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Records of Four Carabid Beetles (Coleoptera, Carabidae) from Southwest Hubei and Northwest Hunan, China

Yûki IMURA

Department of Gynecology, Tôkyû General Hospital, Kita-senzoku,
1–45–6, Ôta-ku, Tokyo, 145–0062 Japan

Abstract Four species of the genus *Carabus* (s. lat.) are recorded from southwestern Hubei and northwestern Hunan of South-Central China. One of them is described as *C.* (*Apotomopterus*) *infirmior kishimotoi* subsp. nov.

Early in the summer of 2000, I made an investigative trip to southwestern Hubei and northwestern Hunan of South-Central China, with a view to clarify the carabid fauna of these areas, which has been poorly known as yet. Unfortunately, almost all the forests have been extensively cut down and most parts of the original vegetation have already disappeared even in and around such nature reserves as Xingdou Shan and Badagong Shan. After making every effort by setting nearly 2,000 traps at nine different sites, I was able to collect only four species of the members of the genus *Carabus* (s. lat.). All these are already known and rather widely distributed species, but are still worth introducing into science from morphological and zoogeographical viewpoints. One of them is considered to be a new race of *C.* (*Apotomopterus*) *infirmior*. In this article, I am going to record all the four taxa with necessary descriptions and exact collecting data.

Before going further, I wish to express my sincere thanks to Mr. FAN Ting (Chengdu International Academic Exchange Centre of the Chinese Academy of Science) and Dr. Toshio KISHIMOTO (Tokyo University of Agriculture) for their kind collaboration throughout my field works. Also I acknowledge Mr. Kiyoyuki MIZUSAWA for his support in various ways. Special thanks are due to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for revising the manuscript of this paper.

1. *Carabus* (*Apotomopterus*) *protenes protenes* BATES, 1889

(Fig. 1)

Carabus (*Apotomopterus*) *protenes*: IMURA, 2000, Gekkan-Mushi, Tokyo, (356), p. 11, figs. 1–2.

Length: 26.7–33.5 mm (including mandibles).

Male genitalia. As shown in Fig. 1, basic structure of the male genital organ of this species is almost identical with that of *C.* (*A.*) *sauteri* (cf. IMURA, 1994; IMURA

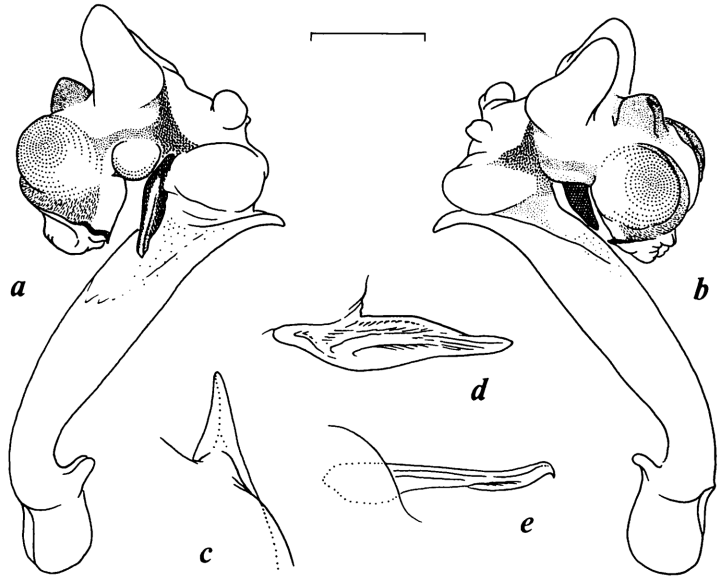

Fig. 1. Male genital organ of *Carabus* (*Apotomopterus*) *protenes protenes* from near Dahong-cun in Da'an Xiang of Longshan Xian, NW. Hunan. —— a, Aedeagus with fully everted endophallus in left lateral view; b, ditto in right lateral view; c, apical part of aedeagus in dorsal view; d, spinula in dorsal view; e, ditto in basal lateral view. Scale: 2 mm for a & b; 1 mm for c–e.

et al., 1998), though the former is peculiar in bearing two irregularly shaped small membraneous projections on the dorsal wall of the endophallus at the place for the median lobe.

Specimens examined. [SW. Hubei]: 6♂♂, 22♀♀, Hongchun [红椿] (1,350 m), in Yuanbao-qu [元堡区] of Lichuan Xian [利川县], 14–VI–2000; 9♂♂, 27♀♀, Bajiao-cun [芭蕉村] (730–800 m), in Maoba-qu [毛坝区] of Lichuan Xian, 14–VI–2000; 1♂, Gaodongzi [高洞子] (700 m) at Dashaba-cun [大沙坝村], in Huangjindong-qu [黄金洞区] of Xianfeng Xian [咸丰县], 14–VI–2000; 24♂♂, 54♀♀, Baiyan [白岩] (900 m), in Xianfeng Xian, 14–VI–2000; 6♂♂, 19♀♀, eastern side of Pass Fenshuiling [分水岭] (1,320 m), at Taiping-qu [太平区] of Hefeng Xian [鹤峰县], 12–VI–2000. [NW. Hunan]: 3♂♂, 6♀♀, near Dahong-cun [大红村](1,020–1,080 m), in Da'an Xiang [大安乡] of Longshan Xian [龙山县], 13–VI–2000; 4♂♂, 17♀♀, Liangshuijing-cun [凉水井村] (780–800 m), in Da'an Xiang of Longshan Xian, 13–VI–2000, all collected by Y. IMURA & T. KISHIMOTO.

Notes. *Carabus protenes* was described by BATES over a hundred years ago based upon the materials brought by PRATT, and is one of the well-known *Apotomopterus* in China. Nevertheless, our knowledge is still very poor on its distribution, variation and even on the detailed morphology. In fact, the male genital organ of this species is illustrated and precisely described for the first time in this paper. The identi-

fication of the above specimens was made based upon a comparison with the lectotype of *C. protenes* now preserved in the National Museum of the Natural History in Paris, but the assigned taxonomic position is still tentative, since the lectotype of BATES' species is a female. As shown in Fig. 1, the male genitalia of this taxon and those of *C. sauteri* are closely similar to each other, and it may be appropriate to unify these two taxa into a single category at a species level, at least from the morphological view.

2. *Carabus* (*Apotomopterus*) *infirmior kishimotoi* IMURA, subsp. nov.

(Fig. 2)

Carabus (*Apotomopterus*) *infirmior* ssp.: IMURA, 2000, Gekkan-Mushi, Tokyo, (356), p. 11, figs. 3–4.

Length: 28.7–32.5 mm (including mandibles).

Black with faint brownish tinge. One of the largest subspecies of all the known races of *infirmior*, with robust body and homodyname elytral sculpture. Male genitalia as shown in Fig. 2, with the apical lobe of aedeagus moderately elongate for the species, gently curved ventrad in lateral view, and not remarkably protruded left laterad in dorsal view. Endophallus short and gradually narrowed towards gonopore, with a pair of well-developed basal lateral lobes; median lobe absent, prepraeputial lobes weakly recognizable on both sides, apical lobes rather remarkably protruded though very small, and podian lobes inconspicuous. Spinula short and small, arrowhead-shaped in dorsal view, with the dorsal margin gently arcuate in lateral view.

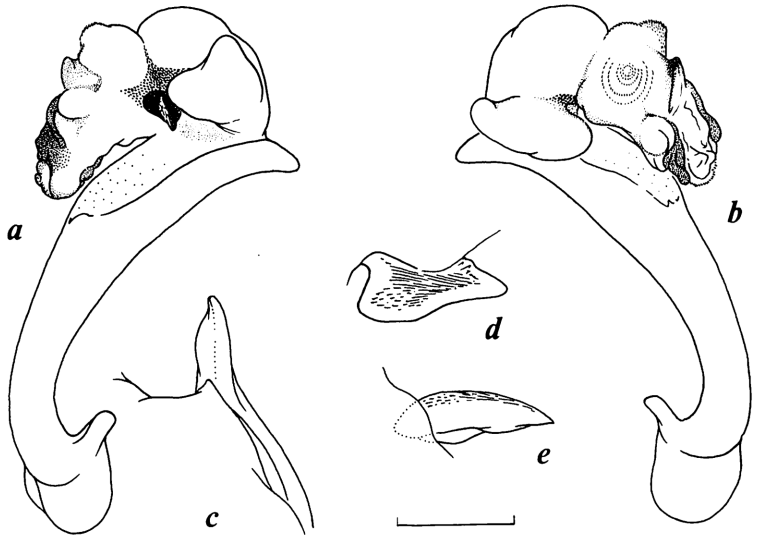

Fig. 2. Male genital organ of *Carabus* (*Apotomopterus*) *infirmior kishimotoi* subsp. nov., from Liangshuijing-cun in Da'an Xiang of Longshan Xian, NW. Hunan. —— a, Aedeagus with fully everted endophallus in left lateral view; b, ditto in right lateral view; c, apical part of aedeagus in dorsal view; d, spinula in dorsal view; e, ditto in basal lateral view. Scale: 2 mm for a & b; 1 mm for c–e.

Type series: Holotype: ♂, Liangshuijing-cun [凉水井村] (780–800 m) in Da'an Xiang [大安乡] of Longshan Xian [龙山县], NW. Hunan, China, 13–VI–2000, Y. IMURA & T. KISHIMOTO leg., in coll. Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes (including allotype): 17♂♂, 40♀♀, same data as for the holotype; 1♂, 3♀♀, eastern side of Pass Fenshuiling [分水岭] (1,320 m), at Taiping-qu [太平区] of Hefeng Xian [鹤峰县], SW. Hubei, China, 12–VI–2000; 3♀♀, near Xuelaozhai [雪落寨] (1,250–1,300 m), in Shaping-qu [沙坪区] of Xuan'en Xian [宣恩县], SW. Hubei, China, 12–VI–2000; 1♀, near Dahong-cun [大红村] (1,020–1,080 m), in Da'an Xiang [大安乡] of Longshan Xian [龙山县], NW. Hunan, China, 13–VI–2000, all collected by Y. IMURA & T. KISHIMOTO and preserved in colls. Y. IMURA & K. MIZUSAWA.

Notes. The elytral sculpture of the present new subspecies is homodyname, and distinguished at a glance from such forms with heterodyname elytral sculpture as nominotypical *infirmior*, *loccai* and *lisanlingae*. From subspp. *homodynamus*, *normodynamus*, *tribulatus* and *jiucaishan*, all with homodyname sculpture, the new form is discriminated by larger size (most specimens of *kishimotoi* nov. measure more than 30 mm even in male), robuster pronotum with more protruded hind angles, and differently shaped aedeagal apex. From subsp. *changdensis* of north-central Hunan, the new subspecies is discriminated mainly by differently shaped aedeagus (cf. DEUVE, 1997, p. 218, fig. 13). The new race cannot be identical with subsp. *longshengensis* described by DEUVE and TIAN (1999) from northeastern Guangxi, since the coloration of legs and the shape of the aedeagal apex seem different, though the description of the Guangxi race is too poor to be cited for a comparative study. Judging from the basic structure of the endophallus, *Carabus infirmior* doubtless belongs to the same lineage containing *laoshanicus* and *cyanopterus*, which constructs one of the sub-clusters of the lineage 3 on the genealogical trees given by KIM *et al.* (1999, pp. 644–645, figs. 1 A & B). The new subspecies is named after Dr. Toshio KISHIMOTO of Tokyo University of Agriculture.

3. *Carabus* (*Coptolabrus*) *principalis principalis* BATES, 1889

Carabus (*Coptolabrus*) *principalis*: IMURA, 2000, Gekkan-Mushi, Tokyo, (356), p. 11, fig. 5.

Length: 41.1 mm (including mandibles).

Specimen examined. 1♀, eastern side of Pass Fenshuiling [分水岭] (1,320 m), at Taiping-qu [太平区] of Hefeng Xian [鹤峰县], SW. Hubei, China, 12–VI–2000, Y. IMURA & T. KISHIMOTO leg.

Notes. A single female specimen was trapped on rather a dried floor of a thin forest composed of planted lacquer trees on the eastern slope of the Pass Fenshuiling. It is sympatric with *Carabus* (*Apotomopterus*) *protenes* and *C.* (*A.*) *infirmior kishimotoi* nov.

4. *Carabus (Coptolabrus) augustus ignigena* HAUSER, 1914

Carabus (Coptolabrus) augustus ignigena: IMURA, 2000, Gekkan-Mushi, Tokyo, (356), p. 11, fig. 6.

Length: 42.5 mm (including mandibles).

Specimen examined. 1♀, Liangshuijing-cun [涼水井村] (780–800 m) in Da'an Xiang [大安乡] of Longshan Xian [龙山县], NW. Hunan, China, 13–VI–2000, Y. IMURA & T. KISHIMOTO leg.

Notes. This species was collected, together with *Carabus (Apotomopterus) protenes* and *C. (A.) infirmior kishimotoi* nov., from a rather deep secondary forest remaining on the eastern slope of a small hill behind the village of Liangshuijing-cun.

要　約

井村有希：中国湖北省南西部と湖南省北西部におけるオサムシ4種の記録．—— 2000年度の中国調査において，湖北省南西部と湖南省北西部から得られた4種のオサムシ（トゲオサムシ2種とカブリモドキ2種）を記録した．これらのうち，ヒメトゲオサムシ *Carabus (Apotomopterus) infirmior* については新亜種と認め，*kishimotoi* nov. という名を与えて記載した．

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Cychrus businskyorum (Coleoptera, Carabidae), a New Species Discovered near the Source of the River Ayeyarwady (=Irrawaddy)

Yûki IMURA

Department of Gynecology, Tôkyû General Hospital, Kita-senzoku,
1–45–6, Ôta-ku, Tokyo, 145–0062 Japan

Cychrus businskyorum IMURA, sp. nov.

(Fig. 1)

Description. Length: 14.5–15.5 mm (including mandibles). Entirely black and not so strongly shiny. Closely allied to *Cychrus koiwayai* DEUVE et IMURA (1993, Elytra, Tokyo, **21**, p. 195, fig. 6), but distinguishable from that form as follows: 1) a little smaller in size; 2) mandibles slightly but obviously shorter; 3) vertex not distinctly convex above, with the central part rather depressed and strongly wrinkled; 4) pronotum with the sides more evidently angulate at the widest part, and the margins a little more strongly reflexed before hind angles; 5) elytra slenderer and more gradually narrowed towards apices, with the areas between primaries more vaguely punctate, elevated parts of secondaries and tertiaries more frequently contiguous with one another; 6) aedeagus much smaller (3.1 mm in length) and slenderer, its apical portion gently but obviously hooked ventrad in lateral view, with the tip very short in dorsal view.

Type series. Holotype: ♂, eastern side of Pass Tsema La (28°28′10 N / 98°13′30 E), 4,300 m in altitude, on the road between Menkong [门空] and Ridong [日东], southeastern part of Zayü Xian [察隅县] in Nyingchi Diqu [林芝地区], Southeast Tibet (Xizang), 18–VI–1999, in coll. Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 1♂+1 ex., same data as for the holotype, in colls. Y. IMURA and R. BUSINSKÝ (Prague).

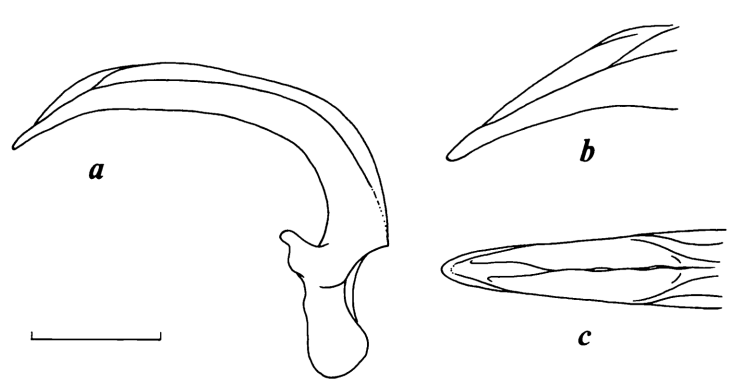


Fig. 1 a–c. Aedeagus of *Cychrus businskyorum* sp. nov. —— a, Right lateral view; b, apical part in the same view; c, ditto in dorsal view. Scale: 1 mm for a, 0.5 mm for b & c.

Elytra, *Tokyo*, **28** (2): 223–228, November 15, 2000

Phylogeny in the Division Archicarabomorphi (Coleoptera, Carabidae) as Viewed from Mitochondrial ND5 Gene Sequences

Yûki IMURA

Department of Gynecology, Tôkyû General Hospital, Kita-senzoku, 1–45–6, Ôta-ku, Tokyo, 145–0062 Japan,

Zhi-Hui SU and Syozo OSAWA

JT Biohistory Research Hall, 1–1 Murasaki-Cho, Takatsuki, Osaka, 569–1125 Japan

Abstract The phylogenetic trees for seven species belonging to the subgenera *Archicarabus*, *Gnathocarabus* and *Acrocarabus* in the division Archicarabomorphi of the genus *Carabus* (s. lat.) are constructed using the mitochondrial ND5 gene sequences. The phylogenetic relationships in and among each taxon are discussed.

Introduction

The Archicarabomorphi is one of the nine major divisions of the genus *Carabus* (s. lat.) (sensu IMURA *et al.*, 1998), consisting of four subgenera, namely, *Archicarabus*, *Ischnocarabus*, *Gnathocarabus* and *Acrocarabus* (cf. DEUVE, 1991 & '94; IMURA, 1996; IMURA & MIZUSAWA, 1996, etc.). Morphologically, they are characterized mainly by the basic structure of the male genital organ, *e.g.*, narrow preostium lacking the ostium lobe, uniquely developed paraligula, apparently projected peripheral rim of the gonopore, etc. In *Archicarabus*, each lobe of the endophallus is remarkably inflated, above all at the basal portion (Fig. 6). *Acrocarabus* is peculiar in having a digitulus-like sclerite on the ventral wall of the endophallus (Fig. 2), though this fact has never been pointed out by previous taxonomists.

The subgenus *Archicarabus* comprises nearly ten species distributed over the greater part of Europe and Asia Minor. The type species, *nemoralis*, is also recorded from North America and Southeast Kazakhstan of Central Asia, most probably as an introduction from Europe. The remaining three subgenera are rather restricted both in the number of species and the range of distribution. *Ischnocarabus* includes two species, both endemic to Turkey. *Gnathocarabus* is monotypical, and the type species, *kuznetzovi*, has been known only from the mountainous area of Northeast Iran. *Acrocarabus* consists of two species distributed on and around the Dzhungarskij Alatau of

Table 1. List of the specimens used in this study.

Locality number	Scientific name by morphology	Locality	DDBJ/EMBL/GenBank Accession No.
1	*Acrocarabus guerini*	Uighentas, N. Dzhungarskij Alatau, SE. Kazakhstan	AB047276
2	*Ac. callisthenoides*	Tekeli~Koksu, SW. Dzhungarskij Alatau, SE. Kazakhstan	AB047251
3	*Ac. callisthenoides*	Altyn-emel Mts., SE. Kazakhstan	AB047252
4	*Gnathocarabus kuznetzovi*	Karim Ishan, NE. Gombad-e Kavus, Mazandaran, NE. Iran	AB047253
5	*Archicarabus victor*	Gönderic Tepesi, W. Giresun Mts., NE. Turkey	AB047277
6	*Ar. victor*	Karagöl Ridge, Giresun Mts., NE. Turkey	AB047254
7	*Ar. gotschi*	Mercan Mts., Erzincan, NE. Turkey	AB047255
8	*Ar. victor*	Karçal Dağı, Coruh, NE. Turkey	AB047256
9	*Ar. victor*	Karçal Dağı, Coruh, NE. Turkey	AB047257
10	*Ar. victor*	Karçal Dağı, Coruh, NE. Turkey	AB047258
11	*Ar. monticola*	Brondello, Cúneo, Piemonte, NW. Italy	AB047259
12	*Ar. monticola*	Tavigliano, Biella, Piemonte, NW. Italy	AB047260
13	*Ar. nemoralis*	Epleny, Zirc Veszprem, W. Hungary	AB047261
14*	*Ar. nemoralis*	Bourgogne, E. France	D86209
15	*Ar. nemoralis*	W. Index, Snohomish, Washington Stat., NW. USA	AB047262
16	*Ar. nemoralis*	Kok-tinbe Mt., Almaty, SE. Kazakhstan	AB047263
17	*Ar. nemoralis*	Liebiazhie, Leningrad Distr., W. Russia	AB047264
18	*Ar. nemoralis*	Lamspringe, Hildesheim, Niedersachsen, N. Germany	AB047265
19	*Ar. nemoralis*	St. Peterburg, W. Russia	AB047266
20*#	*Campalita chinense*	Oasa, Hiroshima, Honshu, SW. Japan	D50343
21*#	*Calosoma inquisitor*	Tokachi, Hokkaido, N. Japan	D50342

* Taken from SU *et al.* (1996a; 1996b). # As an outgroup for constructing the trees (see Fig. 1).

the northeastern Tianshans in Central Asia.

In the present study, we have examined the mitochondrial ND5 gene sequences from the representative species of all the above subgenera except *Ischnocarabus* to clarify the phylogenetic relationships among them. The result shows overall consistency between the molecular phylogeny and the morphological classification.

Following the same manner as in the other articles of ours recently published or those now in press, we conventionally use the subgeneric name in place of the generic name, i.e., "*Archicarabus*" means "*Carabus* (*Archicarabus*)".

Materials and Methods

The specimens used in this study are listed in Table 1. The analytical methods and the construction of the phylogenetic trees are the same as those described by SU *et al.* (1998).

Results and Discussion

On both the NJ- and the UPGMA trees, there exist four well-defined lineages. The two trees yielded the same topology of the species examined. Diversification of the four Archicarabomorphi lineages seems to have started within a short time about 28 million years ago.

The first lineage on the trees contains two species of *Acrocarabus*, i.e., *Ac. guerini* and *Ac. callisthenoides*, both from the northeastern Tianshans in Southeast Kazakhstan. The evolutionary distance (D) between the two species is large, suggesting that

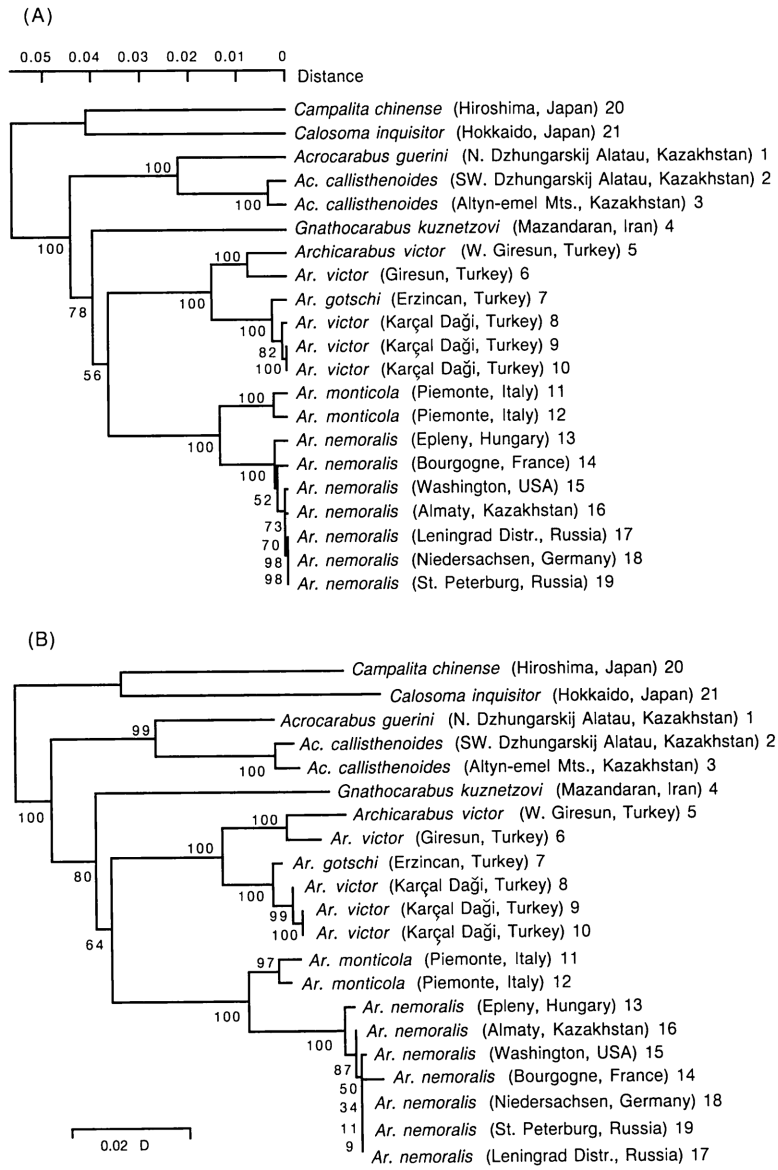
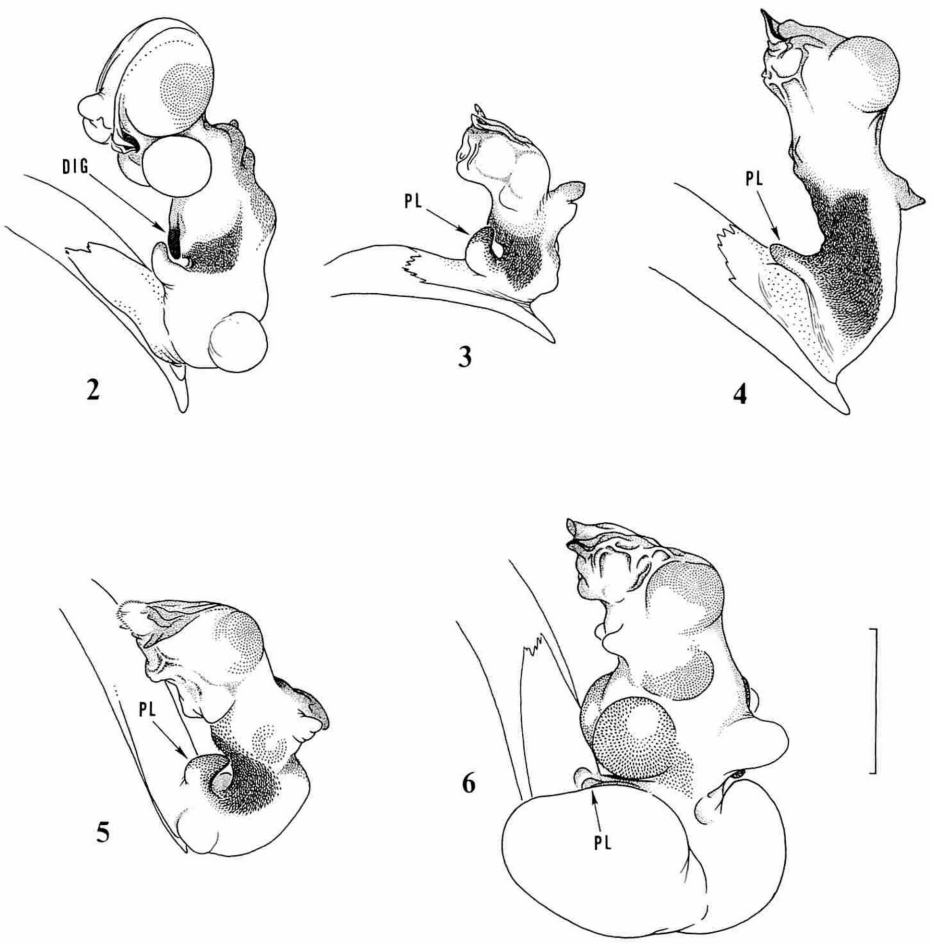


Fig. 1. Phylogenetic trees of the mitochondrial ND5 gene (1,069 bp upstream from 3 terminal stop codon) constructed from the species used in this study. The UPGMA tree (A) and the NJ tree (B). The bootstrap confidence level (%) based on 500 resamplings is shown at each branching point. Distance (D) denotes KIMURA's two-parameter distance. For details, see SU *et al.* (1998).



Figs. 2–6. Completely everted endophallus (left lateral view) of the subgenera *Acrocarabus*, *Gnathocarabus*, *Ischnocarabus* and *Archicarabus*. —— 2, *Acrocarabus callisthenoides* (SW. Dzhungarskij Alatau, SE. Kazakhstan); 3, *Gnathocarabus kuznetzovi* (Karim Ishan, Mazandaran, NE. Iran); 4, *Ischnocarabus tenuitarsis* (Corum, Jskilip, Turkey); 5, *Archicarabus victor* (Karçkal-Otingo, NE. Turkey); 6, *Ar. nemoralis* (Hesel, Niedersachsen, N. Germany); DIG, digitulus; PL, paraligula. Scale: 2 mm.

despite morphological similarity their separation took place long time ago. The *Acrocarabus* lineage would have emerged earlier than the other three. Since the fundamental structure of the male genital organ of this subgenus is considerably different from that of the other three Archicarbomorphi-subgenera, *Acrocarabus* may not be appropriate to be included in this division. As shown in Fig. 2, the male genital organ of the *Acrocarabus* species is characterized by the presence of a chitinized piece on the ventral wall of the endophallus, which seems to be homologous with the digitulus of the

division Digitulati.

The second lineage is represented solely by *Gnathocarabus kuznetzovi* from Northeast Iran.

The third lineage includes two Turkish species, *Archicarabus victor* and *Ar. gotchi*. This lineage may be separated into two sublineages; one containing two specimens of *Ar. victor* from Giresun, and the other containing *Ar. gotchi* from the Mercan Mts. of Erzincan and *Ar. victor* from Karçal Dağı near the northeastern periphery of the country. Note that the same species, *Ar. victor*, appears in two different sublineages. These facts suggest a geography-linked phylogeny, and do not seem to reflect the morphology-based classification. It may be adequate to apply the subgenus *Deuterocarabus* REITTER to this lineage, if the type species (*montivagus*, distributed in the Balkan Peninsula) is also clustered here.

The fourth lineage includes two *Archicarabus* species, i.e., *Ar. monticola* and *Ar. nemoralis*. These two taxa are sharply separated from each other on the phylogenetic trees. Their separation was calculated to have occurred about 20 million years ago, assuming that a 0.01 D unit corresponds to 3.6 million years (SU *et al.*, 1998). Two examples of *Ar. monticola* from two different localities of Northwest Italy show a small difference in their sequences. The sequence difference is also small among all nine examples of *Ar. nemoralis* from seven different localities including North America and Central Asia. The difference is almost null among the specimens from the USA, Kazakhstan, West Russia and Germany, while the specimens from Hungary and France are a little remote in their sequences from the others mentioned above. The population of *Ar. nemoralis* occurring in North America has been considered to be a European introduction (*e.g.*, LINDROTH, 1961). The same situation may be applied to the specimen from Kazakhstan. The present result is consistent with this view.

Unfortunately, none of the *Ischnocarabus*-species were available for the DNA analysis. Judging from the similarity in the basic structure of the endophallus, this subgenus seems to be most closely allied to "*Deuterocarabus*" (cf. Figs. 4 & 5)

Acknowledgements

We wish to express our sincere gratitude to the following colleagues who kindly supplied the specimens to us for analysis: Dr. I. A. BELOUSOV (St. Peterburg, Russia), Mr. E. VAN DEN BERGHE (Seattle, USA), Prof. P. CAVAZZUTI (Pagno, Italy), Dr. B. DAVID (Bourgogne, France), Mr. I. I. KABAK (Almaty, Kazakhstan), Mr. J. KALÁB (Jinacovice, Czech), Mr. N. KASHIWAI & Mrs. T. KASHIWAI (Kawasaki, Japan), Mr. A. PLUTENKO (Smolensk, Russia), Mr. P. RATTI (Biella, Italy) and Mr. K. STAVEN (Broistedt, Germany). Thanks are also due to Ms. Hideko TANAKA for her skillful technical assistance.

要　　約

井村有希・蘇　智慧・大澤省三：ミトコンドリアND5遺伝子の塩基配列からみたマルオサム

シ群内の系統. —— マルオサムシ群Archicarabomorphiを構成する4亜属のうち，3亜属から代表的な種を選び，ミトコンドリアND5遺伝子の塩基配列を決定して，群内の系統関係について検討した．分析した3亜属のうち，天山山脈のキンマルオサムシ*Acrocarabus*はもっとも分岐が古く，♂交尾器内袋に指状片を有するなど，形態学的にもかなり特異なので，マルオサムシ群から除外して骨片オサムシ群に分類するべきものと思われる．北西イランに孤立分布するキバヒョウタンオサムシ*Gnathocarabus*もかなり独立性の高いクラスターを形成したが，分子・形態双方の所見から，マルオサムシ群の一員と考えてよいだろう．狭義のマルオサムシ*Archicarabus*は大きく2サブクラスターに分かれ，一方はトルコ産の2種，他方はヨーロッパ産の2種によって構成された．前者に対しては*Deuterocarabus*亜属を適用するべきかもしれない．*Archicarabus*の基準種である*nemoralis*の塩基配列には産地による相違がほとんどみられず，北米や中央アジアに分布する集団は，従来の指摘どおり，移入種である可能性の高いことが示唆された．

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Elytra, *Tokyo*, **28** (2): 229–233, November 15, 2000

Phylogeny in the Crenolimbi Ground-beetles (Coleoptera, Carabidae) as Deduced from Mitochondrial ND5 Gene Sequences

Zhi-Hui Su

JT Biohistory Research Hall,
1–1 Murasaki-Cho, Takatsuki, Osaka,
569–1125 Japan,

Yûki Imura

Department of Gynecology,
Tôkyû General Hospital, Kita-senzoku,
1–45–6, Ôta-ku, Tokyo, 145–0062 Japan,

Osamu Tominaga and **Syozo Osawa**

Shibatsuji-cho, Nara, 630–8114 Japan

JT Biohistory Research Hall,
1–1 Murasaki-Cho, Takatsuki, Osaka,
569–1125 Japan

Abstract All the five species belonging to the division Crenolimbi (= *Hemicarabus* + *Homoeocarabus*) of the genus *Carabus* (s. lat.) are examined for the mitochondrial ND5 gene sequences to clarify their phylogenetic relationships.

Introduction

The subgenera *Hemicarabus* and *Homoeocarabus* of the grand genus *Carabus* are morphologically similar to each other, and are combined to a single category, the Crenolimbi. This name was first proposed by Reitter (1896) as one of the ranks between the genus and the subgenus, but has been ignored thereafter by most authors for nearly a century. In his revisional work for the classification of *Carabus*, Imura (1996) readopted the Crenolimbi as a subdivisional name. His view was supported by a molecular phylogenetic analysis of the representative groups of *Carabus* (s. lat.), in which the species classified into the Crenolimbi form a well-defined cluster (Imura *et al.*, 1998). Several taxonomists also have used the Crenolimbi as a divisional name in their own system (Deuve, 1997; Kleinfeld & Schütze, 1999; Březina, 1999; etc.). It is thus reasonable to regard the Crenolimbi as one of the nine major divisions under the genus *Carabus* (s. lat.).

The Crenolimbi is the smallest division in the genus *Carabus* (s. lat.), consisting of only five species (four in the subgenus *Hemicarabus* and one in *Homoeocarabus*). They are widely, but rather sporadically distributed throughout the northern part of the Eurasian Continent and of North America, including several adjunctive islands such as Great Britain, Ireland, Sakhalin, the Japanese Islands, Cheju-do, Newfoundland, St.

Table 1. List of the Crenolimbi specimens used in this study.

Locality number	Scientific name by morphology	Locality	DDBJ/EMBL/GenBank Accession No.
1	*Hemicarabus serratus*	Newaygo, Michigan, CN. USA	AB047149
2	*He. tuberculosus*	Lukashovka, Primorskij, E. Russia	AB047202
3	*He. tuberculosus*	Chiri-san Mts., S. Korea	AB047203
4	*He. tuberculosus*	Kunimi, Nagasaki, Kyushu, SW. Japan	AB047204
5	*He. tuberculosus*	Is. Izu-oshima, Tokyo, C. Japan	AB047205
6	*He. nitens*	Uchte Moor, S. Sulingen, Niedersachsen, N. Germany	AB047206
7	*He. macleayi*	Mt. Vachkazhets, Kamchatka, E. Russia	AB047207
8	*He. tuberculosus*	Is. Cheju-do, S. Korea	AB047208
9*	*He. tuberculosus*	Shirasaka, Fukushima, Honshu, C. Japan	D50353
10*#	*Homoeocarabus maeander*	Sarobetsu, Hokkaido, N. Japan	D50354

* Taken from Su *et al.* (1996).
\# As an outgroup for constructing the trees (see Fig. 1).

Pierre and Miquelon, etc. It should be worth noting that most of the Crenolimbi species prefer such biotopes as meadows and/or lowland moors. This trend seems to be more evident in the subgenus *Homoeocarabus*.

In the present study, we have sequenced the mitochondrial ND5 (NADH dehydrogenase subunit 5) gene sequences of all the species in this division from various localities, and constructed the phylogenetic trees using the UPGMA- and the NJ method.

Hereafter we conventionally use the subgeneric names in place of the routinely used generic name, *Carabus*. For instance, "*Hemicarabus*" means "*Carabus* (*Hemicarabus*)".

Materials and Methods

The specimens used in this study are listed in Table 1. The methods employed here are the same as described previously (*e.g.*, Su *et al.*, 1998).

Results and Discussion

On both the NJ- and the UPGMA trees, *Homoeocarabus maeander* is sharply separated from four species of *Hemicarabus*. Diversification of these two subgenera may be estimated to have taken place about 29 million years ago as calculated according to Su *et al.* (1998).

Within the subgenus *Hemicarabus*, *H. tuberculosus* from various localities of Japan, Korea and Primorskij, *H. macleayi* from Kamchatka, and *H. nitens* from Germany are very close in their ND5 gene sequences. This suggests that the common ancestor of these species was distributed throughout the northern part of the Eurasian Continent, consisting of nearly a single reproductive population until recently. Then, speciation occurred in the respective distributional ranges presumably by geographic isolation, followed by genetic changes affecting morphology. Alternatively, it is possible that the ancestor had inhabited certain restricted region of the continent, rapidly

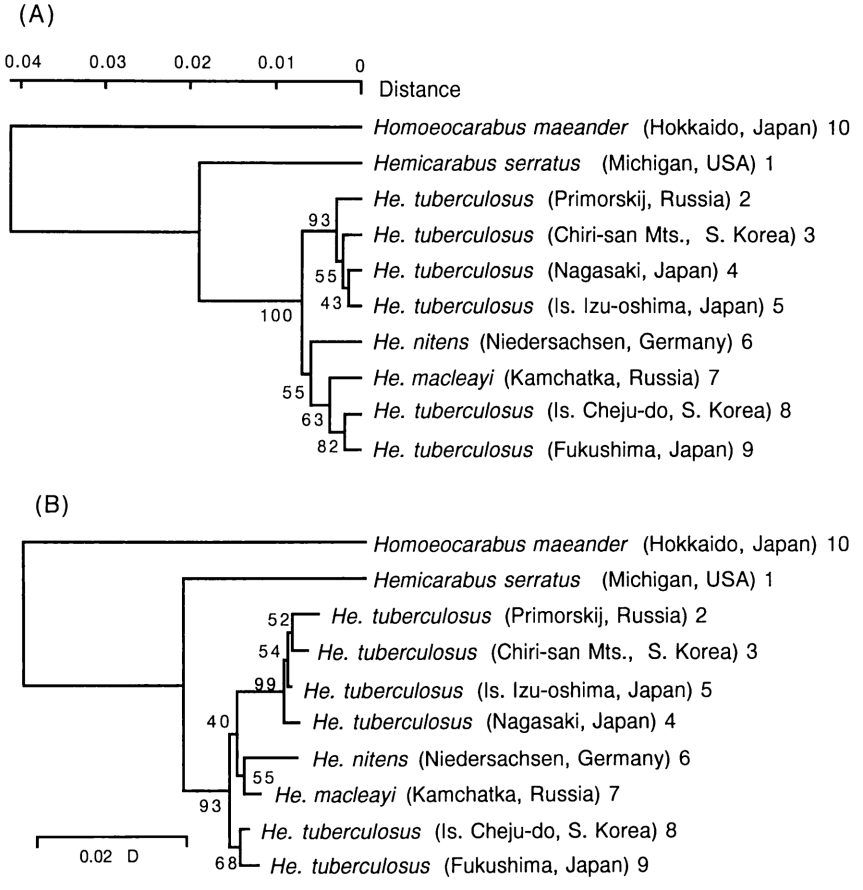

Fig. 1. Phylogenetic trees of the mitochondrial ND5 gene (1,069 bp upstream from 3 terminal stop codon) from the Crenolimbi-species. The UPGMA tree (A) and the NJ tree (B). The bootstrap confidence level (%) (based on 500 resamplings) is shown at each branching point. Distance (D) denotes KIMURA's two-parameter evolutionary distance. For details, see SU *et al.* (1998).

propagated its distributional range recently, and became differentiated into the respective species. It should be worth noting that the three species can be clearly separable morphologically, suggesting occurrence of a rapid morphological differentiation characteristic to each species. As to the immigration of *H. tuberculosus* into the Japanese Islands, see TOMINAGA *et al.* (2000).

Hemicarabus serratus from North America (Michigan) separated fairly long ago (about 14 million years ago) from other Eurasian *Hemicarabus* species. Presumably, the common ancestor of all the *Hemicarabus* species was distributed throughout the Eurasian Continent to North America when they were connected by land. Upon establishment of the Bering Straits, the Eurasian and the North American populations evolved to different directions. As the result, *H. serratus* emerged in North America.

In summary, the subgenus *Homoeocarabus* can be sharply separated from the subgenus *Hemicarabus*. All the *Hemicarabus* species in the Eurasian Continent are phylogenetically very close, while *H. serratus* from North America is rather remote from the Eurasian species.

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We thank the following colleagues who have collaborated with us by supplying the specimens for DNA analysis: Mr. Y. Aoki (Nagasaki, Japan), Dr. R. L. Davidson (Carnegie Museum of Natural History, Pittsburgh, USA), Mr. R. B. Kuranishi (Natural History Museum and Institute, Chiba, Japan), Dr. G. Sh. Lafer (Institute of Biology and Pedology, Vladivostok, Russia), Dr. M. Ôhara (The Hokkaido University Museum, Hokkaido University, Sapporo, Japan) and Mr. K. Staven (Broistedt, Germany). Thanks are also due to Ms. Hideko Tanaka for her skillful technical assistance.

要　　約

蘇　智慧・井村有希・冨永　修・大澤省三：ミトコンドリアND5遺伝子の塩基配列からみたセアカオサムシ群内の系統．—— セアカオサムシ群Crenolimbiは，セアカオサムシ亜属*Hemicarabus*とセスジアカガネオサムシ亜属*Homoeocarabus*の2亜属のみからなる，広義のオサムシ属のなかで最小の群だが，その分布は広く，全北区にわたる．本論文では，本群に属する5種すべてを用いて，ミトコンドリアND5遺伝子の塩基配列を決定し，群内における系統関係を再検討した．その結果，*Homoeocarabus*は*Hemicarabus*から明確に区別されること，*Hemicarabus*内においては，ユーラシアに分布する3種はたがいに近縁で，北米の*serratus*のみ類縁が遠いことなどが判明した．

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Damaster blaptoides (Coleoptera, Carabidae) from Brat Chirpoyev Island of the Kurils, Russia

Zhi-Hui SU[1], Masahiro ÔHARA[2], Yûki IMURA[3] and Syozo OSAWA[1]

1) JT Biohistory Research Hall, 1–1 Murasaki-Cho,
Takatsuki, Osaka, 569–1125 Japan
2) The Hokkaido University Museum, Sapporo, 060–0810 Japan
3) Department of Gynecology, Tôkyû General Hospital, Kita-senzoku,
1–45–6, Ôta-ku, Tokyo, 145–0062 Japan

Damaster blaptoides has been known as a peculiarly shaped ground beetle widely distributed in Japan and the southwestern part of the Kurils. The Hokkaido population is discriminated from several other forms distributed in Honshu, Shikoku and Kyushu as subsp. *rugipennis*, although the specimens from northernmost Honshu belong to the same lineage as the Hokkaido population on a phylogenetic tree of the mitochondrial NADH dehydrogenase subunit 5 (ND5) gene (SU *et al.*, 1998; KIM *et al.*, 1999).

During the expedition performed under the International Kuril Islands Project in 1997, two specimens identified with *Damaster blaptoides* were captured at the Cape Garovnikova of Brat Chirpoyev Island (the central part of the Kuril Islands, Russia; 46°28.405′N / 150°48.160′E), about 500 km off the eastern edge of Hokkaido. One of the specimens (female, 37.5 mm in length including mandibles, 20–VIII–1997, Yasuhiro KUWAHARA leg.) was analysed for the ND5 gene sequence. The 1,069 bp sequence examined was identical with those from Nemuro, Hokkaido. Also, only 1, 1 and 2 base changes were detected between the Kuril specimen and the specimens from Samani, Taiki and Hakodate in Hokkaido (0.094%, 0.094% and 0.19% difference), while the differences of the Kuril specimen from other parts of Hokkaido such as Niseko, Oshamanbe and Abashiri were 0.56%, 0.56% and 0.66% (6, 6 and 7 base changes), respectively. Incidentally, the average sequence difference between the eastern and the western lineage of the Japanese *Damaster* is 4.2% (45 base changes) corresponding to their divergence about 15 million years ago (SU *et al.*, 1998). Thus, it may be assumed that a population that had

inhabited around the west coast of Hokkaido rapidly expanded its distribution to east along the coast, followed by a fairly recent immigration to the Kurils, having reached Brat Chirpoyev Island presumably through the past land bridges. This finding is of interest from the viewpoint of biogeographical relationship between Hokkaido and the Kurils.

The head and prothorax of this specimen are slightly robuster and the elytral surface is a little more roughly sculptured as compared with those of the Hokkaido specimens, though some of the latter reveal a tendency similar to the specimen from the Kurils. Otherwise no clear morphological differences were found. The decision as to whether the Kuril population is differentiated at a subspecies level or not should be waited until more specimens are examined.

In closing this brief report, we wish to thank Dr. Yasuhiro KUWAHARA (Hokkaido Abashiri Fisheries Experimental Station) for supplying us invaluable specimens examined here. This work is supported in part by the Japan Society for the Promotion of Science, Grant No. BSAR–401, Kunio AMAOKA, principal investigator, and by the International Program Division and the Biological Science Directorate (Biotic Survey and Inventories Program) of the U.S. National Foundation, Grant No. DEB–9505031, Theodore W. PIETSCH, principal investigator.

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Elytra, *Tokyo*, **28** (2): 235–239, November 15, 2000

Phylogenetic Relationships in the Division Arciferi (Coleoptera, Carabidae)

Yûki IMURA

Department of Gynecology, Tôkyû General Hospital, Kita-senzoku, 1–45–6, Ôta-ku, Tokyo, 145–0062 Japan,

Zhi-Hui SU and Syozo OSAWA

JT Biohistory Research Hall, 1–1 Murasaki-Cho, Takatsuki, Osaka, 569–1125 Japan

Abstract Four subgenera (*Platycarabus*, *Chaetocarabus*, *Heterocarabus* and *Hygrocarabus*) which construct the division Arciferi (IMURA, 1996) of the genus *Carabus* (s. lat.) are examined for the mitochondrial ND5 gene sequences to clarify their phylogenetic relationships. The constructed trees suggest that *Hygrocarabus* may be excluded from the Arciferi.

Introduction

The Arciferi was proposed by IMURA (1996, p. 7) as one of the five subdivisions in the division Multistriati of the genus *Carabus* (s. lat.). It is composed of four subgenera, *Platycarabus*, *Chaetocarabus*, *Heterocarabus* and *Hygrocarabus*, and is morphologically well-defined by bearing a characteristically shaped ligulum, named "arculus", at the base of the endophallus. According to the results drawn by IMURA *et al.* (1998), it has become reasonable to raise this subdivision to a distinct division of the genus *Carabus* (s. lat.).

In the present study, we have determined the ND5 (NADH dehydrogenase subunit 5) gene sequences of five species belonging to the Arciferi which cover the representatives of the above mentioned four subgenera, and phylogenetic relationships among them are discussed.

Materials and Methods

The specimens used in this study for determination of the ND5 gene sequences are listed in Table 1. The methods of DNA sequencing and the construction of the phylogenetic trees are the same as described previously (*e.g.*, SU *et al.*, 1998).

Table 1. List of the specimens used in this study.

Locality number	Scientific name by morphology	Locality	DDBJ/EMBL/GenBank Accession No.
1	*Hygrocarabus nodulosus*	Gunsbach, Haut-Rhin, E. France	AB047195
2	*Heterocarabus marietti*	W. Giresun, NE. Turkey	AB047196
3-1	*Chaetocarabus intricatus*	Andrate, Torino, Piemonte, NW. Italy	AB047197
3-2	*Ch. intricatus*	Cúneo, Piemonte, NW. Italy	AB047197
4*	*Ch. intricatus*	Bourgogne, CE. France	D86208
5	*Platycarabus depressus*	Val Sesia, Varallo, Piemonte, NW. Italy	AB047198
6	*P. depressus*	Andrate, Torino, Piemonte, NW. Italy	AB047199
7-1	*P. irregularis*	Lamspringe, Hildesheim, Niedersachsen, N. Germany	AB047200
7-2	*P. irregularis*	Göttingen, Niedersachsen, N. Germany	AB047200
8	*P. irregularis*	Jura, E. France	AB047201
9*	*Limnocarabus clathratus*	Dalums Moor, Lingen, Niedersachsen, N. Germany	AB031507
10*	*L. maacki aquatilis*	Nakasato, Aomori, Honshu, N. Japan	D50358
11*	*Euleptocarabus porrecticollis*	Nakatsugawa, Gifu, Honshu, C. Japan	AB022564
12*#	*Cychrus morawitzi*	Daisetsu-zan Mts., Hokkaido, N. Japan	D50347

The sequences of 3-1 and 3-2, and those of 7-1 and 7-2 are the same, respectively.
* Taken from previous studies (SU *et al.*, 1996a; 1996b and KIM *et al.*, 1999a; 1999b).
# As an outgroup for constructing the trees (see Fig. 1).

Results and Discussion

In a previous paper, we showed that *Platycarabus irregularis**)* and *Chaetocarabus intricatus* are clustered together with a rather deep branching point on the ND5 phylogenetic tree of the representative Carabina species in the world (IMURA *et al.*, 1998, p. 21).

As shown in Fig. 1, four species, *Chaetocarabus intricatus*, *Heterocarabus marietti*, *Platycarabus depressus* and *P. irregularis*, are clustered together on both the NJ- and UPGMA trees, while *Hygrocarabus nodulosus* is not tightly related to the other Arciferi species. Its emergence may be traced back to the time of the radiation of the Carabina (SU *et al.*, 1996a; IMURA *et al.*, 1998). Since there is no other species that are clustered with *Hygrocarabus*, it should be excluded from the division Arciferi and is considered to form an independent position in the subtribe Carabina. In fact, emergence of *Hygrocarabus* is as early as that of *Limnocarabus* and *Euleptocarabus* which are the members of the division Lepidospinulati (IMURA *et al.*, 1998). This seems to be consistent with the behavior and the larval morphology of this unique carabid; it is well-known that *Hygrocarabus* leads a semi-aquatic habit throughout its life, and the larva bears quadricuspidate epistoma, while the epistoma of the other three are rostrilabral (CASALE *et al.*, 1982).

CASALE *et al.* (1998) reported a phylogenetic tree of *Platycarabus* and *Chaetocarabus* based on the mitochondrial ND1 gene sequences (336 bp). Unfortunately, the molecular tree does not contain either *Hygrocarabus* or *Heterocarabus*, but on their tree based on the morphological data, *Hygrocarabus* was positioned outside other *Platycarabus* species.

* For convenience, we use hereafter the subgeneric name in place of routinely used generic name, *Carabus*, such as "*Platycarabus irregularis* = *Carabus* (*Platycarabus*) *irregularis*".

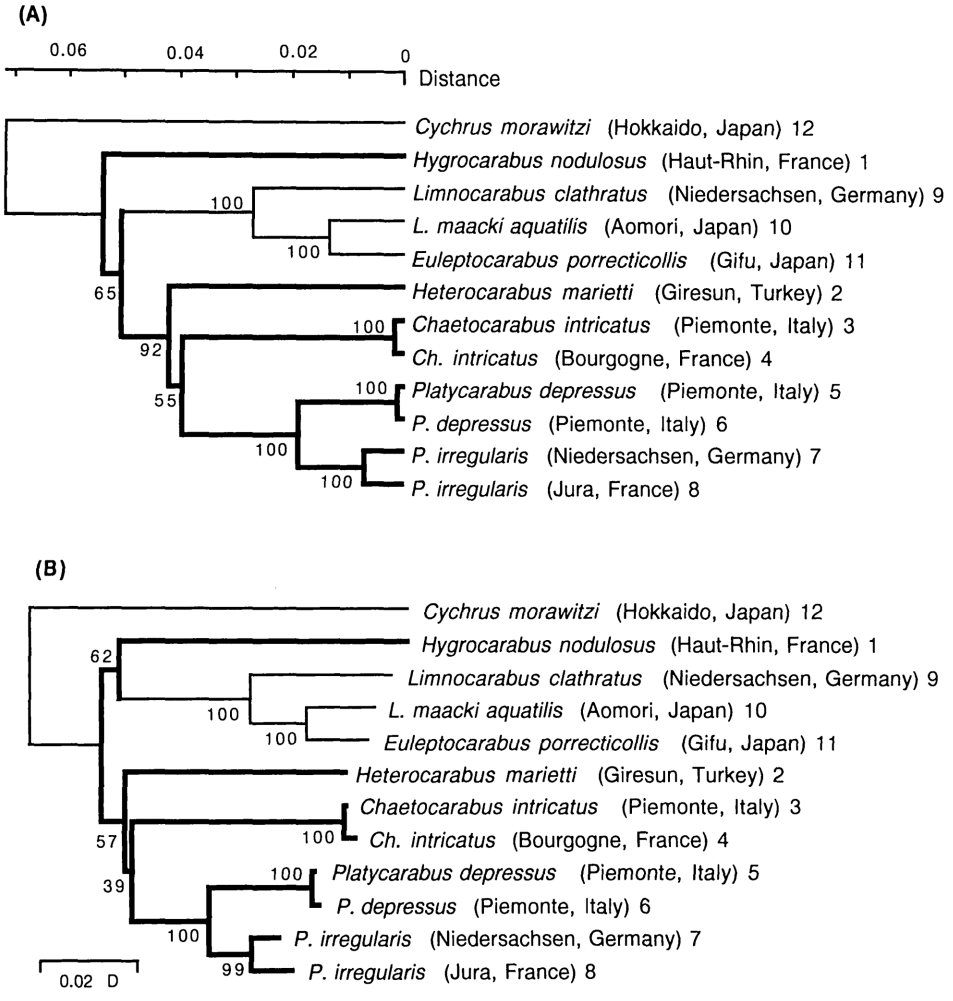

Fig. 1. Phylogenetic trees of the mitochondrial ND5 gene (1,069 bp upstream from 3 terminal stop codon) constructed from the species used in this study. The UPGMA tree (A) and the NJ tree (B). The bootstrap confidence level (%) based on 500 resamplings is shown at each branching point. Distance (D) denotes KIMURA's two-parameter distance. For details, see SU *et al.* (1998).

Chaetocarabus, *Heterocarabus* and *Platycarabus* are well separated on the trees in accordance with the morphological classification. The separation of these three subgenera appears to have taken place within a short time. The sequences of *Chaetocarabus intricatus* specimens from Northeast Italy and France are almost the same. *Platycarabus depressus* and *P. irregularis* are separated well. Two *P. depressus* specimens from Northeast Italy carry almost the same ND5 gene sequences, and *P. irregularis* from North Germany is reasonably close to the same species from France.

In summary, morphological classification in the division Arciferi is consistent with the phylogenetic analyses using the ND5 gene sequences, except that *Hygrocarabus* may be excluded from this division.

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We thank the following colleagues who kindly submitted invaluable specimens to us for study: Dr. I. A. BELOUSOV (St. Peterburg, Russia), Prof. P. CAVAZZUTI (Pagno, Italy), Mr. B. LASSALLE (Boissy les Perche, France), Mr. P. RATTI (Biella, Italy), Mr. H. SCHÜTZE (Gleichen, Germany) and Mr. K. STAVEN (Broistedt, Germany).

要　約

井村有希・蘇　智慧・大澤省三：ヒラタオサムシ群内の系統関係．—— ヒラタオサムシ群Arciferiはヒラタオサムシ亜属*Platycarabus*，キバナガヒラタオサムシ亜属*Chaetocarabus*，ヒメツヤヒラタオサムシ亜属*Heterocarabus*，ミズベオサムシ亜属*Hygrocarabus*の4亜属からなるとされ，♂交尾器内袋基部に弓状片arculusとよばれる器官を共有することにより，他の群から形態学的に識別されてきた．これら各亜属から1~2種ずつを選び，ミトコンドリアND5遺伝子の塩基配列を決定して，群内の系統関係を再検討したところ，ミズベオサムシ*Hygrocarabus*のみは他の3亜属から類縁が遠く，オサムシ亜族内において独立した地位を与えるべきものであろうと思われた．

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Elytra, Tokyo, **28** (2): 239–240, November 15, 2000

A New *Cychrus* (Coleoptera, Carabidae) from Zayü in Southeast Tibet

Yûki Imura

Department of Gynecology, Tôkyû General Hospital, Kita-senzoku, 1–45–6, Ôta-ku, Tokyo, 145–0062 Japan

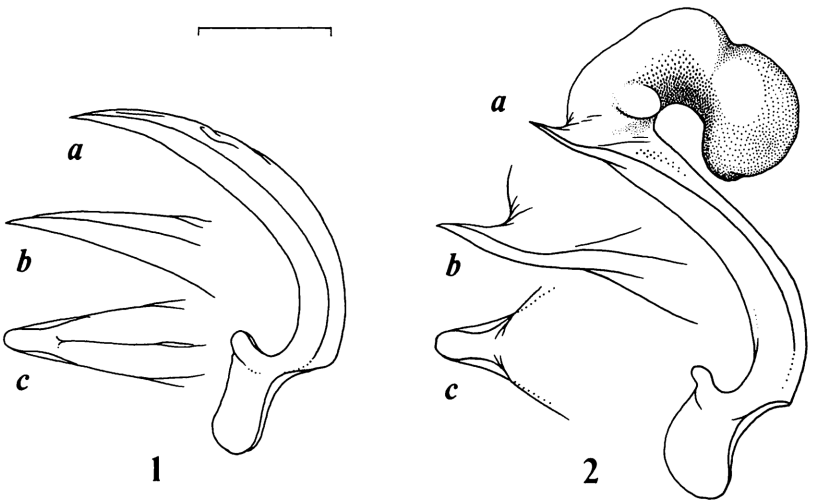
Our knowledge is still very poor on the cychrine fauna of Tibet. Two species of the genus *Cychropsis* have been described from the southeastern part of that region (cf. Deuve, 1992; Imura, 1999), but nothing has been reported about the genus *Cychrus*.* Through the courtesy of Mr. and Mrs. Roman Businský (Prague), I was given an opportunity to examine a short series of cychrine specimens collected from Zayü near the southeastern periphery of Tibet (Xizang). Though resembling *Cychrus kralianus*, the Zayü race is peculiar in bearing characteristically shaped aedeagal apex. It is therefore introduced to science as follows.

Cychrus businskyianus Imura, sp. nov.

Length: 13.2–14.3 mm (including mandibles). Entirely black and not so strongly polished. Closely similar to *Cy. kralianus* Deuve (1996, p. 87, figs. 8 & 16) described from the Hengduan Shan Mountains in northwestern Yunnan, but differs from it in the following respects: 1) size a little smaller; 2) frontal margin of labrum more strongly arcuate; 3) vertex more remarkably rugoso-punctate; 4) postero-lateral margins of pronotum less strongly reflexed above; 5) primary callosities of elytra wider. Male genitalia as shown in Fig. 2, with the apical portion of aedeagus much more elongate, less strongly arcuate, obviously sinuate on the ventral margin in lateral view and more obtuse at apex in dorsal view; endophallus rather simple, only bearing a pair of small lateral lobes at the basal portion.

Type series. Holotype: ♂, about 20 km distant to the northeast from Zayü [察隅], 3,800–4,000 m in altitude, on the eastern side of the Riv. Zayü Qu, in Zayü Xian of Nyingchi

* Another new species of this genus is described from Southeast Tibet on page 222 of this volume.



Figs. 1–2. Male genitalia of *Cychrus* spp. —— 1, *Cychrus kralianus* (holotype) from "YUNNAN, 28°06′N 98°52′E, 3,700 m, Hengduan mts.-part MEILI"; 2, *C. businskyianus* nov. (holotype) from Zayü, SE. Tibet; a, right lateral view; b, apical part of aedeagus in the same view; c, ditto in dorsal view. Scale: 1 mm for a, 0.5 mm for b & c.

Diqu [林芝地区], Southeast Tibet (Xizang), 1–VII–1999, in coll. Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes (including allotype): 3♂♂, 2♀♀ & 4 exs., same data as for the holotype, in colls. Y. IMURA, K. MIZUSAWA and R. BUSINSKÝ.

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Elytra, *Tokyo*, **28** (2): 241–245, November 15, 2000

An Additional New Species of the Genus *Kusumia* (Coleoptera, Trechinae)

Hisashi ASHIDA

3–29–18, Kôshienguchi, Nishinomiya, Hyôgo, 663–8113 Japan

Abstract A new species belonging to the trechine genus *Kusumia* is described from the western part of Wakayama Prefecture on the Kii Peninsula, Central Japan, under the name of *Kusumia kitayamai*. Though similar to *K. latior* of the *tanakai* group in external characters, it is easily distinguished from the latter by bearing a fringe of hairs at the sides of the pronotum. It is also evidently different in the structure of the male genital organ, which has a broad aedeagal apical lobe and a well differentiated copulatory piece in the inner sac.

The trechine genus *Kusumia* is endemic to the Kii Peninsula, Central Japan, and consists of relatively large, hairy, and anophthalmic species. By the 1960's, three species and one subspecies of *Kusumia* were described by UÉNO, though no additional species were properly recorded for a long time after that. In his recent revision of the genus (UÉNO, 1999), eight new species and one new subspecies were described and the distributional range of the genus became fairly clear. In the early summer of 1999, a colleague of the author, Mr. Kenji KITAYAMA, obtained a pair of *Kusumia* specimens from the upper hypogean habitat on Wasa-yama Hill near Gobô City of Wakayama Prefecture, which was rather remote from the distributional area of *Kusumia* theretofore known. As the two individuals were somewhat teneral, Mr. KITAYAMA and the author made an attempt to obtain additional specimens, but they were able to add only a single male. After that, several coleopterists made searches around there, but in vain. Although the specimens available are not yet sufficient, I am going to describe this distinct new species in the present paper under the name of *K. kitayamai*.

The abbreviations used herein are as follows: HW – greatest width of head; PW – greatest width of pronotum; PL – length of pronotum, measured along the midline; PA – width of pronotal apex; PB – width of pronotal base; EW – greatest width of elytra; EL – greatest length of elytra; M – arithmetic mean.

I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his kind guidance and revising the manuscript. Hearty thanks are also due to Messrs. Kenji KITAYAMA, Shôtarô TANAKA and Takumi SAITÔ for their kind support throughout this study.

Kusumia kitayamai ASHIDA, sp. nov.

[Japanese name: Kawabe-mekura-chibigomimushi]

(Figs. 1–4)

Length: 4.95–5.15 mm (from apical margin of clypeus to apices of elytra).

Similar in external characters to *K. latior* S. UÉNO (1999, pp. 289, 306, figs. 16–17, 20) of the group of *K. tanakai*, with wide pronotum and elytra, but easily distinguished from the latter species by the presence of a fringe of hairs at the sides of pronotum. Obviously different from *K. latior* in the structure of male genital organ, which has a broader aedeagal apical lobe and a larger copulatory piece in the inner sac.

Color reddish brown with yellowish brown appendages. Head as in *K. latior*, though the genae are a little more convex and the basal part between the frontal furrows is hairier; antenna fairly slender. Pronotum similar to that of *K. latior*, but remarkably different from the latter by bearing about a dozen hairs in apical two-thirds of each side and one or two at basal part, widest at five-sevenths from base, a little wider on an average than in *K. latior*; sides strongly arcuate in front, moderately sinuate at about one-fourth from base, and subparallel or slightly divergent at base; hind angles almost rectangular; postangular setae present; disc with fairly long hairs. PW/HW 1.45–1.47 (M 1.46), PW/PL 0.99–1.04 (M 1.02), PW/PA 1.47–1.51 (M 1.49),

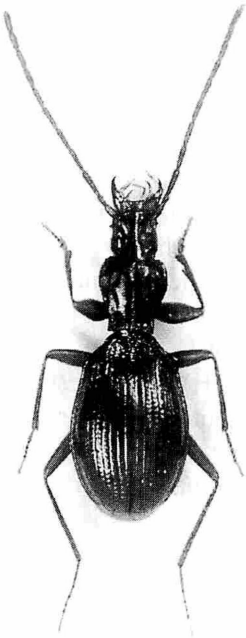
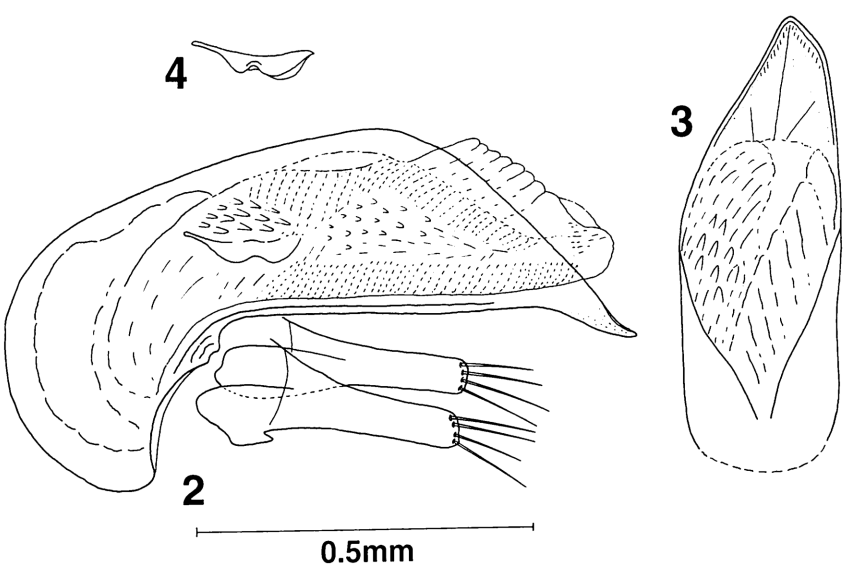


Fig. 1. *Kusumia kitayamai* ASHIDA, sp. nov., ♂, from Wasa-yama Hill; dorsal view.

