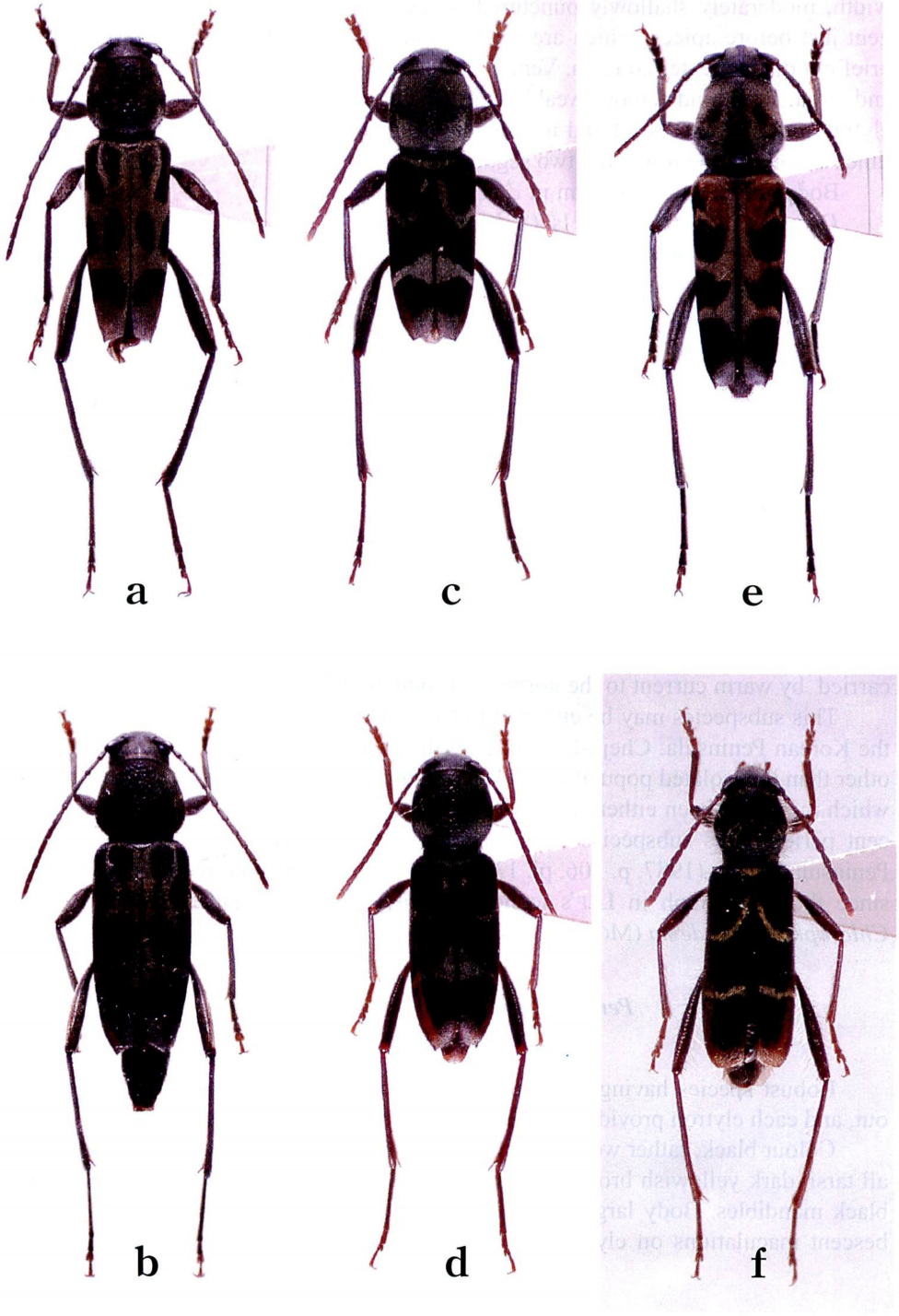
(Fig. 1 e)

Xylotrechus atronotatus var. *subscalaris* PIC, 1916, Mat. Longic., (10), p. 11; type locality: Ile Quelpaert.
Xylotrechus atronotatus subscalaris: MITONO, 1940, Bull. Sch. Agric. For. Taihoku. imp. Univ., (2), p. 92. —— GRESSITT, 1951, Longicornia, **2**, p. 240. —— SEOK, 1970, Ins. Fn. Is. Quelpart, p. 59.

Closest to the nominotypical subspecies from northern Taiwan. Relatively robust subspecies though variable in size. Colour black to dark reddish brown, densely clothed with yellowish gray pubescence; head black, glabrous at median carina on frons; pronotum black, glabrous along median stripe broadened basad and at a pair of rounded spots at sides near middle; elytra largely brownish yellow, each with three black incomplete bands arranged with blackish pubescence as follows: 1) a L-shaped black maculation extending from humerus to basal 2/3, 2) a sinuate band in middle, 3) an inverted L-shaped band in apical 3/10; ventral surface slightly brownish, rather densely with pale white pubescence, partly with dense white pubescence in inner half of mesepisternum, most of metepisternum, hind coxa and on ventrites.

Head large and long, distinctly convex, distinctly wider than apical width of pronotum though fairly narrower than the maximum width of pronotum, with strongly prominent eyes, densely finely punctured; frons strongly emarginate at sides which are distinctly marginate, with a median V-shaped carina distinctly raised and bifurcate in posterior half, extending from apical margin to vertex, then conjoined with a longitudinal narrow carina running from base of occiput; genae a little more than a half the depth of lower eye-lobes. Antennae short, barely reaching basal fifth of elytra in ♂, segment 3 the longest and slightly dilated apicad, terminal segment blunt at the extremity. Pronotum almost as long as wide, slightly narrower than the humeral width of elytra; sides straightly divergent to the maximum width at basal 3/5, the maximum portions roundly angulate, then suddenly convergent to base, which is as wide as apex and distinctly bisinuate on margin; disc strongly convex, highest at middle of basal fourth, rather finely reticulate throughout. Scutellum moderate in size, semicircular, finely

Fig. 1. Clytine cerambycid beetles from South Korea. —— a (holotype ♂), b (allotype ♀), *Perissus kimi* NIISATO et KOH, sp. nov.; c (♂), d (♀), *Perissus fairmairei* GIRESSITT; e, *Xylotrechus atronotatus subscalaris* PIC, ♂; f, *Clytus fulvohirsutus* PIC, ♂.


a
c
e
b
d
f

punctured. Elytra relatively long, 2.1–2.3 (♂) or 2.3 (♀) times as long as the humeral width, moderately shallowly punctured; sides with square humeri, straightly convergent just before apices, which are weakly oblique and slightly arcuate, provided with brief but distinct external teeth. Ventral surface closely and finely punctured. Legs long and stout, with hind femora weakly clavate, fairly exceeding (♂) or not reaching (♀) elytral apices, compressed and moderately swollen in ♂, first hind tarsal segment 2.4 times as long as the following two segments combined.

Body length 11.7–16.1 mm in ♂, 11.5 mm in ♀.

Distribution. Cheju-Do Is. (S. Korea).

Specimens examined. 3♂♂, 1♀, An-Dôk Valley, Cheju-Do Is., off SW Korean Peninsula, Sôgwipo-Shi, Korea, 13–VIII–1994, S.-K. KOH leg. (HK).

Notes. *Xylotrechus atronotatus subscalaris* is similar in facies to the local population of the northern mountain of Taiwan, which is presently considered to be the nominotypical subspecies. Two local populations share with such external characters as the posteriorly broadened pronotum with a pair of lateral black spots, and the enlarged brownish yellow bases of the elytra. However, the Cheju-Do population is clearly separable from the Taiwanese one by the more strongly rounded pronotal sides, and the shorter and largely yellowish elytra, which are distinctly narrowed anteriad. The Ryukyu population of *X. atronotatus* is quite different at least in external characters. Two subspecies from the Ryukyus, *X. a. angulithorax* GRESSITT from both Amami and Okinawa Islands, and *X. a. generosus* MATSUSHITA from the Yaeyama Islands, are identical with the short and broad body with enlarged black and thinly pale pubescent elytra. It is most probable that *X. a. subscalaris* is derived from ancestral populations carried by warm current to the north from southern China or northern Taiwan.

This subspecies may be endemic to Cheju-Do Island off the southwestern part of the Korean Peninsula. Cheju-Do is the northernmost known locality of *X. atronotatus* other than the isolated population of *X. a. angulithorax* in the southern Bosô Peninsula, which may have been either artificially introduced or carried by the sea current at a recent period. This subspecies was also recorded from Jeolla-Bug-Do of the Korean Peninsula by LEE (1987, p. 106, pl. 13, fig. 133). This peninsular record is questionable since the photograph in LEE's iconographical book is a misidentified specimen of *Chlorophorus diadema* (MOTSCHULSKY).

Perissus kimi NIISATO et KOH, sp. nov.

(Figs. 1 a–b & 2)

Robust species having long and stout appendages, grayishly pubescent throughout, and each elytron provided with six isolated black maculations.

Colour black, rather weakly shiny, dark brown in apical six antennal segments and all tarsi, dark yellowish brown at apical margin of clypeus, and mouthparts except for black mandibles. Body largely clothed with grayish pubescence except for black pubescent maculations on elytra; head densely with yellowish gray pubescence, partly

with long pale yellow hairs near mouthparts, the pubescence becoming shorter on occiput; antennae densely with whitish gray pubescence, though the pubescence is slightly yellowish in scape and partly brownish in apical three or four segments; pronotum densely with yellowish gray pubescence as in occiput, almost glabrous in an oblong part along midline; scutellum moderately with yellowish gray pubescence, with dense fringe of the same pubescence along margin; elytron densely with yellowish gray pubescence, though slightly sparser in apical fourth, decorated with five blackish pubescent maculations as follows: 1) an arcuate stripe from humerus to basal third, extending along base towards scutellum, 2) an oblique oblong spot near scutellum slightly bent towards suture, 3) same spot just before middle, slightly bent externally, 4) a small black spot at external margin approximate to (sometimes connected with) the basal arcuate stripe, 5) a semicircular spot near external margin at middle, 6) an arcuate incomplete band at apical fourth, sinuate on anterior margin, mal-defined on posterior one, (the maculations 1), 4) and 5) are connected and form a longitudinal stripe in a female paratype); ventral surface densely with whitish gray pubescence, though almost glabrous at base of mesosternum, partly with yellowish gray one at median triangular part of metasternum and apex of metepisternum, along apical margin of hind coxae.

Male. Head large and rather voluminous, distinctly raised posteriad, narrower than pronotum, rather closely punctured, somewhat rugose at sides of frons, HW/PA 0.96–1.00 (M 0.98), HW/PW 0.78–0.79 (M 0.78); frons quadrate, gently divergent anteriad, slightly raised, with a narrow longitudinal median furrow, FL/FB 0.67–0.77 (M 0.73); clypeus moderate in length, 5/13 the length of basal width; genae deep, nearly equal in the depth of lower eye-lobes, gently divergent ventrad in frontal view; eyes not so large and weakly prominent. Antennae long and stout, reaching apical 2/5 of elytra, moderately compressed in apical six segments; scape moderately raised along external margin, not arcuate, nearly equal in length to segment 4, segment 2 relatively long, a half the length of scape, moderately dilated apicad, segments 3–4 more or less thickened at apices, the latter segment 8/9 the length of the former, segment 5 the longest though only a little longer than segment 3, segments 7–10 weakly dentate at external angles, terminal segment obliquely truncate at apex.

Pronotum large, well expanded and convex, slightly wider than long, widest at basal 2/3, a little wider than the humeral width of elytra, PL/PA 1.11–1.24 (M 1.17), PL/PW 0.93–0.98 (M 0.95), PB/PA 0.84–0.90 (M 0.87), PW/EW 0.9–0.93 (M 0.92), PL/EL 0.36–0.39 (M 0.38); apex nearly transverse or gently arcuate, weakly marginate, distinctly wider than base which is gently sinuate on margin; sides weakly and arcuately divergent to basal 2/5, then suddenly convergent to base, parallel for short distances from both apex and base; disc distinctly convex though almost flattened above, highest at basal fourth, obliquely swollen at sides of basal third, distinctly depressed along basal margin, rather densely asperate on surface except for finely rugose apical part. Scutellum extremely large, complete semicircular, shagreened on surface.

Elytra relatively short and distinctly narrowed apicad, EL/EW 2.29–2.40 (M

2.33); sides with obliquely rounded humeri, slightly and straightly convergent to basal 3/8, then gently arcuately so to apices which are slightly oblique, and provided with brief external teeth; disc moderately convex, slightly depressed just behind scutellum, minutely and closely punctured.

Ventral surface closely and somewhat rugosely punctured; prosternum markedly raised towards the anterior margins of coxal cavities, with prosternal process rather narrow, parallel-sided and concave at middle; abdomen straightly narrowed apicad, nearly twice the length of the basal width, with anal ventrite almost semicircular.

Legs relatively long especially in mid and hind pairs, and fairly stout, with femora compressed and strongly clavate; hind femora reaching elytral apices at apical fifth; hind tarsus with 1st segment 2.7 times as long as the following two segments combined.

Male genital organ small and moderately sclerotized, with median lobe a little less than 1/4 the length of elytra. Sternite 8 1/4 the length of basal width, with apical margin truncate though slightly emarginate near middle, provided with 4–5 long setae at sides. Tergite 8 arcuate at sides, rounded at apex though truncate at middle, rather irregularly provided with numerous setae near apical part. Median lobe relatively long, with fairly broad apical lobe, moderately arcuate, weakly convex; dorsal plate gradually narrowed to apical 3/10, then strongly so to extremity which is bluntly pointed and

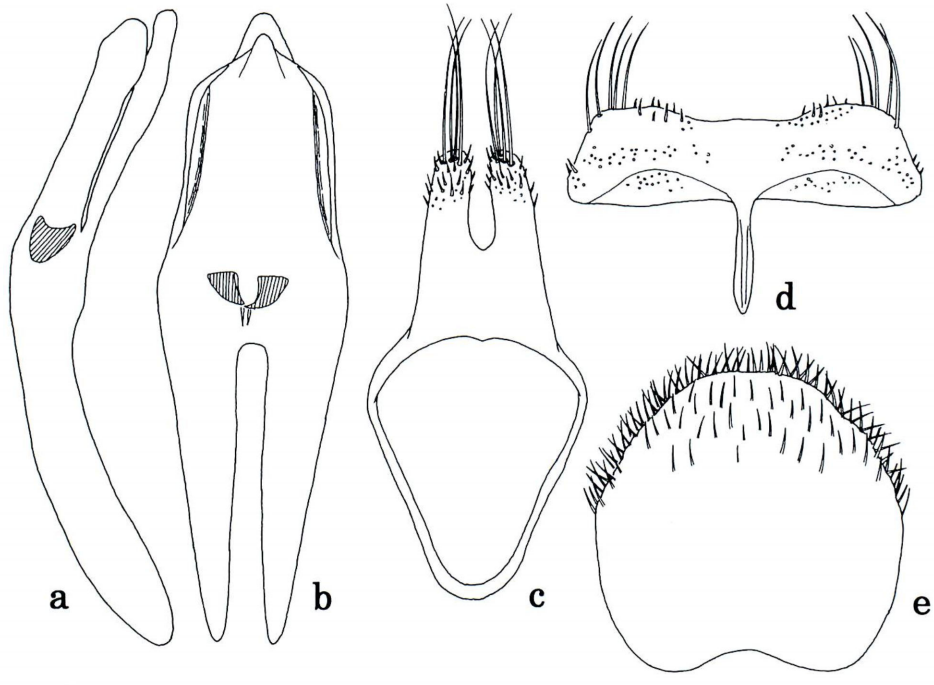


Fig. 2. Male genital organ of *Perissus kimi* NIISATO et KOH, sp. nov.; a, median lobe in lateral view; b, median lobe in dorsal view; c, tegmen in dorsal view; d, sternite 8; e, tergite 8.

strongly convex along mid line; ventral plate with basal 3/5 gently narrowed to apex and strongly reflexed at sides, prolonged and pointed at apex which is distinctly exposed in dorsal view; median struts a little less than 3/5 the length of median lobe. Tegmen 7/10 the length of median lobe, moderately broad; paramere straightly narrowed apicad, deeply divided in 5/9 the length measured along the midline, with each lobe slightly approximate near apex, rounded at extremities, each of which is provided with extremely long four setae and short ones.

Body length 11.5–14.2 mm.

Female. Unlike the male in general appearance. Body short and broad, with simply arcuate elytral sides. Antennae fairly short, reaching basal third of elytra, with apical six segments seemingly widened due to thinner basal segments, terminal segment reduced and bluntly pointed. Legs short and rather slender, with weakly clavate hind femora which barely reach elytral apices. Standard ratios of body parts as follows: HW/PA 0.91–0.95 (M 0.93), HW/PW 0.72–0.73 (M 0.72), FL/FB 0.75–0.77 (M 0.76), PL/PA 1.11–1.21 (M 1.16), PL/PW 0.86–0.95 (M 0.90), PB/PA 0.95–0.98 (M 0.96), PW/EW 0.93–0.97 (M 0.95), PL/EL 0.36–0.38 (M 0.37), EL/EW 2.28–2.30 (M 2.29). Body length 14.0–15.0 mm.

Type series. Holotype ♂, Mt. Naejang, Chôngup-Shi, Chôlla-Buk-Do, Korea, 25–VI–2002, H.-C. KIM leg. (NSMT). Allotype ♀, same data as the holotype (NSMT). Paratypes: 1♂, Mt. Baekyang-san, Jangseong-gun, 28–VIII–2002, H.-C. KIM leg. (HK); 1♂, Mt. Gangcheon-san, Sunchang-gun, 5–VI–2002, same collector (HK); 1♀, same locality and collector but 30–V–2002 (HK). All the specimens of the type series were emerged out from dead trunks of *Celtis sinensis*.

Distribution. Korean Peninsula.

Notes. Perissus kimi sp. nov. no doubt belongs to the same lineage as *P. kankauensis* SCHWARZER from Taiwan, and also as *P. fairmairei* GRESSITT from China and the Korean Peninsula. These *Perissus* species share the asperate globose pronotum, the short broadened hind body and the long stout legs. However, *P. kimi* sp. nov. may be an isolated species with no close relative among the congeners, since its elytra are largely gray pubescent, and the basal and median black bands are divided into oblong spots and short incomplete bands.

All the specimens of the type series of this new species were emerged out from dead trunks of *Celtis sinensis* early to late in the summer of 2002. No adult record in the field has so far been known.

Perissus fairmairei GRESSITT, 1940

(Figs. 1 c–d & 3)

Clytus fuliginosus FAIRMAIRE (nec CHEVROLAT), 1888, Revue Ent., Caen, **7**, p. 145; type locality: Peking.
Clytus fuliginosus var. *semifulvus* PIC, 1916, Mat. Longic., (10), p. 13; type locality: Yongpe (S. China).
Xylotrechus fuliginosus: PIC, 1920, Échange, (36), p.16.
Perissus fairmairei GRESSITT, 1940, Notes Ent. chin., **7**, p.180; type locality: Chahar.

Medium-sized species provided with three whitish gray bands on elytra. Colour almost entirely black, brownish in mouthparts and usually so in appendages. Body densely clothed with black and whitish gray pubescence; head densely with whitish gray pubescence; antennae whitish gray pubescent; pronotum with clearly visible discal asperation due to arrangement by minute yellowish and grayish pubescence; scutellum densely with whitish gray pubescence; elytra densely with brownish pubescence, each with three whitish gray pubescent bands as follows: 1) a L-shaped band starting just behind scutellum and arcuately extended to the middle of disc at basal 3/8, then weakly turned up externally and reaching just before margin at basal fourth, 2) an arcuate narrow transverse band in apical 5/8, broadened near suture, 3) an oblique band in apical fifth, and also supplemented with whitish pubescence on basal margin near scutellum; ventral surface densely with whitish gray pubescence, densely with more whitish pubescence at middle of prosternum, mesepimeron, along apical margins of metasternum and metepisternum, and at sides of ventrites 1–2.

Head wholly convex, slightly wider than apical width of and distinctly narrower than the maximum width of pronotum, finely densely punctured; frons quadrate, almost as long as wide, with a shallow median furrow; genae slightly shallower than lower eye-lobes. Antennae long and slender, reaching apical third (♂) or apical 2/5 (♀) of elytra, with apical six segments weakly serrate at apices in ♂ and slightly compressed in ♂♀, segment 5 the longest though only a little longer than segment 3. Pronotum almost arcuate at sides though parallel-sided near middle, wider than long, distinctly constricted at base, with disc distinctly convex, highest at middle of basal fourth, irregularly asperate throughout. Scutellum large, semicircular. Elytra distinctly short and broad, 2.0–2.2 times as long as the humeral width, well convex, with humeri rounded, weakly and more or less arcuately narrowed to apices which are weakly oblique and provided with brief teeth, densely minutely punctured. Ventral surface closely and finely punctured. Legs long and stout, with femora compressed and moderately swollen in ♂, first hind tarsal segment 2.4 times as long as the following two segments combined.

Male genital organ basically similar to that of *P. kimi* sp. nov. except for the following points: sternite 8 quite transversely truncate at apical margin; tergite 8 slightly emarginate at apical margin, regularly setose; median lobe fairly short, not so broad, with very wide median struts, more weakly produced apical part; paramere narrowly divided in 1/3 the length measured along the midline, with apical setae moderately long.

Body length 11.0 mm in ♂, 9.0 mm in ♀.

Specimens examined. 2♂♂, 1♀, Hongch'ôn, Hongch'ôn-Gun, Kangwon-Do, Korea, 18–V–2002, S.-K. KOH leg.

Distribution. SW. to NE. China; Korean Peninsula (new record).

Notes. *Perissus fairmairei* is a well known species occurring in a wide area between southern China and northeastern China, and belongs to the same lineage as *P. kankauensis* SCHWARZER from Taiwan. It was expected that *P. fairmairei* could be dis-

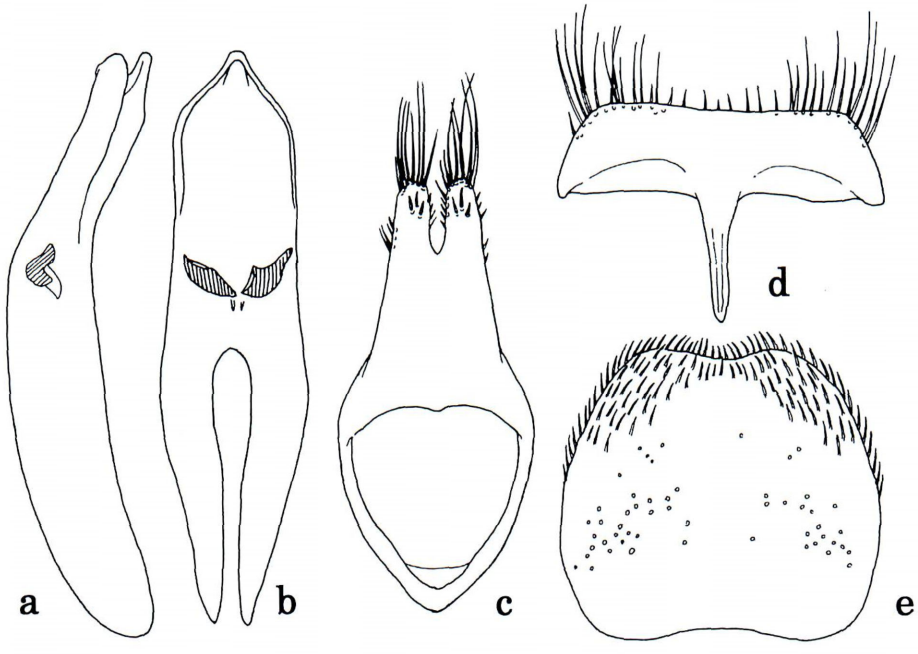


Fig. 3. Male genital organ of *Perissus fairmairei* GRESSITT.; a, median lobe in lateral view; b, median lobe, apical part in dorsal view; c, tegmen in dorsal view; d, sternite 8; e, tergite 8.

covered from the Korean Peninsula, since it has previously been known from the neighboring area at the base of the peninsula. *Perissus fairmairei* and the preceding new species, *P. kimi* sp. nov., are the first representatives of the genus from the Korean Peninsula.

Clytus fulvohirsutus PIC, 1904

(Fig. 1f)

Clytus fulvohirsutus PIC, 1904, Échange, (20), p. 18; type area: SE. Siberia; 1904, Mat. Long., (5), p. 15. —— PLAVILSTSHIKOV, 1940, Fn. SSSR, **22**, pp. 417, 729, fig. 248–9. —— GRESSITT, 1951, Longicornia, **2**, p. 255. —— HEYLOVSKY, 1974, Fragm. Fn. Warszawa, (20), p. 34; locality record: Myo-Hyang-Ni, Ham-Bug. —— TSHEREPANOV & TSHEREPANOV, 1975, Zhuki-drovoseki ivovykh lesov Sibiri, pp. 108–111. —— TSHEREPANOV, 1982, Usachi Severnoi Azii (Cerambycinae: Clytini, Stenaspini), p. 101, figs. 56–58. —— LEE, 1987, Longic. Beetl. Korean Pen., p. 113, pl. 14, fig. 145; locality record: Gangweon-do and Gyeongsang-Bug-Do. (*Glytus* [sic] *fulvohirsutus*).

Specimens examined. 1♀, Mt. Solak, Kangwon-Do, Korea, 11～17–VI–1978, S. SAITO leg.; 1♂, Hongch'ôn, Hongch'ôn-Gun, Kangwon-Do, Korea, 19–V–2002, S.-K. KOH leg.

Distribution. SE. Siberia, Ussuri-Primorie and Amur; NE. China; Korean Peninsula.

Notes. The Far East Asian species, *C. fulvohirsutus* PIC, may not be so common

in the Korean Penisnula, since only three localities in Gangweon-do and Gyeongsang-Bug Do were shown in LEE (1987). We have also recorded the species from the above two localities. *Clytus fulvohirsutus* has no close relatives except *C. nigritulus* KRAATZ (1879, Dt. ent. Z., **23**, p. 109) among the continental members of the genus. However, this species may be a junior synonym of KRAATZ's one according to the opinion by TSHEREPANOV (1982).

Acknowledgements

We wish to express our hearty thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and kindly reading through the original manuscript of this paper. Thanks are also due to Mr. Hyue-Chae KIM of Seoul, and Mr. Shusei SAITO of Japan Wild Research Center, Tokyo, for their kind offer of valuable material used in this study.

要　　約

新里達也・高　尚均：韓国産トラカミキリの分類学的知見．—— 朝鮮半島のカミキリムシ科甲虫は，李　承模 (1987) の総説により暫定的にまとめられているが，それ以降15年以上の期間に，標本の再検討やフィールド調査などにより，追加および訂正すべき知見が数多く判明しつつある．同総説では，広義のトラカミキリ類は12属34種の分布が記録されているが，われわれの最近の調査により，新種を含む2種が韓国から新たに発見されている．これらについて，本論文のなかで命名・記載および新記録を行なった．

1)　*Xylotrechus atronotatus subscalaris* PIC

朝鮮半島南西の済州島に分布するムネモンアカネトラカミキリの最北の地域集団である．本種の既知北限産地は，比較的最近進入したと推定される本州の房総半島南部を例外とすれば，琉球の奄美群島が知られている．しかしながら，済州島の個体群は，上翅斑紋パタンを含む外観が，琉球列島の奄美・沖縄亜種 *X. a. angulithorax* および八重山亜種 *X. a. generosus* よりもむしろ台湾北部の基亜種とされる集団に非常によく似ている．済州島の個体群は，おそらく南シナ海を北上する暖流伝いに，台湾北部あるいは中国大陸南部から直接進入したのであろう．

2)　*Perissus kimi* NIISATO et KOH, sp. nov.

本新種は，チビトラカミキリ属のなかでは，強く鮫肌上の背面をもつ球形の前胸背板，短く幅広い体後半部，太く長い肢などの特徴から，台湾のカンコウチビトラカミキリと同一群に所属すると考えられる．ただし，上翅斑紋は特徴的で，全体に灰色微毛が広がり，黒紋は分断された帯紋や円紋として認められる．台湾のカンコウチビトラカミキリの近縁種群には，このような特異的な斑紋をもつ種は知られておらず，現時点の知見では直接の類縁関係は明らかではない．

3)　*Perissus fairmairei* GRESSITT

中国東北部から記載された種だが，広東省など中国南部にかけて広く分布する．これまで朝鮮半島からは未発見であったが，今回，同半島から新たに記録される種である．前新種と同様に，台湾のカンコウチビトラカミキリと同一種群にあることは明らかである．なお，前種とと

もにチビトラカミキリ属*Perissus*が朝鮮半島から記録されるのは今回が初めてのことである．

4) *Clytus fulvohirsutus* Pic

極東アジアの大陸側に分布するキンケトラカミキリ属*Clytus*の一種であるが，朝鮮半島では採集例は少ない．今回，新たに2採集例を記録した．なお．Tsherepanov (1982) によれば，本種は中国北部より記載された*C. nigritulus* Kraatzの下位同物異名の可能性があるという．

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Elytra, *Tokyo*, **31** (2): 300, November 22, 2003

A *Stenus* Species (Coleoptera, Staphylinidae) Occurring in the Intertidal Zone

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Almost a dozen species of staphylinid beetles have been known in Japan as intertidal inhabitants. So far as we are aware, however, *Stenus* species from such habitats have not been reported until recently (cf. KAWAKAMI & INAHATA, 2000). Generally speaking, they are either litter dwellers or riparian inhabitants of inland waters. Incidentally, no stenines are recorded in MOORE and LEGNER (1976), though insufficiency of their data is admitted by the authors themselves. In the present brief note, we are going to record *Stenus* (*Stenus*) *melanarius* STEPHENS found in the intertidal zone. The collecting data are as follows: 7 exs., Senami-onsen (sand beach in front of a hotel), Murakami-shi, Niigata Pref., Central Japan, 5–V–2000, M. NISHIKAWA leg.; 2 exs., Majima (sand beach), Murakami-shi, same date and collector; 2 exs., Nishibanda (rock reefs), Banda, Tateyama-shi, Chiba Pref., Central Japan, 18–V–1999, H. KAMEZAWA leg. (deposited in NAOMI's collection).

The specimens from Senami-onsen were found under a wooden board washed ashore by high tide and the Majima ones were obtained from under seaweeds newly washed ashore on the beach, which is distant for about 200 m and 1.2 km from backward terrace and the nearest river, respectively. Judging from their behavior on the beaches and the obtained number of the specimens, it seems to the collector that the collecting sites should be regarded not as an accidental habitat but as one of the natural habitats of the species, at least in those parts of Japan. The specimens from Nishibanda were found together with many individuals of *Laius asahinai* NAKANE (Coleoptera, Melyridae) on the surface of rock reefs covered with balanid crustaceans.

We wish to express our hearty thanks to Dr. Shun-Ichiro NAOMI not only for his determination of the species but also for his kind suggestions.

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Elytra, *Tokyo*, **31** (2): 301–306, November 22, 2003

A New *Necydalis* Species (Coleoptera, Cerambycidae) Discovered on Mt. Phang Si Pang of Northwestern Vietnam

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Abstract A new necydaline species belonging to the group of *N. nanshanensis* is described from the alpine zone of Mt. Phang Si Pang in northwestern Vietnam. It has a closer relationship in general features to *N. fujianensis* from South China and *N. nanshanensis* from Taiwan than to *N. shinborii* from northern Vietnam.

The necydaline fauna of northern Vietnam has been rapidly clarified by Japanese entomologists since 1996 (Takakuwa & Niisato, 1996; Niisato, 1998 a–c). Total seven congeners including four endemic species have so far been recorded only from Mt. Tam Dao of Vinh Phu Province. It has been expected that additional *Necydalis* species will be found in other areas of Vietnam. Recently, we were able to examine a peculiar necydaline species doubtless belonging to the group of *N. nanshanensis*, which was collected from the alpine zone of Mt. Phang Si Pang in northwestern Vietnam. After a comparative examination of all the known members of the species-group, it becomes evident that the species in question is not only a new member of the group but also has a closer relationship to *N. fujianensis* from South China and *N. nanshanensis* from Taiwan than to *N. shinborii* from northern Vietnam. We are therefore going to describe it as a new species in the following lines. The abbreviations used in the description are explained in other collaborate paper by the senior author in the present volume (p. 290).

We are very grateful to Dr. Shun-Ichi Uéno of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and kindly reading through the original manuscript of this paper. Our special thanks are also due to Mr. Hiroshi Wakai of Toyonaka for his kind offer of the invaluable specimen, and to Dr. Masatoshi Takakuwa of the Kanagawa Prefectural Museum of Natural History, Odawara, for his useful suggestion for our study.

Necydalis* (*Necydalis*) *alpinicola NIISATO et N. OHBAYASHI, sp. nov.

(Figs. 1–2)

Belonging to the group of *N. nanshanensis*, bearing a closer relationship to *N. fujianensis* NIISATO et PU from South China and *N. nanshanensis* KUSAMA from Taiwan than to *N. shinborii* TAKAKUWA et NIISATO from northern Vietnam, and agreeing with the former two species in the short and almost parallel-sided elytra which are dehiscent in more than apical 2/5 and without sutural angles, and the distinctly raised posterior half of pronotum. Discriminated from such closest species by the absence of golden yellow pubescence on pronotum and elytra, and the apparently dilated antennal segments 5–10.

M a l e. Colour black in head and thoraces, brown in abdomen and appendages, moderately shiny; head black, brown in apical quadrate part of clypeus, mouthparts except for apices and external margins of mandibles; antennae brown in basal four segments, yellowish brown in the remainders; pronotum, scutellum, and meso- and metathoraces black; elytra unicolored brown, more or less shagreened; hind wings translucent brown; abdomen brown, with ventrite 1 largely black except for margins; legs brown, yellow in hind tarsus, infuscate on dorsal sides of fore tibia and tarsus and mid claw, basal half of hind tibia more or less reddish.

Head relatively small, slightly narrower than the maximum width of pronotum, closely and somewhat deeply punctured, sparsely clothed with golden yellow pubescence though rather dense in tempora, HW/PA 1.21, HW/PW 0.92; frons quadrate, with sides parallel and not marginate, gently raised, with a median longitudinal furrow relatively deep and running from apical fourth to vertex, FL/FB 0.88, FB/FA 1.00; clypeus with apical lobe transverse trapezoidal, with truncate margin, moderately raised and punctured in basal 2/3, basal lobe semicircular, punctured as on apical one, with very deep fronto-clypeal suture; mandibles moderate in length, not so stout, rather acute at apices; genae rather short, a half the depth of lower eye-lobes, slightly convergent in frontal view; occiput gently raised; eyes moderate, weakly prominent. Antennae relatively long in the group of *N. nanshanensis*, barely reaching apical third of abdominal ventrite 4, rather stout, distinctly flattened and dilated in segments 5–10, clothed with dense brown pubescence on basal four segments, and pale yellow minute one on the remainders; scape short, gently broadened apicad, a little shorter than segment 3, provided with small punctures, segments 3 and 4 hardly thickened at apices, punctured as in scape, the latter segment 3/4 the length of the former, segment 7 the longest though only slightly longer than the preceding one, terminal segment gently arcuate, bluntly pointed at the extremity.

Pronotum moderate in length and width, distinctly contracted to apex, just of equal length to the maximum width across the lateral swellings at middle, distinctly sinuate at sides, strongly convex towards base, PL/PA 0.76, PL/PW 1.00, PB/PA 1.26, PW/EW 0.96, PL/EL 1.02; apex truncate and not marginate near middle, nearly 4/5 the width of base; base also transverse near middle, narrowly marginate, with deep trans-



Fig. 1. *Necydalis* (*Necydalis*) *alpinicola* NIISATO et N. Ohbayashi, sp. nov., holotype ♂.

verse furrow along margin; sides roundly arcuate in basal fifth, with arcuate swellings at a level between apical and basal 3/10, strongly constricted before and behind the swellings, moderately arcuate in basal fifth; disc strongly convex in basal 3/10 though transversely depressed along base, the convex part forming a pair of callosities which intervenes the vestigial median line, and also strongly depressed along apical margin and transverse part of apical fifth; surface densely deeply punctured, the punctation becoming sparser on the callosities and apical fifth, somewhat rugosely so in basal fifth, rather sparsely clothed with golden yellow hairs except for almost glabrous callosities. Scutellum trapeziform, slightly concave at apex, shagreened, clothed with golden yellow pubescence.

Elytra fairly short, almost quadrate, slightly wider than long, equal in length to

pronotum, slightly exceeding apical fifth of metepisterna, widest at humeri, wholly exposing the sides of meso- and metathoraces, EL/EW 0.94; sides rather distinctly projected at humeri, gently convergent to apices which are roundly truncate and without inner angles; suture completely conjoined in basal half, then weakly arcuately dehiscent to apices; disc convex and uneven, longitudinally depressed along suture except for the raised areas in apical fourth, arcuately so just before the raised areas, with external margins rather widely depressed, thinly haired in most parts, though partly clothed with brown pubescence on apical fifth of disc and apical third of sides. Hind wings reaching base of abdominal tergite 6.

Meso- and metathoraces strongly voluminous, closely deeply punctured, clothed with golden yellow recumbent hairs, partly with dense same-colored pubescence on mesepimeron, metepimeron, apical part of metepisternum, and along anterior margin of hind coxae. Abdomen remarkably elongate and slender, smooth, clothed with pale yellow pubescence; ventrites 1 and 2 parallel-sided and slightly thickened apicad, the former more than 1.3 times as long as the latter, ventrite 3 similar in shape to the preceding though slightly shorter and more distinctly thickened apicad, ventrite 4 the widest, as long as the preceding, with sides almost parallel in basal 2/7, then arcuately dilated to just before apex which is 1.5 times as wide as base, ventrite 5 with sides weakly and straightly dilated to apical 3/10, then narrowed to apical margin which is widely triangularly emarginate, with disc triangularly impressed at a level between basal 2/5 and apical 3/10, then suddenly concave towards emarginate apical margin. Tergite 8 long, rounded at apex with small triangular concavity.

Legs long and slender, exceeding abdominal apex at base of hind tarsal segment 2; hind femur weakly clavate in apical third; hind tibia gently arcuate in apical half; hind tarsus moderate in length, with first segment weakly thickened apicad, 2.0 times as long as the following two segments combined.

Male genital organ moderately sclerotized, a little longer than the length of ventrite 5. Median lobe slender and slightly convex, moderately arcuate in profile, with apical lobe in dorsal view straightly dilated apicad and exposing narrowly pointed ventral plate; dorsal plate with apex narrowly truncate and strongly depressed; ventral plate prolongedly pointed and slightly thickened at the extremity. Tegmen 1.25 times as long as median lobe, slender; paramere a little less than a half the length of tegmen, parallel-sided, each lobe hardly dilated to apex which is rounded and densely clothed with setae.

Body length 26.5 mm.

Female. Unknown.

Holotype ♂, Mt. Phang Si Pang, 2,700 m in alt. (one of the peaks), Lai Chau Province of northern Vietnam, V–2003, local collector leg. Deposited in the collection of the Entomological Laboratory, Ehime University, Matsuyama. The holotype is partly broken at the left side of pronotum and missing the left mid leg.

Distribution. N. Vietnam.

Notes. According to the recent knowledge (NIISATO, 1998 c; NIISATO & PU,

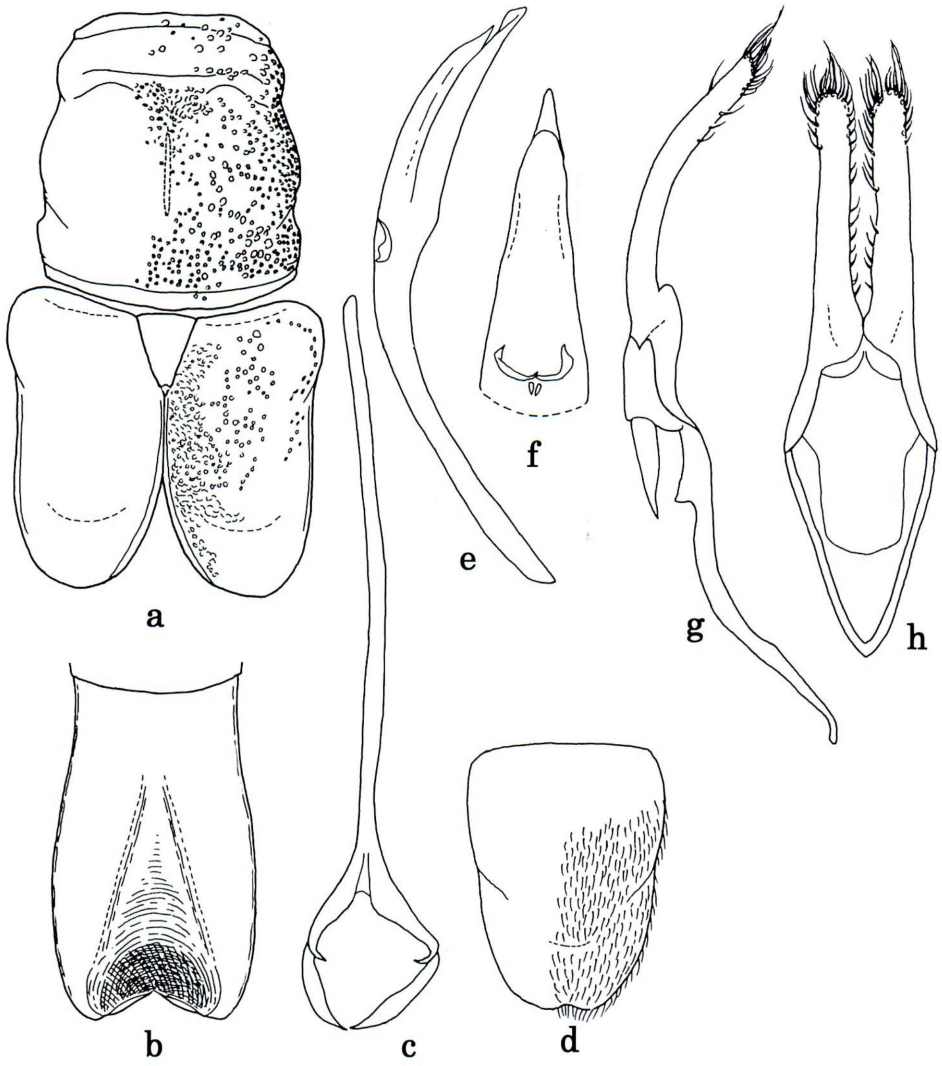

Fig. 2. *Necydalis* (*Necydalis*) *alpinicola* NIISATO et N. OHBAYASHI, sp. nov. —— a, Pronotum and elytra; b, last ventrite in ventral view, showing concavity; c, vestigial sternite 8 and spiracle gastrale; d, tergite 8 in dorsal view; e, median lobe in lateral view; f, ditto, apical part in dorsal view; g, tegmen in lateral view; h, ditto in dorsal view.

1998), five members of the group of *Necydalis nanshanensis* have so far been recorded; *viz.*, *N. yakushimensis* KUSAMA from Yakushima Island of the northern Ryukyus, *N. nanshanensis* KUSAMA from Taiwan, *N. fujianensis* NIISATO et PU from South China, *N. shinborii* TAKAKUWA et NIISATO and *N. katsuraorum* NIISATO, both from northern Vietnam. These members except *N. katsuraorum* are considered to have been derived from the same ancestor, and their present distribution is allopatric in the

wide area between eastern Indochina and the northern Ryukyus. *Necydalis katsuraorum* is no doubt an isolated species in view of its peculiar habitus, and sympatric with *N. shinborii* in northern Vietnam. However, such an opinion of ours may be slightly changed by the present discovery of *N. alpinicola* sp. nov. from Mt. Phang Si Pang of northwestern Vietnam. As was noticed in the introduction and description, this new species has a closer relationship in the structure of pronotum and elytra to *N. fujianensis* and *N. nanshanensis* (and/or *N. yakushimensis*) than to almost sympatric *N. shinborii* from northern Vietnam. It is most probable that *N. shinborii* may be a species rather isolated within the species-group, whereas three or four other species, *N. alpinicola* sp. nov., *N. fujianensis* and *N. nanshanensis* (and/or *N. yakushimensis*) form a species-complex within the group. According to personal communication from Dr. M. TAKAKUWA, *N. yakushimensis* should be considered to be a local race of *N. nanshanensis*.

要　　約

新里達也・大林延夫：ベトナム北西部のファンシーパン山から見つかったホソコバネカミキリ属の1新種．—— 北ベトナムのホソコバネカミキリ属は1996年以降に急速にその実態が解明され，これまでのところ4固有種を含む7種が記録されている．しかし，そのいずれもがビンフー州のタムダオ山からもたらされたもので，ベトナムの他地域からの公式記録は知られていなかった．ようやく2003年の春に，ベトナム北西部のライチャウ州のファンシーパン山において，ナンシャンホソコバネカミキリ種群の新たな種が見つかった．興味深いことに，この新種は，近隣地域に分布する同種群のシンボリホソコバネカミキリよりはむしろ，中国南部のフッケンホソコバネカミキリおよび台湾のナンシャンホソコバネカミキリに，形態的にみて近縁である．たとえば，前胸背板の輪郭や後方に高まる背面隆起，先端1/2で開裂する縫合線と完全に丸められる短い上翅などの形質は，中国南部および台湾の種に共通である．このような特徴から判断すると，本新種はナンシャンホソコバネらと直系にあり，シンボリホソコバネはむしろ同種群のなかで異なる系列なのではないかと推定される．この画期的な新種は，ファンシーパン山の標高2,700 mのピークで採集されたという．そこで，種名は採集地に因み，*Necydalis alpinicola*（高山に住むもの）と命名した．

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* Other references are given in NIISATO (1998 c).

Elytra, Tokyo, **31** (2): 307–320, November 22, 2003

Description of a New Genus Close to *Baralipton* (Coleoptera, Cerambycidae)

(Revisional Studies of the Genus *Megopis* sensu LAMEERE, 1909–3)

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Abstract A new genus, *Ziglipton* gen. nov. is proposed to receive *Megopis sanchezi* SCHULTZE, 1920 and *M. lumawigi* HÜDEPOHL, 1987. Three new species of the genus are described under the names *Ziglipton jirouxi*, *Z. drumonti* and *Z. marieae* spp. nov. All the species are found so far from the Philippines and Sabah, East Malaysia.

Megopis sanchezi SCHULTZE, 1920 and *M. lumawigi* HÜDEPOHL, 1987 were described in the subgenus *Baralipton* of the genus *Megopis*. These species were introduced after the revision of *Megopis* by LAMEERE (1909) and no doubt belonged to *Baralipton* sensu LAMEERE. Recently, a long series of specimens close to these two species have been brought about from the Philippines and Sabah of East Malaysia. After careful examinations of these examples, I have concluded that they are close to *Baralipton* but distinctly different not only from the latter but also from any other known genera. In this paper, I am going to propose a new genus, *Ziglipton* to receive the two known species and three new species to be named *Ziglipton jirouxi Z. drumonti* and *Z. marieae* spp. nov. which will be described in this paper.

The abbreviations used in this paper as well as in this series are as follows; NSMT=National Science Museum (Nat. Hist.), Tokyo; IRSNB=Institut Royal des Science Naturelles de Belgique; NHML=The Natural History Museum, London; ZSM=Zoologische Staatssammulung, München. Measurements of body parts: BL–body length from clypeus to apices of elytra or abdomen, HL–length of head from clypeus to base, HW–width of head across eyes, PL–length of pronotum, PW–maximum width of pronotum, PA–apical width of pronotum, PB–basal width of pronotum, EL–length of elytra, EW–maximum width of elytra, AL–total length of antennae, Aln–length of (n)th antennal segment.

Before going into details, I would like to express my gratitude to Dr. Shun-Ichi UÉNO of NSMT for his valuable suggestion not only to this paper but also to this series of study. I owe to Mr. Alain DRUMONT of IRSNB for his kind help in many ways to this series of studies, to Dr. Martin BAEHR of ZSM for his kind permission to study the collection in ZSM and to Dr. K. E. HÜDEPOHL to use his collection.

Genus ***Ziglipton*** nov.

Megopis subgenus *Baralipton* SCHULTZE, 1920, Philipp. J. Sci., **16**: 192. —— HÜDEPOHL, 1987, Ent. Arb. Mus. Frey, **35/36**: 129–133 [*pro parte*].

Type species. *Megopis* (*Baralipton*) *sanchezi* SCHULTZE, 1920.

Generic features. Body robust, similar in size and general appearance to the genus *Baralipton*. Body length 30–56 mm. Integument brown, sometimes reddish or very dark as to be almost black. Body finely pubescent for the most part and partly glabrous, pronotum, scutellum and elytra usually thickly pubescent. Color of pubescence gray or yellow and often accompanied with golden tint.

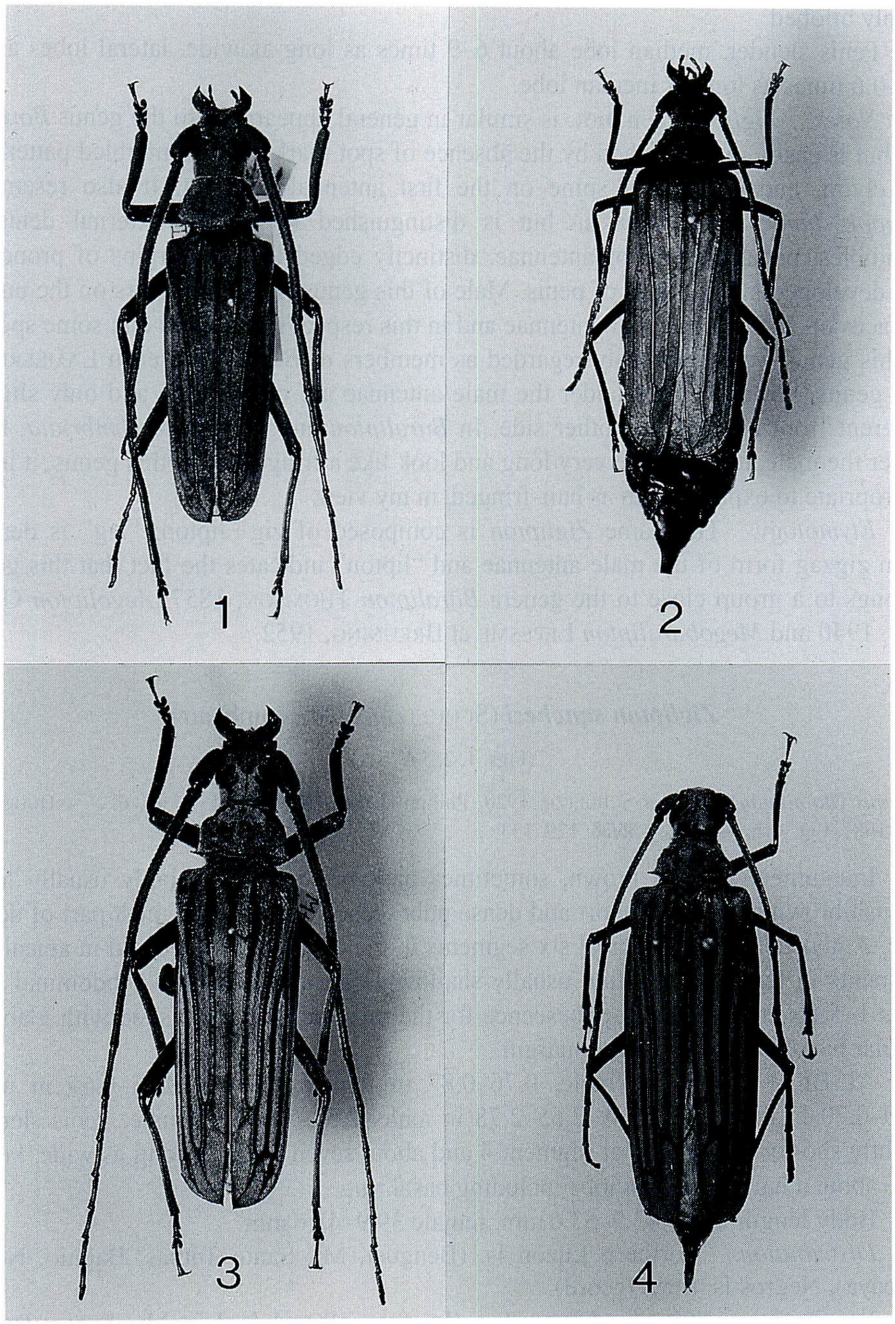
Head cylindrical; mandibles about 0.2–0.6 times as long as head, each furnished with an ordinary shaped internal dent close to base and an obtuse external dent between middle and apical fourth (see Fig. 6 A–F); eyes bulging, interspace between eyes slightly longer than each eyelobe. Antennae 1.01–1.23 times as long as body in male, 0.76–1.04 times in female; covered with thick pubescence on segments 3–5, with rather thin pubescence on segment 6 and the remainders becoming thinner to the apex; in the male, pubescence longer and thicker on the underside of segments 3–5; segments 1–4 granulated especially on the underside of segments 1 and 3, segments 6–11 sometimes sparsely granulated; segment 3 slightly arched inward and about as long as or slightly shorter than united length of segments 4–6, segments 8–11 of male connected to each anterior segment at extreme internal angle so as to show somehow zigzag form (see Fig. 5 A–E), segments 7–11 of female strongly depressed.

Pronotum wide, PL/PW 0.4–0.7 in male, 0.6–0.8 in female; in male, widest at base and gradually narrowed in basal half, then suddenly, strongly contracted to apex; in female, straightly narrowed apicad from the widest base and trapezoidal in general view; lateral margins considerably edged and hemmed, basal angles distinctly projected and apical angles usually not prominent, rarely furnished with a third dent at about basal third in both sexes; disc convex and usually shallowly concave at the top, furnished with irregular knot-like sculpture and granules. Scutellum elongated linguiform.

Elytra wide, EL/EW about 2.4–2.8, not strongly convex, widest at about basal third in male, middle in female, then gradually narrowed to round apices which are furnished with small sutural projections. Each elytron furnished with strongly raised two internal costae, the second being more prominent than the first, and meeting with each other close to apex; external two costae also usually prominent but absent in some species; sutural and lateral margins also strongly raised; intervals and a part of costae covered with thick pubescence though most parts of the costae and sutural margin are glabrous.

Abdominal side uniformly thinly haired, metepisterna about 3.3 times as long as wide, parallel-sided in anterior two-thirds and arcuately narrowed to pointed anal end; fifth abdominal sternites distinctly emarginate at apex.

Legs slender and smooth in both sexes; tarsi broadened apicad with segment 3



Figs. 1–4. Habitus of *Ziglipton* spp. —— 1–2. *Z. sanchezi* (SCHULTZE, 1920); 1, male, 2, female. —— 3–4. *Z. lumawigi* (HÜDEPOHL, 1987); 3, male, 4, female.

deeply bilobed.

Penis slender, median lobe about 6–9 times as long as wide, lateral lobes about 0.5–0.6 times as long as median lobe.

Notes. *Ziglipton* gen. nov. is similar in general appearance to the genus *Baralipton* but is easily distinguished by the absence of spot markings and marbled pattern on the elytra, and of distinct spine on the first antennal segment. It also resembles *Megopis fimbriata* LANSBERGE but is distinguished by having external dents of mandibles, peculiar form of antennae, distinctly edged lateral margins of pronotum and developed lateral lobes of penis. Male of this genus has longer hairs on the undersurfaces of 3–5 segments of antennae and in this respect it is natural that some species of this genus were previously regarded as members of *Baralipton* sensu LAMEERE. In this genus, however, hairs under the male antennae are not so long and only slightly different from hairs on the other side. In *Baralipton* and in *Megopis fimbriata*, hairs under the male antennae are very long and look like a fringe, but in this genus, it is not appropriate to express them as hair-fringed, in my view.

Etymology. The name *Ziglipton* is composed of zig+lipton; "zig" is derived from zigzag form of the male antennae and "lipton" indicates the fact that this genus belongs to a group close to the genera *Baralipton* THOMSON, 1857, *Aegolipton* GRESSITT, 1940 and *Megobaralipton* LEPESME et BREUNING, 1952.

Ziglipton sanchezi (SCHULTZE, 1920), comb. nov.

(Figs. 1, 2, 5 A, 6 A)

Megopis (*Baralipton*) *sanchezi* SCHULTZE, 1920, Philipp. J. Sci., **16**: 192, pl. 1, fig. 6. —— HÜDEPOHL, 1987, Ent. Arb. Mus. Frey, **35/36**: 129–133.

Integument reddish brown, sometimes dark brown but the body usually looks grayish brown because of short and dense pubescence covering the most part of dorsal side. Antennae zigzag at apical six segments in male, strongly depressed in apical five segments in female. Pronotum usually shallowly concave at middle. Abdominal sternites 1–5 covered with thin pubescence for the most part and furnished with glabrous lunular band along each apical margin.

AL/BL 1.13–1.17 in male, 0.76–0.87 in female, PL/PW 0.55–0.64 in male, 0.60–0.70 in female, EL/EW 2.65–2.78 in male, 2.51–2.73 in female. Penis slender, slightly shorter than antennal segment 4 and about seven times as long as wide, lateral lobe about a half of median lobe including basal ring.

Body length: male 42.9–53.6 mm, female 39.9–48.6 mm.

Distribution. Northern Luzon Is. (Benguet, Mt. Santo Tomas, Baguio, Noeva Viscaya), Negros Is. (new record).

Specimens examined. Luzon Is.: (In my coll.), 1♂, 1♀, Mt. Santo Tomas, Baguio, 28–III–1977, K. TAMANUKI leg.; 1♂, Benguet, Baguio (type locality), 15–III–1990, 1♂, 2♀♀, same locality, III–2002; 1♂, Mountain Province of northern Luzon, V–2002; 2♂♂, Noeva Viscaya, northern Luzon, V–2002 (in coll. ZSM, Samm-

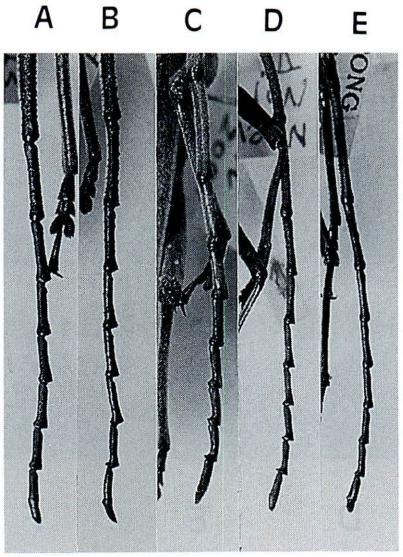


Fig. 5. Right male antenna of *Ziglipton* spp. —— A, *Z. sanchezi*; B, *Z. lumawigi*; C, *Z. jirouxi* sp. nov; D, *Z. marieae* sp. nov; E, *Z. drumonti* sp. nov.

lung K. E. HÜDEPOHL). 1♂, Mt. Santo Tomas, Baguio, Philippines, *B. sanchezi*, HÜDEPOHL det. (in coll. DRUMONT); 12♂♂, 5♀♀, Benguet, northern Luzon, IV–2002, I. LUMAWIG leg. Negros Is.: (in coll. ZSM), 1♂, Negros Or., VI–1984.