PW/PB 1.48–1.53 (M 1.51), PB/PA 0.96–1.00 (M 0.99). Elytra similar to those of *K. latior*, but somewhat larger and ampler, widest at about middle, more gradually narrowed posteriad than anteriad; EW/PW 1.70–1.78 (M 1.73), EL/PL 2.59–2.72 (M 2.67), EL/EW 1.49–1.54 (M 1.52); shoulders more prominent and subtuberculate; prehumeral borders oblique and fringed with five to seven hairs; sides as in *K. latior*; stria 3 on each elytron without dorsal pore; preapical pore ordinary; stria 5 with two setiferous dorsal pores at 1/9–1/7 and about 2/3 from base, respectively. Ventral surface as in *K. latior*. Legs as in *K. latior*, though somewhat stouter.

Male genital organ basically similar to that of *K. latior*, but obviously different in the shape of aedeagal apical lobe and copulatory piece in the inner sac. Aedeagus about one-fourth as long as elytra, moderately sclerotized, robuster and shorter than in *K. latior*; viewed laterally, aedeagus moderately curved ventrad at the basal part, which is ampler than in *K. latior*, gradually narrowed in apical third, produced ventro-apically, and slightly reflexed at the tip; ventral margin slightly convex at middle in profile; sagittal aileron absent; viewed dorsally, apical lobe obviously broader and shorter than in *K. latior*, with a subtriangular tip. Inner sac wholly covered with minute scales and teeth-patches, and armed with a copulatory piece; teeth-patches as in *K. latior* except for the teeth at the left side which are poorly sclerotized and not fused completely; copulatory piece heavily sclerotized, lying at middle, two-ninths as long as aedeagus, and scoop-shaped with the left margin sinuate. Styles as in *K. latior*, left style slightly shorter than right one, each bearing four setae at apex.

Type series. Holotype: ♂, 15–VI–1999, K. KITAYAMA leg. Paratypes: 1 ♀,



Figs. 2–4. *Kusumia kitayamai* ASHIDA, sp. nov., from Wasa-yama Hill; male genitalia, left lateral view (2), apical part of aedeagus, dorsal view (3), and separated copulatory piece (4).

15–VI–1999, K. KITAYAMA leg.; 1♂, 20–VI–1999, K. KITAYAMA leg. The holotype is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Type locality. Matsuse (50 m alt.), northwestern slope of Wasa-yama Hill (488.5 m in height), Kawabe-chô, Wakayama Prefecture, Central Japan.

Notes. Although the members of the genus *Kusumia* are distributed in the southern half of the Kii Peninsula, there was a large blank area in its northwestern part. This is the first record of *Kusumia* from this area and is also the westernmost record.

As mentioned above, *K. kitayamai* shows a resemblance to *K. latior* of the *tanakai* group in external characters. It is reasonable because Matsuse, the type locality of *K. kitayamai*, is in the same drainage area of the Hidaka-gawa River as the Hirano-dani Valley, the type locality of *K. latior*. However, *K. kitayamai* has a fringe of hairs at apical two-thirds of the pronotal sides, which is a unique character in the members of *Kusumia*. In contrast to the similarity to *K. latior* in external characters, the male genital organ of the present species is remarkably different in conformation from those of all the other species. The aedeagus is basically similar to that of *K. latior*, but different from the latter in its broad apical lobe and the shape of the copulatory piece in its inner sac. The members of the *tanakai* group have two sclerotized copulatory pieces in the inner sac, while *K. kitayamai* has one scoop-shaped copulatory piece, which seemingly resembles that of the species of the *elongata* group. Although *K. kitayamai* is considered to have been derived from a common ancestor with *K. latior*, it might be an isolated species judging from these unique characters.

Matsuse is situated on the left side of the Hidaka-gawa River at 50 m above sea-level. The locality is about 30 km west by south of the Hirano-dani Valley, the type locality of *K. latior*, and is about 35 km northwest of the northernmost known locality of *K. tanakai*. Three type specimens were dug out from a talus in a gully flowing into the Hidaka-gawa River and shaded mostly with evergreen broadleaved trees, at a depth of about 50 cm or more.

On the southwestern hillside of Wasa-yama Hill, there is the artificially modified sandstone cave called Gonji-ana, the type locality of *Stygiotrechus nishikawai* S. UÉNO (1980). Although the distance between Matsuse and Gonji-ana is only 1.5 km, *Kusumia* has not been found so far in that cave.

要　　約

芦田　久：キイメクラチビゴミムシ属の1新種. —— 和歌山県西部より，*Kusumia* 属の1新種，カワベメクラチビゴミムシ *Kusumia kitayamai* sp. nov.を記載した．本種はタナカメクラチビゴミムシ群のキイリュウジンメクラチビゴミムシ *K. latior* S. UÉNO に体の外形が近似するが，前胸背板の側縁に細毛列を有することにより *Kusumia* 属の他のすべての種から容易に識別することができる．また，雄交尾器の形態も基本的に *K. latior* に類似するが，幅広く短い中央片先端部や，一見クマノメクラチビゴミムシ群のそれに似た交尾片を内蔵することにより区別できる．

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Elytra, Tokyo, **28** (2): 245–246, November 15, 2000

A Record of *Wittmercantharis curtata* (Coleoptera, Cantharidae) from Hokkaido, Japan

Yûichi OKUSHIMA[1] **and Masataka SATÔ**[2]

[1] Kurashiki Museum of Natural History, Chûô 2–6–1, Kurashiki-shi, Okayama Pref., 710–0046 Japan

[2] Laboratory of Nature Conservation, Graduate School of Nagoya Women's University, Mizuho-ku, Nagoya, 467–8610 Japan

Wittmercantharis curtata (KIESENWETTER, 1874) has been collected only in Honshu for a long time since it was described from Osaka, Honshu. Recently, it was recorded for the first time from Shikoku other than Honshu (OKUSHIMA, 1997).

We can record now some specimens of this species from Hokkaido. Their collecting data are as given below. We thank Dr. Shun-Ichi UÉNO (Tokyo) and Mr. Tatsumi MIYATA (Sapporo) for their kind support in preparing the present report.

Wittmercantharis curtata (KIESENWETTER)

Cantharis curtata KIESENWETTER, 1874, Berl. ent. Z., **18**: 273.

Wittmercantharis curtata: M. SATÔ, 1986, Trans. Shikoku ent. Soc., **17**: 259. — OKUSHIMA, 1997, Elytra,

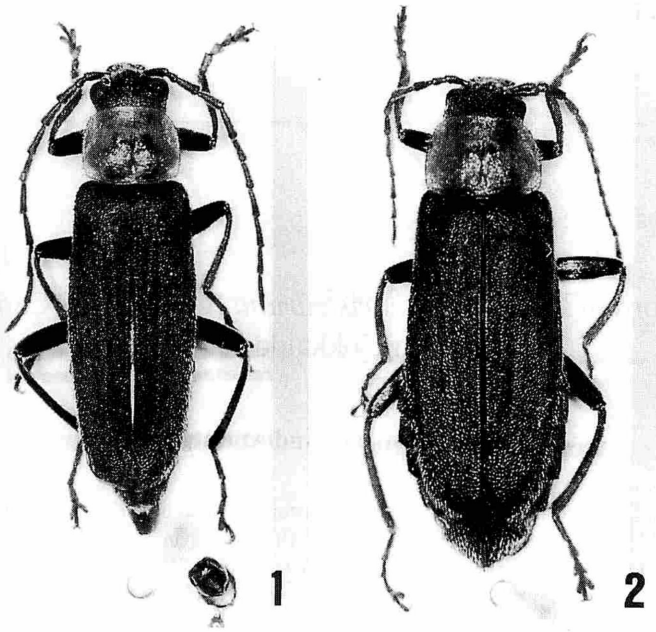
Tokyo, **25**: 332.

Specimens examined. Oshima Pen., Hokkaido, Japan: 1♀, Toyono, alt. 5–100 m, Oshamanbe-chô, 11–VI–1999, no collector's name; 1♂, 1♀, Ôshin, alt. 5–100 m, Yakumo-chô, 4–VI–1999, no collector's name; 1♀, Ukishima-kôen, Aichi, Kitahiyama-chô, 8–VI–1991, T. MIYATA leg.; 2♀♀, Ukishima-kôen, Aichi, Kitahiyama-chô, 12–VI–1993, T. MIYATA leg.

Depository of the specimens examined. The specimens recorded here are preserved in the collection of the Kurashiki Museum of Natural History.

Distribution. Japan (Hokkaido – new record, Honshu, Shikoku).

Notes. Most localities recorded above are confined to narrow areas of the Oshima Peninsula, southwestern Hokkaido. Occurrence of this species seems to be limited in the periphery of grasslands with marshes.



Figs. 1–2. *Wittmercantharis curtata* (KIESENWETTER), from Yakumo-chô, Hokkaido; 1, male; 2, female.

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OKUSHIMA, Y., 1997. A record of *Wittmercantharis curtata* (Coleoptera, Cantharidae) from Shikoku, Japan. *Elytra, Tokyo*, **25**: 331–332.

SATÔ, M., 1986. New Cantharoidea from Japan, II (Coleoptera). *Trans. Shikoku ent. Soc.*, **17**: 255–261.

Elytra, *Tokyo*, **28** (2): 247–264, November 15, 2000

Notes on *Guizhaphaenops* (Coleoptera, Trechinae), with Descriptions of Two New Species

Shun-Ichi UÉNO

Department of Zoology, National Science Museum (Nat. Hist.),
3–23–1 Hyakunin-chô, Shinjuku, Tokyo, 169–0073 Japan

Abstract The trechine genus *Guizhaphaenops* is reviewed on the basis of topotypical specimens of the type species, *G. zorzini* VIGNA TAGLIANTI, and two new congeners from limestone caves in northwestern Guizhou, South China, the latter of which are named *G. striatus* and *G. giganteus*. Exceptional variability of the component species is pointed out, and the original description is corrected to some extent.

The genus *Guizhaphaenops* was erected by VIGNA TAGLIANTI (1997, p. 34) for a semi-aphaenopsoid trechine beetle discovered in a limestone cave lying at the northwestern part of Guizhou, South China. Unfortunately, a female specimen in rather a worn condition was available for the original author at the time of description, and though his account was very careful and thorough, it still posed a problem concerning the systematic relationship of the type species to other aphaenopsoid and semi-aphaenopsoid trechine beetles from Chinese caves. He (p. 40) considered that "*Guizhaphaenops zorzini* would rather be a more specialized taxon of the same line of (and perhaps conge[ne]ric with) *Sinotroglodytes bedosae*," but the latter species (DEUVE, 1996, p. 44, figs. 2, 5, 8) did not seem to me to be so close to the former even though sharing many character states with it. As was aptly commented by the original author himself (p. 41), it was apparent that a direct comparative study between the males of these taxa would be needed for clarifying the problem.

It was, however, not easy to obtain additional material of *G. zorzini*. In the first place, it was necessary to find out the exact location of the type cave, Anjia Yan. The cave was briefly described by ZORZIN and MELOTTI (1995, p. 24), but its exact location was not given in that account. Since the cave was little known to Chinese speleologists, I had to rely solely on the brief notes given by VIGNA TAGLIANTI (1997, p. 39): "The type locality, Anjia Yan Cave, whose name is from a nearby little village in the Shuicheng County (Guizhou, China), lies in the locality Show Ga, about 50 km northwestwards from Shuicheng, 2160 m above sea level." However, there was no village called "Show Ga" to the northwest of Shuicheng, and to make the matter worse, the spelling "show" did not exist in Chinese. After making inquiries for many months, my friend, WANG Fuxing, finally realized that "Show Ga" must be "Shega" to the *south*-west of Shuicheng.

Thus, we made a trip to the Shuicheng area early in the autumn of 1998 and succeeded in obtaining a series of topotypical specimens, including males, of *G. zorzini*. We were also able to find out the habitats of two other species of semi-aphaenopsoid trechines belonging to the same genus beyond doubt. To our utmost surprise, two of the three species thus obtained showed so incredibly wide range of individual variation, above all in the size and body form, that the two extremes looked like different species. However, the gap between them is perfectly bridged by gradations and besides, the male genitalia are identical with each other, which clearly shows that only one species of *Guizhaphaenops* occurs at one locality.

In the present paper, supplementary accounts will be given to the genus *Guizhaphaenops* and its type species, *G. zorzini*, and two new species of the same genus will be described under the names *G. striatus* and *G. giganteus*. The abbreviations used herein are the same as those explained in previous papers of mine.

Before going into further details, I wish to express my hearty thanks to Drs. Yoshiaki NISHIKAWA, WANG Fuxing and Toshio KISHIMOTO for their collaboration in field works, and to Mr. FAN Ting and the authorities of Liupanshui Shi for their kind arrangement and support of our investigations of the cave fauna. My deep appreciation is also due to Professor Augusto VIGNA TAGLIANTI, who helped my investigation by obtaining a copy of the map of Anjia Yan Cave surveyed by the Italian expedition "China Caves '94."

Genus ***Guizhaphaenops*** VIGNA TAGLIANTI, 1997

Guizhaphaenops VIGNA TAGLIANTI, 1997, Int. J. Speleol., **25** [for 1996], p. 34; type species: *Guizhaphaenops zorzini* VIGNA TAGLIANTI, 1997.

This genus was so carefully described by the original author that any full redescription does not seem necessary. However, because of incredibly high variability shown by its members, both interspecific and infraspecific, some amendments of the original account are needed for fulfilling taxonomic requirement. It is also needed to introduce male characters into science, which are indispensable for phylogenetic analysis. They are enumerated below, and the features of particular importance are indicated by bold-faced numerals.

1) Medium- to large-sized trechines of semi-aphaenopsoid facies with long appendages, often attaining to a gigantic size.

2) Body mostly glabrous on dorsum, though always covered with minute pubescence in the lateral areas of elytra, particularly at the humeral parts.

3) Head elongate, usually somewhat shorter than prothorax though exceptionally a little longer than the latter.

4) Posterior pair of supraorbital setae either present (*G. giganteus*) or absent (*G. zorzini* and *G. striatus*).

5) Submentum provided with a transverse row of 8–10 (usually 9) setae.

6) Maxillary palpus usually with half a dozen short hairs at the apical part of

penultimate segment (always more than three).

7) Antennae variable in length, usually longer in ♂ than in ♀, rarely reaching the apices of elytra in the former and rarely reaching only the middle of elytra in the latter.

8) Pronotum individually variable in configuration, though usually longer than wide and with regularly arcuate sides.

9) Posterior pair of marginal setae on pronotum almost always absent, though a short postangular seta rarely exists on one side in a few exceptional individuals.

10) Pronotal front angles either obtusely rounded or produced forwards as small angles, hind angles either completely rounded or marked as obtuse angles due to shallow emargination on each side of basal margin.

11) Elytra large and ovate, considerably variable in shape, sometimes very broad in basal parts with square shoulders and nearly transverse bases, particularly in large males.

12) Elytral striation variable, either almost entire (*G. striatus* and *G. giganteus*) or nearly obsolete at the sides and before apices (*G. zorzini*).

13) In ♂, only segment 1 of each protarsus weakly dilated, minutely denticulate at the apico-internal corner, and furnished beneath with adhesive appendages.

14) Male genital organ small and more or less lightly sclerotized, usually a little larger in proportion to the size of hind body in small individuals than in large ones. Aedeagus slender and more or less arcuate, particularly in basal half, with short apical lobe and large sagittal aileron; inner sac armed with an elongate copulatory piece just inside apical orifice, which is anisotopic, spatulate and partially covered with minute scales and spinules; no differentiated teeth-patches. Styles variable; left style larger than the right and devoid of ventral apophysis; apical setae variable in number from four to six, sometimes bearing a short extra seta on dorsal margin.

Range. The members of *Guizhaphaenops* in a strict sense have so far been known from only three limestone caves in Liupanshui Shi at the northwestern part of Guizhou, South China. However, DEUVE (2000, pp. 156–157) gave five new names to the species discovered from limestone caves in northeastern Yunnan, which were discriminated from *G. zorzini* in a new subgenus, *Semiaphaenops* (DEUVE, 2000, p. 153). Besides, a series of new *Guizhaphaenops*-like trechines recently discovered by myself in northeastern Guizhou may be classified at least into another new subgenus. It is therefore probable that *Guizhaphaenops* in a broad sense may be widely distributed in the subterranean domain of the Yungui Highlands which abound in limestone caves.

Notes. As was already pointed out, the range of variation shown by the members of this genus is quite extraordinary for trechine beetles. The size variation alone is almost incredibly wide, and it is accompanied with modification of facies, particularly of configuration of the elytra. The modification is above all pronounced in *G. zorzini*, whose largest individuals are more than a quarter as large again as the smallest ones and have the elytra much ampler and squarer at the basal parts than in the latter. In the trechine taxonomy, such a difference is almost always regarded as that of specific im-

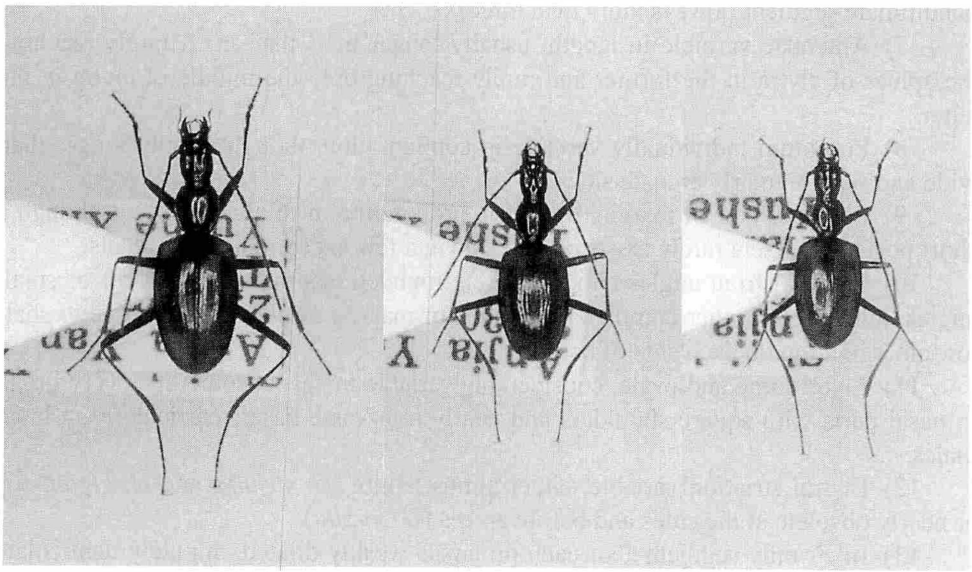


Fig. 1. Individual variation of *Guizhaphaenops* (s. str.) *zorzini* VIGNA TAGLIANTI, from Anjia Yan Cave. From left to right: largest, average-sized and smallest specimens examined, on the same scale. (Photo M. OWADA.)

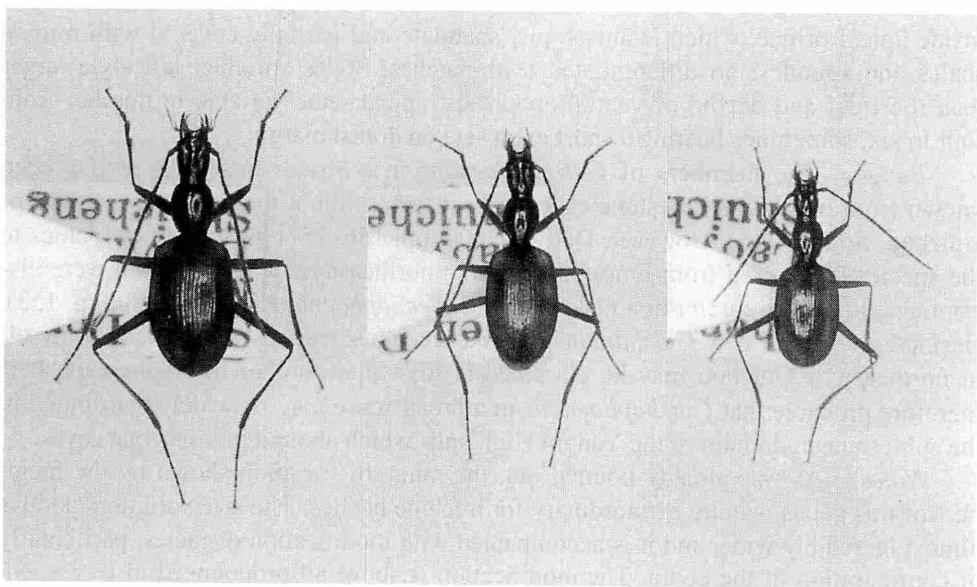


Fig. 2. Individual variation of *Guizhaphaenops* (s. str.) *giganteus* S. UÉNO, sp. nov., from Shen Dong Cave. From left to right: largest, average-sized and smallest specimens examined, on the same scale. (Photo M. OWADA.)

portance, if there were no gradations bridging the gap. Extraordinary variation of the same type is also found in the genus *Cathaiaphaenops* DEUVE (1996, pp. 42, 47; cf. UÉNO, 2000, pp. 265, 266).

Recently, a new subgenus of *Guizhaphaenops* was erected by DEUVE (2000, p. 153) under the name *Semiaphaenops* for the trechines discovered from three limestone caves in northeastern Yunnan. I have not seen any species of this subgenus as yet, but the detailed description given by the original author seems to show that the Yunnanese species are subgenerically segregated from the Guizhou ones. However, two of the three character states pointed out by the original author as being subgeneric are included in the range of variation of *Guizhaphaenops* in a strict sense, that is, "l'absence de la paire de soies basales du pronotum" and "la persistance de la deuxième paire de soies frontales." Thus, only the third point, "la présence de la soie préapicale sur les élytres," remains valid for the peculiarity of *Semiaphaenops*. On the other hand, I can not help feeling uneasy about the systematic status of *G. baiyinensis* DEUVE (p. 156) and *G. zhengxionensis* DEUVE (p. 157). Judging from the extraordinary variability of the Guizhou species of *Guizhaphaenops*, all their peculiarities pointed out by the French author seem to be included in the ranges of individual variation of *G. lipsorum* DEUVE and *G. daheiensis* DEUVE (p. 156), respectively. As DEUVE himself commented (p. 156), further investigations for obtaining longer series of specimens are needed for clearing up all these points.

Key to the Species of *Guizhaphaenops* (s. str.)

1 (4) Posterior pair of supraorbital setae absent.

2 (3) Elytral striae superficial, usually obsolete in the humeral, lateral and apical areas; aedeagus shorter and gently arcuate, distinctly enlarged towards apical orifice, with larger basal part; length 7.10–9.00 mm including mandibles; Anjia Yan Cave ..... *G. zorzini* VIGNA TAGLIANTI, 1997.

3 (2) Elytral striae entire, clearly impressed and distinctly crenulate; aedeagus longer and more strongly arcuate, only slightly enlarged towards apical orifice, with smaller basal part; length 6.75–7.95 mm including mandibles; Duolin Dong Cave ..... *G. striatus* S. UÉNO, sp. nov.

4 (1) Posterior pair of supraorbital setae present; elytral striae almost entire though becoming shallower at the side and near the apex; length 6.90–9.35 mm including mandibles; Shen Dong Cave ..... *G. giganteus* S. UÉNO, sp. nov.

Guizhaphaenops (s. str.) ***zorzini*** VIGNA TAGLIANTI, 1997

(Figs. 1, 3–5)

Guizhaphaenops zorzini VIGNA TAGLIANTI, 1997, Int. J. Speleol., **25** [for 1996], p. 37, figs. 1–5; type locality: Anjia Yan Cave [at] Shega [originally "Show Ga"].

Length: 6.40–8.10 mm (from apical margin of clypeus to apices of elytra; mean

7.07 mm); 7.10–9.00 mm (including mandibles; mean 7.83 mm).

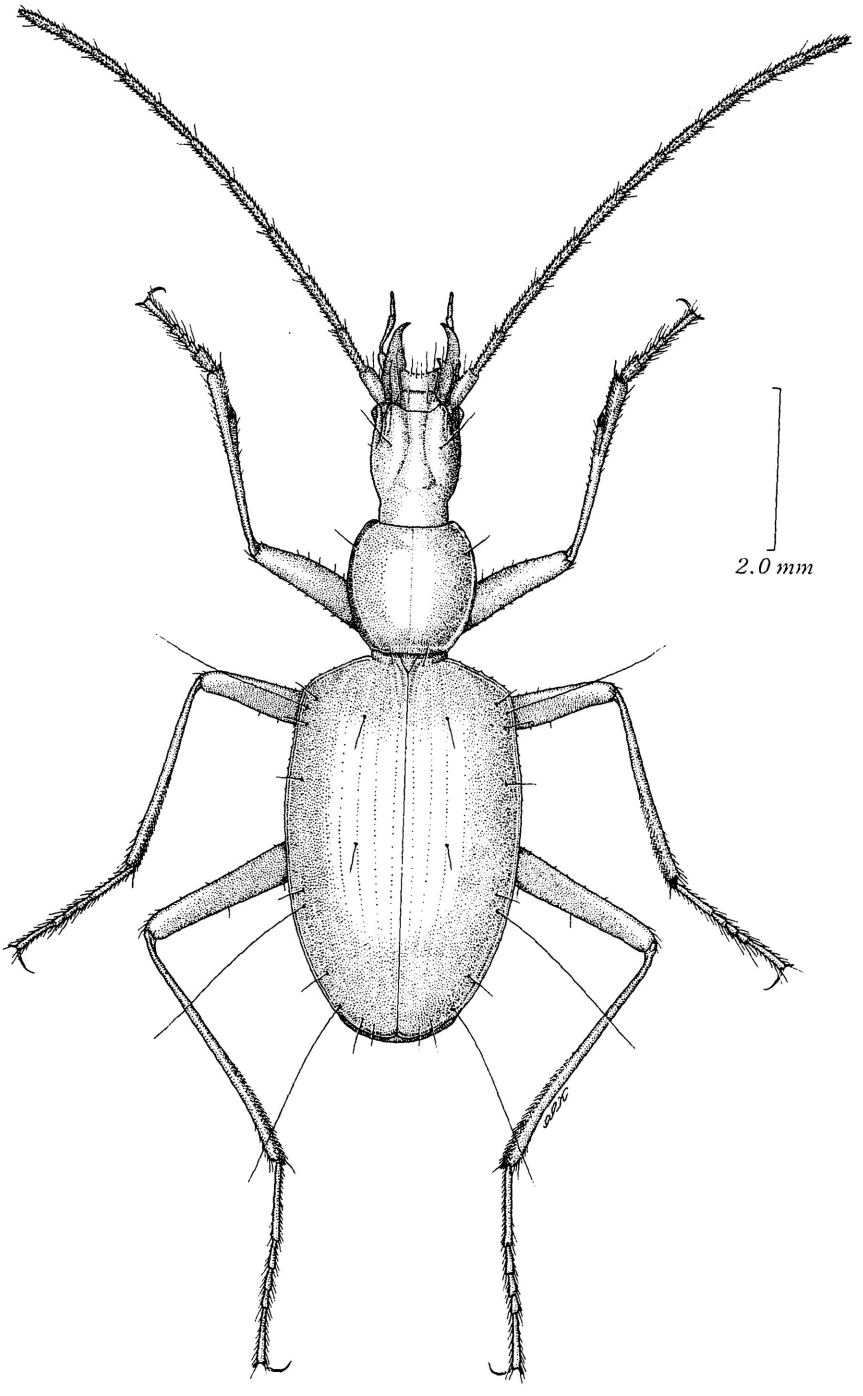
Unusually variable species of medium to large size. The holotype is an exceptionally small female measuring only 6.12 mm from the apical margin of clypeus to the apices of elytra and is smaller than any of the specimens examined in the present study, though identical in all the other respects with small females in the new series.

Body relatively wide, with rather short prothorax and rather long head. Colour reddish brown to dark reddish brown, translucent and shiny, sometimes with a little lighter elytra; palpi, venter of hind body, and tarsi somewhat lighter than the other parts in several individuals.

Head relatively long on an average, evidently longer than wide and about as long as prothorax though variable in proportion, HL/HW 1.28–1.44 (M 1.36), HL/PL 0.96–1.10 (M 1.02); genae either subparallel in anterior two-thirds or slightly convergent posteriad, feebly convex in posterior parts and narrowed towards distinct neck constriction, with short sparse pubescence; frontal furrows deep, feebly arcuate and posteriorly obsolete; posterior pair of supraorbital setae absent; microsculpture distinct, mostly consisting of minute polygonal meshes. Antennae long, usually reaching apical fifth of elytra and rarely reaching elytral apices in ♂, reaching apical four-ninths to one-sixth (usually apical fourth) of elytra in ♀.

Pronotum relatively short, obviously wider than head and about as wide as long, widest at a level between five-ninths and three-fifths from base, and more or less strongly rounded at the sides; PW/HW 1.26–1.37 (M 1.32), PW/PL 0.94–1.03 (M 0.99), PW/PA 1.57–1.69 (M 1.64), PW/PB ca. 1.64–1.76 (M ca. 1.70); sides narrowly bordered, the borders gradually widened posteriad in basal third, strongly arcuate from apex to base without ante-basal sinuation in most specimens examined though a little less strongly so behind middle; in a female specimen with relatively narrow prothorax (PW/PL 0.94 against 0.96–1.03 in the others), the side margins are rather gently arcuate even in front and only feebly so in basal third; only the anterior pair of marginal setae present just before apical fifth in most individuals, but in two (1 ♂, 1 ♀) of the ten specimens examined, a small postangular seta less than one-fifth the length of the anterior one exists only on the left side at about one-thirteenth from base; apex either straight or slightly emarginate, usually somewhat wider than base though rarely as wide as the latter, PB/PA ca. 0.90–1.01 (M ca. 0.96); front angles more or less obtuse, usually a little produced forwards but sometimes rounded off; base either straight or slightly emarginate, roundly oblique on each side in most specimens examined, obliquely emarginate on each side in a few specimens; hind angles usually rounded off but sometimes forming very obtuse but distinct angles due to the lateral emarginations of basal margin; dorsum convex and completely glabrous, with fine but distinct median line; apical transverse impression either vague or fairly apparent and continuous to marginal gutters; basal transverse impression superficial and mal-defined; basal foveae

Fig. 3. *Guizhaphaenops* (s. str.) *zorzini* VIGNA TAGLIANTI, largest ♂ examined, from Anjia Yan Cave at Shega in northwestern Guizhou.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small and shallow, anteriorly extending; microsculpture formed by irregularly transverse lines largely forming wide meshes. Propleura not visible from above.

Elytra ovate though variable in shape, much wider than prothorax, widest at a level between basal two-fifths and the middle, broader and squarer at the basal parts in large individuals than in small ones; EW/PW 1.85–1.99 (M 1.92), EL/PL 2.82–3.06 (M 2.94), EL/EW 1.51–1.60 (M 1.55); shoulders more or less distinct, often very obtuse and rounded but nearly square in large individuals, with prehumeral borders straight and moderately oblique in smaller individuals but much less oblique in larger ones; sides feebly arcuate from behind shoulders to near apices in many specimens examined, but in large individuals, the sides are nearly straight and only slightly convergent anteriad before basal third, moderately bordered throughout, serrulate and ciliated particularly at the humeal parts; preapical emargination slight, often not appreciable; apices rather narrowly and almost conjointly rounded; dorsum moderately convex, steeply declivous at the sides and with obliquely flattened basal area; lateral areas sparsely covered with very minute and erect pubescence, which is particularly conspicuous in the humeral areas of large individuals; microsculpture distinct, consisting of irregular transverse lines; striae superficial, finely punctate, usually more complete in smaller individuals than in larger ones, sometimes almost entire in the former though usually obsolete in the humeral, lateral and apical areas, stria 8 not deepened in apical part; scutellar striole rudimentary; apical striole also rudimentary, sometimes perceptible as a trace but sometimes completely evanescent; stria 3 with two setiferous dorsal pores at 1/8–1/6 (usually 1/7) and 3/8–1/2 from base, respectively, the anterior one lying at a level between the second and third pores of the marginal umbilicate series; preapical pore always absent; marginal umbilicate pores as described in the original description.

Ventral surface and legs as described in the original description; anal sternite bisetose in ♂. Legs long; metatibia about two-thirds as long as elytra, outwardly arcuate in apical part; mesotarsus about two-thirds as long as mesotibia, metatarsus about three-fourths as long as metatibia; tarsomere 1 obviously longer than tarsomeres 2–4 combined in both meso- and metatarsi.

Male genital organ very small and very lightly sclerotized. Aedeagus proportionally larger in small individuals than in large ones, about one-fifth as long as elytra in the former, only two-elevenths as long as elytra in the latter, elongate, gently arcuate before apical third, gradually enlarged towards apical orifice from behind basal third, and strongly curved ventrad at the basal part, which is not large but proximally enlarged and bears a large protrudent sagittal aileron; basal orifice small, with the sides not emarginate; apical lobe short, scalene subtriangular inclined to the left and with blunt extremity in dorsal view, slightly reflexed and blunt at the extremity in lateral view; ventral margin widely but shallowly emarginate though feebly convex before apical lobe in profile. Copulatory piece nearly one-third as long as aedeagus, rounded at the apex in dorsal view but seemingly tapered to pointed apex in lateral view, and largely covered with minute scales and short spinules from before middle. Styles short

and broad, with broad apical parts, each bearing four to six apical setae.

Specimens examined. 6 ♂♂, 4 ♀♀, 17–IX–1998, S. UÉNO & Y. NISHIKAWA leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Anjia Yan, 2,030 m in altitude, at Tianfa Cun of Shega in Yushe Xiang of Shuicheng Xian, Liupanshui Shi, northwestern Guizhou, South China.

Notes. In general appearance, this species is different from the other two known species of *Guizhaphaenops* in a strict sense, and looks similar to certain *Cathaiaphaenops* from southwestern Hubei. Trend of individual variation is also the same between them. This may suggest a relationship of *Guizhaphaenops* to *Cathaiaphaenops*, though the two genera are decisively different in many morphological details, above all in the conformation of buccal appendages, the pubescence of the elytra, and the arrangement of marginal umbilicate pores.

Anjia Yan Cave, the type locality of this remarkable species, lies on the left side of a branch valley above Shega, and is open under a large cliff of limestone. In many places of South China, the word "yan" (primarily meaning a rock) is synonymously used with "dong" (a cave), since many large rocks contain caves. Therefore, the name Anjia Yan means the cave of the An family. It is a fossilized cave of debouchure, and the large entrance room has been formed by collapse of the ceiling. A huge pile of rocks can be passed through a maze of narrow spaces to the lower end of a shallow groove about 80 m removed from the entrance. This is the stream course in former times and probably also in rainy seasons, intermittently continuing for about 150 m to near the innermost of the cave. The first section of the groove, less than 30 m in length, is gravelly and wet, containing a small amount of rotten boards and bamboo sticks abandoned by local people. *Guizhaphaenops zorzini* occurred only in this part of the cave; all the specimens collected were found running about among gravel or hiding themselves under stones or decayed boards.

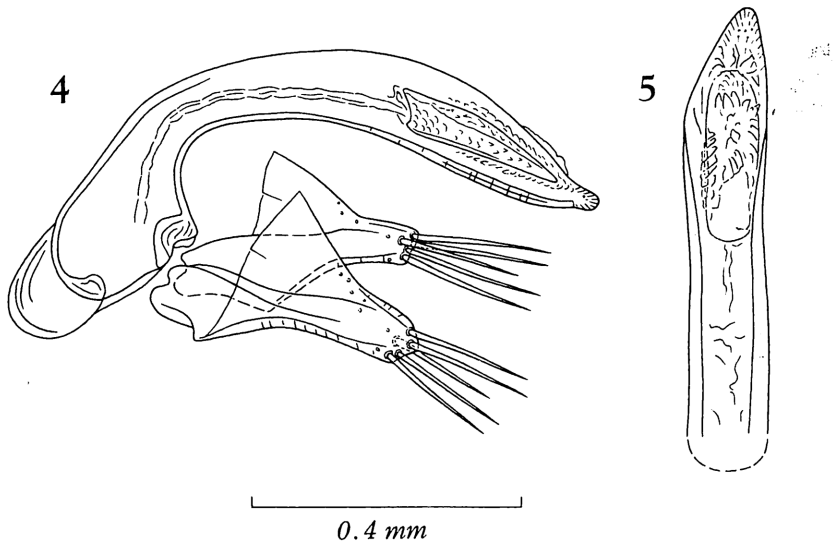
Guizhaphaenops (s. str.) ***striatus*** S. UÉNO, sp. nov.

(Figs. 6–7, 10)

Length: 6.10–7.20 mm (from apical margin of clypeus to apices of elytra; mean 6.72 mm); 6.75–7.95 mm (including mandibles; mean 7.40 mm).

Similar in many respects to small individuals of *G. zorzini*, but distinguished at first sight from the latter by the deeper entire striae on elytra.

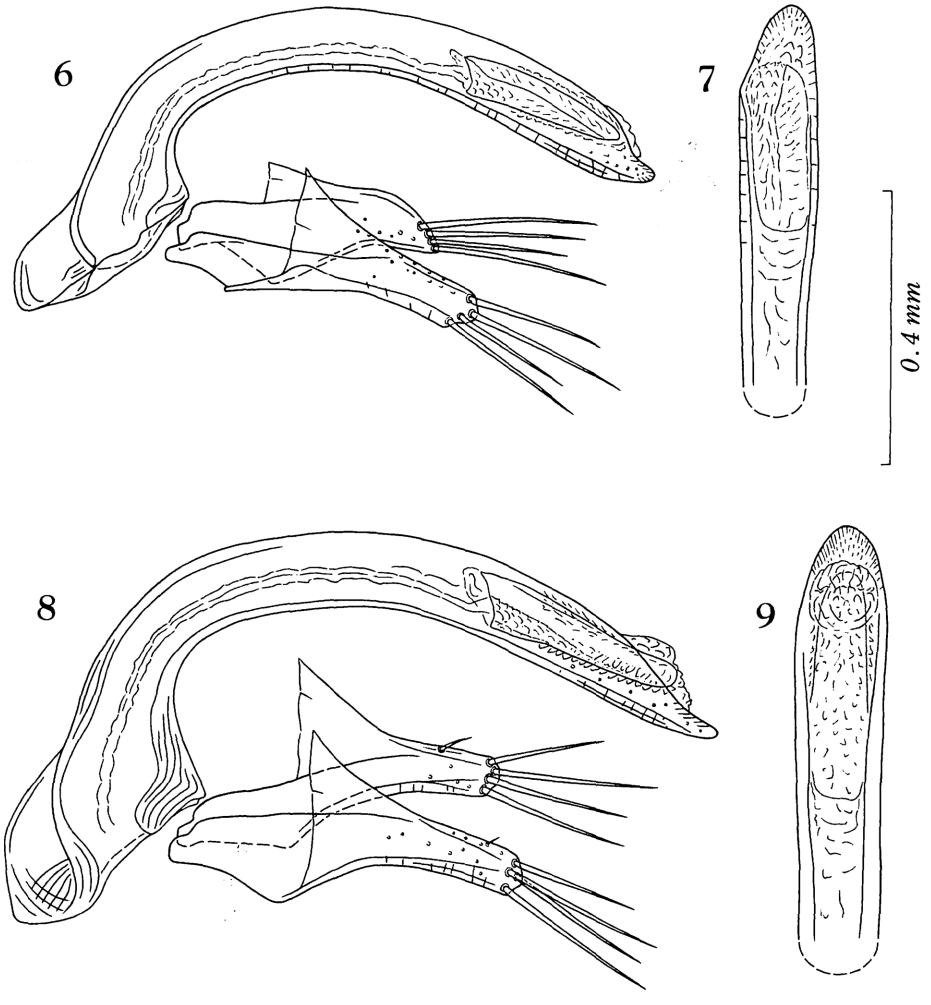
Body relatively elongate due to narrower hind body, with rather small head; colour as in *G. zorzini*. Head a little smaller on an average than in *G. zorzini*, HL/HW 1.22–1.34 (M 1.28), HL/PL 0.90–0.93 (M 0.92); posterior pair of supraorbital setae absent. Antennae reaching apical fourth to fifth of elytra in ♂, apical third of elytra in ♀; scape short though thickest of all the antennomeres, about as long as segment 10 and about four-fifths as long as pedicel, which is about three-fourths as long as seg-



Figs. 4–5. Male genitalia of *Guizhaphaenops* (s. str.) *zorzini* VIGNA TAGLIANTI, from Anjia Yan Cave at Shega; left lateral view (4), and apical part of aedeagus, dorso-apical view (5).

ment 3, 4 or 5; segments 6–10 gradually decreasing in length, segment 8 about as long as pedicel; segment 5 about 5.5 times as long as wide, segment 7 about 5 times as long as wide; terminal segment short, slightly shorter than pedicel and only slightly longer than scape. Pronotum as in *G. zorzini*, though slightly narrower at the apex on an average and a little less rounded at the sides than in the latter; PW/HW 1.29–1.43 (M 1.38), PW/PL 0.96–1.01 (M 0.98), PW/PA 1.62–1.75 (M 1.71), PW/PB ca. 1.65–1.79 (M ca. 1.71), PB/PA ca. 0.97–1.04 (M ca. 1.00); front angles variable as in *G. zorzini*; hind angles usually marked though very obtuse; postangular pair of marginal setae usually absent, but one of the female paratypes bears a postangular seta on the left side.

Elytra elongated ovate, much wider than prothorax, widest at about middle, and a little more gradually narrowed towards bases than towards apices; EW/PW 1.77–1.85 (M 1.81), EL/PL 2.83–2.90 (M 2.86), EL/EW 1.58–1.65 (M 1.61); shoulders distinct though rounded, with prehumeral borders oblique and nearly straight; sides narrowly bordered throughout, feebly arcuate from shoulders to slight preapical emargination, serrulate and ciliated particularly at the humeral parts; apices narrowly and almost conjointly rounded; dorsum as in *G. zorzini* with the exception of striae, which are entire, much deeper and more distinctly crenulate than in the latter species, even stria 7 clearly impressed throughout, and stria 8 moderately deepened behind the middle set of marginal umbilicate pores; scutellar striole short but distinct; apical striole vaguely impressed though sometimes rudimentary, directed to stria 5 if perceptible; stria 3 with two setiferous dorsal pores at 1/7–1/6 and 2/5–1/2 from base, respectively; preapical



Figs. 6–9. Male genitalia of *Guizhaphaenops* (s. str.) spp.; left lateral view (6, 8), and apical part of aedeagus, dorso-apical view (7, 9). —— 6–7. *G. striatus* S. UÉNO, sp. nov., from Duolin Dong Cave at Maolin Cun. —— 8–9. *G. giganteus* S. UÉNO, sp. nov., from Shen Dong Cave at Muqiao Cun.

pore always absent. Ventral surface and legs as in *G. zorzini*, though the first segments of meso- and metatarsi are a little shorter, only a little longer than tarsomeres 2–4 combined in mesotarsus; metatibia about two-thirds as long as elytra, lightly arcuate outwards in apical part; metatarsus about three-fourths as long as metatibia.

Male genital organ small and very lightly sclerotized. Aedeagus long and slender, about three-tenths as long as elytra, moderately and regularly arcuate before apical two-fifths, and strongly curved ventrad at the basal part, which is small and bears a large protrudent sagittal aileron; apical lobe short, narrowly rounded at the extremity

in dorsal view, slightly reflexed and blunt at the extremity in lateral view; ventral margin widely emarginate to near apical lobe in profile. Copulatory piece as in *G. zorzini*. Styles more elongate, at the apical parts in particular, than in *G. zorzini*, each bearing four long setae at the apex.

Type series. Holotype: ♂, 18–IX–1998, S. UÉNO leg. Allotype: ♀, 18–IX–1998, T. KISHIMOTO leg. Paratypes: 1 ♂, 2 ♀♀, 18–IX–1998, Y. NISHIKAWA & T. KISHIMOTO leg. Deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Duolin Dong, 1,200 m in altitude, at Duolinzhai of Maolin Cun in Luobie Xiang of Liuzhi, Liupanshui Shi, northwestern Guizhou, South China.

Notes. Of the three species of *Guizhaphaenops* dealt with in the present paper, only *G. striatus* has been known from medium-sized individuals alone. They are fairly uniform and do not exhibit such extraordinary individual variation as is observed in *G. zorzini* and *G. giganteus*. It is, however, probable that similar variation will be found also in the present species, if a sufficiently long series of specimens can be obtained by future investigations.

Duolin Dong Cave, the type locality of *G. striatus*, is developed in a hill about 98 km distant to the east-southeast from Anjia Yan Cave, that of *G. zorzini*. The entrance to this cave is rather small and not impressive, opening on the flank of the hill above a small paddy field at the back of a small village called Duolinzhai. The cave is developed on two different levels, and the main passage on the upper level is connected with the lower phreatic one by several vertical shafts. At the innermost of the main passage, a very steep slope crusted with flowstone leads down to an underground stream in the lower level passage. Three of the five known specimens of *G. striatus* were taken on the muddy banks of this stream, one from a crack of half-dried mud and the other two crawling on the wall just above the mud deposit. The remaining two specimens were found in the upper level passage, both crawling on a clayey floor just above a shaft leading to the underground stream. Anyway, terrestrial troglobiontic animals were by no means abundant in this cave, probably due to relatively dry, oligotrophic condition of the main passage on the upper level and much restricted habitats in the phreatic passages on the lower level.

Guizhaphaenops (s. str.) ***giganteus*** S. UÉNO, sp. nov.

(Figs. 2, 8–9, 11)

Length: 6.40–8.50 mm (from apical margin of clypeus to apices of elytra; mean 7.43 mm); 6.90–9.35 mm (including mandibles; mean 8.17 mm).

Similar in many respects to *G. striatus*, but distinguished at first sight from that species and also from *G. zorzini* by the presence of the posterior pair of supraorbital setae. Besides, *G. giganteus* is much larger on an average than *G. striatus* and has narrower or more elongate prothorax. Individual variation is pronounced in body size,

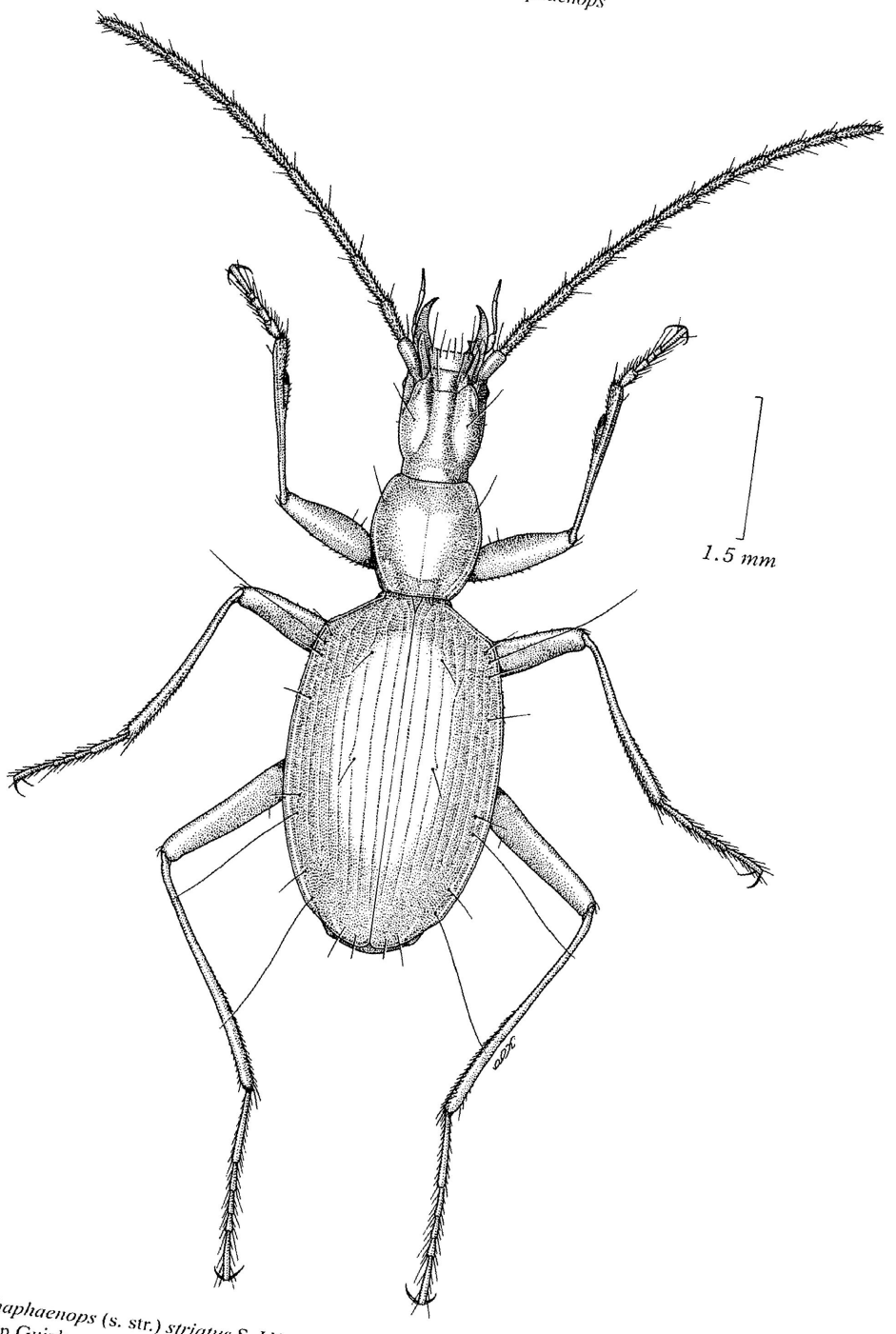


Fig. 10. *Guizhaphaenops* (s. str.) *striatus* S. UÉNO, sp. nov., ♂, from Duolin Dong Cave at Maolin Cun in northwestern Guizhou.

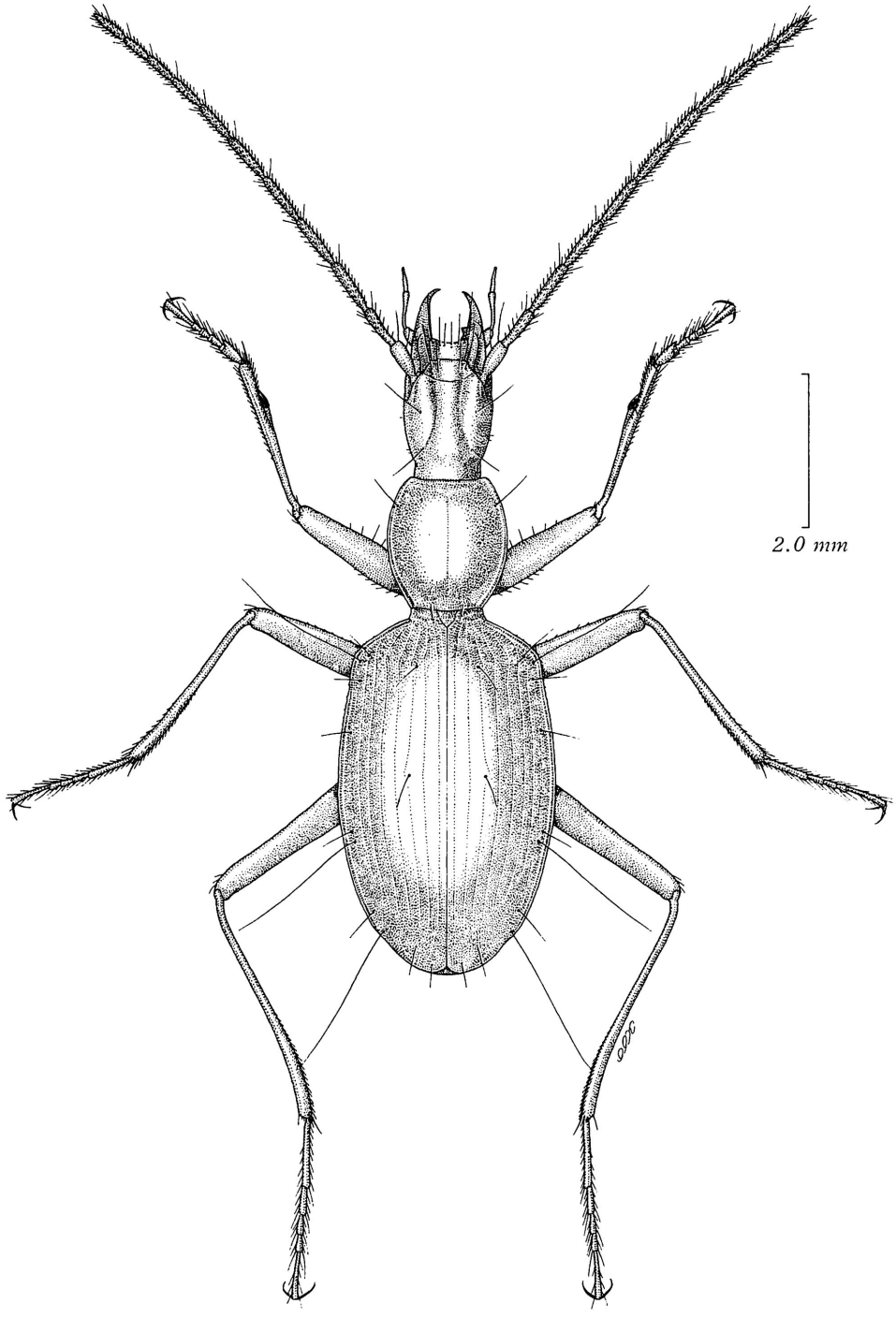
prothoracic configuration and antennal length, but is not so remarkable in the modification of elytral configuration as in *G. zorzini*.

Medium- to large-sized species of elongate facies with long appendages, often attaining to a gigantic size. Colour reddish brown to dark reddish brown, usually darker in large individuals than in small ones, shiny or dull shiny; palpi and venter of hind body sometimes lighter than dorsum, particularly in small individuals.

Head elongate, evidently longer than wide though usually a little shorter than prothorax, HL/HW 1.20–1.45 (M 1.33), HL/PL 0.84–1.00 (M 0.91), either subparallel-sided in anterior three-fifths and then narrowed posteriad towards neck constriction or widest at the level of anterior supraorbital pores and gradually narrowed posteriad from there; genae either feebly convex or rather flat, scattered with very short pubescence; neck constriction shallow but distinct, continuing onto both dorsum and venter; dorsum convex particularly at the posterior part, with two pair of supraorbital setae on lines convergent posteriorly; frontal furrows deeply impressed, feebly arcuate, and obsolete at posterior supraorbital pores; microsculpture fine though distinct, mostly consisting of minute polygonal meshes; mandibles slender, feebly arcuate except for sharply incurved apical portions, right mandible strongly bidentate. Antennae long though variable in length, even in single individuals (i.e., different in length between right and left), reaching apical two-fifths to one-seventh of elytra in ♂, reaching the middle to apical third (usually apical two-fifths) of elytra in ♀; scape a little shorter than pedicel and about as long as segment 9; pedicel about three-fourths as long as segment 3, 4 or 5, each of which is more than 5.5 times as long as wide; segments 6–10 gradually decreasing in length, segment 10 the shortest of all the antennomeres, segment 7 about 4.5 times as long as wide; terminal segment short, about as long as pedicel or segment 7 and only a little longer but obviously narrower than scape.

Pronotum barrel-shaped, evidently wider than head, more or less longer than wide, widest at a level between four-ninths and three-fourths (usually at about five-ninths) from base, and almost equally narrowed in front and behind; PW/HW 1.25–1.38 (M 1.31), PW/PL 0.84–0.97 (M 0.90), PW/PA 1.51–1.83 (M 1.71), PW/PB ca. 1.60–1.97 (M ca. 1.74); sides narrowly bordered in front, the borders gradually widened posteriad in basal third and usually reflexed at hind angles, moderately arcuate in front and a little more feebly so behind in the majority of the specimens examined, but more strongly arcuate in the specimens with relatively broad prothorax; only the anterior pair of marginal setae present just before apical fifth, the posterior pair always absent; in a female paratype, an extra marginal seta present on the left side just in front of the ordinary anterior seta; apex either straight or slightly emarginate, usually about as wide as base though variable to some extent in proportion, PB/PA ca. 0.86–1.12 (M 0.98); front angles variable though always obtuse, usually somewhat produced forwards but sometimes rounded off; base either straight or slightly emar-

Fig. 11. *Guizhaphaenops* (s. str.) *giganteus* S. UÉNO, sp. nov., ♂, from Shen Dong Cave at Muqiao Cun in northwestern Guizhou.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ginate, usually with a small shallow emargination on each side, which is either transverse or oblique; hind angles obtuse but usually clearly marked due to the lateral emarginations of basal margin, sometimes completely rounded off; dorsum convex and completely glabrous, with fine but distinct median line; apical transverse impression variable, sometimes vague but sometimes clearly impressed; basal transverse impression mal-defined, usually uneven; basal foveae small and shallow, extending anteriorly parallel to side borders; basal area longitudinally strigose along basal margin; microsculpture distinct, consisting of irregularly transverse lines which form wide meshes here and there. Propleura not visible from above.

Elytra elongated oval, much wider than prothorax, obviously longer than wide, widest at about middle, and more gradually narrowed towards bases than towards apices; EW/PW 1.82–2.08 (M 1.95), EL/PL 2.67–2.97 (M 2.84), EL/EW 1.54–1.77 (M 1.62); shoulders distinct though rounded, with prehumeral borders straight and fairly oblique; sides narrowly bordered in basal and apical thirds, moderately so at middle, nearly straight for a short distance behind shoulders, then feebly arcuate to slight preapical emargination, finely serrulate and ciliated at the humeral parts; apices almost conjointly rounded, often forming a very obtuse re-entrant angle at suture; dorsum rather strongly convex, steeply declivous at the sides and apices, obliquely flattened in basal area, and sparsely covered with very minute pubescence at the lateral parts; microsculpture distinct, consisting of irregular transverse lines; striae almost entire though shallower at the side and near the apex than on the disc, lightly crenulate, inner four striae deepened in basal area, stria 8 usually somewhat deepened in apical part; scutellar striole vestigial though usually perceptible; apical striole either rudimentary or evanescent; intervals flat even near suture; stria 3 with two setiferous dorsal pores at 1/8–1/6 and 2/5–1/2 from base, respectively; preapical pore always absent; marginal umbilicate pores as in the other species of the subgenus.

Ventral surface pubescent at the median parts of all segments, the pubescence being conspicuous particularly on prosternum and abdominal sternites; anal sternite bisetose in ♂, quadrisetose in ♀. Legs long and slender; metatibia about five-sevenths as long as elytra and gently arcuate outwards in apical part, metatarsus about three-fourths as long as metatibia; tarsomere 1 a little longer than tarsomeres 2–4 combined in mesotarsus, much longer than tarsomeres 2–4 combined in metatarsus.

Male genital organ very small and lightly sclerotized. Aedeagus about two-ninths as long as elytra in large individuals, a little larger than that in proportion to the size of hind body in small individuals, very slender, more strongly arcuate than in *G. striatus*, particularly in proximal half, with long basal part strongly curved ventrad and short apical lobe, towards which the apical part is gradually tapered in profile; sagittal aileron large, often fused with the proximal end of basal part at the ventral side; basal orifice usually small, with the sides not emarginate; apical lobe narrowly rounded at the extremity in dorsal view, relatively narrow and slightly reflexed in lateral view; ventral margin widely emarginate in profile. Copulatory piece as in the other species. Styles relatively narrow at the apical parts, each bearing four to six setae at the apex.

Type series. Holotype: ♂, allotype: ♀, 16–IX–1998, S. UÉNO leg. Paratypes: 46 ♂♂, 63 ♀♀ (incl. 1 teneral ♂ and 1 crushed ♀), 16–IX–1998, S. UÉNO, Y. NISHIKAWA & T. KISHIMOTO leg. All deposited at present in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Shen Dong, 1,860 m in altitude, at Muqiao Cun of Laoyingshan Zhen in Shuicheng Xian, Liupanshui Shi, northwestern Guizhou, South China.

Notes. It seems worth noting that though its type locality, Shen Dong Cave, is geographically much nearer to that of *G. zorzini* (Anjia Yan Cave) than to that of *G. striatus* (Duolin Dong Cave), *G. giganteus* is apparently closer to the latter species in general facies, the striation of the elytra and the configuration of the male genitalia. It is about 35 km distant to the east-northeast from Anjia Yan Cave at Shega, and about 77 km distant to the northwest from Duolin Dong Cave at Maolin Cun. However, the present species is decisively different from the others in the presence of the posterior pair of the supraorbital setae, so that the close external similarity between *G. giganteus* and *G. striatus* may be deceptive. At any rate, the presence or absence of the posterior supraorbital setae should be regarded as a mere specific difference in classifying Chinese trechines. As was already shown in one of our previous papers dealing with *Sinaphaenops*, an asymmetrical reversion of this seta was observed in one of the nine specimens examined of *S. wangorum* which ordinarily lacks the posterior pair of the supraorbital setae (cf. UÉNO & RAN, 1998, p. 55).

Guizhaphaenops giganteus is an exceptionally abundant species among the Chinese cave trechines. We were able to collect 111 specimens in total of this trechine beetle, which enabled me to make a careful study of the unusual individual variation of *Guizhaphaenops*. For calculating standard ratios, I took the measurements of 109 out of the 111 specimens by excluding one teneral male and one crushed female. This was a painstaking and time-consuming task to do (I usually take measurements of less than 24 males and 24 females randomly picked up for calculating standard ratios of a given species), but the result obtained was very important for understanding the incredible variability of the members of *Guizhaphaenops* and *Cathaiaphaenops*.

A brief sketch of Shen Dong Cave, the type locality of *G. giganteus*, was already given in the *Notes* following the description of *Shenaphaenops humeralis* S. UÉNO (1999, p. 632). The present large trechine beetle was found in various places of the cave and in various habitats, but was most abundant at the bottom of the entrance shaft, where many individuals were found running about on the wet floor, even on cemented stairs, and also from beneath stones. They were always quick-moving, and readily ran up onto vertical walls and stalagmites. In deeper parts of the cave, however, the beetle seemed mainly attracted to rotten logs and bamboos, probably because of their humidness.

要　約

上野俊一：*Guizhaphaenops*属のアシナガメクラチビゴミムシ類．—— *Guizhaphaenops*属は，中国貴州省北西部の石灰洞で発見されたただ1点の，保存状態のあまりよくない雌に基づいて創設されたアシナガメクラチビゴミムシの1属で，実態の解明がかねてから望まれていた．今回，基準種である*G. zorzini* VIGNA TAGLIANTIの，複数の雄を含む同地基準標本と，近傍の洞窟で採集された同属の2新種とを詳しく検討した結果，この属の原記載にいくつかの重要な誤りがあることと，構成種にチビゴミムシ類としては信じられないほど極端な個体変異のあることがわかったので，新種の記載にあわせて属そのものの再検討も行った．新種名は*G. striatus* S. UÉNOおよび*G. giganteus* S. UÉNOで，後者のうちの大型個体は，チビゴミムシ類のなかでも最大級のものである．なお，現在の時点で確認されている狭義の*Guizhaphaenops*はこれらの3種だけだが，ごく最近（2000年3月）に隣接する云南省北東部の石灰洞から，この属の新亜属として記載された*Semiaphaenops* DEUVEについては，実物の比較に基づく綿密な検討の必要がある．基準亜属との区別点として原記載に挙げられた三つの特徴のうちの二つまでが，上記の3種の種間変異あるいは個体変異の幅に含まれるので，高次分類の標徴にはなりえないからである．

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A New Cave Trechine from Southwestern Hubei, with Notes on the Genus *Cathaiaphaenops* (Coleoptera, Trechinae)

Shun-Ichi UÉNO

Department of Zoology, National Science Museum (Nat. Hist.),
3–23–1 Hyakunin-chô, Shinjuku, Tokyo, 169–0073 Japan

Abstract A new anophthalmic trechine beetle of the genus *Cathaiaphaenops* is described from two limestone caves in southwestern Hubei, Central China, under the name of *C. amplipennis* S. UÉNO. Unusual variability of the members of this genus is pointed out, and *Amygdalotrechus* DEUVE is synonymized with *Cathaiaphaenops*.

The genus *Cathaiaphaenops* was erected by DEUVE (1996, pp. 42, 47) for a peculiar semi-aphaenopsoid trechine beetle found in a limestone cave in northwestern Hunan, South-Central China. Visiting the type locality, Feihu Dong Cave, in the autumn of 1997, we were able to collect more than thirty specimens of this species and were surprised to find that the beetle was unusually variable in size. More surprising was a population of another *Cathaiaphaenops* found in Laoxiao Dong Cave in southwestern Hubei to the north-northwest of Feihu Dong. The largest specimen from this population was well more than a third as large again as the smallest one, and had relatively small male genitalia as compared with the latter. They looked like two different species, though their male genitalia were perfectly identical in configuration with each other. Since the gap between them was bridged by various intermediate individuals, I felt certain that they represented the two extremes of individual variation of a single species however implausible it may appear, though I was not definitely confident of this view until long series of specimens of two *Guizhaphaenops* showing a similarly unusual size variation were collected in northwestern Guizhou in the autumn of the following year (cf. UÉNO, 2000).