Ziglipton lumawigi (HÜDEPOHL, 1987), comb. nov.

(Figs. 3, 4, 5 B, 6 B)

Megopis (*Baralipton*) *lumawigi* HÜDEPOHL, 1987, Ent. Arb. Mus. Frey, **35/36**: 132

Integument black or very dark brown, dorsal side of body covered with thick gray pubescence for the most part. Four costae on each elytron strongly raised, granulated, glabrous and shiny black, while intervals are covered with thick golden gray pubescence so as to compose distinct longitudinal stripes throughout elytra.

This species is very close to *Z. sanchezi* (SCHULTZE) in body structure but is easily distinguished by conspicuous stripes and distinctly raised third and fourth costae on the elytra. This species usually differs from the latter in having the body darker and more thickly pubescent, the antennae longer, and the pronotum wider and furnished with longer basal projections. Penis similar to that of *Z. sanchezi* but a little shorter.

Body length: male 31.9–55.9 mm, female 38.6–46.3 mm.

Distribution. Mindanao Is., Luzon Is. (this species was originally described from Luzon Is. without more precise locality on two examples, and no other specimens has so far been found from Luzon), Panay Is.(new record).

Referred types. Thanks to Dr. K. E. HÜDEPOHL, Dr. M. BAEHR and Mr. A. DRU-

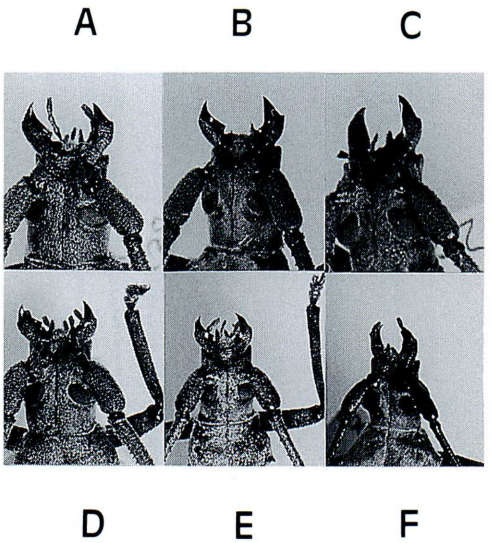


Fig. 6. Head of *Ziglipton* spp. (dorsal view from slightly right side so that the external dent of the right mandible can be observed). —— A, *Z. sanchezi*, male; B, *Z. lumawigi*, male; C, *Z. marieae* sp. nov., male; D, *Z. jirouxi* sp. nov., male; E, *Z. drumonti* sp. nov., male, F, ditto female.

MONT, I was able to refer the holotype ♂ (37 mm) and a paratype ♂ (44 mm), both preserved in Sammlung K. E. HÜDEPOHL of ZSM.

Specimens examined other than types. Mindanao Is.: (in my coll.), 2♂♂, Mt. Kitanglad, Bukidnon, IV–2002; 2♂♂, Mt. Apo, V–1982; 1♂, 1♀, Mt. Pasian, IV–1991; 1♀, 2♂♂, Southern Mindanao; 1♀, IX–1991, Mt. Kalatungan; (in DRUMONT coll.), 2♂♂, 2♀♀, Northern Mindanao, IV–1999, BOUDANT leg.; 2♂♂, same locality, III–1999; 2♂♂, same locality, X–1996; 1♂, 1♀, Southern Mindanao, IX–1996, BOUDANT leg.; 2♂♂, 1♀, Bukidnon, IV–2002. Panay Is.: (in coll. K. E. HÜDEPOHL of ZSM), 1♂, Panay, Philippines, IX–1993; (in my coll.), 1♀, Mt. Malindog, Aklan, 21–VII–1993, B. VILLAN leg.

Ziglipton jirouxi sp. nov.

(Figs. 5 C, 6 D, 7, 11, 12)

Male. Head about 1.3 times as long as wide, parallel-sided and slightly constricted at base, finely pubescent throughout, frons concave at middle and sparsely granulated, vertex furnished with sparse granules only around eyes; mandibles 0.38 times as long as head, each furnished with a small inner dent close to base and obtuse external dent at apical third; jugular process blunt; antennal tubercle large but not strongly raised. Antennae 1.01–1.10 times as long as body; segment 1 robust, covered with small granules, about a half as long as head, segment 3 about three times as long

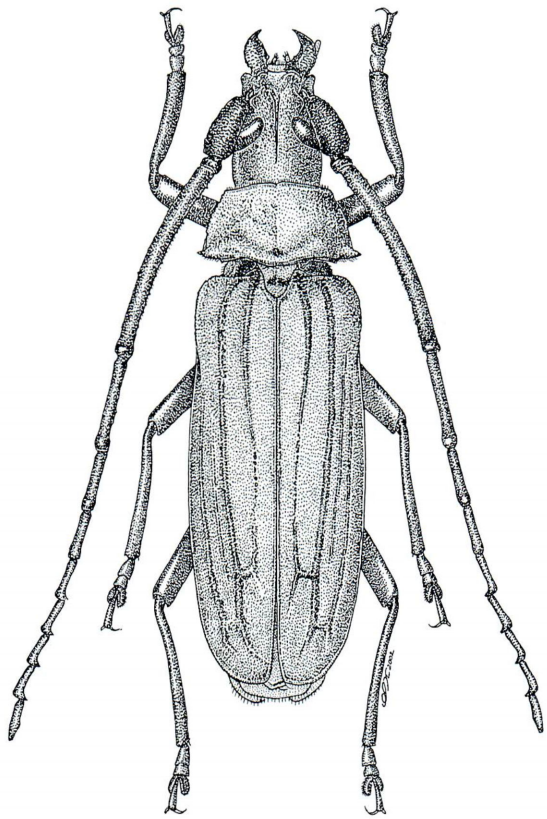


Fig. 7. Habitus of *Ziglipton jirouxi* sp. nov., male.

as segment 1, moderately granulated, covered with thin pubescence which is a little longer on the underside, segment 4 narrower than segment 3, about 0.47 times long and in the other points looking very similar to segment 3, segment 5 slightly shorter than segment 1, narrowest at the middle and thickened towards both ends, thinly covered with pubescence which is hardly longer on the underside, segments 6–10 gradually decreasing in length, each having a triangular process at apico-internal end and each next segment attached close to the apex of the process (see Fig. 5 C), segment 11 about as long as 7, segments 6 and 7 sparsely pubescent and the remainders almost glabrous.

Pronotum convex, the top flat or slightly concave, PL/PW 0.45–0.48, PA/PW 0.62–0.64, sparsely granulated and irregularly uneven throughout, covered with thin gray pubescence. Scutellum linguiform, very thinly pubescent.

Elytra wide, EL/EW 2.41–2.57, covered with thin gray pubescence except for a part of margins and costae, and also with small granules on costae and around shoulders; each elytron furnished with four costae, first strongly raised, glabrous, starting

from humeri and meeting the second at apical fourth of elytron; second stronger than first, glabrous, starting from humeri, meeting the first and then meeting the fourth at about apical eighth and disappearing just before the end, third rather weakly raised, glabrous, starting at about basal third and disappearing at about apical third, not meeting other costae at both ends, fourth starting from humeral angle, prominent but covered with pubescence in basal half, then becoming glabrous, meeting the second and disappearing just before the end; lateral margin clearly hemmed for all length, furnished with a small sutural process.

Ventral surface clothed with thin pubescence for the most part; gula covered with small granules; abdominal sternites sparsely punctured and haired except on lunular part which is placed along each apical margin of segments 1–4.

Legs smooth and slender, hind claw shorter than combined length of three basal segments.

Penis slender, about as long as segment 4 of antennae and eight times of its own width; lateral lobe 0.6 times as long as median lobe including the basal ring.

Body length: 46.5–48.9 mm.

Female. Similar to male in general appearance. Head smaller and pronotum narrower, lateral margins of the latter being rather straightly convergent apicad. Antennae slenderer, AL/BL 0.91–1.04, evenly haired and granulated at segments 1–5, apicointernal and -external angles of segments 6–10 triangularly projected and next segment attached at about middle of two angles.

Body length: 32.3–50.0 mm.

Type series. Holotype: ♀, Mt. Trus Madi, Sabah, East Malaysia, 25–V–1994, M. ITOH leg. Deposited in coll. NSMT. Paratypes: 1♀, same locality, V–1993, 1♀, same locality, III–1995, 2♀♀, same locality, V–1995, E. JIROUX leg. in coll. DRUMONT; same locality, 10–IV–2000, 2♀♀, same locality, IV–2001, K. ANGUS leg.; 1♂, same locality, V–2003; 1♂, Tawaw, Sabah, V–2000; 1♂, same locality, 2–IV–2001. All the paratypes without notes are in my collection at present and some of them will be deposited in public institutes later.

Notes. *Ziglipton jirouxi* sp. nov. is allied to *Z. sanchezi* SCHULTZE. They share similar-sized brown body which is covered with thin gray pubescence. However, this new species can easily be distinguished from the latter by wider body, different length of antennae and strongly raised two external costae (third and fourth) on the elytron. The two ends of the third costa are never connected with other costae only in this new species and this character may serve as a good key to separate this species from other congeners. In *sanchezi*, the two external costae are not raised, and only recognized by color or quite absent, and the third costa is always connected with the neighboring two (second and fourth) at basal and apical ends so far as present. In male, the antennae are longer in *sanchezi* than in *jirouxi* sp. nov. while in female, they are longer in the latter.

Etymology. The specific name is given after Mr. Eric JIROUX of Andrésy, France, who has been contributing to investigation of the cerambycid fauna of Sabah.

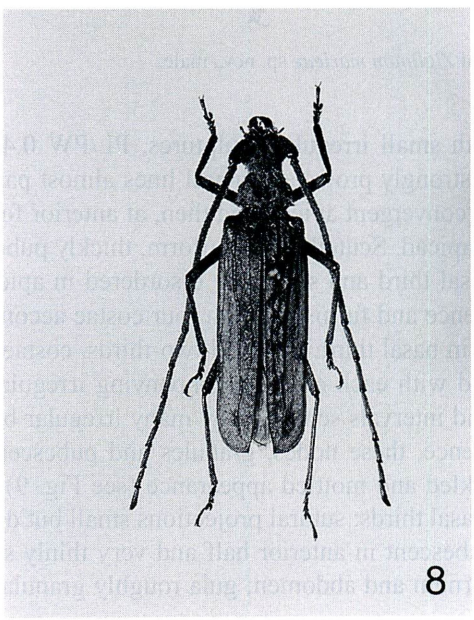
Ziglipton marieae sp. nov.

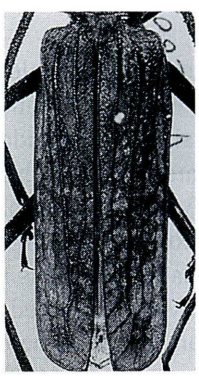
(Figs. 5 D, 6 C, 8–10)

Male. A middle-sized species. Smaller and slenderer than *Z. sanchezi*. Integument brown and covered with gray pubescence for the most parts.

Head as long as wide, widest at eyes and straightly narrowed basad, coarsely granulated for the most part; frons concave at middle; mandibles about 0.54 times as long as head, slender and acute as compared with those of the congeners, furnished with an internal dent close to base and an external one at apical third; eyes bulging, interspace between upper eye-lobes slightly narrower than each lobe; jugular process acute; antennal tubercle glabrous and shiny, small but strongly raised. Antennae 1.07–1.11 times as long as body, slenderer than in congeners; segment 1 densely granulated, 0.64 times as long as head, segments 2–5 granulated, segment 3 about 3.3 times as long as segment 1, covered with thin pubescence which is a little longer on the underside, segments 4–5 sparsely pubescent and in segment 4, pubescence is longer on the underside but in segment 5, longer on apical half of the inner side, segment 4 about a half as long as segment 3, segments 5–10 gradually decreasing in length, each furnished with a triangular process at apico-internal end, segments 6–11 generally covered with very thin pubescence and 6–10 also furnished with rather long hairs on each apical half of inner side; segment 11 about as long as segment 8.

Pronotum strongly convex and concave at the top, covered with thin pubescence,





Figs. 8–9. —— 8. Habitus of *Ziglipton marieae* sp. nov., male. —— 9. *Z. marieae* sp. nov., male, elytra.

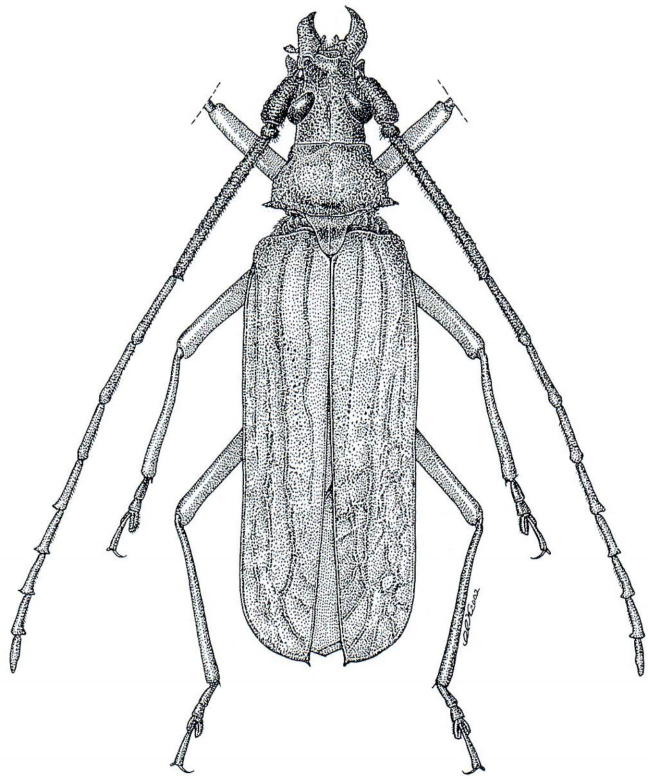


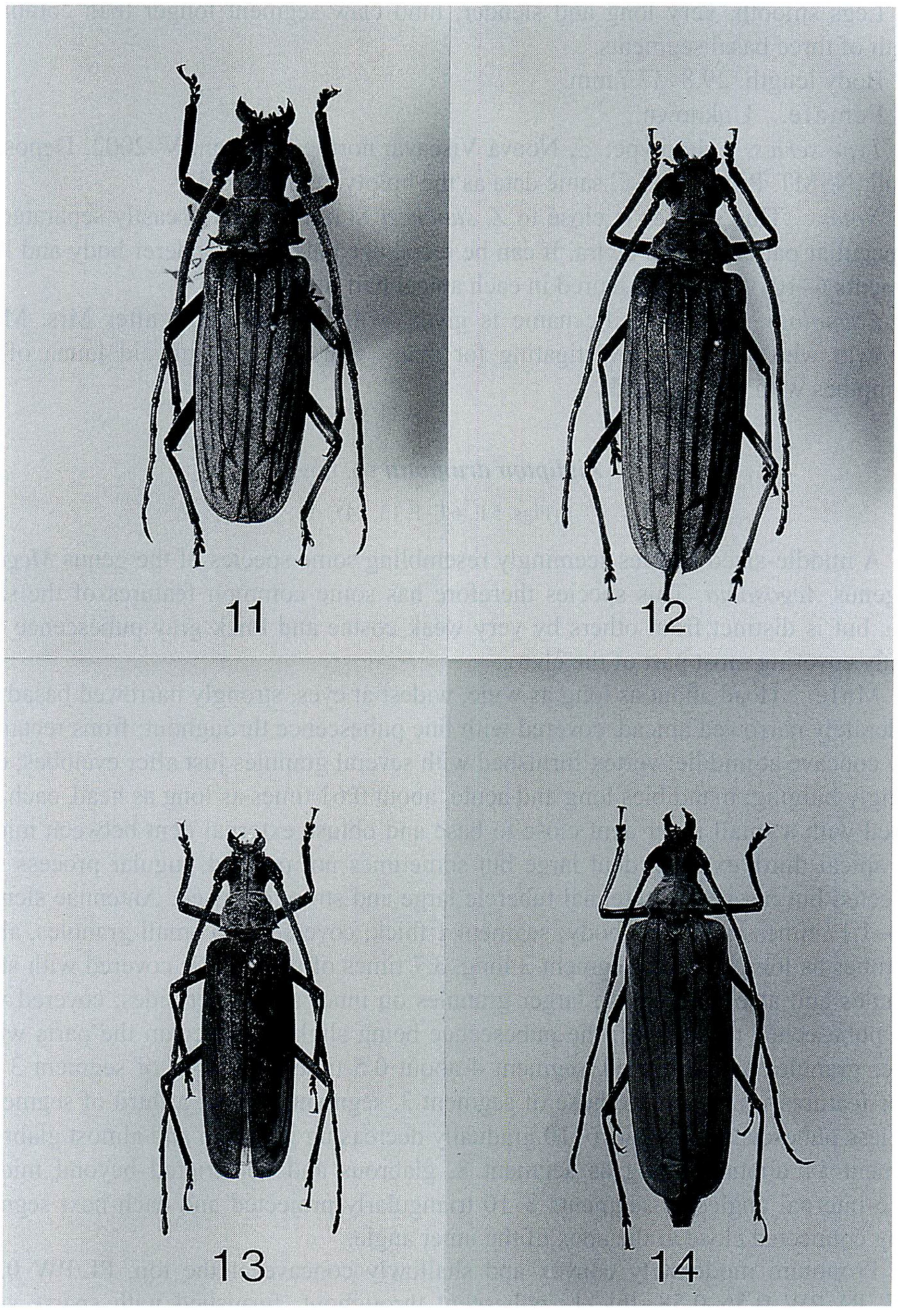
Fig. 10. Habitus of *Ziglipton marieae* sp. nov., male.

furnished with granules and also with small irregular sculptures, PL/PW 0.49–0.51, PA/PW 0.57–0.59, with basal angles strongly projected, lateral lines almost parallel in basal half and then suddenly strongly convergent apicad and then, at anterior fourth almost parallel and slightly convergent apicad. Scutellum linguiform, thickly pubescent.

Elytra wide, normal in about basal third and somehow disordered in apical two-thirds, covered with thin gray pubescence and furnished with four costae accompanied with small granules as in *Z. sanchezi* in basal third; in apical two-thirds, costae irregularly waving, branched and connected with each other accompanying irregular small nodes and granules here and there, and intervals separated by many irregular branches forming small spots of thick pubescence, these nodes, granules and pubescent spots giving this part of elytra a very speckled and mottled appearance (see Fig. 9); lateral margins hemmed only in apical and basal thirds; sutural projections small but distinct.

Ventral surface rather thickly pubescent in anterior half and very thinly so or almost glabrous in anal part of metasternum and abdomen; gula roughly granulated and abdomen sparsely punctured.

Male genitalia close to those of *Z. sanchezi* but a little slenderer.



Figs. 11–14. Habitus of *Ziglipton* spp. —— 11–12. *Z. jirouxi* sp. nov.; 11, male, 12, female. —— 13–14. *Z. drumonti* sp. nov.; 13, male, 14, female.

Legs smooth, very long and slender; hind claw segment longer than combined length of three basal segments.

Body length: 29.8–37.7 mm.

Female. Unknown.

Type series. Holotype: ♂, Noeva Viscaya, northern Luzon, V–2002. Deposited in coll. NSMT. Paratype: 1♂, same data as the holotype, in my coll.

Notes. This species is close to *Z. sanchezi* SCHULTZE but is easily separated by the peculiar pattern of the elytra. It can be recognized also on slenderer body and legs, segments 6–10 of antennae haired in each apical half of the inside.

Etymology. The specific name is given, with my gratitude, after Mrs. Marie LUMAWIG who has been investigating for many years the cerambycid fauna of the Philippines with her husband.

Ziglipton drumonti sp. nov.

(Figs. 5 E, 6 E–F, 13, 14)

A middle-sized species seemingly resembling some species of the genus *Megopis* subgenus *Aegosoma*. This species therefore has some common features of the same tribe, but is distinct from others by very weak costae and thick gray pubescence uniformly covering most part of the elytra.

Male. Head about as long as wide, widest at eyes, strongly narrowed basad and moderately narrowed apicad, covered with fine pubescence throughout; frons rectangularly concave at middle; vertex furnished with several granules just after eyelobes; eyes strongly bulging; mandibles long and acute, about 0.61 times as long as head, each furnished with a small inner dent close to base and obtuse external dent between middle and apical third, external dent large but sometimes not pointed; jugular process well projected but not acute; antennal tubercle large and strongly raised. Antennae slender, 1.14–1.17 times as long as body; segment 1 thick, covered with small granules, about 0.6 times as long as head, segment 3 long, 3.7 times of segment 1, covered with small granules and also with sparse larger granules on inner and under sides, covered with thin pubescence throughout, the pubescence being slightly longer on the parts where larger granules are furnished, segment 4 about 0.5 times in length of segment 3 and other features very close to those of segment 3, segment 5 about a third of segment 4 and less pubescent, segments 6–10 gradually decreasing in length and almost glabrous, segment 11 about as long as segment 8, glabrous and constricted beyond middle, apico-internal angles of segments 8–10 triangularly projected and each next segment being connected close to the apex of the inner angle.

Pronotum moderately convex and shallowly concave at the top, PL/PW 0.56–0.57, PA/PW 0.56–0.58, thickly pubescent throughout, furnished with sparse small granules which are almost hidden under pubescence. Scutellum linguiform, very thickly pubescent.

Elytra slender, EL/EW 2.55–2.60, covered with thick gray pubescence for the

most part except for sutural margin and two internal costae; each elytron furnished with two costae, the first starting from humeri and raised only at basal fifth and then traceable only by color and hardy extending beyond the middle; second costa stronger, starting from humeri, raised in basal two-thirds, then traceable only by color to apical fifth and disappearing; sutural process small but distinct.

Underside of body thickly pubescent throughout; abdominal sternites not punctured. Legs smooth and slender; hind claw longer than combined length of three basal segments. Penis slender, a little shorter than segment 4 of antennae and about eight times as long as wide.

Body length: 29.8–38.9 mm.

Female. Close to male in general appearance. Head smaller and pronotum narrower, more thickly pubescent. Antennae shorter, AL/BL 0.97, segments 1–5 slenderer, segments 6–11 depressed, segment 8 not constricted. Two costae on elytra more prominent, the first and the second meeting each other at apical fifth of elytra, extending just a little more and disappearing before reaching margin.

Body length: 42.3 mm.

Type series. Holotype: ♂, Mt. Gantong, Palawan Is., III–2002, deposited in coll. IRSND. Paratypes: 3♂♂, 1♀, same data as the holotype, 2♂♂, 1♀ in coll. DRUMONT and 1♂ in my coll.

Notes. *Ziglipton drumonti* sp. nov. differs from any congeners in having the elytra with very weak costae. It is close to *Z. marieae* in having slender body, legs and antennae but is quite different in having not haired segments 6–11 of the antennae and not mottled elytra.

Etymology. This species is named after my friend Mr. Alain DRUMONT who first felt the peculiarity of these specimens from Palawan, separated them from many materials and deposited them for me for the present study.

Additional Notes. Just before this article was going to be sent to the editor, A. DRUMONT found an example of *Ziglipton* in the ZSM collection which belongs obviously to this genus but seems not to be involved in any of the five species above recorded. I therefore postpone to give a key to the species of this genus until the result of investigation for the mentioned example is completed.

要　　約

小宮次郎：新属 *Ziglipton* および3新種の記載．—— *Megopis sanchezi* SCHULTZ を基準種とする新属 *Ziglipton* nov. を記載する．この新属の体形は *Baralipton* 属のものに似ているが，鞘翅に斑紋および大理石模様を持たず，触角第1節に棘を欠く点でまったく異なる．また *Megopis fimbriata* LANSBERGE の所属する種群ともきわめてよく似ているが，大顎外側にも明瞭な歯がある，雄触角8–11節が多少ともジグザグとなる，前胸背板側縁が強く角張り中央にしばしば棘をもつなどの点でまったく異なる．雄触角3–5節の下側に他の方向より長い毛を生じるが，*Baralipton* 属や *M. fimbriata* のように明瞭な長毛で縁取られるわけではない．既知の2種に加えて，3新種

を記載する．東マレーシア，サバ州の*Z. jirouxi* sp. nov. は鞘翅の微毛が薄く左右各4本の強い隆条をもち，第3線が他とまったく接続しない．Luzon島北部の*Z. marieae* sp. nov. は鞘翅先端3分の2がまだらで，雄触角7–10節各先端2分の1の内側に毛がある．パラワン島の*Z. drumonti* sp. nov. は体および肢が細長く，鞘翅第3, 4の隆条が痕跡もない点，前胸背板，鞘翅ほぼ全面が灰色の微毛で覆われるなどの点で異なる．

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Elytra, *Tokyo*, **31** (2): 321–323, November 22, 2003

A New Species of the Genus *Tomoderus* (Coleoptera, Anthicidae) from the Ryukyu Islands, Southwest Japan

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Abstract A new anthicid beetle of the genus *Tomoderus* is described from Ishigaki-jima of the Ryukyu Islands, Southwest Japan, under the name of *T. satoi* sp. nov.

Recently, I had an opportunity to examine three specimens of the genus *Tomoderus* collected from Ishigaki-jima of the Yaeyama Islands of the Ryukyu Archipelago. After a careful examination, it has become clear that these specimens are specifically different from the previously described members of the genus *Tomoderus*. Thus, I will describe it in the present paper as a new *Tomoderus* species.

Before going further, I wish to express my deep gratitude to Professor Hiroyuki SASAJI (Fukui) for his continuous advice and encouragement, and to Dr. Hideto HOSHINA (Fukui, University, Fukui) for his kind support of this work. Hearty thanks are also due to Mr. Hiroyuki YOSHITOMI (Bioindicater Co., Ltd., Sapporo) for his kind help in offering materials for the present study.

Tomoderus satoi M. SAITÔ, sp. nov.

[Japanese name: Hime-marutsuya-arimodoki]

(Fig. 1)

Description. Body oval, dorsum convex, underside flat; surface rather densely covered with pale reddish brown short pubescence which is longer on elytra than on the other parts. Body reddish brown and moderately shining; mouth parts and legs pale in color; antennae somewhat dark brown, but four basal and three apical segments are pale reddish brown.

Head circular, wider than pronotum, with larger hind part from constriction of prothorax than fore part, straight at base and strongly rounded at hind angles; upper surface smooth, sparsely and minutely punctate. Eyes weakly protruding. Clypeus slightly transverse, anterior margin straight. Antennae just reaching the posterior margin of pronotum; 2nd segment a little longer than wide, 3rd and 4th longer than wide, 5th to 10th transversely moniliform, terminal 11th segment conical and as long as wide; relative length of each segment from base to apex: 1.3, 0.8, 1.3, 0.8, 0.9, 1.0, 0.9, 1.0, 0.9, 0.9, 1.4. Terminal segment of maxillary palpus short and curtriform, anterior

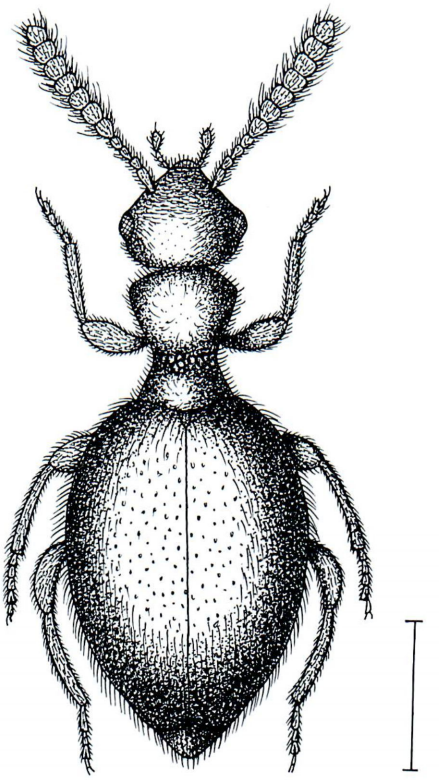

Fig. 1. Habitus of *Tomoderus satoi* M. SAITÔ, sp. nov., female, from Mt. Omoto-dake, Ishigaki-jima Is., Okinawa Pref. Scale 1.0 mm.

margin grooved.

Pronotum gourd-shaped, widest near anterior margin which is weakly arcuate, strongly constricted at two-thirds from apex, fore part larger than hind part; lateral sides of fore part arcuately divergent towards the apex, those of hind part straightly divergent towards the base which is weakly arcuate, posterior margin distinctly narrower than anterior margin; disc smooth, sparsely and minutely punctate; constriction densely and coarsely punctate.

Elytra guttiform, convex, without humeral corners, widest before the middle, arcuately and gently narrowed posteriad; frontal margin strongly and widely arcuate at both lateral sides, which are narrowly bordered from base to basal three-fifths, weakly arcuate, sharply curved at the ends of the borders and weakly arcuate towards apices; surface sparsely and coarsely punctate.

Femora distinctly thickened apicad.

Length: 3.0–3.9 mm (3.4 mm in the holotype).

Type series. Holotype: ♀, Mt. Omoto-dake, Ishigaki-jima Is., Okinawa Pref., the Ryukyu Islands, 22–III–1996, H. YOSHITOMI leg. Paratypes: 1 ex., same data as the

holotype; 1♀, same locality, 10–III–2000, M. SAITÔ leg.

The holotype is preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo; the paratypes are preserved in my collection.

Distribution. Japan: Ryukyus (Ishigaki-jima Is.).

Notes. The present new species is distinguished from the other members of the genus by the pronotum widest near the anterior margin and weakly angled, and the 5th to 10th segments of the antennae each wider than long or as wide as long and the terminal segment as long as wide. The type specimens were collected from heaps of dead leaves. The species was named after Professor Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

要　　約

斉藤昌弘：琉球列島で見つかった *Tomoderus* 属アリモドキの1新種．—— 琉球列島で採集された *Tomoderus* 属のアリモドキを調査したところ，新種と認められたので，ヒメマルツヤアリモドキ *T. satoi* M. SAITÔ と命名して記載した．種名は，名古屋女子大学を退職された佐藤正孝先生に捧げた．

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Elytra, Tokyo, **31** (2): 324, November 22, 2003

Two Elaterid Beetles Collected from Guam Island of the Mariana Islands

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Through the courtesy of Mr. Hitoshi ISHIKAWA, I had an opportunity to examine some elaterid specimens collected on Guam Island of the Mariana Islands. As the result of my examination, they are classified into two species new to the island, which will be recorded as the immigrants from other countries.

I wish to express my sincere thanks to Mr. Hitoshi ISHIKAWA, Shizuoka, for his kind offering of the materials.

Heteroderes amplicollis (GYLLENHAL, 1833)

Elater amplicollis GYLLENHAL, 1833, in SCHÖNHERR, Syn. Ins., I, Append., 141, 194.
Heteroderes amplicollis: CANDÈZE, 1859, Mém. Soc. r. Sci. Liège, **14**: 372.
Conoderus (*Heteroderes*) *amplicollis*: VAN DYKE, 1932, Proc. Calif. Acad. Sci., (4), **20**: 297 (in key), 298–299.
Monocrepidius fucosus BLATCHLEY, 1925, Canad. Ent., **57**: 163–164.

Distribution. Guam Is. (new record, immigrant); Hawaii: Oahu; N. America: California, Arizona, Texas, Alabama, Florida; Puerto Rico; Mexico; Honduras; Dominica; Martinique; Cuba; St. Vincent; Guadeloupe; Bermuda.

Specimen examined. 1 ex., Guam Is., Southern Mariana Islands, 13–XI–1988, H. ISHIKAWA leg.

Prodrasterius collaris (CANDÈZE, 1859)

Drasterius collaris CANDÈZE, 1859, Mém. Soc. r. Sci. Liège, **14**: 422 (in key), 427 (Indes orientale: Morad-Abad).
Prodrasterius collaris: FLEUTIAUX, 1928, Encycl. ent., (B) (Coleoptera), **3**: 137 (in key), 138–139 (Tonkin, Laos).

Distribution. India, Myanmar, Thailand, Vietnam, Laos, Taiwan, Guam Is. (new record, immigrant).

Specimens examined. 3 exs., Guam Is., Southern Mariana Islands, 13–XI–1988, H. ISHIKAWA leg.

Reference

VAN ZWALUWENBURG, R. H., 1957. Coleoptera: Elateridae. *Ins. Micronesia*, **16**: 1–66.

Elytra, *Tokyo*, **31** (2): 325–340, November 22, 2003

Study of Asian Strongyliini (Coleoptera, Tenebrionidae)

XIII. Nine New *Strongylium* Species from the Malay Peninsula

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Abstract This is the thirteenth part of the study concerning Asian Strongyliini and deals with nine new species of the genus *Strongylium* from the Malay Peninsula, described under the following names: *Strongylium malaccanum* sp. nov., *S. pahangense* sp. nov., *S. maruyamai* sp. nov., *S. karubei* sp. nov., *S. munetoshii* sp. nov., *S. tanahense* sp. nov., *S. gombakense* sp. nov., *S. hangayi* sp. nov., and *S. cameronense* sp. nov.

This paper is the thirteenth part of my study of the Asian Strongyliini, and deals with the genus *Strongylium* from the Malay Peninsula. I am going to describe nine new species.

Besides the specimens of my collection, the materials were provided by Dr. Ottó MERKL, the Hungarian Natural History Museum, Budapest, Dr. Wolfgang SCHAWALLER, Staatliches Museum für Naturkunde in Stuttgart, and Dr. Munetoshi MARUYAMA, the National Science Museum (Nat. Hist.), Tokyo.

Appreciation is due to the above persons who offered me the materials, and also to Mr. Seiji MORITA, Tokyo, for taking photographs. Finally, my deepest thanks should be expressed to Emeritus curator, Dr. Shun-Ichi UÉNO, National Science Museum (Nat. Hist.), Tokyo, for his constant guidance in my taxonomic studies.

Depositories of the holotypes to be designated are given under each description. The abbreviations used herein are as follows: NSMT – National Science Museum (Nat. Hist.), Tokyo; HNHMB – Hungarian Natural History Museum, Budapest; SMNS – Staatliches Museum für Naturkunde in Stuttgart.

Strongylium malaccanum sp. nov.

(Fig. 1)

Yellowish brown; elytra, apical six segments of antennae, apical halves of meso- and metafemora, and basal parts of meso- and metatibiae dark brown; dorsal surface rather strongly shining, ventral surface somewhat alutaceous; almost glabrous. Body elongated subfusiform, longitudinally convex, weakly depressed in antero-medial part of elytra.

Female. Head suboctagonal, remarkably vitreous; clypeus semicircular, scattered with microscopic punctures, gently depressed in basal part, truncate at apex, fronto-clypeal border curved and strongly impressed; genae oblique, sparsely scattered with minute punctures, strongly raised outwards, with outer margins roundly produced; frons somewhat boldly T-shaped, widened posteriad, more sparsely scattered with minute punctures than genae, steeply inclined anteriad, weakly impressed along median line in posterior part, diatone about 0.43 times the width of transverse diameter of an eye; vertex convex, rather closely punctate, the punctures somewhat elongate. Eyes subreniform in dorsal view, convex laterad, obliquely inlaid into head. Antennae subfiliform, feebly becoming bolder apicad, reaching basal 1/4 of elytra, ratio of the length of each segment from base to apex: 0.34, 0.20, 0.53, 0.51, 0.44, 0.57, 0.59, 0.61, 0.52, 0.51, 0.62.

Pronotum somewhat barrel-shaped in dorsal view, slightly wider than long, widest at apical 2/5, rather noticeably narrowed in basal part; apex sublinear, grooved and rimmed, the groove becoming deeper and wider medially; base very slightly bisinuous, more boldly bordered and rimmed than base, feebly emarginate in the area opposite to scutellum; sides steeply inclined, not bordered from prosternum; front angles almost rounded, and hind angles acutely angulate in dorsal view; disc strongly convex, nearly hemispherical in anterior part, rather vitreous, scattered with punctures, which are small in central part and become larger in lateral parts. Scutellum triangular, flattened and smooth.

Elytra elongated subfusiform, 2.5 times as long as wide, 3.8 times the length and 1.5 times the width of pronotum; dorsum longitudinally convex, gently flattened in basal part, feebly depressed in basal 1/6 and apical 1/4, highest at basal 2/5; disc with rows of punctures, which are somewhat elongate at the bottoms and rather ovate or quadrate at the upper faces; intervals gently raised, vitreous and almost impunctate; humeri gently swollen; apices slightly explanate and produced.

Legs (female) medium-sized; femora gently thickened; ratios of the lengths of pro-, meso- and metatarsomeres: 0.62, 0.25, 0.26, 0.24, 1.20; 0.91, 0.48, 0.44, 0.29, 1.14; 1.25, 0.51, 0.30, 1.22.

Body length: 5.4 mm.

Holotype: ♀, "Kwala- / Lumpur // Malacca / Biró // *Strongylium* / *malaccanum* / Holotype! / Geb // Holotype!" (HNHMB).

Notes. This is an isolated species. The species name "*Strongylium malaccanum*" inscribed on the label attached to the single specimen available is a *nomen nudum*, since GEBIEN did not describe this species properly.

Strongylium pahangense sp. nov.

(Figs. 2, 10–11)

Dark chestnut brown, with elytra and apical six segments of antennae darker in colour; head, pronotum, scutellum and legs feebly vitreously shining, elytra rather

strongly vitreously shining, ventral surface somewhat alutaceous; each surface covered with long pale hairs. Body elongated subfusiform, longitudinally convex, gently flattened in basal and medial parts of elytra.

Head transversely elliptical; clypeus semicircularly projected anteriad, almost smooth, punctate, depressed in basal part, fronto-clypeal border curved and deeply sulcate; genae obliquely, strongly raised outwards, sparsely scattered with punctures, with rounded outer margins; frons somewhat boldly T-shaped, steeply inclined anteriad, feebly concave in posterior part, rugoso-punctate, diatone 0.5 times the width of transverse diameter of an eye. Eyes rather large, remarkably convex laterad, gently convex above, obliquely inlaid into head. Antennae slender, extending beyond the middle of elytra, apical six segments remarkably longer and wider than basal five, ratio of the length of each segment from base to apex: 0.58, 0.20, 0.31, 0.16, 0.13, 0.81, 0.83, 0.99, 1.02, 0.99, 1.19.

Pronotum subquadrate in dorsal view, 1.28 times as wide as long; apex feebly produced, bordered and gently ridged, the ridge rather bold medially, becoming finer laterad, scattered with microscopic punctures; base very slightly sinuous laterally, bordered and ridged, the ridge rather smooth and sparsely scattered with minute punctures; sides steeply inclined laterad, not bordered but continuous to ventral side; front angles rounded, hind angles angulate in dorsal view; disc feebly convex, noticeably impressed in basal 1/3 on each side, and also impressed at the middle close to base, closely covered with shallow punctures, which are rather small in the medial part. Scutellum subcordate, feebly elevated, microsculptured, densely covered with pily hairs.

Elytra elongated subfusiform, 2.4 times as long as wide, 4.6 times the length and 1.6 times the width of pronotum, widest at apical 1/3; dorsum longitudinally convex, highest at basal 1/5, gently flattened in basal 1/7 and basal 2/5 along sutural parts; disc smooth, sparsely scattered with microscopic punctures, and also with rows of elongated punctures, which are sometimes longitudinally fused with one another, and often forming short grooves; intervals narrow and raised, rather transversely connected with one another; humeri gently swollen; apices roundly produced.

Male anal sternite without peculiarity. Legs medium-sized and without peculiarity; ratios of the lengths of pro-, meso- and metatarsomeres: 0.26, 0.22, 0.22, 0.27, 1.2; 0.72, 0.46, 0.34, 0.33, 1.21; 092, 0.44, 0.37, 1.02.

Male genitalia subfusiform, 1.4 mm in length, 0.19 mm in width, gently curved in lateral view; fused lateral lobes elongated triangular, 0.68 mm in length, with nib-shaped apices.

Body length: 6.5 mm.

Holotype: ♂, Tanah Rata (from illuminated white-washed walls, No. 77), Cameron Highlands, Pahang, Malaysia, 23~31–III–1995, O. MERKL leg. (HNHMB). Paratype: 1 ex., same data as for the holotype.

Notes. This is an isolated species, whose body is distinctly covered with long pale hairs.

Strongylium maruyamai sp. nov.

(Figs. 3, 12–13)

Black, with dark greenish tinge, basal parts of meso- and metafemora dark brown, hairs on surfaces pale greenish; head, pronotum and scutellum weakly, somewhat sericeously shining, elytra moderately, somewhat vitreously shining, ventral sides almost mat, gula polished; each surface covered with fine long hairs. Body oblong-ovate, convex longitudinally.

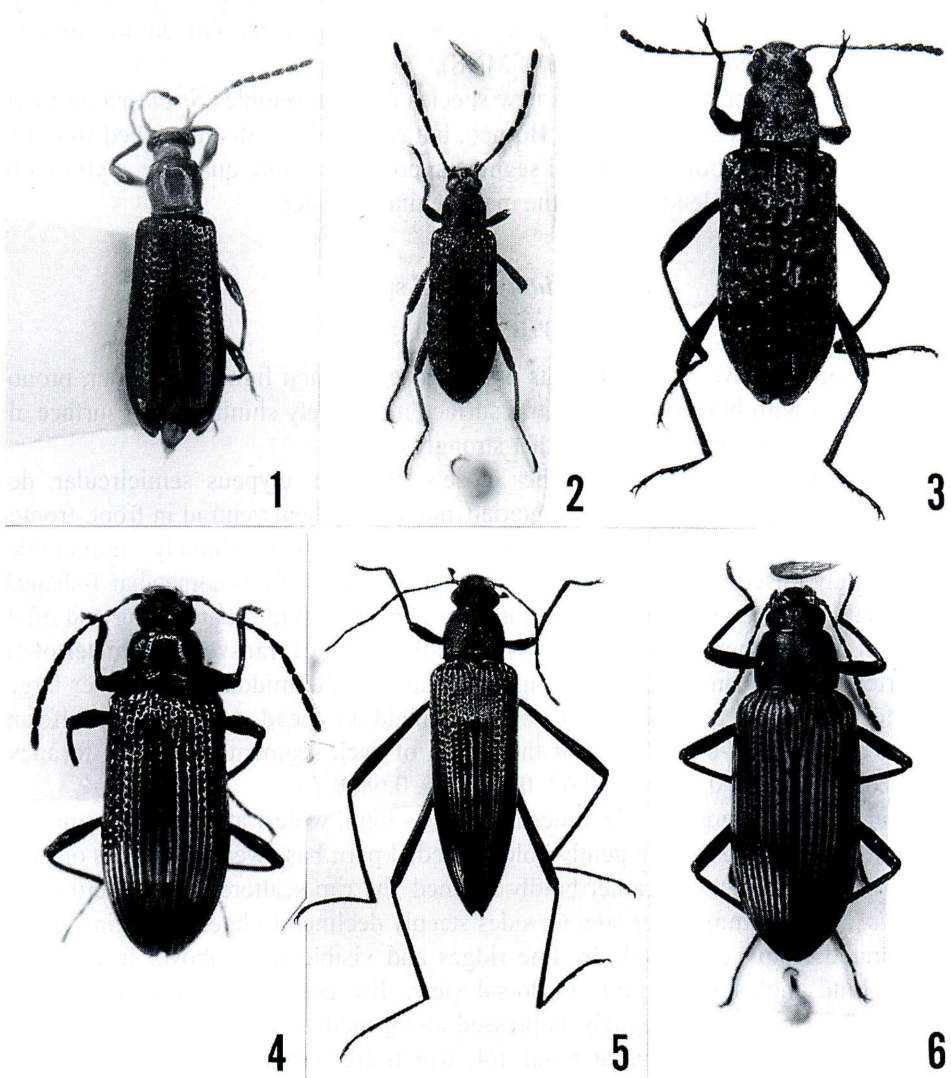
Head subhexagonal, mostly closely punctate; clypeus transverse, depressed in basal part, bent ventrad in the middle, truncate in front, fronto-clypeal border straightly grooved in middle and curved in lateral parts; genae oblique, rather strongly, roundly raised outwards, with areas before eyes weakly depressed and almost impunctate; frons widely T-shaped, gently inclined anteriad, with a vague impunctate area along medial line, diatone 0.66 times the width of transverse diameter of an eye. Eyes medium-sized, transversely comma-shaped in dorsal view, rather strongly convex laterad, gently, roundly inlaid into head. Antennae reaching basal 2/9 of elytra, 5th to 10th segments dilated to each apex, apical six flattened, ratio of the length of each segment from base to apex: 0.38, 0.20, 0.73, 0.56, 0.54, 0.53, 0.52, 0.44, 0.31, 0.28, 0.30.

Pronotum subquadrate, 1.3 times as wide as long, widest at base; apex sublinear, weakly, widely triangularly ridged, finely rimmed in lateral parts; base feebly bisinuous, weakly ridged, rimmed in lateral parts; sides steeply declined to lateral margins, which are finely ridged; front angles rounded, hind angles acutely angulate; disc weakly convex, impressed at the middle and close to base on each side, and also impressed close to apex and base medially, shallowly grooved along medial line in basal half, closely covered with punctures, which are often fused with one another. Scutellum sublinguiform, gently elevated, closely punctate, noticeably densely covered with pily hairs.

Elytra elongated triangular, about 2.1 times as long as wide, 4.4 times the length and 1.46 times the width of pronotum, widest at apical 1/3; dorsum rather strongly convex, with a pair of gibbosities at basal 1/9, with area between and behind them depressed; disc with rows of longitudinal grooves, which are often short and form foveae in antero-lateral parts; intervals strongly convex and often ridged, very weakly covered with isodiametric microsculpture, scattered with microscopic punctures, each clothed with an adpressed hair; base depressed between sutural part and 5th groove; humeri rather noticeably swollen; apices feebly explanate and roundly produced.

Male anal sternite semicircularly depressed in apical 3/5, slightly emarginate at apex. Legs stout; male protibia with ventral face weakly gouged in apical 2/5; male metatibia with inner face weakly flattened and very feebly twisted in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.14, 0.20, 0.23, 1.20; 1.24, 0.61, 0.57, 0.53, 1.23: 1.32, 0.61, 0.43, 1.11.

Male genitalia subfusiform, 1.8 mm in length and 0.4 mm in width, rather strongly curved in lateral view; fused lateral lobes elongated triangular, 0.95 mm in



Figs. 1–6. Habitus of *Strongylium* spp. from the Malay Peninsula. —— 1, *S. malaccanum* sp. nov., holotype, ♀; 2, *S. pahangense* sp. nov., holotype, ♂; 3, *S. maruyamai* sp. nov., holotype, ♂; 4, *S. karubei* sp. nov., holotype, ♂; 5, *S. munetoshii* sp. nov., holotype, ♂; 6, *S. tanahense* sp. nov., holotype, ♂.

length, concave in medio-apical part, with apices gently prolonged and acute.

Body length: 10 mm.

Holotype: ♂, G. Jasar, Cameron Highlands, W. Malaysia, 20–III–2000, M. MARUYAMA leg. (NSMT). Paratypes: 1 ex., Tanah Rata (edge of degraded rainforest), Cameron Highlands, Pahang, Malaysia, FIT, No. 100, 21–III~2–IV–1995, O. MERKL

leg. (HNHMB); 1 ex., 2 km S. Tanah Rata on Tapah Road, roadside vegetation, swept & beaten, no. 89, 27–III–1995, O. MERKL leg. (HNHMB); 1 ex., Gn. Jasar, Cameron Highlands, 4–IV–1990, A. RIEDEL leg. (SMNS).

Notes. In general features, this new species rather resembles *Strongylium kasaharai* MASUMOTO, 2002, from Sabah, Borneo, but can easily be distinguished from the latter by the antennae bolder in apical segments, pronotum more quadrate, elytra more strongly grooved, legs slenderer, and the male genitalia bolder.

Strongylium karubei sp. nov.

(Figs. 4, 14–15)

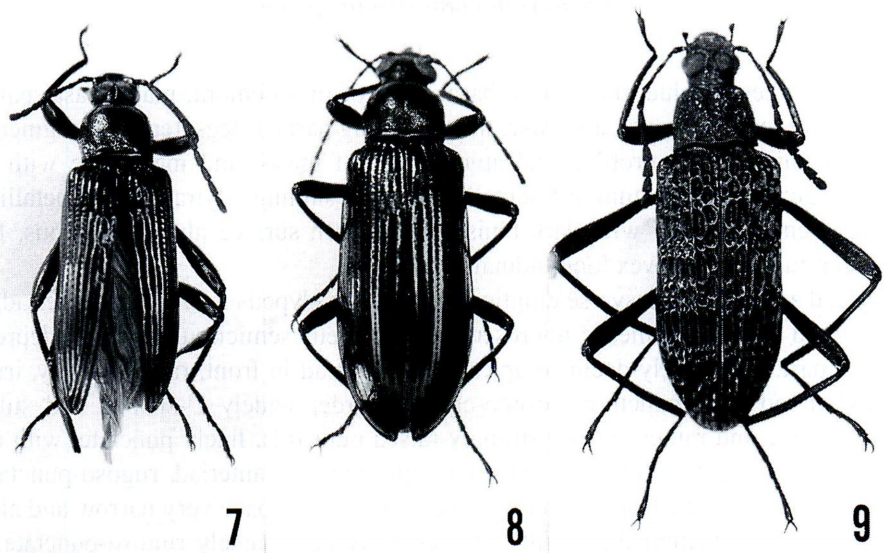
Dark coppery, five basal segments of antennae and tarsi lighter in colour, pronotum and elytra with brassy lustre, ventral surface moderately shining; each surface almost glabrous. Body oblong-ovate, rather strongly convex.

Head transversely elliptical, rather closely punctate; clypeus semicircular, depressed in basal part, gently inclined anteriad, moderately bent ventrad in front, frontoclypeal border widely U-shaped and clearly sulcate; genae obliquely subrhombic, rather strongly raised outwards, with rounded outer margins; frons somewhat T-shaped, steeply inclined anteriad, coarsely punctate, the punctures somewhat oblong and often fused with one another, diatone about 1/4 times the width of transverse diameter of an eye; vertex weakly convex, with an impunctate area at the middle. Eyes rather large, subreniform, strongly convex laterad, obliquely inlaid into head. Antennae subfiliform, reaching basal 1/3 of elytra, ratio of the length of each segment from base to apex: 0.49, 0.20, 0.57, 0.56, 0.51, 0.57, 0.62, 0.67, 0.66, 0.68, 0.76.

Pronotum subquadrate, 1.33 times as wide as long, widest at apical 2/5; apex almost straight, rimmed, the rim gently bold in medial part; base weakly sinuous on each side, strongly bordered and rather boldly rimmed, the rim scattered with microscopic punctures, and becoming finer laterad; sides steeply declined to lateral margins, which are separated from ventral side by fine ridges and visible from above; front angles rounded, hind angles rather acute in dorsal view; disc gently convex, scattered with variously sized punctures, vaguely impressed along medial line in basal half, with a pair of transverse impressions at basal 1/4, which are weakly connected with each other at the middle. Scutellum triangular with feebly rounded sides, flat and smooth, sparsely scattered with microscopic punctures.

Elytra oblong-ovate, 2.12 times as long as wide, widest at apical 3/7, 5.11 times the length and 1.84 times the width of pronotum; dorsum rather strongly convex, highest at basal 3/7, noticeably depressed in basal 1/5 and also in area around scutellar strioles; disc with rows of punctures, which are somewhat ovate, often connected with one another by shallow striae, and become larger and sparser in antero-lateral parts; intervals gently convex, rather vitreous, finely, transversely aciculate; humeri feebly swollen; apices weakly roundly produced.

Anal sternite covered with isodiametric microsculpture and small punctures,



Figs. 7–9. Habitus of *Strongylium* spp. from the Malay Peninsula. —— 7, *S. gombakense* sp. nov., holotype, ♂; 8, *S. hangayi* sp. nov., holotype, ♂; 9, *S. cameronense* sp. nov. holotype, ♂.

clothed with very fine hairs. Legs medium-sized, though the tarsi are rather long; ratios of the lengths of pro-, meso- and metatarsomeres: 0.48, 0.26, 0.29, –, –; 0.62, 0.43, 0.42, 0.32, 1.20; 0.94, 0.48, 0.32, 1.27.

Male genitalia somewhat elongated fusiform, about 1.30 mm in length and 0.24 mm in width, weakly curved in lateral view; fused lateral lobes 0.63 mm in length, nib-shaped, with rounded apices.

Body length: 5.2–5.7 mm.

Holotype: ♂, Mt. Jasar, Cameron Highlands, W. Malaysia, 12–III–1989, H. KARUBE leg. (NSMT). Paratypes: 1 ex., same data as for the holotype; 3 exs., Gn. Jasar, Cameron Highlands, 4–IV–1990, A. RIEDEL leg. (HNHMB); 1 ex., 1~3–IV–1990, same locality and collector as for the preceding; 2 exs., Robinson Falls (swept & beating, No, 81), Cameron Highlands, 24–III–1995, O. MERKL leg. (HNHMB); 1 ex., Brinchang, Trll., Cameron Highlands, 19–VII–1992, C. W. & L. B. O'BRIEN leg. (SMNS).

Notes. This new species somewhat resembles *Strongylium tsuyukiellum* MASUMOTO, 2001, from Sumatra, but can be distinguished from the latter by the eyes smaller and not approximate to each other, the pronotum less strongly punctate and more strongly impressed in the posterior parts on each side, the elytra shorter with intervals less strongly ridged, and the male genitalia shorter and less strongly prolonged apicad.

Strongylium munetoshii sp. nov.

(Figs. 5, 16–17)

Dark greenish blue, profemora, basal parts of mesofemora, major basal parts of metafemora reddish brown, antennae, the remaining parts of legs, terminal segments of palpi brownish black; protibia and apical parts of meso- and metatibiae with dark bluish tinge; head, pronotum and scutellum weakly shining, elytra weakly metallically shining, ventral surface with dark bluish luster; each surface almost glabrous. Body elongated fusiform, convex longitudinally.

Head somewhat transverse elliptical, though the clypeus is projected anteriad, feebly covered with isodiametric microsculpture; clypeus semicircular, gently depressed in basal part, moderately declined apicad, bent ventrad in front, rather closely, irregularly scattered with punctures, fronto-clypeal border widely U-shaped and sulcate; genae oblique and rather narrow, strongly raised outwards, finely punctate, with outer margins rounded; frons finely T-shaped, steeply inclined anteriad, rugoso-punctate at the middle close to the fronto-clypeal border, interocular space very narrow and almost impunctate; area behind the middle of eyes to vertex coarsely rugoso-punctate, impressed at the middle. Eyes very large, subreniform in dorsal view, strongly convex laterad, broadly, roundly inlaid into head. Antennae filiform, reaching basal 1/5 of elytra, ratio of the length of each segment from base to apex: 0.58, 0.20, 1.02, 0.98, 0.76, 0.77, 0.69, 0.68, 0.62, 0.60, 0.67.

Pronotum barrel-shaped, 1.15 times as wide as long, widest slightly before the middle, feebly sinuous before base; apex feebly emarginate, ridged in wide V-shape, the ridge sparsely scattered with microscopic punctures; base sinuous in lateral parts, boldly rimmed, the rim almost smooth, sparsely scattered with microscopic punctures; sides steeply declined to lateral margins, which are separated from ventral parts by fine ridges; front angles nearly rounded, hind angles slightly angulate; disc gently convex, feebly covered with isodiametric microsculpture, closely, rugoso-punctate, the punctures becoming coarser laterad. Scutellum sublinguiform, feebly raised, shallowly aciculate.

Elytra elongated triangular, 2.74 times as long as wide, 4.42 times the length and 1.44 times the width of pronotum, widest at base, feebly sinuous at basal 1/3, then gradually narrowed apicad; dorsum moderately convex, bi-undulate, highest at basal 1/5; disc punctate-grooved, the punctures rather small, ovate and closely set in antero-internal and posterior parts, larger, sparser and somewhat foveolate in antero-lateral parts; intervals gently convex, weakly covered with isodiametric microsculpture, sparsely scattered with microscopic punctures; 1st to 5th grooves noticeably deepened near base; humeri gently swollen; apices dehiscently projected.

Male anal sternite semicircularly depressed, with apex emarginate. Legs slender; male protibia with a tooth at basal 2/5 on ventral surface; ratios of the lengths of pro-, meso- and metatarsomeres: 0.27, 0.16, 0.22, 0.21, 1.20; 2.62, 1.21, 0.81, 0.52, 1.53: 3.04, 1.11, 0.79, 1.56.

Male genitalia slender and rather modified, about 4.6 mm in length and 0.8 mm in width; basal piece oblong-ovate, gently convex dorsad in apical part; fused lateral lobes remarkably elongate, narrowed at the middle and apical 1/6, with apex obcordate and obliquely attached to basal part.

Body length: 14–15 mm.

Holotype: ♂, 19 miles near Cameron Highlands, W. Malaysia, 19–IV–2000, M. MARUYAMA leg. (NSMT). Paratypes: 1 ex., Cameron Highlands, Perak, I–1985, WONG leg. (SMNS); 1 ex., Vicinity of Tapha, Cameron Highlands, 4–V–1955, G. HANGAY leg. (HNHMB).

Notes. Judging from the body outline and the shape of the male genitalia, this new species is related to *Strongylium spinitibiale* MASUMOTO, 1999, from Laos, but can be distinguished from the latter by the genae narrower, eyes more strongly convex laterad, pronotum more coarsely rugoso-punctate and more boldly bordered both at the apex and base, elytra slenderer and more shiny, and the male genitalia shorter (5.35 mm in *S. spinitibiale*) with basal piece not narrowed apicad and lateral lobes narrowed in middle (cf. fig. 18 on p. 349 of this series VIII).

Strongylium tanahense sp. nov.

(Figs. 6, 18–19)

Piceous, antennae, major parts of ventral side and tarsi brownish black; dorsal surface feebly, sericeously shining, ventral surface somewhat alutaceous, apical 2/3 of terminal segments of antennae dark reddish brown; each surface almost glabrous. Body elongated fusiform, gently convex dorsad.