In the present paper, I am going to describe the new species from southwestern Hubei under the name of *Cathaiaphaenops amplipennis*. It is closely similar in facies to the species recently described by DEUVE (2000, pp. 158–160) from the border areas of eastern Sichuan and southwestern Hubei, but is intermediate between the latter and the Feihu Dong species in other morphological features. I am therefore going to regard *Amygdalotrechus* DEUVE (2000, p. 157), a subgenus erected for his new species from the border areas, as a junior synonym of nominotypical *Cathaiaphaenops*. The abbreviations used herein are the same as those explained in previous papers of mine.

Before going into further details, I wish to express my deep indebtedness to Drs. Yoshiaki NISHIKAWA, WANG Fuxing and Toshio KISHIMOTO for their collaboration in the

field, and to Mr. FAN Ting and the authorities of Xianfeng Xian for their kind arrangement and support of our cave investigations.

Genus *Cathaiaphaenops* DEUVE, 1996

Cathaiaphaenops DEUVE, 1996, Revue fr. Ent., (N.S.), **18**, pp. 42, 47; type species: *Cathaiaphaenops delprati* DEUVE, 1996.

Cathaiaphaenops (*Amygdalotrechus*) DEUVE, 2000, Revue fr. Ent., (N.S.), **21** [for 1999], p. 157; type species: *Cathaiaphaenops chuandongziensis* DEUVE, 2000. (*Syn. nov.*)

This genus was carefully described by DEUVE (1996, 2000, *loc. cit.*), so that no redescription seems needed except for the male genitalia, which always bear an anisotopic copulatory piece. It is, however, necessary to give some comments on the unusual variability of the species involved.

As was pointed out in my accounts of the genus *Guizhaphaenops* and its type species (cf. UÉNO, 2000, pp. 248, 249, etc.), members of the genera *Guizhaphaenops* and *Cathaiaphaenops* exhibit unusual individual variation, above all in size but also in such characters as configuration of the prothorax and particularly of the elytra, length of the antennae, chaetotaxy, and size of the male genitalia. In *C. delprati*, these variations are not so strikingly pronounced except for the size (cf. Fig. 1), but "amygdaloid" modification of the elytra is observed to some extent in certain large specimens. On the other hand, the modification of the elytral configuration attains to its maximum in large individuals of *C. amplipennis* to be described in the present paper, though it is much less pronounced in small individuals of the same species (cf. Fig. 2). Thus, the peculiar "amygdaloid" shape of the elytra is a character state emphasized in large individuals of certain trechine beetles belonging to the genera *Cathaiaphaenops* and *Guizhaphaenops*. Its appearance may be regarded as a specific peculiarity but cannot be considered to bear supraspecific importance.

I therefore regard *Amygdalotrechus* DEUVE (2000, p. 157) as a junior synonym of *Cathaiaphaenops* DEUVE (1996, pp. 42, 47). I have not seen the type species of the former, *C. chuandongziensis* DEUVE (2000, p. 158, figs. 4, 11), whose male genitalia seem different from those of the other congeners in conformation of the inner armature, but it doubtless belongs to the same lineage as *C. draconis*, which seems closely related to *C. amplipennis*.

In establishing *Cathaiaphaenops*, DEUVE (1996, pp. 43, 44, fig.7) described that "l'endophallus de l'édéage est inerme." However, the male genitalia of its type species, *C. delprati*, possess an anisotopic copulatory piece as in *C. amplipennis* and *C. draconis*, though it is thin and hyaline and is apt to be overlooked, particularly when dissected specimens are not fully mature. DEUVE's illustration of the male genitalia of *C. delprati* may look appreciably different from my sketch of those of *C. amplipennis*, but this is merely due to the difference of optical angles. Direct comparion of specimens has proved that they are actually very similar to each other, though the aedeagus is a little less slender and less arcuate behind middle in *C. delprati* than in *C. amplipennis*.

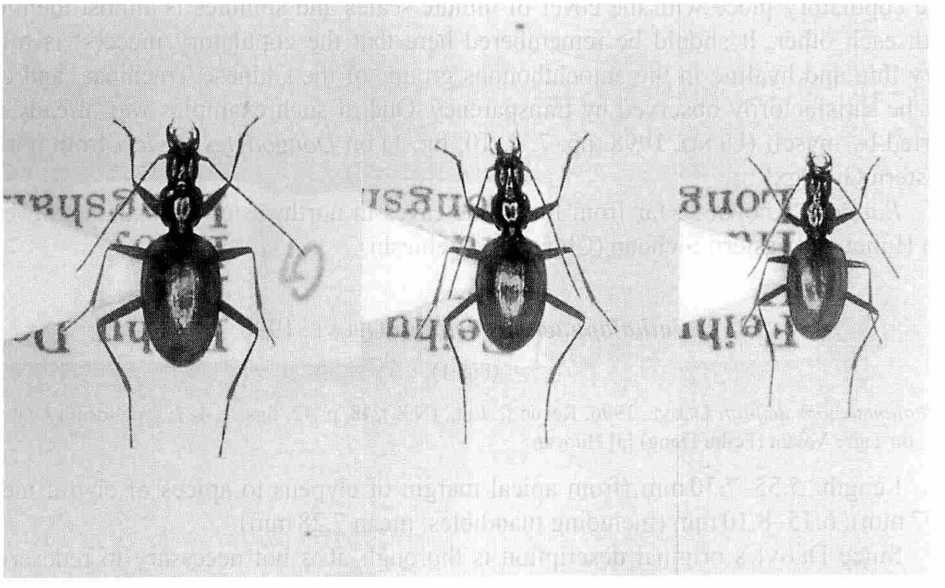


Fig. 1. Individual variation of *Cathaiaphaenops delprati* DEUVE, from Feihu Dong Cave. From left to right: largest, average-sized and smallest specimens examined, on the same scale. (Photo M. OWADA.)

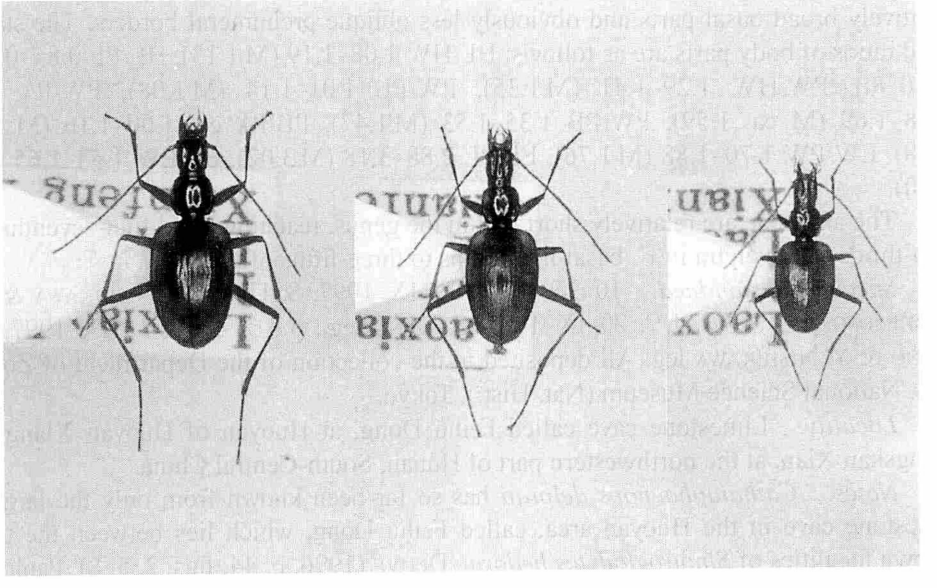


Fig. 2. Individual variation of *Cathaiaphaenops amplipennis* S. UÉNO, sp. nov., from Laoxiao Dong Cave. From left to right: largest, average-sized and smallest specimens examined, on the same scale. (Photo M. OWADA.)

The copulatory piece with the cover of minute scales and spinules is almost identical with each other. It should be remembered here that the copulatory piece(s) is often very thin and hyaline in the autochthonous groups of the Chinese Trechinae, and can not be satisfactorily observed by transparency. One of such examples was already reported by myself (UÉNO, 1998, pp. 7, 8, 10, fig. 1) on *Dongodytes fowleri* from northwestern Guangxi.

Range. Known so far from limestone caves in northwestern Hunan, southwestern Hubei and eastern Sichuan (Chongqing Tebieshi).

Cathaiaphaenops delprati DEUVE, 1996

(Fig. 1)

Cathaiaphaenops delprati DEUVE, 1996, Revue fr. Ent., (N.S.), **18**, p. 42, figs. 1, 4, 7; type locality: Grotte du Tigre Volant (Feihu Dong) [à] Huoyan.

Length: 5.55–7.30 mm (from apical margin of clypeus to apices of elytra; mean 6.57 mm); 6.15–8.10 mm (including mandibles; mean 7.28 mm).

Since DEUVE's original description is thorough, it is not necessary to redescribe this species, with the exception of the male genitalia, whose true characteristics were pointed out in the generic account above. As was already noticed, individual variation is not much pronounced in this species, though certain large specimens show a trend of "amygdaloid" modification of the elytra. In those large specimens, the elytra are widest at about basal two-fifths (at about basal three-sevenths in most other specimens), with relatively broad basal parts and obviously less oblique prehumeral borders. The standard ratios of body parts are as follows: HL/HW 1.08–1.19 (M 1.13), HL/PL 0.84–0.96 (M 0.90), PW/HW 1.29–1.41 (M 1.35), PW/PL 1.01–1.14 (M 1.08), PW/PA ca. 1.48–1.69 (M ca. 1.59), PW/PB 1.35–1.53 (M 1.47), PB/PA ca. 1.00–1.16 (M ca. 1.08), EW/PW 1.70–1.88 (M 1.76), EL/PL 2.88–3.18 (M 3.02), EL/EW 1.53–1.65 (M 1.60).

The antennae are relatively short within the genus, reaching basal four-sevenths to two-thirds of the elytra in ♂, basal five-ninths to three-fifths of the elytra in ♀.

Specimens examined. 10 ♂♂, 4 ♀♀, 19–IX–1997, S. UÉNO, Y. NISHIKAWA & T. KISHIMOTO leg.; 7 ♂♂, 1 ♀, 20–IX–1997, S. UÉNO leg.; 6 ♂♂, 4 ♀♀, 22–IX–1997, S. UÉNO & Y. NISHIKAWA leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Locality. Limestone cave called Feihu Dong, at Huoyan of Huoyan Xiang in Longshan Xian, at the northwestern part of Hunan, South-Central China.

Notes. Cathaiaphaenops delprati has so far been known from only the largest limestone cave in the Huoyan area, called Feihu Dong, which lies between the two known localities of *Sinotroglodytes bedosae* DEUVE (1996, p. 44, figs. 2, 5, 8), Panlong Dong Cave at Zhangjiacao and Remi Dong Cave at Yangliu Cun (erroneously cited as "Grotte Renmi Dong" in the original description). This is rather strange, since the three caves are developed in the same limestone formation and since *C. delprati* is the

commoner of the two species. However, none but Feihu Dong of the nine caves investigated in the Huoyan area and its vicinities were found to be inhabited by this remarkable species, which should be upper hypogean in nature judging from its occurrence in the type cave.

As was noticed in the *Notes* following the description of *Toshiaphaenops ovicollis* (UÉNO, 1999, p. 264), *Cathaiaphaenops delprati* is widely distributed in the type cave, but is commonest in the huge entrance room, most of which is in the twilight zone due to the sunlight coming from a very large entrance. The beetle is usually found from under stones lying on the muddy floor, even in light places so far as the floor is sufficiently moist. In deeper parts of the cave, the beetle becomes more cursorial and is often found on wet flowstones and rotten sticks abandoned by local people.

Cathaiaphaenops amplipennis S. UÉNO, sp. nov.

(Figs. 2–5)

Length: 5.15–7.40 mm (from apical margin of clypeus to apices of elytra; mean 6.26 mm); 5.70–8.25 mm (including mandibles; mean 6.94 mm).

The specimens from the Dishui Dong population are a little larger on an average and less variable in size than those from the type population; length from the apical margin of clypeus to the apices of elytra 5.70–7.40 mm (mean 6.48 mm) in the former, 5.15–7.10 mm (mean 6.02 mm) in the latter; total length including mandibles 6.35–8.25 mm (mean 7.18 mm) in the former, 5.70–7.80 mm (mean 6.68 mm) in the latter. However, this difference may be due to the fact that the Dishui Dong specimens were mostly taken on walls and flowstones, since larger individuals tend to be more cursorial than smaller ones.

Unusually variable species of medium to fairly large size, with narrow fore body and ample hind body. All the appendages long and slender. Colour reddish brown to dark reddish brown, shiny; palpi, apical antennomeres and venter of hind body usually a little lighter than the other parts.

Head longer than wide and usually a little shorter than prothorax, HL/HW 1.11–1.29 (M 1.20), HL/PL 0.82–1.01 (M 0.93), either subparallel-sided or widest at the level of anterior supraorbital pores and gradually narrowed posteriad from there; genae either straight except for posteriormost parts or very feebly convex, sparsely covered with short pubescence; neck wide, with the anterior constriction distinct at the sides and continuing onto both dorsum and venter; dorsum depressed though convex in fronto-vertexal area, with deeply impressed frontal furrows which are feebly arcuate and evanescent at posterior supraorbital pores; microsculpture fine but distinct, mostly consisting of wide meshes; labrum shallowly emarginate at the apex, which is either straight or slightly bisinuate at the median part; mandibles falciform, moderately arcuate inwards at the acute apices, right mandible strongly tridentate. Antennae relatively long and slender, reaching three-fifths to six-sevenths from the bases of elytra in ♂, four-sevenths to two-thirds from the bases of elytra in ♀; scape subequal in length to

pedicel, which is about five-eighths as long as segment 3, 4 or 5; segments 6–10 decreasing in length towards apex, 6–7 each 5 times or more as long as wide; segment 10 obviously shorter than 9 but longer than pedicel; terminal segment about as long as segment 9 and thin, evidently narrower than scape.

Pronotum subquadrate rather than barrel-shaped, distinctly wider than head, about as wide as long, widest at a level between five-ninths and two-thirds (usually at about three-fifths) from base, and more gradually narrowed towards base than towards apex; PW/HW 1.22–1.37 (M 1.31), PW/PL 0.96–1.08 (M 1.03), PW/PA ca. 1.49–1.74 (M ca. 1.60), PW/PB 1.22–1.49 (M 1.34); sides moderately bordered in front, more widely so in basal two-fifths, and widely reflexed in postangular parts, gently arcuate in apical third, either very slightly arcuate or nearly straight at the median parts, and feebly arcuate again near hind angles, with two pair of marginal setae, of which the anterior one is located at about apical seventh and the posterior one just in front of hind angles; apex either straight or shallowly emarginate, always narrower than base, PB/PA ca. 1.11–1.36 (M ca. 1.20), with front angles very obtuse, either slightly produced forwards or rounded off; base briefly produced at the median part whose posterior margin is either straight or lightly arcuate, and more or less obliquely emarginate on each side, with hind angles very obtuse though usually detectable; dorsum convex and completely glabrous, with vague transverse striations; microsculpture mostly clear, consisting of fine transverse lines; median line fine, reaching neither apex nor base; apical transverse impression usually distinct, either smooth or longitudinally wrinkled; basal transverse impression and basal foveae mal-defined, the latter extending anteriorly; basal area longitudinally strigose, though sometimes faintly. Propleura not expanded laterad.

Elytra variable in configuration, more or less ovate and ample, much wider than prothorax, usually widest at about basal third and a little more gradually narrowed towards bases than towards apices, sometimes widest at about basal two-fifths and only feebly narrowed towards bases, forming broad basal parts; EW/PW 1.87–2.08 (M 1.94), EL/PL 2.71–3.11 (M 2.96), EL/EW 1.46–1.56 (M 1.50); shoulders distinct, usually rounded but sometimes almost square in large individuals; prehumeral borders usually straight, a little less oblique in larger individuals than in smaller ones, sometimes gently arcuate and perpendicular to the mid-line at the innermost portions in small individuals; sides moderately bordered throughout, distinctly serrate and ciliated particularly at the humeral parts, gently arcuate in basal halves and less so posteriad in most specimens examined, nearly parallel-sided before middle and feebly arcuate posteriad in some large individuals, preapical emargination slight; apices narrowly rounded, usually forming a small re-entrant angle at suture; dorsum well convex, steeply declivous at the sides, obliquely depressed or sometimes shallowly hollowed in basal areas, and wholly covered with minute piliferous punctures; microsculpture distinct, consisting of fine transverse lines; striae superficial and not sharply impressed though traceable throughout, more or less distinctly punctate, 1–5 deepened in basal area, 1 approaching to suture behind middle, 2 usually forming apical anastomosis with 3, stria 8 not deepened apically; scutellar striole fairly long though shallow; apical

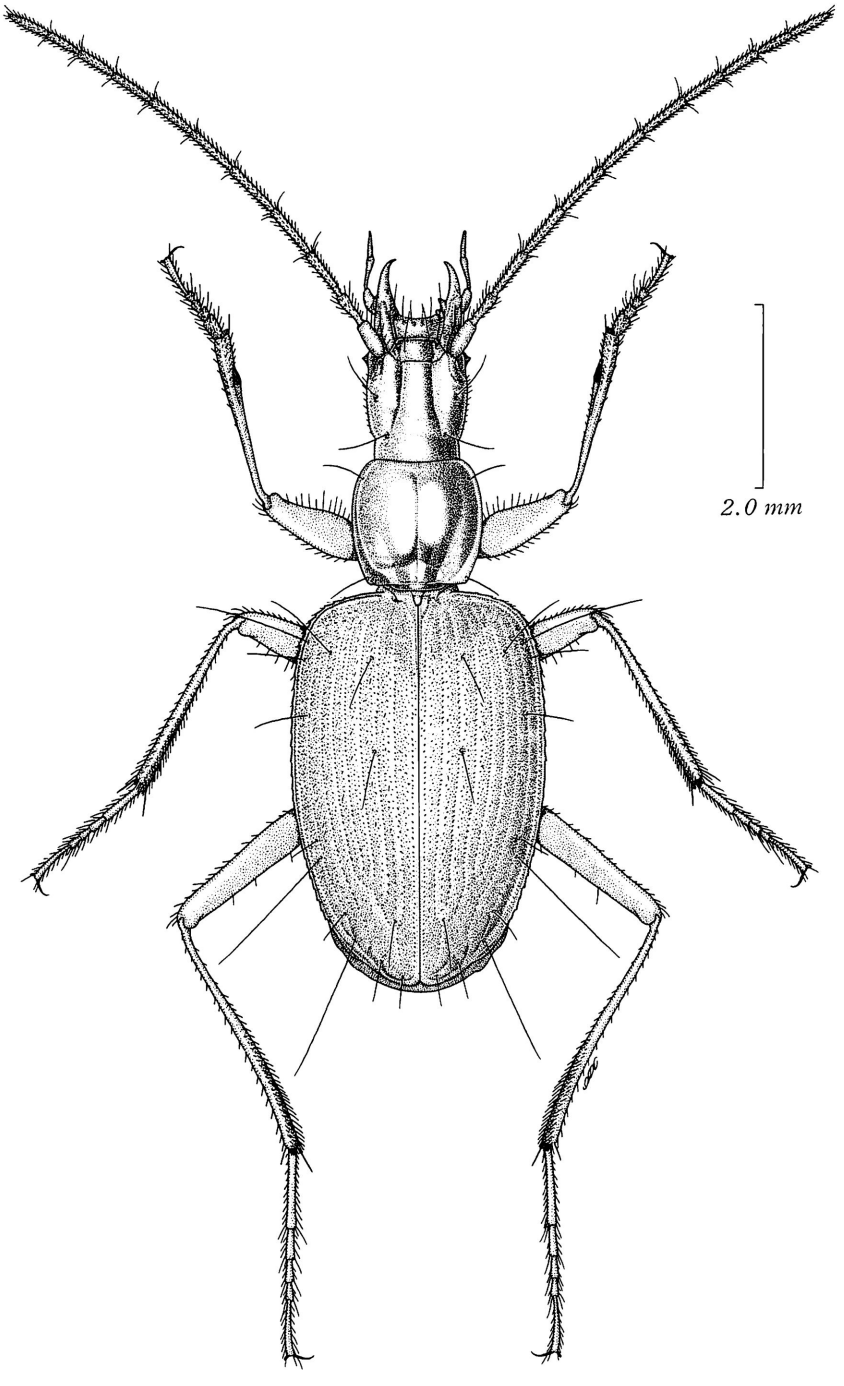
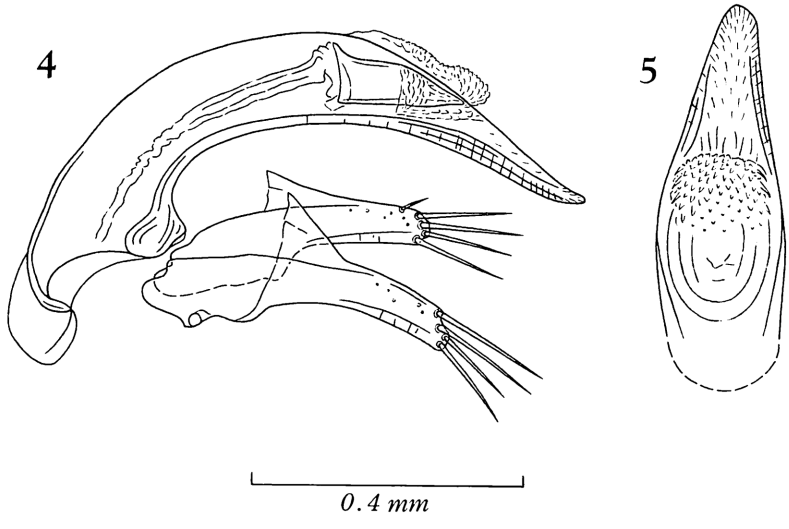


Fig. 3. *Cathaiaphaenops amplipennis* S. UÉNO, sp. nov., ♂, from Laoxiao Dong Cave at Nongjiagai.

striole very short but deep, usually free at the anterior end though directed to stria 7; intervals flat even near suture, apical carina short and obtuse; stria 3 with two setiferous dorsal pores at 1/8–1/7 and 2/5–4/9 from base, respectively; preapical pore located at the apical anastomosis of striae 2 and 3, and much nearer to suture than to apex; marginal umbilicate pores as in the other species of the genus.

Ventral surface minutely pubescent, the pubescence being particularly conspicuous on abdominal sternites, each of which bears a pair of paramedian setae; anal sternite bisetose in ♂, quadrisetose in ♀. Legs long and slender; protibia straight, wholly pubescent and not externally grooved; metatibia about two-thirds as long as elytra and more or less arcuate outwards in apical part, metatarsus about four-fifths as long as metatibia; tarsomere 1 about as long as or slightly longer than tarsomeres 2–4 combined in both meso- and metatarsi; in ♂, protarsomeres 1 and 2 moderately dilated and denticulate inwards at the apices.

Male genital organ closely similar to that of *C. delprati*, very small and lightly sclerotized. Aedeagus only two-ninths as long as elytra in large individuals, a little larger than that (more than three-thirteenths as long as elytra) in small ones, moderately arcuate, gently depressed, and gradually acuminate from behind middle in profile, with fairly large basal part and long flattened apical lobe; basal part curved ventrad, with large basal orifice whose sides are widely emarginate; sagittal aileron fairly large and ventrally protrudent; viewed dorsally, apical lobe nearly symmetrical, gradually narrowed towards the tip, which is obtusely subangulate; viewed laterally, apical lobe slender, gently reflexed at the apical portion, and narrowly blunt at the extremity; ventral margin widely emarginate in profile. Inner sac armed with a subspatulate copula-



Figs. 4–5. Male genitalia of *Cathaiaphaenops amplipennis* S. UÉNO, sp. nov., from Laoxiao Dong Cave at Nongjiagai; left lateral view (4), and apical part of aedeagus, dorso-apical view (5).

tory piece just inside apical orifice, which is very thin and hyaline, about two-ninths as long as aedeagus, tapered towards apex from behind middle, and apically enveloped with a creased sheet of minute scales and spinules extending to the outside of apical orifice. Styles fairly large with elongate apical parts but devoid of ventral apophysis even on the left one, each usually bearing four apical setae but sometimes supplemented by a fifth one; a minute extra seta rarely present on the dorsal margin (cf. Fig. 4).

Type series. Holotype: ♂, allotype: ♀, Laoxiao Dong Cave, 23–IX–1997, S. UÉNO leg. Paratypes: 7 ♂♂, 3 ♀♀, Laoxiao Dong Cave, 23–IX–1997, S. UÉNO, Y. NISHIKAWA & T. KISHIMOTO leg.; 11 ♂♂, 3 ♀♀ (incl. 1 teneral ♂), Dishui Dong Cave, 23–IX–1997, S. UÉNO, Y. NISHIKAWA & T. KISHIMOTO leg. All deposited at present in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Localities. Limestone caves called Laoxiao Dong (type locality!) and Dishui Dong, at Nongjiagai of Laoli Xiang in Xianfeng Xian, at the southwestern part of Hubei, Central China.

Notes. It seems worth noting that the male genital organ of the present species is almost identical with that of *C. delprati*, though the two species are markedly different in facies and other morphological details. This species may be closest to *C. draconis* DEUVE (2000, p. 160, figs. 5, 8, 12) from eastern Sichuan, whose male genitalia are also similar to those of *C. delprati* and *C. amplipennis*.

The two limestone caves harbouring the present species were explored by a Franco-Chinese party of speleologists from the end of 1992 to the beginning of 1993, and were carefully described and illustrated (BARBARY *et al.*, 1995, pp. 77–80). They are located on the same hill but at different elevations: Laoxiao Dong Cave near the top of a ridge and Dishui Dong Cave at the bottom of a deep blind valley.

In Laoxiao Dong Cave (cf. BARBARY *et al.*, 1995, pp. 79–80, fig. 57), the trechine beetle was found in the steeply descending main gallery even near the entrance but mostly at the bottom of the muddy slope. Almost all the specimens were taken from under stones lying in wet places, but there were a few that were found crawling about among gravel. In Dishui Dong Cave (cf. BARBARY *et al.*, 1995, pp. 77–79, fig. 56) on the contrary, most specimens obtained were found crawling on moist walls or flowstones, sometimes more than 2 m above the floor, and only a few specimens were taken from under stones lying on the banks of a narrow underground stream. A single specimen of *Toshiaphaenops globipennis* S. UÉNO (1999, p. 624, fig. 4) was met on the same wall as was inhabited by two individuals of *C. amplipennis*.

要　　約

上野俊一：中国湖北省南西部産 *Cathaiaphaenops* 属アシナガメクラチビゴミムシの1新種. —— 中国湖北省南西部の咸丰县にある老硝洞から，*Cathaiaphaenops* 属のアシナガメクラチビゴミムシの1新種を記載し，これに *C. amplipennis* S. UÉNO という新名を与えた．また，この

属のメクラチビゴミムシ類の体の大きさや形状には，いちじるしい個体変異がみられることを指摘し，*Amygdalotrechus* DEUVE をその下位同物異名と認めて整理した．

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Elytra, Tokyo, **28** (2): 274, November 15, 2000

New Records of Staphylinid Beetles (Coleoptera) from Nii-jima Island of the Izu Islands, Central Japan

Yasuaki WATANABE

Laboratory of Insect Resources, Tokyo University of Agriculture,
Atsugi, Kanagawa, 243–0034 Japan

No staphylinid beetles have hitherto been recorded from Nii-jima Island of the Izu Islands, Central Japan. Through the courtesy of Dr. Ienori FUJIYAMA, Wakô-shi, three species of staphylinid beetles were given to me for study. They were obtained by himself on July 23, 1974, at Honson on the island. All the species are new to the fauna of the island, as recorded below.

1. *Lithocharis nigriceps* KRAATZ, 1♂.
2. *Philonthus lewisius* SHARP, 1♂, 3♀♀.
3. *Philonthus amicus* SHARP, 1♀.

I thank Dr. I. FUJIYAMA for his kindness in giving me the specimens.

Elytra, Tokyo, **28** (2): 275–284, November 15, 2000

The Fine Structure of the Stridulatory Apparatus of the Water Scavenger Beetle *Regimbartia attenuata* (FABRICIUS) (Coleoptera, Hydrophilidae)

Nobutaka WATANABE

Department of Natural History, Graduate School of Science,
Tokyo Metropolitan University, Hachioji, Tokyo, 192–0397 Japan

Abstract The stridulatory apparatus of adult *Regimbartia attenuata* (FABRICIUS, 1801) was observed using scanning electron microscope, based upon specimens from Chiba Prefecture, in the Kanto area (Japan) to describe in detail the fine structure, and to compare it with those of some Japanese species of the genera *Berosus* LEACH and *Laccobius* ERICHSON. The plectrum (on the inner face of the elytron) is almost ellipsoidal in shape but often tapering anteriorly, and it is composed of a large number of minute cusps which are very close-set (7.6–13.4 cusps/100 μm^2) near the center. The pars stridens (on the laterosternite 3 of the abdomen) may be subdivided into the denticulated area, the ridged area and the region posterior to the ridged area. The ridged area is composed of 39–55 ridges, which are of the continuous eulamellated type. Sexual dimorphism is discernible: the mean number of the ridges in the female is significantly larger than in the male, but the functional significance is not clear at present. A process leading to the ridge through various denticulations is supposed: it is almost coincident with the course B proposed by MAILLARD and SELLIER (1970). Various characters in the plectrum, the denticulated area and the ridged area are more or less species-specific, but they also indicate some generic traits.

Introduction

In a considerable number of hydrophilids the stridulatory apparatus, which functions through the abdomino-elytral method (DUMORTIER, 1963), has been examined chiefly as to location, structure and stridulatory mechanism, and less often regarding produced sounds. In the genus *Regimbartia* ZAITZEV, however, no detailed work on this field has, to my knowledge, been carried out, while in its allied genus *Berosus* LEACH one may encounter numerous articles in the entomological literature: for example, examining North American *Berosus*-species, VAN TASSELL (1965) recorded their stress sounds (disturbance chirps of ALEXANDER (1967) (RYKER,1972)) and premating sounds (tremolos) as spectrograms, suggesting that the latter may function as an isolation mechanism in this genus. (See also for *Berosus*, BROCHER, 1912; DUMORTIER, *1963;* MAILLARD, 1969; MAILLARD & SELLIER, 1970; OLIVA, 1992.)

The difficulty of perceiving stridulation by the human ear in the major parts of hydrophilid species examined has been mentioned (MAILLARD, 1969). In *Laccobius* sound emission has been ascertained by some authors (*e.g.*, VAN TASSELL, 1965; SCHELOSKE, 1975; PIRISINU *et al.*, 1988), whereas, in my experience, no stridulation has usually been perceptible in the laboratory, probably owing to the feebleness. Also in *Regimbartia attenuata* (FABRICIUS, 1801) there is no clear evidence for sound production, but it possesses the apparatus very similar in structure to those of *Berosus*, in which their chirps are so clear that they are detectable even at a distance from the sound source.

In this paper I intend to describe in detail the structure of the stridulatory apparatus of adult *R. attenuata* using scanning electron microscope (SEM), and to compare it with those of *Berosus*- and *Laccobius*-forms, which are provided with the ridged area within the pars stridens as in the species studied here, taking account of its evolutionary trends and taxonomical implications.

Material and Methods

The adult specimens examined were collected at a locality in the Kanto Plain, on the main island of Japan, Honshu, by the author himself, all being preserved in 60% ethanol (detailed collectig data: Hiraga, Inba-gun, Chiba-ken Prefecture, September 12, 1995).

For scanning electron microscopy (SEM), after cleaning in several ways including soaking in 5% KOH solution (at room temperature) and sonication, the elytra and the laterosternites were dehydrated using an ethanol series, transferred to t-butanol (at 26–30°C), subsequently dried using a freeze-drying device. The dried samples were mounted on stubs, sputter-coated with gold, and examined/photographed through a JEOL JSM–5300 SEM nearly always at 10 kV.

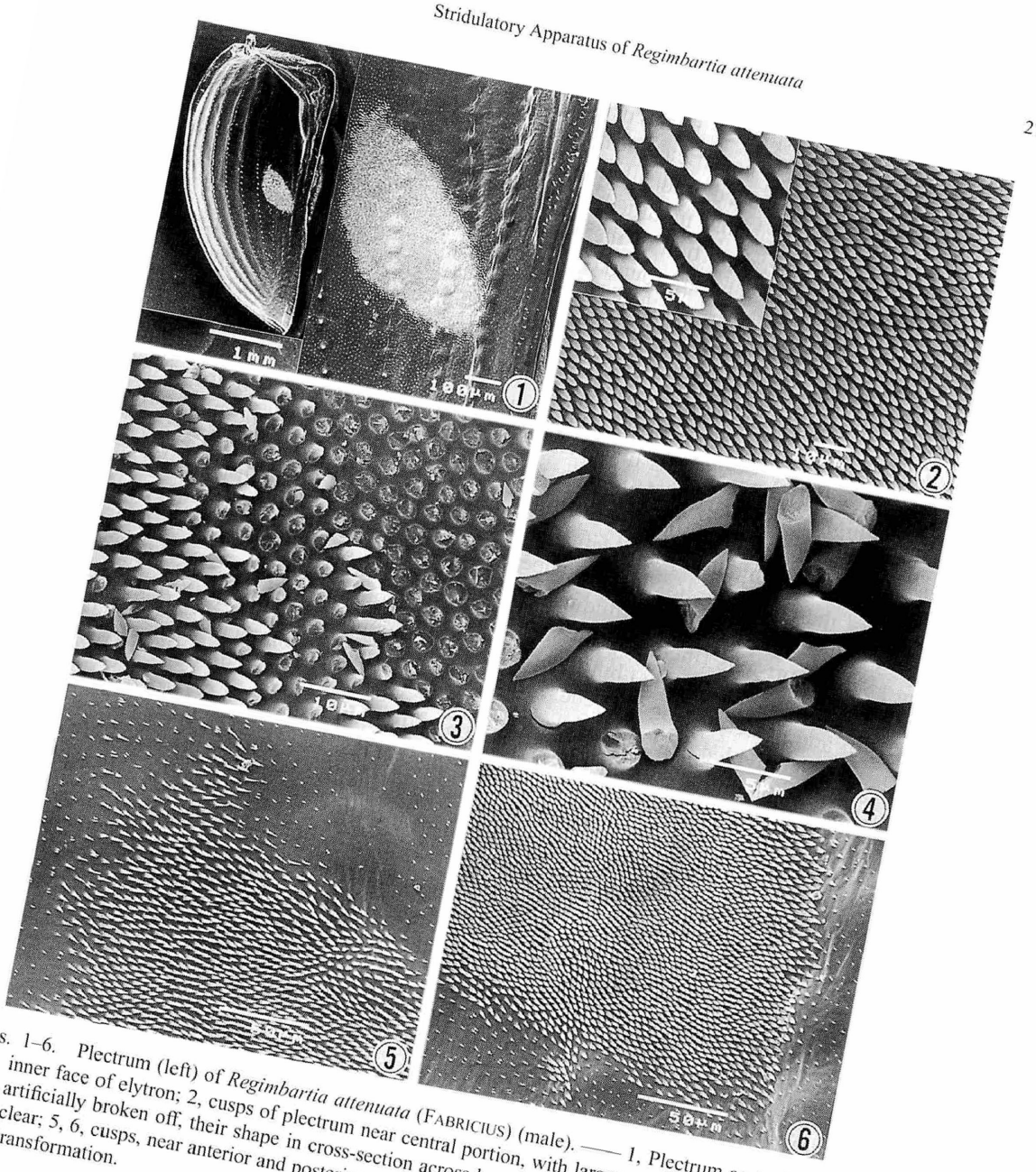
I mainly followed DUMORTIER (1963), VAN TASSELL (1965) and PIRISINU *et al.* (1988) in adopting morphological terms used here.

Observations

Plectrum. The plectrum (Figs. 1–6) is located on the inner face of the elytron, just at the middle of the entire length, and at cr. 7/10 of the elytral width from the elytral suture (Fig. 1). It is somewhat brownish in color, a little more raised than the elytral ground.

It is almost ellipsoidal in shape but often tapering anteriorly, with its inner contour more rounded than the outer one (Fig. 1). The long axis is at an angle of 30–40° to an axis through the elytral shoulder and the apex, cr. 2.2 times as long as the short one, having cr. 1/5 of the whole length of the elytron (Fig. 1).

The plectrum is composed of a large number of minute cusps (Figs. 2–4), which appear to be arranged wavily. Cusps are usually more or less decumbent, apical direc-



Figs. 1–6. Plectrum (left) of *Regimbartia attenuata* (FABRICIUS) (male). —— 1, Plectrum as a whole on inner face of elytron; 2, cusps of plectrum near central portion, with larger magnification; 3, 4, cusps artificially broken off, their shape in cross-section across base and form in various aspects becoming clear; 5, 6, cusps, near anterior and posterior ends, respectively, of plectrum, showing their successive transformation.

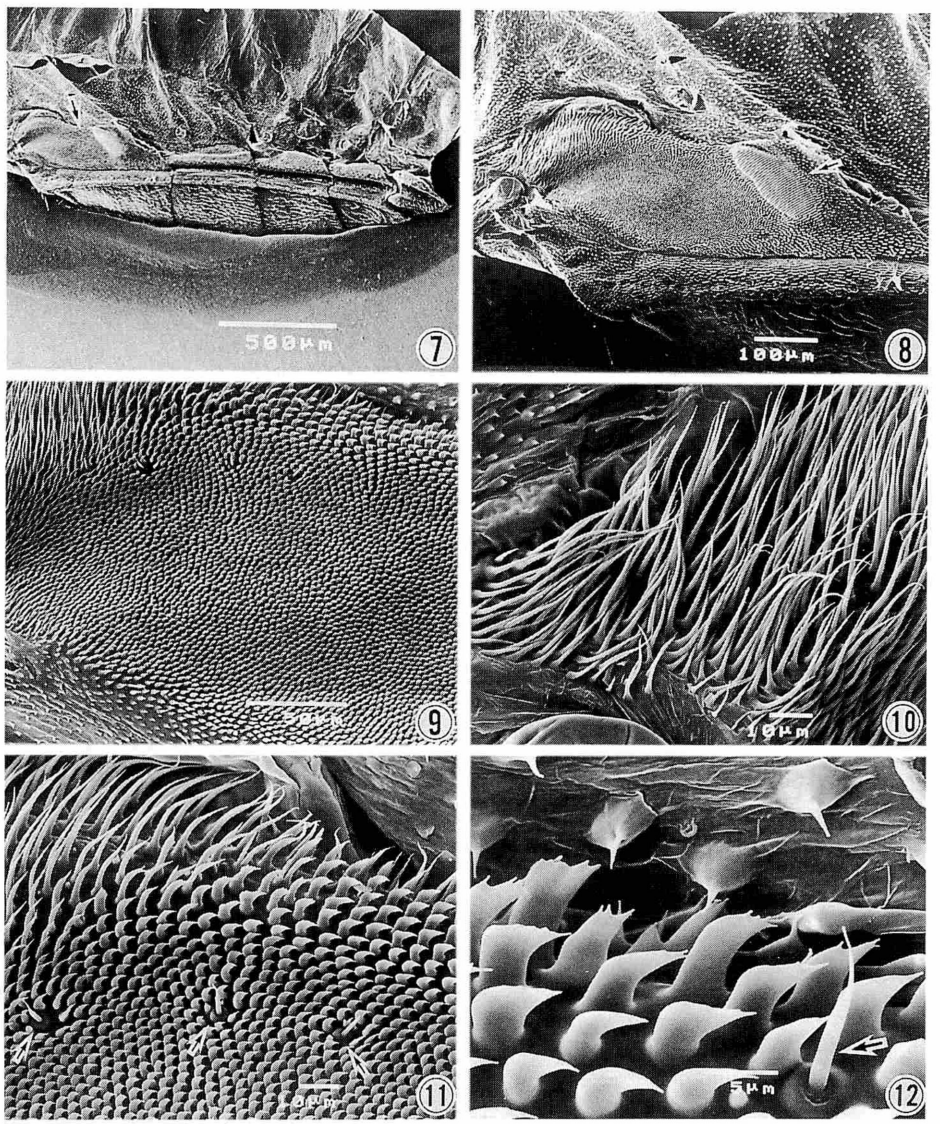
tions of cusps fluctuating successively between the lateral edge of the elytron and the elytral apex. The most crowded portion is fairly ample, being eccentrically situated toward the elytral suture on the posterior half of the plectrum, where the density is

7.6–13.4 cusps/100 μm^2 (Fig. 2). Each cusp in its typical form is circular in cross section across the base, feebly constricted near the base, then a little depressed after there, becoming roundedly sharpened gradually toward the apex (Figs. 3, 4). Cusps gradually become sparser, more variably modified (usually slenderer in shape and smaller in size) toward the peripheral portion of the plectrum, being eventually merged into the usual denticulation on the elytral ground (Figs. 5, 6).

Pars stridens. The pars stridens (Figs. 7–24) is located on the laterosternite 3 (Fig. 7), and may be subdivided into the denticulated area, the ridged area and the region posterior to the ridged area (Fig. 8). (Denticulated area; Figs. 9–18) Usual long hairs are crowded in the anterior part (Fig. 10), but they become rather abruptly shorter toward the ridged area to transform into falcate or hook-like processes (Fig. 11). Along the superior edge of the sclerite, however, the state of transformation is more variable: for example, hairs with the dichotomous tip, bill-like processes bearing the mono- or polydenticulated top are found there (Figs. 11–14). (Ridged area; Figs. 19–22) The area is nearly ellipsoidal in shape, situated at cr. 3/5 of the entire length from the anterior end of the laterosternite, near the superior edge of this sclerite. The long axis is at an angle of 38–56° to the longitudinal one of the insect body, and 1.5–2.3 times as long as the short axis (including the short ridges). About 39–55 ridges are countable (see also concluding remarks) but this counting is somewhat difficult near the anterior (Fig. 20) and posterior (Fig. 24) ends, where they are often incomplete, interrupted or irregularly subdivided. Ridges are placed along the short axis of the area, almost parallel to each other, and at subequal intervals (3.2–3.9 μm in the central part). Each ridge is cr. 1.0–1.4 μm wide near the center. Short ridges (Figs. 19, 21, 22, 24) are also present around major ones, but both are not in a line usually. The area is comparatively well-defined, but in peripheral parts it has also transitional zones to other areas: the transition proceeds abruptly in the apical part (Fig. 20), but gradually near the posterior end (Fig. 24) where ridges are successively changed into crest-like, multidentate or triangular minute processes and so on toward the inferior edge. Laterally, however, this is not always found especially at the side of the inferior edge (Fig. 21). (Region posterior to ridged area; Figs. 23, 24) The denticulation in this region is fairly sparser than in the denticulated area, the sparsity being notable posteriorly, near the superior edge of the sclerite.

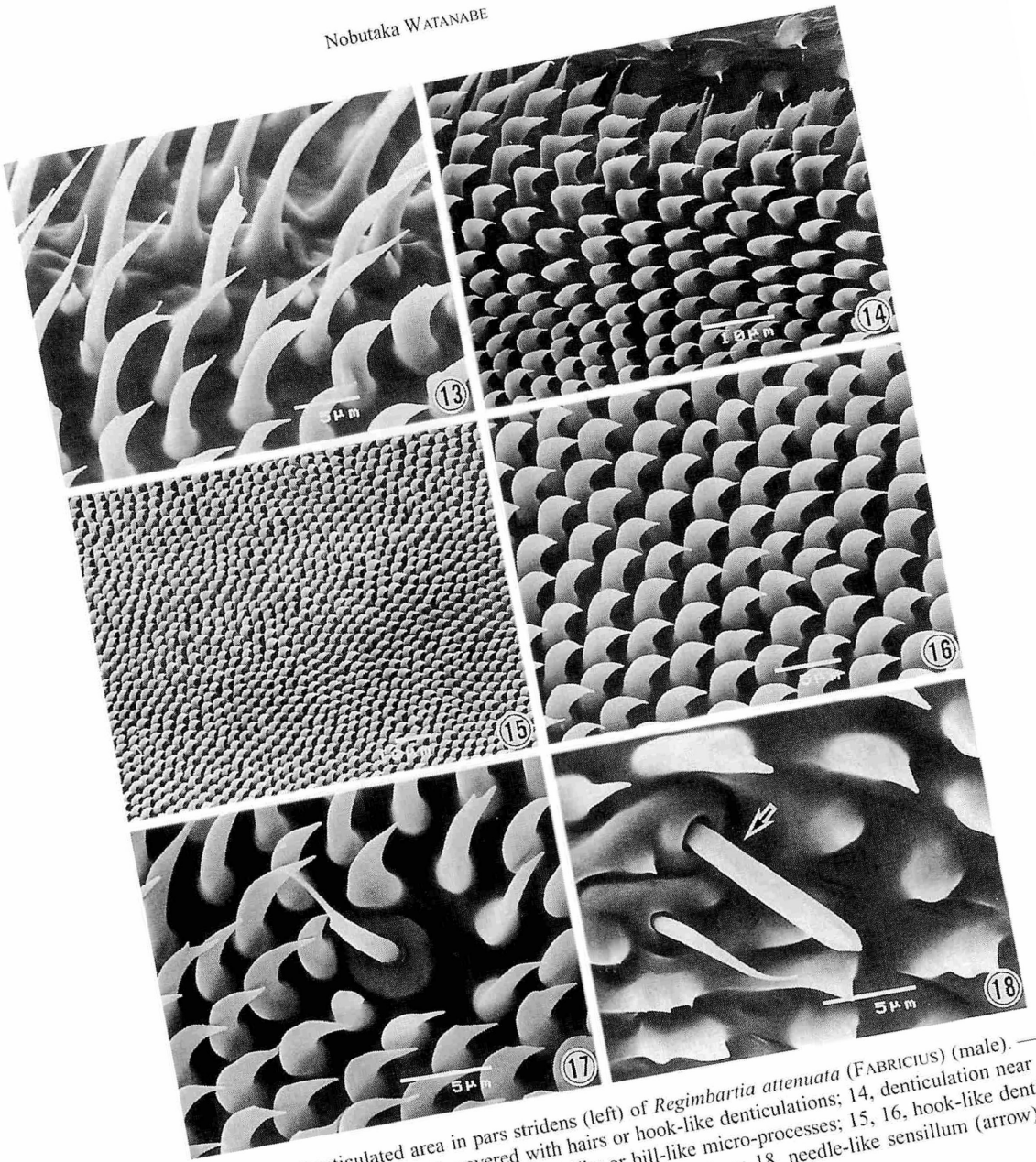
Sensilla. There are at least 14 conspicuous sensilla (Figs. 11, 12, 17, 18) within and near the portion which probably functions as "the pars stridens": the presence may be detectable by the disordered arrangement in denticulation except within the site covered with long hairs (Figs. 9, 10). Similar sensilla have already been reported (MAILLARD & SELLIER, 1970 (*Laccobius*); RYKER, 1972 (*Tropisternus*)).

They all possess a marked rim of the socket, being assigned to the following two types: one (Figs. 11, 12, 17) is shorter and suddenly narrows near the apex, to which almost all of them belong, whereas the other (Fig. 18) is longer, stouter and needle-like. The former sensilla are found along the superior edge of the sclerite within the principal part of the denticulated area except for several which are scattered more in-

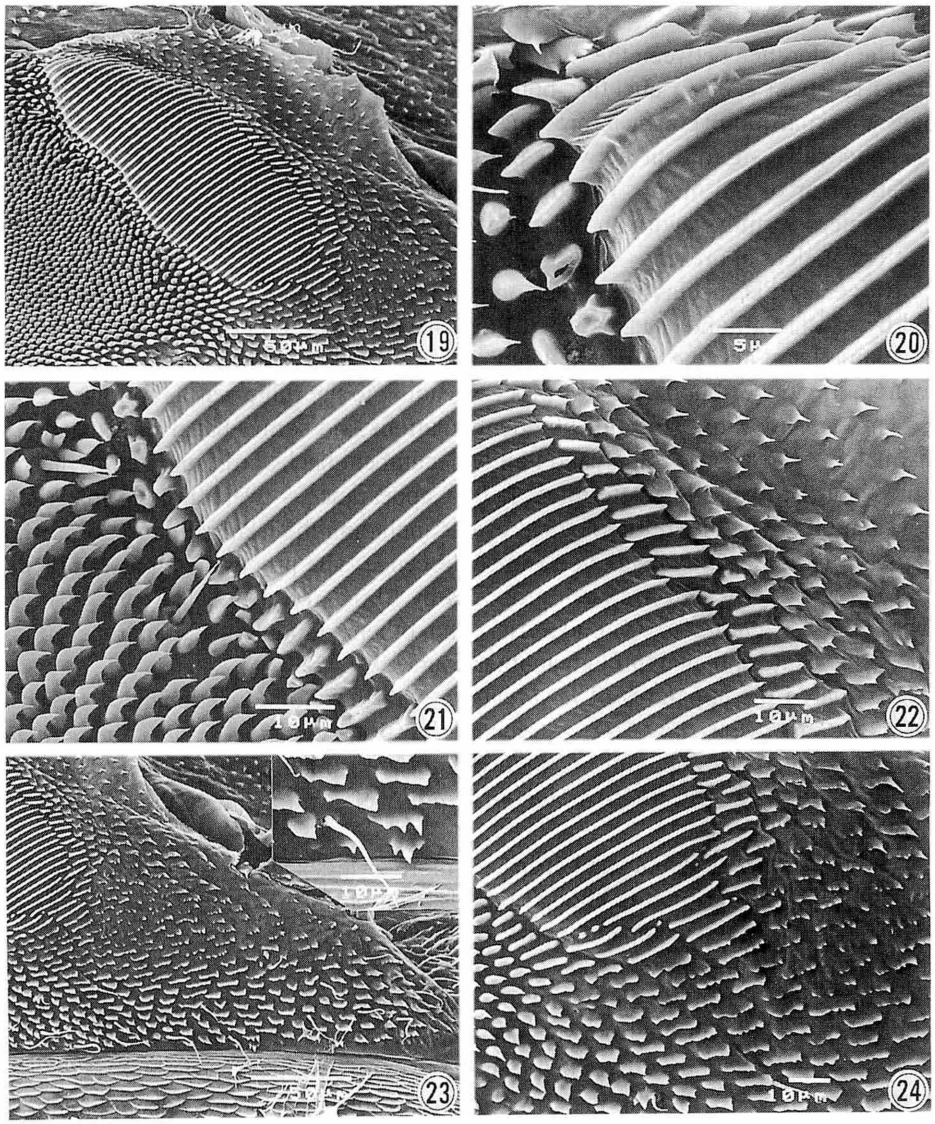


Figs. 7–12. Laterosternites (left) and pars stridens (left) of *Regimbartia attenuata* (FABRICIUS) (male). —— 7, Abdomen, showing laterosternites (arrow points to laterosternite 3); 8, laterosternite 3, showing pars stridens with ridged area (arrow); 9, denticulation near central portion in denticulated area; 10, anterior part in denticulated area, showing covering of hairs; 11, 12, denticulation along superior edge of this sclerite, showing their various transformations (arrows point to sensilla).

ward near the ridged area, whereas a sensillum of the latter lies somewhat apart from *there. Still* another needle-like sensillum is found, but it is situated near the anterior end of this sclerite, apparently outside the pars stridens.



Figs. 13–18. Denticulated area in pars stridens (left) of *Regimbartia attenuata* (FABRICIUS) (male). —— 13, Transitional zone of site covered with hairs or hook-like denticulations; 14, denticulation near superior edge of this sclerite, showing hook-like or bill-like micro-processes; 15, 16, hook-like denticulation near central portion; 17, sensillum within pars stridens; 18, needle-like sensillum (arrow) between ridged area and inferior edge of this sclertie.



Figs. 19–24. Pars stridens (left) of *Regimbartia attenuata* (FABRICIUS) (male). —— 19–22, Ridged area; 23, 24, region posterior to ridged area. —— 19, Ridged area as a whole; 20, anterior part of ridged area, showing abrupt transition; 21, lateral side of ridged area, with various denticulations; 22, lateral side of ridged area, with shorter ridges; 23, whole region posterior to ridged area, with larger magnification near inferior edge; 24, transitional zone near posterior end of ridged area, showing gentle successional change.

Concluding Remarks

The difference between the right and left stridulatory apparatus in *Regimbartia attenuata* is trivial even in quantity, both almost exactly being in mirror-image to each other. A sexual dimorphism is present: the difference in the mean number of ridges was statistically significant between the two sexes (♂: 44.00 (the mean)±1.23 (the standard error of the mean), n=10; ♀: 48.90±0.99, n=10. t=−3.100, P=0.006, on the left laterosternite 3, with an independent-samples t test), but the functional significance is not clear at present.

Ridges in this species are of the continuous eulamellated type, which has been defined by MAILLARD and SELLIER (1970) together with two other types, the discontinuous eulamellated and the polylamellated. Judging from the transition in the denticulation area, it may be supposed that a process leading to the ridge was as follows:

Through hook-like and bill-like denticulations and somewhat irregular lamellae, usual hairs — more or less long and lightly decumbent backwards, and nearly the same as those on ordinary laterosternites 4–7 in appearance — were transformed into a longer lamella by some morphological events including their lateral depression, shortening, elongation at the lateral side and coalescence. The process is almost coincident with the course B, which has been proposed by MAILLARD and SELLIER (1970) based upon *Berosus signaticollis* CHARPENTIER and others, though usual hairs eventually come to the same end also through another course A.

Compared the apparatus of *R. attenuata* with those of some Japanese species of *Berosus* LEACH (*lewisius* SHARP, *elongatulus* JORDAN, *signaticollis punctipennis* HAROLD, *japonicus* SHARP and *pulchellus* MACLEAY) (author's unpublished data) and *Laccobius* ERICHSON (*oscillans* SHARP and *fragilis* NAKANE) (ditto), the following became evident.

The plectrum as a whole and cusps are more or less species-specific in shape, but also show some generic traits, though the distribution of the different forms of structure of the stridulatory apparatus never squares with the systematic divisions in Coleoptera, unlike Orthoptera and Homoptera (DUMORTIER, 1963): in *Berosus* the anterior part of the plectrum is not much pointed unlike in *R. attenuata*, and the shape in contour considerably differs from species to species, while in *Laccobius* it is very elongate anteriorly, and subtly differs between the two species; in *Berosus* the cusp is usually with a more sharpened tip than in *R. attenuata*, but in *Laccobius* above-mentioned species are fairly different from each other in that *fragilis* possesses cusps each with a minute tip at the extreme end instead of a simple end. Also in the pars stridens the situation is similar in the plectrum: the ridged areas of *Regimbartia* and *Laccobius* are relatively smaller than in *Berosus*; the long axis of the area lies almost at right angles to the running direction of ridges in *Regimbartia* and *Berosus*, but in *Laccobius* the axis is almost parallel with their directions; the denticulated area is much crowded, the denticulation becomes hook-like near the ridged area in *Regimbartia*, but in *Berosus* it is sparser, not so denticulated, and in *Laccobius* it is close, gradually becoming blade-like

toward the ridged area; the anterior site covered with long hairs is fairly conspicuous in *Regimbartia* and *Laccobius*, whereas it is completely absent in *Berosus*.

The laterosternite 2 is obscure, and not specialized in *Regimbartia*; in *Berosus* it is larger and provided with a similar denticulation to the sclerite 3, but it is indistinct whether this sclerite is asssociated with sound emission or not; in *Laccobius* it is larger again and with conspicuous processes, but other ordinary laterosternites 4–7 are also markedly denticulated instead of being covered with common hairs as usual on these sclerites.

The true range of the pars stridens is not clear except for the ridged area, but it seems that the denticulated area is also responsible for stridulation, as pointed out by PIRISINU *et al.* (1988), because species with the latter area alone also stridulate (*e.g.*, *Enochrus japonicus* (SHARP) and *Hydrochara affinis* (SHARP) (author's observations); *Tropisternus* spp. (RYKER, 1972)). In this context the distribution of the sensilla on this sclerite might become a clue to answer the question. It is probable that they are at least mechanically sensitive, but their detailed function is unknown.

要　　約

渡辺信敬：マメガムシの発音装置の微細構造．—— 千葉県産マメガムシ *Regimbartia attenuata* (FABRICIUS, 1801)の成虫を対象として，その発音装置(stridulatory apparatus)の微細構造を走査型電子顕微鏡の観察にもとづいて記述するとともに，その形質進化や分類学的価値についても考察した．本種の発音装置は，他のガムシ類同様に，腹部—翅鞘型に入り，（翅鞘は固定されたままで）腹部が動かされることによって音を発すると思われる．弦部(plectrum)は翅鞘内面上，外縁付近にあり，摩擦部(pars stridens)は第3側腹板(laterosternite)上に位置する．弦部は楕円形に近いが，前端部でしばしば尖った形状をとり，その長軸は，翅鞘肩部—翅端部を通る軸に対し30–40°傾斜している．また，この弦部は多数の微小尖突起(cusps)から成っていて，中央部付近では非常に密である(7.6–13.4箇/100 μm^2)．摩擦部は，3部分に分けることもできる(小歯状部域，隆起線部域，隆起線部域より後方の領域)．小歯状部域では，通常毛から嘴状，鎌状あるいは鈎状小突起へと変化していく状態が見てとれる．隆起線部域はほぼ楕円形で，その長軸はこの昆虫体の縦軸に対して38–56°傾斜，およそ39–55本の隆起線より成っているが，これらはほぼ平行，ほぼ等間隔に配置されている．この部域の後方では，小歯状突起はかなり疎らである．摩擦部内およびこの付近には，2種類の顕著な感覚器官が見られるが，その機能は未知である．

この発音装置の左右差は微小であるが，摩擦部の隆起線の本数には性的二型が認められ，雌の方がやや本数が多い．しかし，この機能上の意義は目下のところ判然としない．この隆起線は連続性真正薄板型(continuous eulamellated type) (MAILLARD & SELLIER, 1970)に入る．また，通常毛からこの隆起線へと至る筋道が推定されたが，それは鈎状あるいは嘴状小突起や幾分不規則的な薄板を経て，長い薄板へと至るものであり，上掲著者の提唱するBという筋道にほぼ一致する．本種と同型の（隆起線部域のある）装置を持つ2属，ゴマフガムシ属(*Berosus*), シジミガムシ属(*Laccobius*), の日本産種と比較した結果，弦部（全形および微小尖突起），小歯状部域，隆起線部域等では，多かれ少なかれ種特異的な形質が認められるが，属の特質もみられる場合

のあることが分かった.

第2側腹板は本種では明瞭ではないが，上記の別属ではともにかなり大きい．しかし，これが発音にかかわっているかどうかは定かではない.

摩擦部の真の範囲ははっきりしないが，この部分に関連する感覚器官の分布状態は，この問題を解く手掛かりとなるかもしれない.

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Elytra, *Tokyo*, **28** (2): 285–294, November 15, 2000

Uenohadesina styx, a New Cave-dwelling Genus and Species of the Subfamily Omaliinae (Coleoptera, Staphylinidae) from South Korea

Aleš SMETANA

Agriculture and Agri-Food Canada, Research Branch,
Central Experimental Farm, K.W. Neatby Bldg.,
Ottawa, Ontario K1A 0C6, Canada

Abstract A new cave-dwelling genus and species, *Uenohadesina styx*, is described and illustrated from specimens taken in three different caves in South Korea. Important features of the new taxon are discussed and its taxonomic position and relationships within the tribe Omaliini are briefly discussed.

Introduction

Recently, a series of a conspicuous beetle, taken in three different caves in South Korea quite some time ago, was offered to me for study by my esteemed friend, Dr. Shun-Ichi UÉNO, Tokyo. It was suspected that the beetle may belong to the subfamily Omaliinae of Staphylinidae. After dissection and closer study of the specimens, this theory was indeed confirmed, despite the entirely "non-staphylinid" appearance of the beetle. In addition, it was also established, not surprisingly, that this obviously new species cannot be associated with any known genus. Consequently, it was necessary to establish a new genus for it. This new genus is now joining several other genera of the Omaliinae, with members whose general appearance does not suggest association with the Staphylinidae (e.g., *Brathinus*).

In the following, the new taxon is described and illustrated, and its taxonomic position and possible relationships within Omaliinae are briefly discussed.

Uenohadesina gen. nov.

(Figs. 1–15)

Type species: *Uenohadesina styx* sp. nov.

Gender: feminine.

Description. Body form small; in general with voluminous, markedly convex elytra, entirely covering abdomen in most specimens, and with small, anteriorly narrowed forebody; dorsal surface without microsculpture, with scattered, hardly visible, minute setae.

Head, from anterior margin of clypeus to dorsally indistinctly delimited nuchal constriction, about as long as width across eyes, rather flat; with indefinite, small, round impression posteromediad of each eye, and with variably pronounced, in general more or less elongate, impressions on posterior portion of disc in front of posterior margin of head, diverging anteriad; ocelli absent but elongate impressions each with distinct, round pigmented spot. Epistomal suture not apparent. Eyes very small, slightly convex, tempora considerably longer than eyes seen from above (ratio 3.5), each with minute, obtuse denticle in front of nuchal constriction. Antenna filiform, gradually thickened anteriad, about as long as combined length of head and pronotum (from anterior margin of clypeus to posterior margin of pronotum); first four basal segments with scattered fine setae, remaining segments with additional dense and short setae (Fig. 6). Maxilla with relatively robust and long palpus, first segment minute, segment 2 almost as long as two following segments combined, last segment almost twice as long as segment 3, moderately conically narrowed anteriad (Fig. 3). Labium short, widely emarginate-bilobed, palpus three-segmented with middle segment small, narrower and shorter than stout last segment (Fig. 2). Mentum large, trapezoidal, with both anterior and posterior margins finely margined; with numerous, deep coarse punctures. Submentum and gula somewhat more finely and sparsely punctate than mentum, gular sutures from metatentorial pits markedly convergent posteromediad and disappearing in markedly developed basal impression; postgenae with distinct striae radiating from basal impression (Fig. 4). Pronotum at base slightly wider than length along midline (ratio 1.20), considerably narrowed anteriad, basal margin therefore markedly wider than anterior margin (ratio 1.88); disc moderately transversely convex in anterior half, gradually flattened toward posterior margin, surface even, smooth, without any impressions; pronotal hypomeron conspicuously large, triangular. Prosternum quite short, markedly transverse with anterior margin widely concave; with minute, acute intercoxal projection at middle of posterior margin (Fig. 4). Mesosternum with distinctive microsculpture (Fig. 8), markedly margined anteriorly, marginal carina extended posteriad as distinctive medial keel, markedly elevated in posterior half and then steeply falling toward intercoxal projection (lateral view, Fig. 8); intercoxal projection with apex relatively wide, angulately emarginate (Figs. 8, 9). Metasternum large, moderately coarsely and densely punctate, punctures bearing short, pale setae; anterior metasternal projection short and wide, broadly rounded and margined anteriorly, widely separating middle coxae (Fig. 9); posterior intercoxal projection minute, minutely notched; metasternum with series of small pits parallel to margin of hind coxa, leaving glabrous strip as wide as length of one seta along margin; distal part of hind coxa with posterolateral portion markedly extended and flattened before articulation with trochanter (Fig. 5). Legs long and slender, with very long tibiae; all tibiae without spines at lateral margin, with distinct apical ctenidium (Fig. 7). All tarsi with five segments, empodium of all tarsi bearing two moderately long empodial setae; last segment of all tarsi very long, about as long as three preceding segments combined. Scutellum minute, triangular, glabrous. Elytra elongate-oval in shape; without apparent

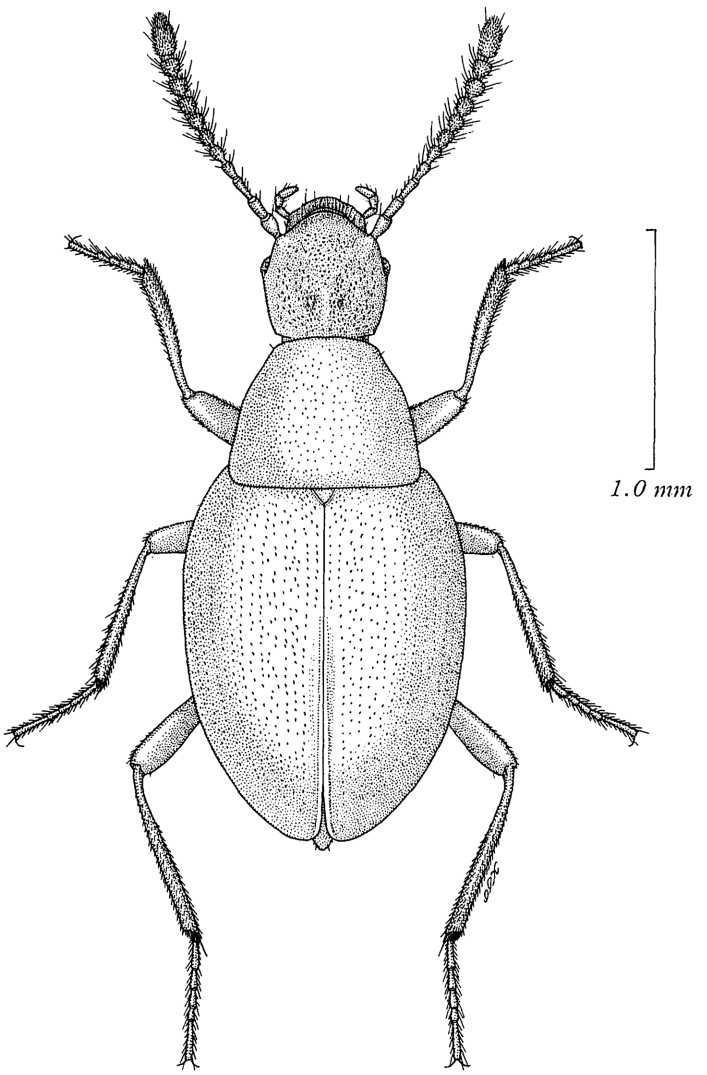
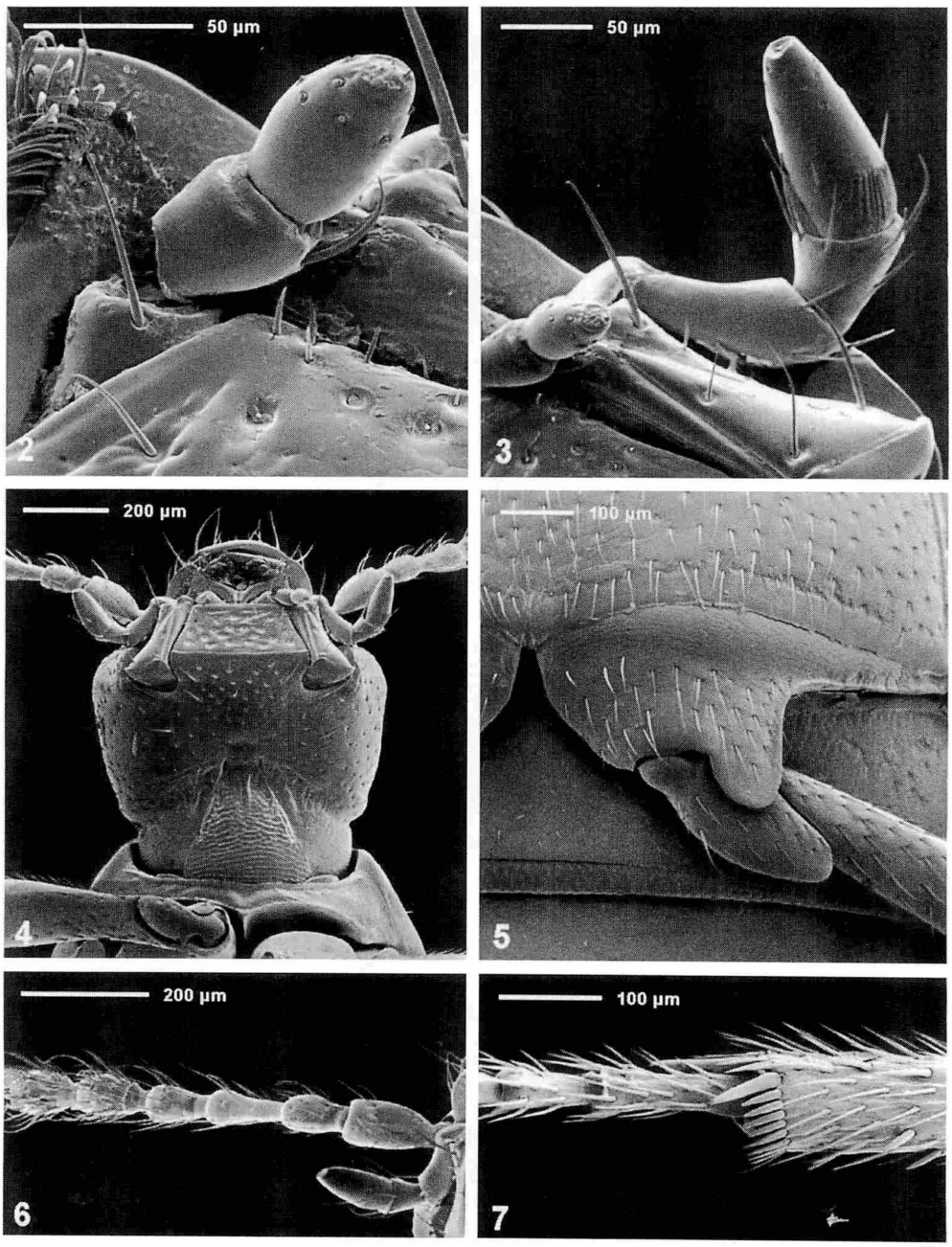
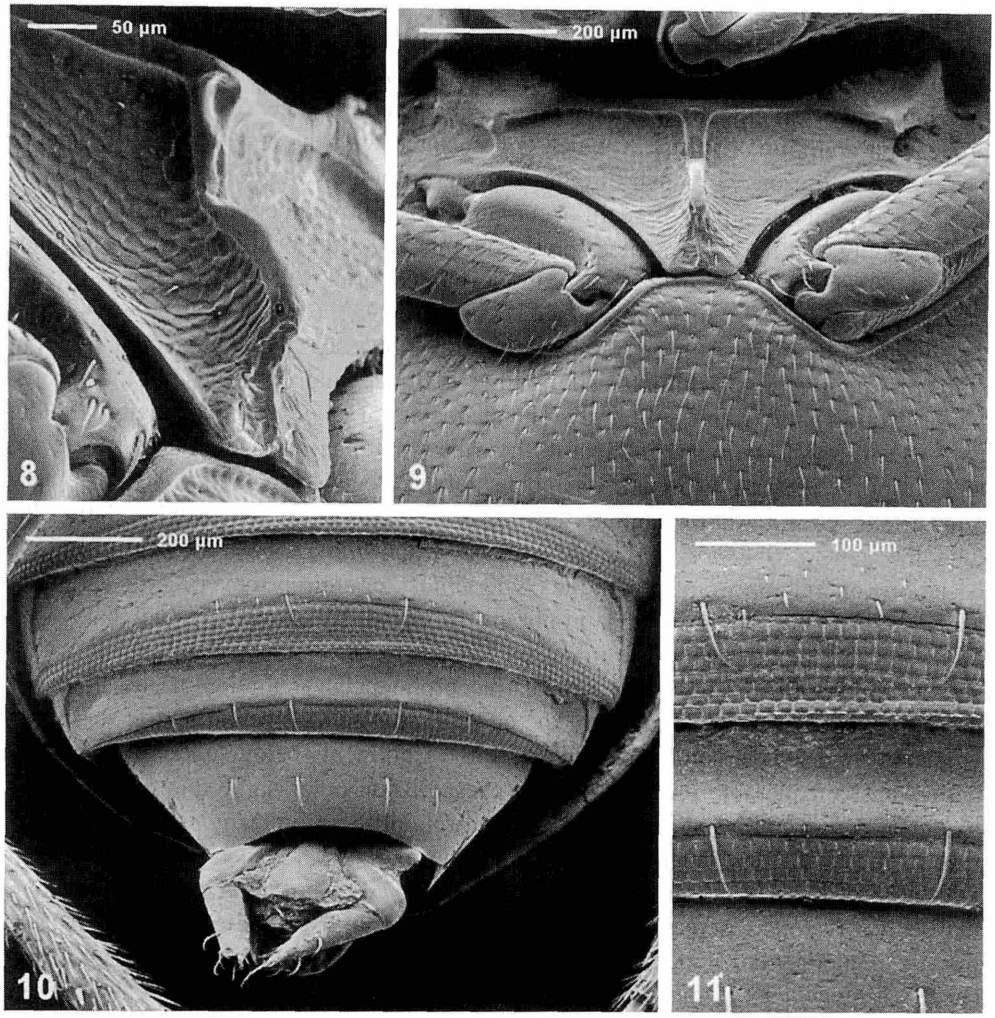


Fig. 1. *Uenohadesina styx* gen. et sp. nov.: habitus (male paratype).

striae, except sutural stria vaguely indicated on posterior half; each elytron finely, moderately sparsely punctate, punctures slightly unequal in size, coarser punctures vaguely subseriately arranged on middle portion of elytron. Each elytron with complete, fine epipleural carina, epipleuron wide anteriorly but markedly, gradually narrowed posteriad, moderately coarsely and densely punctate. Abdomen with sternite 3 (first visible) with minute, short keel in middle of basal margin; sternite 8 with rounded projection in middle of basal margin, associated with reservoir of a defensive gland (Fig. 12); ab-



Figs. 2–7. *Uenohadesina styx* gen. et sp. nov.: 2, labial palpus; 3, maxillary palpus; 4, underside of head; 5, hind coxa and trochanter; 6, first six antennal segments; 7, apex of hind tibia with apical ctenidium.



Figs. 8–11. *Uenohadesina styx* gen. et sp. nov.: 8, mesosternal keel, oblique lateral view; 9, mesosternal keel and anterior projection of metasternum; 10, ventral end of abdomen with exposed female genital segment with gonocoxites; 11, brickwall-like pattern on the abdominal intersegmental membrane.

dominal intersegmental membranes wide, covered by characteristically developed, coarse brickwall-like sculpture (Figs. 10, 11).

Male genital segment of characteristic omaliine type. Aedoeagus (Figs. 13, 14) of usual omaliine type, resting within abdomen in repose on its side; basal bulbus small; parameres markedly developed, large, contiguous mediobasally.

Female genital segment with first gonocoxites not fused; second gonocoxites markedly elongate, each with minute stylus (Fig. 15).

Discussion. *Uenohadesina* may be easily recognized by the conspicuous habitus of its sole member, that seemingly does not suggest any association with the Staphylinidae (Fig. 1). Nevertheless, several characters of *Uenohadesina* undoubtedly link it to the subfamily Omaliinae of Staphylinidae. 1) The presence of the anteromedian process on abdominal sternite 8 which is associated with the reservoir of a defensive gland. 2) The presence of a pair of pigmented spots on the vertex of head, located in an area where typically a pair of ocelli occurs in almost all members of Omaliinae. There is little doubt that these pigmented spots are remnants of the ocelli that were secondarily lost. 3) The presence of the markedly developed, brickwall-like pattern on the abdominal intersegmental membranes (see HAMMOND, 1971, 65; SMETANA, 1985, 475).

On the other hand, it is at present very difficult to assess the phylogenetic relationships of *Uenohadesina* within the subfamily Omaliinae, mainly because of the unsatisfactory subdivision of this subfamily. The characters of *Uenohadesina* (mainly mouthparts) seem to justify its assignment to the tribe Anthophagini, which unfortunately is still a poorly defined, artificial assemblage of heterogeneous genera (see SMETANA, 1985, 475). Within Anthophagini, *Uenohadesina* seems to show possible relationship with the genera *Trigonodemus* LECONTE, 1863 and *Tanyrhinus* MANNERHEIM, 1852 based on general appearance, with the elytra almost, or entirely, covering the abdomen, as well as on the shape of the pronotum. It would be understandable that *Uenohadesina*, due to its cryptic life in caves, lost the frontal extension of the head, most conspicuously displayed in *Tanyrhinus*, the pronounced sculpture of the head and pronotum, as well as the striation of the elytra (however, vestiges of elytral striae may be actually present in some specimens, see the Comments below, under *U. styx*), and underwent considerable reduction of the eyes. On the other hand, this may just be a matter of convergence. At any rate, *Uenohadesina* differs from *Trigonodemus*, in addition to the characters mentioned above, by the markedly reduced, short prosternum with minute intercoxal projection (in *Trigonodemus*, the intercoxal projection is markedly developed, acutely elongate and reaching almost middle of front coxa), by the conspicuously developed, complete medial longitudinal carina of the mesosternum (in *Trigonodemus*, the mesosternum bears at most a minute, inconspicuous, linear ridge posteriorly), and by the wide, broadly rounded anterior intercoxal projection, widely separating the middle coxae (in *Trigonodemus*, the anterior intercoxal projection is narrow, narrowly separating the middle coxae).

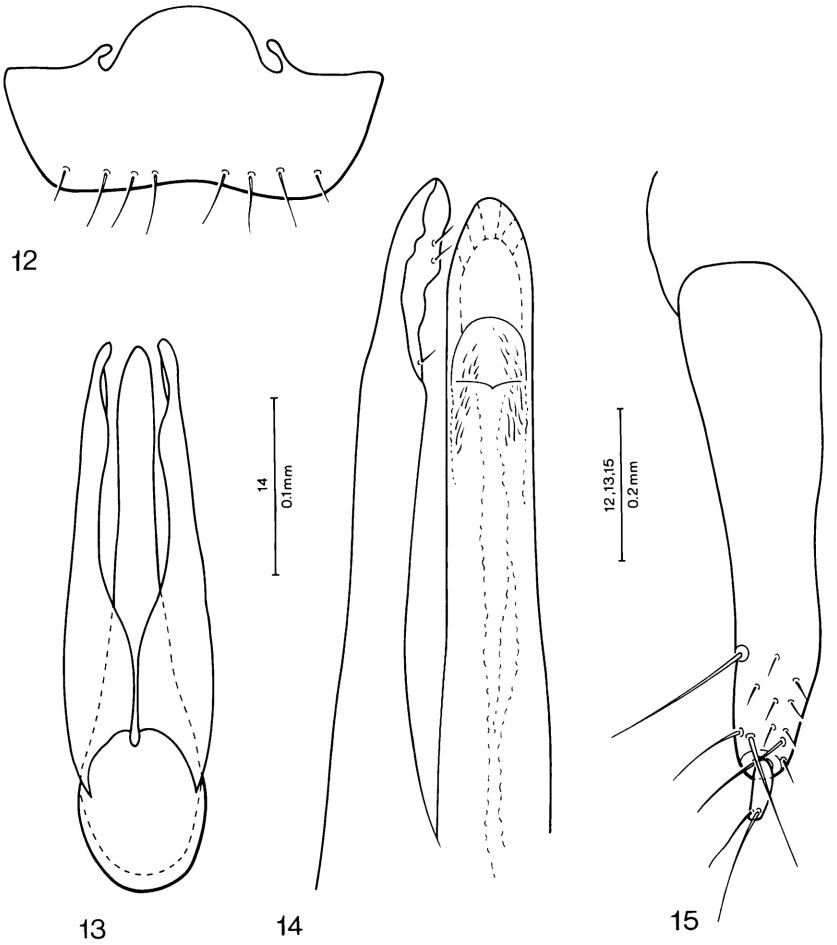
Etymology. Patronymic; this genus was named in honour of Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo), the renowned Japanese coleopterist and speleologist, and one of the discoverers of this new genus. The name is a combination of the family name UÉNO, the Greek word Αιδής -ου, ὁ, and the ending *-ina*. The second portion of the name is acknowledging the occurrence of this genus in caves. *Hades* was, in Greek mythology, the abode of the dead, conceived usually as a dark and gloomy realm. At its entrance was the three-headed watchdog *Cerberus*; beyond was the river *Styx* (see below), across which *Charon*, the dark ferryman, conducted the souls of those who had been buried with due rites. In transferred meaning the word is

used for infernal, lower world.

Uenohadesina styx sp. nov.

(Figs. 1–15)

Description. Entirely testaceorufous to rufobrunneous; mouthparts pale testaceous; antennae testaceous, gradually becoming pale testaceous toward apex; legs testaceorufous with slightly paler tarsi. Head on posterior half with moderately coarse and sparse punctation becoming somewhat coarser and denser mediobasad of elongate impressions in front of posterior margin of head and, to the contrary, gradually finer and sparser toward clypeus, clypeus along anterior margin without punctures; clypeus



Figs. 12–15. Uenohadesina styx gen. et sp. nov.: 12, male sternite 8; 13, aedoeagus, ventral view; 14, apical portion of aedoeagus, including internal sac; 15, female second gonocoxite.

with scattered, rudimentary microscopical striae on disc and with even finer, obliquely directed microscopic striae at lateral margins. Antenna with first two segments about equally, moderately long, first segment slightly more robust than segment 2, segment 3 elongate, longer than segment 2 (ratio 1.17), segments 4–6 longer than wide, gradually becoming shorter and wider, segments 7–10 about as long as wide, gradually becoming wider, segments 9 and 10 appearing slightly wider in some specimens, last segment about as long as two preceding segments combined. Pronotum quite finely, sparsely punctate; with two larger punctures in front of middle portion of posterior pronotal margin. Elytra each markedly transversely convex, entirely covering abdomen, or exposing it from eighth segment. Apparently apterous (elytra were not entirely removed from any of the available specimens).

Male. Sternite 8 as in Fig. 12, apical margin vaguely, broadly emarginate apically. Aedoeagus (Figs. 13, 14) in general narrow and elongate with small basal bulbus, median lobe narrow and quite elongate, almost parallel-sided, with narrowly arcuate apex. Parameres markedly developed, large and elongate, with wide basal portion, gradually narrowed to subacute apex, vaguely exceeding apex of median lobe; each without sensory peg setae, with three minute setae on medioapical portion; internal sac with elongate medial structure, composed of fine, seta-like elements.

Female. Sternite 8 with apical margin slightly extended medioapically; tergite 8 subtruncate apically.

Length 2.7–2.9 mm.

Type material. Holotype (male) and allotype (female): SOUTH KOREA: "Yong'yeon-gul Cave nr. Hwangji, Changseong-eub, Kangweon-do, S. KOREA" / "8–IV–1966 Leg. S. Uéno & F. Nagao". In the National Science Museum (Natural History), Tokyo, Japan.

Paratypes: SOUTH KOREA: same data as holotype, 2♂♂, 1♀, in the National Science Museum (Natural History), Tokyo (1♂), and in the SMETANA collection, Ottawa, Canada; same data as holotype, but "6–IV–1966 Leg. S. Uéno", 1♂, in the National Science Museum (Natural History), Tokyo; "Hwanseon-gul Cave, Daei-ri, Dogye-eub, Samcheog, Kangweon-do, S. KOREA" / "14–I–1966 Leg. J. Namkung", 1♀, same data but "15–I–1966", 1♂, both in the National Science Museum (Natural History), Tokyo; "Kosi-gul Cave, Jiron-ri, Hadong-myeon, Kangweon-do, S. KOREA" / "13–IV–1966 Leg. S. Uéno", 1♀ in the National Science Museum (Natural History), Tokyo.

Geographical distribution. *Uenohadesina styx* has so far been known from three limestone caves in the vicinities of Mt. Taebaek-san at the northeastern part of South Korea. They belong to drainages of three different rivers; Yong'yeon-gul Cave, the type locality, lies at the source of the Naktong-gang River which empties into the Korea Straits; Hwanseon-gul Cave, about 14 km distant to the north-northeast from Yong'yeon-gul Cave, belongs to the Oship-cheon drainage emptying into the Japan Sea; and Kosi-gul Cave, about 37 km distant to the west-southwest from Yong'yeon-gul Cave, lies on the right bank of the Han-gang River which empties into the East

China Sea.

Bionomics. At the type locality, Yong'yeon-gul, which is a large two-storeyed cave lying near the top of a ridge about 980 m above sea-level (cf. UÉNO *et al.*, 1966, 473–475, fig. 2), *Uenohadesina styx* occurs in the large room on the upper level, where no other cave beetles were found though phreatic crustaceans were abundant in small drip pools. There the omaliine beetle was found leisurely crawling about on the muddy floor among boulders. Though two species of cave trechines (a *Kurasawatrechus* and a *Gulaphaenops*) occur in the same cave, they are restricted to damp places at the deeper parts and never coexist with *Uenohadesina*.

In Hwanseon-gul Cave, which is the best known commercialized cave in South Korea and is protected as a natural monument of the Korean Government, a pair of the specimens of *Uenohadesina* was said to have been taken, in coexistence with *Kurasawatrechus latior*, in the northern branch which is humid and rich in organic matters. Unfortunately, foreign scientists were not permitted to make faunal investigation of this cave, and nothing is known about the present situation of the habitats of cave beetles. The third locality, Kosi-gul Cave, is a long limestone cave but is poor in the fauna, probably due to unfavourable environmental condition. A single known specimen of *Uenohadesina* was found crawling on the muddy floor in a short passage leading off from the large entrance room (cf. UÉNO *et al.*, 1966, 482–483).

Comments. The specimens of the three different cave populations are essentially identical, except for a few minute details that are considered to be within intraspecific variability. There are slight differences in the proportions of the antennal segments; the two impressions on the disc of head are variably pronounced; the subseriately arranged coarser punctures on medial portion of each elytron tend to appear in vague, linear impressions in some specimens, and the average size of the two specimens from Hwanseon-gul Cave seems to be larger. All three populations are considered to belong to one species, in contrast to the fact that two of the caves harbor different species of blind trechine beetles: Yong'yeon-gul Cave: *Gulaphaenops leptodiroides* UÉNO, 1987, and a new *Kurasawatrechus*; Hwanseon-gul Cave: *Kurasawatrechus latior* UÉNO et NAMKUNG, 1968. However, these blind trechine beetles were found, unlike *Uenohadesina styx*, usually in deeper, environmentally more stable sections of the caves.

Etymology. The specific epithet is the name Στυξ, Στυγος, ἡ, the name of the mythological river (see above), in apposition.

Acknowledgments

I thank Dr. Shun-Ichi UÉNO for allowing me to study the specimens of this quite interesting staphylinid, and for providing important geographical and bionomical details. I also thank Dr. D. E. BRIGHT and Mr. A. DAVIES, who commented on the original draft of the manuscript. Mr. DAVIES also provided the SEM photomicrographs, and Mr. Go SATO carefully finished the line drawings. Thanks are also extended to the artist Mr. Itsuro KAWASHIMA, Tokyo, who provided the habitus drawing of *Uenohadesina styx*.

要　　約

A. SMETANA：韓国産ヨツメハネカクシ亜科の洞窟性の新属新種*Uenohadesina styx*. —— 韓国北東部の石灰洞3カ所から，ヨツメハネカクシ亜科の洞窟性の新属新種を記載し，*Uenohadesina styx* SMETANAという新名を与えた．この新種は，ハバビロヨツメハネカクシ族に含まれるものと考えられるが，族内の分類が不十分な現時点では，真の類縁関係が明らかでない．地下生活にいちじるしく適応した結果，形態的に大きい変化を起こしている可能性が高いが，外形的に似ている既知の属とは，複眼の退化や，おもに腹面の特異な形状によって明らかに区別できる．

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Elytra, *Tokyo*, **28** (2): 295–303, November 15, 2000

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

Aleš Smetana

Agriculture and Agri-Food Canada, Research Branch,
Central Experimental Farm, K.W. Neatby Bldg.,
Ottawa, Ontario K1A 0C6, Canada

Abstract Three species of the genus *Trigonodemus* are described as new, based on specimens from the People's Republic of China: *T. pictus* (from Yunnan), *T. puncticollis* (from Sichuan), and *T. modestus* (from Sichuan). A key to all species of *Trigonodemus* known at present is given.

This is the third paper treating the species of the conspicuous genus *Trigonodemus* LeConte, 1863 of Omaliinae, and the second one dealing strictly with species from the People's Republic of China (see Smetana, 1996 a,b). The peculiar, relict distributional range of the genus *Trigonodemus* in eastern North America (one species), western North America (one species), and in eastern Asia was briefly discussed in one of the previous papers (Smetana, 1996 a). At that time only one species was known from Japan (*T. lebioides* Kraatz, 1877), but in the above paper one species from Fujian, originally assigned to a new monotypic genus *Klapperichianellia* Hlisnikovský, 1962 of the tribe Pterolomini of Silphidae (at that time), was transferred to *Trigonodemus* (*T. mirabilis* (Hlisnikovský, 1962)), and two additional species were described: *T. audax* Smetana, 1996 a (from Taiwan) and *T. fungicola* Smetana, 1996 a (from Sichuan). In a subsequent paper (Smetana, 1996 b), two additional species, *T. schuelkei* Smetana, 1996 b (from Shaanxi) and *T. monticola* Smetana, 1996 b (from Yunnan) were recorded, so that the number of the species of *Trigonodemus* rose from three to six. Three further species are described in this paper, bringing the total to nine species. However, additional species will undoubtedly be discovered in eastern Asia, which is obviously the evolutionary centre of this genus.

In the following the three new species are described and illustrated, and a key to all species of *Trigonodemus* known at present is given.

Trigonodemus pictus sp. nov.

(Figs. 1–4)

Description. Head and pronotum reddish testaceous to brunneorufous, prono-

tum usually with middle portion of disc variably, mostly extensively, darkened; elytra testaceous to rufotestaceous, with common, extensive, dark median spot starting at base and narrowed toward apex of elytra, and each with lateral dark spot starting below humerus and widened toward apex of elytron (see comments for color variation); mouthparts and legs testaceous to rufotestaceous, first four antennal segments testaceous, remaining antennal segments piceous; entire dorsal surface without microsculpture.

Head noticeably protracted anteriad; furrows on disc narrow and deeply engraved, no more than finely and inconspicuously punctate, base of head and dorsal surface of neck with numerous, more or less coarse punctures, remaining portions of head with only a few, scattered fine punctures, except elevated portion between furrows impunctate; anterior portion of head between furrows markedly elevated; ocelli situated moderately apart, distance separating them about equal to distance separating each ocellus from posteromedial margin of eye; eyes very convex, tempora as long as to vaguely longer than length of eyes from above. Antenna long and moderately strong, segment 3 distinctly longer than segment 2 (ratio 1.42), segment 4 slightly longer than wide, outer segments longer than wide.

Pronotum at base variably wider than length at midline and variable in shape (see comments), anterior margin markedly narrower than base (ratio 1.64), with posterolateral portions appreciably explanate, in most specimens with lateral margins in basal half vaguely sinuate to parallel-sided in front of posterior angles and then arcuately narrowed anteriad, posterior angles subacute and not appreciably protruding laterad; disc of pronotum with inconspicuous, rounded middle impression in front of base, connected to two indefinite longitudinal impressions diverging anteriad, another vague impression in front of each posterior angle; anteromedial portion of pronotum markedly convex; surface of pronotum with irregular and in general sparse punctation, except punctation denser near base and on posterolateral explanate portions.

Scutellum with a few punctures.

Elytra with striae in general moderately deeply engraved, gradually becoming slightly deeper toward lateral and lateroapical margins; strial punctation fine, gradually becoming even finer toward elytral apex, intervals vaguely convex, becoming almost flat toward elytral apex.

Male. Abdominal sternite 8 subtruncate apically (Fig. 1); tergite 8 with distinct, obtuse medioapical emargination (Fig. 2). Aedoeagus (Figs. 3, 4) with median lobe distinctly, almost linearly, narrowed toward apex, with somewhat differentiated apical portion, with subacute apex; parameres moderately robust, somewhat curved toward median lobe anteriorly, somewhat exceeding apex of median lobe, each narrowed into subacute apex and with four fine apical setae; internal sac simple, as in Fig. 4.

Female. Abdominal sternite 8 distinctly prolonged medioapically, with narrowly arcuate apex.

Length 3.8–4.2 mm.

Type material. Holotype (male) and allotype (female): CHINA: "CHINA, NW

Yunnan Bai Ma Xue Shan 35 km S Dêqên 4300–4800 m 24.VI.98, S. Murzin". In the SMETANA collection, Ottawa, Canada.

Paratypes: Yunnan: same data as holotype, 105, in the SMETANA, PÜTHZ (Eisenhüttenstadt, Germany) and SCHÜLKE (Berlin, Germany) collections, and in the collections of the American Museum of Natural History, New York, USA; the Canadian National Collection of Insects, Ottawa, Canada; the Field Museum of Natural History, Chicago, USA; the Natural History Museum, London, England; the Muséum d'Histoire naturelle, Geneva, Switzerland; the Naturhistorisches Museum, Wien, Austria; and the Naturhistorisches Museum in Basel, Switzerland. "CHINA – YUNNAN DEQUEN – 3900 m/m 10.7 – 19.7. 1996 E. Kučera leg", 1 specimen, in the Kučera collection, Soběslav, Czech Republic. "CHINA NW Yunnan, Xue Shan nr. Zhongdian 4000, 24–26.VI. 1996 27°49N 99°34E"/"collected by J. Farkač, P. Kabátek and A. Smetana", in the SMETANA collection.

Geographical distribution. *Trigonodemus pictus* sp. nov. is at present known from high mountain elevations in northwestern Yunnan.

Bionomics. The specimens from Bai Ma Xue Shan were taken from pitfall traps baited with vinegar, but the habitat data are not known. *Trigonodemus pictus* is the only species of this genus that has been collected in such a long series. Obviously, the vinegar used as the pitfall trap bait was highly attractive for this species. This will very likely apply also to other species. Most species of the genus apparently have trophic dependency on mushrooms.

Comparisons and comments. *Trigonodemus pictus* has a color pattern very similar to that of the two North American species, *T. striatus* LECONTE, 1863 and *T. fasciatus* LEECH, 1939. However, the two North American species differ from *T. pictus*, in addition to the different shapes of the aedoeagi, by the less elongate head with larger eyes and shorter, more coarsely punctate discal furrows, and by the generally wider pronotum that is less distinctly narrowed anteriad. The difference in the shape of the pronotum is always noticeable, despite the fact that the pronotal base width : midline length ratio varies in *T. pictus* (ratio range 1.20–1.29). The elytral coloration is somewhat unstable, the dark spots may be variably reduced, exposing more pale color; however, in most specimens the pale color on each elytron appears as a pale strip starting at humerus and extending obliquely posteriad toward the apex of the suture. The configuration of the posterior pronotal angles in *T. pictus* is unstable as well, caused mainly by the variably pronounced sinuation of the lateral margins in front of the angles; in a few specimens the lateral margins are pronouncedly sinuate and the posterior angles conspicuously protrude laterad.

Etymology. The specific epithet is the Latin adjective *pictus*, *-a*, *-um*, meaning painted. It refers to the attractive coloration of the species.

Trigonodemus puncticollis sp. nov.

(Fig. 5)

Description. Piceous-black, exposed apex of abdomen slightly paler; mouthparts and first four antennal segments pale testaceous, remaining antennal segments piceous; legs rufotestaceous. Entire dorsal surface without microsculpture.

Head narrow, moderately protracted anteriad; furrows on disc markedly diverging anteriad, deeply engraved, densely and rather coarsely punctate, remaining portions of head with numerous, moderately coarse punctures, except elevated portion between furrows impunctate; anterior portion between furrows markedly elevated, convex, with posterior portion narrow; ocelli situated moderately apart, distance separating them about equal to distance separating each ocellus from posteromedial margin of eye; eyes convex and large, tempora as long as length of eyes seen from above. Antenna long and moderately strong, segment 3 distinctly longer than segment 2 (ratio 1.48); segment 4 longer than wide (ratio 1.6), outer segments longer than wide.

Pronotum almost parallel-sided in basal half, in apical half markedly and slightly arcuately, narrowed anteriad, at base markedly wider than length along midline (ratio 1.35), anterior margin markedly narrower than base (ratio 1.66), posterolateral portions slightly flattened and explanate, posterior angles not protruding, obtuse; disc of pronotum with impressions similar to those described for *T. pictus*, diverging longitudinal impressions densely and more finely punctate (than rest of disc); rest of disc, including elevated, convex anteromedial portion, moderately densely, unevenly punctate.

Scutellum with a few punctures on basal portion.

Elytra with striae very superficial and hardly engraved, mostly represented by fine, unevenly situated serial punctures on mediobasal portion, gradually becoming slightly more engraved toward apex and lateral margin of each elytron; intervals flat on mediobasal portion, gradually becoming slightly convex toward apex and lateral margin of each elytron.

Female. Abdominal sternite 8 markedly extended medioapically, with apex obtusely rounded (Fig. 5); tergite 8 damaged, but apparently rounded apically.

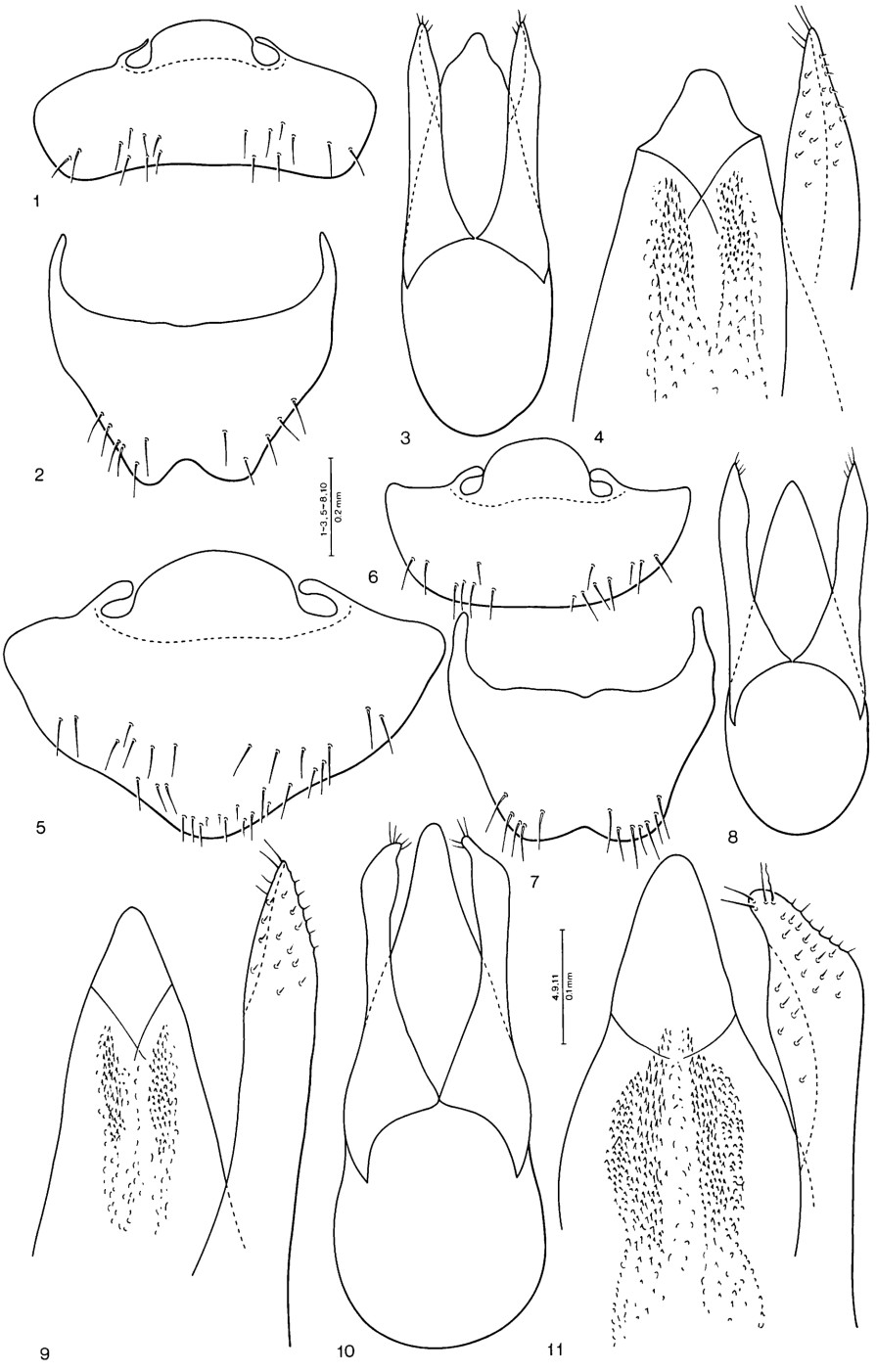
Male unknown.

Length 4.9 mm.

Type material. Holotype (female): CHINA: "China. Sichuan sud Barkam 7. 96 Moretto". In the SMETANA collection, Ottawa, Canada.

Geographical distribution. *Trigonodemus puncticollis* is at present known only from the type locality in northwestern Sichuan.

Figs. 1–11. —— 1–4. *Trigonodemus pictus*: 1, male sternite 8; 2, male tergite 8; 3, aedoeagus, ventral view; 4, apex of median lobe and right paramere, detail. —— 5. *Trigonodemus puncticollis*, female sternite 8. —— 6–9. *Trigonodemus modestus*: 6, male sternite 8; 7, male tergite 8; 8, aedoeagus, ventral view; 9, apex of median lobe and right paramere, detail. —— 10–11. *Trigonodemus lebioides*: 10, aedoeagus, ventral view; 11, apex of median lobe and right paramere, detail.


1
2
3
4
1–3, 5–8, 10
0.2 mm
5
6
7
8
4, 9, 11
0.1 mm
9
10
11

Bionomics. Nothing is known about the collection circumstances of the holotype.

Comparisons and comments. *Trigonodemus puncticollis* may be easily recognized by its rather large and robust form, by the relatively densely punctate pronotum (including the elevated anteromedial portion), and by the superficial elytral striae. In general habitus, it resembles *T. montanus*, but it differs from it by the characters mentioned above.

Etymology. The specific epithet is a combination of the Latin adjective *punctatus*, *-a*, *-um* (punctate) and the noun *collum*, *-i*, n (used for pronotum). It refers to the relatively dense punctation of the pronotum of this species.

Trigonodemus modestus sp. nov.

(Figs. 6–9)

Description. Testaceo-castaneous to castaneous; mouthparts, first four segments of antennae and legs testaceous, remaining antennal segments dark brown. Entire dorsal surface without microsculpture.

Head moderately protracted anteriad; furrows on disc narrow and deeply engraved, moderately finely punctate, base of head and dorsal surface of neck with numerous, rather coarse punctures, remaining portions of head virtually impunctate except for some rather coarse punctures anterolaterally on clypeus; anterior portion of head between furrows markedly elevated; ocelli situated moderately apart, distance separating them about equal to distance separating each ocellus from posteromedial margin of eye; eyes very convex, tempora behind eyes markedly, slightly arcuately narrowed toward neck, about as long as length of eyes from above. Antenna long and moderately strong, segment 3 distinctly longer than segment 2 (ratio 1.36), segment 4 distinctly longer than wide, outer segments longer than wide.

Pronotum at base wider than length at midline (ratio 1.33), anterior margin markedly narrower than base (ratio 0.65), with posterolateral portions appreciably explanate, with lateral margins in basal half vaguely sinuate or parallel-sided in front of posterior angles and then arcuately narrowed anteriad, posterior angles subacute, not appreciably protruding laterad; disc of pronotum with impressions similar to those described for *T. pictus*; anteromedial portion of pronotum slightly convex; surface of pronotum with irregular and in general sparse punctation, punctures present also on convex anterolateral portion.

Scutellum with a few punctures.

Elytra with striae in general moderately deeply engraved, gradually becoming somewhat deeper toward lateral and lateroapical margins; strial punctation fine, intervals vaguely convex, becoming almost flat medioapically near elytral apex.

Male. Abdominal sternite 8 evenly subtruncate apically (Fig. 6); tergite 8 slightly, widely emarginate apically (Fig. 7). Aedoeagus (Figs. 8, 9) with median lobe rather narrow, gradually narrowed into subacute apex; paramere relatively robust, with

apex of each branch slightly exceeding apex of median lobe, each branch with medioapical margin obliquely subtruncate subapically, with rather acute apex and with four fine apical setae; internal sac simple, as in Fig. 9.

Female. Abdominal sternite 8 distinctly prolonged medioapically, with narrowly arcuate apex.

Length 3.8–4.0 mm.

Type material. Holotype (male) and allotype (female): CHINA: "CHINA: W-Sichuan 1999 Ganzi Tibet. Aut. Pref., Kangding Co. Daxue Shan, Mu Ge Cuo, ob. See, 15 km NW Kangding, 3700 m Grünerle, Pilze, 30°09N 101°52E 27.VI., leg. M. Schülke"/"Sammlung M. Schülke Berlin". Holotype in the SCHÜLKE collection, Berlin; allotype in the SMETANA collection, Ottawa.

Geographical distribution. *Trigonodemus modestus* is at present known only from the type locality in western Sichuan.

Bionomics. The two specimens of the original series were apparently found in association with mushrooms in an alder forest.

Comparisons and comments. In general habitus *Trigonodemus modestus* resembles smaller specimens of *T. montanus* SMETANA, 1996 b from northern Yunnan, but it differs, in addition to the differences in the shape of the aedoeagus, by the smaller and slightly less convex eyes that are about as long as tempora seen from above (in *T. montanus* the tempora are shorter than length of eyes seen from above), by the generally narrower pronotum with anterior margin less pronouncedly narrower than base (ratio 0.64, compared to ratio 0.58 in *T. montanus*), and by the generally coarser and more numerous punctures on the pronotum.

The holotype is missing the last segment of the left antenna, and the female sternite 8 is damaged (left one-third is missing).

Etymology. The specific epithet is the Latin adjective *modestus*, *-a*, *-um* (modest, moderate), referring to the inconspicuous appearance and coloration of the species.

To aid in the identification of the species of *Trigonodemus* known at present, a new key to the species, replacing the two recently published keys (SMETANA, 1996 a,b), is presented below.

1. Specimen originating in North America. 2
— Specimen originating in Asia. 3
2. Apex of median lobe truncate, with apical margin of characteristic shape; apices of parameres hardly exceeding apex of median lobe (fig. 3 in SMETANA, 1996 a). Length 3.9–4.8 mm. Eastern North America: CANADA (Nova Scotia, Ontario, Quebec), USA. ..... *T. striatus* LECONTE, 1863
— Apex of median lobe acute; apices of parameres distinctly exceeding apex of median lobe (fig. 9 in SMETANA, 1996 a). Length 3.8–4.0 mm. Western North America: CANADA (British Columbia). ..... *T. fasciatus* LEECH, 1939
3. Elytra unicolored, either pale yellow, or testaceo-castaneous to piceous or piceous-black, without distinct color markings. 4

— Elytra bicolored, with distinct color markings. 7

4. Elytra uniformly pale yellow, contrasting in color with black head and pronotum (pronotum narrowly paler along hind margin). Aedoeagus as in figs. 25 and 26 in SMETANA, 1996 a. CHINA: Fujian. ..... *T. mirabilis* (HLISNIKOVSKÝ, 1962)

— Elytra testaceo-castaneous to piceous or piceous-black, not contrasting in color with head and pronotum. 5

5. Punctation of pronotum relatively dense, including elevated convex anteromedial portion. Elytral striae in general very superficial and hardly engraved, mostly represented by fine, unevenly situated strial punctures, particularly on mediobasal portion of each elytron. Larger species, length 4.9 mm. CHINA: Sichuan. ..... *T. puncticollis* sp. nov.

— Punctation of pronotum in general sparse, represented by unevenly dispersed punctures, including convex anteromedial portion (but never dense there). Elytral striae in general more or less more deeply engraved, including mediobasal portion of each elytron. On average smaller species, length 3.8–4.7 mm. 6

6. Pronotum wide, with apical margin conspicuously narrower than basal margin (ratio 0.58). Eyes larger and more convex, tempora shorter than length of eyes from above (ratio 0.75). Color of body in general darker, piceous-brown to piceous-black. Aedoeagus larger, apices of paramere markedly exceeding apex of median lobe (figs. 3, 4 in SMETANA, 1996 b). Larger species, length 3.9–4.7 mm. CHINA: Yunnan. ..... *T. montanus* SMETANA, 1996 b

— Pronotum narrower, with apical margin markedly but not conspicuously, narrower than basal margin (ratio 0. 65). Eyes smaller and less convex, tempora about as long as length of eyes from above. Color of body in general paler, testaceo-castaneous to castaneous. Aedoeagus smaller, apices of paramere slightly exceeding apex of median lobe (Fig. 8). Smaller species, length 3.8–4.0 mm. CHINA: Sichuan. ..... *T. modestus* sp. nov.

7. Antennal segment 4 slightly longer than wide. Larger species, 4.0–4.5 mm long. 8

— Antennal segment 4 short, globular. Smaller species, length under 4.0 mm. ... 10

8. Elytra with common, mediobasal dark spot starting at elytral base, and each with lateral elongate dark spot starting below humerus. Aedoeagus small, as in Fig. 3. Length 3.8–4.2 mm. CHINA: Yunnan. ..... *T. pictus* sp. nov.

— Elytra with common, medial dark spot starting far below elytral base, and each with lateral dark spot starting around middle of elytron. Aedoeagi larger, differently shaped (Fig. 10 and fig. 7 in SMETANA, 1996 b). 9

9. Branches of paramere each slender, with lateral margin distinctly concave in middle portion, and with apex not quite reaching apex of median lobe (Figs. 10, 11). Length 3.9–4.4 mm. JAPAN. ..... *T. lebioides* KRAATZ, 1877

— Branches of paramere each robust, with lateral margin straight in middle portion, and with apex distinctly exceeding apex of median lobe (fig. 7 in SMETANA, 1996 b). Length 4.1 mm. CHINA: Shaanxi. ..... *T. schuelkei* SMETANA, 1996 b

10. Middle portion of pronotum behind front margin with numerous, more or less coarse punctures. Apex of median lobe of aedoeagus acute (fig. 15 in SMETANA, 1996 a). Length 3.3–3.8 mm. CHINA: Sichuan. . . *T. fungicola* SMETANA, 1996 a
— Middle portion of pronotum behind front margin almost impunctate (two punctures present). Apex of median lobe wide, truncate (fig. 21 in SMETANA, 1996 a). Length 3.4 mm. TAIWAN. . . . . *T. audax* SMETANA, 1996 a

Acknowledgments

My colleagues D. E. BRIGHT and A. DAVIES, Agriculture and Agri-Food Canada, Research Branch, Ottawa, reviewed the original draft of the manuscript and their comments eventually led to its improvement. Mr. Go SATO from the same establishment carefully finished the line drawings.

要　　約

A. SMETANA：中国産シデムシモドキ属の知見第3報．——中国の云南省と四川省からシデムシモドキ属ハネカクシ類の3新種を記載し，それぞれ*Trigonodemus pictus*，*T. puncticollis*および*T. modestus*と命名した．この特異な属の既知種は計11種になったが，そのうちの9種までが東アジアに固有であることからみて，分化の中心がこの地域にあったことは明らかである．論文末に既知種すべての検索表を掲げたが，今後なお中国から新しい種の発見されることが期待される．

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Elytra, *Tokyo*, **28** (2): 304, November 15, 2000

New Record of *Anisotoma besucheti* (Coleoptera, Leiodidae) from Kyushu, Japan

Hideto HOSHINA

Department of Soil Zoology, Institute of Environmental Science and Technology, Yokohama National University, Yokohama, 240–8501 Japan

Anisotoma besucheti was described by ANGELINI and DE MARZO (1990) from Honshu and Shikoku, Japan. In 1995–1996, I collected 17 specimens of this species on Mt. Kurodake, Ôita Pref., Kyushu, and will record it as a new locality in the present report. Before going further, I wish to express my sincere gratitude to Dr. Ivan LÖBL (Muséum d'Histoire naturelle, Genève) who gave me an opportunity to examine the holotype. Hearty thanks are also due to Mrs. Morisato KIUCHI and Masataka YOSHIDA (Tokushima Pref.) for their gifts and loans of the specimens used in the present paper.

Anisotoma besucheti ANGELINI et DE MARZO, 1990

[Japanese name: Hime-kushihige-tamakinokomushi]

Anisotoma besucheti ANGELINI et DE MARZO, 1990, 62 (Japan: Honshu and Shikoku); KIUCHI & YOSHIDA, 2000, 3.

Specimens examined. [Kyushu] 4♂♂, 3♀♀, Mt. Kurodake, Ôita Pref., 29–VI–1995, H. HOSHINA leg.; 10 exs., Mt. Kurodake, Ôita Pref., 24–VII–1996, H. HOSHINA leg. [Shikoku] 1 ex., Mt. Kôtsu, Tokushima Pref., 30–VIII–1964, M. YOSHIDA leg.; 1 ex., Nikubuchi-tôge, Kisawa Vill., Tokushima Pref., 7–VIII–1969, M. KIUCHI leg.; 1♂, Mt. Tsurugi, Tokushima Pref., 10–VII–1996, H. HOSHINA leg.; 1♂, 4♀♀, Mt. Maruzasa, Tokushima Pref., 11–VII–1996, H. HOSHINA leg. [Honshu] Holotype, ♂, ss/Usui (700 m), Bypass, Gunma Pref., 20–VII–1980, I. LÖBL leg. (preserved in the Muséum d'Histoire naturelle, Genève); 6 exs., Mt. Hyônosen, Hyôgo Pref., 5–VI–1996, H. HOSHINA leg.; 2♂♂, 1♀, Mt. Minako, Kyoto Pref., 1–VI–1998, H. HOSHINA leg.

Distribution. Japan (Honshu, Shikoku and Kyushu).

Remarks. This species is similar to *Anisotoma frontalis* (PORTEVIN, 1927) in appearance, but the body length is about 2.5–3.0 mm and the apical part of the male genitalia is sharply pointed. In contrast, the body length of *A. frontalis* is about 3.5–4.0 mm and the apical part of the male genitalia is triangular.

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Elytra, *Tokyo*, **28** (2): 305–309, November 15, 2000

A New *Trigonurus* (Coleoptera, Staphylinidae, Trigonurinae) Discovered in Sichuan, China

Toshio KISHIMOTO

Laboratory of Insect Resources, Tokyo University of Agriculture,
Funako, Atsugi, Kanagawa, 243–0034 Japan

Abstract A new species of trigonurine staphylinid beetle is described from Sichuan, China, under the name of *Trigonurus sichuanicus*. This is the first record of the peculiar beetle from East Asia.

The peculiar staphylinid beetles of the genus *Trigonurus* are the only representatives of the subfamily Trigonurinae and have previously been regarded as the members of the Piestinae, though sometimes placed in the Silphidae (MADGE, 1980, etc.). NEWTON and THAYER (1992) regarded them as forming a distinct subfamily in the Staphylinidae. It was also suggested that *Trigonurus* might be the most primitive member of the oxyteline group in view of the plesiomorphic state of the larvae (LAWRENCE & NEWTON, 1995).

After BLACKWELDER (1941) and HATCH (1957), nine species of *Trigonurus* have been described from the world. Seven species were recorded from the mountain areas of Pacific North America; two species and one subspecies were recorded from the Palearctic, that is *T. mellyi* MULSANT from the Maritime Alps, South Europe, *T. asiaticus* REICH from Caucasus, and *T. a. paphlogonicus* MAŘAN from Ilgaz Dagh, the Asia Minor.

During our entomological survey in Sichuan Province, China, made in the late summer of 1998, two of the members, Professor Masataka SATÔ (Nagoya Women's University) and Dr. Akiko SAITO (Natural History Museum and Institute, Chiba) collected some specimens of trigonurine staphylinids in Jiuzhaigou Xian and Songpan Xian. After a careful examination, it becomes clear that the species in question must be new to science. This is the first record of *Trigonurus* for the East Asian fauna, which bridges the gap in generic distribution between the western Palearctic and the Pacific coast of North America.

Subfamily Trigonurinae REICH

Genus ***Trigonurus*** MULSANT, 1847

Trigonurus MULSANT, 1847, Annls. Soc. Agric. Lyon, **10**: 515 [type species: *Trigonurus mellyi* MULSANT, by monotypy]. —— GANGLBAUER, 1895, Käfer Mitteleuropa, **2**: 682. —— BLACKWELDER, 1941,

Amer. Mus. Novit., (1124): 2. —— HATCH, 1957, Univ. Wash. Publ. Biol., **16**: 241.

Body elongate and flat. Fronto-clypeal suture complete between antennal insertions. Antennae 11-segmented, long, inserted at anterior lateral corners of vertex. Eyes moderate in size and somewhat prominent. Mandibles thin and flat with pointed apices and devoid of teeth; lacinia much shorter than galea; maxillary palpi 4-segmented and pubescent; labial palpi 3-segmented, short and stout. Elytra rather long, extending beyond matasternum, with distinct epipleural ridge; surface with longitudinal rows of punctures. Hind wings developed. Prosternum narrowly and briefly produced between coxae. First abdominal segment entirely absent, 2nd represented by tergite only, 3rd to 7th each with one paratergite on each side. Legs slender; tarsal formula 5–5–5; fore and mid coxae globular; hind coxae almost in contact, expanded laterally and caudally.

Generic distribution. Palearctic (South Europe, Caucasus, Asia Minor, China [first record]), Nearctic (Pacific North America). The distributional pattern seems to suggest that the group is a relict.

Trigonurus sichuanicus KISHIMOTO, sp. nov.

Body length: 4.3–4.6 mm (from front margin of head to anal end); 3.1–3.3 mm (from front margin of head to apices of elytra). Body width: 1.6 mm.

Body rather slender, elongate and strongly depressed above, pronotum and elytra not constricted at base, moderate in size. Color shining blackish brown; pronotum and elytra mat reddish brown; mouth parts, antennae, legs, lateral margins and posterior segments of abdomen paler.

Head small, almost flat or weakly elevated at the middle of vertex, without distinct longitudinal depression but with slightly curved and depressed fronto-clypeal suture, much narrower than pronotum (pronotum/head=1.76); surface with strong and irregular punctures, very sparsely and finely in apical and basal areas, and with short and inconspicuous pubescence. Antennae rather long, extending to basal fourth of elytra; 1st segment elongate and subrectangular; 2nd much shorter than 3rd; 3rd the longest; 4th–6th subequal in length and weakly dilated apicad; 7th large and strongly dilated apicad; 8th oval, not dilated apicad; 9th apparently dilated apicad, longer than 8th; 10th weakly dilated apicad; 11th subconical; relative length (width) of each segment from base to apex:— 1.7 (1.1): 1.2 (0.8): 1.9 (0.8): 1.7 (0.8): 1.7 (0.8): 1.6 (0.8): 1.8 (1.1): 1.4 (1.0): 1.6 (1.2): 1.5 (1.3): 1.8 (1.2).

Pronotum longer than broad (length/width=1.35), narrower than elytra (elytra/pronotum=1.61), weakly convex except for relatively broad but shallow depression along mid-line and a deep concavity near each posterior margin, widest just before the middle; sides feebly arcuate and minutely sinuate in apical halves, slightly sinuate and feebly convergent posteriad in basal halves; anterior angles porrect though narrowly rounded at the tips; hind angles subrectangular, bluntly produced posteriad; anterior margin almost straight at the median part or weakly bisinuate; posterior margin nearly straight at the median part, sinuate on each side; surface rugose with rather large punc-

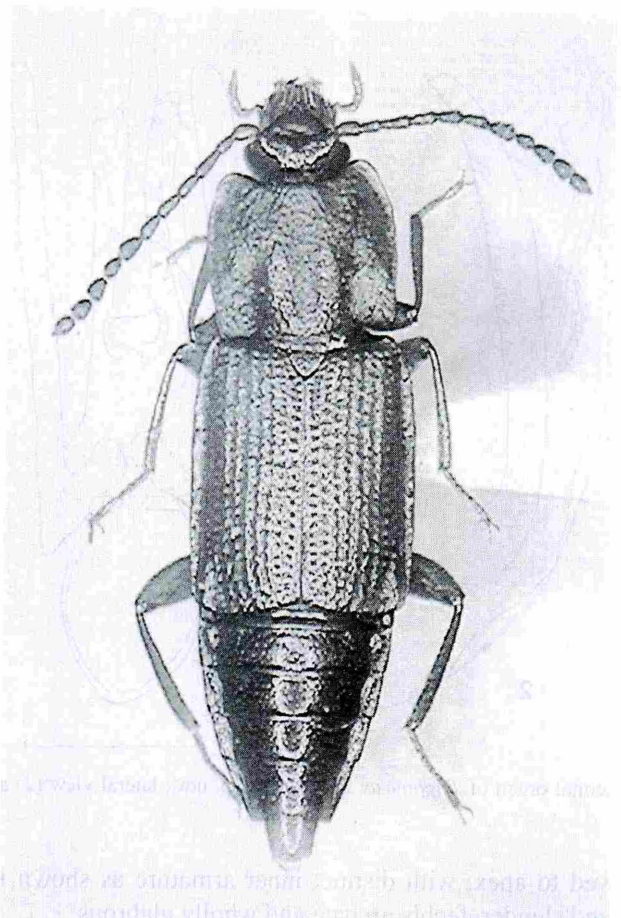
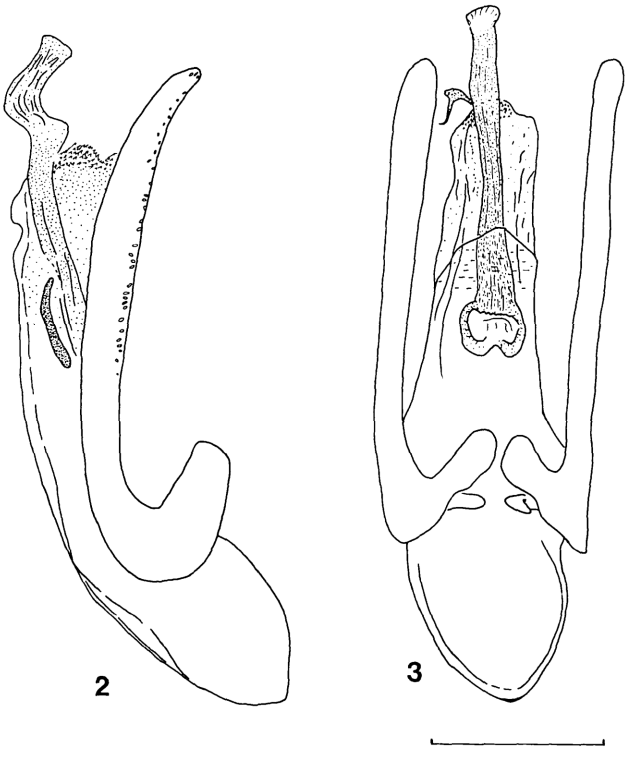


Fig. 1. *Trigonurus sichuanicus* sp. nov.; habitus.

tures. Hypomera with a few punctures. Scutellum large, triangular, strongly punctate.

Elytra elongate, almost parallel-sided, widest at the middle, and abruptly convergent near bases and apices, weakly convex above, slightly longer than broad (length/width=1.06); humeral angles bluntly marked; posterior margins separately arcuate with broadly rounded outer angles. Surface of elytra not striate but with 9 longitudinal rows of distinct punctures; 1st to 7th almost regularly punctate; 8th imcomplete; 9th on flat lateral part somewhat irregular and inconspicuous; intervals rather weakly shining, scattered with very minute pubescence. Legs moderate in length; 5th tarsomere of each leg rather long.

Abdomen gradually narrowed towards apex, moderately convex above, sparsely with distinct punctures and finely and inconspicuously with short curved pubescence; 8th segment much narrower than preceding segments. Male genital organ slender and



Figs. 2–3. Male genital organ of *Trigonurus sichuanicus* sp. nov.; lateral view (2) and ventral view (3). Scale: 0.1 mm.

straightly narrowed to apex, with distinct inner armature as shown in Figs. 2 and 3; parameres long and slender, feebly arcuate and wholly glabrous.

Type series. Holotype: male, [China: Sichuan] Jiuzhaigou Xian, Jiuzhaigou, Xiongmaohai (2,400 m), 30–VIII–1998, Akiko SAITO leg. Paratypes: 1 female, same data as for the holotype; 1 ex., Jiuzhaigou Xian, Jiuzhaigou, Yuanshi-Senlin (2,850 m), 28–VIII–1998, Akiko SAITO leg.; 2 exs., Songpan Xian, Munigou, Zhaga (3,000–3,050 m), 3–IX–1998, Masataka SATÔ leg. The holotype is preserved at present in the collection of the National Science Museum (Natural History), Tokyo, and the paratypes are preserved in the collection of the Laboratory of the Insect Resources, Tokyo University of Agriculture.

Remarks. This new species can easily be distinguished from two other Palearctic species, *T. mellyi* and *T. asiaticus*, by the body much smaller in size and the color of the pronotum and elytra mat reddish brown.

Bionomics. The specimens of the type series were taken by beating dead branches or from under barks of rotten logs in the forest. The collecting sites are situated between 2,400 m and 3,050 m in altitude.

Acknowledgement

I wish to express my cordial thanks to Dr. Shun-Ichi UÉNO and Professor Yasuaki WATANABE of Tokyo University of Agriculture, for their continuous guidance. Special thanks are due to Professor Masataka SATÔ and Dr. Akiko SAITO for their kind offer of invaluable specimens and Mr. FAN Ting for his support in the field. I also thank my colleagues Hiraku YOSHITAKE and Takashi SHIMADA for their help in this study.

要　　約

岸本年郎：中国四川省で発見されたハネナガヒラタハネカクシ属の1新種．—— ハネナガヒラタハネカクシ（新称）*Trigonurus* は，1属でハネナガヒラタハネカクシ亜科（新称）を構成し，これまでに世界から9種が記録されている顕著な甲虫群である．その分布域は不連続で，7種が北米太平洋岸の山地，1種がヨーロッパアルプス，もう1種がコーカサスと小アジアに分布することが知られていた．1998年の中国四川省における調査において，佐藤正孝教授と斉藤明子博士により九寨沟县および松潘县で採集された，珍奇な形態をしたハネカクシは，これまで東アジアから未記録であったハネナガヒラタハネカクシ属のものであった．研究の結果，この種は新種であることが判明したので，*Trigonurus sichuanicus* と命名して記載した．

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Elytra, Tokyo, **28** (2): 310, November 15, 2000

An Additional Record of *Schmidtiana shinkaii* (Coleoptera, Cerambycidae)

Haruki KARUBE

Kanagawa Prefectural Museum of Natural History, 499, Iryuda, Odawara, Kanagawa Pref., 250–0031 Japan

Schmidtiana shinkaii KARUBE was originally described on the basis of a single male specimen collected on the Dalat Highlands (ca. 1,200 m in alt.), in Lam Dong Province of southern Vietnam. Recently, I have examined an additional male specimen collected at Bao Loc to the northeast of Ho-chi-minh of southern Vietnam. I will record it below.

Specimen examined. 1♂, Bao Loc, Lam Dong Prov., S. Vietnam (ca. 700 m in alt.), IV–1998, local collector leg.

This specimen has rather spread dark purple markings at the apical part of the elytra, and relatively short lateral spines of the pronotum as compared with the type specimen. The body length of this additional specimen is 43.4 mm.

Reference

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Elytra, *Tokyo*, **28** (2): 311–321, November 15, 2000

Four New Species of the Genus *Nazeris* (Coleoptera, Staphylinidae) from the Gaoligong Shan Mountains in Yunnan, Southwest China

Yasuaki WATANABE

Laboratory of Insect Resources, Tokyo University of Agriculture,
Atsugi, Kanagawa, 243–0034 Japan

and

XIAO Ning-nian

Laboratory of Insect Taxonomy, Kunming Institute of Zoology,
Academia Sinica, Kunming, Yunnan, 650223 China

Abstract Four new species of the staphylinid genus *Nazeris* are described under the names *N. baihuaensis*, *N. nomurai*, *N. huanxipoensis* and *N. ishiianus*. They are found from under dead leaves or the litter zones of the Gaoligong Shan Mountains and their vicinities in western Yunnan, Southwest China.

Eleven species of the genus *Nazeris* have hitherto been reported from China by KOCH (1939, pp. 156–161), ZHENG (1992, pp. 87–91) and WATANABE and XIAO (1993, p. 130; 1997, pp. 2–9). Of these, five species were reported from Yunnan.

In the course of the Sino-Japanese cooperative study on the soil fauna of tropical forests in Southwest China made in 1996, four species of the genus *Nazeris* were obtained from under dead leaves or in the litter layer on the Gaoligong Shan Mountains and their vicinities in western Yunnan, Southwest China. All of them may belong to the group of *N. wollastoni* (SHARP, 1874, p. 68) for the disappearance of the median carina before the base of the prosternum. However, one of the two species obtained at Baihua Ling seems to belong to the group of *N. optatus* (SHARP, 1889, p. 322) in having peculiar parameres which are remarkably shorter than the median lobe.

After a careful examination, it has become clear that these species are new to science, since secondary sexual characters of the abdominal sternites and configuration of the genital organ in the male are different from those of the known members of the genus. They will be described in the present paper.

1) This study is supported by the Grant-in-aid No. 07041131 for Field Research of the Monbusho International Scientific Research Program, Japan.

Before going further, we wish to express our hearty thanks to Professor YIN Wenying of the Shanghai Institute of Entomology, Academia Sinica, and the late Dr. Gentaro IMADATÉ, for their kind help through the Sino-Japanese cooperative study. Deep gratitude is also due to Dr. Shun-Ichi UÉNO, Visiting Professor at Tokyo University of Agriculture, for his kindness in giving us the opportunity to examine the interesting specimens and valuable advice on the present study, and Dr. Jun-ichi AOKI, Institute of Environmental Science and Technology, Yokohama National University, Professor emeritus Hiroshi TAMURA, Ibaraki University, and Professor ZHANG Han-yun, Vice-director of the Kunming Branch, Academia Sinica, for their kind help through the cooperative study. We are also deeply indebted to Dr. Kiyoshi ISHII, Dokkyo Medical University School of Medicine, Mibu, and Dr. Shûhei NOMURA, National Science Museum (Nat. Hist.), Tokyo, for their kindness in providing us with the specimens used in the present study, and the members of the Sino-Japanese cooperative study for their kind assistance in the field.

Nazeris baihuaensis sp. nov.

(Figs. 1, 2, 6–8)

Body length: 5.8–6.5 mm (from front margin of head to anal end); 3.2–3.4 mm (from front margin of head to elytral apices).

Body elongate, subparallel-sided and slightly convex. Colour reddish brown to reddish black and moderately shining, with labrum, mandibles, basal segments of antennae and coxae yellowish brown, the remaining antennal segments and legs yellowish.