Head somewhat transversely elliptical, weakly covered with isodiametric microsculpture, scatttered with small punctures; clypeus rather narrow in basal part, widened in anterior part, gently inclined anteriad, bent ventrad in front, with a short transverse impression at the middle near fronto-clypeal border, fronto-clypeal border somewhat widely U-shaped in basal half, strongly widened in the remaining part and reaching outer margins; genae oblique, gently raised laterad, weakly depressed in interior parts before eyes, with outer margins obtuse; frons somewhat T-shaped with basal part widened, gently inclined anteriad, very feebly impressed along median line, with an impunctate area in anterior part and a closely punctate area in posterior part, diatone 0.5 times the width of transverse diameter of an eye; vertex closely punctate. Eyes oblique, feebly depressed against frons, convex laterad, obliquely inlaid into head. Antennae subfiliform, feebly becoming bolder apicad, reaching basal 1/5 of elytra, ratio of the length of each segment from base to apex: 0.48, 0.20, 0.63, 0.61, 0.57, 0.56, 0.53, 0.51, 0.42, 0.36, 0.38.

Pronotum subquadrate with rounded sides, 1.33 times as wide as long, widest slightly behind the middle; apex nearly straight, rather clearly rimmed, the rim becoming bolder in medial part, sparsely scattered with microscopic punctures; base gently sinuous on each side, clearly bordered and ridged, more densely scattered with micro-

scopic punctures than apex; sides steeply declined to lateral margins, which are finely ridged, the ridges not visible from above; front angles rounded, hind angles obtusely angulate in dorsal view; disc gently convex, weakly covered with isodiametric microsculpture, softly impressed close to base on each side, closely and rather irregularly scattered with small punctures, each with a bent minute scale. Scutellum nearly equilateral triangular with feebly rounded sides, weakly covered with isodiametric microsculpture, sparsely scattered with microscopic punctures.

Elytra subfusiform, about 2.08 times as long as wide, about 4.4 times the length and 1.45 times the width of pronotum, widest at the middle; dorsum rather strongly convex dorsad, highest at basal 2/5; disc weakly covered with isodiametric microsculpture, sparsely scattered with microscopic punctures, weakly, rather transversely aciculate, punctato-striate, the punctures rather elongate, 5th stria reaching base; intervals rather strongly convex; humeri gently swollen; apices weakly produced.

Male anal sternite semicircularly, weakly depressed in apical part, truncate at apex. Legs without special modification; ratios of the lengths of pro-, meso- and metatarsomeres: 0.28, 0.23, 0.25, 0.24, 1.20; 1.77, 0.88, 0.71, 0.41, 1.37; 1.97, 0.89, 0.54, 1.36.

Male genitalia fusiform, 2.63 mm in length, 0.59 mm in width, feebly curved in lateral view; fused lateral lobes 1.21 mm in length, gently narrowed in basal 2/5, then more strongly narrowed apicad in dorsal view, with acute apices.

Body length: 13.6 mm.

Holotype: ♂, Tanah Rata (from illuminated white-washed walls, No. 77), Cameron Highlands, Pahang, Malaysia, 23~31–III–1995, O. MERKL leg. (HNHMB).

Notes. This new species resembles *Strongylium ishizukai* MASUMOTO, 2003, originally described from Thailand, but can be distinguished from the latter by the slenderer body with the dorsal surface more noticeably covered with isodiametric microsculpture (therefore less shiny), clypeus and genae shorter, diatone wider (0.2 times the width of an eye diameter in *S. ishizukai*), major apical part of 11th antennal segment brownish, pronotum almost evenly convex and less strongly bordered, scutellum narrower in basal part, elytra more finely punctato-striate, and the male genitalia with fused lateral lobes more markedly narrowed in apical 3/5.

Strongylium gombakense sp. nov.

(Figs. 7, 20–21)

Dark coppery, pronotum, posterior part of scutellum, elytra and major parts of ventral side dark greenish tinge; dorsal surface strongly metallically shining, ventral side of head polished, pro-, meso- and metasterna weakly shining, abdomen moderately shining; each surface except for interior sides of male metatibiae almost glabrous. Body subfusiform, strongly convex dorsad.

Head transversely decagonal, weakly covered with isodiametric microsculpture, rather closely punctate; clypeus subtrapezoidal, flattened in basal part, bent ventrad in

apical part, weakly impressed before fronto-clypeal border, fronto-clypeal border almost straight and deeply sulcate; genae obliquely parallelogrammatic, strongly raised outwards, with outer margins rounded; frons finely T-shaped, steeply inclined anteriad, impressed along median line in posterior part, with interocular space very narrow and finely ridged. Eyes rather large, subreniform, approximate with each other, strongly convex laterad, obliquely roundly inlaid into head. Antennae subfiliform, reaching basal 2/9 of elytra, ratio of the length of each segment from base to apex: 0.55, 0.20, 0.64, 0.67, 0.62, 0.64, 0.63, 0.65, 0.62, 0.64, 0.68.

Pronotum 1.20 times as wide as long, widest at the middle, gently sinuous before base; apex obviously shorter than base, feebly produced anteriad, deeply bordered in a V-shape, marginal part convex and sparsely scattered with minute punctures; base sinuous on each side, strongly bordered and ridged; front angles rounded, hind angles rather acutely angulate; sides steeply declined to lateral margins, which are finely ridged, bluntly toothed at the middle, and visible from above; disc moderately convex, weakly covered with isodiametric microsculpture, irregularly punctate, very feebly impressed in basal 1/5 on each side, also weakly impressed near base on each side and at the middle. Scutellum triangular, gently raised in posterior part, almost smooth, sparsely scattered with minute punctures.

Elytra about 2.1 times as long as wide, 3.9 times the length and 1.4 times the width of pronotum, widest near base; disc punctato-striate, the punctures ovate to oblong, connected with one another by fine striae, small and closely set in interior and posterior parts, becoming larger and somewhat foveolate in antero-lateral parts, 5th stria reaching base; intervals strongly convex, covered with isodiametric microsculpture, sparsely scattered with microscopic punctures; base raised from sutural to 5th intervals; humeri moderately swollen; apices weakly produced.

Male anal sternite quadrately depressed, with apex subtruncate; male metatibia flattened, with internal face haired and noticeably twisted; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.22, 0.19, 0.17, 1.20; 1.02, 0.40, 0.36, 0.29, 1.23; 1.11, 0.40, 0.31, 1.23.

Male genitalia somewhat elongated fusiform, strongly constricted at the middle, 2.48 mm in length, 0.39 mm in width, moderately curved in middle in lateral view; fused lateral lobes feebly elongated fusiform, 1.66 mm in length, with apices rather acute.

Body length: 10.5–11.3 mm.

Holotype: ♂, Ulu Gombak (FIT), Selangor, Malaysia, 21–V~3–VI–2003, M. MARUYAMA leg. (NSMT). Paratype: 1 ex., same data as for the holotype.

Notes. This new species is closely related to *Strongylium promiscuum* GEBIEN, 1927, originally described from Sumatra and recorded from Mentawai, but can be distinguished from the latter by the clypeus narrower, pronotum more noticeably toothed at the middle of lateral margins, with the bases less boldly bordered, elytra less strongly produced apicad, and the legs slenderer.

Strongylium hangayi sp. nov.

(Figs. 8, 22–23)

Dark coppery, outer margins of genae, antennae, base of pronotum, major parts of ventral sides, tibiae, etc., dark reddish brown; clypeus, outer margins of genae, pronotum and elytra rather strongly, metallically shining, major parts of head, scutellum and ventral side rather moderately shining; each surface almost glabrous. Body elongate, gently convex longitudinally.

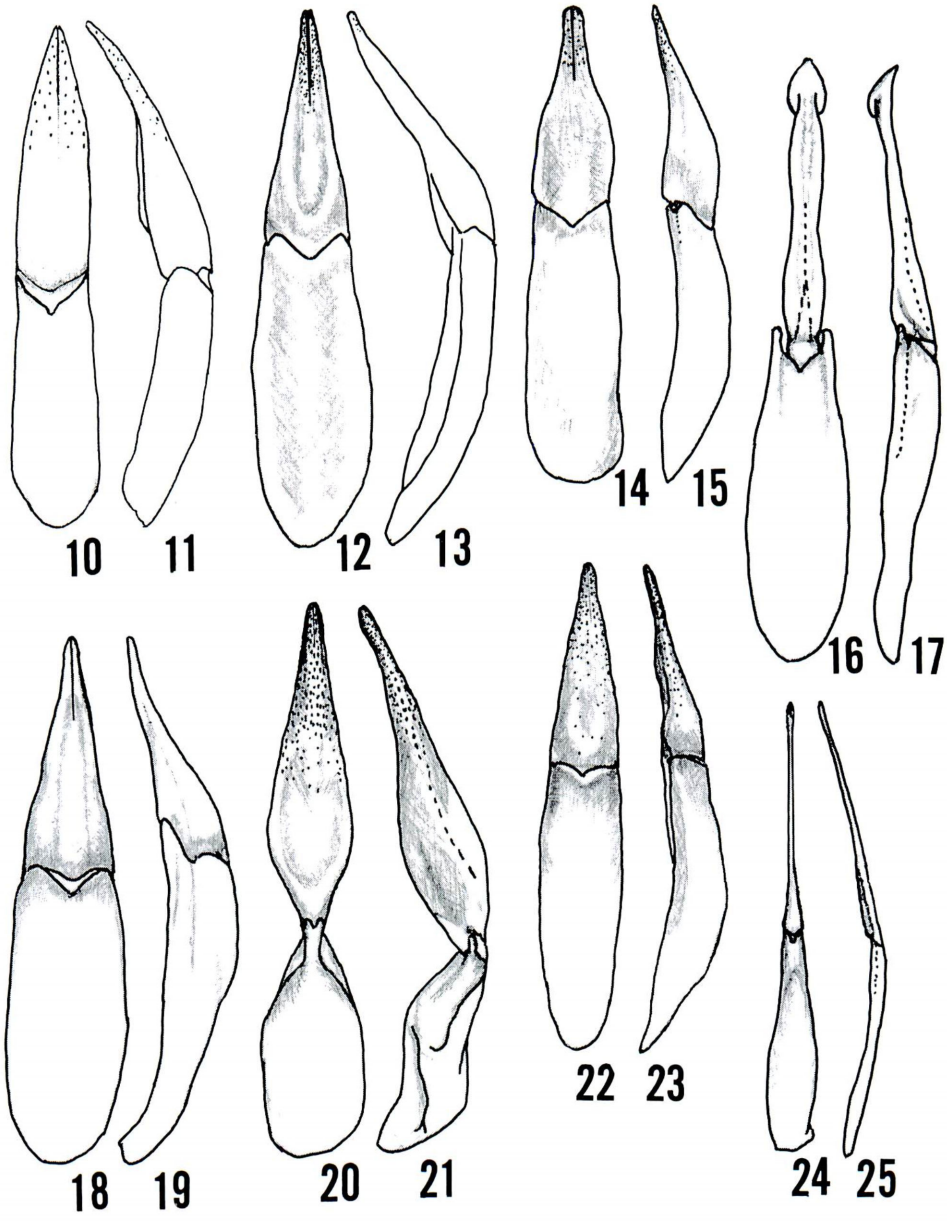
Head subdecagonal, closely, irregularly punctate; clypeus semicircular, flattened in basal part, gently inclined anteriad, weakly bent ventrad and truncate in front, fronto-clypeal border finely sulcate; genae somewhat obliquely rhombic, scattered with small punctures, strongly raised outwards, with outer margins rounded; frons somewhat bold T-shaped, moderately declined to fronto-clypeal border, coarsely rugoso-punctate, weakly grooved along eyes, with an ill-shaped impunctate area close to fronto-clypeal border, and also with a vague longitudinal impression along medial line, the area around the impression impunctate, diatone about 0.4 times the width of transverse diameter of an eye. Eyes rather large and transverse, strongly convex laterad, subelliptically inlaid into head. Antennae subfiliform, reaching basal 1/3 of elytra, ratio of the length of each segment from base to apex: 0.58, 0.20, 0.79, 0.67, 0.65, 0.64, 0.63, 0.61, 0.59, 0.58, –.

Pronotum somewhat trapezoidal with rounded sides, 1.18 times as wide as long, widest slightly before the middle, feebly sinuous before base; apex very weakly produced, finely rimmed, the rim sparsely scattered with microscopic punctures and becoming finer laterad; base slightly sinuous in lateral parts, strongly bordered and ridged, the ridge scattered with microscopic punctures, which become closer in lateral parts; sides steeply declined to lateral margins, which are clearly bordered and visible from above; front angles rounded, hind angles subrectangular in dorsal view; disc strongly convex, very weakly covered with isodiametric microsculpture, irregularly scattered with punctures, divided into two parts by a median groove, which is deepened before the base. Scutellum feebly elongated triangular, slightly depressed as compared with elytra, very weakly covered with isodiametric microsculpture, sparsely scattered with microscopic punctures in lateral parts, weakly impressed along median line.

Elytra oblong-ovate, 2.09 times as long as wide, 3.75 times the length and 1.56 times the width of pronotum, widest at apical 4/9; dorsum moderately convex, highest at basal 1/3; disc punctato-striate, the striae very fine, the punctures deep, small and somewhat ovate; intervals weakly convex, sparsely scattered with minute punctures, very vaguely, transversely aciculate; humeri longitudinally swollen; apices rounded.

Male anal sternite without special modification. Legs medium-sized, without modification; ratios of the lengths of pro-, meso- and metatarsomeres: 0.38, 0.31, 0.28, 0.26, 1.20; 1.23, 0.62, 0.43, 0.39, 1.26; 1.07, 0.47, 0.44, 1.24.

Male genitalia gently elongated fusiform, 2.40 mm in length, 0.41 mm in width, weakly curved in lateral view; fused lateral lobes elongated triangular, 1.16 mm in



Figs. 10–25. Male genitalia of *Strongylium* spp. —— 10–11, *S. pahangense* sp. nov. (10, dorsal view, 11, lateral view); 12–13, *S. maruyamai* sp. nov. (12, dorsal view, 13, lateral view); 14–15, *S. karubei* sp. nov. (14, dorsal view, 15, lateral view); 16–17, *S. munetoshii* sp. nov. (16, dorsal view, 17, lateral view); 18–19, *S. tanahense* sp. nov. (18, dorsal view, 19, lateral view); 20–21, *S. gombakense* sp. nov. (20, dorsal view, 21, lateral view); 22–23, *S. hangayi* sp. nov. (22, dorsal view, 23, lateral view); 24–25, *S. cameronense* sp. nov. (24, dorsal view, 25, lateral view).

length, with acute apices.

Body length: 11.4–12.3 mm.

Holotype: ♂, Cameron Highlands (19 miles station), Pahang, Malaysia, 15–V–1996, G. HANGAY leg. (HNHMB). Paratypes: 2 exs., same data as for the holotype; 1 ex., Gn. Brinchang, Cameron Highlands, 20–IV–1990, A. RIEDEL leg. (SMNS).

Notes. This is an isolated species, with which no previously known species can be compared.

Strongylium cameronense sp. nov.

(Figs. 9, 24–25)

Piceous with feeble dark greenish tinge, each dorsal surface and prothorax sericeously shining and almost glabrous, meso- and metasterna and abdomen almost alutaceous and densely covered with adpressed hairs. Body elongated fusiform, strongly convex dorsad.

Head subdecagonal, very feebly covered with isodiametric microsculpture, closely, coarsely punctate; clypeus semicircular, transversely elliptically flattened in basal part, rather steeply inclined in apical 1/3, bent ventrad in front, particularly noticeably so on each side, fronto-clypeal border curved and clearly impressed; genae subrhombic, gently, subrectangularly raised outwards, with corners rounded; frons somewhat X-shaped, gently steeply inclined anteriad, coarsely rugoso-punctate, sulcate along anterior margins of eyes, with an impression along median line in posterior part, diatone about 0.30 times the width of transverse diameter of an eye. Eyes subreniform, convex laterad, obliquely, roundly inlaid into head. Antennae reaching basal 1/4 of elytra, feebly clavate apicad, apical five segments flattened, ratio of the length of each segment from base to apex: 0.61, 0.20, 0.79, 0.98, 0.78, 0.69, 0.64, 0.63, 0.62, 0.59, 0.58.

Pronotum subtrapezoidal with feebly rounded sides, about 1.5 times as long as wide, widest at base, very weakly sinuous before base; apex very weakly emarginate, ridged, the ridge becoming finer laterad, sparsely scattered with fine punctures; base gently sinuous in lateral parts, boldly ridged, the ridge micro-aciculate on anterior face, scattered with fine punctures on posterior face; sides rather steeply declined to lateral margins, which are finely ridged, the ridges in anterior halves visible from above; front angles rounded, hind angles subrectangular in dorsal view; disc weakly convex, feebly covered with isodiametric microsculpture, irregularly, coarsely punctate, the punctures often fused with one another, with a pair of strong impressions at basal 2/5, and also with a longitudinal impression along median line, which is interrupted around basal 1/3. Scutellum sublinguiform, weakly elevated, very weakly, longitudinally concave along median line, feebly covered with isodiametric microsculpture, sparsely, irregularly scattered with microscopic punctures.

Elytra somewhat elongated elliptical, 2.23 times as long as wide, 4.46 times the length and 1.51 times the width of pronotum, widest near base, feebly narrowed in basal 1/3; dorsum strongly convex, highest at basal 1/5, depressed between scutellar

strioles; disc with rows of foveae, which are round to elongate on upper surfaces, and deeply impressed at each bottom, 2nd, 3rd, 4th and 5th rows deepened close to base; intervals narrowly ridged, 3rd interval distinctly so in basal part, mostly transversely connected with one another, feebly covered with isodiametric microsculpture, scattered with microscopic punctures, very feebly aciculate; humeri (7th and 8th intervals) longitudinally swollen; apices roundly produced.

Male anal sternite strongly, semicircularly depressed, deeply emarginate in apical part, with the depression haired on posterior face and each apical part strongly curved interiad and haired. Legs rather slender; protibia gently curved with ventral face slightly gouged; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.18, 0.20, 0.21, 1.20; 1.77, 0.82, 0.69, 0.52, 1.53; 1.89, 0.78, 0.54, 1.41.

Male genitalia about 3.63 mm in length, 0.41 mm in width, weakly curved in lateral view; basal piece subfusiform; fused lateral lobes extremely slender, 2.07 mm in length, and with acute apices.

Body length: 17.6 mm.

Holotype: ♂, Cameron Highlands, Pahang, Malay Peninsula, no collector's name (NSMT). Paratypes: 1 ex., Cameron Highlands, IV–1985, M. NISHIKAWA leg.; 1 ex., 19 miles, ca. 900 m alt., 20–V–1995, G. HANGAY leg. (HNHMB); 1 ex., vicinity of Tapah, Cameron Highlands, 4–V–1995, G. HANGAY leg.; 1 ex., Tapah, 20–IX–1993, G. HANGAY leg.; 1 ex., Perak, Cameron Highlands, I–1985, WONG leg. (SMNS).

Notes. This new species resembles *Strongylium perforatum* MÄKLIN, 1864, originally described from Java and distributed in Sumatra, but can be distinguished from the latter by the body slenderer with head and pronotum more densely punctate. This species also resembles *Strongylium gressitti* ARDOIN, 1967, originally described from Laos, but can be distinguished from the latter by the robuster body, with the head more coarsely rugoso-punctate and more strongly impressed in postero-medial part, eyes more strongly convex laterad, the pronotum coarsely rugoso-punctate, and impressed along the medial line and the lateral parts, scutellum not smooth but feebly covered with isodiametric microsculpture, and sparsely, irregularly scattered with microscopic punctures, and the elytra more strongly foveolate, depressed between scutellar strioles, and ridged in basal part of the 3rd interval.

要　　約

益本仁雄：アジア産ナガキマワリ族(Strongyliini)の研究．XIII.マレー半島産ナガキマワリ属(*Strongylium*)について（その1）．—— アジア産ナガキマワリ族(Strongyliini)研究の第13回として，マレー半島産のナガキマワリ属(*Strongylium*)を取り上げた．9種の新種を記載し，それぞれ*Strongylium malaccanum* sp. nov., *S. pahangense* sp. nov., *S. maruyamai* sp. nov., *S. karubei* sp. nov., *S. munetoshii* sp. nov., *S. tanahense* sp. nov., *S. gombakense* sp. nov., *S. hangayi* sp. nov. および*S. cameronense* sp. nov. と命名した．

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Elytra, Tokyo, **31** (2): 340, November 22, 2003

A New Record of *Diaclina plagiata* (Coleoptera, Tenebrionidae) from Taiwan

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Diaclina plagiata (MARSEUL, 1876) was originally described from "Japon, Nagasaki", and has been known from Southwest Japan and Korea. Katsumi AKITA and I have been extensively studying Japanese and Taiwanese tenebrionid beetles and found a specimen of this species from Taiwan.

Specimen examined. 1 ex., Palin, Taoyuan Pref., Taiwan, 28–III–1986, M. ÔHARA leg. (NSMT).

I thank Dr. Masahiro ÔHARA, the Hokkaido University Museum, for offering me the specimen, and also thank Mr. Katsumi AKITA, Hisai City, for his permission to record this species for the first time from Taiwan.

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Elytra, *Tokyo*, **31** (2): 341–351, November 22, 2003

Taxonomic Study of Korean Cantharidae (Coleoptera)

VI. Three New Species from Is. Jejudo, Korea

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Abstract Three new species, *Asiopodabrus oreumsensis* sp. nov., *Asiopodabrus asperipunctatus* sp. nov. and *Athemus* (*Andrathemus*) *jejuensis* sp. nov. are described from Is. Jejudo, Korea. Illustrations of the habitus and the aedeagus are provided for each species.

The Korean Cantharidae was enumerated as twenty-nine species of twelve genera belonging to four subfamilies by KIM and KANG (2000), KANG, KIM and KIM (2000), and KANG and KIM (2000 a, b, 2002). KANG and KIM (2000 a) dealt with *Hatchiana* and *Asiopodabrus* as subgenera of the genus *Podabrus*, but since they were raised to the generic rank on the basis of recent morphological studies (IMASAKA, 2001; TAKAHASHI, 2002), we also regard the Korean species as belonging to independent genera.

The volcanic island, Is. Jejudo (=Chejudo) lying on the southwestern sea of Korea has a mild oceanic climate. It has been introduced to the West since 1642 as Quelpart Island. At the center of the island stands Mt. Hallasan, 1,950 m in height. For these reasons, the island has the flora and fauna originating from various places, from the subtropics to the subarctics. As the result, it serves as a habitat for many organisms that cannot be found on the mainland of the Korean Peninsula.

Up to the present time, six species of five genera of the Cantharidae have been recorded from Is. Jejudo (LEE & KWON, 1974; LEE *et al.*, 1985; KANG & KIM, 2000 a, b; KANG, KIM & KIM, 2000). In this paper, we are going to describe newly three species, *Asiopodabrus oreumsensis* sp. nov., *Asiopodabrus asperipunctatus* sp. nov. and *Athemus* (*Andrathemus*) *jejuensis* sp. nov. from the island. Of these, *A.* (*A.*) *jejuensis* is also recorded from the mainland of Korea. As the result, the Cantharidae from Is.

Table 1. List of the Cantharidae from Is. Jejudo.

No.	Species	Korean Name
1	*Hatchiana glochidiatus* (KAZANTSEV, 1996), comb. nov.	등점목가는병대벌레
2	*Asiopodabrus asperipunctatus* KANG et OKUSHIMA, sp. nov.	거친목가는병대벌레
3	*Asiopodabrus fragiliformis* (KANG et KIM, 2000), comb. nov.	연노랑목가는병대벌레
4	*Asiopodabrus circumangulatus* (KANG et KIM, 2000), comb. nov.	원통목가는병대벌레
5	*Asiopodabrus oreumsensis* KANG et OKUSHIMA, sp. nov.	오름목가는병대벌레
6	*Athemus* (*Andrathemus*) *vitellinus* (KIESENWETTER, 1874)	회황색병대벌레
7	*Athemus* (*Andrathemus*) *jejuensis* KANG et OKUSHIMA, sp. nov.	제주어리병대벌레
8	*Cantharis* (*Telephorus*) *tenuelimbata* BALLION, 1870	대륙병대벌레
9	*Rhagonycha* (s. str.) *transita* WITTMER, 1971	꼬마산병대벌레

Jejudo consists of nine species belonging to five genera as is shown in Table 1.

Acknowledgements

We wish to express our deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for critically reading the manuscript of this paper. Our hearty thanks are also due to Dr. Masataka SATÔ, Nagoya, Mr. Kazuhiro TAKAHASHI, Hiratsuka, Dr. Jin Ill KIM of Sungshin Women's University, Dr. Hae Chul PARK and Dr. Jung Sun YOO of the National Institute of Agricultural Science and Technology for their constant guidance and co-operation to our studies.

Materials and Methods

The materials used in this paper are deposited in the collections of Ehime University, Matsuyama (EUM), Kurashiki Museum of Natural History (KURA) and the National Institute of Agricultural Science and Technology, Division of Insect Resources (NIAST).

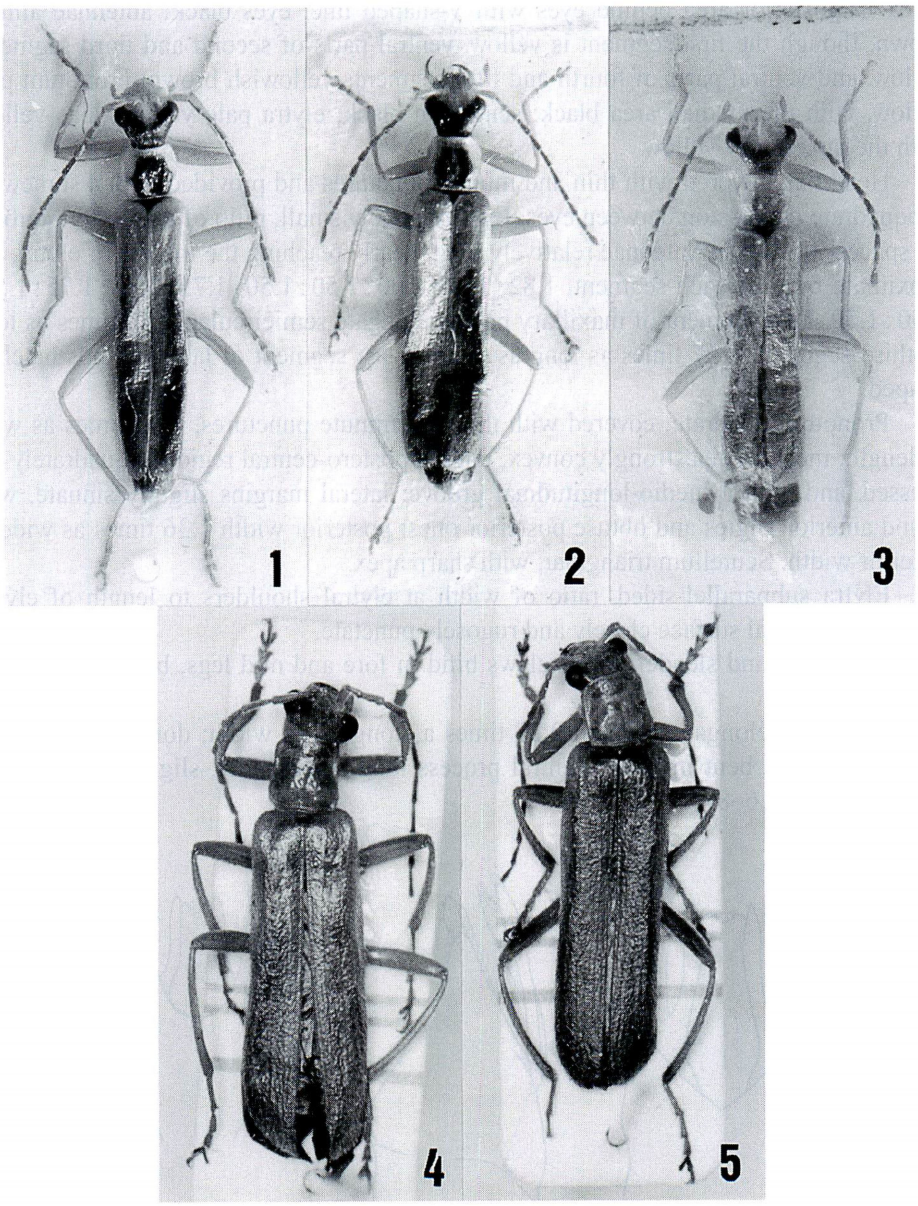
Descriptions and illustrations were prepared by using the stereoscopic microscope (Olympus SYX 12 and Nikon SMZ–10). The photos of habitus were taken with digital camera (Nikon Coolpix 4500).

Systematics

Asiopodabrus oreumsensis KANG et OKUSHIMA, sp. nov.

(Figs. 1–2, 6–8)

Male (Fig. 1). Body mostly pale yellow; head pale yellow in anterior area, but



Figs. 1–5. Cantharidae from Is. Jejudo, Korea. —— 1–2. *Asiopodabrus oreumsensis* KANG et OKUSHIMA, sp. nov.; 1, ♂ (holotype); 2, ♀ (allotype). —— 3. *Asiopodabrus asperipunctatus* KANG et OKUSHIMA, sp. nov., ♂ (holotype). —— 4–5. *Athemus* (*Andrathemus*) *jejuensis* KANG et OKUSHIMA, sp. nov.; 4, ♂ (holotype); 5, ♀ (allotype).

black in posterior area behind eyes with V-shaped line; eyes black; antennae almost brown, though the first segment is yellow, ventral parts of second and third segments yellow, and ventral parts of fourth and fifth segments yellowish brown; pronotum pale yellow, with the median area black; scutellum black; elytra pale yellow; legs yellow, with the tarsi dusky yellow.

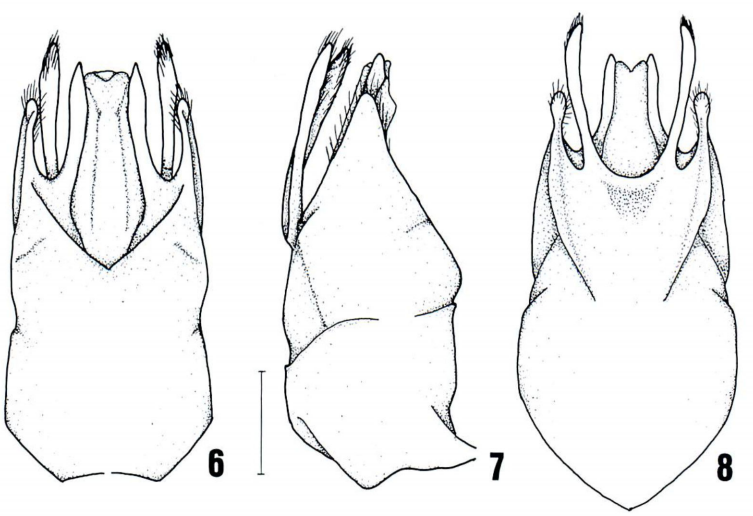
Head flat, covered with thin and minute punctures and provided with a somewhat subquadrate depression between eyes. Eyes relatively small, ratio of an eye to interocular space 1.00 : 4.89. Antennae relatively long, nearly reaching the middle of elytra, approximate ratio of each segment, 1.82 : 1.00 : 1.00 : 1.50 : 1.50 : 1.75 : 1.75 : 1.75 : 1.50 : 1.50 : 1.50. Last segment of maxillary palpus elongate semicircular, 2.50 times as long as third segment, 1.67 times as long as second; last segment of labial palpus hatchet-shaped.

Pronotum quadrate, covered with thin and minute punctures, 1.03 times as wide as length; median area strongly convex, but the postero-central region is quadrately depressed, and with a medio-longitudinal groove; lateral margins slightly sinuate, with round anterior angles and obtuse posterior ones; posterior width 1.36 times as wide as anterior width. Scutellum triangular, with sharp apex.

Elytra subparallel-sided, ratio of width at elytral shoulders to length of elytra, 1.00 : 3.86; dorsal surface closely and rugosely punctate.

Legs long and slender; tarsal claws bifid in fore and mid legs, bluntly toothed in hind one.

Aedeagus elongate; tegmen 2.27 times as long as its width; dorsal process long and slender and bent inwards; ventral process long and slender, slightly expanded at basal part (Figs. 6–8).



Figs. 6–8. Aedeagus of *Asiopodabrus oreumsensis* KANG et OKUSHIMA, sp. nov.; 6, ventral view; 7, lateral view; 8, dorsal view. (Scale: 0.3 mm.)

Body length: 8.22 mm (in the holotype; elytral shoulder : body length = 1.00 : 5.43)

Female (Fig. 2). Body color duskier than in the male; body somewhat longer and wider than in the male (body length in the allotype = 8.23 mm); head and pronotum covered with closer punctures than those in the male. Eyes relatively smaller than in the male (ratio of eye diameter: interocular space in the allotype = 1.00 : 5.00). Mediolongitudinal groove of pronotum evanescent in the allotype, but it often appears as in the male. Scutellum linguiform with obtuse apex. Each tarsal claw of all legs provided with a blunt basal tooth.

Type series. Holotype : ♂, Is. Chejudo, Mt. Hallasan (area between Oreumse and Uioreumse), 11–VI–2000, Y. B. LEE leg. (NIAST). Allotype: ♀, same data as for the holotype (NIAST). Paratypes: Is. Jejudo: 12♂♂, 17♀♀, same data as for the holotype (NIAST); 2♂♂, Sum Gum Puli, 30–IV–1991, Y. NOTSU leg. (EUM); 1♀, Shiitakegoya, 800 m alt., Mt. Hanna (=Hallasan), 14–VII–1968, T. SHIRÔZU & Y. NISHIDA leg. (EUM); 2♂♂, Ryuzinkaku, 1,600 m alt., Mt. Hanna, 16–VII–1968, T. SHIRÔZU leg. (EUM); 2♂♂, 1♀, Ryuzinkaku, 1,600 m alt., Mt. Hanna, 17–VII–1968, T. SHIRÔZU leg. (EUM); 2♂♂, Ryuzinkaku, 1,600 m alt., Mt. Hanna, 17–VII–1968, Y. NISHIDA leg. (EUM); 1♀, Ryuzinkaku, 1,600 m alt., Mt. Hanna, 18–VII–1968, T. SHIRÔZU leg. (EUM); 1♂, Kannonji, 600 m alt., Mt. Nanna (=Hallasan), 20–VII–1968, T. SHIRÔZU & Y. NISHIDA leg. (EUM); 1♂, Sum Gum Puli, 30–IV–1991, Y. NOTSU leg. (EUM); 1♀, Hahlasan (=Hallasan), 750 m alt., Song Panak, 2–V–1991, Y. NOTSU leg. (EUM).

Etymology. The specific name *oreumsensis* is based on the collecting site, Mt. Hallasan. "Oreumse" means a secondary volcano or mountain in local language of Is. Jejudo.

Korean name. Oreum-mogganeun-byeongdaebeolle (see Table 1).

Distribution. Korea: Is. Jejudo.

Notes. According to the key to the groups of the genus *Asiopodabrus* proposed by TAKAHASHI and KIRIYAMA (2000), this new species should belong to the *macilentus* group. It is very similar to *A. kiiensis* (NAKANE et MAKINO, 1989) from Japan and *A. circumangulatus* (KANG et KIM, 2000) from the Korean Peninsula, but is easily distinguished from them by the following points:

From *A. kiiensis*: blackish portion behind eyes with V-shaped line; pronotum a little wider than length, widest at the middle; each processes of aedeagus more widely parted from each other; each ventral process of aedeagus well expanded near the apex.

From *A. circumangulatus*: no longitudinal groove between eyes; median longitudinal groove on pronotum not reaching anterior margin; scutellum sharp at apex in male; punctures on body minute and sparse; dorsal processes of aedeagus bent inwards and ventral processes slightly expanded at each basal part.

Asiopodabrus asperipunctatus KANG et OKUSHIMA, sp. nov.

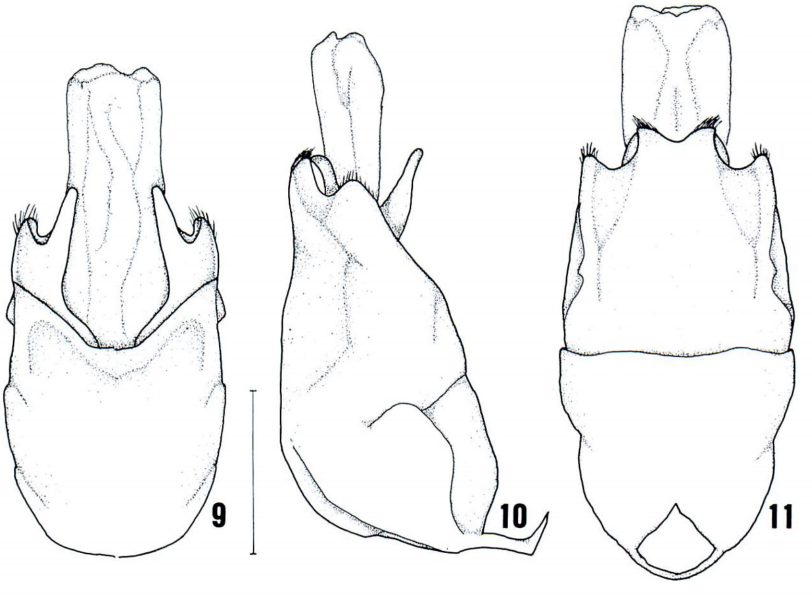
(Figs. 3, 9–11)

Male (Fig. 3). Body mostly pale yellow; head pale yellow in anterior area, but black in posterior area behind eyes; eyes black; antennae almost blackish brown, though each articulation is yellowish brown, first and second segments yellow, third and eleventh yellowish brown; pronotum pale yellow, with the postero-medial area black, scutellum black; elytra pale yellow.

Head flat; surface minutely punctate in anterior portion before eyes, but strongly punctate in posterior portion; interocular area slightly and triangularly depressed. Eyes relatively small, ratio of the diameter of an eye to interocular space, 1.00 : 4.50. Antennae relatively short, nearly reaching basal third of elytra, ratio of antennal segments, 1.63 : 1.00 : 1.00 : 1.16 : 1.16 : 1.33 : 1.16 : 1.16 : 1.00 : 1.00 : 1.33. Last segment of maxillary palpus elongate hatchet-shaped, 2.00 times as long as the third one, 1.25 times as long as the second; last segment of labial palpus hatchet-shaped.

Pronotum quadrate, 1.04 times as wide as length and strongly punctate on disc and minutely so in lateral areas; median area strongly convex, though the postero-central portion is strongly depressed, with a medio-longitudinal groove; lateral margins sinuate, with angulate anterior and sharp posterior angles; posterior width 1.37 times as wide as anterior width. Scutellum triangular with rounded apex.

Elytra subparallel-sided, ratio of width at shoulders to length of elytra, 1.00 : 3.54; dorsal surface covered with close and rugose punctures.



Figs. 9–11. Aedeagus of *Asiopodabrus asperipunctatus* KANG et OKUSHIMA, sp. nov.; 9, ventral view; 10, lateral view; 11, dorsal view. (Scale: 0.3 mm.)

Legs long and slender; each tarsal claw bifid in fore and mid legs, bluntly toothed in hind legs.

Aedeagus oval; tegmen 1.94 times as long as its width; dorsal processes very short, conjointly forming a wide dorsal plate with acute corner on each side of terminal margin; postero-lateral margins sinuate. Laterophyses bent upwards, exposed to apex of posterior portion of dorsal plate. Each ventral process expanded at base, and narrowed apically (Figs. 9–11).

Length of body. 5.35 mm (elytral shoulder: body length = 1.00 : 4.20).

Female. Unknown.

Type series. Holotype: ♂, Is. Chejudo, Mt. Hallasan (area between Oreumse and Uioreumse), 11–VI–2000, Y. B. LEE leg. (NIAST). Paratypes: 1♂, same data as for the holotype (NIAST); 3♂♂, Sogwipo, Chejudo, 1–V–1991, Y. NOTSU leg. (EUM).

Etymology. The specific name *asperipunctatus* is based on morphological peculiarity. The body surface of this species looks rough due to many small punctures particularly on head and pronotum. *Asper* means rough in Latin, and *punctatus* means punctate in the same language.

Korean name. Geochin-mogganeun-byeongdaebeolle (see Table 1).

Distribution. Korea: Is. Jejudo.

Notes. According to the key to the groups of the genus *Asiopodabrus* proposed by TAKAHASHI and KIRIYAMA (2000), this new species falls in the *inexpectus* group. It is very similar in external features to *A. tsuboneae* (TAKAHASHI et KIRIYAMA, 2000) from Japan, but is distinguished from the latter by the following points: body color paler; the anterior part of pronotum narrower; each ventral process of aedeagus expanded at the basal part.

Athemus (*Andrathemus*) *jejuensis* KANG et OKUSHIMA, sp. nov.

(Figs. 4–5, 12–15)

Male (Fig. 4). Body mostly yellow. Eyes black; mandibles and claws reddish brown; antennae, 4th tarsal segments, metasternum and abdominal sternites somewhat dusky. Body closely covered with fine yellowish pubescence; apical margin of clypeus fringed with yellowish bristles; each elytron provided with yellowish bristles intermingled with primary pubescence.

Body moderately slender. Head slightly shorter than its width; dorsum depressed along the apical margin of clypeus and in lateral areas before eyes; surface smooth with faint luster, sparsely with minute and indistinct punctures; apical margin of clypeus arcuate with its center faintly indented; eyes large, globular and strongly prominent, ratio of the diameter of an eye to interocular space 1.00 : 1.55; apical segment of labial palpus blunt triangular; apical segment of maxillary palpus brief ensiform; antennae filiform and slender, attaining to the middle of elytra, 1st segment clavate, second short and a little expanded apicad, third to eleventh subcylindrical, each of fourth to seventh segments with a short groove on the dorso-external side, rela-

tive lengths of antennal segments as follows:— 17 : 10 : 15 : 19 : 19 : 18 : 18 : 17 : 17 : 16 : –.

Pronotum subquadrate, faintly expanded posteriad, 0.87 times (in the holotype; range 0.81–0.87) as wide as head, 1.00 (1.00–1.07) times as long as wide; anterior margin arcuate; posterior margin weakly arcuate; lateral margins sinuate, weakly hollowed behind anterior angles and constricted just before posterior angles; anterior angles rounded; posterior angles obtuse; disc convex, particularly so in the postero-lateral areas, strongly depressed along the posterior margin, antero-lateral areas hollowed; medio-longitudinal furrow distinct in posterior area; surface smooth with faint luster. Scutellum triangular with blunt apex.

Elytra conjointly 1.62 (1.62–1.67) times as wide as pronotum, 2.95 (2.95–3.06) times as long as wide, the sides subparallel though slightly convex at basal fourth; dorsum closely and rugosely punctate, though weakly in basal part; each elytron provided with two vague costae.

Legs considerably slender; each femur mostly straight; each tibia feebly arcuate; each outer claw of fore and middle legs provided with a digitiform tooth, other claws simple.

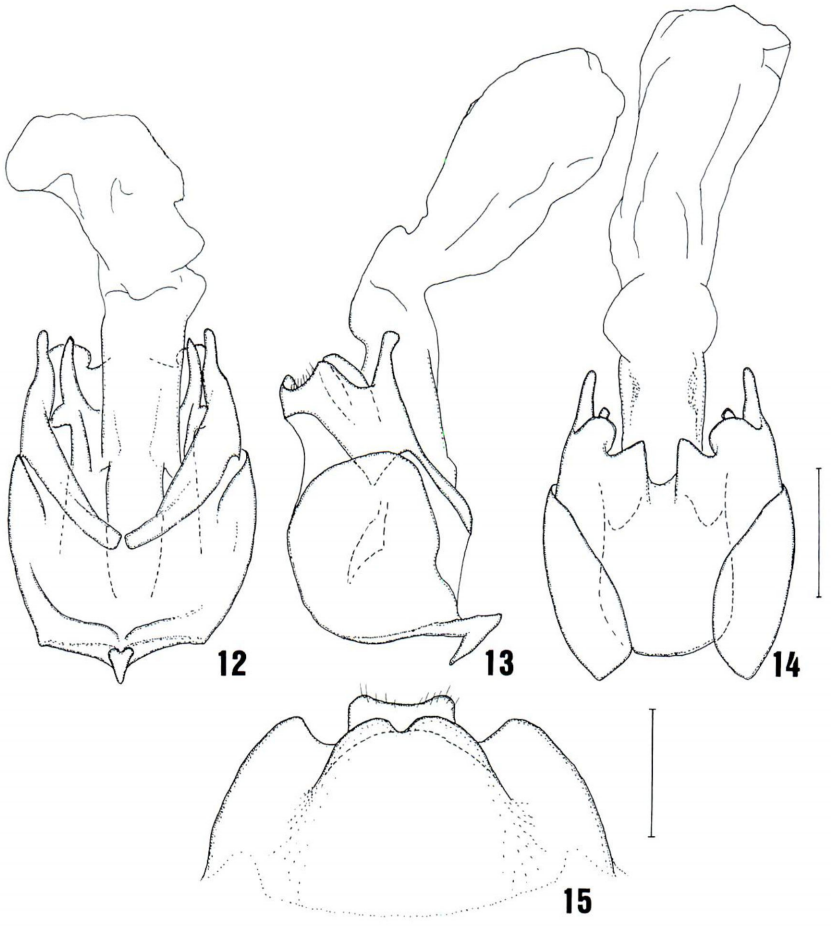
Aedeagus stout. Ventral process of each paramere mostly straight and leaning ventrad, the apex expanded; apical margin of each dorsal plate roundly expanded on lateral side, acutely angular on inner side. Each laterophysis curved towards the apex of each dorsal plate with pointed tip. Inner sac lengthened behind and ventrad, as long as tegmen (Figs. 12–14).

Length of body: 11.20 mm (in the holotype; range 10.60–11.20 measured from the anterior margin of clypeus to the apices of elytra); breadth of body: 2.75 (2.50–2.75) mm (measured at the widest part of conjoint elytra).

Female (Fig. 5). Body somewhat longer and wider than in the male. Eyes not so large as in the male, ratio of the diameter of an eye to interocular space 1.00 : 1.90. Antennae a little shorter than in the male and lacking groove on each segment. Pronotum 0.85–0.95 times as wide as head, 0.91–0.98 times as long as wide. Elytra conjointly 1.49–1.62 times as wide as pronotum, 2.95–3.06 times as long as wide. Eighth abdominal sternite deeply emarginate on each side of terminal margin, forming subtriangular lateral lobes and a wide median lobe, the latter of which is feebly concave at the apical margin and rounded on each side; disc swollen in the central area, the top overhanging apicad with a notch at the middle (Fig. 15).

Length of body: 10.3–11.1 mm; breadth of body: 2.50–2.75 mm.

Type series. Holotype: ♂, Ryuzinkaku, alt. 1,600 m, Mt. Hanna, Chejudo Is., Korea, 17–VII–1968, T. SHIRÔZU leg. (EUM). Allotype: 1 ♀, Ryuzinkaku, alt. 1,600 m, Mt. Hanna, Chejudo Is., Korea, 17–VII–1968, Y. NISHIDA leg. (EUM). Paratypes: 1 ♂, Jeolla-nam-do, Korea: Valley of Piagol, Mt. Jirisan, Gurye-gun, 26–VI–1996 (NIAST); Jejudo Is., Korea: 1 ♂, 1 ♀, Ryuzinkaku, alt. 1,600 m, Mt. Hanna, 16–VII–1968, T. SHIRÔZU leg. (KURA, EUM); 1 ♀, Yongsil, 10–VI–1991, no collector's name (KURA); 1 ♀, Lower stream of Gangjeongcheon, Bokpan-Dong,



Figs. 12–15. *Athemus* (*Andrathemus*) *jejuensis* KANG et OKUSHIMA, sp. nov. —— 12–14, Aedeagus (12, ventral view; 13, lateral view; 14, dorsal view); 15, 8th abdominal sternite in female. (Scale: 0.5 mm.)

16–IV–1998 (NIAST); 1♂, Stream of Uidocheon, Bukjeju-gun, 25–V–1996 (NIAST); 2♀♀, Oreumse – Uioreumse, Mt. Hallasan, 11–VI–2000, Y. B. LEE leg. (NIAST).

Etymology. The specific name is derived from the name of the type locality.

Korean name. Jeju-eori-byeongdaebeolle (see Table 1).

Distribution. Korea: Jeollanam-do, Mt. Jirisan; Is. Jejudo.

Notes. This new species closely resembles *A.* (*Andrathemus*) *vitellinus* (KIESENWETTER, 1874) from Japan, but can easily be distinguished from the latter by the wholly yellow pronotum, characteristic dorsal plates of the male genitalia, and the well swollen 8th abdominal sternite in the female.

The last apical segments are missing in both the antennae in the holotype.

要　約

Tae Hwa KANG・奥島雄一：韓国産ジョウカイボン科の分類学的研究 VI. 済州島の3新種. —— これまで韓国済州島からは6種のジョウカイボン科甲虫が記録されていたが，今回われわれは，新たに*Asiopodabrus oreumsensis* KANG et OKUSHIMA, sp. nov., *A. asperipunctatus* KANG et OKUSHIMA, sp. nov., *Athemus* (*Andrathemus*) *jejuensis* KANG et OKUSHIMA, sp. nov.の3新種を同島から記載した．これらのうち，*Asiopodabrus*属の2種は今のところ同島特産で，*A.* (*A.*) *jejuensis*のみ韓国本土からも記録された．また，いずれの種も韓国本土あるいは日本本土に近縁種が認められた．*A. oreumsensis*は*macilentus*群に属し，日本から知られているキイクビボソジョウカイ*A. kiiensis* (NAKANE et MAKINO, 1989)に酷似するが，前胸背板がやや横長であること，雄交尾器の背面突起がよく離れること，腹面突起が先端近くでよく広がることなどで区別できる．また，本種は韓国本土から知られている*A. circumangulatus* (KANG et KIM, 2000)にも近縁であるが，複眼間に縦溝を欠くこと，前胸背板の中央縦溝が前縁に届かないこと，体表の点刻が小さくまばらであること，雄交尾器の背面突起が内側に曲がり，腹面突起の基部がやや広がることなどで区別できる．*A. asperipunctatus*は*inexpectus*群に属し，日本の本州から知られている*A. tsuboneae* (TAKAHASHI et KIRIYAMA, 2000)にもっとも近縁であるが，体色がより薄いこと，前胸背板前方部がより狭いこと，雄交尾器の腹面突起の基部が広がることで区別できる．*A.* (*A.*) *jejuensis*は，琉球を除く日本と韓国本土に分布するセボシジョウカイ*A.* (*A.*) *vitellinus* (KIESENWETTER, 1874)に近縁であるが，前胸背板が全体に黄色であること，雄交尾器の背板が特異な形態をしていること，雌の第8腹板中央部がよく膨らんでいることなどで区別される．

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Elytra, Tokyo, **31** (2): 351–352, November 22, 2003

Further Records of "*Athemellus multilimbatus*" (Coleoptera, Cantharidae) from Taiwan

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OKUSHIMA and SATÔ (1999) revised Taiwanese *Habronychus* WITTMER, and newly described a subgenus, *Monohabronychus*. They recorded seven species of *Habronychus* from the island. Now, I will add an eighth species to the Taiwanese fauna, which was previously known as a member of *Athemellus*. I will simply record it with some collecting data from Taiwan.

Habronychus (*Monohabronychus*) *multilimbatus* (PIC), comb. nov.

Podabrus multilimbatus PIC, 1911, Le Naturaliste, **32**: 271.
Podabrinus multilimbatus: WITTMER, 1954, Revue suisse Zool., **61**: 275.
Pseudoabsidia multilimbatus: WITTMER, 1969, Mitt. schweiz. ent. Ges., **42**: 128 [genus incertae sedis].
Athemellus multilimbatus: WITTMER, 1972, Ent. Arb. Mus. Frey, **23**: 126 [genus incertae sedis]; 1983, Ent. Rev. Japan, **38**: 171.
Podabrinus? humeralis WITTMER, 1952, Ent. Bl., **47** [1951]: 100.
Podabrinus humeralis: WITTMER, 1955, Mushi, Fukuoka, **29**: 40, tab. 4, fig. 3.
Pseudoabsidia humeralis: WITTMER, 1969, Mitt. schweiz. ent. Ges., **42**: 128 [genus incertae sedis].
Athemellus humeralis: WITTMER, 1972, Ent. Arb. Mus. Frey, **23**: 124.

Specimens examined. [Taiwan]: 6♂♂, 5♀♀, Lala-shan, Taoyuan Hsien, 4–IV–1991, Y. OKUSHIMA leg.; 1♂, Ssuleng, 1,300 m alt., Taoyuan Hsien, 23–III–1991, A. SHINOHARA leg.; 1♂, 1♀, Tzudran, Taoyuan Hsien, 28–IV–1982, N. OHBAYASHI leg.; 1♂, Kukuan, Taichung Hsien, 11–IV–1991, Y. OKUSHIMA leg.; 1♂, Hwei-sun, Nantou Hsien, 3–III–1990, C.-L. LI leg.; 1♂, Sungkang, Nantou Hsien, 18–V–1965, T. SHIRÔZU leg.; 1♀, Sungkang, Nantou Hsien, 12–IV–1991, Y. OKUSHIMA leg.; 2♂♂, 2♀♀, Sungkang, Nantou Hsien, 15–V–1994, T. KISHIMOTO leg.; 1♀, Nanshanchi, Nantou Hsien, 6–IV–1993, T. NONAKA leg.; 1♂, Nanshanchi, Nantou

Hsien, 31–III–1996, R. MATSUMOTO leg.; 1♂, 1♀, Meifeng, Nantou Hsien, 12–V–1994, T. KISHIMOTO leg.

Depository of the specimens examined. All the specimens recorded above are preserved in the collection of Kurashiki Museum of Natural History.

Distribution. China (Fujian), Taiwan.

Notes. It is doubtless that this species belongs to the genus *Habronychus* WITTMER in view of the morphological peculiarities of its male genitalia, and can be placed in the subgenus *Monohabronychus* OKUSHIMA et SATÔ in having simple claws on all the legs. On the other hand, this species seems to be a somewhat isolated member of the genus because of the massive fomora, particularly in male middle legs.

I wish to express my hearty thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his critical reading of the original manuscript, and to all cooperators who kindly supported me with specimens examined.

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Elytra, *Tokyo*, **31** (2): 353–359, November 22, 2003

An Additional New Species of the Genus *Rhagophthalmus* (Coleoptera, Rhagophthalmidae) from Taiwan, with a Key to the Males of the Taiwanese and Japanese Species

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Abstract A new species of the genus *Rhagophthalmus* is described and illustrated from Taiwan under the name of *R. formosanus*, which is the second representative of the genus from the island. A key to the species from Taiwan and Japan is provided for adult males.

Introduction

Only one species, *Rhagophthalmus jenniferae* KAWASHIMA et M. SATÔ, 2001, has been described from Taiwan as the representative of the rhagophthalmid genus. It is closely allied to the Japanese species, *R. ohbai* WITTMER, 1994. Only a year later of its description, the senior author had an opportunity to examine three specimens of a second Taiwanese species collected by the junior author through the courtesy of Dr. Munetoshi MARUYAMA of the National Science Museum, Tokyo. After a careful examination, it has become apparent that they are clearly new to science. In the present paper, the authors will describe and illustrate it under the name *Rhagophthalmus formosanus*.

Materials and Methods

The "materials and methods" and the abbreviations employed in the present paper are the same as those explained in KAWASHIMA and SATÔ (2001).

Description

Rhagophthalmus formosanus KAWASHIMA et SUGAYA, sp. nov.

(Figs. 1–7)

Male. Body feebly shiny, covered all over including appendages with yellowish brown or blackish subrecumbent pubescence. Head capsule black; eyes unfortunately nebulous by dehydration in the type material, probably blackish; antennae brown tinged with yellowish; mandibles shiny, dark brown, paler towards the yellowish bases; other mouth parts yellowish brown; pronotum blackish, becoming more or less lighter towards the sides and base; scutellum yellowish brown; elytra dark brown, entirely tinged olive; coxae and trochanters yellowish brown; femora and tibiae brown; tarsi brown but gradually paler towards apical segments; claws brown; ventral surface of thoraces yellowish brown; abdominal sternites blackish brown.

Body (Fig. 1) elongated oval, gradually dilated towards the distal third of elytra, sides not parallel.

Head (Fig. 1) large and moderately transverse, evidently wider than the maximum width of pronotum, clearly depressed between eyes, rather minutely and irregularly punctate on dorsal surface, the punctures gradually becoming larger towards the basal part of neck area.

Antennae (Fig. 2) 12-segmented, relatively long for a member of the genus, reaching middle of the sides of pronotum; relative length of each segment from scape in the holotype as follows:— 13.5 : 10.5 : 12 : 6.5 : 6 : 8 : 8 : 7 : 7 : 9.5 : 13 : 16.5; scape thick and clavate, about twice as long as wide, widest at the apex; pedicel short cylindrical and thick; 3rd segment (1st flagellar) the longest, clavate and becoming wider towards the apex, twice as long as wide; only 11th (9th flagellar) with lens-like sensillum at the protrudent antero-ventral portion; terminal 12th segment (10th flagellar) slender and spindle-shaped, almost equal in length to the 3rd segment.

Pronotum (Fig. 1) fairly small and short, trapezoidal in dorsal view, widest at the base; anterior margin widely arcuate and produced anteriad; sides straight, gradually divergent towards the base; basal margin clearly sinuate on each side; dorsal surface more or less depressed, irregularly and coarsely punctate; PW/HW 0.96–1.00, PW/PL 1.40–1.48, PW/PA 1.12–1.15, PW/PB 1.00, PL/PW 0.68–0.71, PW/EHW 0.76–0.77.

Scutellum (Fig. 1) triangular or lingulate, closely punctate on the dorsal surface.

Elytra (Fig. 1) broad, widest at apical third, and then narrowed to moderately pointed apices, dehiscent in apical parts; sides distinctly divergent posteriad in proximal two-thirds, narrowly bordered throughout including suture, the margin being concealed at the basal parts by rounded humeli; dorsal surface irregularly rugose; each elytron with three vague costae, EL/PL 5.65–5.81, EL/EW 2.18–2.35, EW/PW 1.71–1.94.