Male. Head suborbicular, gently elevated medially though subdepressed in frontal part between antennal tubercles, slightly longer than broad (length/width= 1.05), distinctly narrowed posteriad and well constricted at the neck; front margin straight and glabrous, lateral sides arcuate behind and somewhat emarginate before compound eyes, with a groove for the reception of 1st antennal segment in front of each eye; surface coarsely and reticulately punctured, the punctures becoming larger and coarser in frontal part and covered with fine brownish bristles decumbent forwards; eyes weakly prominent, the longitudinal diameter of each eye less than a half as long as postocular part. Antennae slender, extending a little beyond the middle of pronotum and not thickened towards the apical segment, with two proximal segments polished, the remainings gradually becoming opaque towards the apical segment, 1st segment robust and cylindrical, conspicuously longer than broad (length/width=3.33), 2nd somewhat dilated apicad, a little longer than broad (length/width=1.33) but remarkably shorter (2nd/1st=0.27) and distinctly narrower (2nd/1st=0.67) than 1st, 3rd elongate, markedly longer than broad (length/ width=3.6) and much longer (3rd/2nd=2.25) but slightly narrower (3rd/2nd=0.83) than 2nd, 4th to 9th equal in width to one another and decreasing in length, though each segment is distinctly longer than broad, 10th longer than broad (length/width=2.17) but slightly shorter

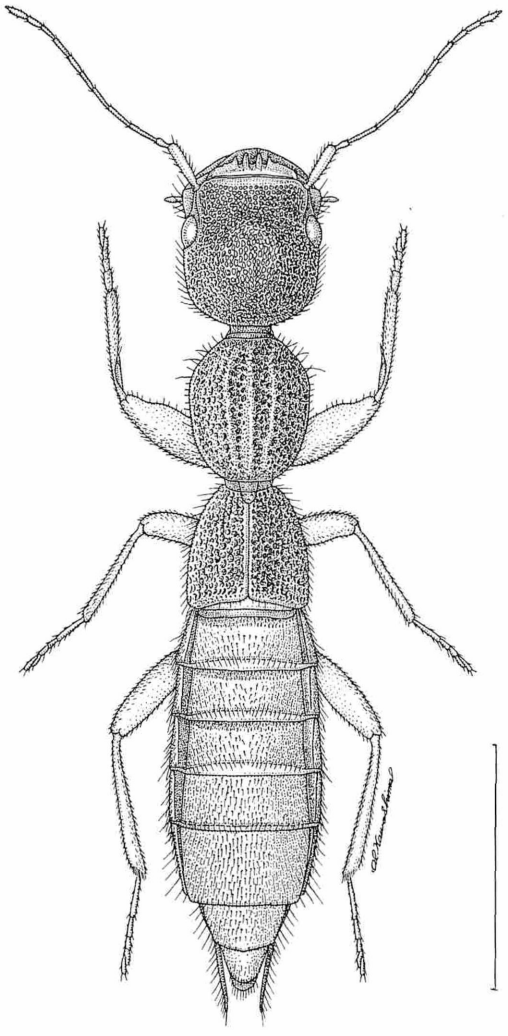
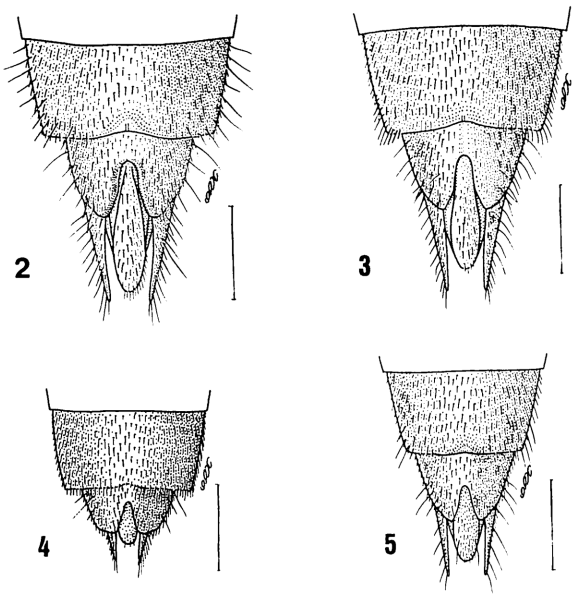


Fig. 1. *Nazeris baihuaensis* sp. nov., ♂, from Baihua Ling of the Gaoligong Shan Mts. in the Baoshan area of western Yunnan, SW. China. Scale: 2.0 mm.

(10th/9th=0.94) though a little broader (10th/9th=1.15) than 9th, 11th fusiform, more than twice as long as broad and a little longer (11th/10th=1.20) and slightly broader (11th/10th=1.09) than 10th.

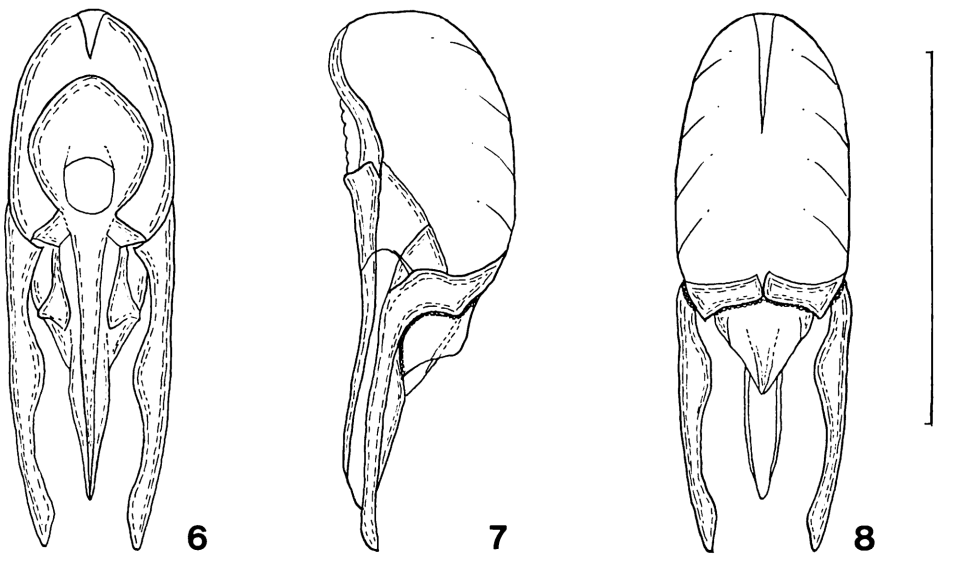
Pronotum semioval and convex medially, distinctly longer than broad (length/width=1.21), as long as but a little narrower than head (pronotum/head=0.86), widest at anterior third and more strongly narrowed posteriad than anteriad; lateral sides arcuate in anterior two-thirds and nearly straight in posterior third as seen from dorsal side, anterior margin nearly straight though only the median part is visible from



Figs. 2–5. Last three abdominal sternites in male of *Nazeris* spp.; *N. baihuaensis* sp. nov. (2), *N. nomurai* sp. nov. (3), *N. huanxipoensis* sp. nov. (4), and *N. ishiianus* sp. nov. (5). Scale: 0.5 mm.

above, posterior margin truncate or slightly emarginate at the middle, anterior angles more broadly rounded than posterior ones, the former being invisible from above; surface densely, more or less irregularly covered with very coarse and setiferous punctures, the bristles similar to those on head, provided with a median longitudinal carina which is abbreviated at anterior third or anterior half, and obscurely depressed on each side of the carina in posterior half; prosternum strongly and longitudinally carinate at the middle, though the carina disappears behind anterior margin. Scutellum subtriangular, uneven on the surface. Elytra subtrapezoidal, dilated posteriad and subdepressed above, slightly longer than broad (length/width=1.05), distinctly shorter than (elytra/pronotum=0.87) though as broad as pronotum; lateral sides feebly arcuate, posterior margin emarginate at the middle, posterior angles rounded; surface densely and setiferously punctured, the punctures less coarse than on pronotum, and covered with bristles similar to those on pronotum. Legs moderately long, profemur thickened though abruptly constricted at apical fourth and excavated in apical half on the inner face; protibia hollowed in about basal third on the inner margin and closely beset with minute yellowish setae on the underside of the hollow; meso- and metatibiae normal; basal four protarsal segments not much dilated.

Abdomen elongate and subcylindrical, gradually dilated from 3rd to 7th segments and then abruptly narrowed towards the apical end; 3rd to 6th tergites each shallowly and transversely depressed along the base, densely and coarsely punctured, the punctures remarkably smaller and much less coarse than those on elytra, 7th tergite less



Figs. 6–8. Male genital organ of *Nazeris baihuaensis* sp. nov.; dorsal view (6), lateral view (7), and ventral view (8). Scale: 1.0 mm.

densely and less coarsely punctured than in the preceding tergites; all the tergites covered with fine brownish pubescence; 8th sternite deeply excised in a U-shape at the middle of posterior margin and depressed in front of the excision, surface of the depression smooth and glabrous; 7th sternite shallowly and broadly emarginate at the middle of posterior margin and semicircularly depressed before the emargination, the depression being provided with a short sulcus just before the posterior margin.

Genital organ well sclerotized except for membraneous ventral side of median lobe, trilobed and almost symmetrical. Median lobe constricted at the middle, and then strongly dilated basad though gently narrowed apicad. Parameres distinctly longer than median lobe, each widened at the middle and obliquely truncated at the apex.

Female. Similar in general appearance to male, but four protarsal segments are less dilated, the 8th abdominal sternite is simply rounded at the middle of posterior margin and the 7th sternite is simple.

Type series. Holotype: ♂, allotype: ♀, Baihua Ling, Gaoligong Shan Mts., Baoshan area, western Yunnan, SW. China, 17–X–1996, S. UÉNO leg. Paratypes: 4♂♂, same data as for the holotype; 1♂, same locality and date as above, S. NOMURA leg.; 3♂♂, 2♀♀, same locality and collector as above, 16–X–1996; 3♂♂, 2♀♀ (teneral), same locality and date as for the holotype, K. ISHII *et al.* leg. The type specimens are deposited at present in the collection of the National Science Museum (Nat. Hist.), Tokyo, except for three pair of the paratypes which are preserved in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture.

Distribution. Southwest China (Yunnan).

Remarks. The present new species is similar in facies and body size to *N. alpinus* Y. WATANABE et XIAO N. (1997, p. 5) from the Diancang Shan Mountains in Yunnan, but different from the latter in the following points: head somewhat dilated anteriad in anterior half and much more coarsely punctured on the surface; pronotum less than 1.5 times as long as broad, its surface covered with much deeper and much larger punctures; elytra slightly longer than broad and as broad as pronotum, much more coarsely punctured on the surface; and different configuration of secondary sexual characters of abdominal sternites and genital organ in the male.

Bionomics. The type specimens were obtained from under dead leaves in an evergreen broadleaved forest consisting of *Rhododendron* sp. and *Lithocarpus leucostachys* at an altitude of 2,550 m.

Etymology. The specific epithet is given after the type locality "Baihua Ling".

Nazeris nomurai sp. nov.

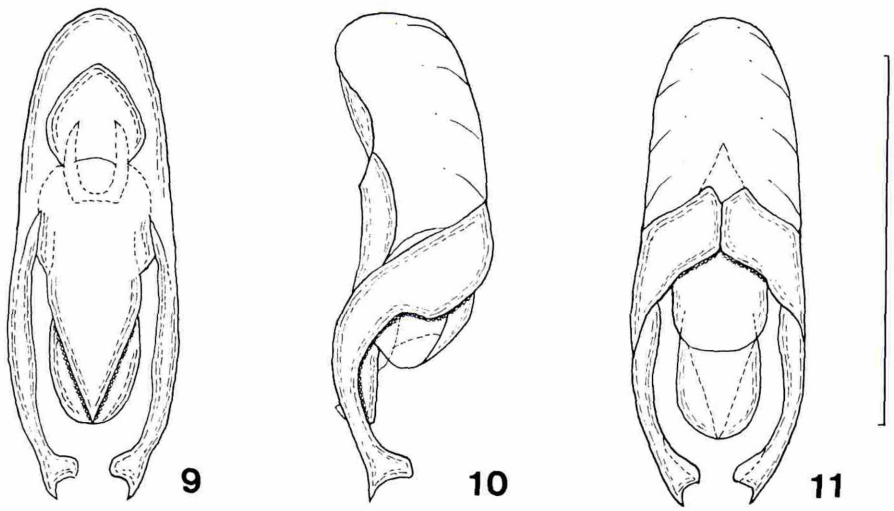
(Figs. 3, 9–15)

Body length: 6.1–7.0 mm (from front margin of head to anal end); 3.2–3.3 mm (from front margin of head to elytral apices).

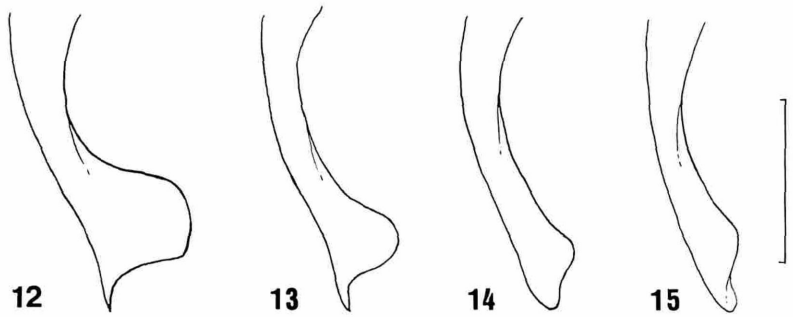
Male and female. In facies and body size similar to the preceding species, but different from it in the following points: head more strongly narrowed posteriad in basal third, surface more finely punctured, postocular part about 2.2 times as long as longitudinal diameter of each eye; pronotum subpentagonal and relatively short (length/width=1.17), slightly shorter than head (pronotum/head=0.95), and less coarsely punctured on the surface; elytra almost as long as broad, though slightly narrower than pronotum (elytra/pronotum=0.97), surface slightly less coarsely punctured; abdomen in male with 7th sternite slightly emarginate at the middle of posterior margin and feebly semicircularly depressed in front of the emargination, surface of the depression more closely setose than the other parts and with a very minute longitudinal sulcus at the middle of posterior margin, 8th sternite provided with a deep V-shaped excision at the middle of posterior margin and more shallowly, longitudinally depressed at the middle before the excision than in the preceding species.

Male genital organ elliptical and almost symmetrical, well sclerotized with the exception of ventral part of median lobe. Median lobe lingulate though slightly widened before posterior margin which is broadly rounded as seen from ventral side. Parameres distinctly longer than median lobe, each strongly curved ventrad in apical half, abruptly dilated in apical part and distinctly emarginate at the apical margin.

Type series. Holotype: ♂, allotype: ♀, Lujiangba, Gaoligong Shan Mts., Baoshan area, western Yunnan, SW. China, 10–X–1996, S. NOMURA leg. Paratypes: 10♂♂ (3 teneral), 7♀♀ (2 teneral), same data as for the holotype. The type specimens are at present deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, except for five pair of the paratypes which are preserved in the collection of the Laboratory of Insect Resources, Tokyo Uiversity of Agriculture.



Figs. 9–11. Male genital organ of *Nazeris nomurai* sp. nov.; dorsal view (9), lateral view (10), and ventral view (11). Scale: 1.0 mm.



Figs. 12–15. Apical part of paramere of *Nazeris nomurai* sp. nov., from Lujiangba on the Gaoligong Shan Mountains in the Baoshan area (12); that of a specimen from Dabei of the Gaoligong Shan Mts. in Tengchong Xian (13–15). Scale: 0.25 mm.

Further specimens examined. 10♂♂, 4♀♀, Dabei, Gaoligong Shan Mts., Tengchong Xian, western Yunnan., SW. China, 11–X–1996, S. NOMURA leg.; 3♂♂, 2♀♀, same locality and date as above, S. UÉNO leg.; 3♂♂, 4♀♀, same locality and date as above, K. ISHII *et al.* leg.

The specimens obtained at Dabei on the Gaoligong Shan Mountains are somewhat different from the type specimens in configuration of the apical part of parameres of the male genital organ, but the difference can be regarded as an infraspecific variation.

Distribution. Southwest China (Yunnan).

Bionomics. The type specimens were obtained from under dead leaves in a mixed forest of deciduous and evergreen trees, consisting of *Viburnum cylindricus*, *Camellia* sp., *Berberis* sp., and *Rubus pirifollius*, at an altitude of 1,720 m.

Etymology. The specific epithet is given after Dr. Shûhei NOMURA, National Science Museum (Nat. Hist.), Tokyo, who collected all the type specimens.

Nazeris huanxipoensis sp. nov.

(Figs. 4, 16–18)

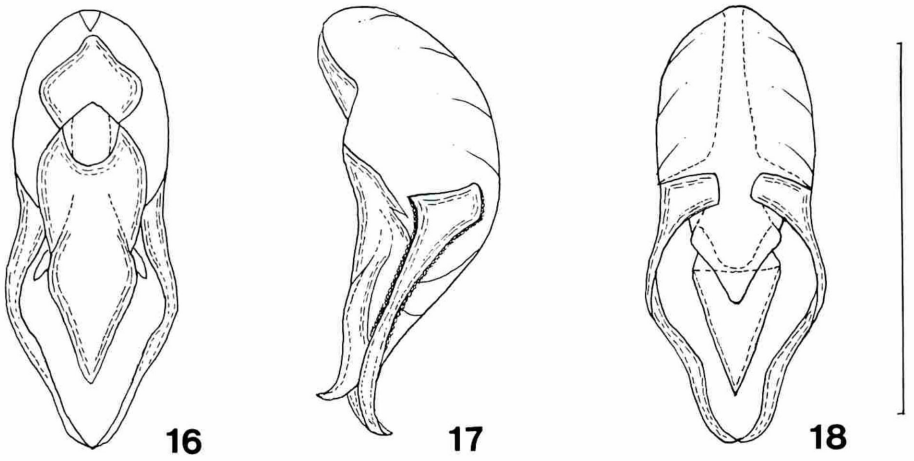
Body length: 6.3–6.6 mm (from front margin of head to anal end); 3.1–3.5 mm (from front margin of head to elytral apices).

Male and female. Similar in general appearance and body size to the two preceding species, but can be distinguished from them by configuration of the secodary sexual characters of abdominal sternites and of the genital organ in the male.

Head more or less elliptical and gently convex medially, somewhat longer than broad (length/width=1.09), more distinctly narrowed posteriad in basal fourth than in the preceding species, *N. nomurai*, and well constricted at neck, front margin straight, lateral sides slightly more strongly arcuate, postocular part relatively long, about 2.4 times as long as longitudinal diameter of each eye; surface densely and reticulately punctured, the punctures slightly finer than those of *N. nomurai*. Antennal articulation similar to that in the two preceding species.

Pronotum long oval, more strongly elevated medially than in *N. nomurai*, apparently longer than broad (length/width=1.28), as broad as but slightly narrower (pronotum/head=0.85) than head, widest just before the middle and narrowed both in front and behind, lateral sides more strongly arcuate than in *N. nomurai*; surface densely covered with much less coarse punctures than those of *N. nomurai* and median longitudinal carina obscure; prosternum provided with a longitudinal carina at the middle as in *N. nomurai*. Elytra trapezoidal and dilated posteriad, subdepressed above, as long as broad, a little shorter (elytra/pronotum=0.75) and slightly narrower (elytra/pronotum=0.96) than pronotum; lateral sides arcuate, posterior margin more deeply emarginate at the middle than in *N. nomurai*; surface densely covered with much less coarse punctures than in *N. nomurai*. Legs as in the two preceding species. Abdomen subcylindrical, gradually dilated from 3rd to 7th segments, and then abruptly narrowed towards the apical end; all the tergites more densely though less coarsely punctured than in *N. nomurai*; in male, 7th sternite devoid of definite secondary sexual characters, 8th sternite deeply excised in a V-shaped at the middle of posterior margin.

Male genital organ more closely similar in configuration to that of *N. nomurai* than to that of *N. baihuaensis*, but different from it in the following points: median lobe subtriangular in posterior half and pointed at the apex which is curved dorsad in lateral view; parameres remarkably longer than median lobe, each strongly curved inwards at the middle and abruptly narrowed towards the pointed apex as seen from dorsal side.



Figs. 16–18. Male genital organ of *Nazeris huanxipoensis* sp. nov.; dorsal view (16), lateral view (17), and ventral view (18). Scale: 1.0 mm.

Type series. Holotype: ♂, Huanxipo, Tengchong Xian, western Yunnan, SW. China, 14–X–1996, S. UÉNO leg.; allotype, ♀, same locality and date as the holotype, S. NOMURA leg. Paratype: 1♂, same data as for the holotype; 3♂♂, 2♀♀, same data as for the allotype; 1♂, same locality and date as for the allotype, K. ISHII *et al.* leg.

Distribution. Southwest China (Yunnan).

Bionomics. The type specimens were obtained from under dead leaves in a mixed forest of coniferous and broadleaved trees, consisting of *Pinus armandi*, *Lithocarpus variolosus* and *Rhus chinensis* at an altitude of 1,950 to 1,960 m.

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

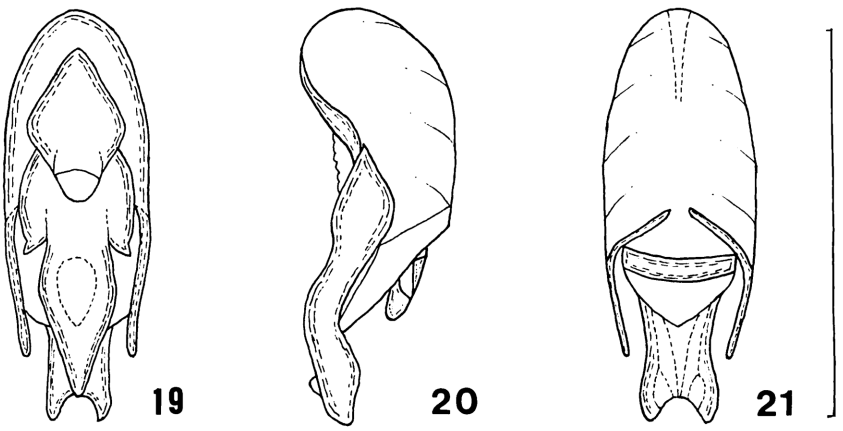
Nazeris ishiianus sp. nov.

(Figs. 5, 19–21)

Body length: 5.1–5.9 mm (from front margin of head to anal end); 3.0–3.4 mm (from front margin of head to elytral apices).

Male and female. The present new species is similar to the three preceding species in facies and coloration, but can be readily distinguished from them by the relatively small body and remarkably shorter parameres of the male genital organ.

Head suborbicular and convex medially, similar in configuration to that of the preceding species, *N. huanxipoensis*, though less strongly narrowed in basal third, punctures on the surface similar to those of *N. huanxipoensis*. Antennal articulation as in *N. huanxipoensis*. Pronotum long oval, less convex than in *N. huanxipoensis* and distinctly shorter than head (pronotum/head=0.92), widest before the middle and more strongly narrowed posteriad than in *N. huanxipoensis*, surface covered with much



Figs. 19–21. Male genital organ of *Nazeris ishiianus* sp. nov.; dorsal view (19), lateral view (20), and ventral view (21). Scale: 1.0 mm.

coarser punctures and provided with a longitudinal carina in basal half as in *N. baihuaensis*. Elytra somewhat broader than long (width/length=1.06), a little shorter (elytra/pronotum=0.82) but slightly longer than pronotum (elytra/pronotum=1.03), surface slightly more coarsely punctured than in *N. huanxipoensis*. Abdominal tergites less densely and more coarsely punctured than in *N. huanxipoensis*; in male, 7th sternite slightly emarginate at the middle of posterior margin, 8th sternite deeply subtriangularly excised at the middle of posterior margin.

Male genital organ considerably different in configuration from those of the three preceding species, as follows: median lobe subquadrate in apical third and semicircularly emarginate at the middle of posterior margin; paramere slender and remarkably shorter than median lobe.

Type series. Holotype: ♂, Baihua Ling, Gaoligong Shan Mts., Baoshan area, western Yunnan, SW. China, 16–X–1996, K. ISHII *et al.* leg.; allotype: ♀, same locality and date as for the holotype, S. NOMURA leg. Paratypes: 1♂, 1♀, same locality and date as for the holotype, S. NOMURA leg. The holo- and allotypes are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and paratypes are preserved in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture.

Distribution. Southwest China (Yunnan).

Bionomics. The type specimens were obtained from under dead leaves in a deciduous broadleaved forest consisting of *Alnus nepalensis* and *Rubus* sp. at an altitude of 2,100 m.

Etymology. The specific epithet of this new species is given afetr Dr. Kiyoshi ISHII, Dokkyo Medical University School of Medicin, Mibu, who collected the holotype.

要　約

渡辺泰明・肖 宁年：中国云南省から採集されたアバタコバネハネカクシ属の4新種．——中国からは，アバタコバネハネカクシ属に含まれる種としてこれまでに11種が知られ，そのうちの5種が云南省から報告されている．1996年に実施された中日共同学術研究「中国南西部における土壌動物相の調査」によって，云南省高黎贡山で採集された本属の4種を検討した結果，新種と判定されたので下記のとおり命名・記載した．

1. *Nazeris baihuaensis* Y. WATANABE et XIAO N.

この種は，高黎贡山百花岭の標高2,550 mの地点で採集された．体長および概観は云南省北西部に位置する点苍山から記載された．*N. alpinus* に類似しているが，頭部，前胸背板および翅鞘の形状が異なり，またより粗く点刻されること，さらに雄交尾器の形状の違いによって区別される．

2. *Nazeris nomurai* Y. WATANABE et XIAO N.

保山地区高黎贡山の潞江坝の標高1,720 mの地点で採集された本種は，体長および概観が前種に類似している．しかし，前胸背板が頭部より短く，幅が翅鞘よりわずかに広いこと，前胸背板，翅鞘両者の点刻が前種のものほど粗くないこと，さらに雄交尾器の形状の違いなどによって区別される．

3. *Nazeris huanxipoensis* Y. WATANABE et XIAO N.

保山地区欢喜坡の標高1,950～1,960 mの地点で採集された本種は，外部形態が前種に類似しているが，前胸背板は上方により強く膨隆し，中央の縦条は不明瞭であり，翅鞘は長さと幅が等しく，後縁中央はより深く湾入すること，さらに雄交尾器側片末端の形状の違いによって区別される．

4. *Nazeris ishiianus* Y. WATANABE et XIAO N.

高黎贡山百花岭の標高2,100 mの地点で採集された本種は，上記3種よりやや小型であること，雄交尾器側片が顕著に細く，しかも中葉よりいちじるしく短い独特の形状を呈していることで容易に区別される．

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Elytra, *Tokyo*, **28** (2): 322, November 15, 2000

Occurrence of *Astenus latifrons* (SHARP) (Coleoptera, Staphylinidae) on Nakadôri-jima Island of the Gotô Islands in Nagasaki Prefecture, West Japan

Yasuaki WATANABE

Laboratory of Insect Resources, Tokyo University of Agriculture,
Atsugi, Kanagawa, 243–0034 Japan

Until now, four species of staphylinid beetles have been reported from Nakadôri-jima Island of the Gotô Islands by EZIMA *et al.* (1981, pp. 285, 325). Through the courtesy of Dr. K. MATSUMOTO, I had an opportunity to examine a staphylinid beetle obtained on the island. It agrees with *Astenus latifrons* (SHARP, 1874), which is new to the fauna of the island. It is recorded below with the collecting data.

1♀, Sannô-san Nakadôri-jima Is., Gotô Isls., Nagasaki Pref., West Japan, 19–VIII–1992, K. MATSUMOTO leg.

I thank Dr. K. MATSUMOTO for his kindness in providing me with the specimen.

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Elytra, *Tokyo*, **28** (2): 323–326, November 15, 2000

A New Species of the Group of *Lathrobium monticola* (Coleoptera, Staphylinidae) from South Korea

Yasuaki WATANABE

Laboratory of Insect Resources, Tokyo University of Agriculture,
Atsugi, Kanagawa, 243–0034 Japan

Abstract A new species of the group of *Lathrobium monticola* is described under the name of *L* (s. str.) *coreanum*. It is found by using Berlese's apparatus from dead leaves or the litter accumulated in a deciduous broadleaved forest on Mt. Najangsan of Jeonlabuk-do Province in South Korea.

As regards apterous *Lathrobium*, only one species, *Lathrobium pollens*, has hitherto been reported from Korea by PAIK (1985, p. 11, fig. 9). Through the courtesy of Dr. Hideto HOSHINA, I have recently had an opportunity to examine an apterous *Lathrobium* obtained on Mt. Najangsan in Jeonlabuk-do Province, Korea. It seems to belong to the group of *L.* (s. str.) *monticola* SHARP (1889, p. 255), which can be distinguished from that of *L.* (s. str.) *pollens* by small body and inconspicuous secondary sexual character of the abdomen in the male. After a careful examination, it has become clear that this species is new to science for reason of disagreement with *L. monticola* in configuration of the male genital organ. It will be described in the present paper.

Before going further, I wish 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 Dr. H. HOSHINA, Institute of Environmental Science and Technology, Yokohama National University, for his kindness in submitting invaluable specimens to me for taxonomic study.

Lathrobium (s. str.) ***coreanum*** Y. WATANABE, sp. nov.

(Figs. 1–4)

Body length: 6.9–7.2 mm (from front margin of head to anal end); 3.0–3.1 mm (from front margin of head to elytral apices).

Body elongate, parallel-sided and somewhat depressed above. Colour brownish black and moderately shining, with suture and apical margin reddish brown, mandibles and antennae yellowish red, legs brownish yellow.

Male. Head subquadrate and weakly convex medially, almost as long as broad,

widest before posterior angles and distinctly narrowed anteriad; lateral sides gently arcuate, frontal part between antennal tubercles transversely flattened and glabrous, provided with a large setiferous puncture inside each antennal tubercle; surface sparingly, coarsely and setiferously punctured, the punctures becoming closer and smaller on the latero-basal parts; eyes small and flat, their longitudinal diameter apparently shorter than postocular part (longitudinal diameter of eye / postocular part=0.42). Antennae elongate, extending to the middle of pronotum and not thickened towards apical segment, two proximal segments polished, the remainings opaque, 1st segment robust and strongly widened apicad, more than twice as long as broad, 2nd to 11th equal in width to one another, 2nd constricted at the base, 1.5 times as long as broad though a half as long as and distinctly narrower than 1st (2nd / 1st=0.73), 3rd elongate though somewhat dilated apicad, 1.5 times as long as broad and almost as long as 2nd, 4th and 5th equal in length to each other, each a little longer than broad (length / width=1.25) but somewhat shorter than 3rd (4th or 5th / 3rd=0.83), 6th to 10th more or less moniliform, equal in length to one another, each slightly longer than broad (length / width=1.13) but somewhat shorter (each of 6th to 10th / 5th=0.90) than 5th, 11th fusiform, apparently longer than broad (length / width=1.75) and about 1.5 times as long as 10th, subacuminate at the tip.

Pronotum oblong though somewhat narrowed posteriad, a little longer than broad (length / width=1.24), distinctly longer (pronotum / head=1.35) and somewhat broader (pronotum / head=1.09) than head; lateral sides slightly arcuate in dorsal view, anterior margin gently rounded, posterior margin subtruncate but feebly emarginate at the middle, anterior angles obtuse and not visible from dorsal side, posterior ones narrowly rounded; surface more closely and more coarsely punctured than on head, except for a narrow smooth median space through the length of pronotum. Scutellum subtriangular and small, provided with several minute setiferous punctures on the surface. Elytra subtrapezoidal, somewhat dilated posteriad, transverse (width / length=1.11), distinctly shorter (elytra / pronotum=0.78) but slightly broader (elytra / pronotum=1.08) than pronotum; lateral sides nearly straight, posterior margin emarginate at the middle, posterior angles broadly rounded; surface rather densely covered with superficial setifer-

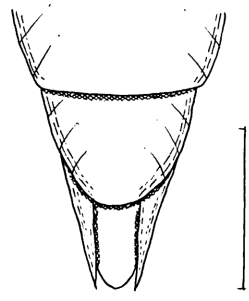
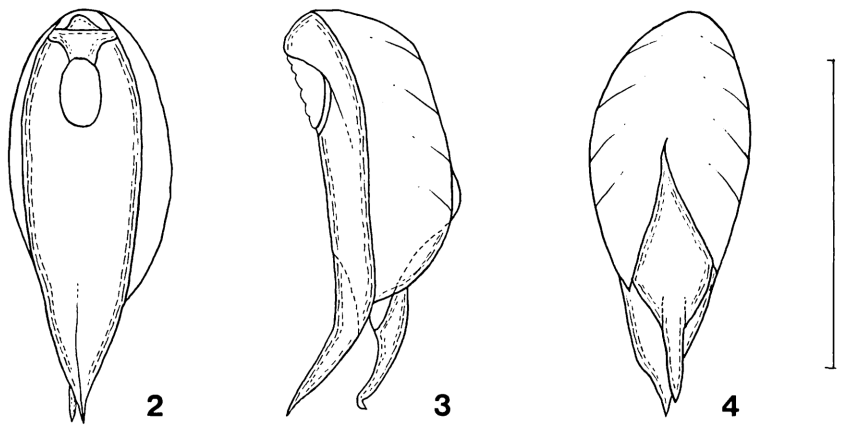


Fig. 1. *Lathrobium* (s. str.) *coreanum* Y. WATANABE, sp. nov.; last three abdominal sternites in the male. Scale: 1.0 mm.



Figs. 2–4. Male genital organ of *Lathrobium* (s. str.) *coreanum* Y. WATANABE, sp. nov.; dorsal view (2), lateral view (3), and ventral view (4). Scale: 1.0 mm.

ous punctures. Legs relatively short; profemur and protibiae similar in structure to that of *L. monticola*; 1st to 4th protarsal segments strongly widened, last segment slightly shorter than all the precedings together.

Abdomen elongate, parallel-sided, though abruptly narrowed from 8th segment to apical end; 3rd to 7th tergites each shallowly and transversely depressed along the base and somewhat sparingly, finely and aciculately punctured, 7th and 8th tergites each more sparingly and more finely punctured than in the preceding tergites; all the tergites covered with fine brownish pubescence; 8th sternite with posterior margin only gently rounded.

Genital organ long elliptical, well sclerotized except for membraneous ventral side of median lobe. Median lobe slightly shorter than fused paramere, widest at the middle and more strongly narrowed apicad than basad; ventral sclerotized piece subrhomboidal, widest near the middle and remarkably narrowed both basad and apicad though nearly parallel-sided in posterior third, apex obtusely pointed in ventral view though briefly curved ventrad and forming a small hook as seen from lateral side. Fused paramere relatively broad and slightly asymmetrical; viewed dorsally, widest at basal fourth and then gradually narrowed both basad and apicad though strongly so in apical part which is slightly inclined to the left side and acutely pointed at the tip, surface finely and longitudinally carinate along the median line, the carina abbreviated near apical third.

Female. Similar to male in general appearance as well as in configuration of 8th abdominal sternite, but the 1st to 4th protarsal segments are not so strongly widened.

Type series. Holotype: ♂, allotype: ♀, Korea, Jeonlabuk-do Prov., Jeongeb City, Mt. Naejangsan, Naejangsa Temple, Geumseon Valley, 24~25–VI–2000, H. HOSHINA & M. MARUYAMA leg. Paratypes: 3♂♂, 2♀♀, same data as for the holotype. The type

specimens are deposited in the Department of Biology, Natural Science College, Chungnam National University, Taejon, Korea, except for three paratypes (2♂♂, 1♀) which are preserved in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture.

Remarks. The present new species is similar in body size and facies to *L.* (s. str.) *monticola* from Japan, but is different from it in the following points: head as long as broad and more distinctly narrowed anteriad, elytra less transverse, surface more densely and more coarsely punctured; 8th abdominal sternite in male more distinctly rounded in the apical margin; median lobe of male genital organ slightly shorter than fused paramere, sclerotized ventral piece nearly parallel-sided in posterior third, fused paramere relatively broad and abruptly curved dorsad in apical fourth as seen from lateral side.

Bionomics. The type specimens were found in dead leaves in a deciduous broadleaved forest in the Geumseon Valley on Mt. Naejangsan.

Etymology. The specific epithet of the present new specie is derived from Korea in which lies the type locality "Mt. Naejangsan".

要　　約

渡辺泰明：韓国全羅北道から採集されたチビコバネナガハネカクシに近縁の1新種．—— 韓国からはこれまでに，ナガハネカクシ属に含まれる後翅の退化した種として，コバネナガハネカクシただ1種が記録されているに過ぎなかった．本年6月下旬，保科英人博士および丸山宗利氏によって，この種群に含まれる1種が全羅北道井邑市の内粧山で採集された．保科博士のご厚意でこの種を検討した結果，体長および雄の腹部の第二次性徴が不明瞭な点で，チビコバネナガハネカクシに近縁の種と判断された．しかしながら，頭部は長さと幅が等しく，前方により明瞭に狭まること，翅鞘はより密に，より粗く点刻されること，さらに雄交尾器の形状にも差異が認められたので新種と判定し，*L.* (s. str.) *coreanum* と命名・記載した．

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Elytra, *Tokyo*, **28** (2): 327–330, November 15, 2000

Contributions to the Knowledge of the Quediina (Coleoptera, Staphylinidae, Staphylinini) of China

Part 18. Genus *Bolitogyrus* CHEVROLAT, 1848. Section 2

Aleš SMETANA

Agriculture and Agri-Food Canada, Research Branch,
Central Experimental Farm, K.W. Neatby Bldg.,
Ottawa, Ontario K1A 0C6, Canada

Abstract *Bolitogyrus nigropolitus* is described as new, based on specimens from Sichuan. Two main lineages of the Chinese species of *Bolitogyrus* are briefly discussed, and a key to the species of *Bolitogyrus* known at present from mainland China is given.

After submitting the manuscript of the first contribution to the knowledge of the Chinese species of *Bolitogyrus* (SMETANA & ZHENG, 2000) for print, I received two additional specimens which I believed to be *B. elegans* SMETANA et ZHENG, 2000. However, they turned out to belong to a different, very similar and apparently closely related species. This species is described below. With the discovery of this additional species the number of species of *Bolitogyrus* of mainland China rose to six, though further species will very likely be discovered. A key to the presently known species is presented.

The Chinese species of *Bolitogyrus* apparently belong to two main lineages, defined by the pronotal sculpture. One lineage, containing the species *B. elegans*, *B. nigropolitus* sp. nov., *B. cyanipennis* ZHENG, 1988 and *B. kitawakii* SMETANA et ZHENG, 2000, is characterized by the presence of coarse punctation on the anterolateral corners of the pronotum. In the other lineage, containing *B. fukienensis* SCHEERPELTZ, 1974 and *B. pictus* SMETANA et ZHENG, 2000, the anterolateral corners lack any punctation. The two Taiwanese species, *B. rufomaculatus* SHIBATA, (1979) and *B. taiwanensis* (HAYASHI, 1991) both belong to the latter lineage.

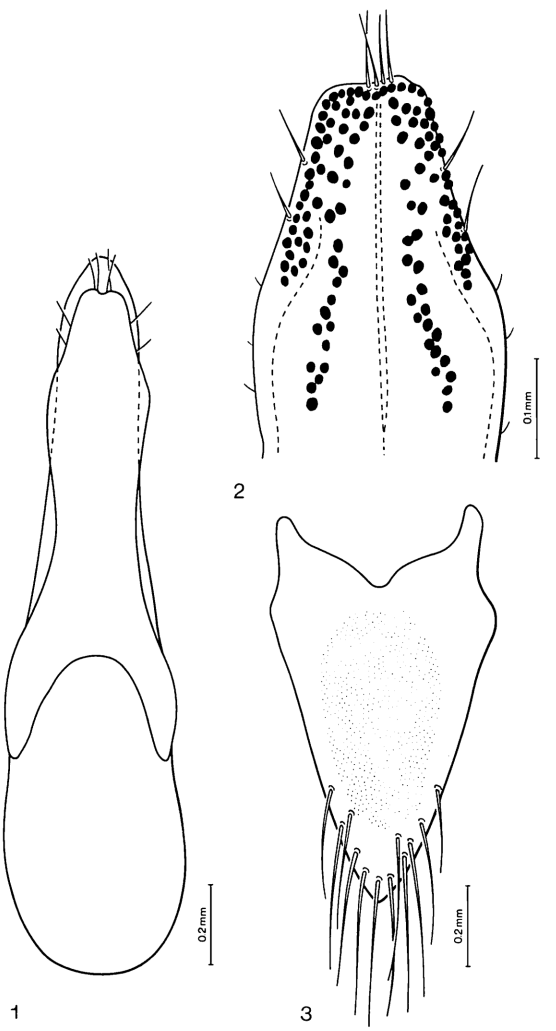
Bolitogyrus nigropolitus sp. nov.

(Figs. 1–3)

Description. In all external characters very similar to *B. elegans* and different mainly by the sexual characters, particularly by the shape of the aedoeagus.

Male. First four segments of front tarsus similar to those of *B. elegans*, but slightly less dilated. Apical margin of tergite 8 simple, widely, inconspicuously sinu-

ate; sternites 7 and 8 not appreciably different from those of *B. elegans*. Genital segment with tergite 10 and sternite 9 both not appreciably different from those of *B. elegans*. Aedoeagus (Figs. 1, 2) similar to that of *B. elegans*, but smaller; median lobe moderately constricted in middle portion, anteriorly narrowed into subacute apex; paramere in general shorter and wider, apical portion shorter, with apex subtruncate, distinctly not reaching apex of median lobe; four fine setae at apex, two similar setae at each lateral margin far below apex; sensory peg setae on underside of paramere arranged differently from those of *B. elegans*, although pattern is similar; internal sac without larger sclerotized structures.



Figs. 1–3. *Bolitogyrus nigropolitus*: 1, aedoeagus, ventral view; 2, apical portion of underside of paramere; 3, tergite 10 of female genital segment.

Female. First four segments of front tarsus similar to those of *B. elegans*, but slightly less dilated. Tergite 8 with apex simple, subtruncate. Genital segment with tergite 10 similar to that of *B. elegans* in shape and pigmentation, but with apical portion less narrowed, and with more numerous setae at apex (Fig. 3).

Length 8.0–9.3 mm.

Type material. Holotype (male): China: "China: W Sichuan 1999 Ya'an Prefecture, Tianquan Co. Jiain Shan, Tal oberh. Labahe N.R.St, 57 km W Ya'an, 30°06N, 102°25E, Streu, Rinde, Pilze, 1800 m 12.VII., leg. M. Schülke". In the SCHÜLKE collection, Berlin, Germany.

Allotype (female): [Sichuan]: "China: W Sichuan 1999 Ya'an Prefecture, Shimian Co. Xiaoxiang Ling, Seitental ob. Nanya Cun bei Caluo, 11 km S Shimian ca. 1250 m, Rinde, Pilze, Streu 76.VII., leg. M. Schülke". In the SMETANA collection, Ottawa, Canada.

Bionomics. Both specimens were collected by sifting debris consisting of bark, forest floor litter and mushrooms.

Recognition. Bolitogyrus nigropolitus is the second Chinese species with the body entirely black with a slight metallic hue. It shares this character state with *B. elegans* and may be distinguished from it positively only by the differently shaped aedoeagus. The two species seem to be allopatric at present, since *B. elegans* is known only from Yunnan.

Etymology. The specific epithet is a combination of two Latin adjectives: *niger*, *-a*, *-um* (black), and *politus*, *-a*, *-um* (shiny). It refers to the coloration and appearance of the species.

Key to Species of *Bolitogyrus* of Mainland China

1. Anterior corners of pronotum with coarse punctation. 2
— Anterior corners of pronotum without punctation. 5
2. Body entirely black with faint metallic hue. 3
— Body not entirely black, variably bicolored with elytra metallic blue or metallic greenish-blue. 4
3. Aedoeagus with apex of paramere narrowly arcuate, subacute, distinctly exceeding apex of median lobe (fig. 9 in SMETANA & ZHENG, 2000), sensory peg setae on underside of paramere as in fig. 11 in SMETANA & ZHENG, 2000). Length 8.1–9.2 mm. Yunnan. ..... *B. elegans*
— Aedoeagus with apex of paramere subtruncate, distinctly not reaching apex of median lobe (Fig. 1), sensory peg setae on underside of paramere as in Fig. 2. Length 8.0–9.3 mm. Sichuan. ..... *B. nigropolitus* sp. nov.
4. Paramere of aedoeagus in ventral view large, covering most of median lobe, narrowly arcuate apex hardly exceeding apex of median lobe, attenuate middle portion short, hardly exposing lateral portions of median lobe. Length 9.5–10.5 mm. Western Sichuan. ..... *B. cyanipennis*

— Paramere of aedoeagus in ventral view appreciably narrower, obtusely truncate apex distinctly exceeding apex of median lobe, attenuate middle portion long, extensively exposing lateral portions of median lobe (fig. 3 in SMETANA & ZHENG, 2000). Length 8.0–8.7 mm. Eastern Sichuan. ..... *B. kitawakii*

5. Abdomen and disc of pronotum entirely piceous-black, elytra moderately long, at sides markedly longer than pronotum at midline (ratio around 1.25), each with variably extensive, rufotestaceous humeral macula. Length 8.5–10.0 mm. Fujian. ..... *B. fukienensis*

— First three visible abdominal segments and entire pronotum testaceorufous, elytra shorter, at sides only slightly longer than pronotum at midline (ratio 1.12), each with similar humeral macula. Length 8.0 mm. Yunnan. ..... *B. pictus*

Acknowledgments

My colleagues Y. BOUSQUET and A. DAVIES, Agriculture and Agri-Food Canada, Research Branch, Ottawa, commented on the original draft of the manuscript. Mr. Go SATO from the same establishment carefully finished the line drawings.

要　　約

A. SMETANA：中国産ツヤムネハネカクシ亜族に関する知見．18．*Bolitogyrus*属の2．——四川省から新種*Bolitogyrus nigropolitus*を記載し，中国産のこの属のハネカクシを6種にした．これらは，前胸背板の印刻の差異によって大きく2系統に区分され，そのひとつは台湾産の2種を含む．今後の研究に資するため，中国本土産全種の検索表を論文末に掲げた．

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SMETANA, A., & ZHENG, Fa-ke, 2000. Contributions to the knowledge of the Quediina (Coleoptera, Staphylinidae, Staphylinini) of China. Part 17. Genus *Bolitogyrus* CHEVROLAT, 1842. Section 1. *Elytra, Tokyo*, **28**: 55–64.

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Elytra, *Tokyo*, **28** (2): 331–335, November 15, 2000

Morphological Peculiarities and Probable Biology of the Insular Agyrtid Beetle, *Necrophilus nomurai* (Coleoptera, Agyrtidae, Necrophilinae)

Masaaki NISHIKAWA

27–1–115, Higashi-kashiwagaya 1, Ebina, 243–0401 Japan

Abstract Morphological peculiarities of the insular agyrtid beetle, *Necrophilus nomurai* (SHIBATA), are discussed in comparison with a congener, *N. hydrophiloides* GUÉRIN-MÉNEVILLE. The present species is unique in having long vestiges of parameres in the male genitalia, the abdominal sternite 7 apically emarginate in both the sexes, and so on. Discussion is also made on its biology.

Introduction

Only six species belonging to the genus *Necrophilus* LATREILLE are known to occur in the world after the New Zealand species was removed to a newly established genus, *Zeanecrophilus* NEWTON (1997), together with a partially sympatric new species. *Necrophilus nomurai* (SHIBATA) was originally described as the only species of a new genus, *Paranecrophilus* SHIBATA, which is generally recognized as a junior synonym of the genus *Necrophilus* at present (SCHAWALLER, 1986; NEWTON, 1997). This insular species has not been known from outside Amami-Ôshima Island of the Ryukyu Islands; however, Mr. H. MIYAMA made an investigation on Tokuno-shima Island, which is a medium-sized island nearest to Amami-Ôshima, and succeeded in obtaining many specimens (MIYAMA, 1996). As is cited above, NEWTON (1997) made a review of the family Agyrtidae and analysed their phylogeny and biogeography, but he was unable to dissect the type specimen of this species. As I have observed by dissection the seventh and eighth abdominal sternites and the male genitalia of the species, they will be summarized and illustrated in comparison with a congener for showing its morphological peculiarities within the genus. In addition, discussion is also made on its biology for further investigations.

Collecting Data of the Specimens Used

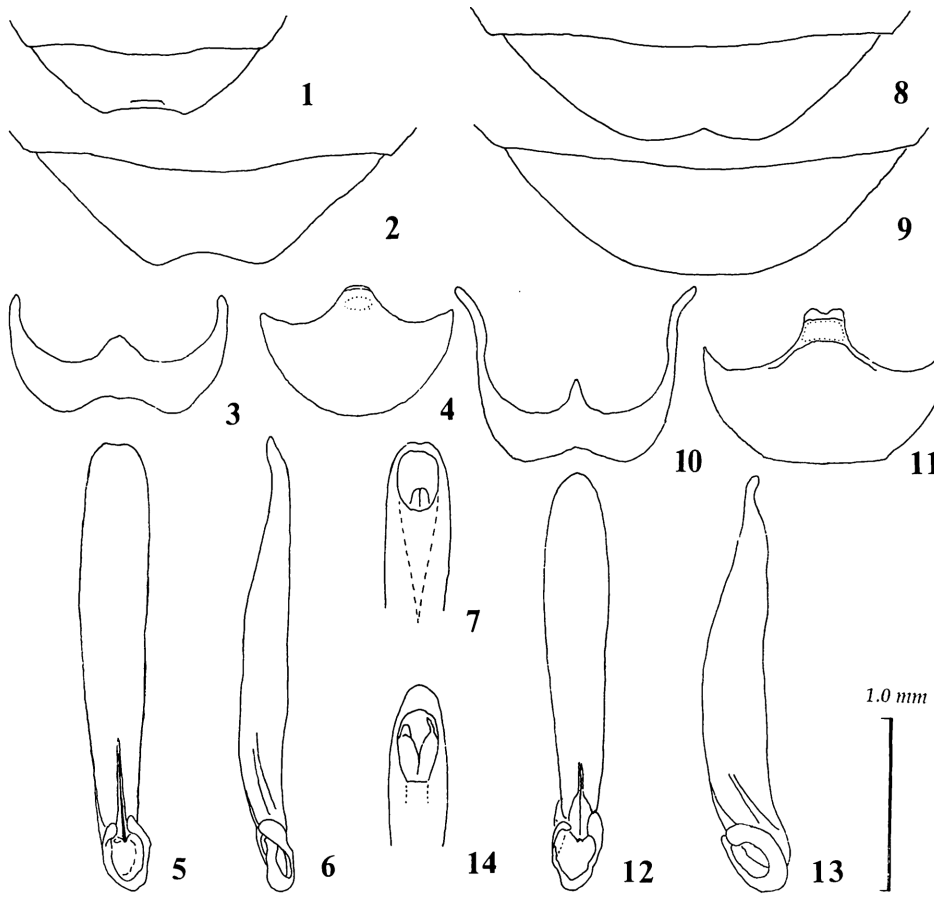
Necrophilus nomurai (SHIBATA): 1♂, 1♀, Sankyô, Tokuno-shima Is., Ryukyus, SW Japan, 30–III–1996, H. MIYAMA leg.

N. hydrophiloides GUÉRIN-MÉNEVILLE: 5♂♂, 4♀♀, Niles Canyon, Alameda Co., California, U.S.A., XII–1990, no collector's name; 1♂, 1♀, same locality, XII–1992,

no collector's name.

Comparison

Seventh and eighth abdominal sternites. In *N. nomurai*, the male abdominal sternite 7 is emarginate at the apex (Fig. 1), with a short transverse ridge in the preapical portion; in the female, the sternite is also emarginate at the apex as was described in the original description (Fig. 2); the male sternite 8 is as shown in Fig. 3, in the female, the sternite has a shallow depression in the preapical portion of mid-anterior pro-



Figs. 1–14. Seventh and eighth abdominal sternites and male genitalia of *Necrophilus* spp. —— 1–7, *Necrophilus nomurai* (SHIBATA), from Tokuno-shima Is., Ryukyus; 8–14, *N. hydrophiloides* GUÉRIN-MÉNEVILLE, from California, U.S.A.; 1, 8, outline of abdominal sternite 7 and apical portion of sternite 6, ♂; 2, 9, same, ♀; 3, 10, outline of sternite 8, ♂; 4, 11, same, ♀; 5, 12, outline of male genitalia, dorsal view; 6, 13, same, lateral view (dorsum to left); 7, 14, same, apical portion in ventral view. Scale: 1.0 mm.

jection (Fig. 4). In *N. hydrophiloides*, on the other hand, the male abdominal sternite 7 is notched at the middle of the apex (Fig. 8), without transverse stria in the preapical portion; in the female, the emargination of the sternite is absent (Fig. 9); the male sternite 8 is as shown in Fig. 10, in the female, the sternite is depressed throughout in the preapical portion of mid-anterior projection (Fig. 11).

Male genitalia. In *N. nomurai* (Figs. 5–7), the median lobe bears round apical corners and gently emarginate apex, flattened in lateral view, the apico-ventral portion is as shown in Fig. 7; the parameres are reduced, fused as relatively long cuneate vestiges, extending along basal 1/4 of the median lobe. In *N. hydrophiloides* (Figs. 12–14), the median lobe is projected apicad, with round apex, still robust in lateral view, the apico-ventral portion is as shown in Fig. 14; the parameres are also reduced, fused as triangular vestiges, extending along basal 1/5 of the median lobe.

Discussion

Judging from the comparison between *N. nomurai* and *N. hydrophiloides*, and other congeners (cf. SCHAWALLER, 1978, 1986; NEWTON, 1997), the former possesses several unique characteristics. One of them is deviation from the diagnostic characters of the genus *Necrophilus* newly proposed by NEWTON (1997), that is, the abdominal sternite 7 of *N. nomurai* is distinctly emarginate at the apex in both the sexes. Other peculiarities are pointed out in the comparison: the median lobe is weakly emarginate at the apex; vestiges of the parameres are long; a short ridge is present in the preapical portion of the sternite 7 in the male. In the female, the presence of depression in the mid-anterior projection of the sternite 8 is one of the characteristics common between the two species examined. The presence or absence of the depression seems important for phylogenetic consideration at a lower level. For example, the depression is absent in two Japanese pterolomatine species (NISHIKAWA, 1986, figs. 10d, 11b), also absent in *Pteroloma sibiricum* SZÉKESSY and *Apteroloma discicolle* (LEWIS). PERREAU (1989) has used them as one of a series of characteristics for reconstruction of the phylogeny of the family Cholevidae. However, further scrutiny of the characteristics is needed for further discussion.

The type series of *N. nomurai* was obtained by a trap baited with carrion (SHIBATA, 1968), and according to MIYAMA (1996), this species was attracted to a dead bird at a roadside. These observations suggest that the species is a typical scavenger, no feeding specialization observed in *N. subterraneus* (DAHL) having been known. The adults of the species seem active only in the spring, so far as recognized on the published data of the specimens known. However, a dead body of an adult beetle was found in Amami-Ôshima in December (pers. comm. from S. MORITA). The male specimen examined from Tokuno-shima seems to be a newly emerged individual, because its median lobe is somewhat teneral in being weakly sclerotized. MIYAMA (1996) also reported a collection of a teneral female in April on Mt. Yuwan-dake of Amami-Ôshima. The North American congeners, *N. hydrophiloides* and *N. pettittii* HORN, are

both winter-active (PECK, 1981; ANDERSON & PECK, 1985; NEWTON, 1997). Though included in a different subfamily, *Apteroloma discicolle* shows mating activity in the late autumn (HIRANO, 1995). Thus, it seems possible that the life cycle of the present species can be surmised as follows: univoltine; the adults are active during the autumn and winter, new generation appears in the spring and estivates till the autumn.

Acknowledgements

I wish to express my deep gratitude to Dr. Alfred F. NEWTON, JR. of the Department of Zoology, the Field Museum of Natural History, Chicago, U.S.A., not only for his critical reading of the manuscript but also for giving kind advice to the contents of this paper, and to Messrs. Yukihiko HIRANO, Hiroshi MIYAMA, Seiji MORITA and Nobuki YASUDA for offering materials and useful information.

要　約

西川正明：オオツヤシデムシ（甲虫目ツヤシデムシ科）の形態的特異性と予想される生活史．—— ツヤシデムシ科の再検討が NEWTON（1997）によって行われ，本科の諸属についても，従来の知見と新たに発見された鑑別形質を基に再記載され，新たな位置づけが提唱されている．琉球列島の奄美大島と徳之島（見山，1996）の特産種であるオオツヤシデムシ *Necrophilus nomurai*（SHIBATA）については，新亜科 Necrophilinae のもとに配列されたが，基準系列以外の標本が入手できず，細部についての検討は行われなかった．そのため，*Necrophilus* 属の再記載に若干の追加・訂正が必要となった．この論文では，徳之島産のオオツヤシデムシと，北米産の *N. hydrophiloides* GUÉRIN-MÉNEVILLE の雌雄の第7–8 腹節腹板，雄交尾器を比較し，属内における本種の形態的特異性を明らかにし，あわせて予想される生活史についても論じた．

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Elytra, Tokyo, **28** (2): 335–336, November 15, 2000

A New *Rafflesia* Associate: *Micronemadus pusillimus* (KRAATZ) (Coleoptera, Leiodidae), and its Additional Records from the Crocker Range, Sabah, Malaysia

Masaaki NISHIKAWA[1], Kôji MIZOTA[2] and Maryati MOHAMED[3]

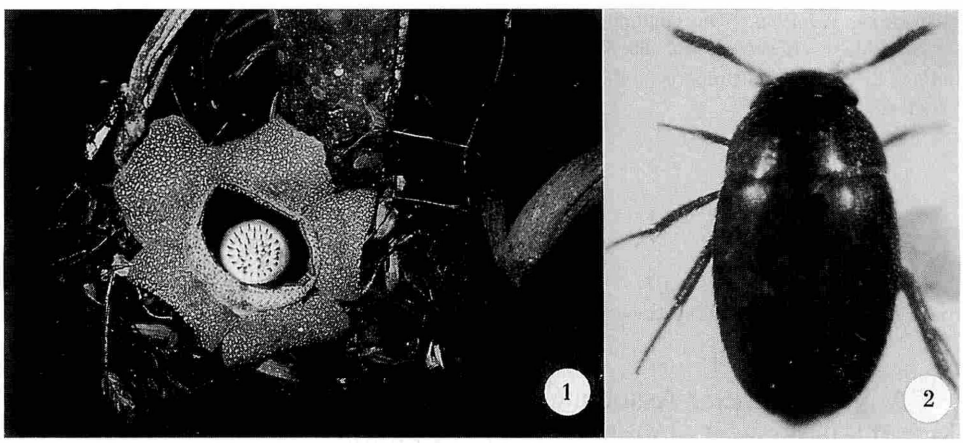
[1] 27–1–115, Higashi-kashiwagaya 1, Ebina, 243–0401 Japan
[2] Systematic Entomology, Faculty of Agriculture, Hokkaido University, Kita 9 Nishi 9, Kita-ku, Sapporo, 060–8589 Japan
[3] Tropical Biology and Conservation Unit, Universiti Malaysia Sabah, Locked Bag 2073, 88999 Kota Kinabalu, Sabah, Malaysia

The International Crocker Range Scientific Expedition 1999, jointly organized by the Sabah Parks (SP), Universiti Malaysia Sarawak (UNIMAS) and Universiti Malaysia Sabah (UMS), was held from the 14th to the 23rd of October with the aim of inventorying the biodiversity components and their ecological relationships found within the park area. The second author (MIZOTA) mainly surveyed the beetle fauna of the Crocker Range Park (CRP) during the expedition period and collected many beetles and other insects. Although CRP is noted for its rich fauna of beetles, a greater part of the fauna lacks documentation and still awaits discovery. In this paper are given additional records of *Micronemadus pusillimus* as a result of the survey. The present material suggests that it seems to be a generalized scavenger and one of the commonest cholevines in CRP, and is an occasional associate of *Rafflesia* flowers, probably acting at twilight (cf. DAVIS & LANTOH, 1996; MIZOTA, HIRONAGA & MOHAMED, 2000; MIZOTA, in preparation).

Micronemadus pusillimus (KRAATZ, 1877)

(Fig. 2)

Catops pusillimus KRAATZ, 1877, Dt. ent. Z., **21**, p. 108; type area: Japan.
Other references are omitted.



Figs. 1–2. —— 1, A fresh flower of *Rafflesia keithii* MEIJER, photographed by K. MIZOTA at a point of Kimanis-Keningau Road near the Crocker Range Park Headquarters, Sabah (22–X–1999); 2, habitus of *Micronemadus pusillimus* (KRAATZ, 1877), ♀, obtained from the flower.

Specimens examined. 6♂♂, 1♀, Mahua B. C., Crocker Range Park, Sabah, Borneo Is., Malaysia, 16~19–X–1999, K. MIZOTA leg. (carrion traps); 1♀, Kimanis-Keningau Road, Crocker Range Park HQ, 22–X–1999 (17:00–18:00), K. MIZOTA leg. (from a fresh flower of *Rafflesia keithii*).

Notes. This species is widespread in East Asia, and has already been recorded from the Crocker Range, Borneo (NISHIKAWA, 1989). The specimen collected from *Rafflesia keithii* MEIJER (Fig. 1) was found visiting the flower in the evening. The genus *Rafflesia*, a well-known stem-parasite plant, has been represented by about a dozen species occurring in Southeast Asia, and its flower is famous not only for its curious features but also for a smell of carrion it emits (cf. CORNER, 1978: flies attracted to a female flower are shown in photographs of plate 14).

In closing, the second author wishes to express his gratitude to SP, UNIMAS and UMS for giving him the opportunity to participate in the Scientific Expedition, and to all expedition members for their help. He is also grateful to Dr. M. J. TODA (Hokkaido Univ.) for his support and encouragement and to Mr. G. ITO (UMS) for helping in collection work.

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Elytra, *Tokyo*, **28** (2): 337–347, November 15, 2000

Dung Beetles (Coleoptera, Scarabaeidae) of Thailand

Part 3. Genus *Sisyphus*

Yupa HANBOONSONG

Faculty of Agriculture, Khon Kaen University,
Khon Kaen, 40002 Thailand

and

Kimio MASUMOTO

Institute of Human Living Sciences, Otsuma Women's University,
Tokyo, 102–8357 Japan

Abstract In the third part of the this study on the Thai dung beetles, the genus *Sisyphus* is taken up. Seven forms are identified from Thailand, one of them being described as a new subspecies of *S.* (s. str.) *thoracicus* SHARP, *chaiyaphumensis* subsp. nov. A key to all the species distributed in Thailand is given, and explanatory photographs, i.e., habitus, male genitalia and legs, are provided.

This is the third part of the study on the dung beetles from Thailand and deals with a ball-rolling genus, *Sisyphus*, which is one of the most distinctive and unmistakable of all the genera of the Coprinae by the possession of the spider-like body with exceedingly long and slender legs.

Before MASUMOTO (1988), records were scarce of the occurrence of this genus in Thailand. He recorded two species, *Sisyphus longipes* (OLIVIER, 1789) and *S. neglectus* GORY, 1833, and described one species, *S. maniti*, from North Thailand. HANBOONSONG *et al.* (1999) recorded three species from Northeast Thailand, *Sisyphus longipes*, *S. maniti* and one indetermined species. The present authors have been studying the members of this genus in the whole parts of Thailand for several years and recognized seven forms.

First of all, the authors wish to acknowledge the grant received from the Thailand Biodiversity Research and Training Programme. They also thank Dr. Angoon LEWVANICHI of the Insect Museum at the Department of Agriculture, Bangkok, for arranging access to the collection of dung beetles and for using facilities and Dr. Rowan W. EMBERSON, Lincoln University, New Zealand, for giving them useful comment. Deep indebtedness should be expressed to Dr. Yves CAMBEFORT, Muséum National d'Histoire Naturelle, Paris, and Messrs. Martin J. D. BRENDELL and Malcolm D. KERLEY, the

Natural History Museum, London, for permission to examine the type specimens under their care. Appreciation should be expressed to Mr. Teruo OCHI of Osaka and Dr. David KRÁL, Charles University, Praha, Dr. Wolfgang SCHAWALLER, Staatliches Museum für Naturkunde, Stuttgart, for providing with many invaluable materials and also to Dr. Makoto KIUCHI, National Institute of Sericultural and Entomological Science, for giving useful comment and taking highly qualified photographs inserted in this paper.

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Systematic Position of the Genus *Sisyphus*

LATREILLE (1807) erected this genus for "*Sisyphe schaefferi* LINNÉ" in the order 1, Family XV, Coprophagi. ARROW (1931) placed the genus *Sisyphus* LATREILLE in the tribe Sisyphini of the subfamily Coprinae and mentioned that only the genus belonged to the tribe. PAULIAN (1945) regarded it as a member of the subfamily Scarabaeinae. BALTHASAR (1963) regarded this genus as a member of the tribe Sisyphini in the subfamily Scarabaeinae and included four genera in it. OCHI, KON and KIKUTA (1996) placed this genus in the tribe Sisyphini of the subfamily Coprinae. In the mean time, MÜLLER (1942) erected the subgenus *Neosisyphus* for *S. atratus* KLUG. Later, CAMBEFORT (1984) proposed to raise it to the generic level.