All legs (Fig. 1) not so long but slender; femora fusiform; tibiae almost straight; tarsi relatively long, only a little shorter than the length of tibiae; 3rd and 4th tar-

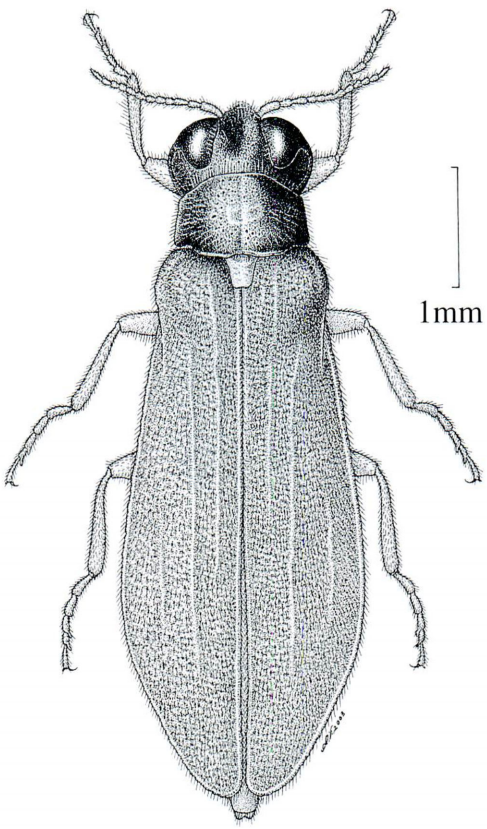
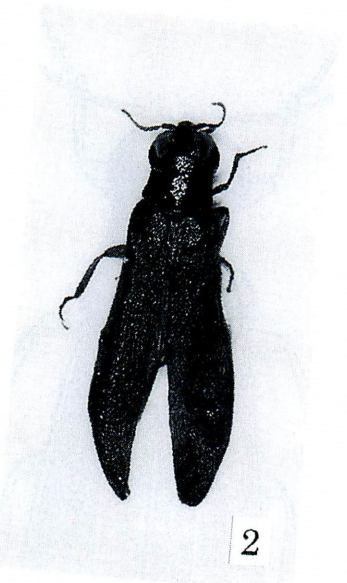


Fig. 1. Habitus of *Rhagophthalmus formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan, dorsal view. Scale: 1.0 mm.

someres with membraneous lingulate lamellae in ventro-apical portions. Claws small and simple, weakly dilated at the bases.

Male genitalia as shown in Figs. 4–5, heavily sclerotized, symmetrically trilobed, weakly flattened dorso-ventrally, broad and relatively rounded as a whole, external surface smooth and glabrous. Basal plate large, elongated oval in dorsal view; distal part fairly extended anteriorly, distal margin almost straight and/or horizontal, with a deep cleft at the center, widely open in venter. Aedeagus very wide, triangular and moderately flattened dorso-ventrally; sides strongly convergent towards the apex, which is minutely rounded or pointed. Parameres spatulate, embracing aedeagus from left and right, joining at the base on ventral side; external sides almost straight, feebly convergent towards the apices; inner margins on dorsum expanded at the middle, each forming a triangular corner, its apices approaching to each other from left and right; inner margins on venter strongly sinuate and widely separated from each other, forming a remarkable level difference near the tips; inner sides each with comparatively small



Figs. 2–3. —— 2. *Rhagophthalmus formosanus* KAWASHIMA et SUGAYA, sp. nov., holotype male, dorsal view. —— 3. Right male antenna of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan, dorsal view. Scale: 0.25 mm.

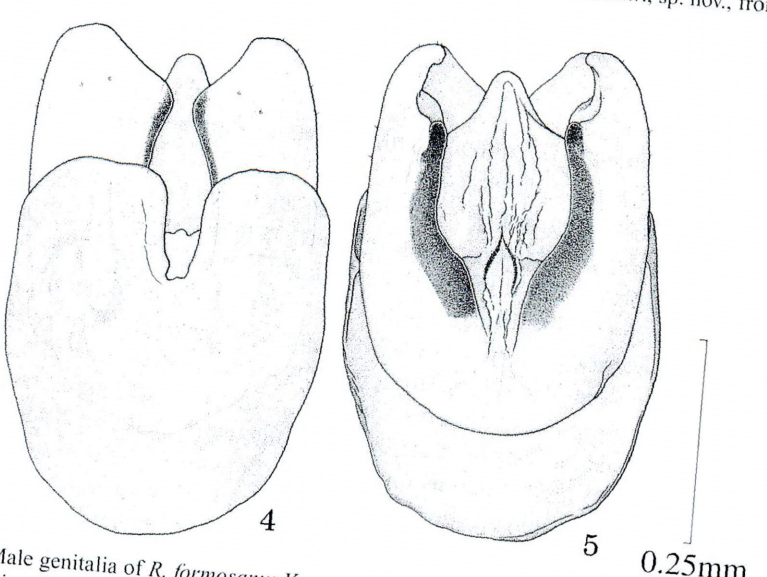


Fig. 4–5. Male genitalia of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., from Taiwan; dorsal view (4), ventral view (5). Scale: 0.25 mm.



Figs. 6–7. —— 6. Micro-habitat of *R. formosanus* KAWASHIMA et SUGAYA, sp. nov., at Meimu, Nantou Hsien, photo by HS., 5–V–2002. —— 7. FIT trap setting at the type locality, Meimu, Nantou Hsien, photo by HS, 5–V–2002.

though deep scooped out areas.

Measurement in mm. BL: 7.10 (in the holotype) (range 7.10–7.70); HW: 1.40 (1.40–1.55); PL: 0.95 (0.95–1.05); PA: 1.20 (1.20–1.35); PB: 1.35 (1.35–1.55); PW: 1.35 (1.35–1.55); EL: 5.45 (5.45–6.10); EW: 2.50 (2.40–3.00); EHW: 1.75 (1.75–2.05); HTL: 1.05 (1.05–1.25).

Female. Unknown (probably wingless larviform).

Type series (all dried). Holotype: 1♂, Meimu [梅木], 1,600 m in alt., Nantou Hsien, Taiwan, 5～10–IV–2002, H. SUGAYA leg. Paratypes: 2♂♂, same data as for the holotype.

The holotype is deposited in the insect collection of the National Museum of Natural Science (NMNS), Taichung, Taiwan. The paratypes are preserved in the luminous insect collection of KAWASHIMA's, Yokosuka-shi, Kanagawa, Japan.

Range. Taiwan.

Biology. Unknown.

Remarks. The color pattern of the body of this new species is common to many other species of the genus, for instance, *R. scutellatus* MOTSCHULSKY, 1853 (the type species of the genus) from East China, *R. ohbai* WITTMER, 1994 from the Yaeyama Isls. (Ishigaki-jima Is., Iriomote-jima Is. and Kohama-jima Is.), Southwest Japan, *R. minutus* KAWASHIMA et M. SATÔ, 2001 from North Thailand and *R. jenniferae* KAWASHIMA et M. SATÔ, 2001 from Taiwan, etc. However, it can be easily distinguished from the other congeners in external morphology, for example, the relative lengths of antennal segments, the relative lengths of the pronotum and elytra, and the shape of the male genitalia.

All the specimens of the type series were caught by FIT trap (about 1m in height, Fig. 7), which was set in a flattened small gap (Fig. 6) of a virgin forest. This collecting site is located in a place about 300m below a path on the ridge. The altitude of the collecting site is almost equivalent to the lowest limit of the virgin forest in this mountain area.

Etymology. The specific name is derived from another name of Taiwan, "Ilha Formosa", which means a beautiful island, firstly called by Portuguese in 1544.

Key to the Males of the Genus *Rhagophthalmus* from Taiwan and Japan

1(2) Elytra rather long, EL/PL 5.65 above. . . . . *R. formosanus* sp. nov. (Taiwan)

2(1) Elytra rather short, EL/PL 5.15 below.

3(4) EL/PL 4.63. Ventral side of meso- and metathoraces brown, weakly tinged with reddish. External sides of parameres in male genitalia almost straight, weakly divergent towards the apices. Luminous spots completely absent. . . . . *R. ohbai* WITTMER (Yaeyama Isls., SW Japan)

4(3) EL/PL 4.75–5.15. Ventral side of meso- and metathoraces reddish brown and fairly tinged with orange. External sides of parameres more or less weakly arcuate, gradually convergent towards the apices. Luminous spots on each

abdominal segment. ..... *R. jenniferae* KAWASHIMA et M. SATÔ (Taiwan)

Acknowledgement

We wish to express our cordial thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his critically reading the original draft and giving us constant advice, and to Dr. Masataka SATÔ of Nagoya-shi and Ms. Nagako KAWASHIMA of Pharmaceutical Division of Kirin Brewery Co. Ltd., Takasaki-shi, Gunma, for their kind help, and also to Dr. Munetoshi MARUYAMA of JSPS Research Fellow PD, Department of Zoology, National Science Museum (Nat. Hist.), Tokyo, for his kind advice and help.

We also thank Dr. Ming-Luen JENG of the University of Kansas, USA and Ms. Jennifer LAI of Kansas, USA, for their encouragement and kindness.

要　約

川島逸郎・菅谷　洋：台湾から新たに追加されたオオメボタル属の1新種の記載，および台湾と日本産の種の雄成虫における検索表．—— 台湾におけるオオメボタル属 *Rhagophthalmus* の種は，この属の基準種である中国産 *R. scutellatus* MOTSCHULSKY, 1853 や，日本の八重山諸島産イリオモテボタル *R. ohbai* Wittmer, 1994 にごく近縁と考えられる *R. jenniferae* KAWASHIMA et M. SATÔ, 2001 が記載されたばかりであるが，その翌年の2002年に採集された1種について，その外部形態を詳しく検討した．その結果，体躯はかなり小型かつ各部位は非常に繊細で，雄交尾器の形状もまったく異なり，その他の本属の既知種からも明瞭に区別されることから，*R. formosanus* という新種名を与えて本報文で記載をおこない，これまで台湾と日本から知られたこの属の雄成虫における検索表を付与して，今後の基礎研究への資料とした．

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Elytra, *Tokyo*, **31** (2): 360, November 22, 2003

New Record of Scirtid Species (Coleoptera, Scirtidae) from Hokkaido

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Up to the present, fourteen species under the six genera of the family Scirtidae have been recorded from Hokkaido, northern Island of Japan (YOSHITOMI, 2002). In this short paper, we are going to record the following two species newly from Hokkaido.

The specimens used in this paper are deposited in the collection of the Historical Museum of Hokkaido, Sapporo.

Sacodes protecta HAROLD, 1881

[Japanese name: Kimune-maruhananomi]

Sacodes protecta: YOSHITOMI, 1997, Elytra, Tokyo, **25**: 402.

Specimen examined. 1♂, Shirahama, Yagishiri Is., Haboro-chô, Hokkaido, 28–VI–1995, S. HORI leg.

Distribution. Japan: Hokkaido (new record), Honshu, Kyushu; Far East of Russia (Primorskij).

Prionocyphon ovalis KIESENWETTER, 1874

[Japanese name: Sedaka-maruhananomi]

Prionocyphon ovalis KIESENWETTER, 1874, Berl. ent. Z., **18**: 243. —— NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., **2**: 140, pl. 70, fig. 16. —— SATÔ, 1985, Coleopt. Japan Col., Osaka, **3**: 423, pl. 77, fig. 24.

Specimen examined. 1♀, Kannonzawa, Sapporo-shi, Hokkaido, 4–VIII–1996, S. HORI leg.

Distribution. Japan: Hokkaido (new record), Honshu, Shikoku, Kyushu.

Reference

YOSHITOMI, H., 2002. An explanation of the Japanese Scirtidae. *Nat. Sci., Tokyo*, **37** (13): 32–35. (In Japanese, with English title.)

Elytra, Tokyo, **31** (2): 361–365, November 22, 2003

New or Little-known Elateridae (Coleoptera) from Japan, XLV

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Abstract Two new species of elaterid beetles, *Glyphonyx koshikiensis* sp. nov. (subfamily Elaterinae) from the Koshiki Islands about 40 km off Kushiki-shi of Kagoshima Prefecture in Kyushu to the west, and *Lanecarus katsuyai* sp. nov. (subfamily Elaterinae) from Fukuoka Prefecture in Kyushu are described and illustrated.

In the present study, I am going to describe two new species of elaterid beetles from Japan. The holotype of each species to be described in this paper is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Before going further, I wish to express my sincere gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for reading the manuscript and giving me useful suggestions, and to Mr. Katsuya KIDO of Fukuoka for his kindness in offering the specimens used in this report.

Glyphonyx koshikiensis sp. nov.

(Fig. 1 A–G)

Male. Length 5.5 mm, width about 1.8 mm. Body normally elongate and convex above; surface rather shining, black to blackish brown except for basal margin and postangular portions of pronotum, scutellum, most parts of elytra, and ventral surfaces of body more or less castaneous brown to dark castaneous brown; vestiture pale yellow, fine and semidecumbent.

Head gently convex between eyes; surface moderately densely and evenly punctate; clypeal margin well ridged and V-shaped (Fig. 1 G). Antenna rather short, with tip hardly reaching posterior angle of pronotum; basal segment elongate and subcylindrical, 2nd small and subclavate, 3rd subtriangular and about 0.8 times as long as 2nd, 4th about 1.6 times as long as 3rd (Fig. 1 B), from 4th to 10th moderately serrate.

Pronotum subquadrate, a little longer than its greatest width at posterior angles, with sides almost parallel in posterior two-thirds, then rounded and convergent towards anterior angles (Fig. 1 C); disc dome-like, moderately densely and evenly punctate (Fig. 1 D), but the punctures become smaller and sparser posteriad, denser and coarser laterad, and surface smooth among punctures; posterior angles produced posteriad, each bearing a distinct carina above along lateral margin. Prosterno-pleural sutures broadly doubled and clearly excavated at each anterior portion. Prosternal process

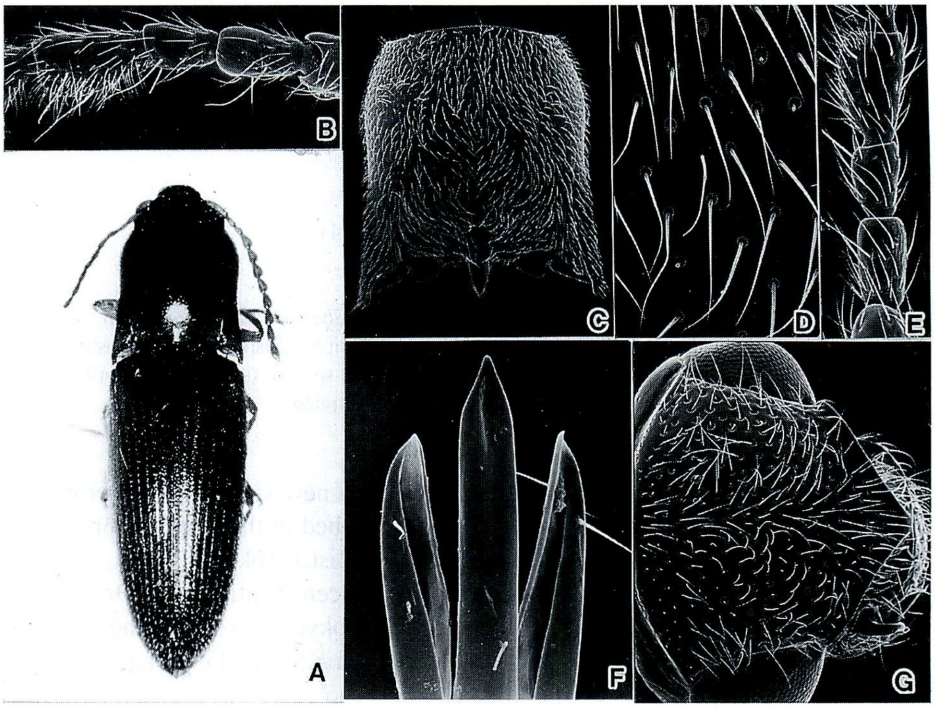

Fig. 1. *Glyphonyx koshikiensis* sp. nov. —— A, Holotype (male); B, 2nd to 4th segments of male antenna; C, pronotum, dorsal aspect; D, some punctures on the disc of pronotum; E, 2nd to 4th segments of female antenna; F, apical portion of aedeagus, dorsal aspect; G, head, dorsal aspect.

straightly projected posteriad and acutely dentate near the tip. Scutellum flattened and lingulate.

Elytra about 2.3 times as long as its basal width, with sides almost parallel in basal halves, thence gradually convergent apicad and ordinarily pointed at the apices; striae well defined, deeply and regularly punctate; intervals rather flattened, finely and irregularly rugose.

Dorsal surface of male genitalia as illustrated (Fig. 1 F); median lobe narrow and parallel-sided, with apical portion subtriangular and pointed at the apex; apical portion of outer margin of each lateral lobe weakly rounded.

Female. Length 5.8–6 mm. Very similar to male, but the body is robuster and the antenna is shorter, not attaining to posterior angle of pronotum.

Holotype: ♂, Sato-mura Rindô in Kamikoshiki-jima Is. of the Koshiki Islands off Kagoshima Prefecture in Kyushu, 21–VII–2002, H. ÔHIRA leg. Paratypes: 5♂, 5♀, same collecting data as for the holotype.

Distribution. Kamikoshiki-jima Is. of the Koshiki Islands off Kyushu, Japan.

This new species is closely allied to *Glyphonyx bicolor bicolor* (CANDÈZE, 1893) from Japan (Honshu, Shikoku and Kyuhyu), but can be distinguished from the latter by

the robuster body, vaguely infuscated posterior halves of elytra, broader and quadrate pronotum, narrower and longer 3rd segment of antenna, and more gently narrowed apex of the median lobe of male genitalia.

Lanecarus katsuyai sp. nov.

(Fig. 2 A–F)

Male. Length 6.5 mm, width about 1.8 mm. Body moderately elongate, almost parallel-sided and gently convex above; surface a little shining, entirely blackish brown except for elytra and most parts of ventral surfaces of body, which are more or less light brown; antennae yellowish brown and legs pale yellowish brown; vestiture pale yellow, fine and semidecumbent.

Head gently convex between eyes, flattened on vertical portion between antennae; surface densely and rather coarsely punctate; clypeal margin obtrapezoidal, with anterior margin broadly and transversely truncate (Fig. 2 F). Antenna elongate, extending beyond posterior angle of pronotum at least by apical segment; basal segment narrow and subcylindrical, 2nd small and subclavate, 3rd subtriangular and about 1.2 times as

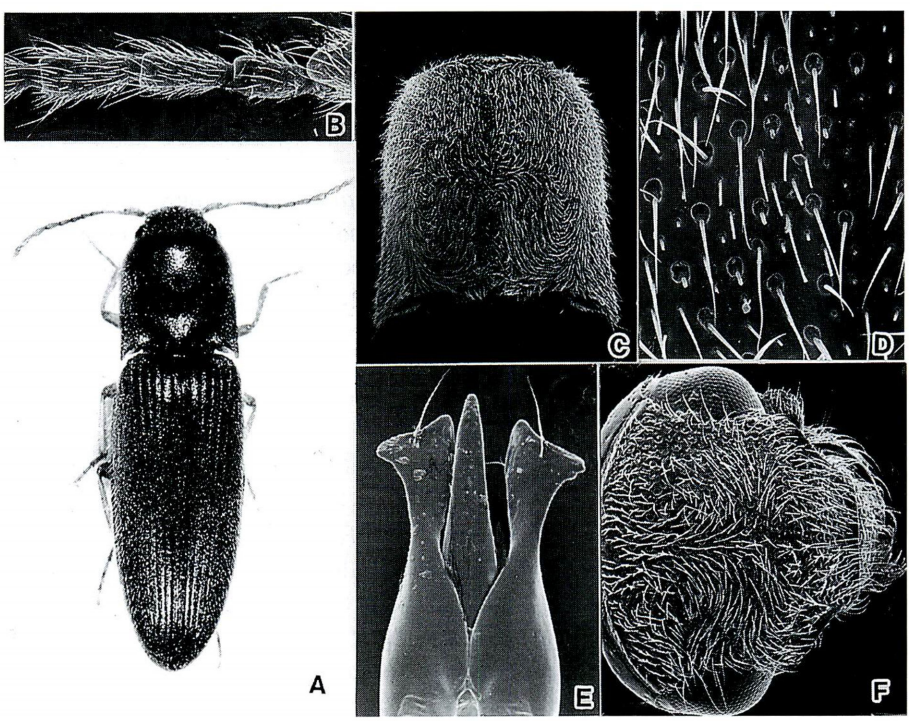

Fig. 2. *Lanecarus koshikiensis* sp. nov. —— A, Holotype (male); B, 2nd to 4th segments of male antenna; C, pronotum, dorsal aspect; D, some punctures on the disc of pronotum; E, apical portion of aedeagus, dorsal aspect; F, head, dorsal aspect.

long as 2nd, 4th a little longer than 3rd (Fig. 2 B), from 4th to 10th feebly serrate.

Pronotum subquadrate, a little longer than its broadest width at posterior angles, with sides slightly sinuate in posterior third, alomst parallel in middle, then rounded and converging towards anterior angles (Fig. 2 C); disc dome-like, rather densely and evenly scattered with two kinds of punctures, small and large ones as illustrated (Fig. 2 D); posterior angles produced posteriad, each with a distinct carina above. Prosternal process slightly excavated just behind procoxal cavities and acutely dentate near tip. Scutellum broad and flattened, punctulate and pointed apically.

Elytra about 2.5 times as long as its basal width, with sides almost parallel in basal halves, thence weakly rounded and gradually convergent towards apices which are ordinarily pointed; intervals elevated, minutely and irregularly rugose. Ventral apical portion of each 3rd segment of tarsi definitely membraneously lobed beneath; claws each with two teeth.

Dorsal surface of aedeagus as illustrated (Fig. 2 E); median lobe gradually narrowing towards obtusely pointed apex; apical portion of each lateral lobe subtriangular, with outer angle obtusely pointed laterad.

Female. Length 6.8 mm. Very similar to male, but the body is robuster and the antenna is slightly shorter, with tip almost attaining to posterior angle of pronotum or slightly extending beyond them.

Holotype: ♂, Shiroshima-chô in Fukuoka Prefecture, Kyushu, 8–VII–2002, K. KIDO leg.; paratypes: 3♂, 4♀, same locality and date as for the holotype. All the specimens are captured by a light trap at the Chikugo-gawa riverside.

Distribution. Kyushu, Japan.

This new species is closely allied to *Lanecarus ihai* ÔHIRA, 1962 from the Ryukyu Islands (Amami-Ôshima Is., Toku-no-shima Is. and Okinawa-hontô Is.), but can be distinguished from the latter by the smaller body, shorter pronotum, shorter 3rd segment of antenna, and more densely and coarsely punctate pronotum with double punctures on the disc.

要　　約

大平仁夫：日本産コメツキムシ科の新種, XLV. —— 本報告では，コメツキ亜科Elaterinaeのニセムナボソコメツキ族Synaptiniに含まれる2新種を記載した．

コシキクチボソコメツキ *Glyphonyx koshikiensis* は，鹿児島県甑列島の上甑島の里村林道で見いだした体長 5.5 mm 内外の種である．一般外形は本州や四国や九州の内陸部に広く分布する *G. bicolor bicolor* キバネクチボソコメツキに類似しているが，体はより大型で，両側はより平行状である．また，上翅は黄褐色であるが，後半部は暗褐色に汚濁している．触角の第3節はより細長く，雄交尾器の中央突起の末端部はより緩く末端に向かって細まる．

カツヤニセクチブトコメツキ *Lanecarus katsuyai* は，福岡県城島町の筑後川の河川敷で城戸克弥氏によって燈火採集で見いだされた．一般外形は奄美大島から沖縄本島にかけて分布するイハニセクチブトコメツキ *L. ihai* に類似するが，触角の第3節がより短く，体はより小型で前胸背

Elytra, *Tokyo*, **31** (2): 367–369, November 22, 2003

Miscellaneous Notes on the Laotian Coleoptera, I

Description of a New Species of the Genus *Metallidascillus* (Coleoptera, Dascillidae)

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Abstract A new species of the genus *Metallidascillus* is described and illustrated from Laos under the name of *M. wakaharai*. It is related to *M. sasajii* from Taiwan, but is readily recognized on its broad facies and reddish brown prothorax.

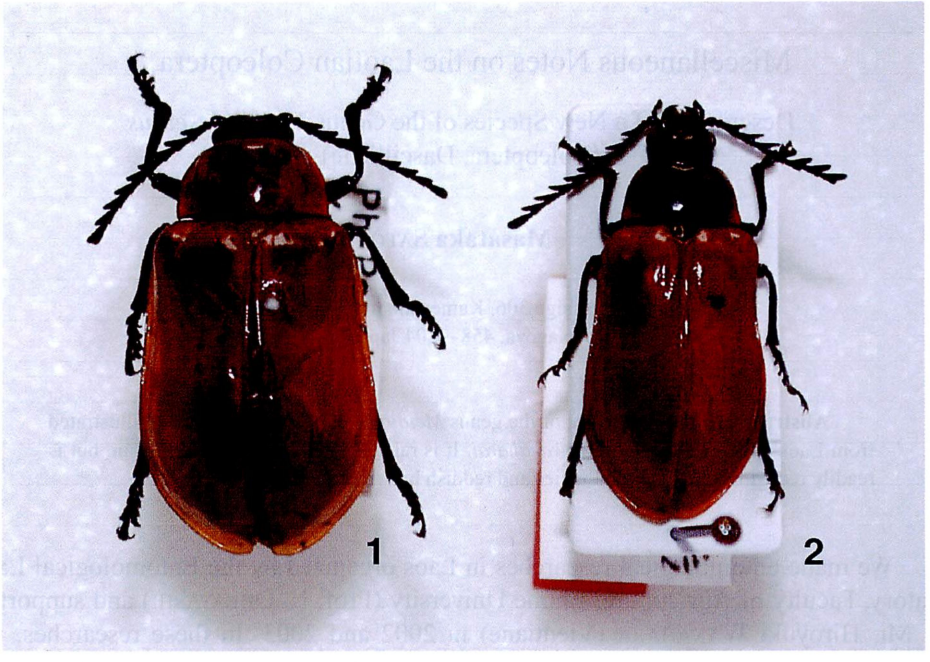
We made entomological researches in Laos organized by the Entomological Laboratory, Faculty of Agriculture, Ehime University (Prof. N. OHBAYASHI) and supported by Mr. Hiroyuki WAKAHARA (Vientiane) in 2002 and 2003. In these researches, we collected many interesting insects, especially Coleoptera. I am therefore going to report some findings of the coleopteran fauna, which should be followed by a series of papers. I would like to pursue collecting researches furthermore.

In this paper, a new dascillid beetle will be described from Laos. Three species of the genus *Metallidascillus* PIC have hitherto been known from Vietnam and Taiwan. In our researches in Laos, we fortunately collected a beautiful species belonging to the genus. After a careful study, I have come to the conclusion that it is a new species. Therefore, it will be recorded in the present paper as a fourth species of the genus.

Metallidascillus wakaharai M. SATÔ, sp. nov.

(Fig. 1)

Female. Body robust, elongated oval and polished. Color mostly reddish brown. Head, meso- and metasterna, antennae and legs black. Head broader than long and finely microreticulate in integument; vertex somewhat flat, closely and finely punctate on anterior part, sparsely so on posterior part, and sparsely pubescent in front; mandibles stout, rugosely punctate and pubescent, each provided with an evident tooth at apical third; labrum prolonged anteriad, and furnished with long cinereous hairs; clypeus transverse, sparsely punctate and pubescent; eyes hemispherical, ratio of the diameter of an eye to interocular space 1: 5.2. Antennae strongly serrate, attaining to the basal fifth of elytra, 1st segment stout and twice as long as 2nd which is the shortest, 3rd subtriangular and 1.3 times as long as 1st, 3rd to 10th subequal, 11th oblong



Figs. 1–2. —— 1. *Metallidascillus wakaharai* M. SATÔ, sp. nov. (Paratype). —— 2. *Metallidascillus sasajii* M. SATÔ et OSAWA (Holotype).

and a little longer than 10th. Terminal segment of maxillary and labial palpi dolabriform.

Pronotum trapezoidal, 1.9 times as wide as head, 1.8 times as wide as long, moderately convex and rather smooth in integument; posterior and lateral margins bordered; anterior angles rounded, posterior angles somewhat rectangular; disc sparsely and obsoletely punctate. Scutellum cordate and smooth.

Elytra elongate, 1.4 times as wide as pronotum, 1.3 times as long as wide, well convex, though somewhat concave at basal third, highest at the centre and smooth in integument; shoulders distinctly recognized; lateral sides reflexed, gently divergent posteriad, with rounded apices, though constricted at basal fourth and broadest at apical third; disc sparsely and obsoletely punctate, and provided with 11 punctate striae which consist of minute punctures and become evanescent anteriad and posteriad.

Ventral surface and legs sparsely covered with pubescence. Prosternal process prolonged into mid-intercoxae, with rounded apex. Mesosternum lanceolate and pointed at the apex. Legs moderate in length; tarsi 5-segmented, 1st to 4th bilobate, 5th simple; claws simple, but slightly dilated at the base.

Length of body: 16.6–19.8 mm; breadth of body: 8.1–10.4 mm.

Male. Unknown.

Type series. Holotype: ♀, Phu Pan, alt. 1,750 m, Ban Saleui, Houaphan

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Elytra, Tokyo, **31** (2): 365, November 22, 2003

A New Synonym of *Pterolophia jiriensis* (Coleoptera, Cerambycidae)

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Pterolophia (*Pseudale*) *coreana*, which was described by HASEGAWA and LEE (2000) from Mt. Ji-Ri-San in South Korea, is no doubt identical with *P. jiriensis*, so that the former falls in a junior synonym of the latter as listed below.

Pterolophia (*Pseudale*) *jiriensis* DANILEVSKY, 1996

Pterolophia jiriensis DANILEVSKY, 1996, Acta ent. slov., **4**, p. 21, figs. 2–3.

Pterolophia (*Pseudale*) *coreana* HASEGAWA et LEE, 2000, Elytra, Tokyo, **28**, pp. 198–200, figs. 1–2. [*Syn. nov.*]

I thank Dr. Mikhail L. DANILEVSKY for notifying the literature to me.

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Elytra, *Tokyo*, **31** (2): 366, November 22, 2003

Record of *Oxynopterus candezei* (Coleoptera, Elateridae) from Bilitung Island, Indonesia

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No elaterid beetles have hitherto been reported from Bilitung Island located between Borneo and Sumatra. Recently, I was able to obtain a giant elaterid beetle, *Oxynopterus candezei*, from the island and will record it below as its new locality.

Oxynopterus candezei FLEUTIAUX, 1927

Oxynopterus Audouini CANDÈZE, 1874, Mém. Soc. r. Sci. Liège, (2), **4** (1): 206 (Borneo, presqu'île des Malacca). [Junior primary homonym of *Oxynopterus audouini* HOPE, 1842.]

Oxynopterus audouini: ÔHIRA, 1973, Pacif. Ins., Honolulu, **15**: 116 (Sabah: Tawau). (Nec HOPE, 1842.)

Oxynopterus candezei FLEUTIAUX, 1927, Faune Colon. Fr., **1**: 121. [Replacement name for *Oxynopterus audouini* CANDÈZE, 1874.]

Oxynopterus mucronatus: SCHENKLING, 1925, Coleopt. Cat., pars **80**: 51 (Borneo) [part]. (Nec OLIVIER, 1790.)

Specimens examined. 1♂, Bilitung Is., Bangka Belitung, Indonesia, 26~29–IV–1986, native collector; 1♂, Gunung Tajam, alt. ca. 300 m, Kacang Butor, Badau, Belitung Is., Bangka Belitung, Indonesia, 2–V–2002, S. & A. SAITO leg.

Distribution. Malay Peninsula, Penang Is., Borneo Is., Sumatra Is., Bilitung Is. (new record).

I greatly thank Dr. Akiko SAITO, of the Natural History Museum and Institute, Chiba, for her kindness in supplying me with valuable materials.

Province, Laos, 28–IV～2–V–2002, M. SATÔ leg. Paratype: 21♀♀, same locality and date as for the holotype, N. OHBAYASHI, H. YOSHITOMI & M. SATÔ leg.

The holotype and some paratypes are deposited in the collection of the Entomological Laboratory, Faculty of Agriculture, Ehime University; paratypes in those of the National Science Museum (Nat. Hist.) Tokyo, M. SATÔ and others.

This new species is closely related to *M. sasajii* M. SATÔ et OSAWA from Taiwan, but can be easily distinguished from the latter in the body much more robust and the pronotum and prosternum reddish brown in color.

This species is commonly found on the fallen trees at Phu Pan (Phu means mountain in Lao), northern Laos, from late April to early May in 2002, but the specimens obtained were all females. The exact reason for this phenomenon is not known, but appearance season may be different between males and females. Besides, we were unable to find the beetle in 2003 at the same place in the middle of June.

The new specific name is given after Mr. Hiroyuki WAKAHARA for his kind support of our survey of the Laotian fauna.

要　　約

佐藤正孝：ラオスの甲虫類に関する覚書，I. *Metallidascillus*属の新種記載．—— 2002, 2003年に，愛媛大学昆虫学研究室を主体として，ラオスで昆虫相調査を行った．多くの興味ある結果が得られているが，そのなかの甲虫類を少しずつでもまとめていきたいと考え，第1報としてナガフナガタムシ科Dascillidaeの新種を記載した．

従来，*Metallidascillus*属に含まれる種は，ヴェトナムから2種，台湾から1種だけが知られていた．その別の1種がラオスで得られたので検討した結果，新種であるとの結論に達した．ここに，*M. wakaharai*として命名記載した．

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Elytra, Tokyo, **31** (2): 370, November 22, 2003

Records of Two Lucanid Beetles (Coleoptera) from Taiwan

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In Taiwan, there exist many problems concerning imported insects, especially lucanid beetles, the same problems as we have in Japan. Recently, one of the authors, LEE, collected two foreign lucanid beetles mentioned below in the natural field. Both species are tropical ones and we are not sure whether they escaped from the captivity of their owners or grew in the Taiwanese environment. Considering from climatic conditions, they are likely to become settled in Taiwan. If these invaders occupy native habitats, the original fauna would be exposed to the threat of ecosystems.

Cyclommatus giraffa MÖLLENKAMP, 1904

1♂, Kenting, Pintung Hsien, 26–VI–1988, H.-Y. LEE leg.
This is a Bornean species and the mentioned specimen accords with the northern type.

Aegus philippinensis DEYROLLE, 1865

1♂, 1♀, Liukuei, Kaohsiung Hsien, 5–VI–2002, H.-Y. LEE leg.
This is a Philippine species.

Both the species seem to be new records for the fauna of Taiwan, even though the latter has been frequently collected in Taiwan by the people interested in the same subject.

Elytra, *Tokyo*, **31** (2): 371–378, November 22, 2003

Two New Species and a New Record of the *Holotrichia constricta* Group (Scarabaeidae, Melolonthinae, Melolonthini)

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Abstract Two new species of the *Holotrichia constricta* group are described from the Philippines under the names, *H. angulicalcarata* and *H. cebuana*. *Holotrichia sexspecula* CHAPIN is recorded from Mindoro and Mindanao Islands, the Philippines for the first time.

Up to date, no records have been brought to us on the species of the genus *Holotrichia* from the Visayan Islands, the Philippines except for CHAPIN (1931) and my latest work (ITOH, 2003). In spite of these scarce reports, I have already noticed that still more unnamed species would be found in the Visayan Islands. Almost all the unnamed species are considered to belong to the *Holotrichia constricta* group, which was proposed by BRENSKE and was referred to in my report above. In this article, I am going to describe two new species from Mindoro and Cebu Islands, respectively, and to record a Negrosian species, *Holotrichia sexspecula* CHAPIN from Mindoro and Mindanao Islands for the first time.

The abbreviations used herein are as follows: IN – interocular distance; HW – head width; Ph – pronotal height; PW – pronotal width; PL – pronotal length; FL – metafemoral length; FW – metafemoral width; A – arithmetic mean; OMNH – Osaka Museum of Natural History, Osaka; ZMHUB – Zoological Museum of Humboldt University, Berlin; CA – author's collection.

Before going further, I would like to express my cordial thanks to Mr. Danny D. MOHAGAN, the best native collector in the Philippines, for obtaining and offering invaluable materials used in this study.

Holotrichia angulicalcarata ITOH, sp. nov.

(Figs. 1, 6–8, 10, 13, 15, 17, 19, 21, 23)

Description. Length: 24.3–28.6 mm.

Male. Body elongate. Head, mouth parts, pronotum, scutellum and tibiae dark brown, antennae, elytra, pro- to metasterna, metacoxae and legs except for tibiae lighter brown, propygidium, pygidium and abdomen much paler, light brown. Dorsal and ventral surfaces opaque, the former weakly iridescent, legs shining.

Head wide, HW/PW 0.71–0.76 (A 0.74, n=18); clypeus bilobed, emarginate at the middle of anterior margin; frons feebly convex, more roughened anteriorly and laterally, with or without a pair of shallow concavities postero-laterally; vertex hardly ridged, without or hardly with transverse impunctate band; occiput coarsely and densely punctate, the punctures extending toward foramen beyond the level of posterior margin of eye; mentum parallel-sided, gradually narrowed anteriad, with a distinct longitudinal ridge in each lateral portion; IN/HW 0.65–0.73 (A 0.68, n=18); antennae with short 3-segmented club, which is longer than four preceding segments together; maxillary palpus with apical segment gradually widened toward apical 1/3 to 1/2, thence of the same width and gently truncate at apex.

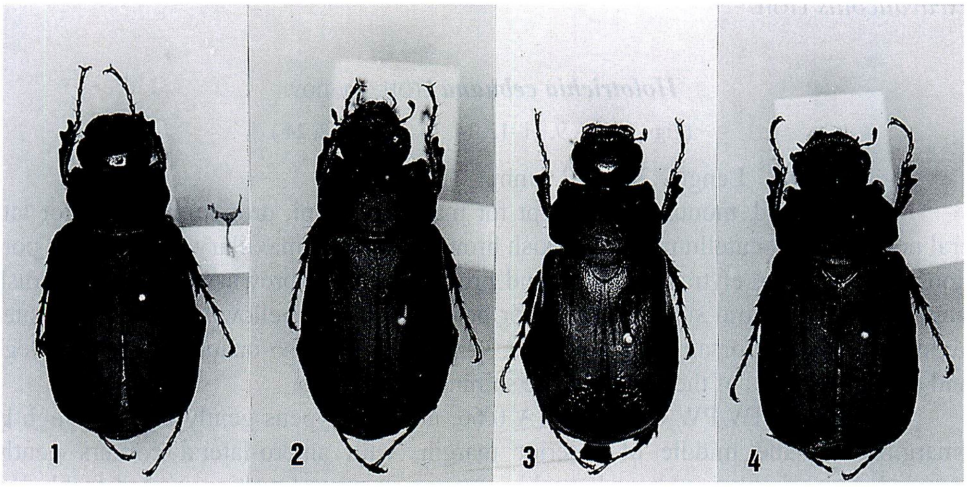
Pronotum moderately produced laterad and strongly constricted basad, excavated near posterior angle, Ph/PW 0.54–0.61 (A 0.57, n=18), PL/PW 0.55–0.60 (A 0.57, n=18); anterior angle subrectangular, posterior one blunt, close to 150° in lateral view; lateral margin distinctly sinuate along both antero-lateral and postero-lateral portions, weakly or hardly reflexed near anterior angle; posterior margin rimmed throughout; disc smooth, finely and rather sparsely punctate, more sparsely so in excavated portions, the surroundings of punctures hardly concave, with small impression near each lateral angle, with or without postero-lateral one before each declivity. Scutellum 1.7–2.1 times as wide as long, finely punctate.

Elytra smooth, with five weakly elevated costae; area just behind humeral knob feebly depressed obliquely. Propygidium smooth, coarsely punctate. Pygidium rather convex, smooth, sparsely and finely punctate, with the surroundings of punctures hardly concave.

Prosternum with basisternum broadened laterally and angulate or not near the sides of anterior margin; post-coxal process flattened and weakly raised. Abdomen almost opaque except on the 6th sternite, haired irregularly; 2nd sternite densely covered with short hairs except on central portion, the central portion of 2nd, almost whole of 3rd to 6th haired sparsely, 3rd to 5th sternites often covered with longer recumbent hairs laterad.

Legs stout; metacoxa round at the postero-lateral corner, neither sharp nor produced; metafemur moderately swollen, sparsely and finely punctate, with a row of short hairs on the surface, which are at most 4/9 times as long as the metafemoral width; FW/FL 0.33–0.37 (A 0.35, n=18); protibia tridentate, with 3rd denticle at basal 0.47–0.57 (A 0.49, n=17), and with 2nd denticle about intermediate between 1st and 3rd denticles; meso- and metatibiae with some small serrations on upper sides, average two serrations on mesotibia and average seven on metatibia; metatibial apical spurs slender, with the longer one longer than 1st metatarsal segment, which is about as long as the 2nd; claws each moderately to rather strongly bent with a sharp denticle at base, the denticle of outer claw of metatarsus slightly smaller than that of inner claw.

Male genitalia with both parameres almost coalescent on upper side, gently and vertically truncate apicad in lateral view; internal sac with lingulate sclerite; spiculum gastrale slender Y-shaped, with the shaft longer than both branches.



Figs. 1–4. —— 1, *Holotrichia angulicalcarata* ITOH, sp. nov.; 2, *H. cebuana* ITOH, sp. nov., ♂; 3, ditto, ♀; 4, *H. sexspecula*, ♂ (Mt. Matotom, S. Mindanao).

Female. HW/PW 0.69–0.78 (A 0.72, n=7), clypeus with a distinct oblique furrow on each side. IN/HW 0.64–0.70 (A 0.67, n=7); antennal club longer than or as long as four preceding segments together. Ph/PW 0.51–0.56 (A 0.54, n=7), PL/PW 0.56–0.58 (A 0.57, n=7). Scutellum 1.8–2.3 times as wide as long. Legs more robust; metafemur rather strongly swollen, FW/FL 0.38–0.47 (A 0.41, n=7), metafemoral hairs on the surface at most 4/9 times as long as the metafemoral width; protibia with 3rd denticle at basal 0.43–0.50 (A 0.47, n=7), mesotibial serrations on the upper side average one, metatibial ones average seven, respectively; longer one of metatibial apical spurs strongly widened toward apical 3/10, thence gently angulate.

Female genitalia as shown in Fig. 23.

Distribution. Mindoro and Palawan Islands (the Philippines).

Type series. Holotype: 1♂, Is. Mindoro, Philippines, V–1993 (OMNH TI–169). Paratypes: 1♂, 1♀, same data as for the holotype; 1♂, same locality, VI–1993; 1♂, Mindoro Oriental, Philippines, 12–VII–1993; 3♂♂, 1♀, Mt. Halcon, Is. Mindoro, Philippines, VI–1993; 6♂♂, 4♀♀, same locality, 1~15–IV–1990, D. MOHAGAN; 1♀, same locality, VI–1992; 2♂♂, Puerto Galra Oriental, Mindoro Is., Philippines, VI–1993; 3♂♂, Mt. Mantalingjan, Is. Palawan, Philippines, III–1996, D. MOHAGAN leg. The holotype and one paratype are deposited in OMNH, two paratypes in ZMHUB and the remaining ones in CA.

Remarks. The present new species resembles the partly sympatric species, *H. excavaticollis* ITOH, 2003 from Palawan, Panay, Mindoro, Cuyo and Dumaran Islands in the shared characters, extremely constricted pronotum and the angular longer spur of the metatibia in female, but judging from the lingulate sclerite of the internal sac of male genitalia, it is considered to be rather allied to *H. flachi* BRENSKE, 1892 than to *H.*

excavaticollis ITOH.

Holotrichia cebuana ITOH, sp. nov.

(Figs. 2–3, 5, 9, 11–12, 14, 16, 18, 20, 22, 24)

Description. Length: 20.5–22.7 mm.

Male. Head, mouth parts except for maxillary palpi, pronotum except for lateral portions and scutellum dark blackish brown, antennae, maxillary palpi, lateral portions of pronotum, elytra, pygidium and prosternum dark brown with feebly reddish tinge, legs and ventral surface except for prosternum dark yellowish brown to lighter yellowish brown. Dorsal surface opaque, ventral surface also opaque though the legs and central portions of the abdomen are shining.

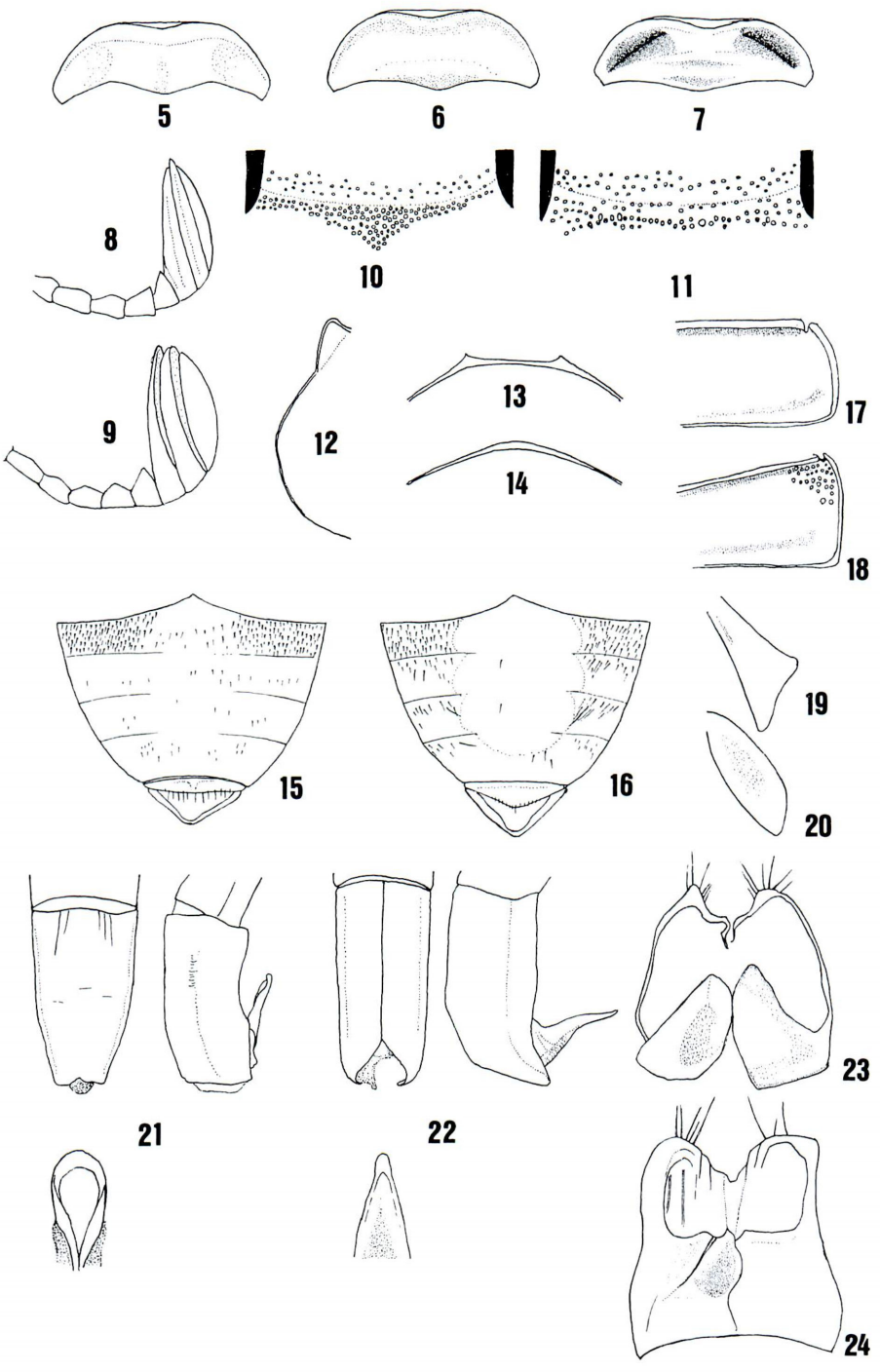
Head wide, HW/PW 0.64–0.68 (A 0.66, n=12); clypeus gently bilobed, slightly emarginate at the middle of anterior margin, with antero-lateral corners gently rounded; frons feebly roughened, weakly concave in central portion; vertex feebly but conspicuously ridged, without distinct transverse impunctate band; occiput coarsely and densely punctate, the punctures feebly extending posteriorly beyond the level of posterior margin of eye; mentum almost parallel-sided with a distinct longitudinal ridge in each lateral portion; IN/HW 0.66–0.69 (A 0.68, n=12); antennae with short 3-segmented club, which is approximately as long as five preceding segments together; maxillary palpus with apical segment elongate and slender, widened toward apical 1/3 or more apically, and rounded at apex.

Pronotum quadrate, convex, moderately produced, not constricted basally, Ph/PW 0.50–0.55 (A 0.52, n=12), PL/PW 0.56–0.59 (A 0.58, n=12); anterior angle rectangular or gently and roundly produced anteriad, posterior one blunt, close to 150° in lateral view; lateral margin irregularly shaped, widely reflexed between anterior angle and apical 2/5–1/2 and often forming a remarkable lobe there; posterior margin rimmed throughout; disc smooth, slightly coarsely and sparsely punctate, the surroundings of punctures obscurely concave, with or without small impression near each lateral angle. Scutellum wide, 1.9–2.2 times as wide as long.

Elytra smooth; sutural costa distinct, 2nd, 3rd and 4th obscurely and weakly elevated, 5th narrow, distinctly or obscurely elevated. Propygidium densely, very coarsely and clearly umbilicately punctate especially in apical half. Pygidium rather convex, the punctures sparse, very coarse and umbilicate though they are concentratedly dense in the apical portion.

Prosternum with basisternum furrowed, strongly broadened laterad, angulate near the sides of anterior margin; post-coxal process thin and gently convex. Abdomen

Figs. 5–24. —— 6–8, 10, 13, 15, 17, 19, 21, 23: *Holotrichia angulicalcarata*; 5, 9, 11–12, 14, 16, 18, 20, 22, 24: *H. cebuana*. —— 5–7, Clypeus (5, 6: ♂, 7: ♀); 8–9, antenna, ♂; 10–11, occiput; 12, antero-lateral portion of pronotal lateral margin; 13–14, prosternal postcoxal process; 15–16, abdomen; 17–18, metacoxa; 19–20, longer metatibial apical spur of female; 21–22, male genitalia (dorsal and lateral views, and sclerite of internal sac); 23–24, coxite of female genitalia.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rather opaque except in central round portion and 6th sternite, haired irregularly: central portion hardly haired or with a transverse row of short sparse hairs, lateral portions of 2nd sternite moderately densely with very short hairs, those of 3rd to 5th ones with some long recumbent or semirecumbent hairs in addition to short hairs, long ones of which are often extendingly distributed toward the central area.

Legs stout; metacoxa almost rectangular at postero-lateral corner, gently curved along its lateral side and irregularly impunctate, for example, in almost all posterior portions or only near posterior angle or in other different ways; metafemur rather swollen, not slender, more densely punctate apicad than basad, with a row of long hairs on the surface, which are at most 5/9 times as long as the metafemoral width; FW/FL 0.36–0.39 (A 0.38, n=12); protibia tridentate, with 3rd denticle at basal 0.52–0.58 (A 0.55, n=11), with 2nd denticle rather close to 1st denticle; meso- and metatibiae with some small serrations on upper sides, average five serrations on mesotibia and average nine on metatibia; metatibial apical spurs more or less widened toward middle, the longer one being as long as 1st metatarsal segment, which is about as long as the 2nd; claws each strongly bent, with a sharp small and vertical denticle at the base, the denticle of outer claw of metatarsus slightly smaller than that of inner claw.

Male genitalia with parameres each obliquely truncate near apex in lateral view and becoming a gently pointed apex, which is directed downward; internal sac with gradually tapered, narrow and lingulate sclerite; spiculum gastrale with the shaft approximately as long as both branches.

Female. Body more robust. HW/PW 0.63–0.65 (A 0.64, n=2), IN/HW 0.68 (n=2), antennal club shorter than or as long as five preceding segments together. Pronotum with a shining small impression on each lateral angle and a rather large, shining and shallow impression on each antero-lateral area. Ph/PW 0.48–0.55 (A 0.52, n=2), PL/PW 0.60–0.61 (A 0.61, n=2). Scutellum 2.2 times as wide as long.

Each elytron with two shining portions on the lateral and apical areas, respectively, the former being from humeral knob to the middle and the latter, which is moderately or sparsely covered with short thick hairs, being a round and rugose portion between apical knob and suture. Legs more robust; metafemur more swollen, FW/FL 0.44–0.46 (A 0.45, n=2), metafemoral hairs on the surface at most half as long as metafemoral width; protibia with 3rd denticle at basal 0.50–0.52 (A 0.51, n=2), mesotibial serrations on the upper side average seven, metatibial ones average nine, respectively; both metatibial apical spurs stout and foliorate. Female genitalia as shown in Fig. 24.

Distribution. Cebu Is. (the Philippines).

Type series. Holotype: 1♂, southern Cebu, Philippines, 10–VII–2002 (OMNH TI–170). Paratypes: 11♂♂, 2♀♀, same data as for the holotype. The holotype and one paratype are deposited in OMNH, two paratypes in ZMHUB and the remaining ones in CA.

Remarks. The present new species is closely allied to *Holotrichia sexspecula* CHAPIN, 1931, from Negros Island. The differences between these two species are

Table. 1. Differences between *Holotrichia sexspecula* and *H. cebuana*.

	H. cebuana	*H. sexspecula*
Anterior portion of pronotal lateral margin	weakly lobed	with remarkably and laterally produced lobe
Color of lateral portions of pronotum	brighter than that of central area	same as that of central area
Antero-lateral portions of pronotum in female	shining	opaque
Elytral apical portion in female	widely shining	not shining
Bundle of thick hairs near elytral suture in female	absent	present
Punctation of metacoxae	uniform in whole area	irregular, partly impunctate

shown in Table. 1.

Holotrichia sexspecula CHAPIN, 1931

(Fig. 4)

Holotrichia sexspecula CHAPIN, 1931, J. Wash. Acad. Sci., **21**: 311–312 (Negros Is.).

Distribution. Negros, Mindoro [new record], Mindanao [new record] (the Philippines).

Specimens examined. 1♂, Is. Mindoro, Philippines, 19～30–VI–1990, D. MOHAGAN leg.; 1♂, Mt. Kitanglad, N. Mindanao, Philippines, 5～13–VI–1991, D. MOHAGAN leg.; 1♂, same locality, 25–V–1990, D. MOHAGAN leg.; 1♂, Mt. Matotom, S. Mindanao, Philippines, II–1996.

Remarks. This species was originally described by CHAPIN from Negros Island. The materials from Mindoro and Mindanao Islands agree with *H. sexspecula* rather than with *H. cebuana* in bright coloration of whole body, paler coloration of lateral portions of the pronotum and well developed lobe of lateral margin of the pronotum. Thus, I determined these materials as *H. sexspecula*.

要　　約

伊藤　武：*Holotrichia constricta* 群の2新種と1新記録．—— 現在までフィリピンのビザヤ諸島からのクロコガネ類の報告はCHAPIN (1931)とITOH (2003)のみであるが，今回ミンドロ島とパラワン島より *H. angulicalcarata* を，セブ島より *H. cebuana* を *H. constricta* 群の新種として報告した．*H. angulicalcarata* は前胸背板基部が極端に引き締まること，雌の後脛節先端にある棘のうち長いほうは角張るなどの点で *H. excavaticollis* ITOH に似ているが，雄交尾器内嚢の骨片の構造からむしろ *H. flachi* BRENSKE に近縁なものと考えられる．*H. cebuana* は *H. sexspecula* CHAPIN に近縁であるが，全体に黒っぽく，前胸背板側縁の葉部があまり発達しないこと，前胸背板側部の

色が中央部よりやや明るい点で区別できる．*H. sexspecula* CHAPIN は従来ネグロス島のみから知られてきたが，ミンドロ島とミンダナオ島からも同一種であると判定される材料が得られたので両島からの新記録とした．

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Elytra, Tokyo, **31** (2): 378, November 22, 2003

New Localities of *Pyrocoelia matsumurai matsumurai* (Coleoptera, Lampyridae, Lampyrinae) from the Okinawa Islands

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A middle-sized lampyrine beetle, *Pyrocoelia matsumurai matsumurai* NAKANE, 1963 has been known to occur on Okinawa-jima Island only. The present author was able to collect this species from two other islands, and will record them below as its new localities.

Materials examined. [Sezoko-jima Is.] 12 larvae, 2–XII–2002, I. KAWASHIMA leg.; [Yagachi-jima Is.] 16 larvae, 2–XII–2002, I. KAWASHIMA leg.

Distribution. Okinawa Isls., Ryukyus: Okinawa-jima Is., Sezoko-jima Is. and Yagachi-jima Is.

Remarks. This species is very common in Okinawa-jima Is. and the two islands recorded above. However, it has never been met with on Iheya-jima Is., which is located off the northern tip of Okinawa Island.

Elytra, Tokyo, **31** (2): 379–383, November 22, 2003

Two New *Larhodius* (Coleoptera, Scarabaeidae, Dichotomini) from the Malay Peninsula

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Abstract Two new species of the scarabaeid genus *Larhodius* (tribe Dichotomini), *L. maruyamai* sp. nov. and *L. hashimi* sp. nov. are described from the Malay Peninsula. *Larhodius* is herewith raised to the generic rank.

Two species of very small scarabaeid beetles with very strange facies were collected by Munetoshi MARUYAMA, a young entomologist specialized in mymecophilous beetles, by FIT (flight interception trap) in the Malay Peninsula. He passed them to us for detailed study. At the first glance, it was noticed that they belong to the genus *Haroldius* in a broad sense, though very peculiar in the body outline. Because of such characteristics as the rounded clypeus, strangely shaped legs, and so on, they were considered to belong to the subgenus *Larhodius* BALTHASAR, 1963, which was known from only a single species.

We have examined the type species and the present material offered to us by MARUYAMA, and have concluded that the latter contains two new species. In addition we have come to the conclusion that the subgenus *Larhodius* should be raised to the generic rank.

Before going further into details, we thank Dr. Munetoshi MARUYAMA, the National Science Museum (Nat. Hist.), Tokyo, for giving us the opportunity to examine very interesting beetles. We also thank Dr. Makoto KIUCHI, Tsukuba City, for taking photographs inserted in this paper. Finally, we appreciate Dr. Shun-Ichi UÉNO, Emeritus Curator of the National Science Museum (Nat. Hist.), Tokyo, for assisting our study in various ways.

Genus ***Larhodius*** BALTHASAR

Haroldius subgen. *Larhodius* BALTHASAR, 1963, Mon. Scarab. Aphod. Palaearkt. Orient. Reg., **1**: 246. Type species: *Haroldius calcaratus* JANSSENS, 1934 (=*Larhodius calcaratus* comb. nov.).

According to BALTHASAR (1963), the subgenus *Larhodius* is characterized by the following points: 1) clypeus not notched at the centre but widely, continuously rounded, with the anterior part weakly reflexed, 2) elytral striae punctate, intervals not

punctate and glabrous, 3) protibiae not bidentate but quadridentate, and meso- and metatibiae each with a long apical spur, which is almost as long as the length of respective tarsi, 4) 1st meso- and metatarsomeres each bearing a spur almost of the same length as the total length of each segment, 5) mesosternum nearly straightly defined from metasternum.