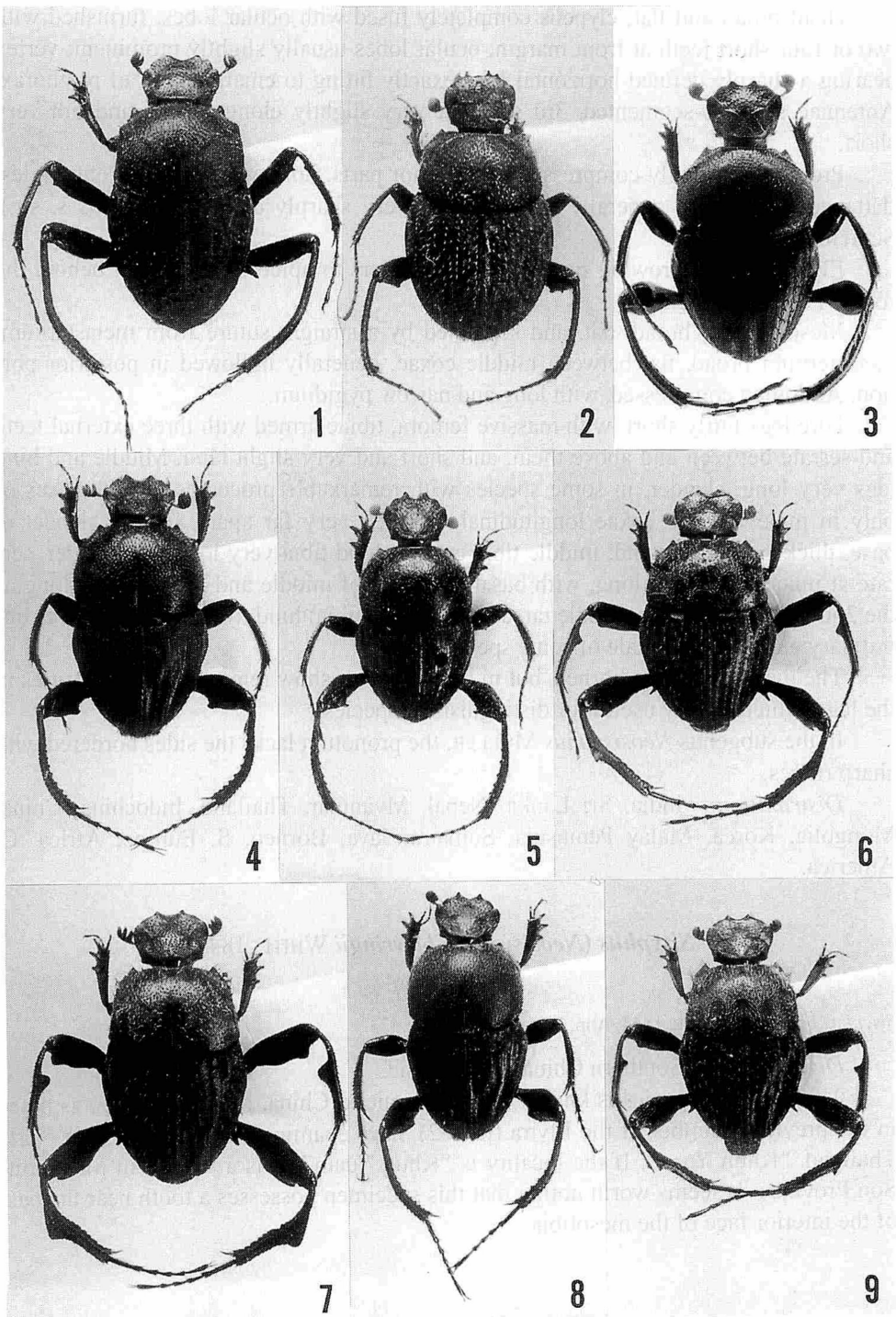
GORY (1833) published "Monographie du Genre *Sisyphe*". Later, ARROW (1927) published a note on this genus and clarified some historical confusion by examining old types of FABRICIUS, OLIVIER, HOPE, GORY, etc. His work could be highly appreciated. HAAF (1955) also published a review of the genus and BALTHASAR (1963) followed his treatment. There occurred a new confusion in the Asian species, *viz.*, *S. denticrus* FAIRMAIRE and *S. laoticus* ARROW were regarded as junior synonyms of *S. neglectus* GORY. Recently, KABAKOV and NAPOLOV (1999) clarified this confusion by proving each to be a good species.

Genus ***Sisyphus*** LATREILLE, 1807

Sisyphus LATREILLE, 1807, Gen. Crust. Ins., **2**: 79. Type species: *Scarabaeus schaefferi* LINNÉ.

General features. Body rather short amygdaloid, clothed with short, erect, hooked setae on dorsal surface, more or less smooth on ventral surface, with very long and loosely articulated posterior legs.

Figs. 1–9. Habitus of *Sisyphus* spp. from Thailand. —— 1, *S.* (*Neosisyphus*) *bowringii* WHITE, ♂; 2, *S.* (s. str.) *maniti* MASUMOTO, ♂; 3, *S.* (s. str.) *longipes* (OLIVIER), ♂; 4, *S.* (s. str.) *denticrus* FAIRMAIRE, ♂; 5, *S.* (s. str.) *laoticus* ARROW, ♂; 6, *S.* (s. str.) *thoracicus thoracicus* SHARP, ♂ (S. Thailand); 7, *S.* (s. str.) *thoracicus chaiyaphumensis* subsp. nov., holotype, ♂; 8, *S.* (s. str.) *neglectus* GORY, ♂ (N. India); 9, *S.* (s. str.) *thoracicus thoracicus* SHARP, ♂ (Borneo).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Head broad and flat; clypeus completely fused with ocular lobes, furnished with two or four short teeth at front margin; ocular lobes usually slightly prominent; vertex bearing a sharply defined horizontal lobe exactly fitting to emargination of prothorax. Antennae short, 8-segmented, 3rd segment very slightly elongate, 4th and 5th very short.

Pronotum strongly compressed in posterior parts, hollowed beneath front angles; flattened lateral area generally hollowed and very sharply defined (*Sisyphus* s. str.). Scutellum not visible.

Elytra short, narrowing rapidly from shoulders to apices, not excised behind the former; epipleura lacking.

Mesosternum broad, flat, and separated by a straight suture from metasternum; metasternum broad, flat between middle coxae, generally hollowed in posterior portion. Abdomen compressed, with long and narrow pygidium.

Fore legs fairly short, with massive femora, tibiae armed with three external teeth and serrate between and above them, and short and very slight tarsi. Middle and hind legs very long, slender, in some species with remarkable processes in both sexes or only in male; middle coxae longitudinal, parallel, very far apart; femora slender at base, thickened before end; middle tibia curved; hind tibia very long and slender, serrate at inner edge; tarsi long, with basal segments of middle and hind tarsi as long as the 2nd and 3rd together, middle tarsus longer than tibia; hind trochanter with an extraordinary elongation in male of some species.

The males are never horned, but in many species show remarkable peculiarities in the legs, which is very useful for distinguishing species.

In the subgenus *Neosisyphus* MÜLLER, the pronotum lacks the sides bordered with sharp ridges.

Distribution. India, Sri Lanka, Nepal, Myanmar, Thailand, Indochina, China, Mongolia, Korea, Malay Peninsula, Sumatra, Java, Borneo, S. Europe, Africa, C. America.

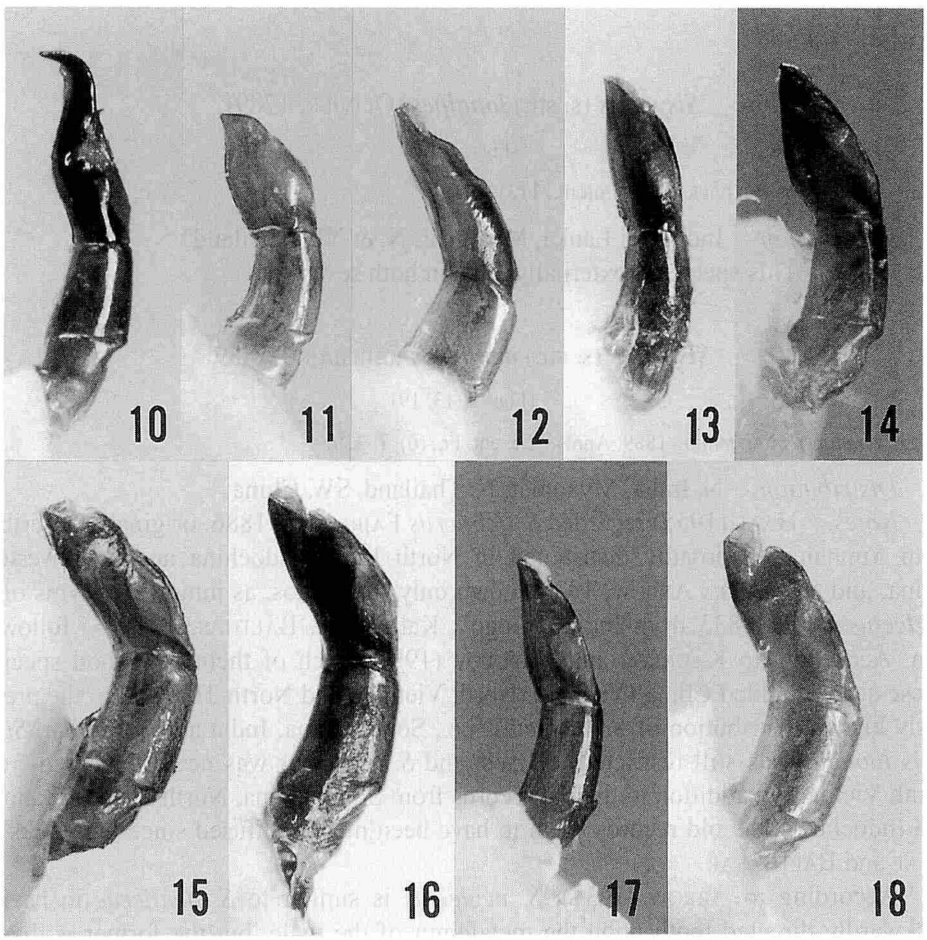
Sisyphus (*Neosisyphus*) *bowringii* WHITE, 1844

(Figs. 1, 10)

Sisyphus bowringii WHITE, 1844, Ann. Mag. nat. Hist., **14**: 423.

Distribution. Southern China; N. Thailand.

Notes. This species is known to be endemic to China, but the authors, as noted in the previous number of the Elytra (p. 162), have examined a specimen from North Thailand, "Khun Yuan". If the locality is "Khun Yuam", it is a village in Mae Hong Son Province. It seems worth noting that this specimen possesses a tooth near the base of the interior face of the mesotibia.



Figs. 10–18. Male genitalia. —— 10, *S.* (*Neosisyphus*) *bowringii* WHITE; 11, *S.* (s. str.) *maniti* MASUMOTO; 12, *S.* (s. str.) *longipes* (OLIVIER); 13, *S.* (s. str.) *denticrus* FAIRMAIRE; 14, *S.* (s. str.) *laoticus* ARROW; 15, *S.* (s. str.) *thoracicus thoracicus* SHARP (S. Thailand); 16, *S.* (s. str.) *thoracicus chaiyaphumensis* subsp. nov.; 17, *S.* (s. str.) *neglectus* GORY (N. India); 18. *S.* (s. str.) *thoracicus thoracicus* SHARP (Borneo).

Sisyphus (s. str.) ***maniti*** MASUMOTO, 1988

(Figs. 2, 11)

Sisyphus maniti MASUMOTO, 1988, Ent. Rev. Japan, Osaka, **45**: 135.

Distribution. N. & NE. Thailand.

Notes. This species is characterized by the small and not strongly convex body with clypeus armed with two pairs of sharp teeth. Dr. CAMBEFORT has suggested that this species somewhat resembles African members, *e.g.*, *S. desaegeri* HAAF. *Sisyphus maniti* is differentiated from the latter by the hairs obviously sparser on the dorsal sur-

face.

Sisyphus (s. str.) ***longipes*** (OLIVIER, 1789)

(Figs. 3, 12)

Scarabaeus longipes OLIVIER, 1789, Entom., **1** (3): 164.

Distribution. India, Sri Lanka, Myanmar, N. & NE. Thailand.

Notes. This species is externally alike in both sexes.

Sisyphus (s. str.) ***denticrus*** FAIRMAIRE, 1889

(Figs. 4, 13, 19)

Sisyphus denticrus FAIRMAIRE, 1889, Annls. Soc. ent. Fr., (6), **7**: 320.

Distribution. N. India, Myanmar, N. Thailand, SW. China.

Notes. HAAF (1955) regarded *S. denticrus* FAIRMAIRE, 1886, originally described from Yunnan and broadly distributed in North India, Indochina and southwestern China, and *S. laoticus* ARROW, 1927 known only from Laos, as junior synonyms of *S. neglectus* GORY, 1833 from India ("Gogo", Kathiawar). BALTHASAR (1963) followed him. According to KABAKOV and NAPOLOV (1999), each of them is a good species. These authors added China (Yunnan), North Vietnam and North Thailand to the previously known distribution of *S. neglectus*, i.e., South China, India and Myanmar. *Sisyphus laoticus* was still restricted to Laos, and *S. denticrus* was newly recorded from South Vietnam in addition to the old records from South China, North India, Myanmar and Indochina. The old records seem to have been much confused since the works by HAAF and BALTHASAR.

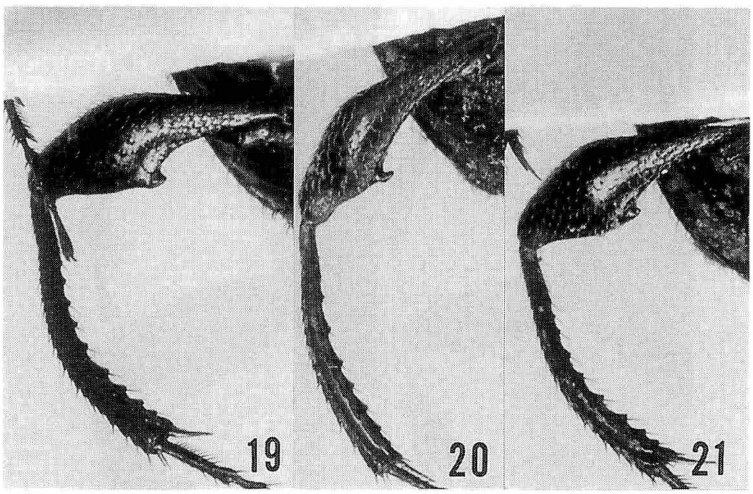
According to ARROW (1931), *S. neglectus* is similar to *S. denticrus* in having backwardly directed tooth upon the metafemur of the male, but the former is distinguishable from the latter by the body more closely covered with setae, the pronotum less deeply and closely punctured, and the male metafemur slenderer at the base.

One of the authors (K. M.) had an opportunity of examining the type specimens of both *S. denticrus* and *S. laoticus*, in the Muséum National d'Histoire Naturelle, Paris and the Natural History Museum, London, respectively, in March of 2000. The former possesses the metafemur with a sharp tooth on the posterior edge, whereas the latter bears a narrow truncate tubercle. He also examined Indian specimens determined as *S. neglectus* (Figs. 8, 17, 21), and concluded that the species distributed in North Thailand, so far as they are aware, is not *S. neglectus* but *S. denticrus*.

Sisyphus (s. str.) ***laoticus*** ARROW, 1927

(Figs. 5, 14, 20)

Sisyphus laoticus ARROW, 1927, Ann. Mag. nat. Hist., (9), **19**: 463.



Figs. 19–21. Male hind legs (ventral view). —— 19, *S.* (s. str.) *denticrus* FAIRMAIRE; 20, *S.* (s. str.) *laoticus* ARROW; 21, *S.* (s. str.) *neglectus* GORY (N. India).

Distribution. Laos, West Thailand (new record).

Notes. As mentioned above, this species is easily distinguishable from *S. neglectus* and *S. denticrus* by the male metafemur with a narrow truncate tubercle on the posterior edge. One of the authors (Y. H.) collected this species at Kanchanaburi and Petchaburi, West Thailand, and this is the first record of the species from Thailand.

Collecting data. 2 exs., Ban Chang, Tongphaphum, Kanchanaburi Prov., W. Thailand, 4–IV–2000, Y. HANBOONSONG leg.; 2 exs., Tongphaphum, Kanchanaburi Prov., 4–IV–2000, Y. HANBOONSONG leg.; 1 ex., Wat Khoa Kling, Petchaburi Prov., W. Thailand, 7–IV–2000, Y. HANBOONSONG leg.

Sisyphus (s. str.) ***thoracicus*** SHARP, 1875

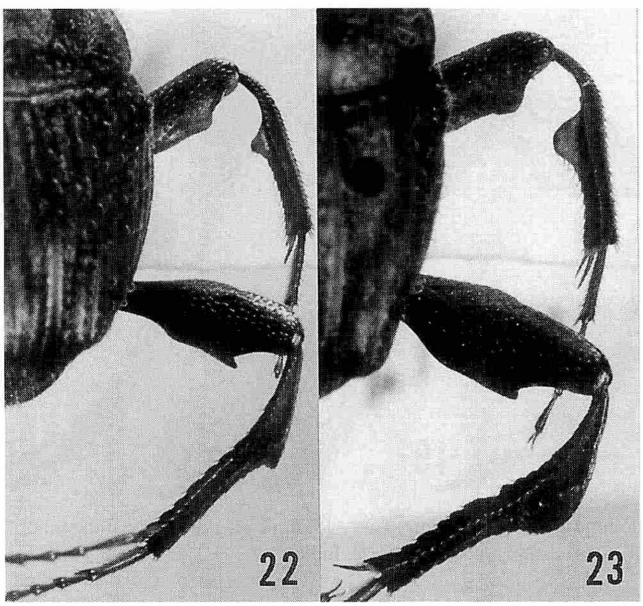
(Figs. 6, 15)

Sisyphus thoracicus SHARP, 1875, Coleopt. Hefte, **13**: 39.

Distribution. Malay Peninsula, Southern Thailand, Sunda Is. (Java, Borneo, Sumatra), Philippines.

Notes. The type specimen preserved in the Muséum National d'Histoire Naturelle, Paris, is a rather small dusty brownish male, with the mesofemur gently produced and obtusely rectangular apicad on the posterior edge, the mesotibia roundly produced at basal 2/5 on the interior edge, the metafemur produced and toothed at apical 2/5 on the posterior edge, the metatibia gently angulate at basal 3/7 on the exterior edge, and the metatrochanter sharply pointed.

A short series of specimens collected in the southern part of Thailand (Peninsular region) possess the above characteristics. Figures 9, 18 and 22 show features of *S.* (s.



Figs. 22–23. Male middle and hind legs. —— 22, *S.* (s. str.) *thoracicus thoracicus* SHARP (Borneo); 23, *S.* (s. str.) *thoracicus chaiyaphumensis* subsp. nov.

str.) *thoracicus thoracicus* from Borneo.

Sisyphus (s. str.) ***thoracicus chaiyaphumensis*** subsp. nov.

(Figs. 7, 16, 23)

As compared with the male of the nominotypical subspecies of *S. thoracicus* SHARP, the new subspecies possesses a larger, stouter and darker body with the male mesofemur more strongly produced and further roundly produced at apical 1/4 on the posterior edge, the male mesotibia more strongly, roundly produced at basal 2/5 on the interior edge, the male metafemur more strongly produced and toothed at apical 1/3 on the posterior edge, the tooth being pointed posteriad (postero-laterad in *S. thoracicus thoracicus*), and the male metatibia more noticeably lobed on the exterior edge (rather triangularly so in *S. thoracicus thoracicus*); metatrochanter bluntly pointed.

Body length: 6.3–7.4 mm.

Holotype: ♂, Phukheio, Chaiyaphum Prov., NE. Thailand, 21–II–1998, C. DICKINSON leg. (DEZ). Paratypes: 11 exs., same data as for the holotype; 3 exs., Phukheio, 21–I–1998, Y. HANBOONSONG leg.; 8 exs., Phukheio, 21–I–1998, Y. HANBOONSONG leg.

Notes. As mentioned above, *S. thoracicus* SHARP is widely distributed from the Malay Peninsula through the Sunda Islands to the Philippines. The Northeast Thai population is distributed at the northernmost of its distributional range, and possesses

noticeable characteristics.

Key to the Species of the Genus *Sisyphus* from Thailand

1 (2) Pronotum not bordered at the sides with sharp ridges (Subgenus *Neosisyphus* MÜLLER). Male mesofemur with a rather sharp tooth in apical part on posterior edge; male mesotibia with a triangular tooth on interior edge near basal part; male metafemur gently produced and moderately angulate in apical part on interior edge; male metatrochanter prolonged at the level of basal 1/3 of metafemur; 10.3 mm; S. China, N. Thailand (Figs. 1, 10) . . . . . *S.* (*N.*) *bowringii* WHITE.

2 (1) Pronotum bordered at the sides with sharp ridges (Subgenus *Sisyphus* LATREILLE).

3 (4) Clypeus very feebly produced at the middle of front emargination, which is armed with a projection on each side, also with an acute angulation outside of it; body not so convex; dorsal surface not shining but micro-shagreened, closely covered with annular punctures, rather densely clothed with scale-like setae; mesofemur not modified in both sexes; metafemur gently produced, in male with a narrow truncate tubercle on posterior edge, whose apex is directed basad; male metatibia rather noticeably dilated at its extremity; 2.8–3.2 mm; N. & NE. Thailand (Figs. 2, 11) . . . . . *S.* (s. str.) *maniti* MASUMOTO.

4 (3) Clypeus simply emarginate in front, the emargination only angulate on each side, outer sides of the angulation more or less forming further angulations or lobes; body larger and more convex, more or less shining.

5 (6) Meso- and metafemora somewhat clavate (strongly widened behind the middle, noticeably narrowed towards base); dorsal surface shiny, pronotum with impunctate areas on each side; metatrochanter prominent at the end; two sexes alike externally; 4–6.5 mm; India, Sri Lanka, Myanmar, N. & NE. Thailand (Figs. 3, 12) . . . . . *S.* (s. str.) *longipes* (OLIVIER).

6 (5) Meso- and metafemora not clavate but more or less produced, in male angulate or toothed or tuberculate on posterior edge; dorsal surface mostly coarser.

7(10) Mesofemora gently produced on posterior edge, without angulation; mesotibia without lobe on interior edge; metatibia without angulation on exterior edge.

8 (9) Dorsal surface more noticeably micro-shagreened; pronotum covered with larger and deeper annular punctures; male metafemur with a minute sharp tooth just beyond the middle on posterior edge; 6.5–7.5 mm; N. India, Myanmar, SW. China, N. & NE. Thailand (Figs. 4, 13, 19) . . . . . *S.* (s. str.) *denticrus* FAIRMAIRE.

9 (8) Dorsal surface less noticeably micro-shagreened, pronotum covered with smaller and shallower annular punctures; male metafemur with a narrow truncate tubercle on posterior edge; 6–7 mm; Laos, W. Thailand (Figs. 5, 14,

20) ..... *S.* (s. str.) *laoticus* ARROW.

10 (7) Mesofemora rather strongly produced on posterior edge, with a noticeable angulation in male; male mesotibia lobed on interior edge; male metatibia with an angulation on exterior edge.

11(12) Body more ovate; male mesofemur simply produced and angulate on posterior edge; male mesotibia roundly produced at basal 2/5 on interior edge; male metafemur less strongly produced and toothed postero-apicad at apical 2/5 on posterior edge; male metatibia less noticeably angulate at basal 3/7 on exterior edge; metatrochanter sharply pointed; 5–7 mm; S. Thailand, Malay Peninsula, Sunda Isls., Philippines (Figs. 6, 15 from S. Thailand; Figs. 9, 18, 22 from Borneo) ..... *S.* (s. str.) *thoracicus thoracicus* SHARP.

10 (9) Body larger, more elongate and darker; male mesofemur produced and further lobed at apical 1/4 on posterior edge; male mesotibia strongly lobed at basal 2/5 on interior edge; male metafemur more strongly produced and toothed postero-apicad at apical 1/3 on posterior edge; male metatibia more noticeably lobed at the middle on posterior edge; metatrochanter bluntly pointed; 6.3–7.4 mm; NE. Thailand (Figs. 7, 16, 22) .... *S.* (s. str.) *thoracicus chaiyaphumensis* subsp. nov.

要　約

Y. HANBOONSONG・益本仁雄：タイ産の食糞コガネムシ類．III. *Sisyphus* 属について．—— タイ産の食糞コガネムシ(Scarabaeidae)研究の第3回として，ダイコクコガネ亜科(Coprinae)アシナガタマオシコガネ族 (Sisyphini) のアシナガタマオシコガネ属 (*Sisyphus*) を検討した．この地域には，7つの種または型が認められた．すなわち，*S.* (*Neosisyphus*) *bowringii* WHITE, 1844, *S.* (s. str.) *maniti* MASUMOTO, 1988, *S.* (s. str.) *longipes* (OLIVIER, 1789), *S.* (s. str.) *denticrus* FAIRMAIRE, 1889, *S.* (s. str.) *laoticus* ARROW, 1927, *S.* (s. str.) *thoracicus thoracicus* SHARP, 1875, および今回小論で新亜種として記載した*S.* (s. str.) *thoracicus chaiyaphumensis* subsp. nov. である．また，*S.* (s. str.) *laoticus* ARROW は，この地域から初めて記録された．なお，これまで*S.* (s. str.) *neglectus* GORY, 1833としていたものは，*S.* (s. str.) *denticrus* FAIRMAIRE, 1889であることがわかった．

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A New Genus of the Trechinae (Coleoptera) from Sichuan, Southwest China

Shun-Ichi UÉNO

Department of Zoology, National Science Museum (Nat. Hist.),
3–23–1 Hyakunin-chô, Shinjuku, Tokyo, 169–0073 Japan

In this short paper, I am going to erect a new genus of the carabid subfamily Trechinae to make the new generic name available for the prospective "Catalogue of the Order Coleoptera of the Palaearctic Region." The type species of this new genus, from Sichuan, Southwest China, was originally regarded as a new species of the genus *Kozlovites* JEANNEL (1935, p. 279; type species: *Kozlovites caviceps* JEANNEL, 1935, from the easternmost part of Tibet). It is true that the Sichuanese species, *K. tronqueti* DEUVE (1995, p. 9, figs. 2, 5), looks similar to the Tibetan, but a careful examination of topotypical specimens of the former has proved that it had better be regarded as a member of the *Trechiama* group. I have examined the type of *K. caviceps* twice at Sankt-Peterburg, and though I was unable to make a direct comparison of the two species, I am confident of the true affinity of *K. tronqueti* mentioned above.

Since all the important character states of *K. tronqueti* were described by the original author, the following account of the new genus will be confined to its diagnostic characters.

Genus ***Sinotrechiama*** S. UÉNO, nov.

Type species: *Kozlovites tronqueti* DEUVE, 1995.

Discriminated from *Kozlovites* by the following points: right mandible with a distinct pre-

molar tooth; pronotum completely bordered at the sides though the borders become finer near hind angles, and with a longitudinal row of 3–4 discal setae on each side of median line; elytra with two series of setiferous dorsal pores, 3–6 internal on stria 3 and 3–5 external on stria 5; protibia glabrous on the anterior face and longitudinally grooved on the external face. From *Trechiama* and its close relatives, this new genus is distinguished by the following points: microsculpture practically absent on pronotum and elytra; pronotum strongly contracted behind and devoid of distinct hind angles; elytra with basally diminishing prehumeral borders and relatively large number of setiferous dorsal pores; visible sternites of abdomen except anal provided with one or two pair of paramedian setae and six to ten hairs around them. Mentum not fused with submentum, the former with a broad bifid tooth and the latter sexsetose. Aedeagus with a lamellar anisotopic copulatory piece, though described "inerme" in the original description.

Sinotrechiama tronqueti (DEUVE, 1995), comb. nov.

Kozlovites tronqueti DEUVE, 1995, Revue fr. Ent., (N.S.), **17**, p. 9, figs. 2, 5; type locality: Jiuding Shan.

Specimens examined. 2♂♂ (1 teneral), 1♀, Mt. Jiuding Shan, 3,580 m alt. on W side, Chaping Shan Mts., Mao Xian, Sichuan, Southwest China, 22–IX–1996, S. UÉNO leg.; 1♀, same locality but 3,810 m alt., 22–IX–1996, S. UÉNO leg. (NSMT).

Notes. This interesting species was collected only at two stations on the western slope of Mt. Jiuding Shan, though we climbed up the mountain from two different sides, western and northern, and searched for trechine beetles. At the lower station at an altitude of 3,580 m, three specimens of *Sinotrechiama tronqueti* were dug out from the clayey soil mingled with gravel beneath very large embedded stones in a small gully shaded by deciduous broadleaved trees. This habitat was typically upper hypogean, though no anophthalmic species were found out. At the upper station 3,810 m above sea-level, a single female was taken from beneath a fist-sized stone lying in a wet sloping groove in a deciduous broadleaved forest about 20 m above a narrow stream. This groove was very similar to the habitats of certain Japanese species of oculate *Trechiama* in that it was too dim and too wet to be inhabited by most other trechines. The only other Chinese species known to live in a similar habitat is *Trechiama crassipes* S. UÉNO (1997, p. 38, fig. 1) discovered on the Daliang Shan Mountains in southern Sichuan.

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Two New Species and a New Subspecies of the Genus *Callistethus* (Coleoptera, Scarabaeidae, Rutelinae) from Sulawesi

Kaoru WADA

Laboratory of Animal Ecology, Department of Biology, Joetsu University of Education,
1 Yamayashiki-machi, Joetsu-shi, Niigata, 943–8512 Japan

Abstract Two new species and a new subspecies of the ruteline genus *Callistethus* are described from Sulawesi under the names *C. masayukii* sp. nov., *C. daruma* sp. nov. and *C. riedeli selatanensis* subsp. nov.

In 1998, I described four new species of the genus *Callistethus* BLANCHARD from Sulawesi. Since then, I have had an opportunity of examining three remarkable forms belonging to the *riedeli* group through the courtesy of Mr. Masayuki FUJIOKA. After a detailed study, I have concluded that the three should be new to science. One of them is similar to *Callistethus riedeli* LANSBERGE, 1880, and another is closely related to *C. sulawesiensis* WADA, 1998. They seem to be morphologically differentiated at the species level. The other is closely related to *C. riedeli* LANSBERGE, 1880, and possesses characteristics similar to those of the latter, *e.g.*, shape of the clypeus, male genitalia and female gonocoxites. In spite of such similarities, they are obviously different in coloration. Therefore, I prefer to regard this form to be a subspecies of *C. riedeli* LANSBERGE, 1880. In this article, I am going to describe them under the names *C. masayukii* sp. nov., *C. daruma* sp. nov. and *C. riedeli selatanensis* subsp. nov.

Before going further, I wish to express my cordial appreciation to Dr. Kimio MASUMOTO of Otsuma Women's University, Tokyo, for his constant encouragement of my entomological study. Deep indebtedness should be expressed to Dr. Roger-Paul DECHAMBRE of the Muséum National d'Histoire Naturelle, Paris, and Dr. Dirk AHRENS of the Staatliches Museum für Tierkunde, Dresden, for the loan of types under their care. Finally, I thank Mr. Masayuki FUJIOKA, Tokyo, for providing me with the invaluable materials. The holotypes will be preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Callistethus masayukii sp. nov.

(Figs. 1, 4)

Body length: 15.8–17.7 mm, width: 8.9–10.1 mm.

Head except clypeus, pronotum except lateral margins, elytra and pygidium ex-

cept apical areas yellowish green, antennae, clypeus, lateral margins of pronotum, apical area of pygidium, ventral surface except abdominal sternites and legs orange to reddish brown; dorsal surface with metallic lustre, ventral surface and legs with rather weak lustre.

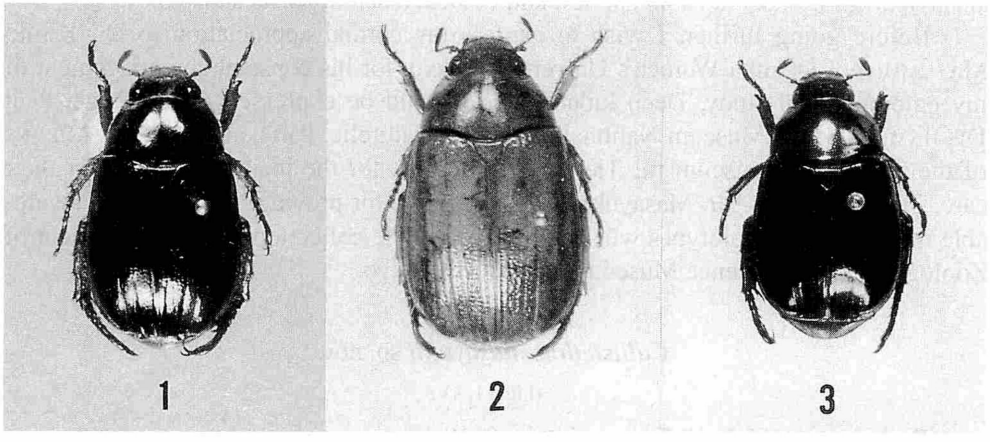
Head microsculptured, with erect orange setae (0.32–0.65 mm in length) along eyes; clypeus weakly emarginate, 2.4–2.7 times as wide as long, reflexed along margin, reticulately rugoso-punctate; frons irregularly punctate in middle, the punctures becoming larger laterad, smaller and sparser towards vertex.

Pronotum 1.6–1.7 times as wide as long, narrowed apicad in apical 2/5, parallel-sided in basal 3/5; front angles projected and acute, hind angles obtuse; disc irregularly scattered with small punctures in middle, which become denser and larger laterad, larger and partly coalescent antero-laterad; lateral margins clothed with erect yellow setae (0.6–1.1 mm in length), with rims extending to hind angles. Scutellum irregularly punctate in antero-lateral portions.

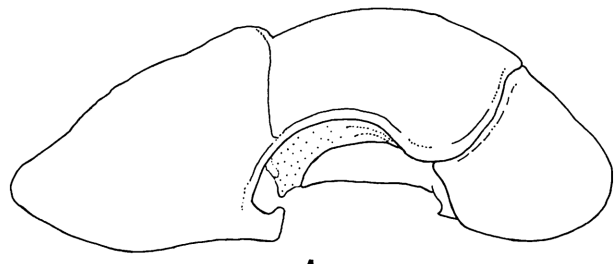
Elytra with 11 rows of round punctures; 1st interval irregularly scattered with round punctures, 3rd and 4th sparsely so; sides weakly widened in anterior half, narrowed posteriad in posterior half; distal margins slightly rounded; lateral margins with rims thickened in basal 2/5, becoming thinner in apical 3/5, and disappearing at hind corners; marginal membrane narrow, starting from basal 1/4, and extending to apices.

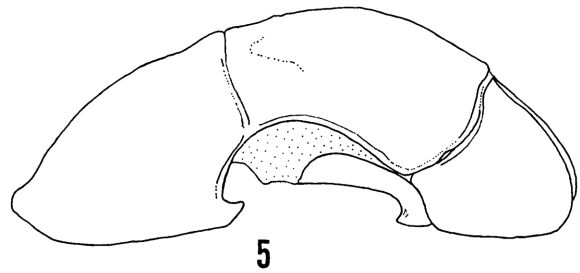
Pygidium with erect yellowish brown setae (0.5–0.92 mm in length) in apical and apico-lateral portions; disc closely punctate, the punctures large, elliptical to elongate, and partly coalescent in lateral portions; outer margins rimmed, nearly straight in lateral sides, widely rounded at apex.

Metasternum sparsely punctate in middle, the punctures dense and setigerous in lateral portions, each with a suberect yellow seta (0.38–1.1 mm in length); mesosternal



Figs. 1–3. Habitus of *Callistethus* spp. —— 1, *C. masayukii* sp. nov., holotype, ♂; 2, *C. daruma* sp. nov., holotype, ♂; 3, *C. riedeli selatanensis* subsp. nov., holotype, ♂.





Figs. 4–5. Male genitalia (scale: 1 mm). —— 4, *Callistethus masayukii* sp. nov., lateral view; 5, *C. daruma* sp. nov., lateral view.

process projected, extending to the level of procoxae, slightly bent downwards, with acute apex in lateral view.

Abdominal sternites irregularly punctate in middle, the punctures elongate to crescent-shaped, becoming denser laterad, each with a transverse row of appressed yellow setae (0.5–0.83 mm in length).

Protibiae bidentate, apico-external denticle obtuse and slightly rounded in male; inner claw of fore leg and outer claw of middle leg apically incised, forming two branches, outer claw of fore leg and inner claws of middle and hind legs simple and acuminate.

Holotype: ♂, near Sampuraga, south of Lake Poso, Central Sulawesi, XII–1994, native collector. Paratypes: 6♂♂, same data as for the holotype.

Notes. This species is closely related to *Callistethus riedeli* LANSBERGE, 1880, but can be distinguished from the latter by the clypeus broadly truncate and by different coloration, *e.g.*, the dorsal surface yellowish green, the lateral margins of pronotum and the legs orange to reddish brown.

Callistethus daruma sp. nov.

(Figs. 2, 5)

Body length: 17.3–19.7 mm, width: 10.5–11.1 mm.

Dorsal surface pale yellowish brown, pronotum sometimes with a few vague reddish brown patches in middle and lateral portions; legs and ventral surface except abdominal sternites yellowish brown, abdominal sternites reddish brown; dorsal surface and legs with rather weak lustre, ventral surface except abdominal sternites with weak lustre, abdominal sternites with vitreous lustre.

Clypeus broadly truncate, rounded at apical corners, 2.2–2.4 times as wide as long, reflexed along margin, closely punctate, the punctures shallow and partly coalescent in lateral and marginal portions; frons irregularly punctate, the punctures becoming closer laterad, smaller and sparser towards vertex, with a few suberect yellowish brown setae (0.32–0.7 mm in length) along eyes.

Pronotum 1.7–1.9 times as wide as long, narrowed apicad in apical 1/3, subparallel-sided in basal 2/3; front angles projected, hind angles obtuse; disc with a pair of round impressions at the middle of lateral portions, irregularly scattered with round punctures, which become larger laterad, with decumbent yellow setae (0.37–0.95 mm in length) along lateral margins; lateral margins with rims extending onto hind margin opposite to 2nd elytral stria. Scutellum sparsely scattered with small punctures.

Elytra with 11 rows of punctures, 1st interval irregularly scattered with round punctures, the remaining intervals sparsely scattered with small punctures; sides weakly widened in basal 2/3, then narrowed posteriad, distal margins slightly rounded; lateral margins with rims thickened in basal 1/4, becoming thinner posteriad and disappearing at hind corners; marginal membrane starting from the level of posterial corner of metasternum and extending to apices.

Pygidium with long erect yellowish brown setae (0.85–1.0 mm in length) in lateral to apical portions; disc irregularly scattered with crescent-shaped punctures, vaguely depressed at the middle on each side; outer margins rimmed, slightly sinuate in lateral sides, weakly truncate at apex.

Metasternum scattered with punctures, those in middle small and sparse, becoming larger and denser laterad, and those in lateral portions setigerous, each puncture with a decumbent yellow seta (0.60–0.75 mm in length); mesosternal process projected, extending to the level of procoxae, slightly compressed, rounded at apex in lateral view.

Abdominal sternites with a transverse row of decumbent reddish yellow setae (0.25–0.38 mm in length); disc irregularly punctate, the punctures somewhat elongate in middle, and becoming larger laterad.

Protibiae bidentate, apico-external denticle acute, inner claw of fore leg and outer claw of middle leg apically incised, forming two branches, the other claws simple and acuminate.

Holotype: ♂, near Sampuraga, south of Lake Poso, Central Sulawesi, XII–1994,

native collector. Paratypes: 5♂♂, same data as for the holotype.

Notes. This species is closely related to *Callistethus sulawesiensis* WADA, 1998, but can be distinguished from the latter by the clypeus broadly truncate, the pronotum with denser punctures, and the mesosternal process compressed.

Callistethus riedeli selatanensis subsp. nov.

(Fig. 3)

Body length: 16.4–20.6 mm, width: 9.0–11.1 mm.

Dorsal surface except pygidium deep green to reddish green with strong metallic lustre, ventral surface, pygidium and femora deep green to reddish brown with metallic lustre, tibiae and tarsi reddish brown to black with rather weak lustre.

Head with suberect reddish brown setae (0.27–0.48 mm in length) at the base of eye-canthus; clypeus broadly truncate, 2.1–2.3 times as wide as long, reflexed along margin, reticulate rugulose except posterior part, which is irregularly scattered with small punctures; frons irregularly punctate in middle, the punctures round, becoming somewhat larger and sparser laterad, smaller and sparser towards vertex.

Pronotum 1.51–1.56 times as wide as long, narrowed apicad in apical half, almost parallel-sided in basal half; front angles acute, hind angles obtuse; disc irregularly scattered with round punctures, which become smaller towards medio-basal portion and denser and larger laterad, with suberect yellow setae (0.45–0.83 mm in length) along lateral margins; lateral margins with rims extending to hind angles. Scutellum sparsely scattered with round punctures, which are intermixed with extremely small punctures (visible under 40×).

Elytra with 11 rows of round punctures; intervals scattered with extremely small punctures (visible under 40×); sides weakly widened towards the middle and widest at the middle, then narrowed posteriad; distal margins widely rounded; lateral margins with rims thickened in basal halves, then becoming thinner apicad and disappearing at hind corners; marginal membrane narrow, starting from basal 1/4 and extending to apices.

Pygidium with erect yellowish brown setae (0.40–0.78 mm in length) in apical and antero-lateral portions; disc irregularly scattered with elongate punctures, those in marginal portions rather elongate and partly coalescent; outer margins rimmed, nearly straight laterad, widely rounded at apex.

Metasternum sparsely scattered with extremely small punctures in middle, those in lateral portions large, sparsely furnished with suberect reddish brown setae (0.20–0.30 mm in length) in apical halves of lateral portions; mesosternal process projected, extending to the level of procoxae, widely rounded at apex in lateral view.

Abdominal sternites irregularly punctate, the punctures small and elongate in middle, becoming larger laterad, with a transverse row of suberect yellow setae (0.27–0.38 mm in length).

Holotype: ♂, Pulu Pulu, Central Sulawesi, XI–1997, native collector. Allotype: ♀,

same data as for the holotype. Paratypes: 4♂♂, 2♀♀, same data as for the holotype; 1♀, Puncak Palopo, Sulawesi, III–1989, native collector; 1♂, Puncak Palopo, Sulawesi, XI–1993, native collector; 1♀, Sapalla Keang, southern Sulawesi, 13–VIII–1992, N. KASHIWAI leg.

Notes. This new subspecies is quite similar to *Callistethus riedeli riedeli* LANSBERGE, 1880 from northern Sulawesi, but can be distinguished from the latter by the pronotum wholly unicolorous, and the metasternum sparsely furnished with suberect reddish brown setae in apical halves of lateral portions.

要　　約

和田　薫：スラウェシ島から発見された*Callistethus*属コガネムシの2新種1新亜種.—— *Callistethus*属のコガネムシ，*C. masayukii* sp. nov., *C. daruma* sp. nov., *C. riedeli selatanensis* subsp. nov. をスラウェシ島から記載した．これらの種は中胸突起が鋭く突出することから，*riedeli*群に含まれる種である．*C. masayukii* sp. nov. は*C. riedeli* LANSBERGE, 1880に近縁の種であるが，幅広い頭盾，より明るい色彩や雄交尾器の形態等の違いから区別は容易である．*C. daruma* sp. nov. は*C. sulawesiensis* WADA, 1998によく似た種であるが，頭盾や雄交尾器の形態などから区別は容易である．*C. riedeli selatanensis* subsp. nov. は*C. riedeli riedeli* LANSBERGE, 1880によく似ているが，頭盾や前胸背板の色彩が均一であることから容易に区別できる.

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Edible Insects and Insect-eating Habit in Northeast Thailand

Yupa HANBOONSONG

Department of Entomology,
Faculty of Agriculture, Khon Kaen University,
Khon Kaen 40002, Thailand,

Arjin RATTANAPAN

Graduate School,
Khon Kaen University,
Khon Kaen 40002, Thailand,

Yuka UTSUNOMIYA and **Kimio MASUMOTO**

Graduate School of Home Economics,
Otsuma Women's University,
Tokyo, 102–8357 Japan

Institute of Human Living Sciences,
Otsuma Women's University,
Tokyo, 102–8357 Japan

Abstract Edible insects in Khon Kaen and other provinces of Northeast Thailand are surveyed. A total of 126 species of edible insects were collected, and 30 families in 8 orders were identified. Of these the beetles are the largest group of edible insects. Insect-eating habit of local people in 19 provinces of Northeast Thailand was observed by using a questionnaire survey. Thirty-two species of edible insects are particularly preferred. Taste is the main reason for eating insects. Most edible insects are cooked before eating. Local people's preference is different between North Thailand and Northeast Thailand.

Introduction

Insects have long been used as nutritious food in many places, such as Africa, Central and South Americas and Asia (HOLT, 1885; SOMNASANG *et al.*, 1986; JONJOUBSONG, 1993). In Thailand, insect-eating has been practised for a long time and throughout the country (WARAASSAWAPATI *et al.*, 1975; PITUG & PRAJOUBMUA, 1992; anonym, 1993). Apart from traditional knowledge of local people, there has been very little scientific works on edible insects in Thailand. UTSUNOMIYA and MASUMOTO (1999) have reported that over 150 species of edible beetles are eaten in Northern Thailand. However, only 50 species of edible insects have been recorded in Northeast Thailand (WATANABE & SATRAWAHA, 1984), even though it is known that insect-eating is one of the symbolic features of the Northeast people's liveliness (PITUG, 1986). A wide range of insects at various stages of their life cycle can be consumed. Local wisdom is the main way for the villagers to quickly determine which insects are edible. Highly developed skills have been transmitted from generation to generation (SUNGPUAG & PUWASATIEN, 1983). This understanding has, however, gradually declined with socio-economic and dietary habit changes. Therefore, it is urgent to study the customs of eating insects by gathering recollection of older people still available at present but at a risk of being lost altogether.

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Materials and Method

1) Edible insect specimens were monthly collected from January to December 1999 from three villages of Muang District, Khon Kaen Province (Ban Song Pluey, Ban Non Ruang and Ban Tapra). Sampling was made by using insect nets, light traps and digging apparatuses. Samples were collected for dry mounting as museum specimens. The insect specimens were determined by the first author at the insect museum of Khon Kaen University, the last author at Otsuma Women's University, and several Japanese, Thai and Austrian specialists in each taxonomic part.

2) Nine hundred and fifty sets of questionnaires concerning insect-eating habit were distributed in 19 provinces of Northeast Thailand through offices of Agricultural Extension at the provincial and district levels. The Water Operation and Maintenance Office of Lum-Domnoi Dam, and the Royal Irrigation Department and the Cooperative Office of Muang District, Mahasarakham Province assisted with the data collection. Five hundred and twenty-six of them were answered by local people. The data were analyzed using the percentile and ranking methods on consumption of favorite insects. The top ten of the preferred edible insects were further analyzed based on the quantity per each month.

Results

A. *Edible insects from field collecting*

Edible insects from Northeast Thailand were monitored in every month through the year of 1999 at the villages (Ban Song Pluey, Ban Non Ruang and Ban Tapra). One hundred and twenty-six species of 30 families in 8 orders were collected. The largest group of edible insects, 73 species, belongs to the order Coleoptera. The second largest group is the order Orthoptera with 23 species (Table 1).

B. *Edible insects from the questionnaire survey*

1) Favorite edible insects.

Giant water bug was the most popular edible insect for the Northeast people, eaten by 99.1%. Predaceous diving beetles and water scavenger beetles and immature ants were eaten by the people in high percentage. Thirty-two kinds of edible insects above 50% were listed as favorite edible insects (Table 2).

2) Occurrence of edible insects.

About 46% of edible insects was found from the beginning of rainy season (May). During this season a wide range of species of edible insects were found. Then, number of edible insects gradually decreased from the end of the rainy season to the dry season (August–March). Only 6% of edible insects was found during the dry season (Fig. 1

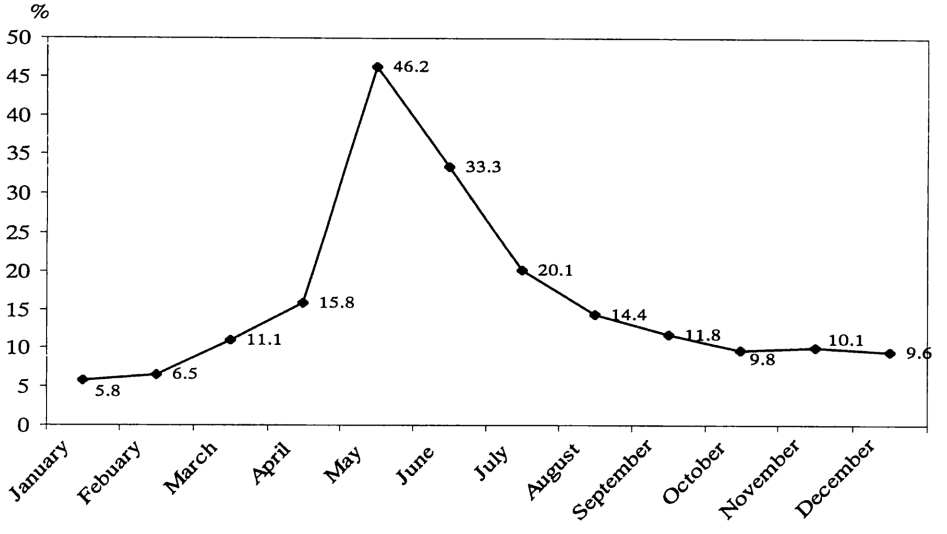

Fig. 1. Occurrence of edible insects from Northeast Thailand.

and Table 3).

3) Preparation and cooking of edible insects.

Various ways of cooking edible insects were observed among the local people in Northeast as shown in Table 4. Most edible insects were cooked before eating. Only about 7% of edible insects were eaten raw without any preparation: giant water bugs, adults and immatures of water beetles, ants, bees, grasshopper, wasp, cicadas, June beetles, metallic beetles and dung beetles.

4) Reasons for eating insects

Approximately 3/4 of the people eat insects for the reason of "tasty". Some kinds of insects such as giant water bug were used for seasoning and were also used as snacks with alcohol drinking. Other reasons for eating insects for the Northeast people are also shown in Table 5.

Conclusion

Edible insect data from the field survey through the year of 1999 have shown that 126 species are eaten in Northeast Thailand. Beetles (Coleoptera) at least constitute the largest group of edible insects consumed.

The questionnaire survey showed that a total of 32 species of insects are eaten by more than 50% of the local people, and the three of them, giant water bugs, predaceous diving beetles together with water scavenger beetles and immature ants, are the most popular. Various edible insect species can be found mainly during the rainy season (May–July) and the number of them gradually decreases during the dry season (August–March).

Table 1. Edible Insects from Northeast Thailand.

Order	Name	Name
Coleoptera	**Dytiscidae**	
	Copelatus sp.	*Eretes sticticus* (LINNÉ)
	Cybister tripunctatus asiaticus SHARP	*Hydaticus rhantoides* SHARP
	Cybister rugosus (MACLEAY)	*Laccophilus pulicarius* SHARP
	Cybister limbatus FABRICIUS	*Rhantaticus congestus* KLUG
	Hydrophilidae	
	Hydrobiomorpha spinicollis (ESCHSCHOLTZ)	*Sternolophus rufipes* (FABRICIUS)
	Hydrophilus bilineatus REDTENBACHER	
	Scarabaeidae	
	Aphodius (*Pharaphodius*) *crenatus* HAROLD	*Onthophagus tragoides* BOUCOMONT
	Aphodius (*Pharaphodius*) *marginellus* (FABRICIUS)	*Onthophagus tragus* (FABRICIUS)
	Aphodius (*Pharaphodius*) *putearius* REITTER	*Onthophagus tricornis* (WIEDEMANN)
	Catharsius birmanensis LANSBERGE	*Onthophagus trituber* (WIEDEMANN)
	Catharsius molossus (LINNÉ)	*Adoretus* sp. 1
	Copris (s. str.) *carinicus* GILLET	*Adoretus* sp. 2
	Copris (s. str.) *nevinsoni* WATERHOUSE	*Agestrata orichalca* (LINNÉ)
	Copris (*Microcopris*) *reflexus* FABRICIUS	*Anomala anguliceps* ARROW
	Copris (*Paracopris*) *punctulatus* WIEDEMANN	*Anomala antiqua* GYLLENHAL
	Copris (*Paracopris*) sp.	*Anomala chacites* SHARP
	Gymnopleurus melanarius HAROLD	*Anomala cupripes* HOPE
	Heliocorpis bucephalus (FABRICIUS)	*Chaetadoretus cribratus* WHITE
	Liatongus (*Paraliatongus*) *rhadamistus* (FABRICIUS)	*Heteronychus liioderes* REDTENBACHER
	Onitis niger LANSBERGE	*Holotrichia* sp. 1
	Onitis subopacus ARROW	*Holotrichia* sp. 2
	Onthophagus avocetta ARROW	*Maladera* sp.
	Onthophagus bonasus (FABRICIUS)	*Oryctes rhinoceros* (LINNÉ)
	Onthophagus khonmiinitnoi MASUMOTO	*Pachnessa* sp.
	Onthophagus orientalis HAROLD	*Protaetia* sp.
	Onthophagus papulatus BOUCOMONT	*Sophrops abscenssus* BRENSKE
	Onthophagus sagittarius (FABRICIUS)	*Sophrops bituberculatus* (MOSER)
	Onthophagus seniculus (FABRICIUS)	*Xylotrupes gideon* (LINNÉ)
	Buprestidae	
	Sternocera aequisignata SAUNDERS	*Sternocera ruficornis* SAUNDERS
	Cerambycidae	
	Aeolesthes sp.	*Plocaederus obesus* GAHAM
	Apriona germai HOPE	*Plocaederus ruficornis* NEWMAN
	Dorysthenes buqueti (GUÉRIN)	
	Curculionidae	
	Arrhines hirtus FAUST	*Hyopmeces squamosus* (FABRICIUS)
	Arrhines sp. 1	*Pollendera atomaria* MOTSCHULSKY
	Arrhines sp. 2	*Rhynchophorus ferrugineus* (OLIVIER)
	Astycus gestvoi MARSHALL	*Sepiomus aurivilliusi* FAUST
	Cnaphoscapus decoratus FAUST	*Tanymeces* sp.
	Genus sp. near *Deiradorrhinus*	

Table 1 (Continued).

Order	Name	Name
Odonata	Aeschnidae	
	Aeschna sp.	
	Coenagrionidae	
	Ceriagrion sp.	
	Corduliidae	
	Epophtalmia vittigera bellicosa LIEFTINCK	
	Libellulidae	
	Rhyothemis sp.	
Orthoptera	Acrididae	
	Acrida cinerea (THUNBERG)	*Locusta migratoria* (LINNÉ)
	Acrida sp.	*Oxya* sp.
	Chondacris rosea (DE GEER)	*Patanga japonica* (BOLIVAR)
	Cyrtacanthacris tatarica (LINNÉ)	*Trilophidia annulata* (THUNBERG)
	Gryllidae	
	Acheta testacea WALKER	*Brachytrupes portentosus* (LICHTENSTEIN)
	Acheta confirmata WALKER	*Gryllus bimaculatus* DE GEER
	Modicogryllus confirmatus (WALKER)	Gen. et sp. indet.
	Teleogryllus testaceus (WALKER)	
	Gryllotalpidae	
	Gryllotalpa africana microphtalma CHOPARD	
	Mantidae	
	Tenodera ariddifolia sinensis SAUSSURE	
	Tetrigidae	
	Euparatettix sp.	
	Tettigoniidae	
	Conocephalus maculatus (LE GUILLOU)	*Pseudophyllus titan* WHITE
	Conocephalus sp.	*Onomachus* sp.
	Euconocephalus incertus (WALKER)	
Isoptera	Termitidae	
	Macrotermes gilvus (HAGEN)	
Hemiptera	Belostomatidae	
	Lethocerus indicus (LEPELETIER et SERVILLE)	*Diplonychus* sp.
	Coreidae	
	Anoplocnemis phasiana (FABRICIUS)	*Homoeocerus* sp.
	Gerridae	
	Cylindrostethus scrutator (KIRKALDY)	
	Nepidae	
	Ranatra longipes thai LANSBURY	*Laccotrephes ruber* (LINNÉ)
	Ranatra variipes STÅL	

Table 1 (Continued).

Order	Name	Name
	Notonectidae	
	Anisops barbatus BROOKS	*Anisops bouvieri* KIRKALDY
	Tessaratomidae	
	Pygoplatys sp.	*Tessaratoma papillosa* (DRURY)
	Tessaratoma javanica (THUNBERG)	
Homoptera	Cicadidae	
	Chremistica sp.	*Orientopsaltria* sp.
	Dundubia sp.	*Platylomia* sp.
Lepidoptera	Bombycidae	
	Bombyx mori LINNÉ	
	Hesperiidae	
	Erionata thrax thrax (LINNÉ)	
	Pyralidae	
	Omphisa fuscidentalis HAMPSON	
Hymenoptera	Apidae	
	Apis florea FABRICIUS	*Apis dorsata* FABRICIUS
	Formicidae	
	Oecophylla smaragdina (FABRICIUS)	*Carebara castanea* SMITH
	Vespidae	
	Vespa affinis indosinensis PÉREZ	

Traditionally edible insects are cooked, grilled, deeply fried or used for making chilly paste. Some kinds are eaten raw. Tastiness is the main reason for eating insects.

So far as the beetles are concerned, species eaten in North Thailand are richer (about 100 species) than in Northeast Thailand (73 species). It might be caused from biological diversity due to the topographical complexity of the North. In the meantime, insect-eating habit is still commoner among local people in Northeast Thailand. They enjoy traditional taste and supply protein from insects.

The top favorite edible insects in the North are the dynastid beetles (imago), ants and bees, in contrast to the giant water bugs, predaceous diving beetles together with water scavenger beetles and immature ants in the Northeast. This also shows that difference of insect-eating habits between North Thailand and Northeast Thailand is deeply related to natural environment of each area, a mountaineous tropical rain forest and a plateau savanna, respectively.

Table 2. Edible insects eaten by more than 50% of people in Northeast Thailand (M.A.).

Insect common name	Answers	%
Giant water bugs	521	99.1
Predaceous diving beetles & Water scavenger beetles	495	94.1
Immature ants	493	93.7
Mole crickets	436	82.9
Winged ants	431	81.9
Worker ants	429	81.6
Common black crickets	427	81.2
Imagoes of dragonflies	410	78.0
Winged-termites	401	76.2
Giant crickets	386	73.4
Giant honey bees	385	73.2
Crawling water beetles	356	67.7
Small June beetles	343	65.2
Rice grasshoppers	342	65.0
Small long-horned grasshoppers	330	62.7
Paper wasps	325	61.8
Small honey bees	323	61.4
Cicadas	319	60.7
Back swimmers	318	60.5
Hercules beetles	316	60.1
Giant June beetles	311	59.1
Wasps	304	57.8
Common brown crickets	295	56.1
Giant dung beetles	283	53.8
Greenish June beetles	282	53.6
Buffalo dung beetles	282	53.6
White grubs	273	51.9
Patanga	271	51.5
Small brown crickets	271	51.5
Slant-faced grasshoppers	270	51.3
Metallic beetles	268	51.0
Water scorpions	267	50.8

Table 3. Edible insects occurring in each month.

Month	Insects
January	Ants, Predaceous diving beetles & Water scavenger beetles, Imagoes of dragonflies, Crickets, Mole crickets
February	Ants, Predaceous diving beetles & Water scavenger beetles, Imagoes of dragonflies, Crickets, Mole crickets
March	Ants, Predaceous diving beetles & Water scavenger beetles, Crickets, Mole crickets, Imagoes of dragonflies, Grasshoppers, Winged termites
April–October	Giant water bugs, Ants, Predaceous diving beetles & Water scavenger beetles, Crickets, Mole crickets, Imagoes of dragonflies, Giant crickets, Winged termites
November	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Crickets, Mole crickets, Imagoes of dragonflies, Winged termites, Giant crickets
December	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Crickets, Mole crickets, Imagoes of dragonflies, Giant crickets

Table 4. Various ways of cooking edible insects in Northeast Thailand.

Cooking ways	%	Insects
•Raw	7.3	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Ants, Imagoes of dragonflies, Crawling water beetles, Back swimmers, Water scorpions, June beetles, Grasshoppers, Metallic beetles, Dung beetles, Bees, Wasps, Cicadas, Predaceous diving beetles (immature stage)
•Cooked	92.7	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Ants, Mole crickets, Crickets, Imagoes of dragonflies, Winged termites, Giant crickets, Bees, Crawling water beetles, June beetles, Grasshoppers, Wasps, Cicadas, Back swimmers, Hercules beetles, Water scorpions, Dung beetles, Metallic beetles, Predaceous diving beetles (immature stage)
–parched	50.1	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Ants, Mole crickets, Crickets, Imagoes of dragonflies, Winged termites, Giant crickets, Bees, Crawling water beetles, June beetles, Grasshoppers, Wasps, Cicadas, Back swimmers, Hercules beetles, Water scorpions, Dung beetles, Metallic beetles, Predaceous diving beetles (immature stage)
–fried	19.0	Same as above
–curried	11.9	Predaceous diving beetles & Water scavenger beetles, Ants, Mole crickets, Crickets, Imagoes of dragonflies, Giant crickets, Bees, Crawling water beetles, June beetles, Grasshoppers, Wasps, Cicadas, Back swimmers, Hercules beetles, Water scorpions, Dung beetles, Predaceous diving beetles (immature stage)
–grilled	6.6	Giant water bugs, Bees, Predaceous diving beetles (immature stage), Wasps, Imagoes of dragonflies, Crawling water beetles, Back swimmers, Grasshoppers, Crickets, June beetles, Bees, Wasps, Water scorpions, Mole crickets, Crickets, Giant crickets, Dung beetles
–parched ground	3.8	Giant water bugs, Predaceous diving beetles & Water scavenger beetles, Mole crickets, Crickets, Giant crickets, Imagoes of dragonflies, Grasshoppers, June beetles, Winged termites (mature stage), Bees, Dung beetles, Wasps
–parched served sour	3.0	Ants, Grasshoppers, Crickets, Giant crickets, June beetles, Bees, Wasps, Imagoes of dragonflies, Dung beetles, Predaceous diving beetles (immature stage)
–steamed in leaf	2.8	Predaceous diving beetles & Water scavenger beetles, Ants, Imagoes of dragonflies, Bees, Crawling water beetles, Back swimmers, Grasshoppers, Crickets, June beetles, Bees, Wasps, Water scorpions, Mole crickets, Crickets, Giant crickets, Predaceous diving beetles (immature stage)
–steamed	1.7	Giant water bugs, Ants, Predaceous diving beetles & Water scavenger beetles, Crickets, Giant crickets, Mole crickets, Winged termites (mature stage), Bees
–miscellaneous	1.3	Giant water bugs, Ants, Grasshoppers, June beetles, Crawling water beetles, Back swimmers, Bees, Wasps

Table 5. Reasons for eating insects in Northeast Thailand (M.A.).

Reasons	Answers	%
Tasty	391	74.3
As a snack with alcohol	370	70.3
Good for snacks	312	59.3
Traditional medicine	254	48.3
As an ingredient in cooked meals	254	48.3
As a seasoning	168	31.9
Easy to find	160	30.4
No main available food	158	30.0
As main available food	120	22.8
Accessible for mass production	100	19.0
Other reasons	82	15.3

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要　　約

Yupa HANBOONSONG・Arjin RATTANAPAN・宇都宮由佳・益本仁雄：東北タイの食用昆虫・食虫習俗について．—— コンケンを中心とする東北タイの食用昆虫を調査した．その結果，8目30科126種の食用昆虫が確認された．このうち，コウチュウ目がもっとも多かった．一方，東北

タイ19県の住民の食虫習俗に関して質問紙を用い実態調査をおこなった．32種の食用昆虫がとくに好まれていた．味覚がよいというのが食虫習俗のおもな理由であった．また，ほとんどの食用昆虫は食べる前に調理されていた．北タイと東北タイでは住民の食用昆虫選好性に違いがみられた．

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

Hitoo ÔHIRA

6–4 Kitsuneyama, Maigi-cho, Okazaki-shi, 444–3511 Japan

Abstract Two new species of elaterid beetles are described from the Ryukyu Islands, Japan and illustrated. They are named *Prodrasterius okinawensis* and *Reitterelater kuriharai*.

In the present study, I am going to describe two new species of elaterid beetles from the Ryukyu Islands, Japan. The holotypes of each species to be described in this paper are 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 his kindly reading the manuscript and giving me many useful suggestions, and Mr. Masaaki KIMURA of Naha City and Mr. Takashi KURIHARA of Tokyo for their kindness in offering to me the specimens used in this study.

Prodrasterius okinawensis sp. nov. [Agrypninae]

(Fig. 1 A–B)

Female. Body length 6 mm, width about 1.8 mm. Body moderately elongate and gently convex above, with sides nearly parallel; surface shining, entirely chestnut brown except for head, labrum, median longitudinal area of pronotal disc, scutellum and some parts of elytra, which are black as shown in Fig. 1 A. Antennae and legs yellowish brown. Vestiture pale yellow, rather long and semidecumbent.

Head gently convex between eyes and weakly depressed in subvertical portion between antennae; surface deeply, densely and rather coarsely punctate; clypeal margin entire, transverse and weakly rounded at middle. Antenna rather short, not attaining to posterior angle of pronotum; basal segment robust and subcylindrical, 2nd small and subclavate, 3rd subtriangular and a little longer than 2nd, 4th about 1.7 times as long as 3rd; 4th to 10th ordinarily serrate.

Pronotum subquadrate, longer than its basal width, with sides slightly sinuate just before posterior angles, weakly rounded at middle; disc convex, deeply, coarsely and evenly punctate, but the punctures become coarser laterad, without median longitudinal channel or smooth line in middle; posterior angles rather short, projecting poste-

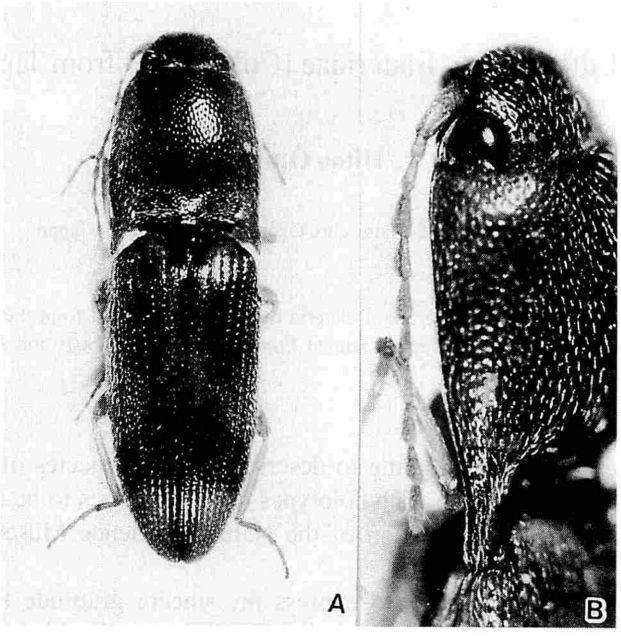

Fig. 1. *Prodrasterius okinawensis* sp. nov., female; A, holotype; B, dorsolateral aspect of head and pronotum, and lateral aspect of left antenna.

riad, each with a distinct carina above. Scutellum subovate, gently convex at middle, punctulate and pubescent.

Elytra a little more than twice as long as their conjoined basal width, with sides almost parallel in basal halves, thence weakly rounded and gradulally convergent towards apices which are normally rounded; striae well defined, deeply and regularly punctate; intervals weakly elevated, punctulate and irregularly rugose. Legs rather robust, apical portion of each 4th tarsal segment more or less lobed beneath.

Male unknown.

Holotype: ♀, Matsuda in Ginoza-son, Kunigami, Okinawa-hontô Is. of the Ryukyu Islands, 4~8–VII–1995, M. SUGIMOTO leg.

Distribution. Okinawa-hontô Island of the Ryukyu Islands.

This new species is somewhat similar to *Prodrasterius agnatus* (CANDÈZE, 1873) from Japan, but can be distinguished from the latter by the larger body and unique black maculations on the elytra.

Reitterelater kuriharai sp. nov. [Elaterinae]

(Fig. 2 A–B)

Female. Body length 7.5 mm, width about 2.5 mm. Body moderately elongate, nearly parallel-sided and gently convex above; surface shining, entirely blackish brown

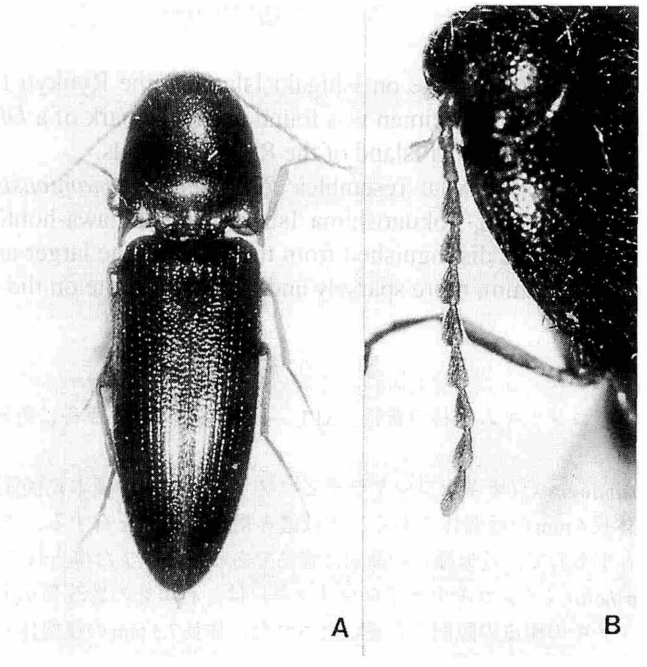

Fig. 2. *Reitterelater kuriharai* sp. nov., female; A, holotype; B, lateral aspect of left antenna.

except for postangular portions of pronotum, sutural intervals of elytra and most parts of ventral surfaces of body, which are more or less dark chestnut-brown; antennae and legs castaneous brown; vestiture fine, rather long and fulvous.

Head gently convex between eyes, weakly depressed in subvertical portion between antennae; surface moderately densely and evenly punctate; clypeal margin well ridged, rounded and weakly impressed at middle. Antenna rather short, not attaining to posterior angle of pronotum; basal segment robust and subovate; 2nd small and subglobose, 3rd subclavate and about 1.3 times as long as 2nd; 4th about 1.3 times as long as 3rd; 4th to 10th moderately serrate.

Pronotum subquadrate, almost as long as its basal width, with sides weakly sinuate just before posterior angles, slightly rounded at middle; disc moderately convex, rather sparsely and evenly punctate, surface smooth and shining among the punctures, median longitudinal channel barely seen in basal area; posterior angles projected posteriad, each with double carinae above, with outer carina shallow and raised along lateral margin. Scutellum flattened, lingulate and obtusely pointed apicad.

Elytra about 2.2 times as long as its basal width, with sides almost parallel in basal two-thirds, thence weakly rounded and gradually convergent towards apices which are ordinarily pointed; striae well defined, deeply and coarsely punctate; intervals rather flattened, punctulate, irregularly and transversely rugose. Basal plates of each outer margin angulate near basal portion, then clearly narrowed outwards. Legs

and claws simple.

Male unknown.

Holotype: ♀, Mt. Omoto-dake on Ishigaki Island of the Ryukyu Islands, 31–III–1999, T. KURIHARA leg. This specimen was found under the bark of a *Distylum*-tree.

Distribution. Ishigaki-jima Island of the Ryukyu Islands.

This new species somewhat resembles *Reitterelater amamiensis* ÔHIRA, 1968 from Amami-Ôshima Island, Tokunoshima Island and Okinawa-hontô Island of the Ryukyu Islands, but can be distinguished from the latter by the larger and stouter body and more elongate pronotum, more sparsely and evenly punctate on the disc.

要　約

大平仁夫：日本産コメツキムシ科の新種，XLI. —— 本報告では2亜科に所属する2新種を記載した．

Prodrasterius okinawensis（オキナワマダラチビコメツキ）は，沖縄本島国頭の宜野座村松田で見いだされた体長6 mmの雌個体である．体は濃赤褐色で光沢を有する．また，上翅に黒色の特有の斑紋を有するので，近似種との識別は容易である．雄はまだ得られていない．

Reitterelater kuriharai（イシガキチャイロコメツキ）は，石垣島の於茂登岳山麓の畑の生け垣にされているイスノキの樹皮の隙間から見いだされた．体長7.5 mmの雌個体である．体は暗赤褐色で光沢を有する．一般外形は奄美大島から新種として記載された*R. amamiensis*（アマミチャイロコメツキ）に類似しているが，体はより大型でより細長く，前胸背板の点刻はより細かくてよりまばらに印する．雄はまだ得られていない．

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Elytra, *Tokyo*, **28** (2): 369–372, November 15, 2000

A New Species of the Genus *Denticolloides* (Coleoptera, Elateridae) from Hokkaido, Japan

Hisayuki ARIMOTO

Tezukayama-nishi 4–3–21, Sumiyoshi-ku,
Osaka, 558–0052 Japan

Abstract A new species of the elaterid genus *Denticolloides* GURJEVA, 1963, hitherto unrecorded from Japan, is described from Hokkaido, Japan. This interesting species, named *D. hosokawai*, belongs to the subfamily Dendrometrinae.

The genus *Denticolloides* GURJEVA, 1963 was established on the basis of *Denticolloides paradoxus* GURJEVA, 1963, and five species belonging to this genus have hitherto been known from Central Asia.

Through the courtesy of Mr. Kôji HOSOKAWA, I had an opportunity to examine a series of elaterid specimens in his collection. After a careful examination, I have found that a new species belonging to the genus *Denticolloides* is contained in it. In the present paper, I am going to describe it under the name of the *Denticolloides hosokawai* sp. nov.

Before going further, I wish to express my sincere gratitude to Dr. Hitoo ÔHIRA of Okazaki for his constant guidance and to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his critically reading the original manuscript of this paper. Thanks are also due to Mr. Kôji HOSOKAWA of Nagoya for his kindness in giving me an opportunity to examine this interesting species which is an important addition to the elaterid fauna of Japan.

The holotype will be deposited in the collection of the Osaka Museum of Natural History.

Denticolloides hosokawai sp. nov.

[Japanese name: Kita-kurobeni-kometsuki]

(Figs. 1–4)

Female. Body length 12.2 mm and largest width about 3.0 mm. Body elongate, almost parallel-sided and moderately convex above; dorsal surfaces of head and pronotum opaque, but scutellum, elytra and most parts of ventral surfaces more or less shining. Head, pronotum and scutellum black except for elytra and ventral surfaces dark brown to black; antennae dark brown and legs yellowish brown.

Head and pronotum clothed with rather long, subrecumbent and whitish yellow pubescence except for elytra and ventral surfaces with rather short, recumbent and pale yellow pubescence.

Head subquadrate, with frons triangularly impressed between eyes, unevenly, coarsely and densely punctate, each puncture seemingly umbilical; clypeal margin rather prominent, rounded and shallowly impressed at the middle, but strongly ridged over antennal insertions; apical segment of each maxillary palpus hatchet-like in shape and about 1.7 times as long as its largest width; labrum transversely ovate, slightly convex in the middle, with surface coarsely punctate; fronto-clypeal area transverse, broad and somewhat narrowed at the middle. Eyes semicircular and prominent outwards. Antenna elongate and barely reaching posterior angle of pronotum; basal segment robust and subovate; the second short, subconical and about 0.8 times as long as its largest width; the third elongate triangular, about 3.5 times as long as the second and as long as the fourth; the third to tenth normally serrate; apicalmost subovate and about 3 times as long as its largest width.

Pronotum almost quadrate, as long as basal width, with sides clearly sinuate just before posterior angles, almost parallel at the middle, then feebly arcuate and clearly convergent towards anterior angles; disc gently convex, with a median longitudinal impression feebly seen in the middle; surface unevenly, coarsely, densely and umbilicately punctate, the punctures becoming slightly smaller laterad and posteriad; poste-

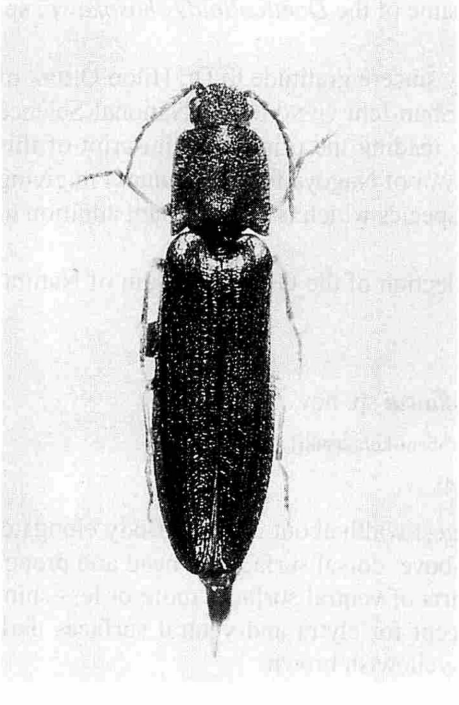


Fig. 1. *Denticolloides hosokawai* sp. nov., holotype (female), from Mitsumata in Kamishihorochô, Katou-gun, Hokkaido.

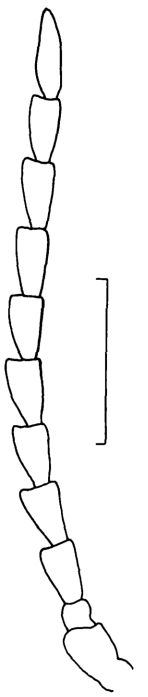
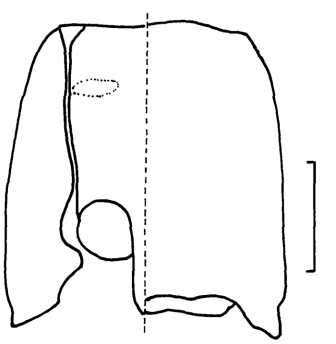


Fig. 2. Right antenna of *Denticolloides hosokawai* sp. nov. Scale: 1 mm.



Figs. 3–4. Prothorax of *Denticolloides hosokawai* sp. nov.; right half of dorsal view (3), and right half of ventral view (4). Scale: 1 mm.

4 3

rior angles short, projecting postero-laterally, and obtusely pointed at each apex, without carina above.

Scutellum lingulate, subvertical and convex above; surface coarsely and sparsely punctate.

Elytra about 3.1 times as long as its basal width, with sides almost parallel in basal two-thirds, then rounded and gradually convergent towards apices; striae defined, coarsely and unevenly punctate; intervals slightly elevated, shallowly punctate and transversely rugose.

Legs slender, each apical end of second to fourth tarsal segments slightly expanded beneath, though the fourth is more clearly expanded than the second and third; claws simple.

Propleura coarsely and umbilicately punctate in each apical three-fourths, but the punctures are smaller and sparser than those of pronotal disc. Prosternum with a pair of nodules at the sides of apical fourth along prostero-pleural suture; surface coarsely and umbilicately punctate, the punctures smaller and sparser than those of propleura. Prosternal process weakly incurved between procoxae, then straightly projecting apicad and obtusely pointed at apex.

Male unknown.

Holotype: 1♀, Mitsumata, Kamishihoro-chô, Katou-gun, Hokkaido, 1–VII–1983, K. HOSOKAWA leg.

Notes. This new species is allied to *Denticolloides sinensis* DOLIN et CATE, 1999, from the East Tian Shan Mountains in northwestern China, but can be distinguished from the latter by the following points: 1) The body is larger. 2) The sides of pronotum are sinuate just before the posterior angles. 3) Posterior angles of the pronotum obtusely pointed apicad.

要　約

有本久之：北海道から発見されたキタベニコメツキ属の1新種．——キタベニコメツキ属 *Denticolloides* の種は，DOLIN & CATE (1999) の研究によれば，中央アジアから5種が記録されている．今回，北海道で発見された *Denticolloides* 属の1種を新種と認め，キタクロベニコメツキ *Denticolloides hosokawai* と命名して記載した．これは日本から最初の属である．本種は *Denticolloides sinensis* DOLIN et CATE, 1999 に似ているが，より大型，前胸背板の両側は後角直前で顕著に狭まり，後角の先端は鋭く尖らないことなどにより識別できる．雄は未発見である．

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GURJEVA, E. L., 1963. A new elaterid genus (Coleoptera, Elateridae) from the north Tien-Shan. *Zool. Zh.*, **42**: 1409–1412. (In Russian, with English summary.)

Elytra, *Tokyo*, **28** (2): 373–385, November 15, 2000

Three New Species of the Genus *Athemus* (Coleoptera, Cantharidae) from Japan

Yûichi Okushima

Kurashiki Museum of Natural History, Chûô 2–6–1, Kurashiki-shi, Okayama Pref., 710–0046 Japan

and

Shôichi Imasaka

Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, 812–8581 Japan

Abstract Three new species of the genus *Athemus* are described from Japan and illustrated. Of these, *A.* (*Andrathemus*) *matsunagai* and *A.* (*Andrathemus*) *tobiranus* are collected from the Japanese mainland, and *A.* (*Athemellus*) *naokii* is collected from the Ryukyu Islands.

The genus *Athemus* Lewis, 1895, was established for a Japanese species, *Telephorus suturellus* Motschulsky, 1860, and at the same time, *Cantharis attristata* Kiesenwetter, 1874, was transferred to it. Many Japanese species were later transferred from other genera, or added as new species, to *Athemus* by subsequent entomologists. Until now, forty-one species of *Athemus* have been recorded from Japan including the Ryukyu Islands (Takahashi, 1998). However, some taxonomical problems still remain about Japanese species.

In recent years, we have reexamined the Japanese species of *Athemus* previously recorded as were unidentified, and found that at least three of them are new to science. Of these, two were collected from the Japanese mainland and should belong to the subgenus *Andrathemus* Wittmer, 1978, while the other one was collected from the southern part of the Ryukyu Islands and should belong to the subgenus *Athemellus* Wittmer, 1972 (Imasaka & Yamaji, 1989; Imasaka & Abiru, 1989; Imasaka & Nakamura, 1993; anonym, 1997). They will be described in the present paper.

We wish to express our 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 Dr. Masataka Satô of Nagoya Women's University for his constant guidance and co-operation to our studies. Imasaka also thanks Dr. Katsura Morimoto of Kyushu University for his continuous guidance. Our thanks are also due to Dr.

Kyoichiro UEDA (KMNH), Messrs. Martin BRENDELL (BMNH), Malcolm KERLEY (BMNH), Kazuhiro TAKAHASHI (KTC), Masami MASUMOTO (NIAES), Naoki TAKAHASHI (NTC), and Ms. Hiromi NIWA (=H. URUSHIHARA, OMM) for their kind support in loaning specimens from their institutions or private collections, and to all the collectors, in particular Messrs. Yoshiaki MATSUNAGA, Osamu YAMAJI and Hirofumi HAYAKAWA, who kindly offered invaluable specimens to us.

The type series of the new species to be described in this paper are deposited in the following institutions and personal collections, which are referred to in the text by the following abbreviations: BMNH: The Natural History Museum, London; KMNH: Kitakyushu Museum and Institute of Natural History; KUF: Kyushu University, Fukuoka; KURA: Kurashiki Museum of Natural History; NIAES: National Institute of Agro-Environmental Sciences, Tsukuba; NWU: Nagoya Women's University; OMM: Omogo Mountain Museum; KTC: Kazuhiro TAKAHASHI's collection; NTC: Naoki TAKAHASHI's collection; SIC: Shôichi IMASAKA's collection.

Athemus (*Andrathemus*) *matsunagai* IMASAKA et OKUSHIMA, sp. nov.

[Japanese name: Matsunaga-jôkai]

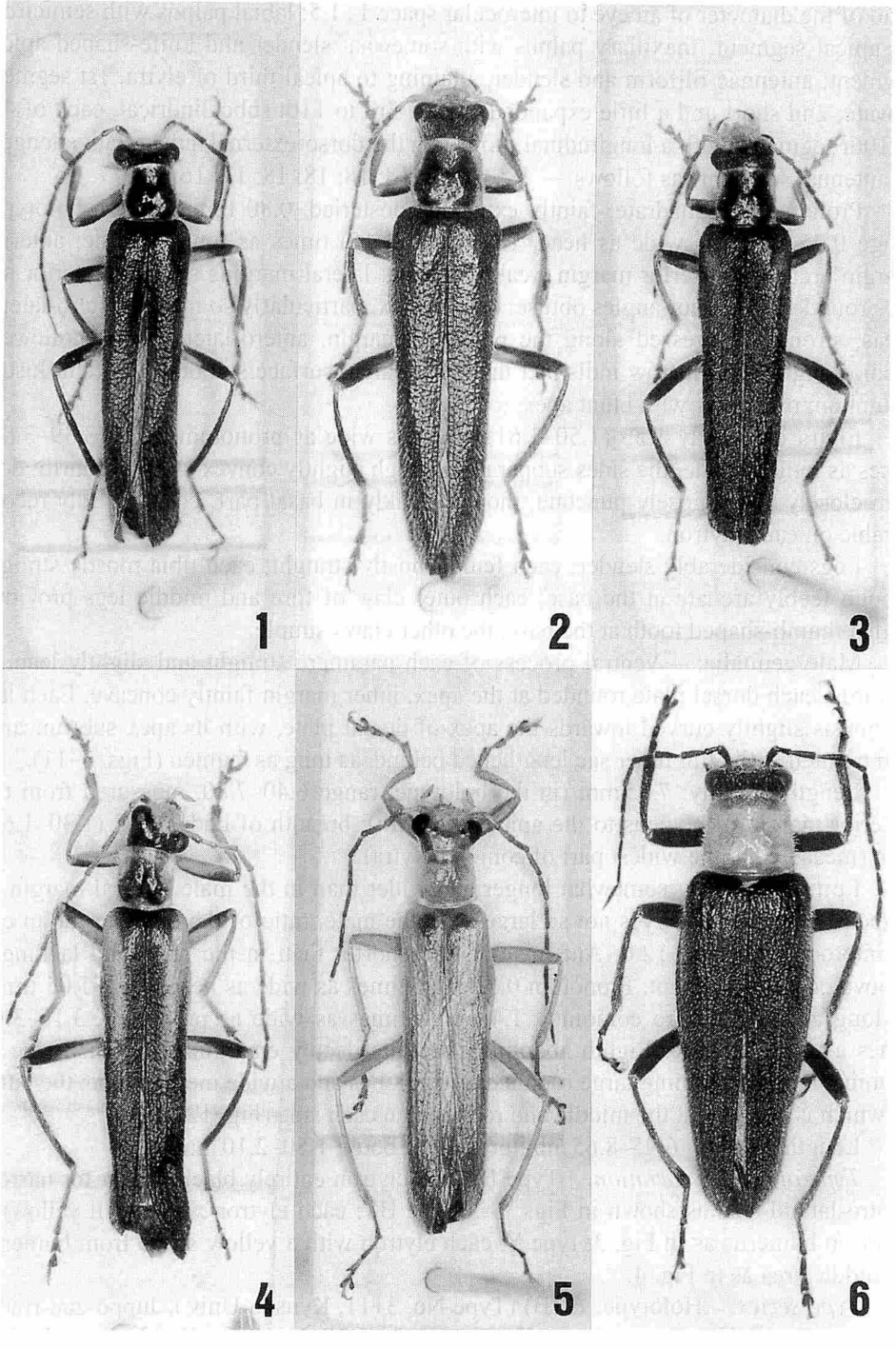
(Figs. 1–4, 7–12, Table 1)

Athemus sp. [Matsunaga-jôkai]: IMASAKA & ABIRU, 1989, Kumamoto Konchû-Dôkôkaihô, **35** (1): 12, fig. 2-8. —— IMASAKA & NAKAMURA, 1993, Misc. Rept. Hiwa Mus. nat. Hist., (31): 51, pl. 2, fig. 27, pl. 4, fig. 27. —— IMASAKA & OHTSUKA, 1996, Kumamoto Konchû-Dôkôkaihô, **40** (3): 49, figs. 3-23, 5-23.

Male. Body mostly blackish brown or black; anterior area before eyes, mouth parts, basal parts of antennae, circumference of pronotum, prosternum, narrow ventrolateral side of each elytron, fore femora and tibia without outer margins, basal halves of middle and hind femora without outer margins, and joints of legs yellow; apical parts of mandibles and claws reddish yellow. Each elytron often with a yellow stripe from humerus to middle area, development of which is variable with individuals. Body closely covered with fine pale pubescence; apical margin of clypeus and lateral margins of pronotum fringed with pale bristles; each elytron provided with intermingled pale bristles in addition to primary pubescence, though they become much sparser in anterior half.

Body very slender. Head slightly shorter than its width; dorsum depressed along the apical margin of clypeus and in lateral areas before eyes, faintly depressed along the mid-line; surface smooth with faint lustre, closely with minute and indistinct punctures; clypeus arcuate at apical margin; eyes large, globular and strongly prominent,

Figs. 1–6. *Athemus* spp. from Japan. —— 1–4. *A.* (*Andrathemus*) *matsunagai* IMASAKA et OKUSHIMA, sp. nov.; 1, ♂ (holotype), from Hiroshima Pref.; 2, ♀ (allotype), from Hiroshima Pref.; 3, ♀, (paratype), from Okayama Pref.; 4, ♂, (paratype), from Shizuoka Pref. —— 5. *A.* (*Andrathemus*) *tobiranus* OKUSHIMA et IMASAKA, sp. nov., ♂ (holotype), from Nagano Pref. —— 6. *A.* (*Athemellus*) *naokii* OKUSHIMA et IMASAKA, sp. nov., ♀(holotype), from Iriomote-jima Is.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ratio of the diameter of an eye to interocular space 1 : 1.5; labial palpus with semicircular apical segment; maxillary palpus with somewhat slender and knife-shaped apical segment; antennae filiform and slender, attaining to apical third of elytra, 1st segment clavate, 2nd short and a little expanded apicad, 3rd to 11th subcylindrical, each of 4th to 10th segments with a longitudinal groove on the dorso-external side, relative lengths of antennal segments as follows:— 18: 10: 14: 18: 18: 18: 18: 17: 16: 14: 17.

Pronotum subquadrate, faintly expanded posteriad, 0.80 times (in the holotype; range 0.75–0.83) as wide as head, 1.00 (1.00–1.15) times as long as wide; anterior margin arcuate; posterior margin weakly arcuate; lateral margins sinuate; 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 indistinct in anterior area; surface smooth with faint lustre. Scutellum triangular with blunt apex.

Elytra conjointly 1.55 (1.50–1.61) times as wide as pronotum, 3.71 (3.39–3.81) times as long as wide, the sides subparallel though slightly convex at basal fourth; dorsum closely and rugosely punctate, though weakly in basal part; costae hardly recognizable on each elytron.

Legs considerably slender; each femur mostly straight; each tibia mostly straight though feebly arcuate at the base; each outer claw of fore and middle legs provided with a thumb-shaped tooth at the base, the other claws simple.

Male genitalia:— Ventral process of each paramere straight and slightly leaning inwards, each dorsal plate rounded at the apex, inner margin faintly concave. Each laterophysis slightly curved towards the apex of dorsal plate, with its apex subtruncated and pointed at the tip. Inner sac lengthened behind, as long as tegmen (Figs. 7–11).

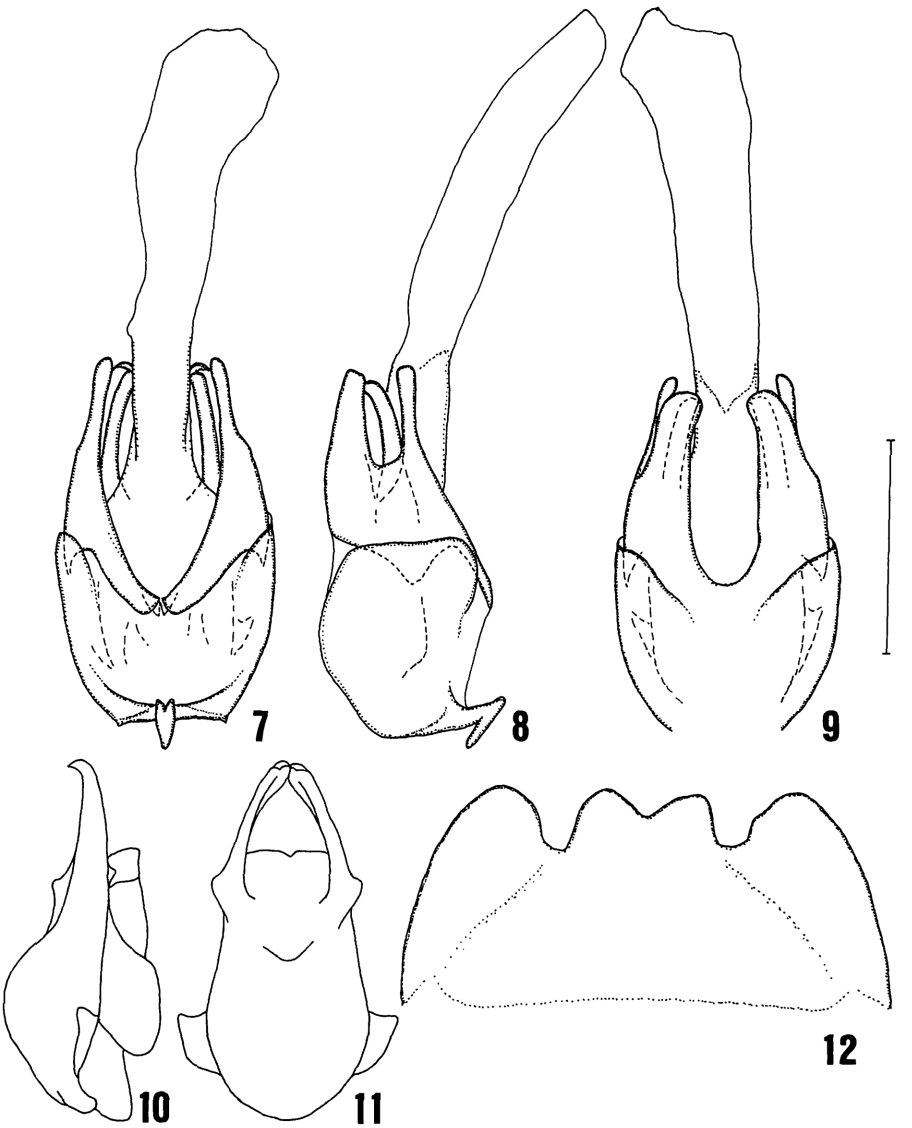
Length of body: 7.55 mm (in the holotype; range 6.40–7.80, measured from the anterior margin of clypeus to the apices of elytra); breadth of body: 1.55 (1.30–1.60) mm (measured at the widest part of conjoint elytra).

Female. Body somewhat longer and wider than in the male. Apical margin of clypeus subtruncated. Eyes not so large as in the male, ratio of the diameter of an eye to interocular space 1 : 2.0. Antennae a little shorter than in the male and lacking a groove on each segment. Pronotum 0.83–0.96 times as wide as head, 0.92–1.05 times as long as wide. Elytra conjointly 1.48–1.64 times as wide as pronotum, 3.10–3.67 times as long as wide. Eighth abdominal sternite deeply emarginate on each side of terminal margin, forming large rounded lateral lobes and a wide median lobe, the latter of which is notched at the middle and rounded on each side (Fig. 12).

Length of body: 6.95–8.65 mm; breadth of body: 1.50–2.10 mm.

Type of colour variation. Type B: each elytron entirely black except for narrow ventro-lateral side as shown in Figs. 1–2; type BY: each elytron with small yellowish mark on humerus as in Fig. 3; type Y: each elytron with a yellow stripe from humerus to middle area as in Fig. 4.

Type series. Holotype: ♂ (B) (Type No. 3111, Kyushu Univ.), Juppô-zan-rindô, Yoshiwa-mura, Hiroshima Pref., Honshu, Japan, 19–V–1989, Y. MATSUNAGA leg.



Figs. 7–12. *Athemus* (*Andrathemus*) *matsunagai* IMASAKA et OKUSHIMA, sp. nov. — 7–9, Male genitalia (6, ventral view; 7, lateral view; 8, dorsal view); 10–11, median lobe with laterophyses of male genitalia (10, lateral view; 11, dorsal view); 12, 8th abdominal sternite in female. (Scale: 0.5 mm.)

(KUF). Allotype: ♀ (B), Nakatsuya, Yoshiwa-mura, Hiroshima Pref., Honshu, Japan, 24–V–1988, S. IMASAKA leg. (KUF). Paratypes: [Honshu, Japan] Kanagawa Pref.: 1♀ (Y), Tennôji-one, Mt. Tanzawa-yama, 2–VII–1984, K. TAKAHASHI leg. (KTC, paratype of *A. okuyugawaranus*). Shizuoka Pref.: 1♀ (Y), Mt. Kurakake-yama, Kannami-chô, 30–IV–1991, H. NAGAOKA leg. (KURA); 1♂ (Y), Mt. Amagi-san, Izu Pen., 3–VI–

Table 1. Prefectural distribution of colour patterns of the elytra in the type series of *Athemus* (*Andrathemus*) *matsunagai* IMASAKA et OKUSHIMA, sp. nov.

Colour types of elytra		Honshu						
		Kanagawa	Shizuoka	Mie	Kyoto	Hyôgo	Nara	Shimane
Y	Male		3	4			1	
	Female	1	3	2	1	2	15	
BY	Male					1		
	Female					2		
B	Male							
	Female							1

Colour types of elytra		Honshu		Shikoku		
		Okayama	Hiroshima	Tokushima	Ehime	Kôchi
Y	Male			5	2	
	Female			4	5	1
BY	Male			3	2	
	Female	2		1		
B	Male		14		2	1
	Female		8			

Colour types of elytra		Kyushu					
		Nagasaki	Kumamoto	Ôita	Miyazaki	Kagoshima	Yaku-shima
Y	Male			1			
	Female	1	1	1			
BY	Male	1	1	9			
	Female	1	1	15	1		
B	Male	3	18	12	2	5	4
	Female	7	29	12		3	8

1990, H. KOJIMA leg. (KURA); 1♂ (Y), Mt. Amagi-san, Izu Pen., 8–VI–1991, H. NAGAOKA leg. (KURA); 1♂ (Y), 1♀(Y), Mt. Amagi-san, Izu Pen., 8–VI–1991, no collector's name (KURA); 1♀(Y), Mt. Amagi-san, Izu Pen., 9–VI–1991, H. NAGAOKA leg. (KURA). Mie Pref.: 1♀(Y), Hirakura, Misugi-mura, 14–V–1967, H. ICHIHASHI leg. (NWU); 1♀(Y), Hirakura, Misugi-mura, 4–V–1987, T. IMAMURA leg. (NWU); 1♂ (Y), Hirakura, Misugi-mura, 3–V–1988, K. AKITA leg. (NWU); 1♂ (Y), Hirakura, Misugi-mura, 4–V–1988, M. SAITO leg. (SIC); 1♂ (Y), Hirakura, Misugi-mura, 27–V–1988, N. KANIE leg. (NWU); 1♂ (Y), Chichigatani, Miyagawa-mura, 5–V–1989, N. NARUKAWA leg. (NWU). Kyoto Pref.: 1♀ (Y), Ashiu, Miyama-chô, 6–VI–1991, K.

MASAKI leg. (SIC). Hyôgo Pref.: 3♀♀ (2Y, 1BY), Akasai-keikoku, Haga-chô, 13–V–1993, H. OKADA leg. (SIC); 1♂ (BY), 1♀ (BY), Akasai-keikoku, Haga-chô, 16–V–1993, H. OKADA leg. (SIC). Nara Pref.: 2♀♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 29–VI–1975, K. MIZUNO leg. (SIC); 1♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 19–VI–1977, K. MIZUNO leg. (SIC); 1♂ (Y), 1♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 16–VI–1985, K. URATA leg. (SIC); 1♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 14–V–1986, N. NARUKAWA leg. (SIC); 1♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 21–VI–1987, N. NARUKAWA leg. (NWU); 1♀ (Y), Mt. Ôdaigahara, Kamikitayama-mura, 26–VI–1992, K. MATSUMOTO leg. (KURA); 1♀ (Y), Shirakawamata, Kamikitayama-mura, 4–V–1980, K. MIZUNO leg. (SIC); 2♀♀ (Y), Mt. Misen, Ômine Mts., 21–VI–1987, K. MIZUNO leg. (SIC); 1♀ (Y), Mt. Obako-dake, Yoshino-gun, 11–V–1986, T. HATAYAMA leg. (SIC); 4♀♀ (Y), Mt. Obako-dake, Yoshino-gun, 1–VI–1986, T. HATAYAMA leg. (SIC). Shimane Pref.: 1♀ (B), Ai, Nita-chô, 11–V–1960, T. FUJIMURA leg. (NIAES). Okayama Pref.: 1♀ (BY), Okutsugawa, Shôhoku-chô, 19–V–1996, A. WATANABE leg. (KURA); 1♀ (BY), Shimotsugawa, Kamo-chô, 11–V–1997, O. YAMAJI leg. (KURA). Hiroshima Pref.: 1♂ (B), 1♀ (B), same data as for the holotype (SIC); 1♀ (B), Nakatsuya, Yoshiwa-mura, 27–V–1984, H. OKADA leg. (SIC); 4♂♂ (B), 1♀ (B), Nakatsuya, Yoshiwa-mura, 23–V–1988, S. IMASAKA leg. (SIC); 8♂♂ (B), 4♀♀ (B), same data as for the allotype (SIC). [Shikoku, Japan] Tokushima Pref.: 3♀♀ (Y), Mt. Takagi-san, Kisawa-son, 15–VI–1986, A. WATANABE leg. (SIC); 2♂♂ (Y), 1♀ (Y), Dosu-tôge, Kisawa-son, 17–V–1987, A. WATANABE leg. (SIC); 1♂ (Y), Minokoshi, Higashiiyayama-son, 20–V–1993, Y. OKUSHIMA leg. (KURA); 1♂ (BY), Kuwadaira – Tsurugi-san, Ichiu-son, 20–VI–1993, S. MANO leg. (KTC); 1♀ (BY), Mt. Tsurugi-san, Ichiu-son, 20–VI–1993, S. MANO leg. (KTC); 4♂♂ (2Y, 2BY), Mt. Tsurugi-san, alt. 1,600–1,900 m, 22–V–1998, M. YOSHIDA leg. (SIC). Ehime Pref.: 2♂♂ (BY), Nibukawa, Tamagawa-chô, 3–V–1996, M. SHIRAISHI leg. (SIC); 2♂♂ (B), Mt. Narahara-yama, Tamagawa-chô, 26–IV–1998, M. SHIRAISHI leg. (SIC); 1♂ (Y), 3♀♀ (Y), Jôju-sha, Mt. Ishizuchi-san, 26–VI–1994, M. SHIRAISHI leg. (SIC); 1♂ (Y), Mt. Ishizuchi-san, 27–V–1990, H. KUSUNOKI leg. (OMM); 1♀ (Y), Odamiyama, Oda-chô, 6–V–1995, N. OHBAYASHI leg. (NWU); 1♀ (Y), Odamiyama, Oda-chô, 6–V–1995, K. AITA leg. (NWU). Kôchi Pref.: 1♂ (B), fork of Naka-gawa & Nishi-kawa – Senbon-yama-tozan-guchi, Umaji-mura, 2–V–1988, K. HAGA leg. (KTC); 1♀ (Y), Tengu-kôgen, Higashitsuno-mura, 13–VI–1995, Y. OKUSHIMA leg. (KURA). [Kyushu, Japan] Nagasaki Pref.: 4♀♀ (B), Mt. Unzen-dake, Obama-chô, 12–VI–1986, S. IMASAKA leg. (SIC); 1♂ (B), 2♀♀ (B), Mt. Unzen-dake, Obama-chô, 28–V–1987, S. IMASAKA leg. (SIC); 3♂♂ (1BY, 2B), 3♀♀ (1Y, 1BY, 1B), Mt. Unzen-dake, Obama-chô, 31–V–1989, S. IMASAKA leg. (SIC). Kumamoto Pref.: 5♂♂ (1BY, 4B), 7♀♀ (B), Shiiya-tôge, Yabe-chô, 6–VI–1989, S. IMASAKA leg. (KURA); 2♀♀ (B), Shiiya-tôge, Yabe-chô, 6–VI–1995, S. IMASAKA leg. (SIC); 1♀ (B), Naidaijin-kyô, Yabe-chô, 12–V–1984, S. OGATA leg. (SIC); 1♂ (B), Hagi, Izumi-mura, 19–V–1996, S. IMASAKA leg. (KURA); 3♂♂ (B), 2♀♀ (B), Hagi, Izumi-mura, 4–V–1997, S. IMASAKA leg. (SIC); 2♀♀ (B), Mt. Hakuchô-zan, Izumi-mura, 17–VI–1984, S. IMASAKA leg. (KURA); 4♀♀ (1BY, 3B),

Mt. Hakuchô-zan, Izumi-mura, 18–VI–1984, S. IMASAKA leg. (SIC); 4♂♂ (B), 9♀♀ (8B, 1Y), Mt. Hakuchô-zan, Izumi-mura, 5–V–1998, R. NODA leg. (SIC); 4♂♂ (B), 1♀ (B), Mt. Shiraga-dake, Ue-mura, 31–V–1994, S. IMASAKA leg. (SIC); 2♂♂ (B), 3♀♀ (B), Mt. Shiraga-dake, Ue-mura, 17–V–1997, S. IMASAKA leg. (SIC). Ôita Pref.: 1♂ (BY), Taisen-rindô, Mt. Hiiji-dake, 18–V–1982, S. SASAKI leg. (SIC); 1♀ (BY), Mt. Kuro-dake, Shônai-chô, 10–V–1983, Y. TAKAKURA leg. (KMNH); 1♀ (BY), Mt. Kuro-dake, Kujû Mts., 9–V–1987, S. OGATA leg. (SIC); 1♂ (BY), 4♀♀ (3BY, 1B), Mt. Kuro-dake, Kujû Mts., 16–V–1989, S. IMASAKA leg. (SIC); 2♂♂ (1BY, 1B), 6♀♀ (4BY, 2B), Mt. Kuro-dake, Kujû Mts., 20–V–1992, M. NISHIDA leg. (SIC); 2♀♀ (1BY, 1B), Mt. Kuro-dake, Kujû Mts., 25–V–1996, S. IMASAKA leg. (SIC); 5♂♂ (1Y, 1BY, 3B), 1♀ (Y), Taisen-rindô, Kujû Mts., 7–V–1989, M. NISHIDA leg. (SIC); 2♂♂ (B), 8♀♀ (5BY, 3B), Mt. Katamuki-yama, 30–IV–1990, S. SASAKI leg. (KURA); 4♂♂ (3BY, 1B), 1♀ (B), Hôei-rindô, Mt. Katamuki-yama, 26–IV–1998, R. NODA leg. (KURA); 6♂♂ (1BY, 5B), 4♀♀ (B), Hôei-rindô, Ogata-machi, 29–IV–1999, R. NODA leg. (SIC); 1♂ (BY), Mt. Sobo-san, 24–V–1995, N. TAKAHASHI leg. (NTC). Miyazaki Pref.: 1♀ (BY), Mt. Goyô-dake, Hinokage-chô, 15–VI–1996, S. IMASAKA leg. (SIC); 1♂ (B), Mt. Shiraiwa-yama, Gokase-chô, 18–V–1991, A. NAGAI leg. (SIC); 1♂ (B), Ebino-kôgen, Ebino-shi, 24–V–1990, A. NAGAI leg. (SIC). Kagoshima Pref.: 5♂♂ (B), 2♀♀ (B), Mt. Shibi-san, Miyanojô-chô, 14–V–1991, S. IMASAKA leg. (KURA, SIC); 1♀ (B), Mt. Kirishima-yama, 13–V–1991, S. IMASAKA leg. (SIC); 2♂♂ (B), Yodogawa-rindô, alt. 1,300 m, Yaku-shima Is., 17–V–1988, Y. MATSUNAGA leg. (SIC); 2♂♂ (B), 6♀♀ (B), Yodogawa-goya, Yaku-shima Is., 7–VI–1988, S. IMASAKA leg. (SIC); 1♀ (B), Yodogawa-goya, Yaku-shima Is., 9–VI–1988, S. IMASAKA leg. (SIC); 1♀ (B), Shirataniun-sui-kyô – Tsuji-no-tôge, Yaku-shima Is., 4–V–1998, N. TAKAHASHI leg. (NTC). [No detailed data] 1♂ (Y), "Japan./ G. Lewis./ 1910–320." (BMNH).

Distribution. Japan: Honshu (west of Kanagawa Pref.), Shikoku, Kyushu, Yakushima Is.

Notes. This new species closely resembles *A.* (*Andrathemus*) *okuyugawaranus* TAKAHASHI, 1992 from Kanagawa Pref., Honshu, particularly in the yellow striped type (Y), but can be distinguished from the latter by the colour of the middle and hind femora which are blackish along the outer margins, and the structure of the male genitalia, above all in the broader dorsal plates. The blackish type (B) can be easily distinguished from *A.* (*Andrathemus*) *okuyugawaranus* TAKAHASHI by the characteristic colour.

The colour of the body shows a tendency to become blackish in the southwestern area of the distributional range of the species, and to become yellowish in the eastern area (Table 1). However, this merely shows geographical variation within the same species, because it is continuous and no morphological difference has been observed except for coloration.

It has become clear by our reexamination that one of the paratypes of *A.* (*Andrathemus*) *okuyugawaranus* TAKAHASHI actually belongs to this new species.

This species is collected on various flowers (*Palura chinensis* KOIDZ. var. *pilosa*

NAKAI, *Cornus controversa* HEMSLEY, etc.) in the upper lucidophyllous to the lower cool temperate deciduous broadleaved forests. Living individuals look like *Encyclops olivacea* BATES, a longicorn beetle, on forest flowers.

The specific name is given in honour of Mr. Yoshiaki MATSUNAGA who collected a part of the type series including the holotype of this interesting new species.

Athemus (*Andrathemus*) *tobiranus* OKUSHIMA et IMASAKA, sp. nov.

[Japanese name: Tobira-jôkai]

(Figs. 5, 13–15)

Athemus sp. [Tobira-jôkai]: anon., 1997, Matsumoto-shi no Konchû, Matsumoto-shishi Shizen-bumon Chôsa-hôkoku-sho, Matsumoto-shi, 1, p. 47.

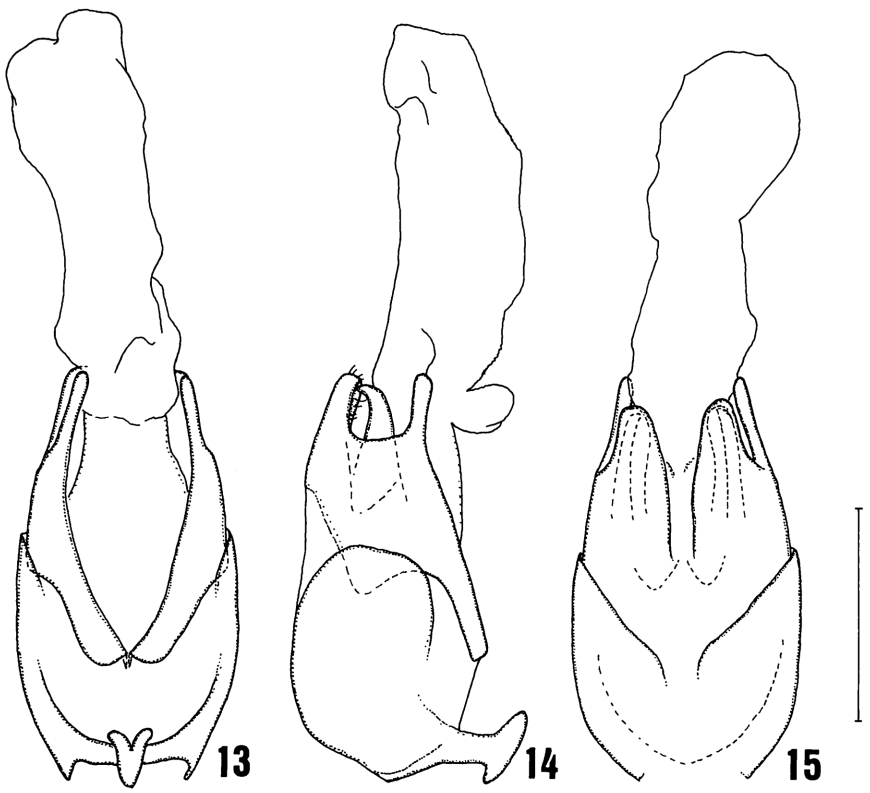
Male. Body mostly yellow. Eyes black; mandibles and claws faintly reddish; antennae, tarsi, metasternum and abdominal sternites somewhat dusky. Body closely covered with fine yellowish pubescence; apical margin of clypeus fringed with yellowish bristles; each elytron with intermingled yellowish bristles in addition to primary pubescence.

Body very 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 lustre, sparsely with minute and indistinct punctures; apical margin of clypeus arcuate with its centre faintly indented; eyes large, globular and strongly prominent, ratio of the diameter of an eye to interocular space 1 : 1.5; labial palpus with semicircular apical segment; maxillary palpus with somewhat slender and knife-shaped apical segment; antennae filiform and slender, attaining to apical third of elytra, 1st segment clavate, 2nd short and a little expanded apicad, 3rd to 11th subcylindrical, each of 4th to 10th segments with a longitudinal groove on the dorso-external side, but that on the 4th is short, relative lengths of antennal segments as follows:— 15: 10: 12: 14: 17: 16: 16: 16: 16: 14: 15.

Pronotum subquadrate, faintly expanded posteriad, 0.87 times as wide as head, 0.96 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 rectangular and slightly projected; disc convex, particularly so in the postero-lateral areas, strongly depressed along the posterior margin, antero-lateral areas hollowed; medio-longitudinal furrow distinct only in central area; surface smooth with faint lustre. Scutellum triangular, with blunt apex.

Elytra conjointly 1.54 times as wide as pronotum, 3.4 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 mostly straight though feebly arcuate at the base; each outer claw of fore and middle legs provided with a thumb-shaped tooth at the base, the other claws simple.



Figs. 13–15. Male genitalia of *Athemus* (*Andrathemus*) *tobiranus* OKUSHIMA et IMASAKA, sp. nov.; 13, ventral view; 14, lateral view; 15, dorsal view. (Scale: 0.5 mm.)

Male genitalia:— Ventral process of each paramere straight and leaning inwards, each dorsal plate rounded at the apex, slightly expanded inwards. Each laterophysis curved towards the apex of each dorsal plate, pointed at the tip. Inner sac lengthened behind, as long as tegmen (Figs. 13–15).

Length of body: 9.0 mm (measured from the anterior margin of clypeus to the apices of elytra); breadth of body: 2.0 mm (measured at the widest part of conjoint elytra).

Female. Unknown.

Type specimen. Holotype: ♂ (Type No. 3112, Kyushu Univ.), Tobira, Matsumoto-shi, Nagano Pref., Honshu, Japan, 12–VI–1995, H. HAYAKAWA leg. (KUF).

Distribution. Japan: central Honshu (Nagano Pref.).

Notes. This new species somewhat resembles *A.* (*Andrathemus*) *okuyugawaranus* TAKAHASHI, 1992 from Kanagawa Pref., Honshu, but can easily be distinguished from the latter by the wholly yellow body and the dorsal plates of the male genitalia slightly expanded inwards.

The two apical segments of the left antenna are missing in the holotype.
The specific name is given after the name of the type locality.

Athemus (*Athemellus*) *naokii* OKUSHIMA et IMASAKA, sp. nov.

[Japanese name: Ishigaki-kubiaka-jôkai]

(Figs. 6, 16)

Athemellus sp. [Ishigaki-kubiaka-jôkai]: IMASAKA & YAMAJI, 1989, Gekkan-Mushi, Tokyo, (226): 15, fig. 4.

Male. Unknown.

Female. Body mostly black. Eyes blackish brown, lateral areas before eyes yellowish brown, mandibles and claws reddish brown, pronotum reddish orange, scutellum reddish orange though the posterior margin is dusky, abdominal sternites orange yellow. Body closely covered with fine whitish pubescence intermingled with blackish bristles in addition to primary pubescence; apical margin of clypeus fringed with yellowish bristles.

Body somewhat stout. Head slightly shorter than its width; dorsum depressed along the apical margin of clypeus and in lateral areas before eyes; surface smooth with faint lustre; apical margin of clypeus arcuate as a whole though slightly sinuate with its centre faintly indented; eyes large, globular and moderately prominent, ratio of the diameter of an eye to interocular space 1 : 1.9; labial palpus with triangular apical segment; maxillary palpus with somewhat wide and securiform apical segment; antennae filiform and slender, attaining to the middle of elytra, 1st segment clavate, 2nd short and a little expanded apicad, 3rd to 11th subcylindrical, lacking groove on each segment, relative lengths of antennal segments as follows:— 20: 10: 16: 18: 18: 18: 18: 18: 17: 16: 20.

Pronotum subquadrate slightly expanded posteriad, 1.03 times (in the holotype; range 0.97–1.03) as wide as head, 0.92 (0.92–1.00) times as long as wide; anterior margin arcuate; posterior margin weakly arcuate; lateral margins faintly sinuate; anterior angles rounded; posterior angles rectangular; disc convex, particularly so in the postero-lateral areas, strongly depressed along the posterior margin, antero-lateral areas hollowed; medio-longitudinal furrow distinct only in central area; surface smooth with faint lustre. Scutellum triangular with rounded apex.

Elytra conjointly 1.51 (1.50–1.51) times as wide as pronotum, 2.47 (2.47–2.69) times as long as wide, the sides subparallel though slightly convex at basal third, and gradually and slightly convergent apicad; dorsum closely and rugosely punctate; each elytron provided with two vague costae.

Legs moderately slender; each femur mostly straight; each tibia mostly straight though feebly arcuate at the base; each outer claw of fore legs provided with a minute tooth at the base, the other claws simple.

Eighth abdominal sternite deeply and rather narrowly emarginate on each side of terminal margin, forming two round lateral lobes and moderately wide median lobe,

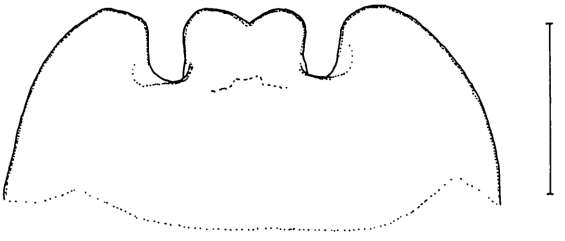


Fig. 16. Eighth abdominal sternite in the female of *Athemus* (*Athemellus*) *naokii* OKUSHIMA et IMASAKA, sp. nov. (Scale: 0.5 mm.)

the latter of which is rounded on each side, forms a re-entrant angle at the centre, and is slightly constricted at the base (Fig. 16).

Length of body: 10.4 mm (in the holotype; range 8.55–10.4, measured from the anterior margin of clypeus to the apices of elytra); breadth of body: 2.95 (2.25–2.95) mm (measured at the widest part of conjoint elytra).

Type series. Holotype: ♀ (Type No. 3113, Kyushu Univ.), Gunkan-iwa – Kanpira-no-taki, above 800 m alt., Iriomote-jima Is., Okinawa Pref., Ryukyus, Japan, 17–IV–1996, N. TAKAHASHI leg. (KUF). Paratype: 1 ♀, Mt. Omoto-dake, Ishigaki-jima Is., Okinawa Pref., Ryukyus, Japan, 3–V–1977, O. YAMAJI leg. (SIC).

Distribution. Japan: Yaeyama group (Ishigaki-jima Is., Iriomote-jima Is.) of the Ryukyu Islands.

Notes. This new species very closely resembles *A.* (*Athemellus*) *sauteri* (PIC, 1926) from Taiwan, but can easily be distinguished from the latter by the wholly reddish orange pronotum and the 8th abdominal sternite in female with the median lobe bearing rounded projections.

The members of the subgenus *Athemellus* WITTMER are usually provided with no tooth on their claws. Though this new species has a minute tooth on each outer claw of the fore legs, at least in the female, it is tentatively placed in the subgenus *Athemellus*, at least for the time being, since *A. sauteri* (PIC) also has a minute tooth on each outer claw of only fore legs in the female.

The specific name is given in honour of our friend, Mr. Naoki TAKAHASHI, a taxonomist of the Cantharidae, who kindly provided us with a strange specimen.

要　　約

奥島雄一・今坂正一：日本産ジョウカイボン属の3新種．——日本のジョウカイボン属には，近年になって多くの種がほかの属から移されたり，新種として記載されたりして追加されている．今回，これまでに不明種として記録が公表されている日本産の3種を検討した結果，いずれも新種と認められたので，それぞれマツナガジョウカイ *Athemus* (*Andrathemus*) *matsunagai* IMASAKA et OKUSHIMA, sp. nov., トビラジョウカイ *Athemus* (*Andrathemus*) *tobiranus* OKUSHIMA et IMASAKA, sp. nov., イシガキクビアカジョウカイ *Athemus* (*Athemellus*) *naokii* OKUSHIMA et IMASAKA,

sp. nov. として命名記載した．マツナガジョウカイは上翅の色彩に黒色型と黄筋型があり，とくに後者は神奈川県から記載されたホソニセヒメジョウカイ *A.* (*Andrathemus*) *okuyugawaranus* TAKAHASHI, 1992に酷似しているが，中・後脚腿節外側が基部から黒ずむこと，および雄交尾器の背板がいくぶん幅広いことで区別できる．トビラジョウカイもまたホソニセヒメジョウカイにいくぶん似ているが，体全体が黄色いことおよび雄交尾器の背板が内側に広がることで容易に区別できる．イシガキクビアカジョウカイは，台湾から記載された *A.* (*Athemellus*) *sauteri* (PIC, 1926) にきわめてよく似ているが，前胸背板全体が橙赤色であることおよび雌の第8腹板の中央片が丸くてふたつの山状に突き出ることで区別できる．

なお，和名はそれぞれ不明種として発表された時にすでに使用されているものを採用した．

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Elytra, *Tokyo*, **28** (2): 386, November 15, 2000

A New Record of *Gonatas carolinensis* GRAVELY (Coleoptera, Passalidae) from Koror Island, Palau[1)]

Masahiro KON[2)] and Hajimu ICHIHASHI[3)]

[2)] School of Environmental Science, The University of Shiga Prefecture, Hassaka-cho, Hikone, 522–8533 Japan
[3)] Komono 3949–5, Komono-cho, Mie-gun, 510–1233 Japan

Up to the present, the only one species of Passalidae, *Cetejus virginalis* (KAUP), has been known from Palau (HINCKS & DIBB, 1935). In 1997, however, the second author (ICHIHASHI) collected some individuals of one passalid species different from *C. virginalis* from Koror Island, Palau. Later, these specimens were identified with *Gonatas carolinensis* GRAVELY by S. BOUCHER, the Muséum national d'Histoire naturelle, Paris. This is the first record of *G. carolinensis* from Palau. Its collection data are as follows: 8 exs., Koror Island, Palau, Micronesia, 11–V–1997, H. ICHIHASHI leg.

Gonatas carolinensis was described by GRAVELY (1918) from the Caroline Islands, but it is unknown which island of the Caroline Islands is the type locality of this species. Although the Caroline Islands include the Palau Islands as the westernmost part, the present specimens from Koror are a little different from GRAVELY's (1918) description, *e.g.*, the lateral area of the metasternum punctured and hairy in the Koror specimens though smooth and hairless in GRAVELY's (1918) description. Therefore, Koror appears not to be the type locality of *G. carolinensis*.

Intensive field studies are expected to yield further discoveries of this species from the other islands of Micronesia.

In closing this brief report, we wish to express our hearty thanks to S. BOUCHER, the Muséum national d'Histoire naturelle, Paris for species identification.

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Elytra, *Tokyo*, **28** (2): 387–389, November 15, 2000

Stephanopachys sachalinensis (MATSUMURA) (Coleoptera, Bostrychidae) Found Infesting Coniferous Bark in Kanagawa Prefecture, Japan

Ryûtarô IWATA

Forest Zoology Laboratory, Department of Forest Science and Resources,
College of Bioresource Sciences, Nihon University,
Fujisawa, 252–8510 Japan,

Klaus-Ulrich GEIS

Schauinslandstr. 22, D 79100, Freiburg, Germany

and

Yukihiko HIRANO

585–29 Renshôji, Odawara, 250–0865 Japan

Abstract *Stephanopachys sachalinensis* (MATSUMURA) (Coleoptera, Bostrychidae), a species having been described from Sakhalin and never recorded elsewhere, was found infesting coniferous bark for gardening use in Kamakura, Central Japan. This population is deemed to have been imported from East Russia or its surroundings. A supplementary note was given to distinguish it from a closely related species, *S. substriatus*.

Stephanopachys sachalinensis is a bostrychid species described by MATSUMURA (1912) from Solowiyofka, Sakhalin, under the name *Rhyzopertha sachalinensis*, and CHÛJÔ (1936) transferred it to the present genus. It is a species hitherto unknown from Japan, and little is known with regard to its biology.

Several years ago, through the courtesy of the late Dr. S. MORIYA and Dr. M. TAKAKUWA, we had an opportunity to examine several specimens of a strange minute beetle species that had been found by a gardener in Kamakura, Kanagawa Prefecture, Central Japan. The beetles were said to have emerged out of coniferous outer bark fragment material for gardening use. Two of us, Y. H. and R. I., recognized them as a species of a bostrychid genus *Stephanopachys*, and later, one of us, K.-U. G., by comparing them with other related species (*S. quadricollis*, *S. substriatus* and *S. himalayanus*), came to a conclusion that they are *S. sachalinensis*.

Stephanopachys sachalinensis (MATSUMURA)

[Japanese name: Karafuto-hirata-nagashinkui]

Specimens examined. 5 exs., Kamakura-shi, Kanagawa Pref., Japan, 30–III–1994, collector unknown (body length 3.7–4.2 mm; Fig. 1).

Here, we add a few specific characteristics as supplement to its original description by MATSUMURA (1912), stating the broad penultimate segment of the antennal club and the elytral proportions, which distinguishes the species from a closely related species, *S. substriatus*. More precisely, in *S. sachalinensis* the antenna has a stouter shape, the basal segments stouter and slightly wider than in *S. substriatus*. In particular, in *S. sachalinensis* the second and third basal antennal segments are short, the third only slightly longer than the fourth, while in *S. substriatus* the second and third basal segments are longer and more slender, the third clearly longer than the short and globose fourth. In *S. sachalinensis*, the elytral pair are about 2.5 times as long as wide, as opposed to about 2.0 times in *S. substriatus*. Also, in *S. sachalinensis* the granula of the apical declivity of elytra are less prominent than in *S. substriatus*.

Discussion

As for *Stephanopachys* of the Far East, KRIVOLUTSKAIA (1992) mentioned only *S. linearis* and *S. substriatus* as members of the Far Eastern districts of Russia, and

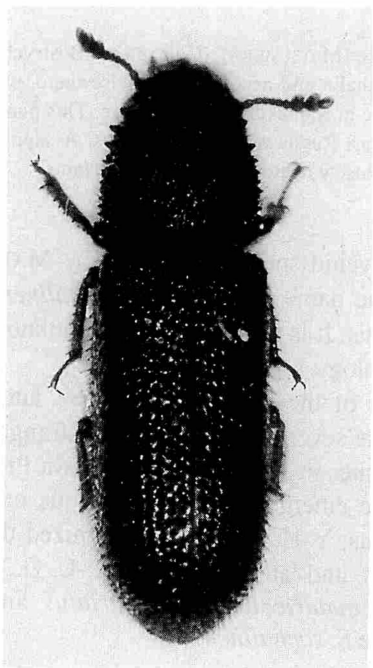

Fig. 1. *Stephanopachys sachalinensis* (MATSUMURA).

ZHANG *et al.* (1995) recorded *S. linearis* from Daxinganling, Northeast China, as the sole Chinese representative of the genus. Therefore, since its description, *S. sachalinensis* has been further recorded neither from Sakhalin nor from its adjacent regions.

Species of the genus *Stephanopachys*, unlike the other bostrychid genera, are known to infest inner and outer bark of northern conifers, and are introduced to other countries rather readily (FISHER, 1950; SCHURR-MICHEL, 1950; GEIS, in press). The present infestation is consistent with these facts. Although there is no information as to whether this population is of the Japanese origin or not, the coniferous bark material, from which the beetles emerged, might be an imported product from East Russia or its surroundings, and in this case, these beetles should be regarded as not native but introduced to Japan.

Acknowledgments

We thank Dr. M. TAKAKUWA, Yokohama, for his providing us with the relevant specimens. Also, we dedicate this article to the memory of the late Dr. S. MORIYA, a pest control scientist at Yokohama.

要　　約

岩田隆太郎・Klaus-Ulrich GEIS・平野幸彦：針葉樹樹皮を食害していた *Stephanopachys sachalinensis* (MATSUMURA) カラフトヒラタナガシンクイ（新称）の神奈川県における発見．—— 樺太から記載されて以来どこからも記録のなかったカラフトヒラタナガシンクイ（新称）*Stephanopachys sachalinensis* (MATSUMURA)（ナガシンクイムシ科）が，神奈川県鎌倉市において，園芸用資材の針葉樹樹皮破片に発生しているのが発見され，ロシア東部またはその周辺からの人為導入と考えられた．近縁種 *S. substriatus* との区別点を若干補足した．

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Elytra, *Tokyo*, **28** (2): 390, November 15, 2000

Occurrence of *Glipa uenoi* TAKAKUWA (Coleoptera, Mordellidae) in Taiwan

Masatoshi TAKAKUWA

Kanagawa Prefectural Museum of Natural History,
499, Iryuda, Odawara, 250-0031 Japan

Glipa (*Macroglipa*) *uenoi* TAKAKUWA has hitherto been known from Amami-Oshima and Okinawa Islands of the central Ryukyus (TAKAKUWA, 1986; TAKAKUWA *et al.*, 2000) and South China (FAN & YANG, 1993), though the latter record is most probably based on such different species as *G.* (*M.*) *satoi* NAKANE et NOMURA judging from the illustrated genitalic features given by FAN and YANG (1993; TAKAKUWA, 2000). I herewith record the mordellid from Taiwan.

Specimens examined. Nantou Hsien, central Taiwan: 1♀, Jiuyuentan, V–1983, Y. KUSAKABE leg.; 5♂♂, 2♀♀, Mt. Kwanto, ca. 1,400 m in alt., 5~7–VI–1995, M. TAKAKUWA leg.; 1♂, southeastern foot of Mt. Kwanto, 2–VI–1995, M. TAKAKUWA leg.; 2♂♂, 1♀, same, 17–V–1996, S. NAKAMURA leg.; 1♂, Nanshanchi, 3–VI–1995, M. TAKAKUWA leg.; 1♂, 3♀♀, same, 5–VI–1995, R. YAKITA leg.; 1♂, same, 18–V–1996, M. TAKAKUWA leg. (all in my coll.).

These Taiwanese specimens are rather variable, particularly in the shape of body, coloration and elytral maculation, but agree well with Ryukyuan ones in the characteristics of the male genitalia.

I deeply thank Messrs. Shin-ichi NAKAMURA of Yokohama, Riichiro YAKITA of Naha and Yoshiyasu KUSAKABE of Yokohama in supplying me with valuable materials used in the present paper.

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Elytra, *Tokyo*, **28** (2): 391–407, November 15, 2000

Study of Asian Strongyliini (Coleoptera, Tenebrionidae)

X. Ten New Species of the Genus *Strongylium* from Southeast Asia

Kimio MASUMOTO

Institute of Human Living Sciences, Otsuma Women's University,
Tokyo, 102–8357 Japan

Abstract This is the tenth part of the study of the Asian Strongyliini and deals with 10 new species of the genus *Strongylium* from Southeast Asia, which are described under the following names: *Strongylium bisbicostatum* sp. nov., *S. flavocostatum* sp. nov., *S. clytoides* sp. nov., *S. palliditerminale* sp. nov., *S. baudonianum* sp. nov., *S. niasiinsularum* sp. nov., *S. masatakai* sp. nov., *S. lampros* sp. nov., *S. minicupreum* sp. nov., and *S. pinfaense* sp. nov.

This paper is the tenth part of my study of the Asian Strongyliini and deals with ten new species of the genus *Strongylium* from various areas of Southeast Asia.

The specimens examined are submitted to me for taxonomic study from the collections of the Muséum National d'Histoire Naturelle, Paris, the Natural History Museum, London, and the Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw. Other materials, besides the specimens in my collection, are also personally submitted to me from Prof. Dr. Masataka SATÔ, Nagoya Women's University and Mr. Stanislav BEČVÁŘ, Institute of Entomology, Czech Academy of Sciences.