We have confirmed the following characters common to the members of this group: apical margin of head continuously rounded, apical spurs of meso- and metatibiae long, and meso- and metasternal borders nearly straight, intervals minutely punctate and protibia with three to four outer teeth.

In *Haroldius*, the body is hemispherical, the anterior margin of the head widely incised at the middle, with each side of the incision produced, the protibia with the outer margin bidentate, the meso- and metatibiae without long terminal spurs, and the borders of meso- and metasterna strongly curved.

Larhodius can be easily distinguishable from *Haroldius* by the characteristics noticed above. We are therefore going to raise *Larhodius* to the generic rank for reasons of possessing such peculiar characteristics.

Larhodius maruyamai sp. nov.

(Fig. 1)

Body blackish brown, with outer margins darker in colour, hairs on antennal clubs pale yellow, hairs on legs orange; rectangularly oval and strongly convex dorsad; almost glabrous.

Head broad, reflexed along anterior margin, which is widely, continuously rounded and fringed with short setae; clypeus minutely punctate, not clearly defined from genae and frons; genae (ocular lobes) finely punctate, subrectangular at lateral corners, with post-lateral margins (opposite to antero-lateral margins of pronotum) feebly sinuate; frons weakly convex, moderately punctate, the punctures minute in anterior part, becoming larger posteriad, somewhat ocellated in posterior part. Eyes rather crescent-shaped in dorsal view.

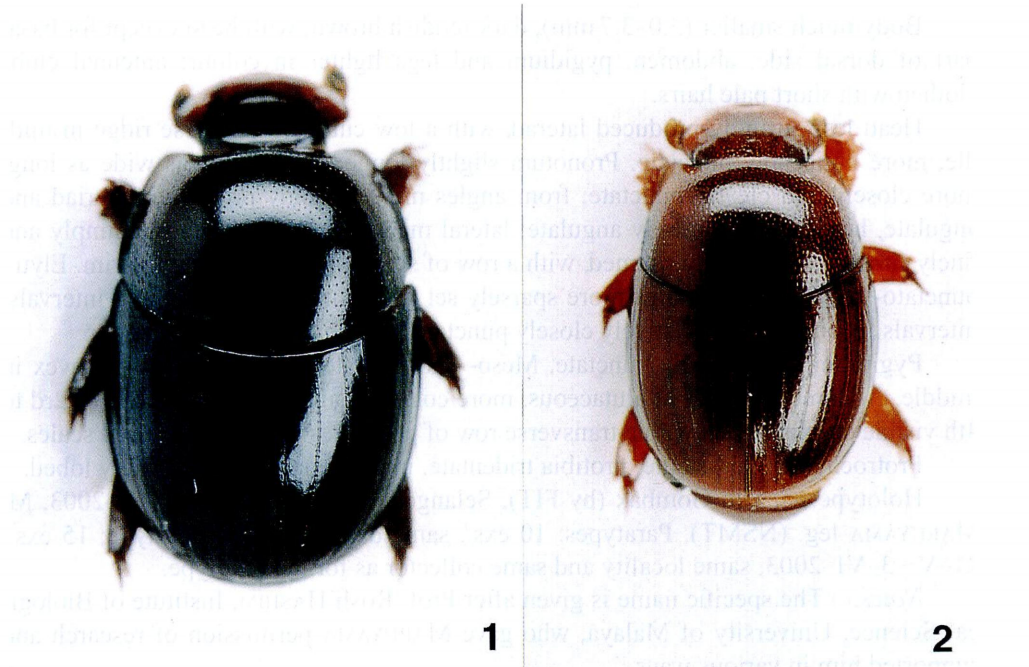
Pronotum somewhat trapezoidal, 1.33 times as wide as long, gently narrowed anteriad; apex widely emarginate, very slightly produced in middle; sides rather steeply declined to lateral margins, which are distinctly bordered throughout, slightly explanate laterad in middle; front angle subrectangular with a rounded corner, hind angle obtuse though the corner is rounded; base very widely rounded, not rimmed, with a row of punctures along margin in lateral parts; disc strongly raised in major postero-central part, wholly covered with microscopic punctures, also covered with larger punctures, which are small in basal and central parts, become larger in anterior and lateral parts, and become ovate and ocellated in lateral parts; antero-interior parts of prothorax hollowed beneath.

Elytra somewhat semicircular in dorsal view; base widely, roundly emarginate in dorsal view; disc with seven striae, which are superficial but evenly impressed, the

punctures in the striae notching intervals; intervals almost flat, minutely punctate; lateral margins feebly explanate and finely rimmed.

Pygidium gently convex, scattered with microscopic punctures, with apical margin bordered by a rim, which is gently widened in medial part. Mesosternum short, rather closely, shallowly punctate, nearly straightly defined from metasternum by a fine groove; metasternum broad, smooth but sparsely microscopically punctate in medial part, relatively closely and coarsely punctate in lateral parts; abdomen rather short, 3rd to 5th visible segments each with a transverse row of punctures, each bearing an adpressed seta.

Legs flattened and wide; protrochanter sharply pointed at the antero-external corner; protibia tridentate with the extremity bearing a bold spur directed antero-exteriad, interior margin gently lobed near base; protarsus short and narrow; mesotibia gently narrowed apicad, with two apical spurs at the extremity, the upper one of which is longer and bolder than the lower, slightly shorter than the total length of mesotarsomeres, and also with short and bold spines in lateral parts of the extremity; mesotarsus with 1st to 3rd segments bearing setae on outer and inner sides of each apex, the setae a little longer than the length of the next tarsomere; 4th mesotarsomere rather small; ventral surfaces of meso- and metatibiae each with a ramp creased obliquely posteriad, though uneven in proximal part; metatibia gently narrowed apicad, with a



Figs. 1–2. Habitus of *Larhodius* spp. —— 1, *L. maruyamai* sp. nov., holotype, ♂; 2, *L. hashimi* sp. nov., holotype, ♂.

bold apical spur at the extremity, which is almost as long as the four metatarsomeres combined, and also with short and bold spines in lateral parts of the extremity; metatarsus with apical parts of 1st to 3rd segments bearing setae on each side; claws small.

Body length: 5.3–5.4 mm.

Holotype: ♂, Ulu Gombak (by FIT), Selangor, Malaysia, 27–II~5–III–2003, M. MARUYAMA leg. (NSMT). Paratype: 1 ex., same data as for the holotype; 2 exs., 21–V~3–VI–2003, the same locality and collector as for the holotype.

Notes. This new species resembles *Larhodius calcaratus* (JANSSENS, 1934), originally described from Barway, India, but can be distinguished from the latter by much larger size (2.5 mm in *L. calcaratus*) and slightly elongate body, with the pronotum more densely punctate, the elytral striae more densely punctate, the protibiae bearing three outer teeth (four teeth in *L. calcaratus*), and the first to third segments of the meso- and metatarsi with setae in the lateral parts of each apex.

Larhodius hashimi sp. nov.

(Fig. 2)

This new species somewhat resembles the preceding, but can be distinguished from the latter by the following characteristics:

Body much smaller (3.0–3.7 mm), dark reddish brown, with head except for basal part of dorsal side, abdomen, pygidium and legs lighter in colour; antennal clubs clothed with short pale hairs.

Head less strongly produced laterad, with a low curved, transverse ridge in middle, more noticeably punctate. Pronotum slightly longer, 1.35 times as wide as long, more closely and clearly punctate; front angles more strongly produced anteriad and angulate, hind angles obtusely angulate; lateral margins not explanate but simply and finely rimmed; base finely rimmed, with a row of small punctures along the rim. Elytra punctato-striate, the punctures more sparsely set and more weakly notching intervals; intervals feebly convex, relatively closely punctate, the punctures slightly larger.

Pygidium more clearly punctate. Meso- and metasterna longitudinally convex in middle. Abdomen somewhat alutaceous, more coarsely punctate, lateral parts of 2rd to 4th visible sternites each with a transverse row of punctures bearing adpressed scales.

Protrochanters less acute; protibia tridentate, interior margin less strongly lobed.

Holotype: ♂, Ulu Gombak (by FIT), Selangor, Malaysia, 27–II~5–III–2003, M. MARUYAMA leg. (NSMT). Paratypes: 10 exs., same data as for the holotype; 15 exs., 21–V~3–VI–2003, same locality and same collector as for the holotype.

Notes. The specific name is given after Prof. Rosli HASHIM, Institute of Biological Science, University of Malaya, who gave MARUYAMA permission of research and supported him in various ways.

要　約

益本仁雄・宇都宮由佳：マレー半島産*Larhodius*属(Dichotomini)の2新種．—— 国立科学博物館の丸山宗利博士が，マレー半島でFITによって採集した小型で半球形のコガネムシを検討したところ，コガネムシ科Dichotomini族の*Haroldius*属*Larhodius*亜属に属する新種であることがわかった．また，*Larhodius*は，*Haroldius*と比較して顕著な特徴をもっているため，属に昇格させるべきであるという結論になった．新種名は，採集者，および採集者に協力を惜しまなかったマラヤ大学のRosli HASHIM教授にちなんで，*Larhodius maruyamai* sp. nov.および*L. hashimi* sp. nov.と命名した．

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Elytra, *Tokyo*, **31** (2): 383–384, November 22, 2003

Tenebrionid Beetles (Coleoptera) from the Palau Islands Collected by Keiichi TAKAHASHI (1)

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Keiichi TAKAHASHI, one of my friends in entomology, has been energetically collecting insects in the Palau Islands for these two years. He has been giving me opportunities of studying tenebrionid beetles from these islands.

KULZER (1957) recorded thirty-five tenebrionid species from the Palau Islands, which are mostly seaside inhabitants. I was therefore surprised to find such sylvicolous species in TAKAHASHI's material as *Amarygmus* and a *Strongylium*, particularly the latter is known for the first time from the Palau Islands.

As the first part of this study, I am going to enumerate previously described species.

Diphyrrhynchus carolinensis BLAIR, 1940: Sonsorol Is.

Gonocephalum pottsi KULZER, 1957: Merir Is.
Nesocaedius minimus (M. T. CHÛJÔ, 1966): Sonsorol Is. (new record).
Trachyscelis suturalis KULZER, 1957: Babethuap Is., Helen Is., Sonsorol Is.
Bradymerus acuticostis GEBIEN, 1925: Peleliu Is., Merir Is., Sonsorol Is., Pulo Anna Is.
Rhipidandrus speculifrons (GEBIEN, 1922): Babethuap Is., Merir Is. (new record).
Platydema waterhousei GEBIEN, 1925: Babethuap Is.
P. townesi KULZER, 1957: Babethuap Is. (new record).
Menimus adamsi KULZER, 1957: Babethuap Is.
Tribolium castaneum (HERBST, 1797): Babethuap Is., Merir Is.
Alphitobius laevigatus (FABRICIUS, 1781): Babethuap Is., Merir Is., Helen Is.
Toxicum quadricorne (FABRICIUS, 1801): Babethuap Is.
Schizomma minor KULZER, 1957: Babethuap Is.
Apterophenus dybasi KULZER, 1957: Babethuap Is.

I deeply thank Dr. Keiichi TAKAHASHI, Japan International Cooperation Agency, for offering invaluable materials, and also thank Dr. Ottó MERKL, the Hungarian Natural History Museum, Budapest, for taking trouble of determination.

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Elytra, *Tokyo*, **31** (2): 385–390, November 22, 2003

A New Species of *Leptaulax* (Coleoptera, Passalidae) from Borneo

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Abstract A new species of *Leptaulax* is described from Sabah and Sarawak, Borneo under the name of *L. hidakai* sp. nov. The present new species is characterized by having mat elytral side, and is closely related to *L. beccarii* from Sumatra. However, it can be distinguished from *L. beccarii* by having the following characters: the body larger (24 mm or more), flatter (the ratio of prothorax thickness to pronotum width less than 0.49). A key is also provided to the *Leptaulax* species sharing the character, the side of elytron mat.

Most passalid species (Coleoptera, Passalidae) have entirely polished elytra except in the punctures of elytral grooves. However, some passalid species have the lateral grooves of the elytron mat (GRAVELY, 1918). The genus *Leptaulax* also includes five species having mat elytral grooves: i.e., *L. anna* ZANG, *L. beccarii* KUWERT, *L. humerosus* KUWERT, *L. masayukii* IWASE and *L. schillhammeri* IWASE (GRAVELY, 1918; IWASE, 1997, 1998).

During the course of the entomological survey in Sabah, Borneo in 1981, the first author collected one beetle of the genus *Leptaulax* from Mamut, near Mt. Kinabalu. This beetle had the elytron with mat lateral grooves but appeared to differ from any known *Leptaulax* species sharing this character. Later we had opportunities to examine some additional specimens of this form from Sarawak as well as from Sabah. After a careful examination of these specimens, we concluded that this form is new to science. Thus, we are going to describe a new species of *Leptaulax* based on the specimens from Sabah and Sarawak.

In describing the present new species, we adopt the terminology of GRAVELY (1914) and IWASE (1996) for external morphology and LINDROTH (1957) for male genitalia.

Leptaulax hidakai JOHKI, ARAYA et KON, sp. nov.

(Figs. 1–4)

Description of holotype. Male. Length from apical margin of clypeus to apices of elytra 24.0 mm. Body flat, ratio of prothorax thickness to pronotum width 0.47, polished except side of elytron; head, pronotum, prosternum, elytra, tibiae and tarsi black; mesosternum, metasternum, abdominal sternites and coxae dark reddish-brown.

Outer margin of mandible with a strong angle near base, almost straight in middle portion anterior to outer angle, strongly curved inwards in distal portion; anterior lower tooth triangular, with apex rounded, slightly larger than lowest terminal tooth, the left one slightly larger than the right one. Labrum punctured and hairy, weakly asymmetrical, with left anterior angle slightly more prominent forwards than the right one, anterior margin concave, lateral margins weakly diverged anteriad. Inner marginal tubercle slightly larger than outer one, with apex rounded; distance between inner tubercles 1.8



Fig. 1. Habitus of *Leptaulax hidakai* sp. nov., scale 5 mm.

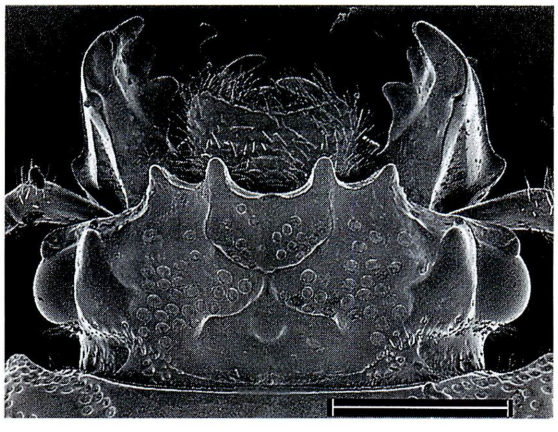


Fig. 2. Head of *Leptaulax hidakai* sp. nov., scale 2 mm.

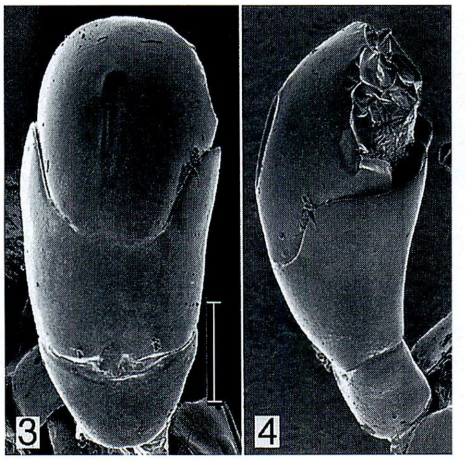
times as long as that between inner and outer ones; outer marginal tubercle triangular; median tubercle small and obtuse. Canthus weakly punctured on dorsal surface, with anterior angle rounded. Eye large, projecting laterally beyond canthus. Frontal area pentagonal, wider than long, hairless, with large annular punctures, median keel indistinct; depressed areas anterior to parietal ridge and between parietal and supraorbital ridges with large annular punctures; areas behind outer tubercle and behind parietal ridge impunctate; parietal ridge short, abruptly ending, not extending to supraorbital ridge; supraoccipital ridge indistinct and punctured in distal portion. Mentum smooth, polished and with J-shaped scar in central portion, with large hair-bearing punctures in lateral portion, rounded at anterior end of lateral portion, concave in posterior margin. Hypostomal process smooth, polished, without groove.

Pronotum flat, rectangular, densely punctured in lateral portion, with anterior angle weakly prominent forwards, posterior angle weakly rounded, median sulcus distinct, lateral scar shallow. Prosternum smooth and with a few hairs in middle portion; posterior plate of prosternum rugose and finely punctured in central portion, polished on posterior border. Mesothoracic episternum mat; mesosternum smooth and impunctate in central portion, with broad lateral scar, mat in scar. Central area of metasternum polished, impunctate, with shallow depression between mesocoxae; anterior intermediate area entirely punctured and hairy; posterior intermediate area punctured in inner and posterior portions, impunctate in outer portion close to lateral area; lateral area rugose, well defined, narrow, slightly widened posteriad.

Elytron flat on dorsal surface, slightly widened posteriad, hairy at humerus, mat in seventh to tenth grooves, with transverse punctures in lateral grooves.

Abdominal sternites entirely polished except for visible third and fourth sternites depressed and mat in anterior portion.

Lateral surface of front tibia flat, somewhat depressed, polished, with hair-bearing punctures; lateral surface of middle tibia polished except in punctures.



Figs. 3–4. Male genitalia of *Leptaulax hidakai* sp. nov., scale 500 μm; 3, ventral view; 4, right lateral view.

Penis large, rounded in distal end, longer than parameres in the middle of ventral side; parameres connected with each other both on dorsal and ventral sides, broadened towards distal end in lateral view, with lateral portion strongly extending forwards in ventral view; basal piece small, much shorter than parameres.

Variation. No sexual dimorphism is evident. Measurements for paratypes from Sabah: body length (mean±SD, range) 25.0 mm±0.87, 24.5–25.8 mm (N=3); the ratio of prothorax thickness to pronotum width (mean±SD, range) 0.476±0.004, 0.471–0.481.

Type series. Holotype: ♂, Mamut near Mt. Kinabalu, 1,000 m in alt., Sabah, 13–VIII–1981, Y. JOHKI leg. Paratypes: 1♀, Mt. Kinabalu, Park Headquarters, 1,300 m in alt., Sabah, 16–IV–1987, A. UEDA leg.; 1♀, Crocker Range, 1,600 m in alt., Sabah, 27–VIII–1987, M. KON leg.; 1♀, Sayap, Mt. Kinabalu, 1,000 m in alt., Sabah, 13–V–1992, H. SADAMORI leg.; 2 exs., Baram River, Sarawak, 4 & 24–X–1920, J. C. MOULTON leg. (in the collection of the Natural History Museum, London). The holotype is deposited in the collection of the Institute for Tropical Biology and Conservation, University Malaysia Sabah.

Etymology. The present new species is named in honor of Prof. Emeritus Toshitaka HIDAKA, who gave us opportunities to perform researches in Borneo.

Notes. The present new species resembles *Leptaulax beccarii* from Sumatra but differs from the latter in having the combination of the following characters: the body larger, 24 mm or more in length, whereas in *L. beccarii*, it is 22 mm or less; the prothorax flatter, the ratio of prothorax thickness to pronotum width less than 0.49, whereas in *L. beccarii*, it is more than 0.52.

The holotype and two paratypes from Sabah were collected by light.

Specimens compared. *Leptaulax anna*: 2♀♀, Ruteng, Flores, XII–1989. *L. bec-*

carii: 3 exs., Bukittinggi, W. Sumatra, 19–VI–1994, K. FUJITA leg.; 5 exs., Mt. Sibayak, N. Sumatra, 24–III–1997, Y. JOHKI leg.; 3 exs., Brastagi, N. Sumatra, 1998, K. FUJITA leg. *L. humerosus*: 1♀, Bukittinggi, W. Sumatra, II–1988; 1♂, Liwa, Lampung, Sumatra, IX–2002. *L. masayukii*: 1♂, Gunung Tambora, Sumbawa (holotype, in the collection of the National Science Museum (Nat. Hist.), Tokyo). *L. schillhammeri*: 1♂, Sibolangit, Sumatra Utara, 25–II–1990, H. SCHILLHAMMER leg. (holotype, in the collection of the Naturhistorisches Museum, Wien).

Key to the *Leptaulax* Species Sharing Mat Elytral Side

1. Hypostomal process with a longitudinal groove; 13 mm; Sumatra, Borneo ..... *L. schillhammeri* IWASE.
— Hypostomal process without longitudinal groove ..... 2.
2. Eye small, not projecting laterally beyond canthus; pronotum impunctate except in marginal groove and scar; Lesser Sunda species ..... 3.
— Eye large, projecting laterally beyond canthus; pronotum punctured in lateral portion; Greater Sunda species ..... 4.
3. Body smaller, less than 27 mm in length; elytra not fused; 25–26 mm; Sumbawa, Flores ..... *L. anna* ZANG.
— Body larger, 30 mm or more in length; elytra fused; 30–32 mm; Sumbawa, Flores .. .. *L. masayukii* IWASE.
4. Body smaller, 18 mm or less in length; external surface of middle tibia mat; anterior intermediate area of metasternum hairless; penis of male genitalia with spine at distal end; 16–18 mm; Sumatra, Malay Peninsula, Borneo ..... *L. humerosus* KUWERT.
— Body larger, 19 mm or more in length; external surface of middle tibia polished except in punctures; anterior intermediate area of metasternum hairy; penis of male genitalia without spine at distal end. ..... 5.
5. Body relatively convex, ratio of prothorax thickness to pronotum width more than 0.52; body length 22 mm or less; side of pronotum weakly punctured; 19–22 mm; Sumatra. ..... *L. beccarii* KUWERT.
— Body flat, ratio of prothorax thickness to pronotum width less than 0.49; body length 24 mm or more; sides of pronotum densely punctured; 24–26 mm; Borneo ..... *L. hidakai* sp. nov.

Acknowledgments

We thank A. UEDA, T. KIKUTA and M. KERLEY for provding us with invaluable specimens and S. NOMURA and H. SCHÖNMANN for giving us opportunities to examine the type specimens. We also express our hearty thanks to Dr. T. HIDAKA for giving us opportunities to perform researches in Borneo. This study was supported in part by a Grant-in-Aid from the Japan Society for the Promotion of Science (No. 14405013).

要　約

常喜　豊・荒谷邦雄・近　雅博：ボルネオからのヒラタクロツヤムシ属の1新種．—— ボルネオのサバ州およびサラワク州から，クロツヤムシ科ヒラタクロツヤムシ属の1新種を *Leptaulax hidakai* sp. nov.と名付けて記載した．本種は鞘翅側面がつや消し状になる特徴を持ち，スマトラ産の *L. beccarii* に近縁である．しかし，体が大きく，24 mm以上あることと，体がより扁平なこと(前胸の厚み／前胸背板幅が0.49未満）により *L. beccarii* から区別できる．ヒラタクロツヤムシ属のつや消し状の鞘翅側面をもつ種についての検索表を付した．

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Elytra, *Tokyo*, **31** (2): 391–394, November 22, 2003

Fourth Contribution to the Knowledge of the Chinese Species of the Genus *Trigonodemus* LeConte, 1863 (Coleoptera, Staphylinidae, Omaliinae)

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Abstract *Trigonodemus puetzi* is described as new, based on specimens collected in west-central Sichuan. A check list of the species of *Trigonodemus*, known at present from mainland China and from Taiwan, is given.

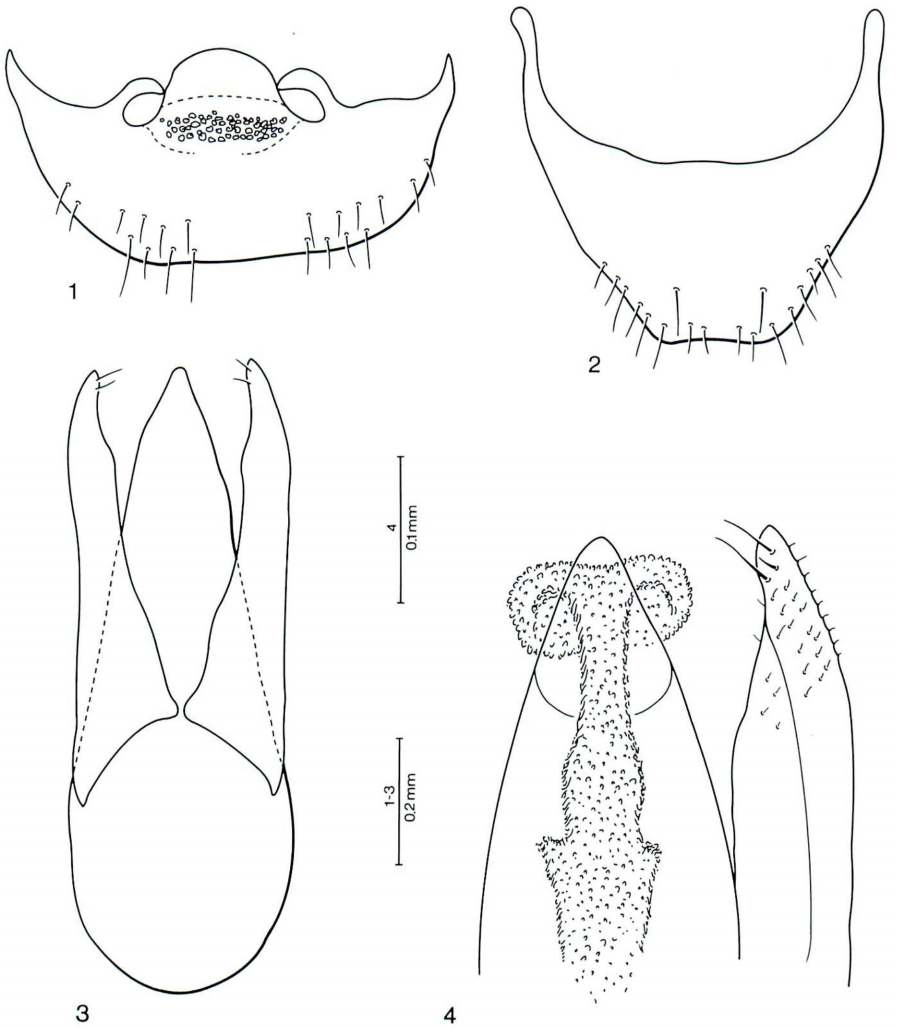
This is the fourth paper treating the species of the conspicuous genus *Trigonodemus* LeConte, 1863 of the Omaliinae and the third one dealing with species from the People's Republic of China (see Smetana, 1996 a, b and 2000). It contains the description of a further new species, which brings the number of species of this genus, known to occur in mainland China and in Taiwan, to nine. There is no doubt that further new species will be found in mainland China.

In the following the new species is described and illustrated.

Trigonodemus puetzi sp. nov.

(Figs. 1–4)

Description. In all external characters similar to *T. puncticollis* Smetana, 2000, but different as follows: coloration very similar, but head and pronotum, particularly its lateral portions, appearing slightly paler in most specimens. Punctation of head located in a similar way as that of *T. puncticollis*, but punctures in general somewhat more numerous. Dorsal portion of neck more densely punctate. Pronotum markedly narrower than that of *T. puncticollis*, at base only moderately wider than along midline long (ratio 1.25; same ratio in *T. puncticollis* is 1.35) and consequently anterior margin is less markedly narrower than base (ratio 1.56; same ratio in *T. puncticollis* is 1.63); impressions on disc of pronotum less pronounced, punctation of pronotum more evenly spaced and in general markedly denser. Elytra more elongate (ratio length from base of scutellum to elytral apex = 1.53; same ratio in *T. puncticollis* is 1.32); elytral striae fine but entirely, finely engraved and finely punctate, gradually becoming distinctly engraved toward lateral elytral margins; intervals flat on mediobasal portion of each elytron, but gradually becoming convex toward lateral margin and less so toward



Figs. 1–4. *Trigonodemus puetzi* sp. nov.: 1, male sternite 8; 2, male tergite 8; 3, aedoeagus, ventral view; 4, apex of median lobe with internal sac and apex of right paramere, detail.

apex of each elytron (in *T. puncticollis* the striae are very superficial and hardly engraved, mostly represented by fine, unevenly situated serial punctures on mediobasal portion).

Male. Abdominal sternite 8 subtruncate apically (Fig. 1); tergite 8 vaguely concave apically (Fig. 2). Aedoeagus (Figs. 3, 4) with median lobe markedly, linearly narrowed anteriad, with vaguely differentiated, subacute apical portion; parameres rather robust, each slightly, subangulately dilated medially at about apical third, each with subacute apex about reaching apex of median lobe and with two fine and one minute

apical setae; internal sac simple, without any larger sclerotized structures (Fig. 4).

Female. Abdominal sternite 8 inconspicuously extended medioapically.

Length 4.0–5.0 mm.

Type material. Holotype (male) and allotype (female): CHINA: "CHINA, Prov. Sichuan Ganzi Tibetian Auton. Pref., Yajiang Co., Shaluli Shan E Pass, 15 km W Yajiang" / "4300 m, Rhododendron sift 30.00,24N 100.51,63E 4.VII.1999, leg. A. Pütz" / "Sammlung Andreas Pütz Eisenhüttenstadt". Holotype in the PÜTZ collection, Eisenhüttenstadt, Germany. Allotype in the SMETANA collection, Ottawa, Canada.

Paratypes: China: [Sichuan]: same data as holotype, 3 ♀; same data as holotype, but date 2.VII.1999, 2 ♀. In the PÜTZ collection (3) and SMETANA collection (2).

Geographical distribution. *Trigonodemus puetzi* is at present known only from the type locality in Shaluli Shan west of Yajiang in west-central Sichuan.

Bionomics. The specimens of the original series were sifted from under *Rhododendron* bushes at a very high elevation of 4,300 m.

Comparisons and comments. *Trigonodemus puetzi* is similar and closely related to *T. puncticollis* and would run to that species in the key to the species of *Trigonodemus* in SMETANA, 2000, 301; however, it may be easily distinguished from that species by the characters given in the description.

The holotype of *T. puetzi* (the only male) is markedly smaller than the females of the original series. It is only 4.0 mm long, whereas the length of the females varies between 4.5 and 5.0 mm.

Etymology. Patronymic. The species was named in honor of its collector, Mr. Andreas PÜTZ, Eisenhüttenstadt, Germany, in recognition of his excellent collecting skills and his outstanding contribution to the knowledge of the Chinese staphylinids through his numerous explorations in that country.

The following check list provides quick orientation about the species of *Trigonodemus* known from mainland China and Taiwan at present:

T. audax SMETANA, 1996 a, 11	(Taiwan)
T. fungicola SMETANA, 1996 a, 9	(Sichuan)
T. mirabilis (HLISNIKOVSKÝ, 1962), 458 (*Klapperichianellia*)	(Fujian)
T. modestus SMETANA, 2000, 300	(Sichuan)
T. montanus SMETANA, 1996 b, 241	(Yunnan)
T. pictus SMETANA, 2000, 295	(Sichuan)
T. puetzi sp. nov.	(Sichuan)
T. puncticollis SMETANA, 2000, 298	(Sichuan)
T. schuelkei SMETANA, 1996 b, 244	(Shaanxi)

Acknowledgments

I thank Mr. Go SATO, Agriculture and Agri-Food Canada, Research Branch, Ottawa, who carefully finished the line drawings.

要　約

Aleš SMETANA: 中国産シデムシモドキ属の知見第4報. —— 中国四川省の中西部からシデムシモドキ属ハネカクシの1新種 *Trigonodemus puetzi* を記載し，あわせて中国本土および台湾からこれまでに記録された同属種の目録を掲げた.

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Elytra, *Tokyo*, **31** (2): 394, November 22, 2003

Occurrence of *Astenus chloroticus* (Coleoptera, Staphylinidae) on the Island of Aogashima of the Izu Islands, Central Japan

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Until now, no staphylinid beetles have been recorded from the Island of Aogashima of the Izu Islands, Central Japan. Through the courtesy of Dr. K. KUROSA, Tokyo, I had an opportunity to examine *Astenus chloroticus* SHARP, which is new to the fauna of this island. It is recorded below with the collecting data.

1♂, Yasundo – Sanpô, Aogashima Island, Central Japan, 21–VI–1979, J. ÔKUMA leg.

I thank Dr. Kazuyoshi KUROSA for his kindness in giving me the specimen.

Elytra, *Tokyo*, **31** (2): 395–402, November 22, 2003

Notes on the Genus *Eusphalerum* (Coleoptera, Staphylinidae) from Aomori Prefecture, Japan

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Abstract Four species of the staphylinid genus *Eusphalerum* from the Bonju-san Mountains and Mt. Manokami-yama of Aomori Prefecture in northeastern Honshu are dealt with. Of these, three species are described as being new to science under the names *E.* (s. str.) *yamauchii*, *E.* (s. str.) *bonjuense* and *E.* (s. str.) *tsugaruense*, and the remaining one determined as *E.* (s. str.) *towadaense* is recorded with collecting data.

The members of the genus *Eusphalerum* are usually found on flowers and widely distributed throughout the world. Fourty-two species of the genus have hitherto been reported from Japan, including the Ryukyus, by SHARP (1874, 1889), FAUVEL (1901), BERNHAUER (1909), CAMERON (1930), CHÛJÔ and LAST (1958) and WATANABE (1990, 1993). From Aomori Prefecture, however, only four species have been reported until now by SHIMOYAMA *et al.* (1986, 1989, 1991) and YAMAUCHI (1996), though three of them were not determined to the species level.

Through the courtesy of Mr. Satoshi YAMAUCHI, I had an opportunity to examine a number of specimens belonging to the genus *Eusphalerum*. They are collected by himself on the Bonju-san Mountains and Mt. Manokami-yama of Aomori Prefecture in northeastern Honshu, Japan. As the result of careful examination, they are classified into four species belonging to two different species-groups. Two species belong to the group of *E.* (s. str.) *michinoku* and the other two species belong to the group of *E.* (s. str.) *japonicum*. Three of the four are new to science for reason of disagreement in the configuration of the male genital organ from the previously known species, and the remaining one is determined as *E.* (s. str.) *towadaense* Y. WATANABE (1990, p. 233). In this paper, I am going to describe the new species in addition to the collecting data of *E.* (s. str.) *towadaense*. The type specimens of the new species to be described are deposited in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture, except for some paratypes which are preserved in the collection of the Aomori Prefecturel Museum.

Before going further, I would like to express my hearty thanks to Dr. Shun-Ichi UÉNO, Visiting Professor at Tokyo University of Agriculture, for his kind advice on the present study. Deep gratitude is also due to Mr. Satoshi YAMAUCHI, the Aomori Prefectural Museum, for his kindness in submitting invaluable specimens to me for taxo-

nomic study, and to Mr. Koji ARAI, Ranzan, Saitama, for his assistance in drawing the habitus illustration inserted in this paper.

Eusphalerum (s. str.) *yamauchii* Y. WATANABE, sp. nov.

[Japanese name: Yamauchi-hanamuguri-hanekakushi]

(Figs. 1–4)

Body length: 2.7–3.0 mm (from front margin of head to anal end); 1.9–2.0 mm (from front margin of head to elytral apices).

Body elliptical and moderately convex medially. Colour blackish and shining, except for head and pronotum which are somewhat dull, with mouth parts, five or so proximal segments, elytra, terminal abdominal segment and legs yellow.

Male. Head subtrapezoidal and depressed above, narrowed anteriad in front of eyes, remarkably broader across compound eyes than long (width/length=1.86); postocular part very short, about one-fourth as long as the longitudinal diameter of each eye, which is prominent; surface sparingly, finely though distinctly punctured and covered with coriaceous ground sculpture, provided with a shallow depression inside each antennal tubercle, and with also a vague small fovea just before each ocellus; ocelli relatively small, the distance between them somewhat larger than that from the outside of ocellus to the inner margin of each eye. Antennae fully extending to posterior margin of pronotum, somewhat thickened towards the apicalmost segment, with five proximal segments polished and the remainigs opaque, 1st segment robust, distinctly longer than broad (length/width=1.80), 2nd constricted at the base, nearly 1.5 times as long as broad, apparently shorter (2nd/1st=0.71) and narrower (2nd/1st=0.88) than 1st, 3rd dilated apicad, apparently longer than broad (length/width=1.75), somewhat longer (3rd/2nd=1.09) though slightly narrower (3rd/2nd=0.91) than 2nd, 4th to 7th equal in length to one another, 4th almost as long as broad, evidently shorter (4th/3rd=0.57) than though as broad as 3rd, 5th globular though slightly transverse (width/length=1.10), slightly broader than 4th (5th/4th=1.10), 6th to 10th gradually increasing in width, each distinctly transverse, 11th semioval, apparently longer than broad (length/width=1.43), twice as long as though as broad as 10th, bluntly pointed at the apex.

Pronotum convex medially and transverse (width/length=1.50), a little broader than head (pronotum/head=1.15), widest at the middle and slightly more strongly narrowed posteriad than anteriad; lateral margins finely bordered, gently arcuate in anterior halves and almost straight in posterior halves, anterior margin feebly emarginate at the middle, posterior margin nearly straight though slightly emarginate at the middle, anterior angles narrowly rounded, posterior ones obtuse; surface covered with similar punctures and ground sculpture to those of head, provided with a shallow and narrow depression in posterior half just inside each lateral margin. Scutellum subtriangular, impunctate though covered with extremely fine coriaceous ground sculpture on the surface. Elytra subtrapezoidal and dilated posteriad, a little longer than broad (length/width=1.10), considerably longer (elytra/pronotum=2.30) and broader (ely-

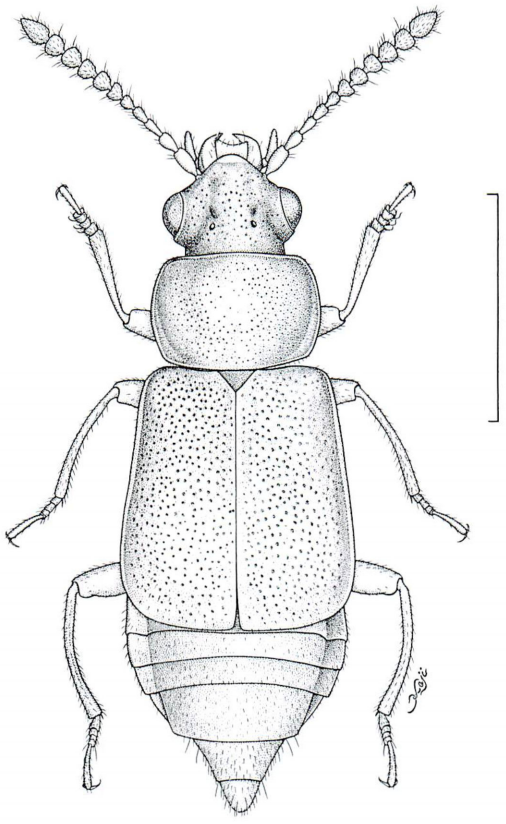


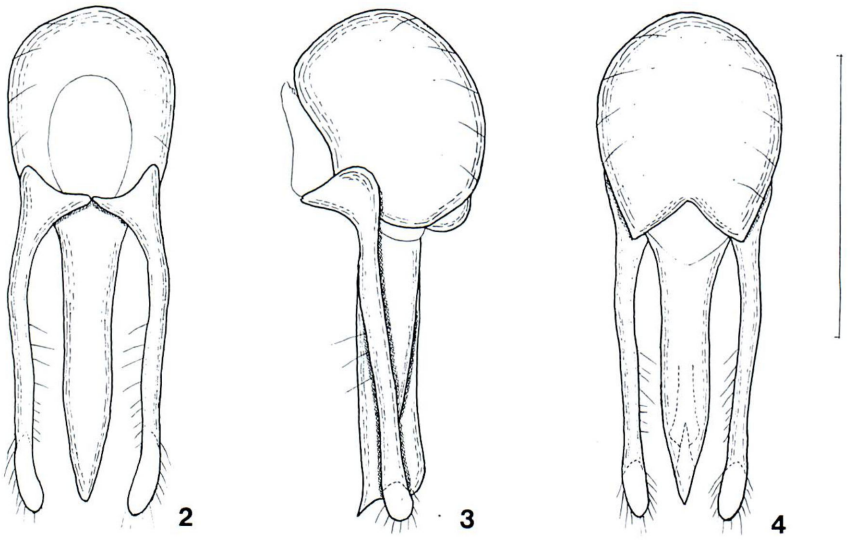
Fig. 1. *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE, sp. nov., ♂, from Sawauchizawa of the Bonju-san Mountains of Aomori Prefecture, Japan. Scale: 1.0 mm.

tra/pronotum=1.40) than pronotum, posterior margin feebly arcuate, posterior angles broadly rounded; surface densely, coarsely punctured and covered with extremely fine ground sculpture. Legs moderately long, protarsus not dilated; mesotibia dilated and incurved in apical half; apical segment of metatarsus relatively long, distinctly longer than the four preceding segments together.

Abdomen abruptly narrowed from the 5th segment to the apical end; surface of each tergite almost impunctate though covered with microscopic ground sculpture; 8th sternite deeply, semicircularly excised at the middle of posterior margin.

Genital organ trilobed and symmetrical. Median lobe nearly parallel-sided in basal two-thirds and then abruptly narrowed at the apex which is bluntly pointed. Parameres elongate and somewhat longer than median lobe; each paramere provided with a number of setae at median part of inner margin and with more numerous and much finer setae on outer-apical margin.

Female. Unknown.



Figs. 2–4. Male genital organ of *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE, sp. nov.; dorsal view (2), lateral view (3), and ventral view (4). Scale: 0.5 mm.

Type series. Holotype: ♂, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 5–V–1995, S. YAMAUCHI leg. Paratype: 1 ♂, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Remarks. The present new species is similar in general appearance to *E.* (s. str.) *kaoru* Y. WATANABE (1990, p. 242), but can be distinguished from it by the following points: pronotum more convex medially, surface more sparsely and much more finely punctured; elytra more closely and more coarsely punctured though covered with less distinct ground sculpture. The male genital organ is also similar to that of *E. kaoru*, but differs from it in the configuration of the median lobe which is more elongate and parallel-sided in basal two-thirds.

Bionomics. The type specimens were found on wild flowers, either of *Adenocaulon himalaicum* or of *Anemone pseudo-altaica*, in a deciduous broadleaved forest at an altitude of 150 m.

Etymology. This new species is named after Mr. Satoshi YAMAUCHI, who kindly supplied me with the type specimens.

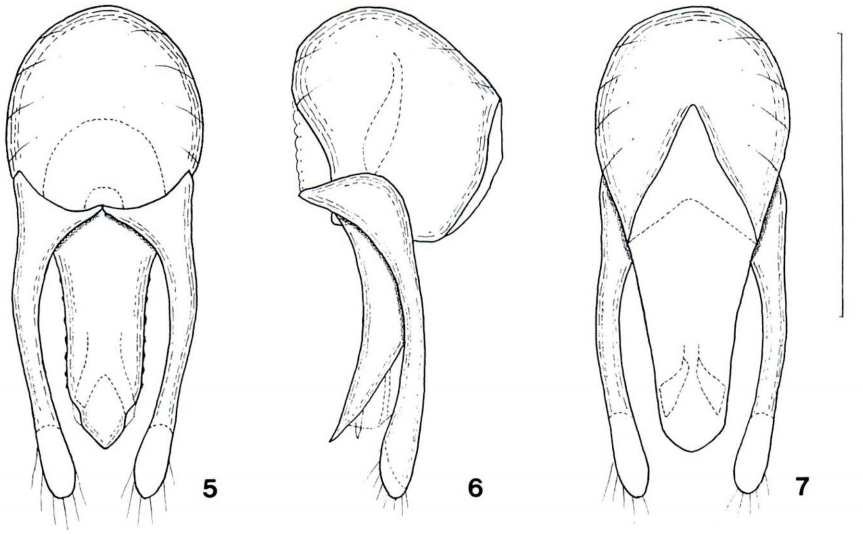
Eusphalerum (s. str.) ***bonjuense*** Y. WATANABE, sp. nov.

[Japanese name: Bonjusan-hanamuguri-hanekakushi]

(Figs. 5–7)

Body length: 2.1–2.2 mm (from front margin of head to anal end); 1.6–1.7 mm (from front margin of head to elytral apices).

Male and female. Similar in external features and colour to *E.* (s. str.) *michi-*



Figs. 5–7. Male genital organ of *Eusphalerum* (s. str.) *bonjusanum* Y. WATANABE, sp. nov.; dorsal view (5), lateral view (6), and ventral view (7). Scale: 0.25 mm.

noku described from Tachiyazawa of Yamagata Prefecture, but differs from it in the following points: head including compound eyes less transverse (width/length=1.72), surface covered with much finer punctures and somewhat finer coriaceous ground sculpture; pronotum transverse (width/length=1.33) as in *E. michinoku*, though more apparently broader than head (pronotum/head=1.17), surface more finely punctured; elytra slightly longer than broad (length/width=1.06) and a little broader than pronotum (elytra/pronotum=1.46), surface covered with somewhat sparser, less coarse punctures and finer ground sculpture than those of *E. michinoku*.

Male genital organ decidedly different from that of *E. michinoku* in configuration. Median lobe relatively broad, slightly and gradually narrowed apicad, except near apical part which is abruptly narrowed towards the bluntly pointed tip, provided with a number of minute blackish granules on each lateral side. Parameres elongate and considerably longer than median lobe, each fringed with some fine setae at the apical part which is membraneous.

Type series. Holotype: ♂, allotype: ♀, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 5–V–1995, S. YAMAUCHI leg. Paratypes: 2♂♂, 3♀♀, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Bionomics. The type specimens were similarly obtained from wild flowers, either of *Adenocaulon himalaicum* or of *Anemone pseudo-altaica*, at the same collecting site as the preceding species.

Etymology. The specific epithet of the present new species is named after

"Bonju-san", the type locality.

Eusphalerum (s. str.) ***tsugaruense*** Y. WATANABE, sp. nov.

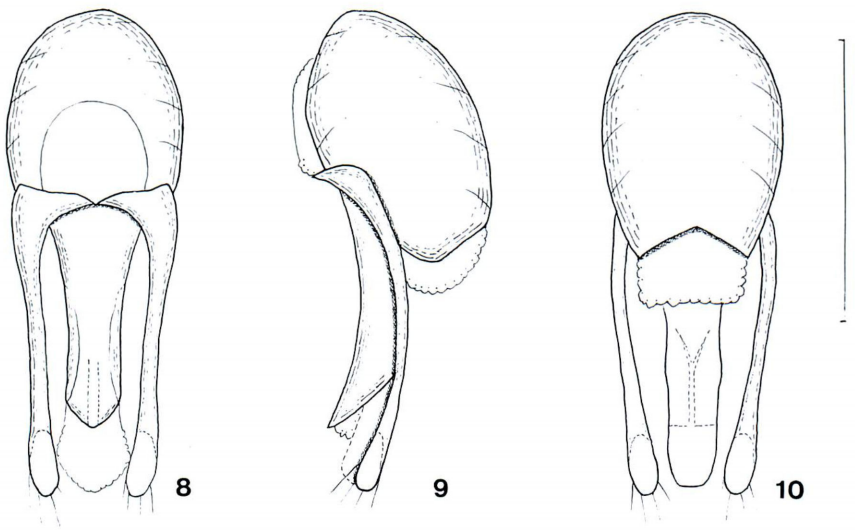
[Japanese name: Tsugaru-hanamuguri-hanekakushi]

(Figs. 8–10)

Body length: 2.3–2.6 mm (from front margin of head to anal end); 1.7–1.9 mm (from front margin of head to elytral apices).

Body gently convex and parallel-sided, covered with fine pubescence on the whole surface. Colour reddish brown and moderately shining, with mouth parts, six or so proximal segments of antennae, elytra and legs brownish yellow, abdomen blackish in male, and blackish brown in female.

Male and female. Similar in general appearance to *E.* (s. str.) *japonicum* (BERNHAUER, 1909), but differs from it in the more robust body, darker coloration, different configuration of male genital organ, and the following points: head more coarsely punctured and covered with more distinct coriaceous ground sculpture; pronotum slightly more convex medially and much braoder than head (pronotum/head=1.19), widest behind the middle and more strongly dilated anteriad than in *E. japonicum*, lateral margins more strongly emarginate in posterior halves, surface more distinctly punctured and covered with slightly coarser ground sculpture, inner side of each lateral margin more strongly depressed in posterior half; elytra almost parallel-sided, distinctly longer than broad (length/width=1.20), surface less densely and more deeply punctured.



Figs. 8–10. Male genital organ of *Eusphalerum* (s. str.) *tsugaruense* Y. WATANABE, sp. nov.; dorsal view (8), lateral view (9), and ventral view (10).

Male genital organ also similar to that of *E. japonicum* in having remarkably long parameres, but different from it in the following details: median lobe more parallel-sided except for apical part which is abruptly narrowed towards the narrowly rounded tip, dorsal surface provided with a fine longitudinal carina inside each lateral margin.

Type series. Holotype: ♂, allotype: ♀, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 3–V–2003, S. YAMAUCHI leg. Paratypes: 1♂, 4♀♀, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Bionomics. The type specimens were found on flowers of coltsfoot in a deciduous broadleaved forest at an altitude of 150 m.

Etymology. The spicific epithet of this new species is derived from "Tsugaru", in which province lies the type locality.

Eusphalerum (s. str.) ***towadaense*** Y. WATANABE

[Japanese name: Towada-hanamuguri-hanekakushi]

Eusphalerum (s. str.) *towadaense* Y. WATANABE, 1990, Mem. Tokyo Univ. Agric., **31**: 233.

This species was described by WATANABE (1990, p. 233) based on the specimens obtained from "Towada" of Aomori Prefecture. Later, YAMAUCHI (1996, p. 82) reported it from Kabenosawa and Menjazawa of the Bonju-san Mountains in Aomori Prefecture.

Specimens examined. 11♂♂, Menjazawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 9♂♂, 6♀♀, Kabenosawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 2♂♂, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 290♂♂, 112♀♀, same locality and collector as above, 3–V–2003; 192♂♂, 103♀♀, Mt. Manokami-yama, Aomori Pref., Honshu, Japan, 7–V–2003, S. YAMAUCHI leg.

Distribution. Japan (northeastern Honshu).

Remarks. The specimens examined vary in colour which is often darkened in head and pronotum.

Bionomics. A large number of specimens were found on flowers of coltsfoot in deciduous broadleaved forests on two different mountains, the Bonju-san Mountains at an altitude of 150 m and Mt. Manokami-yama at an altitude of 480 m.

要　　約

渡辺泰明：青森県から採集されたハナムグリハネカクシ類について．—— 青森県下からはこれまでに4種のハナムグリハネカクシが記録されているが，そのうちの3種は種名まで確定されず，種名が明らかにされたのは1種のみであった．私は青森郷土資料館の山内智氏から，同氏によって青森県波岡町の梵珠山地および青森市の馬ノ神山で採集された多数のハナムグリハネカクシを検討する機会を得た．検討の結果，これらは4種に識別され，そのうちの1種は「十和田」から記載された *E. towadaense* Y. WATANABE で，他の3種はいずれも未記載種であった．

そこで，未記載種について下記のとおり命名・記載するとともに *E. towadaense* の採集データを記録した．

1. *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE ヤマウチハナムグリハネカクシ

本種は梵珠山地の標高150 mほどの沢内沢に自生していたフキ，またはキクザキイチリンソウの花から採集された．外部形態および色彩が *E. kaoru* Y. WATANABE に類似しているが，前胸背板はより強く隆起し，点刻がより疎でより細かいこと，翅鞘の点刻がより密でより粗いこと，雄交尾器の形状が著しく異なることなどによって容易に区別される．

2. *Eusphalerum* (s. str.) *bonjusanum* Y. WATANABE ボンジュサンハナムグリハネカクシ

前種と同様な環境から採集された種で，外部形態および色彩は *E. michinoku* Y. WATANABE に類似している．しかし，頭部の幅が相対的に狭く，表面の点刻と微細構造はより細かいこと，前胸背板はより幅広で，点刻が細かいこと，翅鞘の点刻の粗さはより弱く，微細構造がより細かいこと，また雄交尾器中葉の形状が明らかに異なることなどで区別される．

3. *Eusphalerum* (s. str.) *tsugaruense* Y. WATANABE ツガルハナムグリハネカクシ

本種も前記2種と同様，梵珠山地の沢内沢（標高150 m地点）に自生していたフキの花から採集された．形態的概観は *E. japonicum* BERNHAUER に類似しているが，体がより強壮で，色彩は暗褐色を呈し，雄交尾器の中葉は両側がより平行に近く，各側縁の内側に細縦隆線が認められることなどによって区別される．

4. *Eusphalerum* (s. str.) *towadaense* Y. WATANABE トワダハナムグリハネカクシ

本種は，これまで原記載以後の報告がなかったが，今回梵珠山地および馬ノ神山から採集された個体を検したので記録した．なお，この種には，頭部および前胸背板の色彩が赤黄色から暗褐色を呈する個体が認められた．

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Elytra, *Tokyo*, **31** (2): 403–408, November 22, 2003

A New *Synuchus* (Coleoptera, Carabidae) from Okinawa-hontô Island, Southwest Japan

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Abstract A new carabid species belonging to the genus *Synuchus* is described from Okinawa-hontô Island, Southwest Japan under the name *Synuchus* (*Synuchus*) *inadai*. Male genitalia of *S.* (*S.*) *satoi* MORITA et TOYODA are shown.

Mr. Hanmei HIRASAWA, a friend of ours, entrusted the first author with the study of a small collection consisting of two species of synuchine carabids. In this paper, one of them is described as a new species under the name *S. inadai*, which looks like a very recently described species, *S. ishigakiensis* (MORITA & TOYODA, 2003, p. 75), at first sight. Unfortunately, the other species was not only represented by a female less important taxonomically but also by a specimen in a rather poor condition of preservation.

The abbreviations used herein are as follows: L – body length, measured from apex of clypeus to apices of elytra; HW – greatest width of head; PW – greatest width of pronotum; PL – length of pronotum, measured along the mid-line; PA – width of pronotal apex; PB – width of pronotal base, measured between postangular setae; EL – greatest length of elytra; EW – greatest width of elytra; FL – length of metafemur; ML – length of metatrochanter; TL – length of metatarsus; NSMT – National Science Museum (Nat. Hist.), Tokyo.

We wish to express our deep gratitude to Dr. Shun-Ichi UÉNO for critically reading the manuscript of this paper.

Thanks are also due to Mr. Satoshi INADA for kindly supplying us with important material. Hearty thanks are also due to Mr. Hanmei HIRASAWA for his kindness. Without his help, we could not have undertaken this study.

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* Upon getting married, Koji TOYODA was adopted into the family of his wife and his name is now Koji ARAI.

Synuchus* (*Synuchus*) *inadai MORITA et K. ARAI, sp. nov.

[Japanese name: Okinawa-tsuyahirata-gomimushi]

(Figs. 1–8)

Diagnosis. Medium-sized; hind wings developed; terminal segment of labial palpus cylindrical (not dilated); pronotal postangular seta present; antennal segment II with a short seta and a minute seta on each side; elytral apices separately rounded; aedeagus bent; viewed laterally, apical half of aedeagus almost straight.

Description. L: 9.7–9.9 mm. Body rather elongate and medium-sized. Colour black; ventral side blackish brown to brown; margins of pronotum dark brown; mouth parts and appendages brown.

Head moderately convex above; PW/HW 1.52, 1.57; frontal furrows almost obsolete; lateral grooves straight, becoming shallower and reaching the post-eye level; eyes large and weakly convex; clypeal suture fine; anterior supraorbital pores situated at the level of apical third of eyes on each side, posterior ones situated at the post-eye level; genae feebly convex, short and about 3/10 as long as eyes on each side; mentum tooth bifid and narrowly rounded at each tip; neck wide; labrum transverse and with straight or very weakly emarginate apical margin; antennae robust; antennal segment II with a short seta and a minute one; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI ≒ 1 : 0.55 : 1.08 : 1.13 : 1.18 : 1.15 : 1.22 in 2♂♂; terminal segment of labial palpus cylindrical and widest at about middle (not dilated); terminal segment of maxillary palpus elongate, widest at about middle and narrowly rounded at the tip (not dilated); microsculpture composed of polygonal meshes.

Pronotum of moderate size, and widest at about 3/5 from base; PW/PL 1.21, 1.22; PW/PA 1.52, 1.56; PW/PB 1.29, 1.29; PA/PB 0.83, 0.85; apical margin weakly emarginate and bordered at the sides; sides moderately arcuate throughout; reflexed sides narrow at apical parts, becoming wider posteriad, and merging into basal foveae on each side; base arcuately produced posteriad and bordered at the sides, and almost straight at middle; apical angles weakly produced and rounded at the tips, hind ones widely rounded, and with a seta on each side; anterior marginal setae situated a little before the widest part; basal foveae wide, shallow, and rugose; median line fine and extending a little before the apex and base; microsculpture composed of wide or transverse meshes on the disc, and of strongly impressed isodiametric meshes on the reflexed sides and basal foveae.

Elytra elongate; wings developed; basal borders strongly arcuate and joining scutellar striole on each side; EW/PW 1.41, 1.43; EL/EW 1.59, 1.61; sides weakly arcuate throughout; inner plica indistinct; apices narrowly produced and separately rounded; striae deep and impunctate; intervals moderately convex, and sparsely and microscopically punctate; two dorsal pores very weak and on interval III adjoining stria 2 at basal 3/10–2/5 and 3/5–7/10, respectively; marginal series composed of 16–18 pores; basal pore situated at the proximal part of stria 1 or basal anastomosis of striae 1 and 2; scutellar striole situated on interval I, long, and free at the apical end;

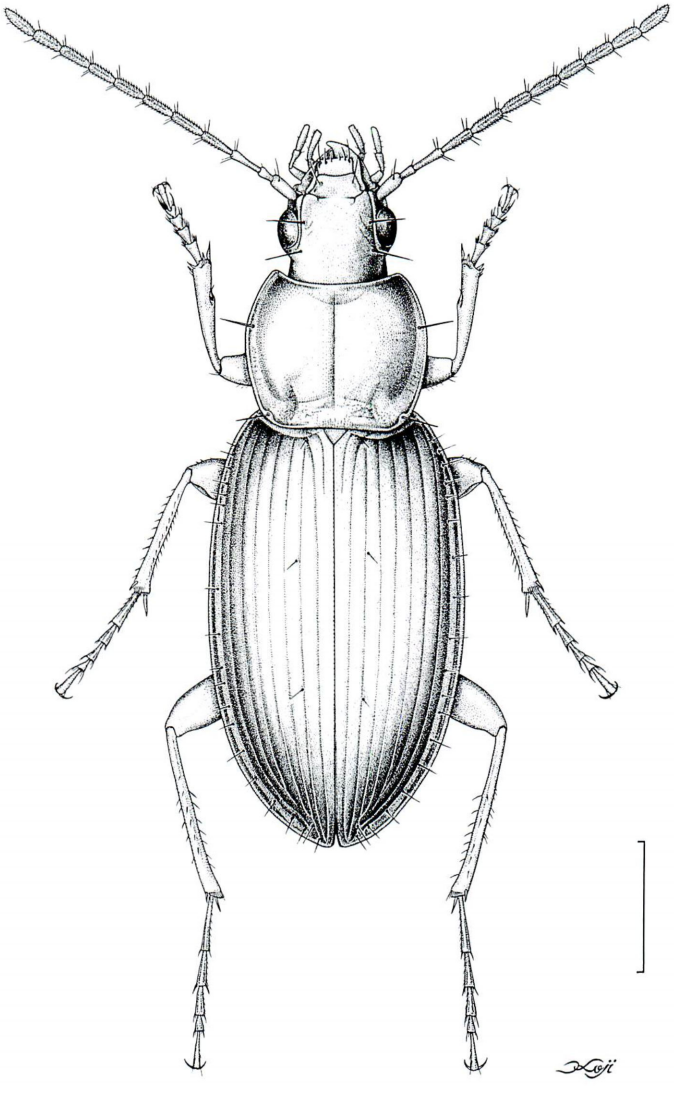
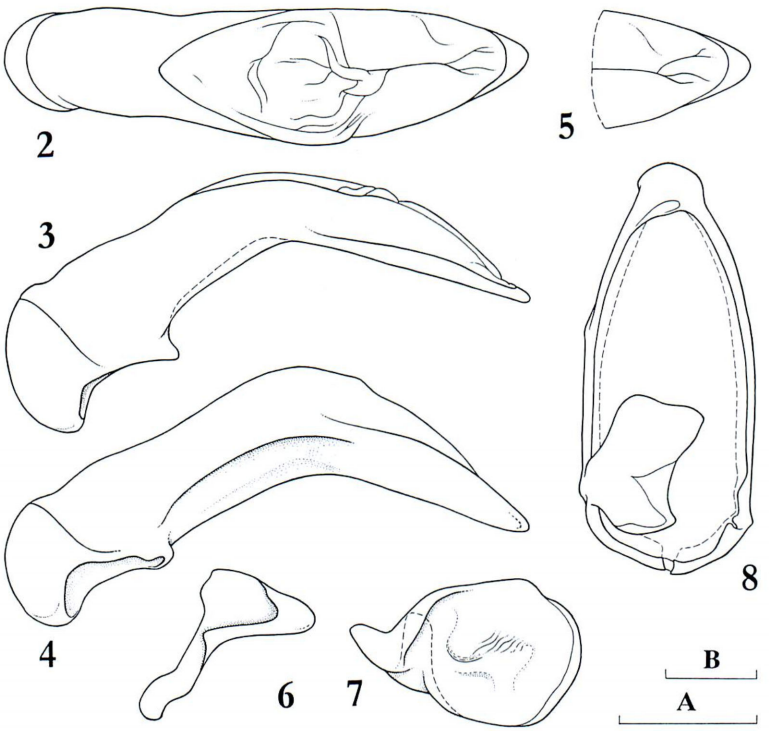


Fig. 1. *Synuchus* (*Synuchus*) *inadai* MORITA et K. ARAI, sp. nov., from Mt. Nishime-dake. Scale: 2 mm.

microsculpture clearly impressed and composed of polygonal or wide meshes.

Ventral side impunctate, but the sternites II and III bear irregular and vague wrinkles; anal sternite (VII) narrowly and strongly produced posteriad. Legs of moderate size; metatrochanter short and with widely rounded apex; ML/FL 0.42, 0.43; segments 1–3 of mesotarsus bisulcate, but the inner sulci are weaker than the outer ones; segments 1–3 of metatarsus bisulcate, but the inner sulci are sometimes rudimentary or disappear; claw segment of metatarsus with a pair of long setae on dorso-lateral sides



Figs. 2–8. *Synuchus* (*Synuchus*) *inadai* MORITA et K. ARAI, sp. nov., from Mt. Nishime-dake. —— 2, Aedeagus, dorsal view; 3, same, left lateral view; 4, same, oblique left ventro-lateral view; 5, apical part of aedeagus, dorso-apical view; 6, right paramere, left lateral view; 7, left paramere, left lateral view; 8, genital segment, ventral view. Scale: 0.5 mm; A for 2–7; B for 8.

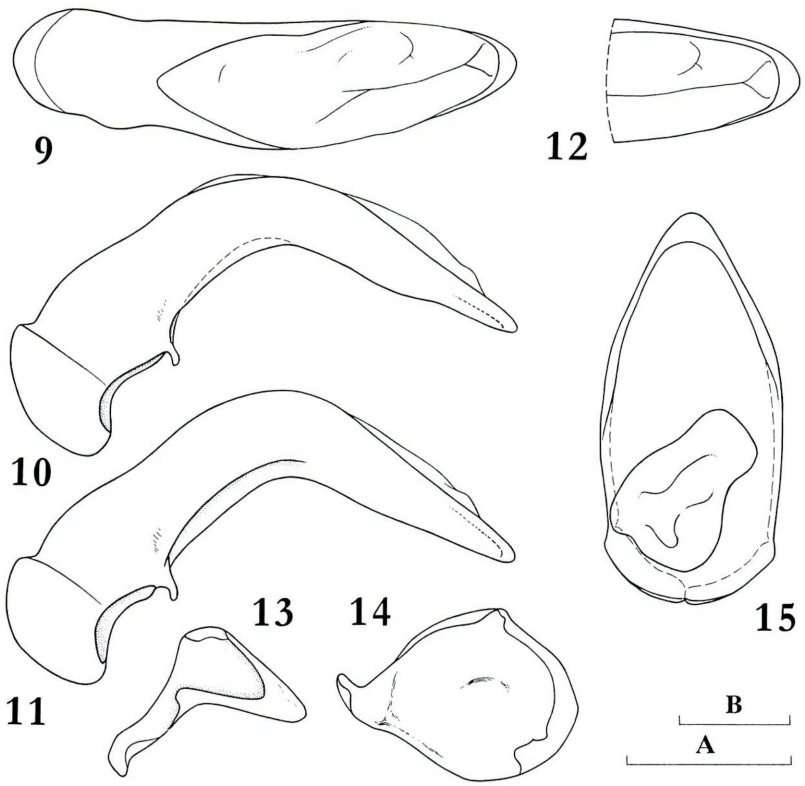
of subapical part, a pair of minute setae on dorso-lateral sides of apical part, and several long setae on ventro-lateral side; claw serrate inside; TL/HW 1.36, 1.37.

Genital segment elongate, narrow at basal part, and with a handle which is short, wide, and bent towards dorsal side. Aedeagus elongate, with short basal lobe, and moderately bent at middle in lateral view; basal half of ventral side deeply concave, and forming ridges at the sides; apical half of ventral side weakly convex; viewed dorsally, apical lobe short and simply rounded at the tip. Right paramere bent, with wide and rounded apical part and elongate basal part; left one broad and with rather large basal part.

Type series. Holotype: ♂ (NSMT), paratype: 1♂, 27–I–1998, S. INADA leg.

Type locality. Mt. Nishime-dake, Kunigami-son, Okinawa-hontô Is., Southwest Japan.

Notes. Judging from the shape of the terminal segment of labial palpi, elytral microsculpture, and position of the apical pores and subapical ones of the elytra, this new species belongs to the *dulcigradus* group (HABU, 1978, p. 344). However, this new



Figs. 9–15. *Synuchus* (*Synuchus*) *satoi* MORITA et TOYODA, from Mt. Omoto-dake. —— 9, Aedeagus, dorsal view; 10, same, left lateral view; 11, same, oblique left ventro-lateral view; 12, apical part of aedeagus, dorso-apical view; 13, right paramere, left lateral view; 14, left paramere, left lateral view; 15, genital segment, ventral view. Scale: 0.5 mm; A for 9–14; B for 15.

species can be easily distinguished from *S.* (*S.*) *dulcigradus* (BATES) (1873, p. 273) by the shape of elytral apices and the bent aedeagus [in *S.* (*S.*) *dulcigradus*, apices of elytra obliquely truncated on each side; aedeagus very weakly arcuate in lateral view (cf. HABU, 1978, pp. 339, 345, figs. 695, 708.)].

On the other hand, this new species looks like a very recently described species, *S.* (*S.*) *ishigakiensis*, at first sight. It is, however, distinguished from it by the following points: body larger; basal foveae of pronotum deeper; apex of elytron more rounded; hind wings developed; apical part of aedeagus differently shaped in lateral view.

This year, we described *Synuchus satoi* (MORITA & TOYODA, 2003, p. 72) from Southwest Japan. In the original description, we incorrectly gave an illustration of the male genital organ; we therefore take this opportunity to provide the correct one.

要　約

森田誠司・新井浩二：沖縄本島から発見されたツヤヒラタゴミムシの1新種．—— 沖縄本島から発見されたツヤヒラタゴミムシの1新種*Synuchus* (*Synuchus*) *inadai* MORITA et K. ARAIを記載した．この種は，ヒメツヤヒラタゴミムシ*S.* (*S.*) *dulcigradus* (BATES)種群に属するが，陰茎の形態などで明瞭に異なる．

なお本年，石垣島から筆者らが記載した*S.* (*S.*) *satoi* MORITA et TOYODAの陰茎が，誤って図示されたため訂正をおこなった．

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Elytra, *Tokyo*, **31** (2): 408, November 22, 2003

Additional Records of *Micropeplus sharpi* (Staphylinidae, Micropeplinae)

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A micropepline staphylinid species, *Micropeplus sharpi* SAWADA, 1964 (Ent. Rev. Japan, **16**: 35, pl. 6, fig. 1), was described on the specimens collected from Kasuga-yama, Nara Prefecture of Kinki District in Central Japan. This species is rather rare since no other specimen than the holotype and allotype of the type series has so far been known. The second author obtained this micropeplid from small secondary broadleaved forests in Mie Prefecture. Its collecting data are as follows:

Specimens examined. 1♂, Toyama, Uéno-shi, Mie Pref., 19–X–1996, H. YOKOZEKI leg.; 1♂, Sumiyoshi-Jinja, Inagu, Uéno-shi, Mie Pref., 21–IX–1998, H. YOKOZEKI leg.

Elytra, *Tokyo*, **31** (2): 409–414, November 22, 2003

Occurrence of a New *Stygiotrechus* (Coleoptera, Trechinae) in the Takanawa Peninsula of Northwestern Shikoku, Southwest Japan

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Abstract A new upper hypogean species of the trechine genus *Stygiotrechus* belonging to the *ohtanii* group is described from near the southwestern corner of the Takanawa Peninsula at the northwestern part of the Island of Shikoku, Southwest Japan. It is related to *S. satoui* S. UÉNO, but is decisively discriminated from it by the differently shaped male genitalia and configuration of the prothorax. The new name given is *Stygiotrechus iyonis* S. UÉNO et ASHIDA.

It has long been known that the trechine beetles of the genus *Stygiotrechus* are mainly distributed along the northern side of the Median Tectonic Zone of West Japan, though several species are also found from the southern side at the eastern part of the generic range (cf. ASHIDA & KITAYAMA, 2003; UÉNO & NAITÔ, 2003). In the Island of Shikoku, an endogean species, *S. satoui* S. UÉNO (1976, p. 278, figs. 1–4; 1980, p. 10; 1983, p. 74) has been known from three distant localities in the Sanuki area north of the main course of the Yoshino-gawa River, or from the northern side of the Median Tectonic Zone, and has become differentiated into two geographical races. It has crossed the Yoshino-gawa Valley at least at two points, though the true systematic status of these southward invaders has not been clarified as yet due to insufficiency of available materials.

In the summer of 2001, a specimen of *Stygiotrechus* apparently belonging to the same lineage as *S. satoui* was unexpectedly obtained by Shun-ichi YAMASHITA in a small valley near the southwestern corner of the Takanawa Peninsula at the northwestern part of the Island of Shikoku. Though lying on the northern side of the Median Tectonic Zone, this peninsula is largely granitic and not favourable for harbouring anophthalmic trechine beetles. Only its southernmost part along the northern side of the Shigenobu-gawa and Nakayama-gawa Valleys forms a narrow belt of shale and

sandstone, and sometimes furnishes good habitats to subterranean inhabitants. Two isolated species of the subgenus *Miyamaidius* are restricted to this narrow area (cf. UÉNO, 1978), and YAMASHITA's specimen was also found there.

However, it was not easy to find out additional material of the beetle due to lack of good collecting sites. We examined the narrow area intensively and were able to locate only a few spots that might be promising. At last near the end of the second trip to the small valley, we came across a habitat of the *Stygiotrechus* at the bottom of a fairly large scree sliding down to near the source of the stream. One month later, we made a third trip to the same spot, dug out tons of accumulated gravel, soil and embedded stones above the bedrock, and collected a pair of additional specimens at last.

A careful examination of these fresh specimens amply proved that the *Stygiotrechus* was a distinctive new species, though it was doubtless close to *S. satoui* as was originally surmised by the junior author. It will be described in the present paper under the name of *Stygiotrechus iyonis* in view of its zoogeographical importance. The abbreviations used herein are the same as those explained in previous papers of ours.

Before going into further details, we wish to express our heartfelt thanks to Mr. Shun-ichi YAMASHITA, without whose discovery and generosity in submitting the specimen to our study, this important species could never be introduced to science. Our deep appreciation is also due to the following colleagues and friends of ours, who willingly helped the senior author in the painstaking and time-consuming work of excavation in the swelteringly hot and mosquitoey environment: Drs. Kazuo ISHIKAWA, Yoshiaki NISHIKAWA, Masahiro SAKAI and Shinzaburo SONE, Mr. Yoshiyuki ITÔ, and Ms. Haruko ISHIKAWA.

Stygiotrechus iyonis S. UÉNO et ASHIDA, sp. nov.

(Figs. 1–3)

Length: 2.45–2.65 mm (from apical margin of clypeus to apices of elytra).

Belonging to the *ohtanii* group and closely related to *S. satoui* from Sanuki Province, particularly to subsp. *compira* S. UÉNO (1980, p. 6, figs. 5–6) from Zôzu-san, but the pronotum is a little more strongly contracted at the base and widest more in front, with the sides more briefly and somewhat more strongly arcuate in front and either straight or slightly sinuate behind, and with the base more briefly and deeply emarginate on each side just inside hind angle, which is usually denticulate laterad. Definitely different from *S. satoui* in the configuration of aedeagus, which is only very slightly arcuate and sigmoidally curved, with very short basal part and almost rectangularly curved apical part.

Colour somewhat darker than in *S. satoui*, almost concolorously dark reddish brown, with somewhat lighter palpi, apical halves of antennae, and legs. Microsculpture, pubescence and chaetotaxy as in *S. satoui*. Head similar to that of *S. satoui*, with genae subangulate before neck constriction; HW/HL 1.16–1.28 (M 1.23); antennae reaching basal two-sevenths of elytra or extending slightly beyond that level.

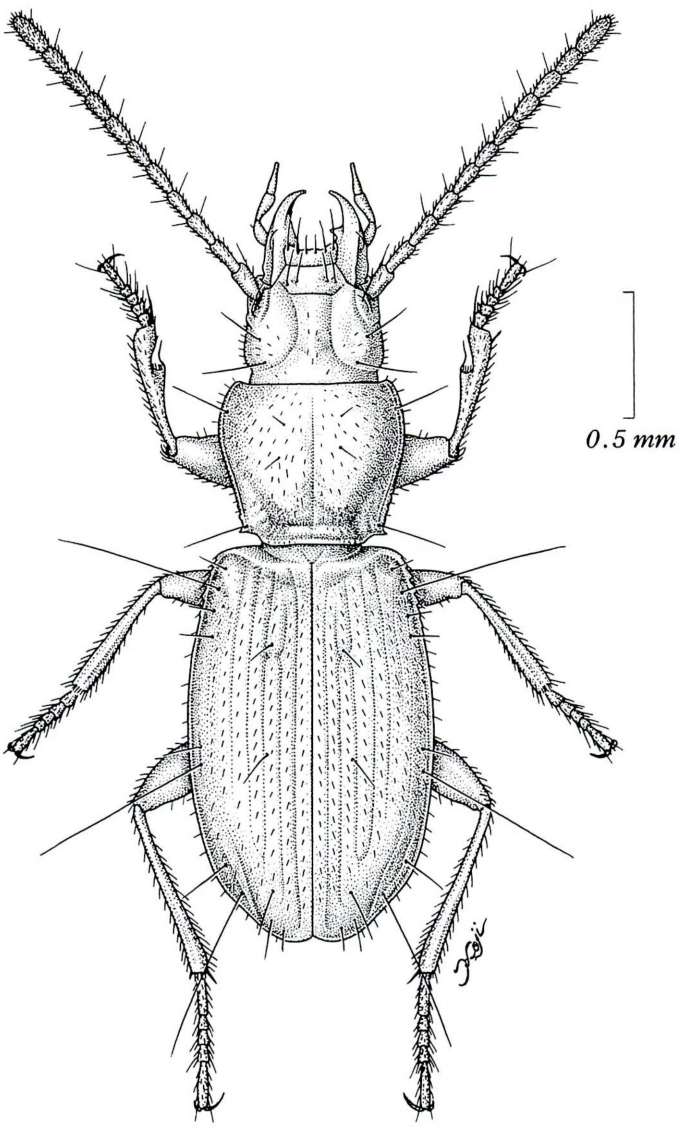
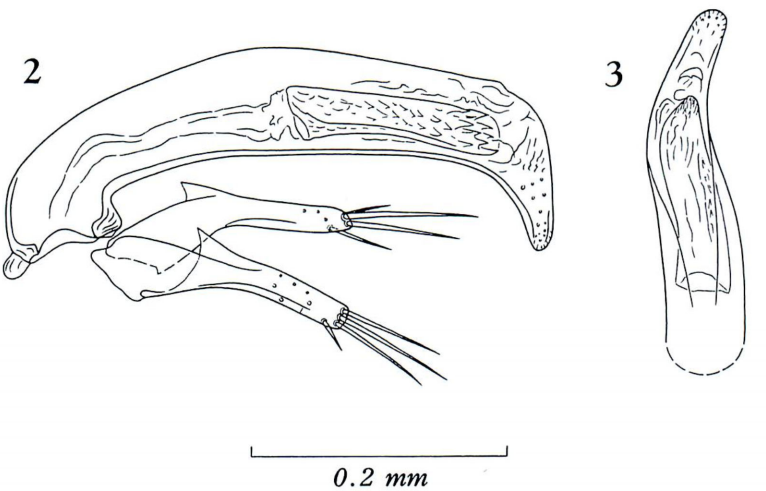


Fig. 1. *Stygiotrechus iyonis* S. UÉNO et ASHIDA, sp. nov., ♂, from the Aonami-dani of Sugitaté.

Pronotum transverse subcordate rather than subquadrate, widest at about five-sevenths from base, and more gradually narrowed posteriad than anteriad; PW/HW 1.27–1.30 (M 1.28), PW/PL 1.06–1.14 (M 1.11), PW/PA 1.24–1.27 (M 1.25), PW/PB 1.27–1.32 (M 1.30); sides gently and rather briefly arcuate in front, less so behind, and either straight or slightly sinuate at about basal fourth, with weak indentation at the



Figs. 2–3. Male genitalia of *Stygiotrechus iyonis* S. UÉNO et ASHIDA, sp. nov., from the Aonami-dani of Sugitaté; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

basal parts; hind angles usually denticulate laterad; apex always a little wider than base, PA/PB 1.02–1.05 (M 1.04) [PB/PA 0.95–0.98 (M 0.96)], with front angles obtuse and only slightly advanced; base nearly straight at middle, briefly and deeply emarginate on each side just inside hind angle; discal sculptures generally similar to those of *S. satoui*, though the postangular carinae are very obtuse, much less prominent than in *S. satoui*.

Elytra similar to those of *S. satoui*, though more deeply striate, widest at about four-ninths from bases; EW/PW 1.31–1.40 (M 1.35), EL/PL 2.29–2.45 (M 2.38), EL/EW 1.54–1.61 (M 1.58); shoulders square and more or less reflexed, with distinctly serrate humeral borders, each provided with five to seven teeth, two or three of which are larger than the others; sides feebly arcuate at middle, separately rounded at apices, which form a very obtuse re-entrant angle; apical striole deeply impressed, hardly curved in front, and usually joining stria 7; stria 3 with two setiferous dorsal pores at 1/5–2/9 and 4/9–1/2 from base, respectively; preapical pore more distant from apex than from suture.

Ventral surface and legs as in *S. satoui*.

Male genital organ basically similar to that of *S. satoui*, but utterly different from it in the configuration of aedeagus. Aedeagus small and lightly sclerotized, about two-sevenths as long as elytra, elongate, compressed, only very slightly arcuate, and sigmoidally curved in dorsal view, with the apical part almost rectangularly curved ventrad; basal part small and very short, abruptly bent ventrad, with small basal orifice whose sides are moderately emarginate; sagittal aileron very small but protrudent, moderately sclerotized; apical part narrow, inclined to the left, and gradually narrowed towards the narrowly rounded tip of apical lobe in dorsal view, ventrally protrudent

and more rapidly narrowed towards the blunt extremity in lateral view; ventral margin nearly straight behind middle in profile, though deeply emarginate at the base of apical lobe. Inner sac scaly near apical orifice and armed with an elongate copulatory piece, which is about two-fifths as long as aedeagus and coarsely serrate at the apical portion. Styles slender with narrow apical parts; left style longer than the right and devoid of protrudent ventral apophysis; each style provided with four apical setae, one or two of which are much shorter than the others.

Type series. Holotype: ♂, 450 m alt., 20–VII–2003, S. UÉNO leg. Allotype: ♀, 450 m alt., 24–VIII–2003, Y. NISHIKAWA leg. Paratypes: 1♂, 450 m alt., 25–VIII–2003, S. SONE leg.; 1♀ (damaged), 430 m alt., 27–VII–2001, S. YAMASHITA leg. All but YAMASHITA's specimen are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Aonami-dani, 430–450 m in altitude, of Sugitaté in Matsuyama-shi, Ehimé Prefecture, northwestern Shikoku, Southwest Japan.

Notes. The type locality of this interesting species, the Aonami-dani, is a small valley carved by one of the upper courses of the Ishité-gawa River. The stream Aonamidani-gawa rises in a gently sloping bamboo grove, flows north across the narrow belt of shale and sandstone, joins the Ishité-gawa and turns west, then southwest just after entering the granitic area, and finally empties into the Inland Sea of Seto-naikai. With the exception of afforested parts, the valley is largely shaded by deciduous and evergreen broadleaved trees and bamboos.

The first specimen, unfortunately badly damaged, was met by YAMASHITA from beneath a stone embedded in the bank of a narrow branch stream, called the Koya-dani, not far upstream from its joining point with the main stream course. This branch stream was carefully examined to near its source, but no good place for excavation was found out mainly due to the high ground water level.

The other three specimens examined were found from a scree on the right side of the main stream about 250 m apart to the northwest from the Koya-dani site. This fan-shaped scree was formed on a steep mudstone bed, nearly 10 m wide at the skirts and about 5 m wide at the top, 5–6 m long, and 50–130 cm deep, and had been largely covered with grasses before excavation. Its subsurface layer, 30–50 cm in thickness, was composed of rather loosely accumulated gravel of mudstone, shale and sandstone with many embedded stones of fairly large size, and readily crumbled down when dug up. On the contrary, the bottom layer was moist and more stable, forming a favourable habitat for subterranean animals.

Several specimens of *Yamautidius* (*Miyamaidius*) *anaulax* S. UÉNO (1978, pp. 200, 203, figs. 4–5) were found near the upper part of the bottom layer, together with diplurans, myriapods, and *Atranodes kyushuensis* (HABU), a primarily subterranean platynine, whereas all the specimens of *Stygiotrechus iyonis* were met with at the deeper parts of the bottom layer, that is, on or near the bedrock. The holotype was found at a depth of about 100 cm, the allotype at about 50 cm, and the paratype at 120 cm; they were always crawling on the undersurface of embedded stones. Thus, the

present species is typically upper hypogean in contrast to its relative, *S. satoui*, which is typically endogean.

The new specific name *iyonis* is derived from Iyo Province, an old name of Ehimé Prefecture.

要　約

上野俊一・芦田　久：四国の高縄半島におけるノコメメクラチビゴミムシの発見．—— ノコメメクラチビゴミムシ属*Stygiotrechus*のチビゴミムシ類は，これまで四国の北西部からは知られていなかったが，その1種が，高縄半島の基部を東西方向に走る狭い頁岩・砂岩地帯から発見された．四国の北東部に分布するオオタキメクラチビゴミムシ*S. satoui* S. UÉNOに近縁のものだが，地下浅層性であり，雄交尾器にいちじるしい差異があるので，新種イヨメクラチビゴミムシ*Stygiotrechus iyonis* S. UÉNO et ASHIDAとして，この論文に記載した．この新種の存在は，チビゴミムシ類の分布模様を解析するうえできわめて重要な発見であり，今後の調査を進めるに際して大きい手掛かりを与えるものである．なお，上記の頁岩・砂岩帯からは，固有のタカナワメクラチビゴミムシ亜属*Miyamaidius*の2種がすでに知られている．

Postscript

At the last stage of proof-reading of the present paper, the junior author had an opportunity to visit the type locality of *Stygiotrechus iyonis*, and in collaboration with Takumi SAITÔ and Yoshihide OKUDA, made further excavation of the very scree that had yielded three of the four specimens of the type series. They succeeded in obtaining nine additional specimens of the trechine beetle, as recorded below.

Additional specimens examined. 3♂♂, 6♀♀, same locality as for the holotype, 12–X–2003, T. SAITÔ, Y. OKUDA & H. ASHIDA leg.

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——— & T. NAITÔ, 2003. Discovery of *Stygiotrechus* (Coleoptera, Trechinae) at the southeastern part of the Kii Peninsula, Central Japan. *Elytra, Tokyo*, **31**: 231–236.

Elytra, *Tokyo*, **31** (2): 415–429, November 22, 2003

New *Awatrechus* (Coleoptera, Trechinae) from the Northwestern Peripheries of the Range of Generic Distribution

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Abstract Four new species of anophthalmic trechine beetles belonging to the genus *Awatrechus* are described from the northwestern peripheries of the range of generic distribution. Three of them, named *A. misatonis*, *A. occidentalis* and *A. sancticaveae*, occur in two mine adits and a shale cave, all lying on the right side of the Yoshino-gawa River, and the remaining one, *A. simplicior*, is upper hypogean at a high elevation of the Tsurugi Mountains west of the known localities of the other congeners occurring on the same mountain range.

In the present paper, I am going to describe four new species of *Awatrechus* occurring at the northwestern peripheries of the distributional range of the trechine genus. All of them are distinctive, and the western three are particularly interesting in forming their own lineage by sharing a peculiar conformation of their male genitalia. Two of the four species, to be named *A. misatonis* and *A. occidentalis*, have so far been known from abandoned adits of copper mines, one to be named *A. sancticaveae* from a shale cave, and the other, *A. simplicior*, from the upper hypogean zone. The first three species are distributed along the right side of the Yoshino-gawa River, while the last one occurs at a high elevation of the Tsurugi Mountains west of all the other known localities of congeners on the same mountain range.

It has taken me a long time to make up my mind to describe the new species before a thorough revision of *Awatrechus*. There was a difficult problem concerning the taxonomy of the *pilosus* complex, and more and more materials were needed from various places in its range, most of which were not easily accessible. Even now, there remain blank areas in our knowledge about the exact distribution of the members of this genus, above all in the Iya-gawa drainage area at the northwestern part. However, it has become preferable to introduce at least distinctive new species into science, and though the purpose of this paper is limited to descriptions of four northwestern forms, there is at least another distinctive new species known from the southern periphery of the distributional range of the genus, which will be described in a separate paper.

The abbreviations employed in the present paper are the same as those explained in previous papers of mine (*e.g.*, UÉNO, 1969, p. 195).

In searching for various forms of *Awatrechus*, most of which are by no means

abundant, I have received hearty and consistent support and co-operation from Messrs. Morisato KIUCHI and Masataka YOSHIDA, to whom I wish to acknowledge my deepest indebtedness. Hearty thanks are also due to the following colleagues and friends for their help in field works and supplying invaluable materials for my study: Drs. Yoshiaki NISHIKAWA and Shinzaburo SONE, the late Messrs. Akiyoshi ISHIDA and Masazi UOZUMI, and Messrs. Yoshiyuki ITÔ, Tetsuo KAWASAWA and Toshiki MOHRI.

Awatrechus misatonis S. UÉNO, sp. nov.

(Figs. 1–3)

Length: 3.65–4.45 mm (from apical margin of clypeus to apices of elytra).

Closely allied to *A. bisetiger* S. UÉNO (1973, p. 183, figs. 2–5) from Inbé-no-ana Cave in view of close similarity of male genitalia, but recognized at first sight on the ample elytra devoid of the posterior dorsal pore on the 5th stria.

Colour usually a little lighter than in *A. bisetiger*, though similar to the latter in some individuals; pubescence and microsculpture as in *A. bisetiger*. Head smaller than in *A. bisetiger* on an average, with genae gently and more evenly convex; antennae reaching four-ninths to five-ninths from bases of elytra, usually about middle. Pronotum as in *A. bisetiger*, though the basal part is usually a little longer, widest at about or a little before three-fourths from base, and constricted at a level between two-ninths and two-sevenths (usually at about one-fourth) from base; PW/HW 1.36–1.50 (M 1.44), PW/PL 0.94–1.10 (M 1.02), PW/PA 1.34–1.44 (M 1.39), PW/PB 1.32–1.46 (M 1.39), PA/PB 0.94–1.05 (M 1.00); sides more strongly arcuate in front, a little more strongly narrowed towards ante-basal sinuation, and then more or less divergent towards hind angles, which are acute and postero-laterally protrudent; front angles obtuse or narrowly rounded and slightly advanced.

Elytra large and broad, usually widest at about middle, sometimes a little behind that level, with broad proximal and round apical halves; EW/PW 1.62–1.76 (M 1.68), EL/PL 2.47–2.67 (M 2.58), EL/EW 1.45–1.56 (M 1.50); shoulders distinct though usually obtuse, sometimes obtusely tuberculate; prehumeral borders less oblique than in *A. bisetiger*, usually straight or nearly so; sides either straight or slightly emarginate behind humeri, then rather strongly arcuate to apices, which are rather widely and conjointly rounded; dorsum convex, steeply declivous at the sides; basal depression distinct, delimited on each side by obtuse carina at the base of interval 5; striae clearly impressed, finely crenulate, almost entire though shallower at the side than on the disc, 1–3 deepened in basal depression, 8 deeply impressed behind the middle set of marginal umbilicate pores; apical striole deeply impressed, feebly curved anteriad, and directed to stria 5; intervals flat, each bearing a somewhat irregular row of suberect pubescence; stria 3 with or without setiferous dorsal pore, at about basal 1/6 if present; stria 5 with a single setiferous dorsal pore at 1/4–2/7 from base; preapical pore located at the apical anastomosis of striae 2 and 3 at about or behind the level of the terminus of apical striole and usually more distant from apex than from suture.

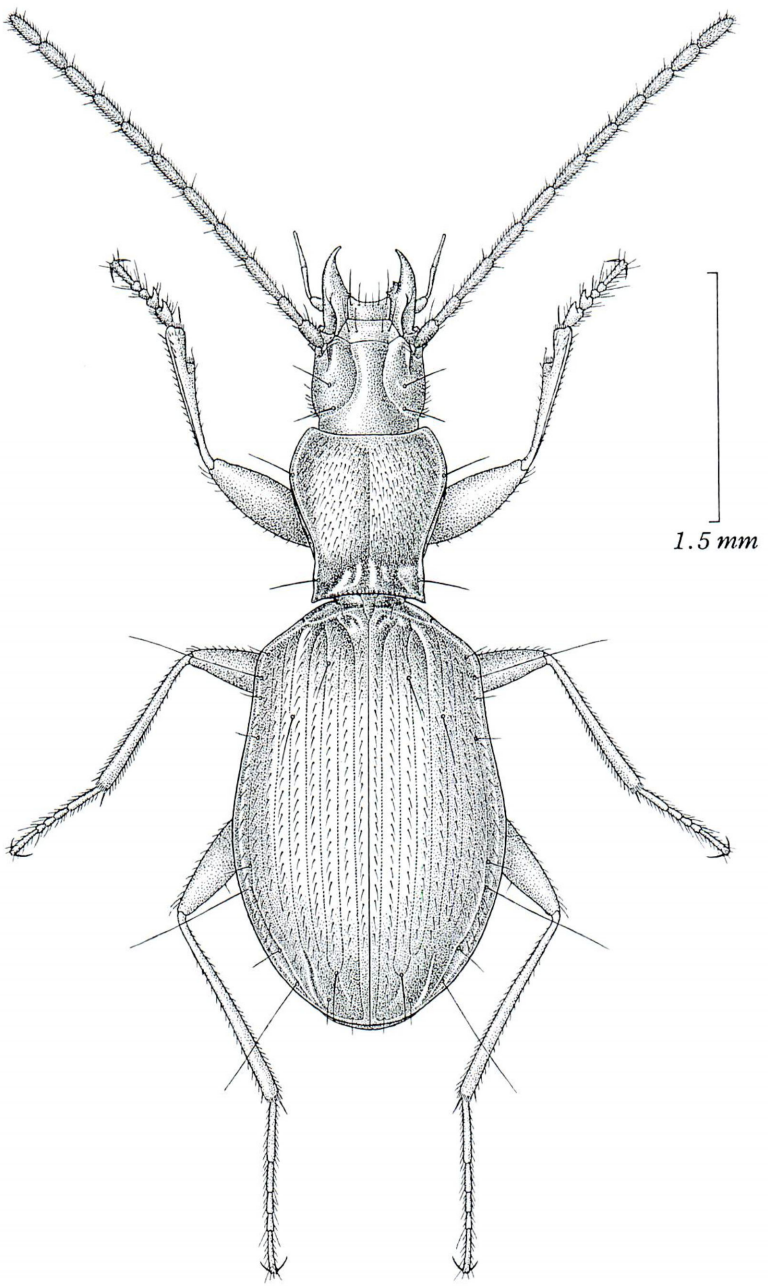
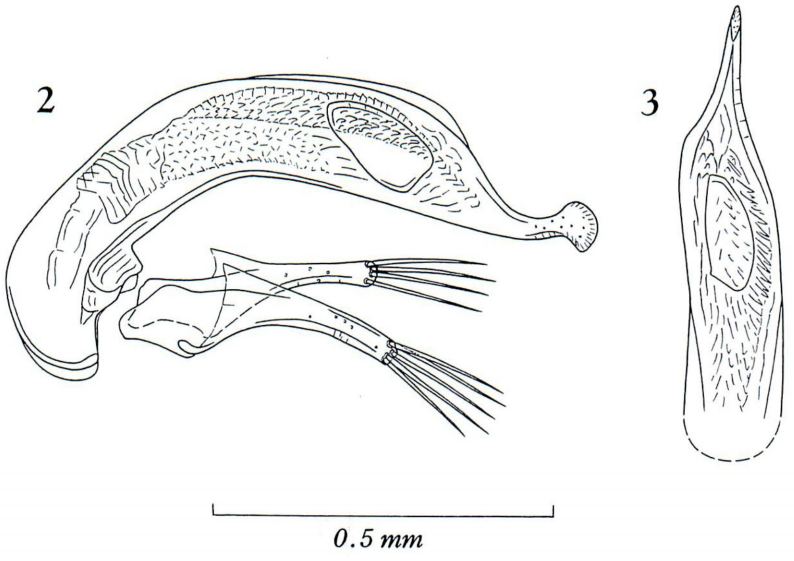


Fig. 1. *Awatrechus misatonis* S. UÉNO, sp. nov., ♂, from a prospecting adit at Nakagoi in Misato-son.



Figs. 2–3. Male genitalia of *Awatrechus misatonis* S. UÉNO, sp. nov., from a prospecting adit at Nakagoi in Misato-son; left lateral view (2), and apical part of aedeagus, dorso-apical view (3).

Ventral surface and legs as in *A. bisetiger*.

Aedeagus closely similar to that of *A. bisetiger* in many respects, that is, in general configuration, shape and size of apical disc and copulatory piece, and disposition of longitudinal patch of sclerotized teeth, but shorter, three-eighths as long as elytra, with shorter and more strongly upcurved stalk of apical disc, and shorter longitudinal teeth-patch composed of smaller and obviously less differentiated teeth. Styles broader, left style bearing atrophied ventral apophysis; each style usually provided with four long apical setae, which are sometimes supplemented with an extra seta on one style.

Type series. Holotype: ♂, 23–VIII–1981, S. UÉNO leg. Allotype: ♀, 3–VIII–1981, Y. NISHIKAWA leg. Paratypes: 1♂, 1♀, 24–V–1981, M. KIUCHI & M. YOSHIDA leg.; 2♂♂, 1♀ (incl. teneral 1♂, 1♀), 23–VIII–1981, M. YOSHIDA & A. ISHIDA leg.; 3♂♂, 3♀♀ (incl. teneral 1♂, 1♀), 23–VIII–1981, S. UÉNO & S. SONE leg. (found in baited traps set by Y. NISHIKAWA on 3–VIII–1981); 12♂♂, 14♀♀ (incl. teneral 3♂♂, 6♀♀), 24–I–1982, M. YOSHIDA leg. (found in baited traps set by S. UÉNO, S. SONE & M. YOSHIDA on 23–VIII–1981). All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Prospecting adit at Nakagoi, 450 m in altitude, in Misato-son of Tokushima Prefecture, eastern Shikoku, Southwest Japan.

Notes. This is the northernmost peripheral species of the genus, whose habitat is only 6 km apart from the main course of the Yoshino-gawa River. It has been known so far from only an abandoned prospecting adit of a copper mine located on the right side of the Kurara-gawa, a branch of the Kawata-gawa River that empties into the Yoshino-

gawa. The adit is 12.9 km distant to the north-northeast in a beeline from Inbé-no-ana Cave, the type locality of *A. bisetiger*, and 16.9 km distant to the north by west from Tôgen-daiichi-dô Cave, that of *A. pilosus* S. UÉNO (1957, pp. 212, 214, figs. 28–29; 1969, p. 196; 1973, p. 183).

As is suggested from the geographical situation of the type locality, *A. misatonis* is doubtless close to *A. bisetiger*. This is clearly indicated by the close similarity of their male genitalia, which become only weakly differentiated. On the other hand, the two species are remarkably different in external morphology, above all in the configuration and chaetotaxy of the elytra. Loss of the posterior dorsal pore on the fifth stria is unknown in any other species of the genus, and instability of the internal dorsal pore is also quite exceptional. It is true that a rare reversion of the pore on the third elytral stria has been known in *A. hygrobius* S. UÉNO, which is normally devoid of it (cf. UÉNO, 1973, pp. 188–189). In *A. misatonis*, however, it is difficult even to determine which state is dominant. I have selected a pair with the setiferous dorsal pores of both the internal and external series as the holotype and allotype of *A. misatonis*, since specimens of this type are more numerous than those lacking the internal pore on one or both the elytra. An exactly identical instability of the setiferous dorsal pore of the internal series has been known in *Trechiama instabilis* S. UÉNO, an upper hypogean species endemic to a small isolated hill called Zôzu-san about 48 km distant to the north-northwest from Nakagoi (cf. UÉNO, 1981, pp. 12–14).

The prospecting adit at Nakagoi is excavated from a corner of terraced cultivated fields, extends almost straight for about 20 m, and is widened at several points. *Awatrechus misatonis* occurs in those widened spots, under stones lying at wet corners, but is seldom found out by naked eyes. However, it was more frequently caught by baited traps set in the same places, which seems to suggest that the ordinary habitats of the beetle are not in the artificial adit itself but somewhere in the fissures of shale surrounding it.

Awatrechus sancticaveae S. UÉNO, sp. nov.

(Figs. 4–5)

Length: 4.30 mm (from apical margin of clypeus to apices of elytra).

Not unlike *A. bisetiger* in general appearance, but the prothorax is larger, with the sides more strongly arcuate, the elytra are more elongate, with the shoulders less prominent and the prehumeral borders more oblique, and the 3rd elytral stria bears a setiferous dorsal pore near the base. Strikingly different from *A. bisetiger* in the conformation of male genitalia as will be described later.

Coloration, pubescence and microsculpture as in *A. bisetiger*. Head generally similar to that of *A. bisetiger*, but the genae are less convex, particularly at the posterior parts; antennae fairly long, reaching the middle of elytra. Pronotum large, much wider than head, about as wide as long, widest at three-fourths from base, and more gradually narrowed towards base than towards apex; PW/HW 1.49, PW/PL 1.02,

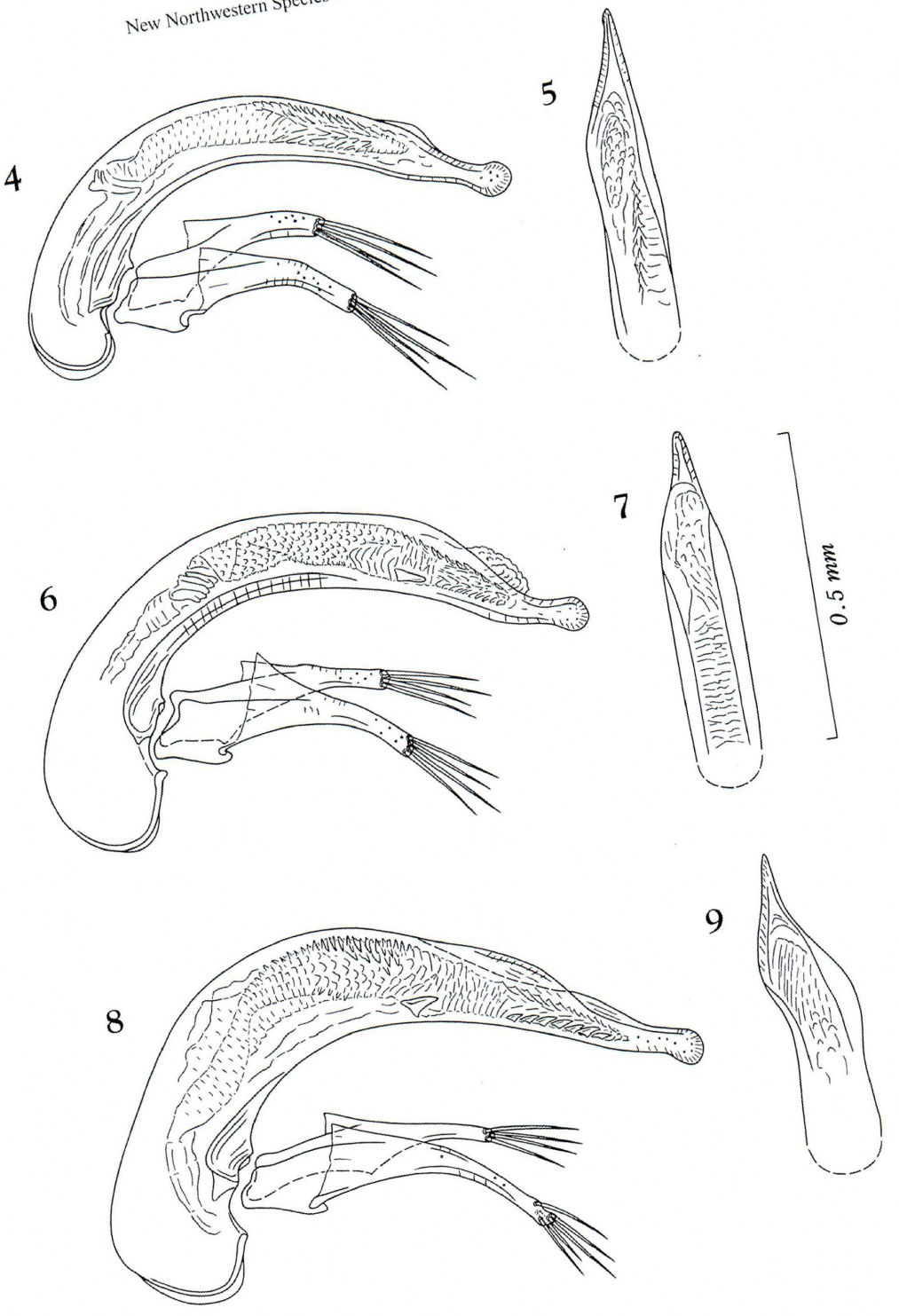
PW/PA 1.46, PW/PB 1.46; apex as wide as base, PA/PB 1.00, the latter straight at middle but posteriorly curved on each side; front angles broad, a little produced forwards and rounded; hind angles sharp, produced more posteriorly than laterally; other pronotal features as in *A. bisetiger*.

Elytra oblong-oval, much longer than wide, widest at about middle, and a little more gradually narrowed towards apices than towards bases; EW/PW 1.56, EL/PL 2.55, EL/EW 1.61; humeral angles obtuse, hardly salient; prehumeral borders oblique and straight; lateral sides briefly straight behind humeral angles, gently arcuate at middle, less so in apical two-fifths, and rather narrowly and conjointly rounded at apices; dorsum moderately convex though longitudinally depressed on the disc and steeply declivous in lateral and apical areas, with a round depression in basal areas, which is delimited on each side by a very obtuse carina formed by the basal portion of interval 5; striae superficial, shallower at the sides than on the disc, stria 8 deeply impressed except before the middle set of marginal umbilicate pores; apical striole deeply impressed, moderately curved, and directed to stria 5; intervals flat, each bearing an irregular row of suberect pubescence; stria 3 provided with a single setiferous dorsal pore at 2/13 from base, stria 5 with two setiferous dorsal pores at 3/11 and 1/2 from base, respectively; preapical pore lying at the apical anastomosis of striae 2 and 3, and much more distant from apex than from suture.

Ventral surface pubescent except for lateral parts. Legs fairly long and slender.

Male genital organ small though somewhat similar in configuration to that of *A. yoshidai* S. UÉNO (1969, p. 196, figs. 3–11); markedly different from the latter in the much smaller apical disc of aedeagal apical lobe, more extensive teeth-patch covering the inner sac, and above all, in the absence of recognizable copulatory piece. Aedeagus slender, only one-third as long as elytra, regularly arcuate though more strongly so before middle than behind, and slightly tapered from behind middle towards apical lobe in lateral view; basal part not ventrally bent and devoid of conspicuously produced parameral articulation; basal orifice very small, with the sides briefly but deeply emarginate; sagittal aileron very narrow and hyaline; viewed dorsally, apical part slightly twisted to the right, with nearly symmetrical apical lobe which is narrow and gradually tapered to nearly pointed extremity; viewed laterally, apical lobe slightly constricted before terminal disc, which is small and ventrally leaned; in profile, ventral margin rather deeply emarginate in proximal half, less so behind middle, and very slightly convex at the base of apical lobe. Inner sac wholly covered with minute scales in proximal half and with large sclerotized teeth behind middle, especially on the ventral side; copulatory piece not recognizable. Styles relatively short and broad with downcurved apical parts; left style longer than the right and devoid of distinct ventral apophysis; each style provided with four thin apical setae various in length.

Figs. 4–9. Male genitalia of *Awatrechus* spp.; left lateral view (4, 6, 8), and apical part of aedeagus, dorso-apical view (5, 7, 9). —— 4–5. *A. sancticaveae* S, UÉNO, sp. nov., from Higao-no-anazenjô Cave in Handa-chô. —— 6–7. *A. simplicior* S. UÉNO, sp. nov., from Nakahigashi-yama on the Bunsui Range. —— 8–9. *A. occidentalis* S. UÉNO, sp. nov., from Tanioku-kô Adit in Ikeda-chô.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Female unknown.

Type specimen. Holotype: ♂, 5–V–1979, Akiyoshi ISHIDA leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Further specimen examined. Remains of pronotum and hind body (without apical part of abdomen), 5–XI–1978, M. YOSHIDA leg. (NSMT).

Type locality. Shale cave called Higao-no-anazenjô, 630 m in altitude, at Higao of Handa-chô in Tokushima Prefecture, eastern Shikoku, Southwest Japan.

Notes. This is a very interesting species not directly related to any congeners previously described, though it cannot be discriminated as a representative of a different group from the members of the *pilosus* lineage in external morphology alone. As will be dealt with on later pages, however, its close relatives occur at a height of the Tsurugi Mountains 18.7 km distant to the south by west and in an abandoned mine adit located on a hill distant to the west by south for about 22 km. This seems to mean that other species of the same lineage still remain undiscovered in the hilly area between the Iya-gawa River and the main course of the Yoshino-gawa River.

It was most unexpected that this new species lacks recognizable copulatory piece in the inner sac of its male genitalia. Whether the sclerite is really missing or concealed in the teeth covering the inner sac is difficult to determine. In the following two species, *A. simplicior* and *A. occidentalis*, existence of a small copulatory piece is accompanied by slight disorder of minute scales in the surrounding part, so that the small sclerite can be detected without difficulty, particularly in *A. occidentalis*. In *A. sancticaveae*, however, such a disorder of minute scales cannot be observed anywhere on the inner sac, and therefore I have concluded that the copulatory piece has not become differentiated in this new species.

Higao-no-anazenjô is a vertical crack of a large shale cliff less than 10 m long. Its entrance section is very narrow, and the small cave is only slightly broadened even at the innermost. Accordingly, the cave fauna is very poor in the number of both species and individuals. The present trechine beetle was first found out as the remains of the prothorax and hind body, and succeeding investigations yielded only one male specimen in a perfect condition. The cave is 15.8 km distant to the west-northwest from Inbé-no-ana Cave, the type locality of *A. bisetiger*.

The specific name of this new species is derived from the name of its type cave, Higao-no-anazenjô, which might be loosely translated as the Sacred Cave of Higao. It was regarded by Buddhists as a sacred place, and was frequently visited by pilgrims in former times.

Awatrechus simplicior S. UÉNO, sp. nov.

(Figs. 6–7, 10)

Length: 4.10–4.15 mm (from apical margin of clypeus to apices of elytra).

Belonging to the same lineage as *A. sancticaveae*, and readily recognized on its

large head, long basal part of pronotum, very obtuse humeral angles of elytra, and relatively short stout legs. Decidedly different from *A. sancticaveae* also in the configuration of male genitalia as will be described later.

Coloration, pubescence, chaetotaxy and microsculpture as in *A. sancticaveae*; sometimes (in the paratype), the colour of body is wholly dark reddish brown. Head large, as wide as long, with genae gently and evenly convex, not particularly tumid at the posterior parts; antennae fairly stout but not particularly short, reaching the middle of elytra, pedicel the shortest, about a half as long as antennomere 3 or 4, each of which is about 3.5 times as long as wide, 5–10 gradually decreasing in length towards apex, terminal antennomere about as long as antennomere 6.

Pronotum subcordate, wider than head, about as wide as long, widest at about four-fifths from base or slightly behind that level, and more contracted at base than at apex, with long basal part which sometimes occupies one-third the median length; PW/HW 1.35–1.38 (M 1.36), PW/PL 1.00–1.01 (M 1.00), PW/PA 1.35–1.39 (M 1.37), PW/PB 1.43–1.52 (M 1.47); sides briefly but strongly arcuate in front, nearly straightly convergent posteriad at middle, widely sinuate at about basal fourth, and then either subparallel or slightly divergent towards hind angles, which are either sharp or acute and protrudent posteriad or postero-laterad; apex a little wider than base, PA/PB 1.04–1.10 (M 1.08), with front angles obtuse, narrowly rounded and slightly advanced; base nearly straight at middle and posteriorly curved on each side; other pronotal features as in *A. sancticaveae* and *A. bisetiger*.

Elytra subovate, widest at the middle, and a little more gradually narrowed towards apices than towards bases; EW/PW 1.58–1.60 (M 1.59), EL/PL 2.41–2.45 (M 2.43), EL/EW 1.53–1.55 (M 1.54); humeral angles more or less tuberculate though the prominence is variable with individuals; prehumeral borders moderately oblique, usually somewhat emarginate but rarely straight; sides briefly straight behind humeri, then gently or moderately arcuate, and rather widely and conjointly rounded at apices; dorsum convex, steeply declivous in lateral and apical areas, with a round depression in basal areas delimited on each side by an obtuse carina formed by the basal portion of interval 5; striae superficial and becoming shallower at the side, finely crenulate, striae 1–3 deepened in basal depression, 6 slight and partially evanescent, 7 and 8 nearly obliterated though the latter is clearly impressed behind the middle set of marginal umbilicate pores; apical striole deeply impressed, moderately curved, and directed to stria 5 at the terminus; intervals flat, each bearing an irregular row of suberect pubescence; stria 3 with a single setiferous dorsal pore at 1/7–1/6 from base, stria 5 with two setiferous dorsal pores at 1/4–2/7 and 1/2–3/5 from base, respectively; preapical pore located at the apical anastomosis of striae 2 and 3 on or just behind the level of the terminus of apical striole, and twice or more distant from apex than from suture.

Ventral surface pubescent as in *A. sancticaveae*. Legs relatively short and stout; protibiae moderately dilated towards apices and slightly arcuate in apical part; metatibia about a half as long as elytra; mesotarsomere 1 as long as mesotarsomeres 2–4 combined; metatarsomere 1 a little shorter than metatarsomeres 2–4 combined; protar-

someres 1–2 rather widely dilated and stoutly produced inwards at the apices in ♂.

Male genital organ relatively large, similar to that of *A. sancticaveae* in basic conformation, but the aedeagus is more strongly arcuate with the apical disc less differentiated, the longitudinal teeth-patch of inner sac is more extensive, and the copulatory piece is recognizable though very small and hardly specialized. Aedeagus slender, two-fifths as long as elytra, regularly arcuate, and nearly parallel-sided in both dorsal and lateral views, with the basal part rather strongly curved ventrad and the apical lobe gently upcurved; parameral articulation not distinctly produced; basal part round, with small basal orifice, whose sides are shallowly emarginate; sagittal aileron vestigial; viewed dorsally, apical lobe very slightly asymmetrical and gradually tapered to nearly pointed extremity; viewed laterally, apical lobe gently upcurved, only slightly narrowed apicad, and gently dilated into a round disc which is not conspicuous; ventral margin widely emarginate in profile, more deeply before middle. Inner sac wholly covered with scales and teeth, the latter of which are enlarged and rather heavily sclerotized in apical fourth; copulatory piece very small, somewhat spatulate with blunt apex, and membraneous in proximal part, lying at the ventral side of inner sac at about apical third of aedeagus. Styles with slender apical parts, left style longer than the right, each bearing four apical setae.

Type series. Holotype: ♂, allotype: ♀, 1,420 m alt. on SSW slope, 20–X–1990, Y. ITÔ leg. Paratype: 1 ♂, 1,400 m alt. on SW slope, 4–VI–1989, Y. ITÔ leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Nakahigashi-yama on the Bunsui Range, 1,400–1,420 m in altitude on the southwestern and south-southwestern slopes, in Monobé-mura of Kôchi Prefecture, eastern Shikoku, Southwest Japan.

Notes. Judging from its relatively thickset body with stout appendages, *A. simplicior* may be the least specialized species within the genus *Awatrechus*. Besides, its primitiveness is suggested by the conformation of its male genitalia, which are relatively unmodified and devoid of well differentiated copulatory piece.

In most eastern species of the genus, the aedeagal apical lobe is highly modified to form a large terminal disc supported by a narrow stalk, and the copulatory piece is usually larger than the apical disc. Only the exception is *A. hygrobius* S. UÉNO (1955, p. 38, figs. 1–2; 1957, p. 212; 1969, pp. 196, 208; 1973, p. 188) occurring at the easternmost part of the generic range, in which the aedeagal apical disc is well developed but the copulatory piece is very small and not comparable in size with those of the other species. The small copulatory piece possessed by *A. simplicior* is nearly of the same size as that of *A. hygrobius* but is sclerotized only in apical half, or in other words it is less completely formed than that of the latter.

Awatrechus simplicior may be a relict species surviving in isolation at a high place of the Tsurugi Mountains. Its habitats are about 25 km distant to the west-southwest in a beeline from Tôgen-daiichi-dô Cave, the type locality of *A. pilosus* and 18.7 km distant to the south by west from Higao-no-anazenjô Cave, that of *A. sancti-*

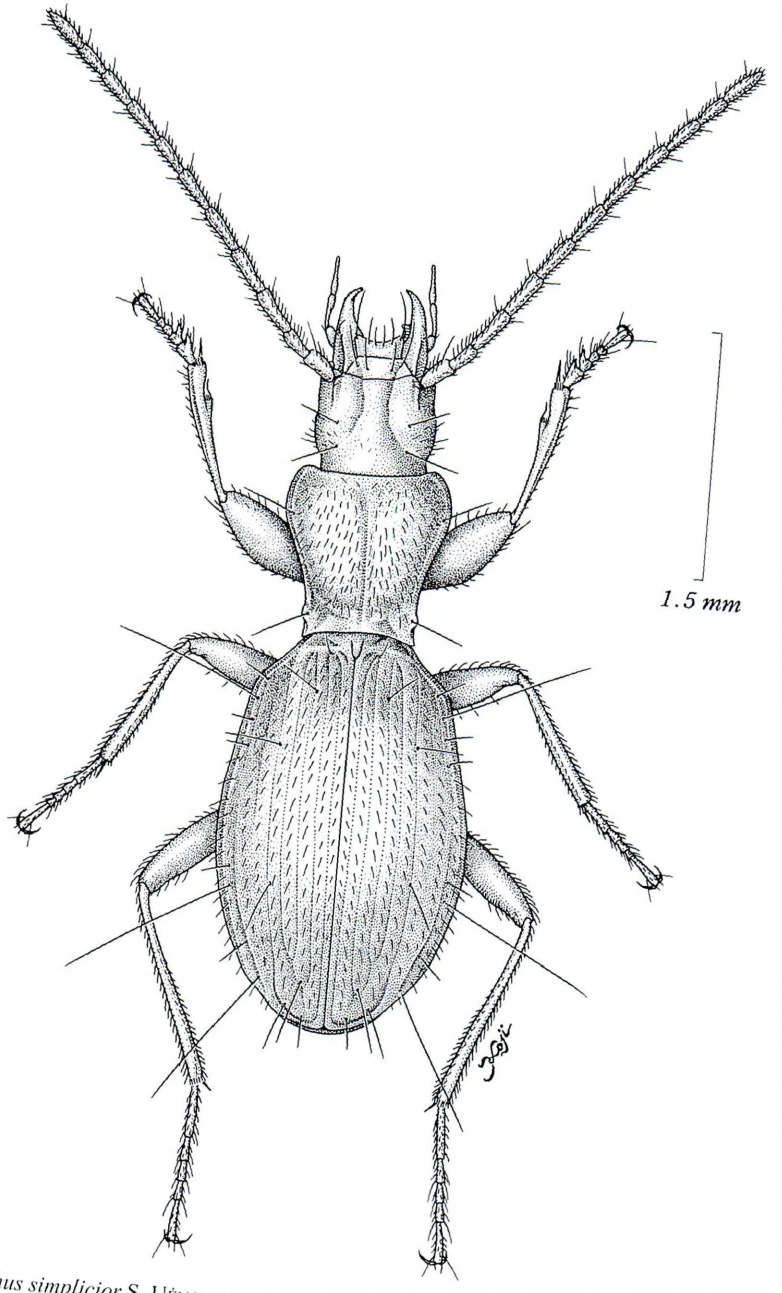

Fig. 10. *Awatrechus simplicior* S. UÉNO, sp. nov., ♂, from Nakahigashi-yama on the Bunsui Range.

caveae, and mark the westernmost point of the distribution of *Awatrechus* on the watershed of the Tsurugis. The known localities of the other two new species belonging to the same lineage are much lower in elevation than the type locality of *A. simplicior*, though one of them is farther apart to the northwest.

The type locality of this new species, Nakahigashi-yama, is the northernmost head of the Bunsui Range, which is the main southward branch of the Tsurugi Mountains and forms the borders of Tokushima and Kôchi Prefectures. The trechine beetle was found at two stations on the Kôchi side of the summit (1,685 m in height), from screes in a deciduous broadleaved forest fed by narrow streams. The habitats were typically upper hypogean, being near the bedrock beneath thick covers of rock debris.

Awatrechus occidentalis S. UÉNO, sp. nov.

(Figs. 8–9, 11)

Length: 4.00–4.45 mm (from apical margin of clypeus to apices of elytra).

Externally very close to *A. sancticaveae* and indistinguishable from it with confidence, but definitely different in the size and configuration of male genitalia.

Identical with *A. sancticaveae* in the coloration, pubescence, chaetotaxy and microsculpture. Head perfectly similar to that of *A. sancticaveae*. Pronotum also similar to that of *A. sancticaveae* with similar standard ratios, only differing in the curvature of lateral sides, which are more briefly and more strongly arcuate on an average; PW/HW 1.45–1.49 (M 1.47), PW/PL 0.98–1.03 (M 1.00), PW/PA 1.41–1.49 (M 1.44), PW/PB 1.44–1.54 (M 1.47), PA/PB 1.00–1.05 (M 1.03). Elytra slightly broader and more clearly striate than in *A. sancticaveae*, though mostly identical with those of the latter; EW/PW 1.54–1.58 (M 1.56), EL/PL 2.39–2.49 (M 2.43), EL/EW 1.52–1.59 (M 1.56); pore on stria 3 located at 1/7–1/6 from base, those on stria 5 at about 2/7 and 3/5 from base, respecively. Legs somewhat slenderer than in *A. sancticaveae*.

Male genital organ similar in basic conformation to that of *A. sancticaveae*, though considerably different from the latter in many details. Aedeagus larger, nearly two-fifths as long as elytra, highest and strongly arcuate at about basal third, and gradually tapered from there towards apical orifice; apical part sigmoidally twisted to the right in dorsal view, with narrow symmetrical apical lobe pointed at the extremity; viewed laterally, apical part twisted, with apical lobe very slightly upcurved and gently dilated into a ventrally leaned terminal disc of a similar size to that of *A. simplicior*; basal part not large, straight, devoid of conspicuously produced parameral articulation, with small basal orifice, whose sides are moderately emarginate; sagittal aileron very narrow and hyaline; ventral margin widely emarginate in profile, much more deeply so before middle than behind. Inner sac wholly covered with scales and teeth as in *A. simplicior*, but the teeth are obviously larger and more heavily sclerotized in apical part and at the dorsal side of proximal third; copulatory piece very small though larger than in *A. simplicior*, subtriangular with nearly pointed apex, and moderately sclerotized, lying at the ventral side behind middle. Styles slender and fairly long, with very slen-

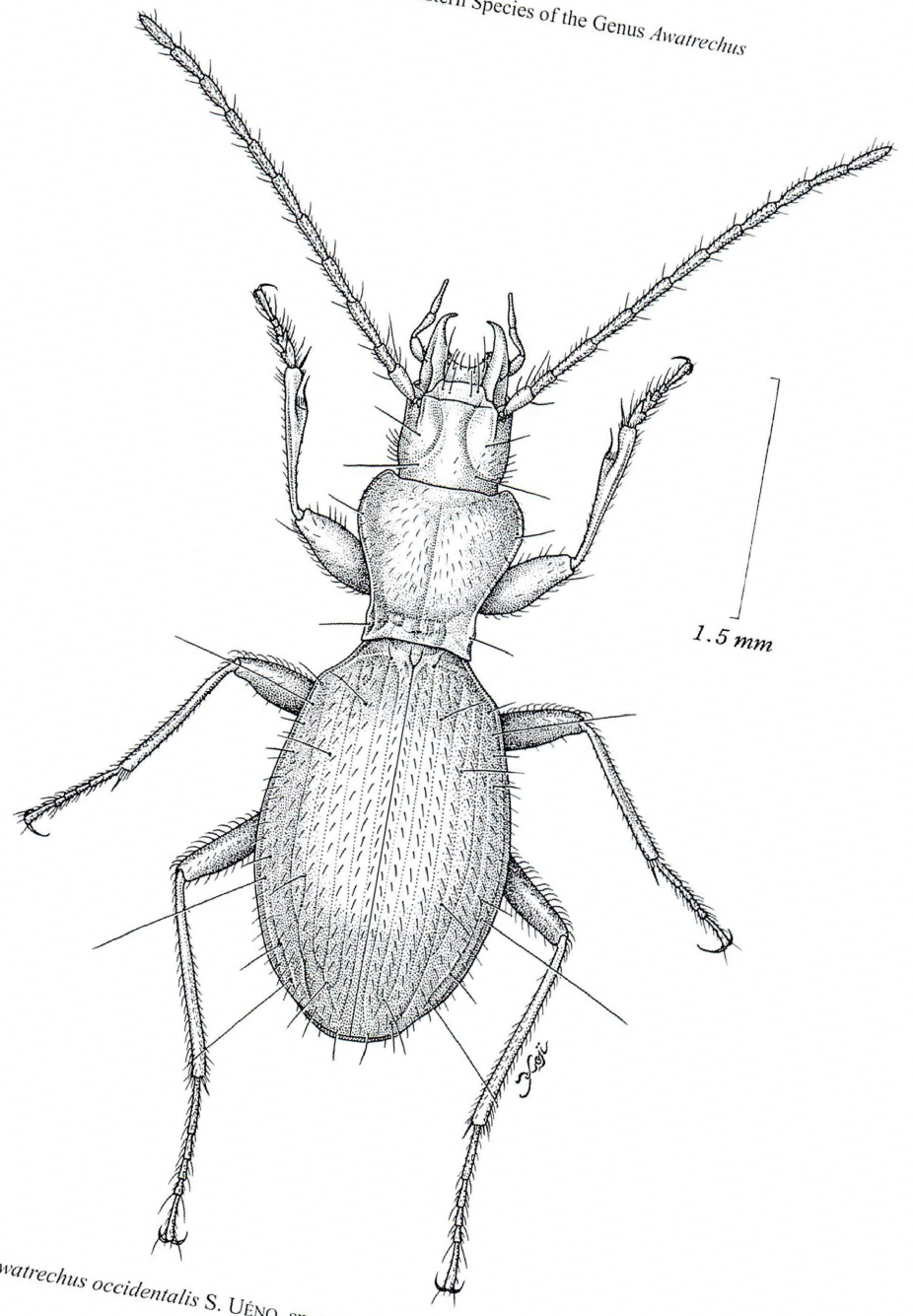

Fig. 11. *Awatrechus occidentalis* S. UÉNO, sp. nov., ♂, from Tanioku-kô Adit in Ikeda-chô.

der apical parts, left style obviously longer than the right, each usually bearing four thin apical setae, which are sometimes supplemented with a short extra seta on one style.

Type series. Holotype: ♂, allotype: ♀, paratypes: 3♂♂, 1♀ (teneral), 1–XII–1985, M. YOSHIDA leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Abandoned adit of a copper mine, called Tanioku-kô, 530 m in altitude, at Ishinouchi of Ikeda-chô of Tokushima Prefecture, eastern Shikoku, Southwest Japan.

Notes. Though geographically isolated, this new species is almost identical with *A. sancticaveae* in external features and cannot be correctly discriminated without dissection of males. Contrary to external morphology, the male genitalia are quite unique, above all in the peculiar configuration of the aedeagus, which is almost rectangularly curved at about basal third and sigmoidally twisted to the right at the apical part. Also the copulatory piece is in a more completed state than in the other species of the same lineage, and comparable with that of *A. hygrobius* in the size, position and sclerotization. This similarity may have been brought about by convergence, but is still interesting because the parallel evolution has taken place in the westernmost and easternmost species of the genus.

The type locality of this remarkable new species is an abandoned adit of a copper mine lying to the south of the town of Ikeda on the right side of the main course of the Yoshino-gawa River. It is 22.1 km distant to the west by south from Higao-no-anazenjô, the type locality of *A. sancticaveae*, and about 27 km distant to the northwest from Nakahigashi-yama on the Bunsui Range, that of *A. simplicior*. The mine is located at the southeastern side of a low hill 622 m in height. From the entrance, the adit leads to a rather spacious room which leads off a passage with a shallow pool of underground water and heaps of bats' excreta standing up from it. The trechine beetle occurs in the room and was found from beneath stones lying near the edge of the underground water.

要　　約

上野俊一：アワメクラチビゴミムシ属分布域の北西部に産する4新種．—— アワメクラチビゴミムシ属の未記載種のうち，属の分布域の北西部に固有の4新種を正式に記載し，これらにミサトメクラチビゴミムシ *Awatrechus misatonis* S. UÉNO, ヒガオメクラチビゴミムシ *A. sancticaveae* S. UÉNO, モノベメクラチビゴミムシ *A. simplicior* S. UÉNO, およびイケダメクラチビゴミムシ *A. occidentalis* S. UÉNO の新名を与えた．

最初の種は，吉野川の右岸に位置する廃坑から見つかったもので，既知種のインベノメクラチビゴミムシ *A. bisetiger* S. UÉNO に類縁が近いが，上翅の形態や剛毛式がいちじるしく異なっている．次の種は，上記の2種の生息地より西方に位置する頁岩洞に固有で，雄交尾器の基本的な構造が，ミサトメクラチビゴミムシを含めた既知の7種のいずれのものとも異なる．とくに，中央片先端部の円盤状拡張部があまり発達していないことと，交尾片が認められないこと

は，この新種の特異性を際立てるものである．3番目の種は地下浅層性で，剣山地の高所に局在し，雄交尾器の構造からみてヒガオメクラチビゴミムシと同系列のものだろうと考えられるが，小さい交尾片をもつ点で異なっている．ただし，この交尾片は分化がきわめて悪く，大型の鱗片に見誤られる程度の大きさしかない．

最後のイケダメクラチビゴミムシは，吉野川が北から東へ屈曲する付近の右岸に位置する廃坑から発見されたもので，ほかのどの種の産地からも直線距離で20 km以上へだたり，剣山地の主稜からも遠く離れた位置に孤立している．しかし，外部形態ではヒガオメクラチビゴミムシとほとんど異ならず，雄交尾器の基本的な構造はモノベメクラチビゴミムシの場合と同じで，同系列の新種だと考えざるをえない．ただし，交尾片の発達は，同系列の既知の3種のうちではもっともよく進んでいて，同様に小さい交尾片をもつリュウノメクラチビゴミムシの場合に匹敵する．ヒガオメクラチビゴミムシあるいはモノベメクラチビゴミムシの生息地とイケダメクラチビゴミムシの基準産地とのあいだには，ナガチビゴミムシ属*Trechiama*の盲目種以外にメクラチビゴミムシ類のまったく知られていない地域がかなり大きく残されているので，将来この地域から，同じ系列の別の新種の発見される可能性が高い．

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Elytra, *Tokyo*, **31** (2): 429–430, November 22, 2003

Occurrence of *Yamautidius anaulax* (Coleoptera, Trechinae) in the Upper Hypogean Zone

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Yamautidius (*Miyamaidius*) *anaulax* S. UÉNO (1978, pp. 200, 203, figs. 4–5) is a small anophthalmic trechine beetle originally described from two males collected in 1978 in a

prospecting adit of a manganese mine at Aonami near the southwestern corner of the Takanawa Peninsula at the northwestern part of the Island of Shikoku. The adit was dug into fine-grained sandstone on the right bank of the Aonami-gawa and was only 12 m long. No additional specimens were obtained after that time, and the small adit itself was destroyed by road construction. Since the Aonami-dani Valley is by no means good for seeking hypogean beetles, *Y. anaulax* became a lost species that was available for trechine researchers only by the two type specimens.

In mid-July of this year, Kazuo ISHIKAWA, Yoshiyuki ITÔ and I tackled the excavation of a fairly large scree lying on the right side of the Aonami-gawa 2.1 km south by west of, or upstream from, the lost type locality of *Y. anaulax*. The purpose of the excavation was to locate the natural habitat of a new *Stygiotrechus*, but before finding it out, we unexpectedly came across a habitat of *Y. anaulax* at a depth of 30–50 cm. It was near the interface between the loose subsurface layer and more stable bottom layer, well above the level of the bedrock (cf. UÉNO & ASHIDA, 2003, p. 413). All the specimens obtained were found running on the surface of embedded stones, not necessarily on the undersurface.

The rediscovery of *Y. anaulax* from the upper hypogean zone is fortunate in view of the fact that at least one of the two known species of the endemic subgenus *Miyamaidius* becomes accessible again. It proves beyond doubt the survival of the rare species in the subterranean domain of the Aonami-dani. It is worth noting here that *Y.* (*Miyamaidius*) *aenigmaticus* S. UÉNO (1978, pp. 200, 201, figs. 1–3), the other known species of the subgenus, is no more obtainable at present because of the danger of collapse of the abandoned mine adit concerned, the type locality of this trechine beetle.

The collecting data of the upper hypogean specimens examined of *Yamautidius* (*Miyamaidius*) *anaulax* S. UÉNO are as given below:

Specimens examined. 1♂, 2♀♀, 1♀ (found dead), Aonami-dani, 450 m alt., Sugitaté, Matsuyama-shi, Ehimé Pref., 19–VII–2003, Y. ITÔ leg.; 1♂, 1♀, same locality, 20–VII–2003, S. UÉNO leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Before closing this brief report, I wish to express my heartfelt thanks to Dr. Kazuo ISHIKAWA and Mr. Yoshiyuki ITÔ for their kind help in searching for upper hypogean trechine beetles in the Takanawa Peninsula.

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Elytra, *Tokyo*, **31** (2): 431–438, November 22, 2003

The Complex of *Trechiama fujitai* (Coleoptera, Trechinae) from Hyôgo Prefecture, West Japan (I)

—Two New Species from the Maruyama-gawa Drainage Area—

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Abstract Two new anophthalmic species of the *fujitai* complex in the group of *Trechiama oni* were found from the drainage area of the Maruyama-gawa River, which flows from the central part of Hyôgo Prefecture to the Sea of Japan. They are described as follows: *T.* (s. str.) *latilobatus* ASHIDA, sp. nov. from the eastern side of the upper part of the Maruyama-gawa River, and *T.* (s. str.) *oja* ASHIDA, sp. nov. from the drainage areas of the Akenobe-gawa and the Ôya-gawa, both being tributaries of the Maruyama-gawa. New records of *T.* (s. str.) *cuspidatus* S. UÉNO are also provided from the drainages of the Mikobata-gawa and Sanaka-gawa, which are branches of the Maruyama-gawa.

Trechiama is one of the most diversified trechine genera in Japan. The group of *T. oni* occurring in western Japan consists of approximately forty species and is now classified into nine species-complexes (UÉNO, 1985 a, 1987, 2000; ASHIDA, 2002 a, b). In Hyôgo Prefecture, three complexes show parapatric distribution: namely the *fujitai* complex in the western part, the *kosugei* complex in the eastern part, and the *notoi* complex in the northeastern part. No overlapping zone of these complexes is so far known and instead many blanks still remain around boundary areas.

Energetic field investigations made by Mr. Akinao SOUMA and other members of the Kansai Trechine Research Group in the blank areas of Hyôgo Prefecture brought forth number of findings. In this paper, I am going to deal with the species belonging to the *fujitai* complex from the drainage area of the Maruyama-gawa River flowing from the central part of Hyôgo to the Sea of Japan.

The abbreviations used herein are the same as those in my previous papers (ASHIDA, 2002 a, b).

Trechiama (s. str.) ***latilobatus*** ASHIDA, sp. nov.

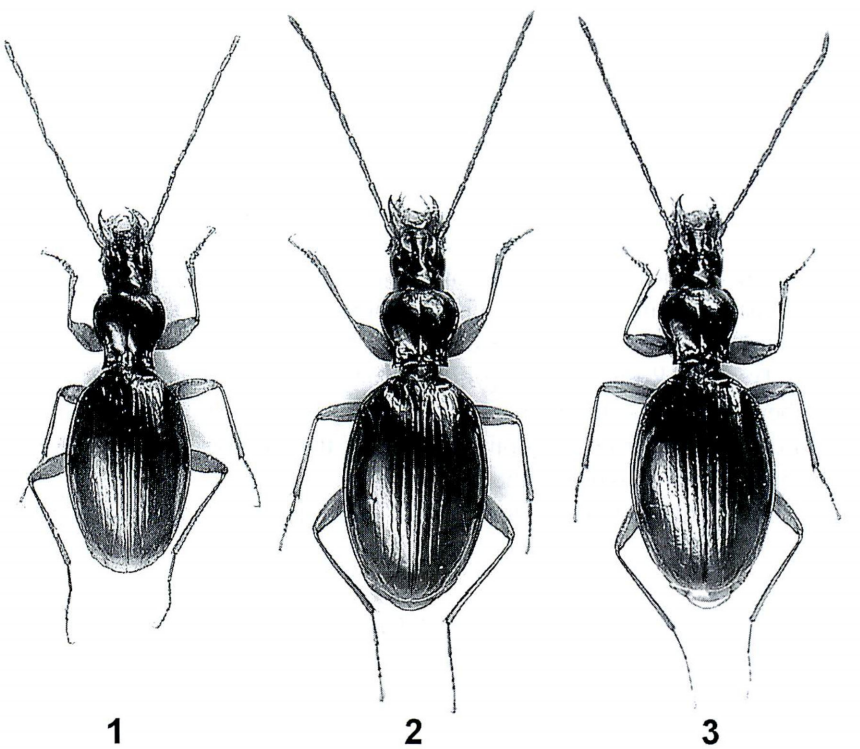
(Figs. 1, 4–7)

Length: 4.80–5.45 mm (from apical margin of clypeus to apices of elytra).

Readily distinguished from all the members of the group of *T. oni* by extremely compressed aedeagus with wide and flat apical lobe and a small but sclerotized copula-

tory piece in the inner sac. Externally similar to *T. silicicola* S. UÉNO (1981, p. 79, figs. 1–4) from Otogawachi in Ichijima-chô, a member of the *kosugei* complex of the group of *T. oni*, with relatively small body, pronotum lacking postangular setae, and regularly oval elytra, though judging from the shape of male genital organ, most likely belonging to the *fujitai* complex because of sharing some common features in aedeagus with *T. cuspidatus* S. UÉNO (1985 a, pp. 168, 173, figs. 5–6) from Takinoya in Yabu-chô.

Color yellowish brown with light-colored appendages, usually lighter than in the other upper hypogean species of the group of *T. oni*. Head slender, a little longer than width; genae slightly convex; antennae slender, reaching the middle of elytra; eyes completely disappearing; mandibles fairly long, sharply hooked at apices. Pronotum subcordate, a little longer than width, widest at two-thirds from base; PW/HW 1.34–1.49 (M 1.42), PW/PL 1.00–1.10 (M 1.04), PW/PA 1.34–1.49 (M 1.41), PW/PB 1.29–1.45 (M 1.38), PB/PA 0.95–1.08 (M 1.02); sides strongly arcuate in front, deeply sinuate at basal fourth, and then divergent again towards hind angles, which are sharp and protrude postero-laterad; postangular setae absent; base markedly emarginate at middle; front angles obtuse; surface moderately convex though more or less depressed on the disc. Elytra ovate, relatively slender, widest at about middle; EW/PW 1.67–1.82

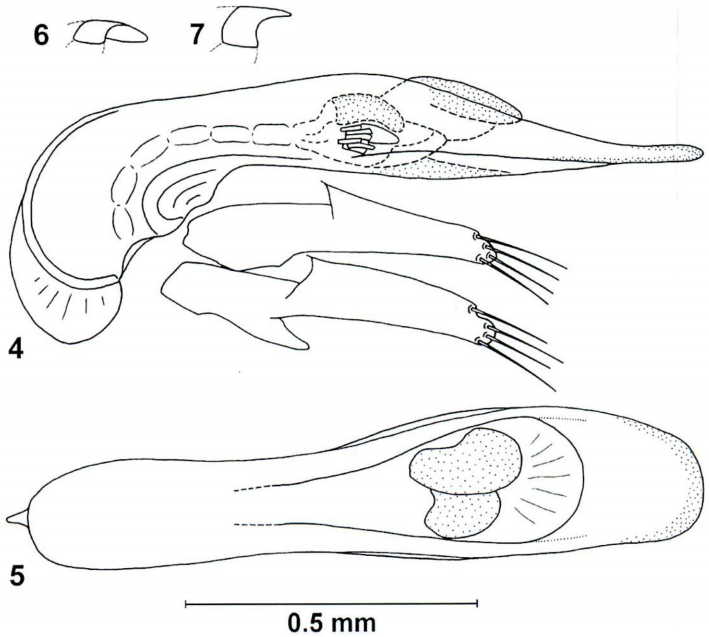


Figs. 1–3. *Trechiama* (s. str.) spp., ♂, dorsal views: *T. latilobatus* ASHIDA from Tataragi in Asago-chô (1); *T. oja* ASHIDA from Akenobe in Ôya-chô (2); *T. cuspidatus* S. UÉNO from Mikobata in Asago-chô (3).

(M 1.73); EL/PL 2.50–2.75 (M 2.67); EL/EW 1.45–1.51 (M 1.49); shoulders effaced, with prehumeral borders moderately oblique; sides regularly rounded towards apices; striae relatively shallow, especially in striae 6, 7 and 8; setiferous dorsal pores on stria 5 located at 1/7–1/6 and 3/5–2/3 from base, respectively. Legs as in the other species of the *fujitai* complex.

Male genital organ large, elongate and heavily sclerotized. Aedeagus two-fifths as long as elytra, heavily compressed, and almost straight except for strongly curved basal part; basal orifice small, with the sides emarginate; sagittal aileron very large though hyaline; viewed laterally, middle part slightly convex on dorsum, then gradually narrowed towards apical tip, which is thin and flat; viewed dorsally, apical lobe gradually dilated, widest at apical fourth, then feebly narrowed apicad, with wide and regularly rounded apex; viewed ventrally, apical lobe longitudinally convex behind apex. Inner sac armed with a teeth-patch, a small copulatory piece and two large plates; teeth-patch small, formed by fairly long teeth, lying on the left side at about middle of aedeagus; copulatory piece lightly sclerotized, lying at the right side of teeth-patch, one-eighth as long as aedeagus, rolled ventrad, with the front margin deeply emarginate and projected ventro-posteriad at right-apical corner; two large plates covered with minute scales at the dorsal side of apical orifice. Styles long and nearly straight; left one slightly longer than the right, each bearing four setae at apex.

Type series. Holotype: ♂, allotype: ♀, 21–IV–2002, H. ASHIDA leg. Paratypes:



Figs. 4–7. Male genitalia of *Trechiama* (s. str.) *latilobatus* ASHIDA from Tataragi in Asago-chô; left lateral view (4), dorsal view (5), and separated copulatory piece, lateral (6) and dorsal (7) views.

6♂♂, 1♀, 10–XII–2000, A. SOUMA leg.; 5♂♂, 1♀, 3–V–2001, S. YAMASHITA, K. ITÔ & Y. OKUDA leg.; 2♂♂, 1♀, 21–IV–2002, H. ASHIDA leg.; 1♂, 25–V–2002, A. SOUMA leg.; 2♂♂, 2♀♀ (incl. 1♀ teneral), 13–VII–2003, H. ASHIDA leg.; 1♂, 3–VIII–2003, H. ASHIDA leg. The holotype and allotype are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Type locality. Tataragi (280 m alt.), Asago-chô, Hyôgo Prefecture, West Japan.

Further records. 2♂♂, 3♀♀, Kurogawa (550 m alt.), Ikuno-chô, Hyôgo Prefecture, 31–V–2003, A. SOUMA leg.; 1♀, Ginzanko (400 m alt.), Ikuno-chô, Hyôgo Prefecture, 2–V–2002, T. SAITÔ leg.;

Etymology. The specific epithet of this species refers to the shape of the aedeagal apical lobe, which is wide and flat.

Notes. At first glance, the external morphology of the present species is similar to that of *T. silicicola*, a member of the *kosugei* complex, which lacks postangular setae on the pronotum exceptionally in the *kosugei* complex and has a relatively small body with oval elytra. However, the male genitalia of *T. latilobatus* do not show any similarities to those of the *kosugei* complex, but have some common features with those of such members of the *fujitai* complex as *T. cuspidatus*; namely, broad apical lobe, very lightly sclerotized copulatory piece, two large plates on apical orifice, and so on. Thus the present species must be a peculiar offshoot of the *fujitai* complex.

The type population was found in two gullies facing the northeastern and southeastern shores of the Tataragi Reservoir constructed on an eastern branch of the upper part of the Maruyama-gawa River. The gullies are mostly covered with rock debris of granite, which is usually unfavorable for harboring upper hypogean trechine beetles, though the type specimens were dug out from the bottom of colluvia at a depth of about 60–100 cm. The third locality is a gully at the southwestern side of the Kurogawa Reservoir, which is in the upper course of the Ichi-kawa River emptying into the Inland Sea of Seto-naikai, and is 2.5 km distant to the east from the type locality. Although these artificial lakes were constructed on two quite different drainages, they are near to each other and are divided by a ridge with gentle slopes, so that the upper hypogean trechine beetle might be able to cross it. Only one female specimen which seems to be *T. latilobatus* was collected from a gully at the northeastern side of the Ginzanko Reservoir, which is on the same river below the Kurogawa Dam. In this gully, the present species coexists with a species of the other lineage of *Trechiama*, which is undescribed and may belong to the *kosugei* complex.

All the known localities of this species lie on the eastern side of the Maruyama-gawa/Ichi-kawa line. Since previously known species of the *fujitai* complex are all from the western side of that line, *T. latilobatus* is the first species of the complex occurring on the eastern side, and thus the easternmost species of that complex. Tataragi, the type locality of this species, is about 12 km southeast of Takinoya, the type locality of *T. cuspidatus*; about 11 km east-northeast of Mt. Darugamine in Ikuno-chô (ASHIDA, 1997), the northernmost known locality of *T. crassilobatus* S. UÉNO, 1977; about 24 km west by north of Otogawachi, the type locality of *T. silicicola*; and 14 km north

of Ôhata in Kanzaki-chô, that of *T. obliquus* S. UÉNO, 1985.

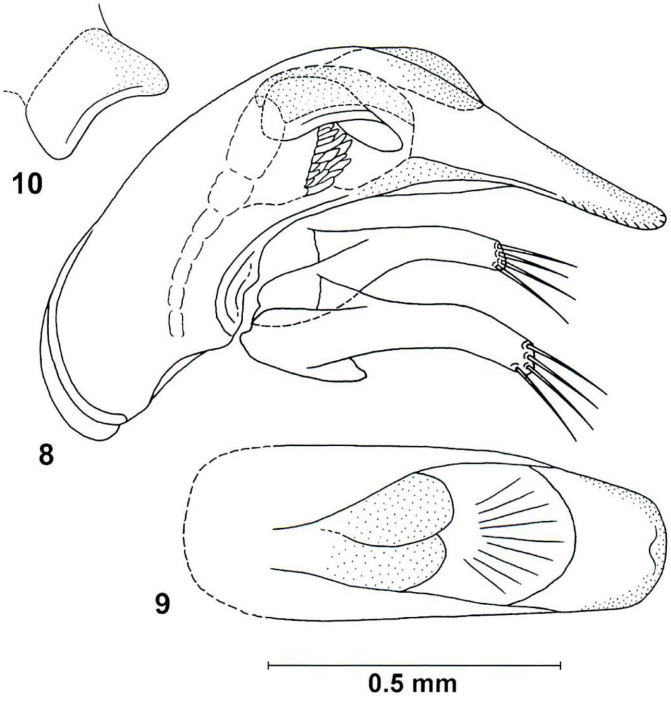
Trechiama (s. str.) ***oja*** ASHIDA, sp. nov.

(Figs. 2, 8–10)

Length: 5.35–5.95 mm (from apical margin of clypeus to apices of elytra).

Closely related to *T. cuspidatus* S. UÉNO (1985 a, pp. 168, 173, figs. 5–6) from an abandoned mine adit at Takinoya of Yabu-chô, Hyôgo Prefecture, though clearly distinguished from the latter species by the configuration of aedeagal apical lobe whose ventral surface is hardly concave. Also similar to *T. moritai* S. UÉNO (1985 a, pp. 168, 170, figs. 1–2) from the Wakasugi-tôge in Nishi-awakura-son, Okayama Prefecture, and *T. spinulifer* S. UÉNO (1985 a, pp. 168, 172, figs. 3–4) from an abandoned mine adit at Nakase of Sekinomiya-chô, Hyôgo Prefecture, though discriminated from those species by the structure of aedeagal apical lobe and by arming a sclerotized copulatory piece in the inner sac.

Externally very similar to *T. cuspidatus*, though the body is a little slenderer, in particular with narrower pronotal base. PW/HW 1.35–1.47 (M 1.42), PW/PL 1.06–1.18 (M 1.11), PW/PA 1.40–1.47 (M 1.43), PW/PB 1.39–1.45 (M 1.42), PB/PA 1.00–



Figs. 8–10. Male genitalia of *Trechiama* (s. str.) *oja* ASHIDA from Akenobe in Ôya-chô; left lateral view (8), apical part of aedeagus, dorso-apical view (9), and separated copulatory piece, dorsal view (10).

1.03 (M 1.01), EW/PW 1.70–1.83 (M 1.78); EL/PL 2.79–3.00 (M 2.87); EL/EW 1.43–1.48 (M 1.45).

Male genital organ robust and moderately sclerotized. Aedeagus similar in profile to that of *T. moritai*, one-third as long as elytra, arcuate though somewhat compressed, with broad apical lobe, which is thicker than in *T. moritai*, and thinner than in *T. spinulifer*; viewed ventrally, undersurface of apical lobe neither concave nor file-like unlike those of *T. cuspidatus* and *T. spinulifer*. Inner armature similar to that of *T. cuspidatus*; left lateral teeth-patch consisting of compact spinules; copulatory piece lying at the right dorsal side of left lateral teeth-patch, one-fourth as long as aedeagus, lamellar, very lightly sclerotized though usually more heavily than in *T. cuspidatus*, subtetragonal and rolled ventrad, with emarginate left apical margin and obtusely projected right apical corner.

Type series. Holotype: ♂, allotype: ♀, 27–VII–2003, H. ASHIDA leg. Paratypes: 2♀♀, 22–IV–2001, A. SOUMA leg.; 4♂♂, 2♀♀, 29–IV–2001, A. SOUMA leg.; 3♂♂, 3–V–2001, S. YAMASHITA leg.; 1♂, 4♀♀, 21–VII–2003, H. ASHIDA leg.; 9♂♂, 9♀♀, 27–VII–2003, A. SOUMA, Y. OKUDA, S. YAMASHITA, K. ITÔ & H. ASHIDA leg.; 2♂♂, 1♀, 3–VIII–2003, S. NAKAMURA leg. The holotype and allotype are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Type locality. Fudono-dani (340 m alt.) in Akenobe, Ôya-chô, Hyôgo Prefecture, West Japan.

Further records. 2♂♂, 2♀♀, Tendaki Valley (400–500 m alt.), Ôya-chô, Hyôgo Prefecture, 22–X–2000, A. SOUMA & S. YAMASHITA leg.; 1♂, same locality, 29–X–2000, A. SOUMA leg.; 3♂♂, 3♀♀, same locality, 28–IV–2002, A. SOUMA & S. YAMASHITA leg.; 2♂♂, 4♀♀, same locality, 27–VII–2003, A. SOUMA, Y. OKUDA, S. YAMASHITA, K. ITÔ & H. ASHIDA leg.; 2♀♀, Yokoyuki Valley (450–550 m alt.) on the southeastern slope of Mt. Hyônosen (1,510 m in height), Ôya-chô, Hyôgo Prefecture, 25–VI–2000, A. SOUMA & S. YAMASHITA leg.; 3♀♀, same locality, 15–VIII–2000, A. SOUMA & S. YAMASHITA leg.; 1♂, 20–VIII–2000, A. SOUMA leg.; 4♂♂, 1♀, 16–VI–2002, A. SOUMA leg.; 3♂♂, 4♀♀, same locality, 27–VII–2003, A. SOUMA, Y. OKUDA, S. YAMASHITA, K. ITÔ & H. ASHIDA leg.;

Etymology. The specific name is derived from the town name, Ôya, in which lie the known localities of this species.

Notes. Since the copulatory pieces are usually very poorly sclerotized in the *fujitai* complex, they have not been well documented so far, but a close dissecting study revealed their usefulness for classification. At first sight the present species seems to be a close relative of *T. moritai* because of having a very similar shape of aedeagus, though its copulatory piece is much larger and darker in color than in *T. moritai* and is rather similar to that of *T. cuspidatus*. Therefore, this species might have a direct relationship with the latter species.

All the known localities of *T. oja* are in the drainage areas of the Ôya-gawa River and its branch Akenobe-gawa, which are tributaries of the Maruyama-gawa. In all localities, the trechines were dug out from the upper hypogean habitat. Fudono-dani, the

type locality of the present species lies at the source of the Akenobe-gawa, and is about 8 km southwest of Takinoya, the type locality of *T. cuspidatus*, and about 6 km northwest of the Kasasugi-tôge, the second locality of the latter species (see bellow). The Tendaki Valley is about 8 km north-northwest of Akenobe, and is only 3.5 km apart to the south from Nakase in Sekinomiya-chô, the type locality of *T. spinulifer*. Tendaki and Nakase lie on the opposite sides of the ridge, namely, Nakase is at the side of the Yagi-gawa River, while Tendaki in the drainage of the Ôya-gawa, though the two rivers join at the lower part and flow into the Maruyama-gawa. The Yokoyuki Valley lies on the southeastern slope of Mt. Hyônosen, which is near the riverhead of the Ôya-gawa. It is about 6 km west of Tendaki, about 9 km west-northwest of Akenobe, and about 16 km northeast of the Wakasugi-tôge, the type locality of *T. moritai*.

Trechiama (s. str.) ***cuspidatus*** S. UÉNO, 1985

(Fig. 3)

Trechiama (s. str.) *cuspidatus* S. UÉNO, 1985, Mem. natn. Sci. Mus., Tokyo, (18), pp. 168, 173, figs. 5–6; type locality: Okuyama of Takinoya in Yabu-chô.

Additional records. 1♀, Takinoya (200 m alt.), Yabu-chô, Hyôgo Prefecture, 10–X–1998, Y. OKUDA leg.; 1♂, same locality, 15–IV–2000, S. TANAKA leg.; 5♂♂, 4♀♀, same locality, 20–IV–2002, Y. OKUDA, T. SAITÔ & S. TANAKA leg.; 2♂♂, 1♀, same locality, 28–IV–2002, H. ASHIDA leg.; 1♂, Kasasugi-tôge (400 m alt.) near Mikobata, Asago-chô, Hyôgo Prefecture, 15–IV–2001, A. SOUMA leg.; 3♂♂, 2♀♀, same locality (350–400 m alt.), 3–V–2001, S. YAMASHITA, Y. OKUDA & K. ITÔ leg.; 4♂♂, 7♀♀, same locality, 5–VIII–2001, S. YAMASHITA leg.; 3♂♂, same locality, 23–XI–2001, A. SOUMA leg.; 2♂♂, same locality, 11–VIII–2002, H. ÔHIRA leg.; 7♂♂, 2♀♀, same locality, 21–VII–2003, H. ASHIDA leg.; 2♂♂, 1♀, Sanaka (300 m alt.), Asago-chô, Hyôgo Prefecture, 24–VI–2001, A. SOUMA leg.; 2♂♂, 1♀, same locality, 25–V–2002, A. SOUMA leg.

Notes. This species has previously been known from only an abandoned mine adit in Takinoya. The specimens reported here were obtained from the upper hypogean habitats at streamsides in three localities. The Kasasugi-tôge, the second locality, lies at the source of the Mikobata-gawa River, a western branch of the upstream portion of the Maruyama-gawa River and 8 km south-southwest of Takinoya. The Kasasugi-tôge specimens have a little slenderer pronotum with narrower base on an average than that of Takinoya specimens, though the other features are identical in both the populations. The body proportions are as follows: PW/HW 1.40–1.43 (M 1.41), PW/PL 1.06–1.10 (M 1.08), PW/PA 1.41–1.46 (M 1.44), PW/PB 1.34–1.40 (M 1.37), PB/PA 1.03–1.09 (M 1.05), EW/PW 1.77–1.84 (M 1.80); EL/PL 2.83–3.00 (M 2.90); EL/EW 1.47–1.54 (M 1.49). The third locality Sanaka is in the Sanaka-gawa drainage area, which is a branch of the Mikobata-gawa, and is located between the Kasasugi-tôge and Takinoya. The body proportions as well as male genitalic features of Sanaka specimens are completely identical with those of Takinoya specimens.

Acknowledgments

First of all, I thank Mr. Akinao SOUMA, who discovered the interesting new species described in this paper and provided the materials for study. I also thank the following members of the Kansai Trechine Research Group for their kind help: Messrs. Shun-Ichi YAMASHITA, Yoshihide OKUDA, Takumi SAITÔ, Kazue ITÔ, Hiroshi ÔHIRA, Satoshi NAKAMURA and Shotaro TANAKA. Hearty thanks are also due to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his continuous guidance.

要　　約

芦田　久：兵庫県のフジタメクラチビゴミムシ系（第I報）—円山川流域の2新種—．—— 兵庫県中央部から北へ流れる円山川流域のナガチビゴミムシ属オニメクラチビゴミムシ群を調査したところ，フジタメクラチビゴミムシ系の2新種が見いだされたので，本論文において以下のように命名，記載した．タタラギメクラチビゴミムシ *Trechiama* (s. str.) *latilobatus* ASHIDA, sp. nov. は円山川上流部の右岸地域に分布し，基準産地の朝来町多々良木のほか，生野町黒川，生野町銀山湖畔に産する．オオヤメクラチビゴミムシ *T.* (s. str.) *oja* ASHIDA, sp. nov.は，円山川の支流である大屋川流域と明延川流域に分布し，基準産地の大屋町明延のほか，大屋町天滝渓谷と大屋町横行渓谷に産する．また，マチオクメクラチビゴミムシ *T.* (s. str.) *cuspidatus* S. UÉNOは養父町建屋の廃坑から記載された種であるが，円山川上流部の左岸側の支流，神子畑川流域と佐中川流域にも分布することが明らかになったので，採集記録を報告した．

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An Isolated Population of *Homoeocarabus maeander* (Coleoptera, Carabidae) Discovered from a Palsa Bog on the Daisetsu-zan Mountains in Hokkaido, Northeast Japan

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Abstract An isolated population of *Homoeocarabus maeander* is recorded from a palsa bog on the Daisetsu-zan Mountains in central Hokkaido, Northeast Japan, and is described as a new subspecies under the name *nobukii*.

Homoeocarabus maeander FISCHER VON WALDHEIM is a single component of the genus *Homoeocarabus* REITTER belonging to the division Hemicarabigenici of the subtribe Carabina (sensu IMURA, 2002). The species prefers cold marshy environment, and is rather widely but sporadically distributed mainly in the subarctic zone of northeastern Eurasia and northern North America. In Japan, it is endemic to Hokkaido and has been recorded from moors or marshy meadows now discontinuously extant in the low altitudinal area of the same island. It was therefore unexpected that a population of the same species was discovered from the alpine zone of the Daisetsu-zan Mountains, the central massif of Hokkaido.

Early in the summer of 2003, Nobuki YASUDA visited an alpine bog lying at the southern side of Mt. Hira-ga-daké (=Hira-ga-také) in the central part of the Daisetsu-zan Mountains for investigating soil beetles.[1)] The bog is peculiar in accompanying palsa, a peaty permafrost mound, and such a palsa bog is known so far only from there in Japan. Together with *Aulonocarabus kurilensis daisetsuzanus* KÔNO and several other small Carabidae such as *Pterostichus subrugosus* STRANEO, both of which are restricted to the wind-blown community of the alpine zone of the Daisetsu-zan, he found a series of *H. maeander* in pitfall traps set in the bog, and they were submitted to me for study. All the specimens looked so strange in having a smaller size and darker coloration, and apparently distinguishable even with the naked eyes from the other populations of the same species known from Hokkaido which are represented by subsp. *paludis* GÉHIN. After a close examination, it has become apparent that the Daisetsu-zan population bears several other characteristic features of its own, and can be distin-

1) This survey was performed under the permissions of the Ministry of Environment (328th permission of the West Hokkaido Regional Office for Nature Conservation) and the Hokkaido Board of Education (3,046th order of the Cultural Section).

guishable not only from subsp. *paludis* but from all the known races of *H. maeander*. I will therefore describe it as a new subspecies in the following lines.

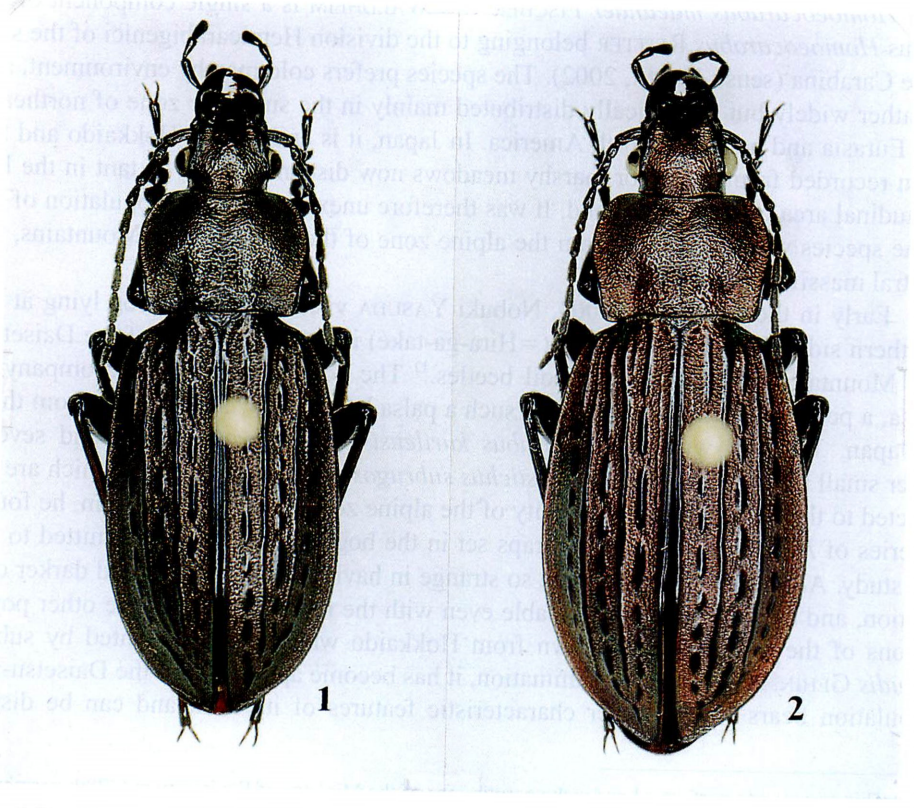
The abbreviations used in the text are the same as those explained in my previous papers.

Homoeocarabus maeander nobukii IMURA, subsp. nov.

[Japanese name: Takané-sesujiakagané-osamushi]
(Figs. 1–3)

Length: 17.7–20.3 mm (including mandibles). Body above dark reddish coppery, dark brown or black with a coppery lustre, sometimes with a faint greenish tinge on the lateral sides of head, pronotum and elytra. Venter and appendages black.

Most closely allied to subsp. *paludis*, but readily discriminated from that race in the following respects: 1) size a little smaller on an average; 2) dark individuals are relatively frequent (of the total 23 specimens examined, 13 are dark reddish coppery and



Figs. 1–2. *Homoeocarabus maeander nobukii* subsp. nov. (1, ♂, holotype; 2, ♀, paratype) from a palsa bog near Mt. Hira-ga-daké.

10 are dark brown or black with a coppery lustre), whereas they are much less frequent in subsp. *paludis*); 3) dorsal surface of mandibles more sparsely and weakly punctured; 4) antennae shorter, barely reaching basal fifth of elytra in male, while they usually reach basal quarter in subsp. *paludis*; 5) marginal setae of pronotum completely lost in all the specimens examined, while two pairs of setae (one median and one basal) are inserted in subsp. *paludis*; 6) basal foveae of pronotum a little shallower; 7) humeral serration of elytra completely lost in all the specimens examined, whereas it is constantly recognized in subsp. *paludis*.

Male genital organ as shown in Fig. 3. Aedeagus slender, weakly bent ventrad near the base, nearly straight and parallel-sided in median portion and gradually bent ventrad towards the apex; apical lobe long and narrow, not faintly convergent near the base as in subsp. *paludis* but almost parallel-sided, its dorsal margin gently arcuate throughout and obtusely rounded at the tip in lateral view; basal edge of membraneous preostium narrowly elongate towards base of aedeagus to form a longitudinal furrow on dorsal wall of aedeagus; OL medium to large-sized, rather wide at the base and bilobed at the tip; ligulum indicated by a well developed patch of pigmented granules; neither BL nor ML developed, though dorsal wall of endophallus apparently inflated near the base; PRE moderately or rather prominently inflated, not bilobed and almost

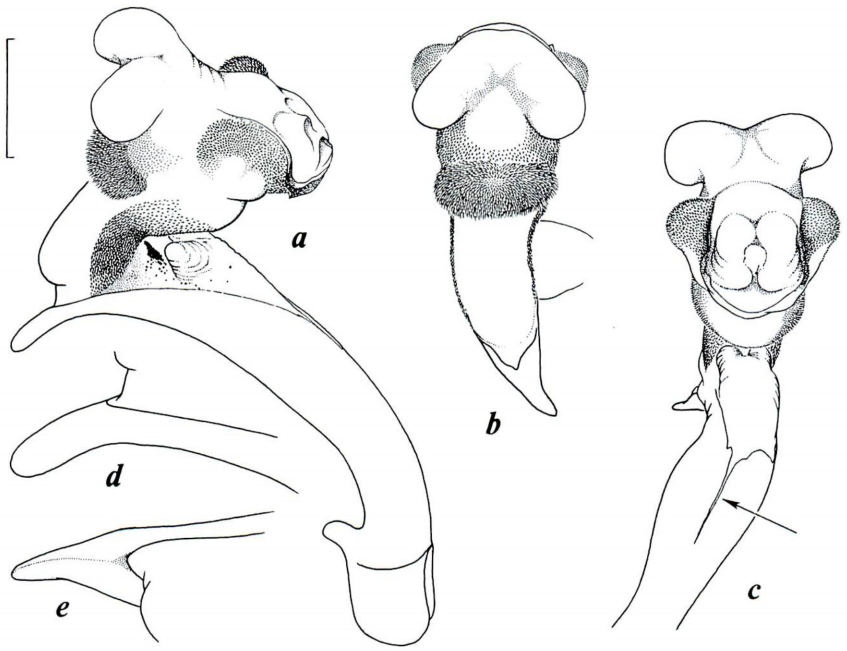


Fig. 3. Male genital organ of *Homoeocarabus maeander nobukii* subsp. nov. —— a, Aedeagus with fully everted endophallus in right lateral view; b, ditto in posterior (dorsal) view; c, ditto in frontal (ventral) view; d, apical part of aedeagus in right lateral view; e, ditto in dorsal view. Arrow indicates a membraneous furrow on the dorsal wall of the aedeagus. Scale: 1 mm for a–c; 0.5 mm for d & e.

symmetrical in shape; PP large and bilobed, with each lobe almost symmetrically protruded and rounded at the tip; PAR absent; AL not so large but rather strongly protruded laterad; PL not inflated; AGG unremarkable, neither strongly sclerotized nor pigmented.

Type series. Holotype: ♂, palsa bog, at an altitude of 1,720 m, 500–700 m distant to the south from the peak of Mt. Hira-ga-daké, in the central part of the Daisetsuzan Mountains in Central Hokkaido, Northeast Japan, 9–VII–2003, N. YASUDA leg., preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 5♂♂, 17♀♀, same collecting data as for the holotype, in the collections of N. YASUDA and Y. IMURA.

Discussion

The habitat of the present new subspecies, an alpine bog lying at the southern side of Mt. Hira-ga-daké, is peculiar in accompanying palsa. Palsa is one of the circumglacial landforms distributed in the permafrost zone, indicating a peaty permafrost mound with the height about 0.5 to 10 m and the diameter exceeding about 2 m (WASHBURN, 1983). The palsa bog near Hira-ga-daké was discovered and described for the first time by TAKAHASHI and SONE (1988), and such a landform has not been found so far anywhere else in Japan. According to TAKAHASHI and SONE (1988), it is located on a broad pass on the andesitic lava plateau at an altitude of 1,720 m, measured 650 m from east to west and 350 m from north to south, attaining to about 10.3 ha in area. Average annual temperature at the same site is estimated at about −2°C (SONE, 2002).

The vegetation in the bog is mainly composed of sphagnum and sedge. Such plants as *Drosera rotundifolia*, *Andromeda polifolia* and *Vaccinium oxycoccum* are also dominant, partly associated with *Menyanthes trifoliata* and *Eriophorum vaginatum*. On the other hand, the surface of the palsa is drier than the surrounding bog, and is covered with *Diapensia lapponica* v. *obovata*, *Bryanthus gmelinii*, *Geum pentapetalum* and several kinds of lichens, with a partial invasion of young *Pinus pumila* from the surrounding area (TAKAHASHI & SONE, 1988).

From the botanical point of view, this palsa bog is peculiar in harboring two endemic species; one is a circumpolar sedge, *Carex rotundata* WAHLENBERG (SATO & TAKAHASHI, 1994) and the other is an arctic moss, *Loeskypnum badium* (HARTM.) PAUL (KANDA & SATO, 1994). Both the species are distributed rather widely in the circumboreal to subarctic zones of the Northern Hemisphere, but have been recorded in Japan only from the bog near Hira-ga-daké, and are considered to be a relict of the past cold time.

In view of the carabidology, two species of the subtribe Carabina were obtained from the same bog by pitfall traps. One is *Aulonocarabus* (s. str.) *kurilensis* LAPOUGE (sensu IMURA, 2002, as regards the generic classification) and the other is *Homoeocarabus maeander* FISCHER VON WALDHEIM. The former is represented by subsp. *daisetsuzanus* KÔNO, which is one of the dominant carabids in the wind-blown com-

munity of the alpine zone of the Daisetsu-zan and has hitherto been recorded from the area between Mt. Kuro-daké and Mt. Tomuraushi-yama (YASUDA, 2001). According to YASUDA (pers. comm.), this species was dominant also in the bog, though preferring drier environment. In contrast, the latter was collected from marshy places around the small ponds often associated with the palsas, and seemed to be confined to such a strictly narrow habitat. The Daisetsu-zan population of *H. maeander* is peculiar in several respects and doubtless belongs to a new subspecies as described in the present paper.

In *Homoeocarabus maeander nobukii* nov., all the marginal setae of the pronotum are completely lost and the humeral serrations of the elytra are not recognizable. In addition, the basal edge of the membraneous preostium of the male genitalia is narrowly elongate towards the base of the aedeagus to form a longitudinal furrow on its dorsal wall. All these character states are quite exceptional for the species, and are considered to be a unique autapomorphy of the Daisetsu-zan race. This seems to represent either a long history after isolation or a rapid morphological change caused by its distinctive habitat. In many respects, they must have been isolated after the past cold time without mingling with the other population of the same species, and the origin and period of their immigration into Hokkaido might have been different from those of subsp. *paludis* now distributed much more widely in the low altitude moors of the same island.



Fig. 4. Habitat of *Homoeocarabus maeander nobukii* subsp. nov. (palsa bog, 1,720 m in alt., south of Mt. Hira-ga-daké on the Daisetsu-zan Mountains; arrow indicates a palsa; Mt. Hakuun-daké can be seen in the distance) (photograph by N. YASUDA in July 2003).

Since the habitat of the new race is located in the special protection zone of a national nature conservation area, it will be well protected against disturbance caused by collectors. As mentioned in the preceding lines, however, the habitat is narrowly restricted to a small alpine bog which is completely isolated from all the other known localities of the same species. To make matters worse, total area of the palsas has been gradually reducing for the past several decades. For example, they were reduced to about two-thirds (rate of reduction was estimated at 36%) according to the observation made by air photographs taken from 1955 to 1982 (TAKAHASHI & SONE, 1988). Though *H. maeander* is not necessarily depending upon the palsa itself, it seems certain that the climatic changes resulting from the warming of the globe may have an adverse effect on the bog and, in its turn, influence the meager fauna and flora depending on this distinctive environment. From such a point of view, the new race may be worth regarding as a threatened local population.

Acknowledgements

I wish to express my deep indebtedness first of all to Mr. Nobuki YASUDA, chief of the Daisetsuzan National Park Sounkyo Visitor Center, without whose enthusiastic searches, this remarkable new population could not have been brought to light. Hearty thanks should also be expressed to Professor Nobuyuki TAKAHASHI of Hokkai-Gakuen University, Sapporo, and Dr. Toshio SONE of the Institute of Low Temperature Science, Hokkaido University, for kindly providing me necessary literature of geology and botany, above all those concerning the palsa of Daisetsu-zan, and to Messrs. Mitsumasa KAWATA of Sapporo and Kiyoyuki MIZUSAWA of Yokosuka for their kindness in allowing me to examine the specimens of *H. maeander* preserved in their collections for comparative study. Cordial thanks are due to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for critically reading the manuscript of this paper.

要　　約

井村有希：北海道大雪山のパルサ湿原から発見されたセスジアカガネオサムシの孤立集団．—— セスジアカガネオサムシは，北東ユーラシアから北米にかけての亜寒帯地域を中心に分布する好湿性の種で，わが国においては北海道のみから知られており，これまでに確認された生息地はいずれも低湿地帯ないしそれに準じた環境に限られていた．しかしながら今夏，大雪山層雲峡ビジターセンターの保田信紀氏により，大雪山系中央部の平ヶ岳南方鞍部（標高1,720 m）にある小湿原から，同種の特異な小集団が発見された．同湿原は，永久凍土地帯に分布する周氷河地形のひとつであるパルサ（泥炭質の永久凍土丘）を伴っているという点においてきわて特異であり，わが国唯一のパルサ湿原として知られている．同地のセスジアカガネオサムシは，氷期以降の比較的長い年月を，他集団との遺伝的交流を絶たれた状態で過ごしてきたことは疑いなく，その進入経路や年代も，道内各地の低湿地に分布している集団とは異なるものかもしれない．形態学的にみても，前胸背板剛毛や肩部鋸歯状突起を欠く点，さらに陰茎

背面に長く亀裂状に伸張する膜状の溝がみられる点など，いくつかの特徴的な形質をそなえていることがあきらかになったので，発見者の保田氏にちなみ，この集団にタカネセスジアカガネオサムシ subsp. *nobukii* という新亜種名を与えて記載した．本新亜種の生息地は，大雪山国立公園の特別保護区内にあるため，採集圧による個体数の減少が問題となることはないだろう．しかしながら，その生息地はわずか1.3ヘクタールの面積をもつに過ぎない孤立した湿原であり，また，同地のパルサの総面積は年ねん減少しているという．地球温暖化に伴うこうした環境条件の変化が，同地の希少な動植物相にも今後，少なからぬ影響を与えてゆくであろうことは明白で，こうした点を考慮に入れると，本新亜種は，絶滅の恐れのある地域個体群に匹敵する扱いがなされてもよいであろう．

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Elytra, *Tokyo*, **31** (2): 446, November 22, 2003

New Replacement Name for a Carabine Species (Coleoptera, Carabidae)

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In one of my recent papers, I described *Megodontoides erwini maoxianensis* from Mao Xian of northern Sichuan in Southwest China (IMURA, 2002, p. 41). In my view, the subtribe Carabina is not equivalent to the genus *Carabus* but should be regarded as an assemblage of many distinctive genera, and it makes no problem to the rules of nomenclature when we use the name *maoxianensis* under the genus *Megodontoides*. However, most taxonomists, above all those in the Western countries, still adhere to regard the Carabina as equivalent to a single genus *Carabus*. In their system, the above subspecific name becomes a junior homonym of *Carabus latro maoxianensis* DEUVE et MOURZINE, 2000, so that I am going to propose a new replacement name for the sake of its usage under the grand genus *Carabus* as follows:

Carabus* (*Megodontoides*) *erwini huilongensis nom. nov.

Megodontoides erwini maoxianensis IMURA, 2002, Elytra, Tokyo, **30**: 39–45 [Nec DEUVE et MOURZINE, 2000].

Notes. The new name comes from the type locality of the subspecies (below Shuigouzi near Huilong in central Mao Xian of northern Sichuan). Incidentally, the original description of *Carabus latro maoxianensis* was made by DEUVE and MOURZINE, though the paper was written under a single authorship of DEUVE.

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Occurrence of *Ohomopterus chugokuensis* (Coleoptera, Carabidae) in the Eastern Part of the Sanuki Hills in Northeastern Shikoku, Southwest Japan

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Abstract Taxonomic status of *Ohomopterus chugokuensis* is raised from a subspecies of *O. japonicus* to a full species based on genitalic characters and sympatry with *O. japonicus* on the Sanuki Hills in northeastern Shikoku. The Sanuki population of *O. chugokuensis* is described as a new subspecies under the subspecific name *mikianus*.

In one of his early works on the Japanese Carabidae, NAKANE (1961) described a lower taxon named *chugokuensis* as a subspecies of *Apotomopterus japonicus* (MOTSCHULSKY) (=*Ohomopterus japonicus* in the present sense; see IMURA, 2002). Though adopted genus has been variable according to the authors, its status as one of the geographical races of MOTSCHULSKY's species has been kept unchanged for more than forty years. Describing two new subspecies of *O. japonicus* in my previous paper (IMURA & MIZUSAWA, 1999), I illustrated two different types of endophallus of the same species, each corresponding to the group of *japonicus* in a strict sense and that of *chugokuensis*, respectively (*idem.*, p. 4, figs. 5–6). At that time, I noticed that the two groups were radically different in conformation of the endophallus, and might be regarded as two separate species. However, no definitive conclusion was drawn on this matter, since the distributional range of the *chugokuensis* group nowhere overlapped that of the *japonicus* group, and the two types of the endophallus might indicate the difference merely at the subspecies level. A conclusive proof on this problem has been obtained very recently.

In the early summer of 2003, a series of carabid specimens with general features agreeing with those of *O. japonicus* were collected by Masayoshi MIKI from the Sanuki Hills stretching along the borders of Kagawa and Tokushima Prefectures in northeastern Shikoku, Southwest Japan, and were submitted to me for identification. Examining the male genitalia by himself, MIKI was vaguely aware of the fact that there were two kinds of beetles in shape of the aedeagal apex in his series. A close examination made by myself proved that the specimens collected from the central part of the Sanuki Hills and those inhabiting the eastern part were apparently distinguishable not only in shape of the aedeagus but in conformation of the endophallus. The former was almost identical with subsp. *awajiensis* of the *japonicus* group described from the Is-

land of Awaji-shima, whereas the latter looked in all probability like a member belonging to the *chugokuensis* group. This was most unexpected, since the main distributional range of the latter group was the Chûgoku Hills of southwestern Honshu, and the range extended onto several adjacent islands on the Inland Sea of Setonai-kai at the most. At my request, MIKI made further investigations promptly and vigorously, and we have soon arrived at a rough estimation on the range of each group and the distributional borders between them. Finally on July 26, he found two places where the beetles with the genitalia of the *japonicus* type and those of the *chugokuensis* type occur sympatrically.

Taking the above findings into account, I am going to raise the taxonomic rank of *chugokuensis* to a full species in this paper, and to describe the Sanuki population as a new subspecies. In the same paper are given the records of *O. japonicus* collected from the neighboring areas and the findings of presumable natural hybrids between *O. chugokuensis* and *O. japonicus*.

Before going further, I wish to express my deep appreciation to Mr. Masayoshi MIKI (Aizumi-chô of Tokushima Prefecture), without whose enthusiastic survey and careful observation, this work could never have been accomplished. Also I thank Mr. Kiyoyuki MIZUSAWA for kindly allowing me to examine the specimens in his collection. Hearty thanks are due to Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo) for reading the manuscript of this paper.

Ohomopterus chugokuensis (NAKANE, 1961), stat. nov.

[Japanese name: Aki-osamushi]

Apotomopterus japonicus chugokuensis NAKANE, 1961, Fragm. coleopterol., Kyoto, (1), p. 1; type locality: Mt. Takashiro [sic.] (=misreading of Mt. Takajô-san), Shimane Pref., Honshu (depository of the type specimen: Hokkaido University Museum, Sapporo); 1962, Ins. Japon., Tokyo, **2**(3), p. 35; 1963, Icon. Ins. Japon. Col. nat. ed., Tokyo, **2** [Coleoptera], p. 11. —— ISHIKAWA, 1969, Bull. natn. Sci. Mus., Tokyo, **12**, p. 523. —— KOMIYA, 1971, Ins. Mag., Tokyo, (76) [1970], p. 53.

Ohomopterus japonicus chugokuensis: Kinki Research Group of Carabid Beetles, 1979, Spec. Publ. Osaka Mus. nat. Hist., Osaka, p. 31.

Carabus (*Ohomopterus*) *japonicus chugokuensis*: ISHIKAWA, 1985, Coleopt. Japan Col., Osaka, **2**, p. 23. —— IMURA & MIZUSAWA, 1996, *Carabus* of the World, Tokyo, p. 107.

Though described as a subspecies of *O. japonicus*, the present lower taxon should be regarded as an independent species, since it is sympatric with *O. japonicus* at least at two places on the Sanuki Hills, the details of which will be described on later pages.

Morphologically, these two species are discriminated from each other most aptly by the endophallic structure of the male genitalia as shown in Figs. 1–4 and the following key:

1 (2) Left basal lateral lobe with the shape like a chicken wing tip, without any accessory protrusion at ventral side; podian lobe less strongly protruded bilaterally; terminal plates on both sides of aggonoporius very short and wider than long. . . . . *O. chugokuensis*.

2 (1) Left basal lateral lobe dome-like in shape, with an accessory protrusion at ventral side; podian lobe strongly protruded bilaterally; terminal plates on both sides of aggonoporius elongate and longer than wide . . . . *O. japonicus*.

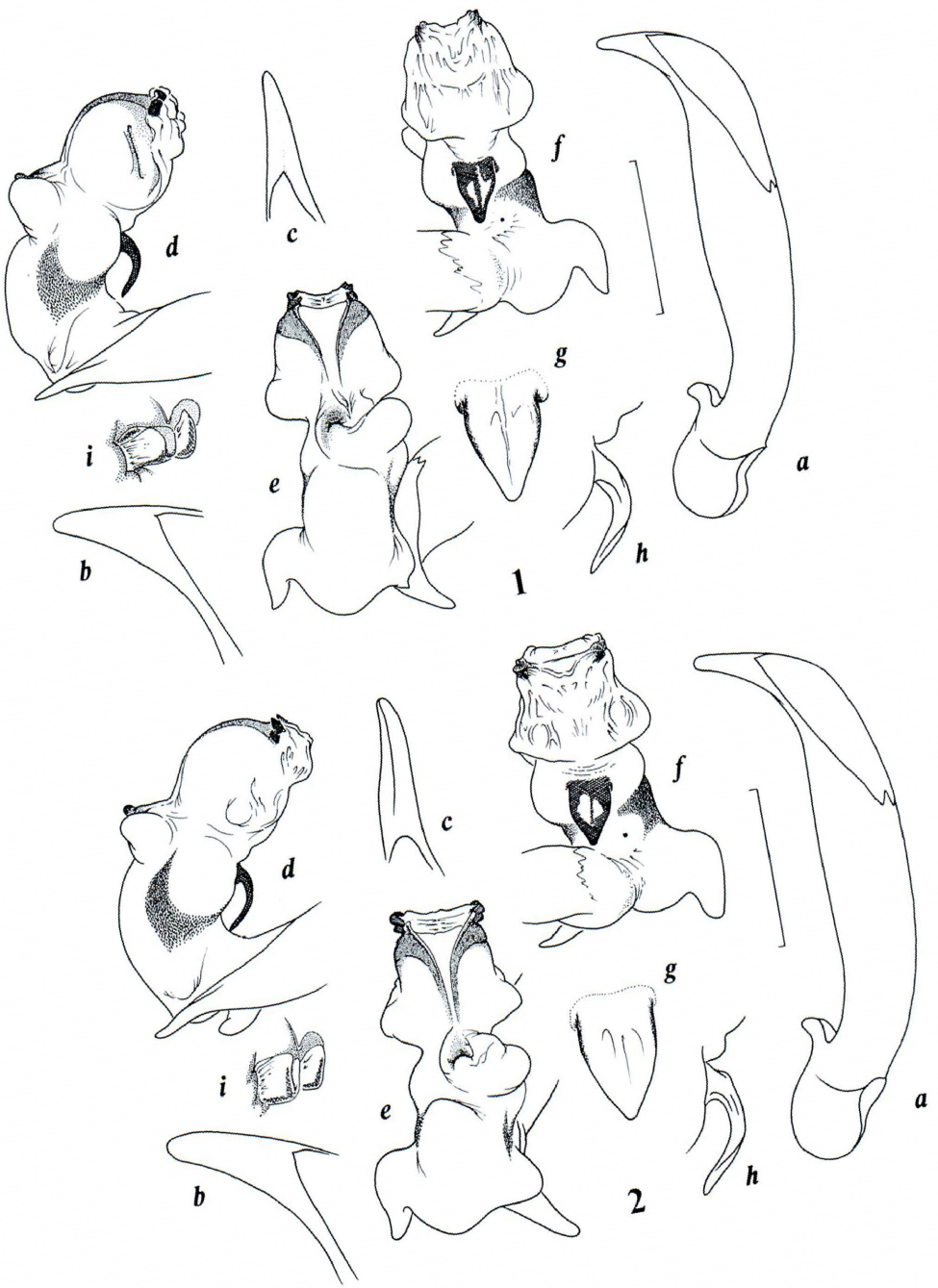
In *O. chugokuensis*, the gonocoxite is slenderer, more strongly concave above and scattered with a smaller number of dimples on the dorsal surface, whereas it is wider, less strongly concave above and scattered with many dimples on the dorsal surface in *O. japonicus*. A difference is also found in size and shape of the ligular apophysis; it is a little larger and wider in *O. chugokuensis* but relatively smaller and narrower in *O. japonicus* when compared between the same-sized individuals (Figs. 5–6). However, such differences in the female genitalia are often uncertain, and they cannot be always useful for a correct determination.

Subspecific classification. Of the total fifteen taxa hitherto recognized as the subspecies of *O. japonicus* (MOTSCHULSKY, 1858; BREUNING, 1932; NAKANE, 1961, '68; IMURA, DEJIMA & MIZUSAWA, 1993; IMURA & MIZUSAWA, 1994, '99), at least three, all having the genitalic features of the *chugokuensis* type, should be transferred to the present species. *Ohomopterus chugokuensis* is thus classified into the following four subspecies:

1) subsp. *chugokuensis* NAKANE, 1961
   Range: greater part of the Chûgoku District and the west-central part of the Kinki District, partly reaching the southwestern tip of the Hokuriku District (Fukui Prefecture).
2) subsp. *umekii* IMURA et MIZUSAWA, 1999
   Range: southeastern part of Yamaguchi Prefecture (Yanai-shi, Iwakuni-shi, Is. Yashiro-jima of the Bôyo Islands, etc.) to the southern part of Hiroshima Prefecture (Is. Kami-kamagari-jima of the Geiyo Islands).
3) subsp. *mochizukii* IMURA et MIZUSAWA, 1994
   Range: Is. Ôshima of the Geiyo Islands in Ehime Prefecture.
4) subsp. *seizaburoi* IMURA, DEJIMA et MIZUSAWA, 1993
   Range: Is. Shôdo-shima in Kagawa Prefecture.

Figs. 1–2 (on p. 450). Male genital organ of *Ohomopterus chugokuensis* subspp. —— 1, *O. c. chugokuensis* (from Mt. Takajô-san of Misumi-chô, Shimane Pref.); 2, *O. c. mikianus* (from Ôyamahata of Kamiita-chô, Tokushima Pref.). —— a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporius in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.

Figs. 3–4 (on p. 451). Male genital organ of *Ohomopterus japonicus* subspp. —— 3, *O. j. japonicus* (or subsp. *corvinus* MOTSCHULSKY, more strictly) (from Mt. Hiko-san of Nagasaki-shi, Nagasaki Pref.); 4, *O. j. awajiensis* (from the Pass Kusaka-tôgé of Sanuki-shi, Kagawa Pref.). —— a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporius in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.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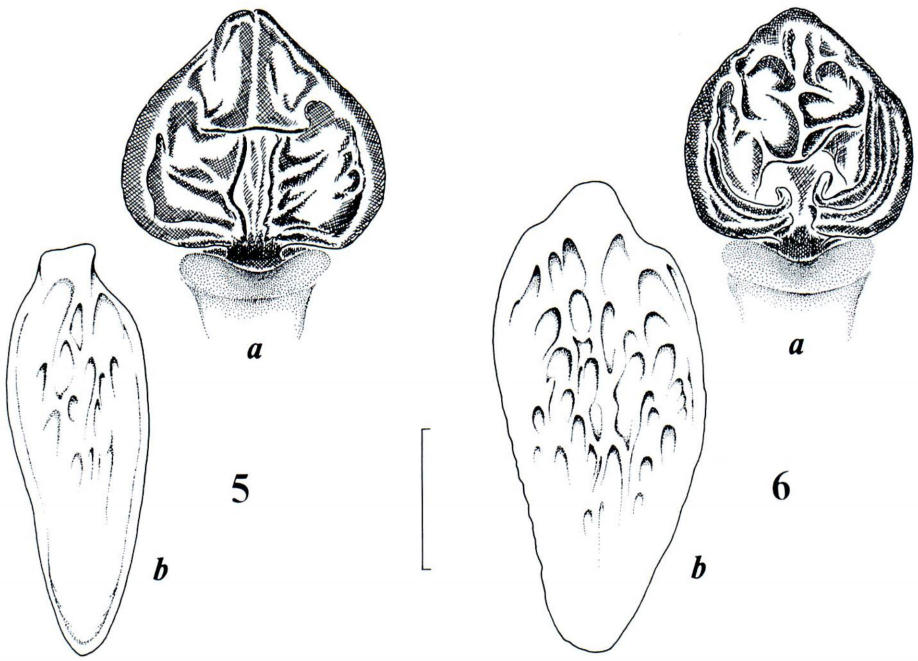

Figs. 5–6. Female genital organ of *Ohomopterus* spp. —— 5, *O. chugokuensis mikianus* (from Ôyamahata of Kamiita-chô, Tokushima Pref.); 6, *O. japonicus awajiensis* (from the Pass Kusaka-tôgé of Sanuki-shi, Kagawa Pref.). —— a, Inner plate of ligular apophysis in dorsal view; b, left gonocoxite in dorsal view. Scale: 0.5 mm.

In addition to the above four, the fifth one will be described in the following lines.

Ohomopterus chugokuensis mikianus IMURA, subsp. nov.

[Japanese name: Sanuki-aki-osamushi]
(Figs. 2 & 5)

Length: 18.7–22.2 mm (including mandibles). Upper surface of body brownish coppery sometimes with a faint greenish tinge along lateral margins, or black with a weak blue-greenish lustre along lateral margins. Tibiae dark reddish brown except for distal parts which are dark brown. In a male specimen collected from the northeastern side of the Pass Ôsaka-tôgê, upper surface is coppery with brighter greenish tinge, and tibiae and tarsi are entirely black.

Allied to the nominotypical *chugokuensis*, but distinguishable from that race in the following respects: 1) size a little smaller on an average; 2) lateral sides of pronotum more strongly convergent towards front angles which are more obtusely rounded; 3) pronotal disc usually more strongly convex above; 4) striae between elytral intervals narrower and more deeply guttered, with the surface less prominently punctured.; 5) tertiary intervals adjoining outside the 3rd, or outermost, primary intervals smoother,

at most very weakly notched near the basal and apical parts of elytra; 6) apical lobe of aedeagus a little longer and less acutely narrowed towards the tip in lateral view.

From subsp. *umekii*, the new race is discriminated by different coloration, evidently smaller body size and differently shaped aedeagal apex. Also differs from subsp. *mochizukii* in less strongly protruded hind angles of the pronotum and much robuster aedeagal apex. Readily distinguishable from subsp. *seizaburoi* of Is. Shôdoshima in the number of the setae on the metacoxa (it is trisetose in *seizaburoi*, which is the character state quite exceptional for the species, whereas it is bisetose in all the other subspecies of *O. chugokuensis* including *mikianus*) and less roundly arcuate dorsal margin of the aedeagal apex.

Type series. Holotype: ♂, Ôyamahata [大山畑], 400 m in alt., Kan-yaké [神宅] of Kamiita-chô in Itano-gun, Tokushima Pref., 25–VI–2003, M. MIKI leg., preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 50♂♂, 97♀♀, same collecting data as for the holotype; 2♂♂, 3♀♀, Pass Ôyama-goé [大山越], 500 m in alt., between Kamiita-chô of Tokushima Pref. and Higashi-kagawa-shi (=former Shirotori-chô in Ôkawa-gun) of Kagawa Pref., 22–VI–2003; 3♂♂, 1♀, Pass Utatsu-goé [卯辰越], 250 m in alt., Orino [折野] of Kitanada-chô in Naruto-shi, Tokushima Pref., 28–VIII–2003; 9♂♂, 10♀♀, ESE of the Pass Ôsaka-goé [大坂越], 750 m in alt., Ôsaka [大坂] of Itano-chô in Itano-gun, 25–VI–2003; 1♀, N of the Pass Uno-tao [鵜峠], 380 m in alt., in Higashi-kagawa-shi, 25–V–2001; 5♂♂, 5♀♀, Kurokawa-onsen Spa [黒川温泉], 120 m in alt., Nyûnoyama [入野山] of Higashi-kagawa-shi, 28–VIII–2003; 10♂♂, 12♀♀, above Iwano [岩野], 180 m in alt., on the eastern bank of the Higaidani-gawa River [日開谷川], of Ichiba-chô in Awa-gun, Tokushima Pref., 25–VIII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

Further specimens examined. 8♂♂, NE of the Pass Ôsaka-tôgé [大坂峠], 280 m in alt., of Gomyô [五名] in Higashi-kagawa-shi, Kagawa Pref., 25–VI–2003; 10♂♂, same locality, 26–VII–2003; 4♂♂ (collected with *O. japonicus awajiensis*), SW of the Pass Ôsaka-tôgé, 280 m in alt., 26–VII–2003; 1♂ (collected with *O. j. awajiensis*), between Ônara [大楢] and Gomyô elementary school, ca. 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

All the above specimens are excluded from the type series even though bearing the features consistent with the present new subspecies, in order to avoid risk of genetic contamination by *O. japonicus awajiensis*. All the females from the same places are excluded even from the examined specimens because of uncertainty of the morphological identification.

Colour variation. Dorsal surface is coppery in all the specimens from the Utatsu-goé, Ôsaka-goé, Ôyama-goé and Uno-tao, whereas the black individuals appear in the following localities (ratio of the black form is shown in parentheses): Ôyamahata (3.4%), Iwano (13.6%), northeastern side of the Ôsaka-tôgê (30.8%) and Kurokawa-onsen (70.0%). Thus, the black form is much more frequent in the western

part of the distributional range, where the new race is parapatric with *O. japonicus*.

Distribution. Narrowly localized on the hilly area in the eastern part of the Sanuki Hills in northeastern Shikoku, Southwest Japan, usually above the altitude of 100 m. Its range is defined by the Yoshino-gawa alluvion in the south and the depression formed by the Minato-gawa and Oumi-gawa Rivers in the north. The southwestern margin seems to be bordered by the Higaidani-gawa River, a northern tributary of the Yoshino-gawa, on the western bank of which is found *O. japonicus awajiensis*. The easternmost locality so far known is the Pass Utatsu-goé on the southwestern slope of Mt. Ôasa-yama. The range partly overlaps that of *O. japonicus awajiensis* on the southwestern side of the Pass Ôsaka-tôgé.

Ohomopterus japonicus awajiensis (IMURA, DEJIMA et MIZUSAWA, 1993)

[Japanese name: Awaji-hime-osamushi]
(Figs. 4 & 6)

Carabus (*Ohomopterus*) *japonicus awajiensis* IMURA, DEJIMA et MIZUSAWA, 1993, Gekkan-Mushi, Tokyo, (264), pp. 14, 16, fig. 32, pl. 1, figs. 19–20.

The present subspecies was originally described from the Island of Awaji-shima, off the northeastern coast of the Island of Shikoku. Its endophallus is of the *japonicus* type, and the subspecies is evidently classified into *O. japonicus*. This race is characterized by having longer antennae, uniquely shaped elytra and narrowly elongate aedeagal apex, etc. Terminal plates on both sides of the aggonoporius are much shorter than those of the nominotypical subspecies as shown in Figs. 3–4.

Though somewhat different in the details, *O. japonicus* inhabiting northeastern Shikoku seems to agree in the morphological characters with the Awaji-shima race, at least concerning those collected from the areas neighboring the distributional range of *O. chugokuensis mikianus*. They are therefore recorded under the name of subsp. *awajiensis*.

Specimens examined. 5♂♂, 7♀♀, NNE of the Pass Kusaka-tôgé [日下峠], 270 m in alt., Fusogi [不枌] of Ôkawamachi-tazura [大川町田面] in Sanuki-shi, Kagawa Pref., 25–VI–2003; 19♂♂, 25♀♀, Suzutaké [鈴竹], ca. 1,000 m distant to north from the Pass Ôsaka-tôgé, 200 m in alt., of Gomyô in Higashi-kagawa-shi, Kagawa Pref., 26–VII–2003; 12♂♂, 25♀♀, ca. 900 m distant to west from the Pass Ôsaka-tôgé, 280 m in alt., 26–VII–2003; 67♂♂+ca. 100♀♀ (collected with *O. chugokuensis mikianus*), SW of the Pass Ôsaka-tôgé, 280 m in alt., 25–VI–2003; 13♂♂+ca. 30♀♀ (collected with *O. c. mikianus*), between Ônara and Gomyô elementary school, 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; 22♂♂, 21♀♀, above Gomyô crematory, in the upper course of the Miya-gawa [宮川] River, 300 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; 1♂, 7♀♀, between Haraigawa [払川] of Higashi-kagawa-shi and Ôkubo-ji Temple [大窪寺] of Sanuki-shi, 350 m in alt., 25–VI–2003; 1♂, near the summit of Mt. Nyotai-san [女体山], 720 m in alt., on the borders of Higashi-kagawa-shi and Sanuki-shi, 25–VI–2003; 6♂♂, 29♀♀, above Heiji [平地], 120 m in alt., Inu-no-

haka [犬墓] of Ichiba-chô in Awa-gun, Tokushima Pref., 25–VIII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

Natural Hybrid between *Ohomopterus chugokuensis mikianus* and *O. japonicus awajiensis*

(Fig. 7)

Three strange specimens with the male genitalic features intermediate between those of *O. chugokuensis mikianus* and *O. japonicus awajiensis* have been obtained from the two places where the two species occur sympatrically. In many respects, they are considered to be the interspecific hybrid, and here I show an illustration of the male genitalia of one of the three. In this example (teneral, 21.5 mm in the length including the mandibles, with the coloration of the upper surface black bearing a faint blue-greenish tinge on the head and pronotum), the aedeagal apex and the digitulus are intermediate in the shape between the two species, the left basal lateral lobe of the en-

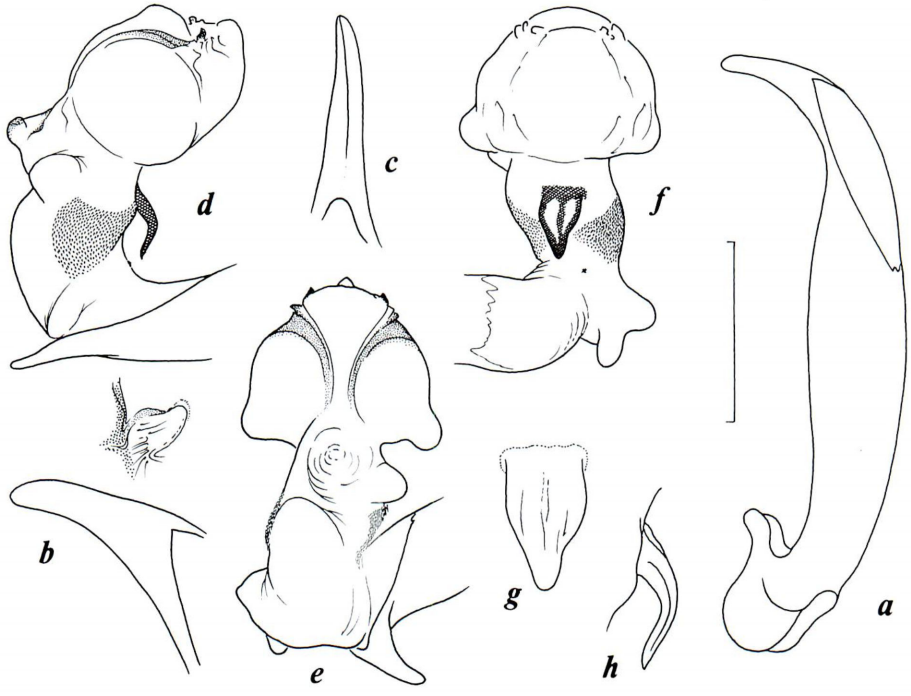

Fig. 7. Male genital organ of presumable natural hybrid between *Ohomopterus chugokuensis mikianus* and *O. japonicus awajiensis* (from between Ônara and Gomyô elementary school of Higashi-kagawa-shi, Kagawa Pref.). —— a, Aedeagus in right lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, fully everted endophallus in right lateral view; e, ditto in dorsal view; f, ditto in ventral view; g, digitulus in ventral view; h, ditto in right lateral view; i, right terminal plate of aggonoporius in right lateral view. Scale: 2 mm for a, d–f; 1 mm for b, c, g, h; 0.7 mm for i.

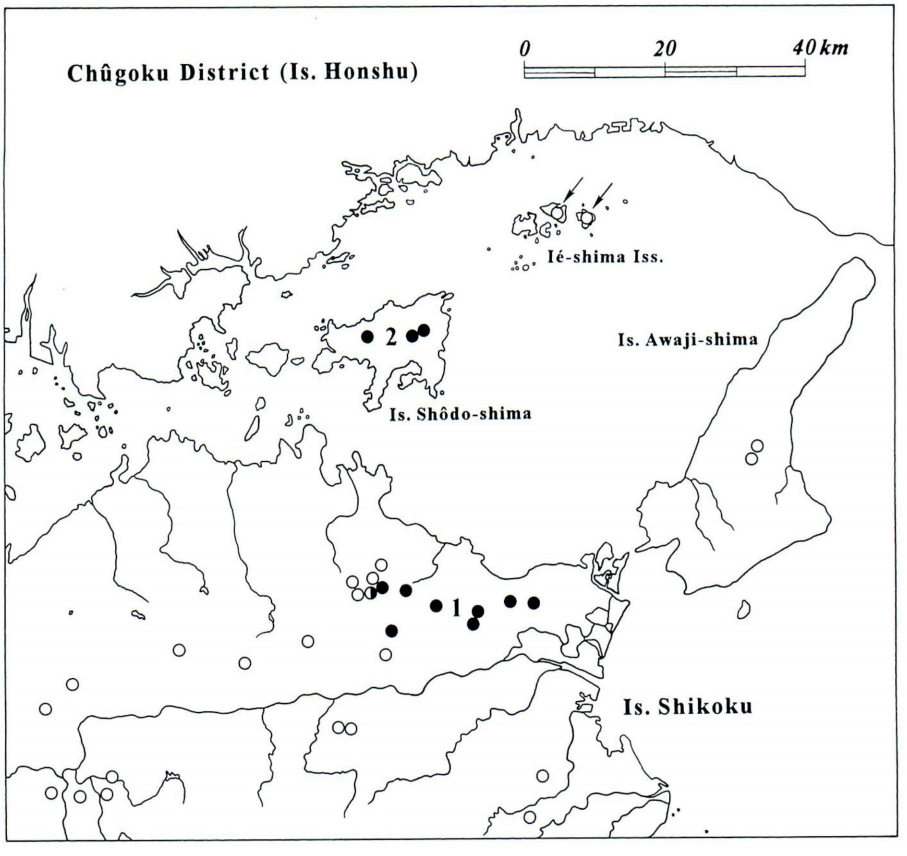

Fig. 8. Map showing the distribution of the two species belonging to the *japonicus* species-group of *Ohomopterus* in northeastern Shikoku and the neighboring islands in Southwest Japan. Closed circle: *O. chugokuensis* (1, subsp. *mikianus*; 2, subsp. *seizaburoi*). Open circle: *O. japonicus* (identifiable with subsp. *awajiensis*). Hemi-closed circle: the place where both the species occur sympatrically (two collecting sites are included in a plot). The nominotypical *chugokuensis* is known from the Chûgoku District, though not recorded from the alluvial plain and low hills facing the Inland Sea of Setonai-kai within the range shown on this map. Plots of *O. japonicus* partly contain those recorded by previous authors (Kinki Research Group of Carabid Beetles, 1979; TOMINAGA, 1982; MIKI, 2003, pers. comm.).

dophallus is of the *japonicus* type though much smaller in the size, and the terminal plates on both sides of the aggonoporius are vestigial, lacking sclerotization of the basal parts. Apical portion of the endophallus is monstrously inflated, but it is uncertain whether this deformity is resulted from hybridization or caused by applying a strong pressure into the endophallus of the immature specimen.

Specimens examined. 2♂♂, SW of the Pass Ôsaka-tôgé, 280 m in alt., of Gomyô in Higashi-kagawa-shi, Kagawa Pref., 26–VII–2003; 1♂ (the specimen described above and illustrated in Fig. 7), between Ônara and Gomyô elementary school,

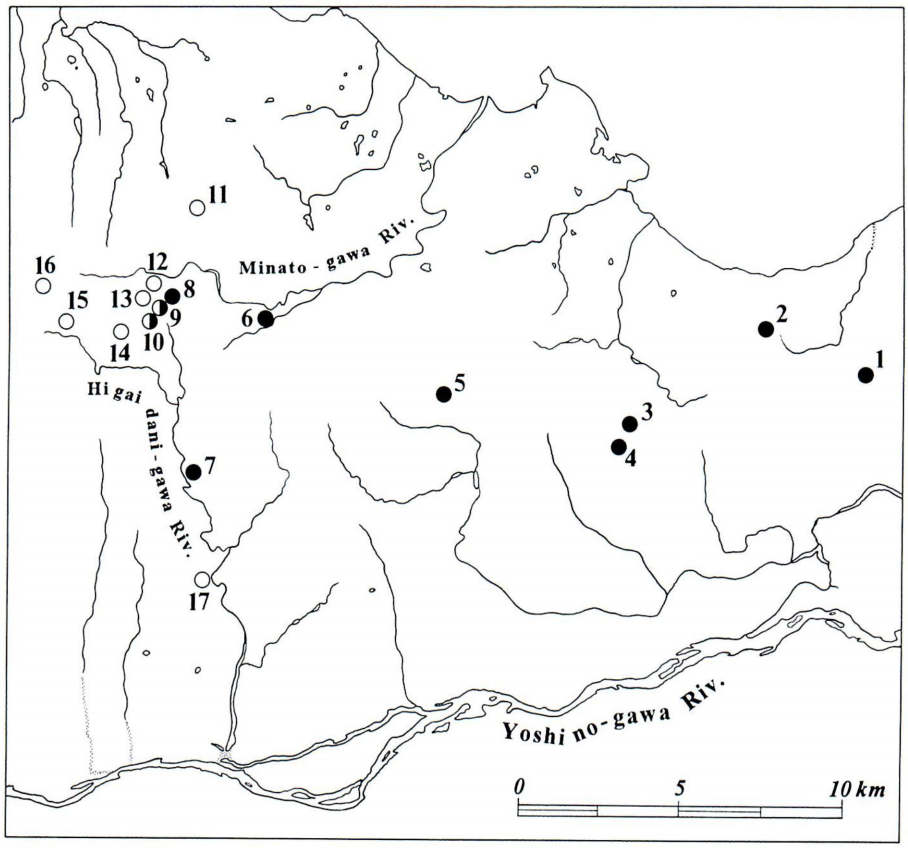

Fig. 9. Localities of *Ohomopterus chugokuensis mikianus* (1–10) and *O. japonicus awajiensis* (9–17) in the eastern part of the Sanuki Hills, superimposed on the south-central portion of Fig. 8. Closed circle: *O. c. mikianus*. Open circle: *O. j. awajiensis*. Hemi-closed circle: the place where both the species occur sympatrically. 1, Pass Utatsu-goé; 2, Pass Ôsaka-goé; 3, Pass Ôyama-goé; 4, Ôyamahata; 5, Pass Uno-tao; 6, Kurokawa-onsen Spa; 7, Iwano; 8, NE of Pass Ôsaka-tôgé; 9, SW of Pass Ôsaka-tôgé; 10, Ônara – Gomyô elementary school; 11, Pass Kusaka-tôgé; 12, Suzutaké; 13, W of Pass Ôsaka-tôgé; 14, Gomyô crematory; 15, Haraigawa – Ôkubo-ji; 16, Mt. Nyotai-san; 17, Heiji.

ca. 250 m in alt., of Gomyô in Higashi-kagawa-shi, 26–VII–2003; all collected by M. MIKI and preserved in coll. Y. IMURA.

Discussion

The discovery of the present new population is very important from several points of view.

In the first place, we have obtained an undeniable evidence to corroborate the specific independency of *Ohomopterus chugokuensis*, since it coexists with *O. japonicus*

at least at two stations on the Sanuki Hills. Though strikingly resembling each other in the external features, these two species are sharply discriminated in conformation of the endophallus of the male genitalia.

Distributional ranges of the two species partly overlap in the southwestern side of the Pass Ôsaka-tôgé located near the uppermost courses of the Higaidani-gawa and Minato-gawa Rivers, from where three examples of presumable interspecific hybrid have been obtained. Of the total 73 male specimens from the southwestern side of the same pass, 67 were identified with *O. japonicus*, 4 were *O. chugokuensis* and the remaining 2 were assigned to the hybrid. Of the 15 males collected from between Ônara and Gomyô elementary school, 13 were *O. japonicus*, 1 was *O. chugokuensis* and 1 was considered to be the hybrid. Though all the female specimens were not taken into account because of the uncertainty of morphological identification, *O. japonicus* is evidently predominant over *O. chugokuensis* at these two collecting sites, and the hybridized individuals, if any, seem to be seldom produced. It seems certain that the two species occurring on the Sanuki Hills are distributed parapatrically in principle. At least we can be sure that the so-called intergrading or hybrid zone is nowhere recognizable in the intervening area of the two species. It is true that *O. chugokuensis* occasionally penetrates into the territory of *O. japonicus* at the spots where the ranges of the two species adjoin each other, but the former is never fused into the latter. This fact suggests that they have reached a high degree of completeness in the reproductive isolation despite a close similarity in the external features.

The discovery is also important from the zoogeographical viewpoint. Until carefully surveyed by MIKI, our knowledge was rather insufficient on the *japonicus* species-group of the Sanuki Hills, and only *O. japonicus* was sporadically recorded from the east-central to the western part. The species is also known from the central part of the Island of Awaji-shima off the northeastern coast of Shikoku. Though separated by the Naruto Straits now, the central hills of Awaji-shima can be regarded as the northeastern extension of the Sanuki Hills. This view is supported by the fact that the populations of *O. japonicus* from these two regions are morphologically quite similar, and could be assigned to a single subspecies, *awajiensis*. Before the discovery of *O. chugokuensis mikianus*, we naturally considered that the whole range of the Sanuki Hills might be included in the territory of *O. japonicus*. It was therefore most unexpected that the beetles obviously referable to *O. chugokuensis* did occur in the eastern part of the same hills as if it were sandwiched between the two separate ranges of *O. japonicus*. To give a convincing explanation for such an unusual distribution, it might be necessary to examine a possibility of an artificial introduction. However, it is highly implausible that the population of *O. chugokuensis* occurring on the Sanuki Hills was recently introduced from somewhere else, since the known range of the new subspecies is considerably wide, attaining to a distance over 22 km from east to west, and a high population density is maintained in every collecting site.

The nominotypical *chugokuensis* is known from the Chûgoku Hills of the Chûgoku District in southwestern Honshu. However, it has not been recorded from the

alluvial plain and the low hills at the southern part of Okayama Prefecture facing the Setonai-kai, so far as I know. The population inhabiting the Island of Shôdo-shima, which is located between southeastern Chûgoku District and northeastern Shikoku, belongs to an endemic subspecies named *seizaburoi*. According to Kiyoyuki MIZUSAWA (pers. comm.), another population of the *japonicus* species-group also occurs on the two small islands named Ié-shima and Tanga-shima belonging to the Ié-shima Islands off the southwestern coast of Hyôgo Prefecture, though not properly recorded as yet. I was able to examine the Ié-shima specimens now preserved in the MIZUSAWA collection, and realized from the endophallic morphology that they belong to the group of *japonicus*, showing a close similarity to subsp. *awajiensis*. As shown in Fig. 8, distribution of the two species is thus complicated in northeastern Shikoku and the neighboring islands, and does not seem to correlate with the present topography. It is difficult to elucidate at present why and how such a discrete distribution was established in the easternmost part of the Inland Sea of Setonai-kai, but the discovery of the present new subspecies poses an interesting problem to the relationship between the geohistorical background and the process of dispersal of the *japonicus* species-group.

要　　約

井村有希：讃岐山脈東部におけるアキオサムシの発見．—— 徳島県の三木將義氏によってごく最近，讃岐山脈の東部から，下位分類単位*chugokuensis*（アキオサムシ）の特徴に一致する交尾器形態をそなえたヒメオサムシ種群の集団が発見された．本単位はじゅうらい，ヒメオサムシ*Ohomopterus japonicus*の1亜種とみなされてきたが，♂交尾器内袋の基本形態が異なるうえ，讃岐山脈の一角において*japonicus*型の集団と同所的に生息していることから，ヒメオサムシとは異なる種に分類するべきであろう．本論文ではまず，アキオサムシを独立種*Ohomopterus chugokuensis*へと昇格し，その下にこれまでヒメオサムシの亜種とされてきた3亜種(*umekii*, *mochizukii*, *seizaburoi*)を編入したうえで，讃岐山脈の集団にはサヌキアキオサムシ*mikianus*という新亜種名を与えて記載した．同山脈東部において，ヒメオサムシとアキオサムシは日開谷川と湊川を分布境界線としてほぼ側所的にすみ分けているようで，両河川の上流部が出会う香川県東かがわ市五名の大坂峠南西部には両種の混生地があり，同所では交雑によって生じたと思われる個体が得られている．アキオサムシの分布圏はこれまで，中国地方からせいぜい瀬戸内の島嶼の一部までと考えられてきたので，瀬戸内海を越えて四国の一部から発見されたことは驚嘆に値しよう．いっけん不自然にみえるその分布状況から，人為的に移入されたものが定着している可能性も考慮しなければならないが，これまでに確認されたサヌキアキオサムシの生息範囲は東西22 km以上に及んでいるうえ，いずれの地においてもひじょうに高い個体密度が維持されていることから，自然分布とみなすほうが妥当であろう．本新亜種の発見により，瀬戸内海東部地域におけるヒメオサムシ種群の分布が，予想以上に複雑なものであることが浮き彫りになり，生物地理学的にもきわめて興味深い問題が提起されたことになる．

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ISSN 0387—5733

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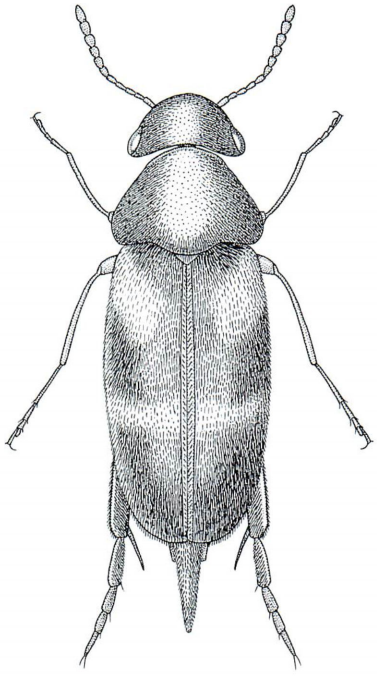

日本鞘翅学会

THE JAPANESE SOCIETY OF COLEOPTEROLOGY
TOKYO

Dates of Issue:

Vol. 31, No. 1	June 30, 2003
Vol. 31, No. 2	November 22, 2003

CONTENTS　目　　次

AKIYAMA, H.: A New Species of the Genus *Indasclera* (Coleoptera, Oedemeridae) from Northwestern Myanmar 61
[秋山秀雄：ミャンマー北西部産カミキリモドキ科の1新種]

ASHIDA, H.: The Complex of *Trechiama fujitai* (Coleoptera, Trechinae) from Hyôgo Prefecture, West Japan (I) —Two New Species from the Maruyama-gawa Drainage Area—..... 431
[芦田　久：兵庫県のフジタメクラチビゴミムシ系（第I報）—円山川流域の2新種—]

ASHIDA, H., & K. KITAYAMA: The Group of *Stygiotrechus ohtanii* (Coleoptera, Trechinae) from the Kii Peninsula, Central Japan..... 221
[芦田　久・北山健司：紀伊半島のコンゴウメクラチビゴミムシ群]

HANBOONSONG, Y., K. MASUMOTO & T. OCHI: Dung Beetles (Coleoptera, Scarabaeidae) of Thailand.　Part 5. Genera *Copris* and *Microcopris* (Coprini)..... 103
[Yupa HANBOONSONG・益本仁雄・越智輝雄：タイ産の食糞コガネムシ類．V．*Copris*および*Microcopris*属について]

HAYASHI, M.: A New *Donacia* from Laos, with New Record of *Sominella longicornis* (JACOBY) (Coleoptera, Chrysomelidae, Donaciinae)..... 31
[林　成多：ラオス産*Donacia*属の1新種の記載と*Sominella longicornis* (JACOBY)の記録（甲虫目ハムシ科ネクイハムシ亜科）]

HLAVÁČ, P., & S. NOMURA: A Taxonomic Revision of Tyrini of the Oriental Region. III. *Megatyrus* (Coleoptera, Staphylinidae, Pselaphinae), a New Genus of the Tyrina from China and Vietnam 165
[Peter HLAVÁČ・野村周平：東洋区のコケアリヅカムシ族に関する分類学的研究III．中国およびベトナム産の新属*Megatyrus*（コウチュウ目ハネカクシ科アリヅカムシ亜科）]

HOSHINA, H.: Discovery of the Subfamily Coloninae (Coleoptera, Leiodidae) from the Ryukyus, Japan, with Description of a New Species 209
[保科英人：タマキノコムシ科ヒゲブトチビシデムシ亜科の琉球からの発見と1新種の記載]

HOSOYA, T., K. ARAYA & Y. SHIROTA: Molecular Phylogeny of Japanese Stag Beetles of the Genus *Dorcus* (Coleoptera, Lucanidae) and its Allied Genera Inferred from Mitochondrial COI Gene Sequences 127
[細谷忠嗣・荒谷邦雄・城田安幸：ミトコンドリアCOI遺伝子による日本産クワガタ属*Dorcus*とその近縁属の分子系統]

IMURA, Y.: An Isolated Population of *Homoeocarabus maeander* (Coleoptera, Carabidae) Discovered from a Palsa Bog on the Daisetsu-zan Mountains in Hokkaido, Northeast Japan..... 439
[井村有希：北海道大雪山のパルサ湿原から発見されたセスジアカガネオサムシの孤立集団]

IMURA, Y.: Occurrence of *Ohomopterus chugokuensis* (Coleoptera, Carabidae) in the Eastern Part of the Sanuki Hills in Northeastern Shikoku, Southwest Japan 447
[井村有希：讃岐山脈東部におけるアキオサムシの発見]

IMURA, Y., & M. OKAMOTO: Records of Sixteen Cychrini and Carabini (Coleoptera, Carabidae) from Sichuan and Gansu, China, with Descriptions of Six New Subspecies 253
[井村有希・岡本宗裕：中国四川省と甘粛省のセダカオサムシ族とオサムシ族（16種の記録と6新亜種の記載）]

ITOH, T.: Two New Species and a New Record of the *Holotrichia constricta* Group (Scarabaeidae, Melolonthinae, Melolonthini) 371
[伊藤　武：*Holotrichia constricta* 群の2新種と1新記録]

JALOSZYŃSKI, P., & H. HOSHINA: Notes on the Distribution of *Cephennodes vafer* KURBATOV, 1995 (Coleoptera, Scydmaenidae) in the Mainland of Japan 195
[Pawel JALOSZYŃSKI・保科英人：チシマムナビロコケムシの分布に関する知見]

JOHKI, Y., K. ARAYA & M. KON: A New Species of *Leptaulax* (Coleoptera, Passalidae) from Borneo 385
[常喜　豊・荒谷邦雄・近　雅博：ボルネオからのヒラタクロツヤムシ属の1新種]

JOHKI, Y., & M. KON: A New Bicolored Species of *Leptaulax* (Coleoptera, Passalidae) from Borneo 143
[常喜　豊・近　雅博：ボルネオからのヒラタクロツヤムシ属の1新種]

KANG, T. H., & Y. OKUSHIMA: Taxonomic Study of Korean Cantharidae (Coleoptera). VI. Three New Species from Is. Jejudo, Korea 341
[Tae Hwa KANG・奥島雄一：韓国産ジョウカイボン科の分類学的研究 VI. 済州島の3新種]

KAWASHIMA, I., & H. SUGAYA: An Additional New Species of the Genus *Rhagophthalmus* (Coleoptera, Rhagophthalmidae) from Taiwan, with a Key to the Males of the Taiwanese and Japanese Species 353
[川島逸郎・菅谷　洋：台湾から新たに追加されたオオメボタル属の1新種の記載，および台湾と日本産の種の雄成虫における検索表]

KIM, C-G., Z.-H. SU, Y. IMURA, M. OKAMOTO & S. OSAWA: Phylogeny and Evolution of the Division Procrustimorphi (Coleoptera, Carabidae) of the World as Deduced from the Mitochondrial ND5 Gene Sequences 263
[金　衝坤・蘇　智慧・井村有希・岡本宗裕・大澤省三：ミトコンドリア ND5 遺伝子の塩基配列からみた世界のヨロイオサムシ群の系統と進化]

KLAUSNITZER, B., & H. YOSHITOMI: Notes on Some Homonyms and Synonyms of the Scirtid Species (Coleoptera, Scirtidae) 93
[Bernhard KLAUSNITZER・吉富博之：マルハナノミのいくつかのホモニムとシノニムについて]

KOMIYA, Z.: Notes on the Genus *Baralipton* (Coleoptera, Cerambycidae), with Description of a New Species (Revisional Studies of the Genus *Megopis* sensu LAMEERE, 1909–2) 43
[小宮次郎：*Baralipton* 属に関するノートおよび1新種の記載]

KOMIYA, Z.: Description of a New Genus Close to *Baralipton* (Coleoptera, Cerambycidae) (Revisional Studies of the Genus *Megopis* sensu LAMEERE, 1909–3)..... 307
[小宮次郎：新属 *Ziglipton* および3新種の記載]

KON, M., Y. JOHKI & K. ARAYA: A New Species of the Genus *Leptaulax* (Coleoptera, Passalidae) from Phu Pan, Laos 149
[近　雅博・常喜　豊・荒谷邦雄：ラオスの Phu Panからのヒラタクロツヤムシ属の1新種]

MASUMOTO, K.: Study of Asian Strongyliini (Coleoptera, Tenebrionidae). XII. New *Strongylium* Species from Thailand 65
[益本仁雄：アジア産ナガキマワリ族（Strongyliini）の研究．XII．タイ産ナガキマワリ属（*Strongylium*）について]

MASUMOTO, K.: Study of Asian Strongyliini (Coleoptera, Tenebrionidae). XIII. Nine New *Strongylium* Species from the Malay Peninsula..... 325
[益本仁雄：アジア産ナガキマワリ族（Strongyliini）の研究．XIII．マレー半島産ナガキマワリ属（*Strongylium*）について（その1）]

MASUMOTO, K., & Y. UTSUNOMIYA: Two New *Larhodius* (Coleoptera, Scarabaeidae, Dichotomini) from the Malay Peninsula..... 379
[益本仁雄・宇都宮由佳：マレー半島産 *Larhodius* 属（Dichotomini）の2新種]

MORITA, S.: Notes on the Bembidiinae (Carabidae) of Japan. XII. A New Species of the Subgenus *Plataphus* 215
[森田誠司：日本産ミズギワゴミムシ類の知見．XII．屋久島産ヒラタミズギワゴミムシ亜属の1新種]

MORITA, S., & K. ARAI: A New *Synuchus* (Coleoptera, Carabidae) from Okinawa-hontô Island, Southwest Japan..... 403
[森田誠司・新井浩二：沖縄本島から採集されたツヤヒラタゴミムシの1新種]

NAGANO, M., & S. SUZUKI: Spatio-temporal Distribution and Food-searching Strategy Differentiations between Two Silphid Beetles, *Eusilpha japonica* and *E. brunnicollis* (Coleoptera, Silphidae)..... 199
[永野昌博・鈴木誠沼：オオヒラタシデムシとベッコウヒラタシデムシの時空的資源利用様式の違い]

NARITA, Y.: Descriptions of Donaciine Larvae (Coleoptera, Chrysomelidae) from Japan 1
[成田行弘：日本産ネクイハムシ亜科（甲虫目ハムシ科）の幼虫形態による分類学的研究]

NIISATO, T.: A New *Stenhomalus* (Coleoptera, Cerambycidae) from Northeastern Laos..... 37
[新里達也：ラオス北東部産メダカカミキリ属の1新種]

NIISATO, T., & S.-K. KOH: Taxonomic Notes on Clytine Longicorn Beetles (Coleoptera, Cerambycidae) from Korea 289
[新里達也・高　尚均：韓国産トラカミキリの分類学的知見]

NIISATO, T., & N. OHBAYASHI: A New *Necydalis* Species (Coleoptera, Cerambycidae) Discovered on Mt. Phang Si Pang of Northwestern Vietnam..... 301
[新里達也・大林延夫：ベトナム北西部のファンシーパン山から見つかったホソコバネカミキリ属の1新種]

NOMURA, S.: A Taxonomic Revision of the Genus *Basitrodes* (Staphylinidae, Pselaphinae). Part 2. *Basitrodes vestitus* Group 175
[野村周平：ツノアリヅカムシ属の分類学的再検討（コウチュウ目ハネカクシ科アリヅカムシ亜科）．第2部：チュウゼンジツノアリヅカムシ種群]

NOMURA, S., & P. HLAVÁČ: *Himepion cyathicornis* (Coleoptera, Staphylinidae, Pselaphinae), a New Genus and Species of the Somatipionina from Shikoku, Japan 159
[野村周平・Peter HLAVÁČ：四国産セダカアリヅカムシ亜族（和名新称）の新属新種*Himepion cyathicornis*（コウチュウ目ハネカクシ科アリヅカムシ亜科）]

ÔHIRA, H.: New or Little-known Elateridae (Coleoptera) from Japan, XLV 361
[大平仁夫：日本産コメツキムシ科の新種，XLV]

SAITÔ, M.: A New Species of the Genus *Ischalia* (Coleoptera, Anthicidae, Ischaliinae) from Hokkaido, Japan 55
[斉藤昌弘：日本産ヘリハネムシ属の1新種]

SAITÔ, M.: A New Species of the Genus *Tomoderus* (Coleoptera, Anthicidae) from the Ryukyu Islands, Southwest Japan 321
[斉藤昌弘：琉球列島で見つかった*Tomoderus*属アリモドキの1新種]

SATÔ, M.: Miscellaneous Notes on the Laotian Coleoptera, I. Description of a New Species of the Genus *Metallidascillus* (Coleoptera, Dascillidae) 367
[佐藤正孝：ラオスの甲虫類に関する覚書，I. *Metallidascillus*属の新種記載]

SENOH, T.: A New Species of the Genus *Ulorhinus* (Coleoptera, Anthribidae) from Northeast Japan 285
[妹尾俊男：福島市から発見された*Ulorhinus*属ヒゲナガゾウムシの1新種]

SMETANA, A.: *Quedius* (*Quedius*) *sundukovi* (Coleoptera, Staphylinidae, Staphylininae, Quediina), an Interesting New Species from the Russian Far East 189
[Aleš SMETANA：極東ロシアから初めて発見されたツヤムネハネカクシ亜属の興味深い1新種，*Quedius* (*Quedius*) *sundukovi*]

SMETANA, A.: Fourth Contribution to the Knowledge of the Chinese Species of the Genus *Trigonodemus* LECONTE, 1863 (Coleoptera, Staphylinidae, Omaliinae) 391
[Aleš SMETANA：中国産シデムシモドキ属の知見第4報]

UÉNO, S.-I.: A New Genus and Species of Extraordinary Cave Trechine (Coleoptera, Trechinae) from Eastern Yunnan, Southwest China 245
[上野俊一：云南東部で発見された異常な形態の洞窟性チビゴミムシ]

UÉNO, S.-I.: New *Awatrechus* (Coleoptera, Trechinae) from the Northwestern Peripheries of the Range of Generic Distribution 415
[上野俊一：アワメクラチビゴミムシ属分布域の北西部に産する4新種]

UÉNO, S.-I., & H. ASHIDA: Occurrence of a New *Stygiotrechus* (Coleoptera, Trechinae) in the Takanawa Peninsula of Northwestern Shikoku, Southwest Japan 409
[上野俊一・芦田　久：四国の高縄半島におけるノコメメクラチビゴミムシの発見]

UÉNO, S.-I., & T. NAITÔ: Discovery of *Stygiotrechus* (Coleoptera, Trechinae) at the Southeastern Part of the Kii Peninsula, Central Japan 231
[上野俊一・内藤隆夫：紀伊半島南東部で発見されたノコメメクラチビゴミムシ]

UÉNO, S.-I., & T. NAITÔ: Occurrence of a Second Species of *Kusumia* (Coleoptera, Trechinae) on the Hatenashi Mountains in the Kii Peninsula, Central Japan 237
[上野俊一・内藤隆夫：紀州の果無山脈で見つかったキイメクラチビゴミムシ属の2番目の種]

WADA, K.: Two New Species of the Genus *Parastasia* (Coleoptera, Scarabaeidae, Rutelinae) from Vietnam and Tana Island of Vanuatu 97
[和田　薫：ベトナムおよびタナ島から発見された*Parastasia*属コガネムシの2新種]

WATANABE, Y.: Notes on the Genus *Eusphalerum* (Coleoptera, Staphylinidae) from Aomori Prefecture, Japan 395
[渡辺泰明：青森県から採集されたハナムグリハネカクシ類について]

YAMAZAKI, K., & S. SUGIURA: Biological Notes on *Hyperaspis asiatica* (Coleoptera, Coccinellidae) 87
[山崎一夫・杉浦真治：ツマフタホシテントウの生態に関する記録]

短　報　(**Short Reports**)

AKIYAMA, H.: New Records of *Nacerdes* (*Xanthochroa*) *dedicata* and *Indasclera similis* (Coleoptera, Oedemeridae) from Myanmar 42

HASEGAWA, M.: A New Synonym of *Pterolophia jiriensis* (Coleoptera, Cerambycidae) 365

IMURA, Y.: New Replacement Name for a Carabine Species (Coleoptera, Carabidae) 446

KAWASHIMA, I.: New Localities of *Pyrocoelia matsumurai matsumurai* (Coleoptera, Lampyridae, Lampyrinae) from the Okinawa Islands 378

KISHIMOTO, T., & H. YOKOZEKI: Additional Records of *Micropeplus sharpi* (Staphylinidae, Micropeplinae) 408

KOMIYA, Z.: A New Record of *Hastertia bougainvillei* LAMEERE (Coleoptera, Cerambycidae, Prioninae) from Malaita Island of the Solomons 142

KOMIYA, Z.: New Records of *Apriona* Species (Coleoptera, Cerambycidae, Lamiinae) 219

KON, M., & K. ARAYA: On the Microhabitat of *Ceracupes yui* (Coleoptera, Passalidae) from Taiwan 154

KON, M., & T. SHIMADA: A New Record of *Leptaulax cyclotaenius* (Coleoptera, Passalidae) from Thailand 148

MARUYAMA, M., & K.-J. AHN: New Records of *Zyras* (Coleoptera, Staphylinidae, Aleocharinae) from Korea 262

MASUMOTO, K.: A New Synonym of *Leprocaulinus* (Coleoptera, Tenebrionidae), with Proposal of a New Combination, *L. sumatranus* 60

MASUMOTO, K.: A New Record of *Diaclina plagiata* (Coleoptera, Tenebrionidae) from Taiwan 340

MASUMOTO, K.: Tenebrionid Beetles (Coleoptera) from the Palau Islands Collected by Keiichi TAKAHASHI (1) 383

NISHIKAWA, M.: *Choleva spinipennis* (Coleoptera, Leiodidae, Cholevinae) Newly Recorded from Transbaikalia, Russia 194

NISHIKAWA, M., & H. KAMEZAWA: A *Stenus* Species (Coleoptera, Staphylinidae) Occurring in the Intertidal Zone 300
ÔHARA, M.: A New Record of *Althanus teretrioides* (Coleoptera, Histeridae, Histerinae, Platysomatini) from Java Island, Indonesia 214
OKUSHIMA, Y.: Further Records of "*Athemellus multilimbatus*" (Coleoptera, Cantharidae) from Taiwan 351
SATÔ, M., & H.-Y. LEE: Records of Two Lucanid Beetles (Coleoptera) from Taiwan 370
SENOH, T.: Some Records of Anthribid Beetles (Coleoptera, Anthribidae) from Laos 288
SUGAYA, H.: Notes on *Apharinodes papageno* (Coleoptera, Staphylinidae, Pselaphinae) in Okinawa-jima, the Ryukyus, Japan 125
SUGAYA, H., & S. ARAI: Notes on the Distribution of *Hirashimanymus schistodactyroides* (Coleoptera, Staphylinidae, Pselaphinae) 187
SUGAYA, H., P. HLAVÁČ & S. NOMURA: Notes on the Distribution of *Saltisedes brunneus* (Coleoptera, Staphylinidae, Pselaphinae) in Japan 156
SUGAYA, H., & S. NOMURA: Additional Records of *Awas shunichii* (Coleoptera, Staphylinidae, Pselaphinae), with a Note on its Habitat in Taiwan 183
SUZUKI, W.: Two Elaterid Beetles Collected from Guam Island of the Mariana Islands 324
SUZUKI, W.: Record of *Oxynopterus candezei* (Coleoptera, Elateridae) from Bilitung Island, Indonesia 366
TAKAHASHI, K.: Additional Record of *Rhagonycha chirorodakensis* (Coleoptera, Cantharidae) 230
TAKAKUWA, M.: Additional Record of *Glipa subflava* (Coleoptera, Mordellidae), with Description of the Female 102
UÉNO, S.-I.: Occurrence of *Yamautidius anaulax* (Coleoptera, Trechinae) in the Upper Hypogean Zone 429
UÉNO, S.-I., & Y. ITÔ: New Records of Upper Hypogean *Trechiama* (Coleoptera, Trechinae) in Central Shikoku, Southwest Japan 243
UÉNO, S.-I., & T. NAITÔ: A New Record of *Kusumia kitayamai* (Coleoptera, Trechinae) 236
WATANABE, Y.: Occurrence of *Astenus chloroticus* (Coleoptera, Staphylinidae) on the Island of Aogashima of the Izu Islands, Central Japan 394
YOSHITOMI, H.: New Record of *Hydrocyphon nakanei* (Coleoptera, Scirtidae) from the Islands of Tsushima 96
YOSHITOMI, H., & S. HORI: New Record of Scirtid Species (Coleoptera, Scirtidae) from Hokkaido 360

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