I wish to express my cordial thanks to Dr. Claude GIRARD and Mlle Jeanne CHARBONNEL, Muséum National d'Histoire Naturelle, Paris, Mr. Martin J. D. BRENDELL, the Natural History Museum, London, Prof. Dr. Masataka SATÔ, and Mr. Stanislav BEČVÁŘ, for their invaluable support in the course of the present study. I thank Dr. Dariusz IWAN, the Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, and Dr. Michel BRANCUCCI, the Natural History Museum, Basel, for permitting me to examine the GEBIEN collection preserved in the museums. Appreciation is due to Mr. Seiji MORITA, Tokyo, for taking photographs inserted in this paper. Finally, my deepest thanks should be expressed to 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 in each description.

The abbreviations used herein are as follows: NSMT – National Science Museum (Nat. Hist.), Tokyo; MNHNP – Muséum National d'Histoire Naturelle, Paris; NHML – the Natural History Museum, London; NMNHP – National Museum (Nat. Hist.), Praha; MIZW – Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw; NHMB – Natural History Museum, Basel.

Strongylium bisbicostatum sp. nov.

(Figs. 1, 11–12)

Blackish brown, with dorsal surface dark green, ventral surface bluish green, mouth parts, coxae and basal 1/3 of meso- and metafemora yellow; each surface weakly, sericeously shining. Elongated fusiform, convex longitudinally, though gently flattened in middle.

Head feebly micro-shagreened, closely rugoso-punctate; clypeus transverse, bent ventrad and finely punctate in apical part, fronto-clypeal border arcuate and finely impressed; genae oblique, minutely punctate, strongly raised outwards with rounded outer margins; frons somewhat T-shaped, steeply inclined anteriad, diatone (nearest part between eyes) about 1/9 the width of transverse diameter of an eye, with a vague impression at the middle of posterior part. Eyes large, strongly convex laterad, obliquely inlaid into head and approximate to each other. Antennae filiform, ratio of the length of each segment from basal to 6th (the remaining segments lost in the holotype): 0.54, 0.2, 0.82, 0.79, 0.64, 0.61, —, —, —, —, —.

Pronotum widely hexagonal, 1.2 times as wide as long; apex sublinear, rimmed, the rim feebly becoming bolder in middle; base slightly sinuous on each side, bordered and ridged; sides steeply inclined, feebly sinuous before base, bordered from prosternum by impressions, which are vanished in basal halves; front angles rounded and hind angles angulate in dorsal view; disc gently convex, longitudinally depressed in middle, very feebly micro-shagreened, closely and coarsely punctate, the punctures often obliquely fused with one another. Scutellum sublinguiform, elevated, very feebly micro-shagreened, irregularly scattered with microscopic punctures in apical part.

Elytra elongated subcuneiform, 2.9 times as long as wide, 4.4 times the length and 1.33 times the width of pronotum; dorsum convex longitudinally, though flattened in middle; disc with rows of strong and somewhat transverse punctures, 1st and 2nd as well as 3rd and 4th distinctly united; 3rd and 5th intervals ridged, 1st, 2nd and 4th not ridged but flattened and rather zigzaged; humeri gently swollen; apices emarginate, the emargination acutely spined on each side.

Male anal sternite subelliptically depressed in apical 3/5, truncate at apex. Legs noticeably slender; male metatibiae flattened and twisted in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.32, 0.2, 0.18, 0.17, 1.2; 3.18, 1.04, 0.73, 0.49, 1.48: 4.17, 1.29, 0.73, 1.64.

Male genitalia elongated fusiform, weakly constricted at the border of basal piece and lateral lobes, 1.6 mm in length and 0.28 mm in width, feebly curved in lateral view; lateral lobes fused, 0.7 mm in length, prolonged in apical part, with acute apex.

Body length: 10–12 mm.

Holotype: ♂, "Philippines / Ch. Semper // Muséum Paris / Coll. R. Oberthür" (MNHNP). Paratypes: 3 exs., same data as for the holotype; 1 ex., "Ost Mind. // Philippines / Ch. Semper // Muséum Paris / ex. Coll. R. Oberthur"; 1 ex., "Illigan / Mindanao / Baker // 70 // *Strongylium bicostatum* GEB. (hand-writing) // Muséum Paris / Coll. M.

Pic"; 1 ex., "Philippin / Semper (hand-writing) // Paratype! // *Strongylium bisbicostatum* (hand-writing) Geb / H. Gebien det. 1939 (hand-writing) // *Strongylium bisbicostatum* Geb // Mus. Zool. Polonicum Warszawa 12/45 // *bibiscostatum* Geb. (hand-writing)" (MIZW); 1 ex., "Baker Is. (hand-writing) // *S. bisbicostatum* GEB. (hand-writing)", (NHMB).

Notes. This new species is characterized by the elongated body with the elytra distinctly punctate, ridged, and spined at apices, the slender legs and the filiform antennae, all of which can be regarded as peculiarities of a species-group.

The specific name is given after GEBIEN's unpublished one. Related species are distributed in East Asia and form the species-group of *S. bisbicostatum*.

Strongylium flavocostatum sp. nov.

(Figs. 2, 13–14)

Brownish black, with head except for eyes, pronotum, 3rd intervals and baso-external parts of elytra, coxae, and basal 1/3 to 1/2 of tibiae brownish yellow, ventral surface bearing dark bluish tinge; dorsal surface weakly shining, ventral surface moderately, somewhat alutaceously so. Elongated fusiform, convex longitudinally, though gently flattened in middle.

Head weakly micro-shagreened, closely, coarsely punctate; clypeus short, gently bent ventrad in front, semicircularly depressed in basal part, fronto-clypeal border finely impressed; genae obliquely rhombical, sparsely scattered with microscopic punctures, strongly raised outwards, with rounded outer margins; frons somewhat T-shaped, steeply inclined anteriad, areas before and between eyes rather impunctate, area between eyes triangular. Eyes large, closely approximate to each other, convex laterad, rather triangularly inlaid into head. Antennae filiform, ratio of the length of each segment from basal to 8th (the remaining segments lost in the holotype): 0.62, 0.2, 1.05, 1.07, 1.02, 0.98, 0.86, 0.84, —, —, —.

Pronotum somewhat barrel-shaped, 1.13 times as wide as long; apex sublinearly rimmed, the rim rough on the surface and becoming bolder in middle; base weakly sinuous on each side, rimmed, the rim smooth and microscopically punctate, bolder than apex in middle; sides steeply inclined laterad, weakly sinuous near base, bordered from prosternum by low ridges in apical halves, and also by vague impressions in basal halves; front angles rounded and hind angles angulate in dorsal view; disc gently convex, longitudinally depressed somewhat in an I-shape in middle, very weakly micro-shagreened, closely, coarsely punctate, the punctures often fused with one another. Scutellum triangular though the apex is not acute, rather noticeably longitudinally aciculate.

Elytra subfusiform, 2.7 times as long as wide, 4.9 times the length and 1.4 times the width of pronotum; dorsum strongly convex longitudinally, though flattened in middle; disc except for basal parts of 3rd, 5th and 7th intervals feebly micro-shagreened, with rows of strong, somewhat transverse punctures, 1st and 2nd as well as

3rd and 4th rows united with each other, respectively; 3rd interval in almost whole part, 5th in basal half and 7th in basal part ridged, the remaining parts and other intervals not ridged; humeri rather noticeably swollen; apices emarginate, the emargination acutely spined on each side.

Male anal sternite semicircularly depressed and shagreened, with truncate apex. Legs slender; male metatibiae flattened in areas around basal 2/5, with interior faces of the flattened areas setigerous; ratios of the lengths of pro-, meso- and metatarsomeres: 0.3, 0.15, 0.18, 0.17, 1.2; 2.98, 1.2, 0.83, 0.52, 1.39; 3.62, 1.32, 0.64, 1.37.

Male genitalia nearly fusiform, 1.7 mm in length and 0.4 mm in width, gently curved in lateral view, very weakly constricted between basal piece and lateral lobes; lateral lobes fused, nib-shaped, 0.8 mm in length, with rather acute apices.

Body length: 11.5–13 mm.

Holotype: ♂, "Nord Bornéo / Mont Kina Balu / 5–8 1903 / John Waterstradt // Muséum Paris / ex. Coll. / R. Oberthür" (MNHNP). Paratypes: 6 exs., same data as for the holotype; 1 ex., "Bornéo / .... (hand-writing) // 06? (hand-writing) // Muséum Paris / Coll. M. Pic"; 1 ex., "Telang, Bornéo / 10 81 (hand-writing) // Muséum Paris / ex Coll. / R. Oberthür"; 1 ex., "Bornéo // *S. flavocostatum* GEB. (hand-writing)" (NHMB).

Notes. This new species closely resembles the preceding one in principal body features, and is a member of the *bisbicostatum* group. The new species can be distinguished from *S. bisbicostatum* sp. nov. by the different coloration which is stable, less shining dorsum, more acute elytral spines, more basally depressed male anal sternite, male metatibiae flattened in areas around basal 2/5, and bolder male genitalia. The specific name is given after GEBIEN's unpublished one.

Strongylium clytoides sp. nov.

(Figs. 3, 15–16)

Dark brown, with dorsal surface feebly dark greenish, apical half of head and ventral surface bluish green to violet, coxae and basal 1/2 to 2/3 of tibiae brownish yellow, apical 1/3 to 1/2 of tibiae dark bluish to purplish; dorsal surface weakly, sericeously shining, ventral surface metallically shining. Elongated fusiform, strongly convex longitudinally, though feebly flattened in middle.

Head weakly micro-shagreened, closely rugoso-punctate; clypeus semicircular, inclined apicad, depressed in basal part, fronto-clypeal border somewhat widely U-shaped and unevenly impressed; genae obliquely raised, rather sparsely, minutely punctate, with obtuse outer margins; frons ridged in a T-shape, steeply inclined anteriad, with a vague impression at the middle near vertex. Eyes very large, strongly convex laterad, obliquely inlaid into head, distinctly approximate to each other. Antennae filiform, nearly reaching basal 2/5 of elytra, ratio of the length of each segment from basal to apical: 0.6, 0.2, 1.26, 1.22, 1.15, 1.13, 1.11, 0.96, 0.94, 0.91, 0.89.

Pronotum somewhat barrel-shaped, as wide as long, very weakly micro-shagreened; apex slightly emarginate, finely rimmed, the rim not becoming bolder in mid-

dle; base weakly sinuous on each side, boldly rimmed, the rim polished but rather sparsely scattered with minute punctures; sides steeply inclined laterad, produced in middle, gently sinuous before base, bordered from prosternum with fine impressions only in basal halves; front angles rounded and hind angles acute in dorsal view; disc gently convex, though longitudinally depressed in middle, impressed near base on each side, coarsely rugoso-punctate. Scutellum sublinguiform, elevated, weakly micro-shagreened and micro-aciculate.

Elytra elongated subcuneiform, 3.1 times as long as wide, 4.6 times the length and 1.3 times the width of pronotum; dorsum longitudinally convex though flattened in middle; disc very weakly micro-shagreened, with rows of coarse, rather transverse punctures, 1st and 2nd rows as well as 3rd and 4th united with each other, respectively; 3rd and 5th intervals ridged, and 2nd and 4th indistinct; base ridged; humeri swollen; apices emarginate, the emargination acutely spined on each side.

Male anal sternite subelliptically depressed, truncate at apex. Legs slender; male metatibiae with interior faces gouged in areas around basal 2/5, gently twisted; ratios of the lengths of pro-, meso- and metatarsomeres: 0.22, 0.15, 0.16, 0.14, 1.2; 4.18, 1.28, 0.96, 0.49, 1.3; 5.23, 1.52, 0.62, 1.47.

Male genitalia fusiform, 1.8 mm in length and 0.3 mm in width, weakly curved in lateral view; lateral lobes fused, 0.85 mm in length, with feebly prolonged apices.

Body length: 12.5 mm.

Holotype: ♂, "Sumatra (hand-writing) // Muséum Paris / Coll. L. FAIRMAIRE" (MNHNP). Paratype: 1 ex., "Palembang / Sumatra, // MUSÉUM PARIS / Coll. L. FAIRMAIRE".

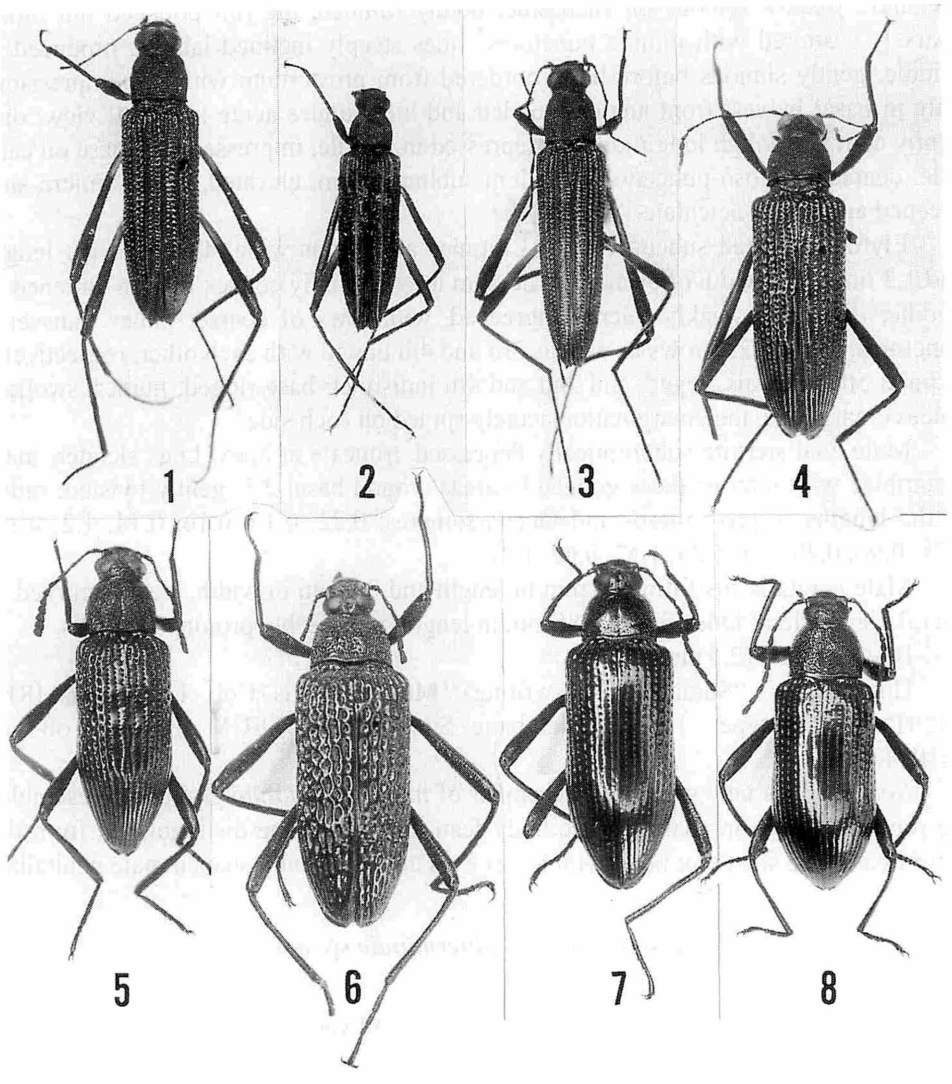
Notes. This new species is a member of the *bisbicostatum* group and resembles the preceding ones in sharing basic body features, but can be distinguished from the other two by the slenderer body with larger eyes and differently shaped male genitalia.

Strongylium palliditerminale sp. nov.

(Figs. 4, 17–18)

Blackish brown, with head, scutellum, elytra and ventral surface dark greenish to bluish, pronotum dark castaneous, terminal segments of antennae pale yellow; dorsal surface feebly sericeously shining, ventral surface moderately, somewhat alutaceously shining. Elongated fusiform, strongly convex longitudinally, though feebly flattened in middle.

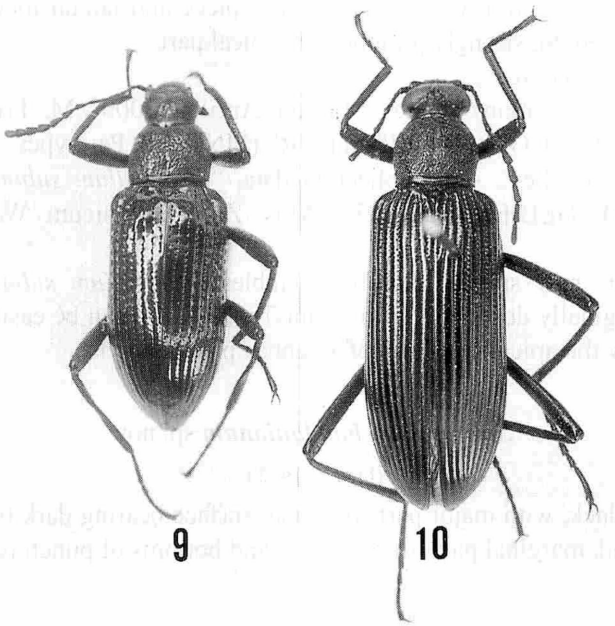
Head weakly micro-shagreened, closely punctate, the punctures often fused with one another, longitudinally impressed between posterior part of eyes; clypeus semicircular, transversely depressed near basal part, rather strongly bent ventrad in front, fronto-clypeal border arcuate and finely impressed; genae obliquely subrhombical, strongly raised outwards, with subrectangular outer margins, though the corners are rounded; frons somewhat elongated T-shaped, steeply inclined anteriad, diatone about 1/8 times the width of an eye transverse diameter. Eyes medium-sized, convex laterad,



Figs. 1–8. Habitus of *Strongylium* spp. from East Asia. —— 1, *S. bisbicostatum* sp. nov., holotype, ♂; 2, *S. flavocostatum* sp. nov., holotype, ♂; 3, *S. clytoides* sp. nov., holotype, ♂; 4, *S. palliditerminale* sp. nov., holotype, ♂; 5, *S. baudonianum* sp. nov., holotype, ♂; 6, *S. niasiinsularum* sp. nov., holotype, ♂; 7, *S. masatakai* sp. nov., holotype, ♂; 8, *S. lampros* sp. nov., holotype, ♂.

obliquely inlaid into head. Antennae filiform, reaching basal 1/4 of elytra, ratio of the length of each segment from basal to apical: 0.77, 0.2, 1.36, 1.32, 1.2, 1.17, 1.09, 0.86, 0.81, 0.69, 0.64.

Pronotum somewhat trapezoidal, slightly wider than long, weakly micro-shagreened; apex slightly emarginate, bordered and rimmed, the rim becoming bolder in



Figs. 9–10. Habitus of *Strongylium* spp. —— 9, *S. minicupreum* sp. nov., holotype, ♂; 10, *S. pinfaense* sp. nov., holotype, ♂.

middle, scattered with minute punctures; base rather noticeably sinuous on each side, bordered and rimmed, the rim becoming bolder more widely in middle than at apex; sides steeply inclined, produced laterad, feebly sinuous before base, indistinctly bordered from prosternum; front angles rounded and hind angles rather acute and projected obliquely posteriad in dorsal view; disc gently convex, longitudinally depressed in middle, closely punctate, the punctures very often fused with each other. Scutellum subcordate, convex in middle, weakly micro-shagreened, irregularly scattered with microscopic punctures.

Elytra subfusiform, 2.6 times as long as wide, 7.1 times the length and 1.5 times the width of pronotum; dorsum strongly convex, quadrisinuous in middle; disc very feebly micro-shagreened and sparsely scattered with microscopic punctures, with rows of strong punctures, whose bottoms are small and rounded, and whose upper faces are rather quadrate or hexagonal; base raised in areas between 1st to 5th rows of punctures; humeri gently swollen; apices rounded.

Male anal sternite semicircularly depressed, with truncate and feebly emarginate apex, the emargination acute on each side. Legs rather slender; male metatibiae very weakly bent in middle, with interior faces finely haired; ratios of the lengths of pro-, meso- (lost in the holotype) and metatarsomeres: 0.3, 0.2, 0.22, 0.23, 1.2; —, —, —, —, —; 2.57, 1.18, 0.69, 1.48.

Male genitalia strongly elongated fusiform, 5.3 mm in length and 0.7 mm in

width, weakly constricted at the border of basal piece and lateral lobes; lateral lobes fused, 2.3 mm in length, strongly prolonged in apical part.

Body length: 15 mm.

Holotype: ♂, "Tonkin / Montes Mauson / April 2–3000' / M. Fruhstorfer // MUSÉUM PARIS / 1952 / COLL. R. OBERTHÜR" (MNHNP). Paratypes: 1 ex., same data as for the holotype; 1 ex., same collecting data, "*Strongylium subimpressum* FRM. (hand-writing) / H. GEBIEN, det. 1938 // Mus. Zool. Polonicum / Warszawa / 12/45" (MIZP).

Notes. This new species closely resembles *Strongylium subimpressum* FAIRMAIRE, 1903, originally described from "Haut-Tonkin", but can be easily distinguished from the latter by the apical segments of antennae pale yellowish.

Strongylium baudonianum sp. nov.

(Figs. 5, 19–20)

Brownish black, with major parts of dorsal surface bearing dark bronzy tinge, anterior part of head, marginal parts of pronotum and bottoms of punctures dark blue, antennae, legs except for tarsi, and ventral surface dark blue and partly bearing purplish tinge; dorsal surface feebly sericeous, anterior half of head, bottoms of punctures on pronotum, and ventral surface gently shining, and ventral surface partly alutaceous. Rather fusiform, strongly convex longitudinally, though feebly flattened in middle.

Head irregularly impressed in middle between posterior parts of eyes; clypeus semicircular, scattered with microscopic punctures, flattened in basal part, bent ventrad in apical part, fronto-clypeal border arcuately impressed; genae oblique and subrhombical, scattered with microscopic punctures, strongly raised outwards, with obtusely angulate outer margins; frons T-shaped, weakly micro-shagreened and rather closely, coarsely punctate, diatone about 1/5 times as wide as an eye transverse diameter. Eyes rather large, convex laterad, obliquely, roundly inlaid into head. Antennae subclavate, reaching basal 1/5 of elytra, ratio of the length of each segment from basal to apical: 0.7, 0.2, 1.04, 0.78, 0.59, 0.57, 0.58, 0.55, 0.57, 0.47, 0.53.

Pronotum subquadrate, 1.7 times as wide as long; apex sublinear, bordered and rimmed, the rim becoming bolder in middle, mostly polished but sparsely scattered with minute punctures; base bordered and raised, becoming bolder in middle, sinuous on each side, scattered with minute punctures; sides steeply inclined and produced laterad, sinuous before base, completely bordered from prosternum by fine ridges, with impressions along the borders in basal 2/5; disc moderately convex, longitudinally grooved in middle, impressed at medio-basal part and close to base on each side, weakly micro-shagreened, coarsely, irregularly punctate, sparsely scattered with microscopic punctures among larger ones. Scutellum sublinguiform, elevated, weakly micro-shagreened, irregularly scattered with microscopic punctures.

Elytra subfusiform, 2.1 times as long as wide, about 4 times the length and 1.3 times the width of pronotum, very weakly micro-shagreened, frequently scattered with

microscopic punctures; dorsum strongly convex, gently flattened in middle, tri- or quadrisinuous, weakly impressed along scutellar strioles; disc punctate-grooved, the punctures in antero-lateral parts coarse and foveolate, those in antero-interior and posterior parts small, the grooves becoming clearer in posterior 2/5, 1st and 2nd grooves as well as 3rd and 4th united with each other close to base; intervals convex, widened in baso-internal part, somewhat zigzaged in antero-lateral parts, straight in posterior 2/5; base ridged in areas between 1st to 5th rows of punctures; humeri gently swollen; apices feebly bilobed and weakly angulate at each apex.

Male anal sternite feebly depressed in apico-medial part, truncate at apex. Legs rather stout; male protibiae with ventral faces gently gouged in apical halves, male metatibiae with interior faces very weakly gouged in areas around basal 2/5; ratios of the lengths of pro-, meso- and metatarsomeres: 0.28, 0.16, 0.19, 0.17, 1.2; 2.26, 0.98, 0.67, 0.52, 1.47; 2.46, 0.81, 0.59, 1.4.

Male genitalia extremely elongate, 4.2 mm in length and 0.4 mm in width, almost straight in lateral view, basal piece subelliptical with anterior part strongly narrowed; lateral lobes fused, distinctly prolonged, 1.8 mm in length, with acute apices.

Body length: 10.5 mm.

Holotype: ♂, "VII. 1963 (hand-writing) / Vientiane / LAOS – A. Baudon // ♂ // MUSÉUM PARIS / COLL. P. ARDOIN / 1978" (MNHNP).

Notes. This new species resembles *Strongylium spinitibiale* MASUMOTO, 1999, from Laos, in essential body features, but can be distinguished from the latter by the subclavate antennae, male protibiae without interior spines and differently shaped male genitalia (apical parts of lateral lobes not spatulate).

Strongylium spinitibiale MASUMOTO, 1999, *S. inspinitibiale* MASUMOTO, 1999, and this species, all distributed in Laos, form a species-group, the *spinitibiale* group.

Strongylium niasiinsularum sp. nov.

(Figs. 6, 21–23)

Blackish brown, with dark greenish or bluish tinge; dorsal surface feebly sericeously shining, prosternum weakly shining, meso- and metasterna densely clothed with hairs, abdomen somewhat alutaceous. Elongated ovate, convex medially.

Head very weakly micro-shagreened, closely punctate and partly rugulose; clypeus semicircular, rather strongly bent ventrad in apical part, fronto-clypeal border widely arcuate and impressed; genae subrectangular, gently raised, with rounded outer margins; frons boldly T-shaped, gently inclined anteriad, depressed in areas before eyes, longitudinally impressed in medio-posterior part, diatone 0.38 times the width of an eye transverse diameter. Eyes medium-sized for a member of the genus, rather strongly convex laterad, obliquely, roundly inlaid into head. Antennae feebly clavate, ratio of the length of each segment from basal to 7th: 0.53, 0.2, 0.79, 0.81, 0.76, 0.69, 0.67, —, —, —, —.

Pronotum trapezoidal, 1.33 times as wide as long, weakly micro-shagreened; apex

feebly emarginate, gently raised in a V-shape, scattered with microscopic punctures, impressed along the border; base sinuous on each side, bordered and ridged, the ridge becoming bolder in middle, scattered with small and minute punctures; sides rather steeply inclined, gently narrowed anteriad, bordered from prosternum by fine ridges; front angles rounded and hind angles subrectangular in dorsal view; disc gently convex, coarsely, irregularly punctate, the punctures often fused with one another, sparsely scattered with microscopic punctures among larger ones, longitudinally impressed in middle, also impressed at basal 2/5 and close to base on each side. Scutellum triangular, weakly micro-shagreened, punctate and aciculate.

Elytra 2.2 times as long as wide, 4 times the length and 1.4 times the width of pronotum, very weakly micro-shagreened and sparsely scattered with microscopic punctures; dorsum strongly convex, highest at basal 1/3, depressed before and behind the highest area; disc with rows of punctures, which are foveolate in antero-lateral parts, longitudinally fused with one another in antero-interior and posterior parts, 1st and 2nd rows as well as 3rd and 4th united with each other near base, 5th impressed close to base; base rather strongly raised in area between internal margin to 5th row; humeri rather noticeably swollen; apices rounded and feebly expanded apicad.

Male anal sternite (Fig. 23) noticeably emarginate and depressed, each side of emargination acutely projected postero-interiad. Male protibiae with ventral faces feebly gouged in middle, male metatibiae with interior faces slightly gouged in areas around apical 2/5; ratios of the lengths of pro-, meso- and metatarsomeres: 0.2, 0.15, 0.17, 0.16, 1.2; 1.2, 0.53, 0.49, 0.38, 1.39; 1.23, 0.59, 0.48, 1.49.

Male genitalia 2.7 mm in length and 0.5 mm in width, moderately curved near basal part in lateral view, with ovate basal piece and elongated lateral lobes; lateral lobes fused, about 1.3 mm in length, with acute apices.

Body length: 16 mm.

Holotype: ♂, "Dyma / M. Nias III/V '95 / R. MITSCHKE // St. perforatum Mäkl" (hand-writing) // Muséum Paris / Coll. M. PIC" (MNHNP). Paratype: 1 ex., "Sumatra / Nias (hand-writing) / German Mission // Fry Coll. / 1905. 100" (NHML).

Notes. This new species closely resembles *Strongylium perforatum* MÄKLIN, 1864, originally described from Java. The present species can be distinguished from the latter by the slightly elongated body with dorsal surface micro-shagreened, head and pronotum more finely and closely punctate, and differently shaped male genitalia. This new species and *Strongylium perforatum* MÄKLIN form a species-group. The members of this group are easily distinguished from other *Strongylium* species by the elongated ovate body outline, which recalls us of some erotylid species, and the elytra with rows of longitudinal foveae.

Strongylium masatakai sp. nov.

(Figs. 7, 24–25)

Piceous, with dorsal surface brassy in colour, posterior part of head, anterior part

of pronotum, and lateral parts of elytra with purplish lustre, ventral surface dark green, partly dark bluish; dorsal surface rather strongly shining and feebly sericeous, ventral surface moderately shining and feebly alutaceous. Elongated elliptical, rather strongly convex above.

Head weakly micro-shagreened, rather closely punctate, longitudinally impressed in postero-medial part; clypeus semicircular, flattened in basal part, rather strongly bent ventrad in apical part, fronto-clypeal border arcuately impressed; genae oblique and subrhombical, strongly raised outwards, with obtusely angulate outer margins; frons boldly T-shaped, gently inclined anteriad, depressed and impunctate in areas before eyes, diatone about 1/3 times the width of an eye transverse diameter. Eyes medium-sized, somewhat transversely comma-shaped, convex laterad, obliquely inlaid into head. Antennae feebly widened apicad, reaching basal 1/5 of elytra, ratio of the length of each segment from basal to apical: 0.43, 0.2, 0.81, 0.76, 0.66, 0.64, 0.63, 0.58, 0.59, 0.53, 0.57.

Pronotum subquadrate, 1.33 times as wide as long, very feebly micro-shagreened; apex nearly straight, bordered by a fine impression in a wide V-shape, microscopically punctate; base gently sinuous on each side, bordered from disc by a shallow groove and ridged, the ridge scattered with microscopic punctures; sides gradually inclined and feebly produced, finely bordered and clearly rimmed; front angles rounded and hind angles subrectangular in dorsal view; disc gently convex, rather sparsely scattered with small and minute punctures, vaguely impressed in medio-posterior part and close to base on each side. Scutellum triangular, feebly inclined basad, weakly micro-shagreened and feebly micro-aciculate, rather sparsely scattered with microscopic punctures.

Elytra elongated subelliptical, very feebly micro-shagreened, sparsely scattered with microscopic punctures; dorsum rather strongly convex, highest at basal 1/6; disc with rows of punctures, the punctures in antero-medial part being small and longitudinal, those in antero-lateral parts becoming larger and foveolate, those in posterior part smaller and striate, 1st and 2nd rows as well as 3rd and 4th united with each other, respectively, and deepened near the base, 5th also deepened and barely reaching basal margin; intervals moderately convex; base gently raised between internal margin and humerus; humeri rather noticeably swollen; apices roundly produced, gently expanded apicad.

Male anal sternite noticeably emarginate on both lower and upper faces, with each side of emargination acutely projected postero-interiad. Legs rather slender; male protibiae with intero-ventral faces feebly gouged in middle, male metatibiae with interior faces very feebly gouged and twisted in middle.

Male genitalia 2.5 mm in length and 0.4 mm in width, with ovate basal piece and strongly prolonged lateral lobes; lateral lobes fused, 1.3 mm in length, with sharply pointed apices.

Body length: 16 mm.

Holotype: ♂, Puncak, Palopo env., S. Sulawesi, Indonesia, V–1999, native collec-

tor leg. (NSMT). Paratypes, 5 exs., Puncak, Palopo, Sulawesi, Indonesia, II–2000, native collector leg.

Notes. This new species somewhat resembles *Strongylium viridicolle* MÄKLIN, 1864, originally described from "Pulo Penang", but can be distinguished from the latter by the body larger, wider, and differently colored. This species might be a relative of the *perforatum* group, because the male anal sternite is noticeably modified.

Strongylium lampros sp. nov.

(Figs. 8, 26–27)

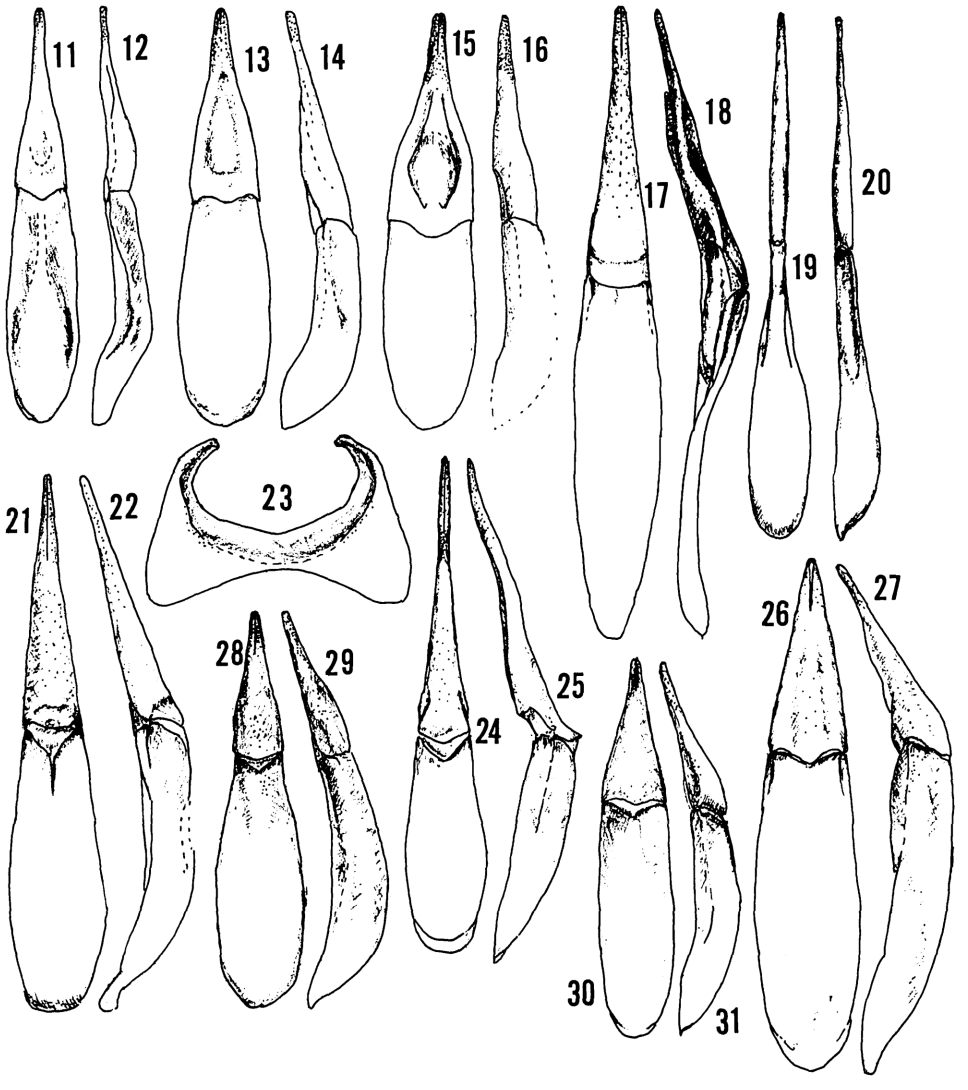
Piceous, with dorsal surface various in colour, elytra dark green, dark blue, dark violet, deep golden green, etc., head and pronotum usually darker in colour than elytra, legs dark blue, ventral surface dark greenish blue; head and pronotum weakly sericeously shining, scutellum vitreous, elytra metallically shining, ventral surface gently, somewhat alutaceously shining. Elongated elliptical, rather strongly convex longitudinally.

Head rather closely punctate; clypeus semicircular, gently inclined apicad, fronto-clypeal border impressed; genae subrectangular, rather strongly raised outwards, minutely punctate, with rounded outer margins; frons rugoso-punctate, gently inclined anteriad, impressed medially, feebly depressed in areas before eyes, diatone about 0.65 times the width of an eye diameter. Eyes medium-sized, gently convex laterad, obliquely inlaid into head. Antennae slightly becoming bolder apicad, ratio of the length of each segment from basal to apical: 0.53, 0.2, 0.68, 0.79, 0.55, 0.52, 0.49, 0.51, 0.48, 0.47, 0.52.

Pronotum trapezoidal, 1.4 times as wide as long, widest at the middle; apex nearly straight, narrower than base, clearly impressed in wide V-shape and bordered, scattered with microscopic punctures; base gently sinuous on each side, bordered and ridged, sparsely, microscopically punctate; sides steeply inclined laterad, bordered from prosternum by fine impressions and ridges; front angles rounded and hind angles weakly angulate in dorsal view; disc moderately convex, rather closely irregularly punctate, sparsely scattered with microscopic punctures, longitudinally impressed at the middle. Scutellum triangular with feebly sinuous sides, gently convex in middle, polished, sparsely scattered with microscopic punctures.

Elytra subelliptical, 1.67 times as long as wide, slightly less than 3.8 times the length and 1.7 times the width of pronotum, very sparsely scattered with microscopic punctures; dorsum rather strongly convex, highest at basal 1/4, feebly depressed in areas around scutellar strioles; disc with rows of punctures, which are grooved in posterior parts, and foveolate in antero-lateral parts, 1st and 2nd rows united with each other in basal part, 3rd and 4th not united, 5th barely reaching base; intervals gently convex except for postero-internal parts where they are almost flattened; base depressed; humeri gently swollen; apices slightly dehiscent.

Male anal sternite weakly, roundly depressed, feebly truncate at apex. Legs



Figs. 11–31. Male genitalia (11–22, 24–31) and anal sternite (23). —— 11–12, *Strongylium bisbicostatum* sp. nov., 11, dorsal view, 12, lateral view; 13–14, *S. flavocostatum* sp. nov., 13, dorsal view, 14, lateral view; 15–16, *S. clytoides* sp. nov., 15, dorsal view, 16, lateral view; 17–18, *S. palliditerminale* sp. nov., 17, dorsal view, 18, lateral view; 19–20, *S. baudonianum* sp. nov., 19, dorsal view, 20, lateral view; 21–23, *S. niasiinsularum* sp. nov., 21, dorsal view, 22, lateral view, 23, anal sternite; 24–25, *S. masatakai* sp. nov., 24, dorsal view, 25, lateral view; 26–27, *S. lampros* sp. nov., 26, dorsal view, 27, lateral view; 28–29, *S. minicupreum* sp. nov., 28, dorsal view, 29, lateral view; 30–31, *S. pinfaense* sp. nov., 30, dorsal view, 31, lateral view.

medium-sized; male metatibiae with interior faces weakly gouged in areas around basal 2/5 and feebly twisted; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.2, 0.22, 0.22, 1.2; 0.83, 0.52, 0.43, 0.39, 1.28; 0.79, 0.49, 0.38, 1.22.

Male genitalia gently elongated fusiform, rather strongly curved in lateral view, 2.6 mm in length and 0.6 mm in width, very weakly constricted between basal piece and lateral lobes; lateral lobes fused and nib-shaped, 1.1 mm in length, with rather sharp apices.

Body length: 14.5 mm.

Holotype: ♂, Coffee Plant, Sulawesi, Indonesia, 12–VI–1982, M. TAO leg. (NSMT). Paratypes: 3 exs., same data as for the holotype; 2 exs., Coffee Plant, Sulawesi, 14–VI–1982, M. TAO leg; 2 exs., Palopo, Sulawesi, 7–II–1985, M. TAO leg.; 2 exs., Puncak, Palopo, II–2000, native collector leg.; Rante Pao, "C. Celebes", 2 exs., 14–VI–1985, 2 exs., 15–II–1985, 1 ex., 5–II–1985, 1 ex., 2–VI–1984, M. TAO leg.; Toarco Jaya, Rante-Pao, C. Sulawesi, 3 exs., 2–VI–1984, 1 ex., M. TAO leg.

Notes. This new species resembles the preceding one, but can be discriminated from the latter by the smaller body with the male anal sternite not so highly modified as in *S. masatakai* sp. nov., though the male metatibiae are more noticeably modified.

Strongylium minicupreum sp. nov.

(Figs. 9, 28–29)

Piceous, with anterior part of head, major part of ventral surface, tibiae and femora dark blue, posterior part of head, pronotum, scutellum and major medial parts of elytra dark golden green, lateral parts of elytra dark greenish blue; head, pronotum, scutellum and legs weakly, sericeously shining, elytra metallically shining, ventral surface rather alutaceously so. Oblong-ovate, strongly convex above, rather hunchbacked.

Head micro-shagreened, closely punctate, microscopically haired; clypeus semicircular, gently inclined apicad, transversely impressed near fronto-clypeal border, which is arcuately impressed; genae obliquely raised outwards, with rounded outer margins; frons somewhat boldly T-shaped, impunctate in postero-medial part, diatone 1/7 times the width of an eye transverse diameter. Eyes rather large, noticeably convex laterad, obliquely inlaid into head and roundly approximate to each other. Antennae subclavate, reaching basal 1/5 of elytra, ratio of the length of each segment from basal to apical: 0.53, 0.2, 0.96, 0.66, 0.59, 0.57, 0.53, 0.48, 0.38, 0.34, 0.41.

Pronotum subquadrate, about 1.5 times as wide as long, widest at the middle, weakly micro-shagreened; apex very feebly emarginate, clearly bordered and widely triangularly raised, finely scattered with microscopic punctures; base feebly sinuous on each side, clearly bordered and ridged, the ridge scattered with microscopic punctures and feebly becoming bolder in middle; sides steeply inclined laterad, bordered from prosternum by fine ridges; front angles rounded and hind angles subrectangular in dorsal view; disc gently convex, weakly micro-shagreened, rather closely, irregularly punctate, weakly impressed in medial part, with a longitudinal impunctate area in basal

2/5. Scutellum sublinguiform, elevated, weakly micro-shagreened, scattered with microscopic punctures, sparsely micro-aciculate.

Elytra somewhat widely cuneiform, 2.5 times as long as wide, 3.9 times the length and 1.3 times the width of pronotum, very slightly micro-shagreened, sparsely scattered with microscopic punctures; dorsum strongly convex, highest at basal 1/3, with a pair of gibbosities at basal 1/6, with area between them depressed; disc with rows of punctures, which are slightly longitudinal and often striate, those in antero-lateral parts becoming larger and somewhat foveolate, those in posterior parts becoming smaller and rather ..rongly striate, 1st and 2nd rows as well as 3rd and 4th united with each other near base, 5th row impressed near base and reaching base; intervals convex in major parts, almost flat in antero-internal part; base gently sinuous and weakly raised between interior margin to 5th row; humeri rather distinctly swollen; apices feebly produced and slightly dehiscent.

Male anal sternite subelliptically, strongly depressed, truncate and feebly emarginate at apex. Legs medium-sized; male protibiae with ventral faces weakly gouged in areas around apical 2/5, male metatibiae flattened, twisted in the middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.27, 0.19, 0.21, 0.2, 1.2; 1.5, 0.68, 0.61, 0.39, 1.38; 1.33, 0.58, 0.37, 1.36.

Male genitalia elongated fusiform, 2.2 mm in length and 0.3 mm in width, moderately curved in lateral view, feebly constricted at the border of basal and apical parts; lateral lobes fused, nib-shaped, 0.72 mm in length, with acute apices.

Body length: 11.5 mm.

Holotype: ♂, Puncak, Palopo env., S. Sulawesi, Indonesia, V–1999, native collector leg. (NSMT). Paratypes: 9 exs., same data as for the holotype; 5 exs., Puncak, Palopo, Sulawesi, II–2000, native collector leg.

Notes. This new species is a member of the *gravidum* group for the reason of basic body characters, but can be distinguished from other members by the peculiar body coloration and shape of male genitalia.

Strongylium pinfaense sp. nov.

(Figs. 10, 30–31)

Piceous, with medial parts of elytra and abdomen often lighter in colour; head, pronotum and major part of scutellum weakly, somewhat sericeously shining, elytra, metasternum, abdomen, femora and tibiae moderately shining, other parts mostly not shining. Elongate and subparallel-sided, convex longitudinally.

Head micro-shagreened and closely punctate in major part; clypeus semicircular, gently inclined apicad, weakly bent ventrad in short apical part, fronto-clypeal border of somewhat wide U-shape, hardly impressed; genae strongly raised outwards, minutely punctate, with rounded and rather smooth outer margins; frons T-shaped, steeply inclined in front, weakly depressed in areas before eyes, interocular space narrow and gently ridged, longitudinally impressed between posterior parts of eyes. Eyes

large, strongly convex laterad, broadly inlaid into head, roundly approximate to each other. Antennae rather filiform, only feebly thickened to the apex of each segment, ratio of the length of each segment from basal to apical: 0.52, 0.2, 0.96, 0.89, 0.78, 0.82, 0.77, 0.79, 0.74, 0.72, 0.82.

Pronotum subquadrate, 1.13 times as wide as long, widest at the middle, very feebly micro-shagreened; apex weakly produced, rimmed, the rim rather frequently, microscopically punctate; base gently sinuous on each side, boldly raised, sparsely punctate in anterior half and frequently so in posterior half; sides steeply inclined and produced laterad, gently sinuous before base, bordered from prosternum by fine ridge and impressions; front angles rounded and hind angles subrectangular in dorsal view; disc moderately convex, closely punctate, the punctures sometimes united with one another, impunctate along midline. Scutellum triangular with rounded sides, slightly concave in middle, micro-shagreened, rather closely scattered with microscopic punctures, which are often striate.

Elytra subcylindrical, 2.3 times as long as wide, 4.4 times the length and 1.6 times the width of pronotum; dorsum strongly convex longitudinally; disc punctato-striate, the punctures round and not so large in antero-interior parts, those in antero-lateral parts becoming larger and transversely impressed on each upper face, and those in posterior parts almost diminished; intervals rather strongly convex, weakly micro-shagreened, rather transversely micro-reticulate, rather frequently scattered with microscopic punctures; base produced on each side, gently elevated between interior margin to 5th stria; humeri gently swollen; apices moderately rounded.

Male anal sternite slightly, semicircularly depressed in apical part, with apex not truncate. Legs slender; male metatibiae with interior faces weakly gouged and finely haired in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.33, 0.24, 0.23, 0.26, 1.22; 1.48, 0.72, 0.63, 0.59, 1.57; 1.84, 0.78, 0.68, 1.55.

Male genitalia elongated fusiform, 3 mm in length and 0.6 mm in width, gently curved in lateral view; lateral lobes fused, rather nib-shaped, 1.1 mm in length, with acute apices.

Body length: 16–21 mm.

Holotype: ♂, "MUSÉUM PARIS / KOUY-TCHÉOU / RÉG. DE PIN-FA / PÈRE CAVALERIE 1908" (MNHNP). Paratypes: 1 ex., same data as for the holotype; 1 ex., "China Kwei-tschou // MUSÉUM PARIS 1952 COLL. R. OBERTHÜR".

Notes. This new species resembles *Strongylium atricolor* PIC, 1922, originally described from Tonkin, but can be distinguished from the latter by the dorsal surface more noticeably micro-shagreened and the pronotum more closely punctate. This species also resembles *Strongylium yunnanicum* MASUMOTO, 1999, but can be differentiated from the latter by the head and pronotum with punctures not rugulose.

要　　約

益本仁雄：アジア産ナガキマワリ族(Strongyliini)の研究．X．東南アジア産ナガキマワリ属

(*Strongylium*)の10新種. —— アジア産ナガキマワリ族(Strongyliini)の研究の第10回として，東南アジア産のナガキマワリ属(*Strongylium*)の新種を10種記載した．それらは，*Strongylium bisbicostatum* sp. nov.，*S. flavocostatum* sp. nov.，*S. clytoides* sp. nov.（以上3種は*bisbicostatum*種群），*S. palliditerminale* sp. nov.（*S. subimpressum* FAIRMAIREに近い種だが種群未定），*S. baudonianum* sp. nov.（*spinitibiale*種群），*S. niasiinsularum* sp. nov.，*S. masatakai* sp. nov.（以上2種は*perforatum*種群），*S. lampros* sp. nov.（前種にやや似るが種群は異なる．種群未定），*S. minicupreum* sp. nov.（*gravidum*種群），*S. pinfaense* sp. nov.（*S. atricolor* PICに近い種だが*carbonarium*種群）である．

Reference (Additional)

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Elytra, Tokyo, **28** (2): 407–408, November 15, 2000

A New *Ponerotrogus* (Coleoptera, Scarabaeidae, Alloscelini) from Sri Lanka

Yuka UTSUNOMIYA[1] and Kimio MASUMOTO[2]

[1] Graduate School of Home Economics, Otsuma Women's University, Tokyo, 102–8357 Japan
[2] Institute of Human Living Sciences, Otsuma Women's University, Tokyo, 102–8357 Japan

On the occasion of visiting Prague in March 1998, the authors received a scarabaeid specimen from Dr. David KRÁL of Charles University for taxonomic study. After a careful examination, they have concluded that this is a new species of the genus *Ponerotrogus*, which will be described below.

Ponerotrogus krali sp. nov.

(Fig. 1)

Body hemispherical; brownish black, with dorsal surface except for apical margin of head almost black, apical margin of head, mouth parts, antennae and legs lighter in colour; dorsal surface moderately shining, ventral surface feebly alutaceous.

Head feebly convex in medio-posterior part, scattered with small punctures near apex; apical margin noticeably emarginate at the middle, sinuous near the borders of genae and clypeus, each side of the emargination strongly projected apicad; genae before eyes subangulate laterad. Pronotum rather wide; apex gently produced anteriad; base widely rounded though very slightly

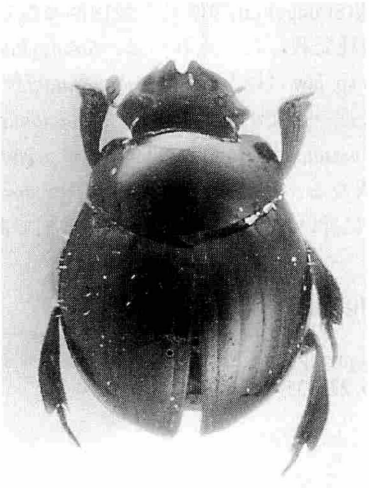

Fig. 1. Habitus of *Ponerotrogus krali* sp. nov., holotype, ♀. (Photo by M. KIKUCHI.)

angulate at the middle; front angles rounded and hind angles obtusely angulate in dorsal view; disc very sparsely scattered with microscopic punctures, with a weak depression in medio-basal part, whose anterior limit is arcuate on each side.

Elytra finely punctato-striate, the punctures in striae small and rather closely set; intervals feebly convex, weakly microsculptured, very sparsely scattered with small setigerous punctures in lateral and posterior parts. Pygidium subrhombical, feebly micro-shagreened, sparsely scattered with small punctures.

Fore and middle femora visible from above (one of the characteristics of the genus); fore tibia widened apicad, roundly produced at the extremity, bluntly projected at outer angle, shallowly emarginate behind the projection, with outer margin feebly produced; middle tibia widened apicad, widest at apical 1/3, triangularly incised at the extremity, with outer angle roundly produced; hind tibia widened apicad, widest in apical 2/5, with the extremity triangularly incised.

Body length: 3.3 mm.

Holotype: ♀, Kanoy (at light), Sri Lanka, IV–1975 (National Museum (Nat. Hist.), Prague).

Notes. This new species can be differentiated from *Ponerotrogus ceylonicus* BALTHASAR, 1972, originally described from "Kantalai, Ceylon", by the genae subangulate, the pronotum with a depression in the medio-basal part, the elytra with the 3rd and 4th striae not shortened in the anterior part, and the fore tibia with only a terminal tooth.

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——— 1972. Neue Arten der Scarabaeidae und Aphodiidae von Ceylon. *Mitt. schweiz. ent. Ges.*, **45**: 117–122.

Elytra, *Tokyo*, **28** (2): 409–417, November 15, 2000

Distribution of Donaciinae (Coleoptera, Chrysomelidae) in and around Niigata Prefecture, Central Japan

Masakazu HAYASHI[1)]

Graduate School of Science and Technology, Niigata University,
Ikarashi 2–8050, Niigata, 950–2181 Japan

Abstract Eleven species of the chrysomelid subfamily Donaciinae were recorded from Niigata Prefecture: *Plateumaris sericea* (LINNAEUS), *Plateumaris constricticollis* (JACOBY), *Donacia bicoloricornis* CHEN, *Donacia clavareaui* JACOBSON, *Donacia nitidior* (NAKANE), *Donacia hiurai* KIMOTO, *Donacia japana* CHÛJÔ et GOECKE, *Donacia vulgaris* ZSCHACH, *Donacia ozensis* NAKANE, *Donacia lenzi* SCHÖNFELD, and *Donacia provostii* FAIRMAIRE. Of these, *P. sericea*, *D. nitidior* and *D. provostii* are distributed in Sado Island. It is possible that *Donacia sparganii gracilipes* JACOBY is distributed in the high altitude area of Niigata Prefecture.

The chrysomelid subfamily Donaciinae includes about 20 Japanese species. Of these, nine species have been recorded in Niigata Prefecture (*e.g.*, OHNO, 1968; BABA, 1972; Fossil Insect Research Group for Nojiri-ko Excavation, 1980, 1985; INAIZUMI, 1987). From 1991 to 1999, I surveyed distribution of Donaciinae in and around Niigata Prefecture (Figs. 1, 2), and also examined specimens deposited in the National Science Museum, Tokyo [NSMT] and the Osaka Museum of Natural History [OMNH]. I recognized 12 species in total. Their distribution in the surveyed area are as shown in Figs. 2–8.

I gratefully acknowledge my indebtedness to Dr. Shûhei NOMURA (National Science Museum, Tokyo), Messrs. Koujiro KATSURA (Osaka City) and Shigehiko SHIYAKE (Osaka Museum of Natural History) for allowing access to the referred materials. I also gratefully thank Messrs. Tsuyoshi YAGI (Museum of Nature and Human Activities, Hyôgo), Daisuke IWAI (Ustunomiya University), and Dr. Tatsuya SAKUMOTO (Niigata University) for supporting my field survey.

Plateumaris sericea (LINNAEUS)

New records. [Niigata Pref.] 36♂, 41♀, Sankyôno-ike, Masaragawa, Ryôtsu City (Sado Is.), alt. 290 m, 14–VI–1987, K. KATSURA leg. (pers. comm. from Koujiro KATSURA, 1999); 3♂, 1♀, Miomote, Asahi-mura, 180 m, 2–VI–1994, M. HAYASHI leg.;

1) Present address: 767–45–101, Ôhara, Sanda, 669–1515 Japan.

10♂, 6♀, Kamagui, Asahi-mura, alt. 70 m, 31–V–1996, M. HAYASHI leg.; 3♂, 4♀, Ookurita, Asahi-mura, alt. 150 m, 31–V–1996, M. HAYASHI leg.; 4♂, 6♀, Shimono, Asahi-mura, alt. 50 m, 31–V–1996, M. HAYASHI leg.; 1♀, Sakamizu-gawa, Ooide, Nakajô-machi, alt. 5 m, 29–V–1998, M. HAYASHI leg.; 2♂, Kotsunagi, Tochio City, alt. 100 m, 12–V–1996, M. HAYASHI leg.; 4♂, 6♀, Tajima-tôge, Oguni-machi, alt. 150 m, 9–VI–1996, M. HAYASHI leg.; 1♀, Okanomachi, Takayanagi-machi, alt. 120 m, 13–VI–1996, M. HAYASHI leg.; 6♂, 2♀, Jimichi, Irihirose-mura, alt. 350 m, 12–VI–1993, M. HAYASHI leg.; 2♂, 1♀, Uchigamaki, Ojiya City, alt. 90 m, 8–V–1999, M. HAYASHI leg.; 3♂, Tsuike, Tôkamachi City, alt. 250 m, 8–V–1999, M. HAYASHI leg.; 9♂, 4♀, Takinosawa, Hakka, Tôkamachi City, alt. 300 m, 14–V–1999, M. HAYASHI leg.; 7♂, 3♀, Futatsuya, Tôkamachi City, alt. 300 m, 18–V–1999, M. HAYASHI leg.; 2♂, 4♀, Tatsuno, Itakura-machi, alt. 250 m, 28–V–1999, M. HAYASHI leg.

Records in Niigata Pref. Aikawa-machi (Sado Is.); Hatano-machi (Sado Is.); Asahi-mura; Sekikawa-mura; Kurokawa-mura; Irihirose-mura; Yunotani-mura; Nagaoka City; Kashiwazaki City; Myôkôkôgen-machi; Myôkô-mura; Itoigawa City: OHNO (1968), BABA (1972), Fossil Insect Research Group for Nojiri-ko Excavation (1980, 1985), INAIZUMI (1987), TAKAHASHI (1989), TAKAHASHI & TAKAKUWA (1993), YAMAYA (1996), and this report.

Remarks. This species is widely distributed in the surveyed area (Fig. 3). Its vertical distribution ranges from about 5 to 2,000 m in altitude.

Host plants. *Carex* sp.

Plateumaris constricticollis (JACOBY)

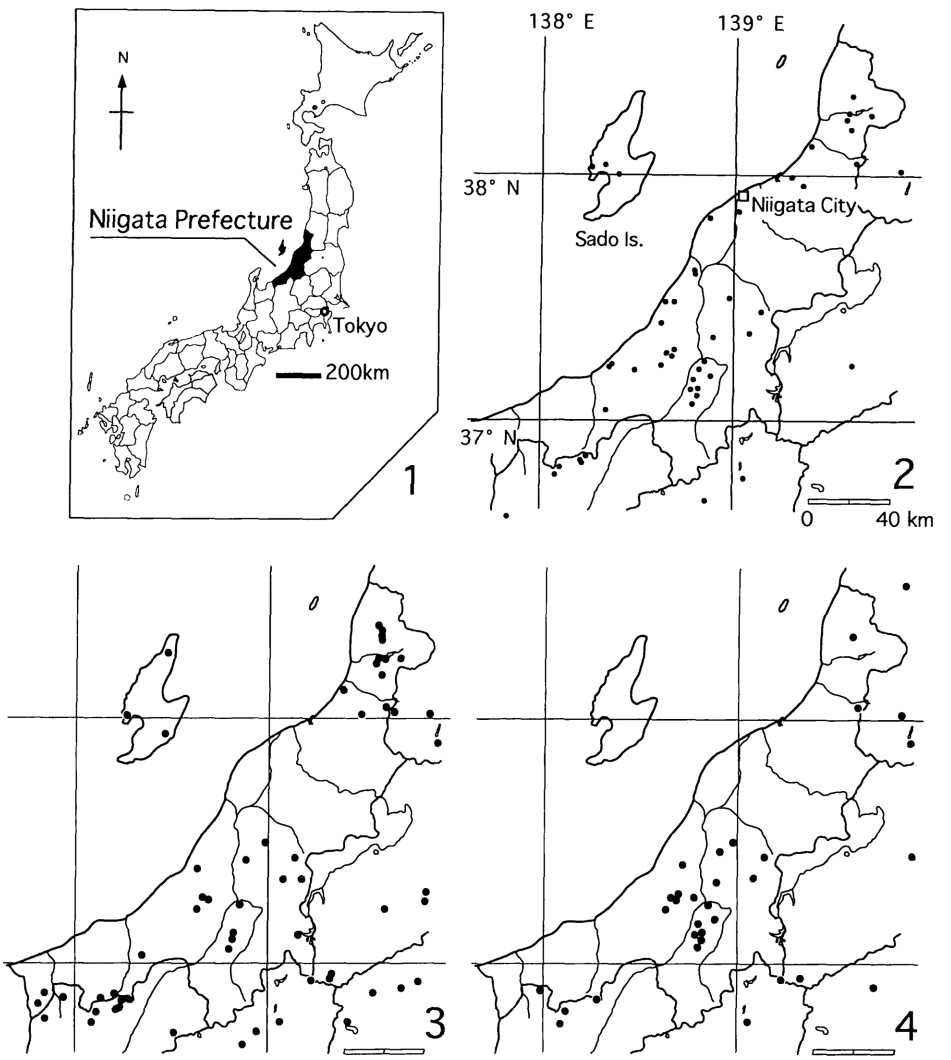
New records. [Niigata Pref.] 23♂, 12♀, Asôda-machi, Nagaoka City, alt. 50 m, 13–V–1999, M. HAYASHI leg.; 16♂, 18♀, Uchigamaki, Ojiya City, alt. 90 m, 8–V–1999, M. HAYASHI leg.; 1♂, Tsuike, Tôkamachi City, alt. 250 m, 8–V–1999, M. HAYASHI leg.; 5♂, 2♀, Takinosawa, Hakka, Tôkamachi City, alt. 300 m, 14–V–1999, M. HAYASHI leg.; 3♂, 2♀, Futatsuya, Tôkamachi City, alt. 300 m, 18–V–1999, M. HAYASHI leg.; 1♂, 2♀, Tsujimata, Yamato-machi, alt. 210 m, 26–V–1999, M. HAYASHI leg.

Records in Niigata Pref. Asahi-mura; Sekikawa-mura; Kurokawa-mura; Shitada-mura; Tochio City; Yamakoshi-mura; Irihirose-mura; Nagaoka City, Ojiya City; Takayanagi-machi; Oguni-machi; Tôkamachi City: CHÛJÔ (1959), BABA (1972), Fossil Insect Research Group for Nojiri-ko Excavation (1985), INAIZUMI (1987); TAKAHASHI & TAKAKUWA (1993), HAYASHI (1997), and this report.

Remarks. This species is commonly found in Chûetsu district (Fig. 4). Its vertical distribution ranges from about 50 to 1,250 m in altitude.

Donacia* (*Donaciomima*) *bicoloricornis CHEN

New records. [Niigata Pref.] 1♂, 1♀, Iizuka, Kashiwazaki City, alt. 15 m,



Figs. 1–4. —— 1. Index map of the studied area. —— 2. Investigated sites in the studied area. —— 3–4. Distribution: 3, *Plateumaris sericea*; 4, *Plateumaris constricticollis*.

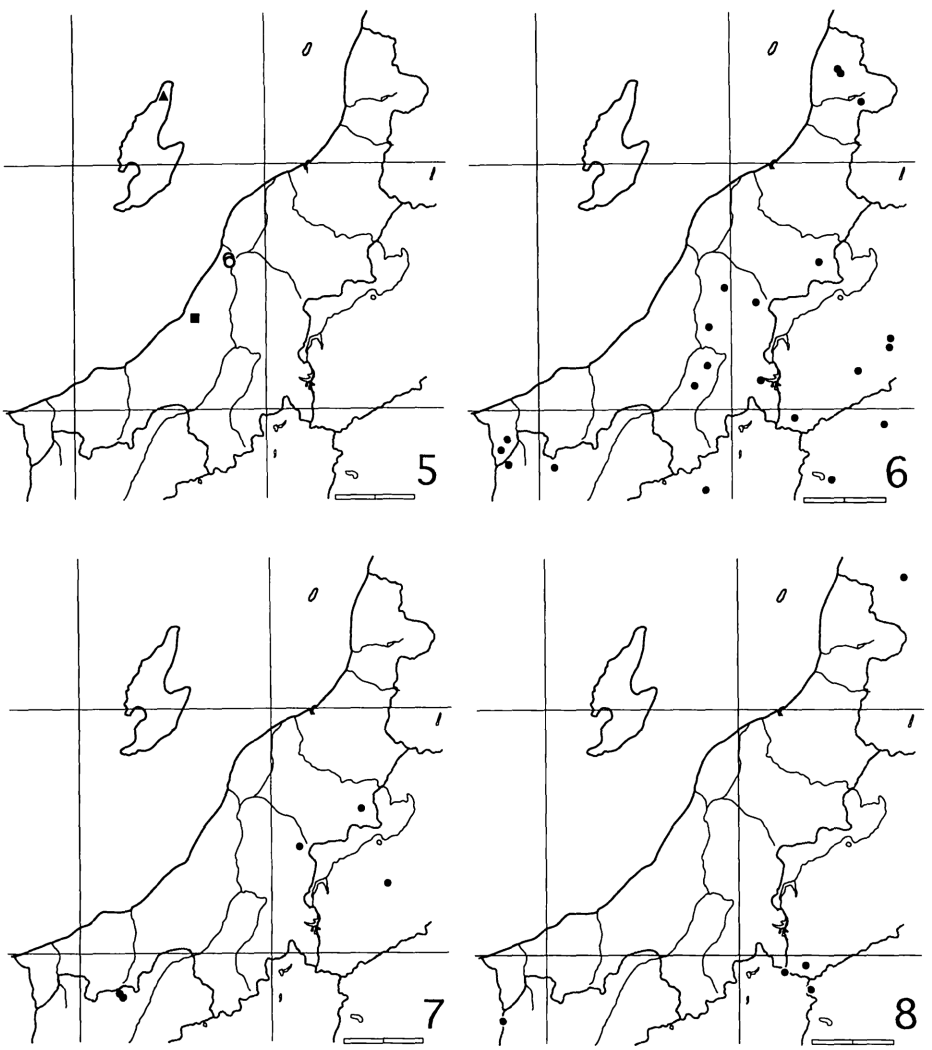
1–VI–1991, M. HAYASHI leg.

Specimens examined. 1♂, 1♀, Sochi, Kashiwazaki City, Niigata Pref., alt. 15m, 1–VI–1991, M. HAYASHI leg.

Records in Niigata Pref. Kashiwazaki City: INAIZUMI (1987).

Remarks. This species is known only from Kashiwazaki City (Fig. 5: ■).

Host plant. *Typha latifolia*.



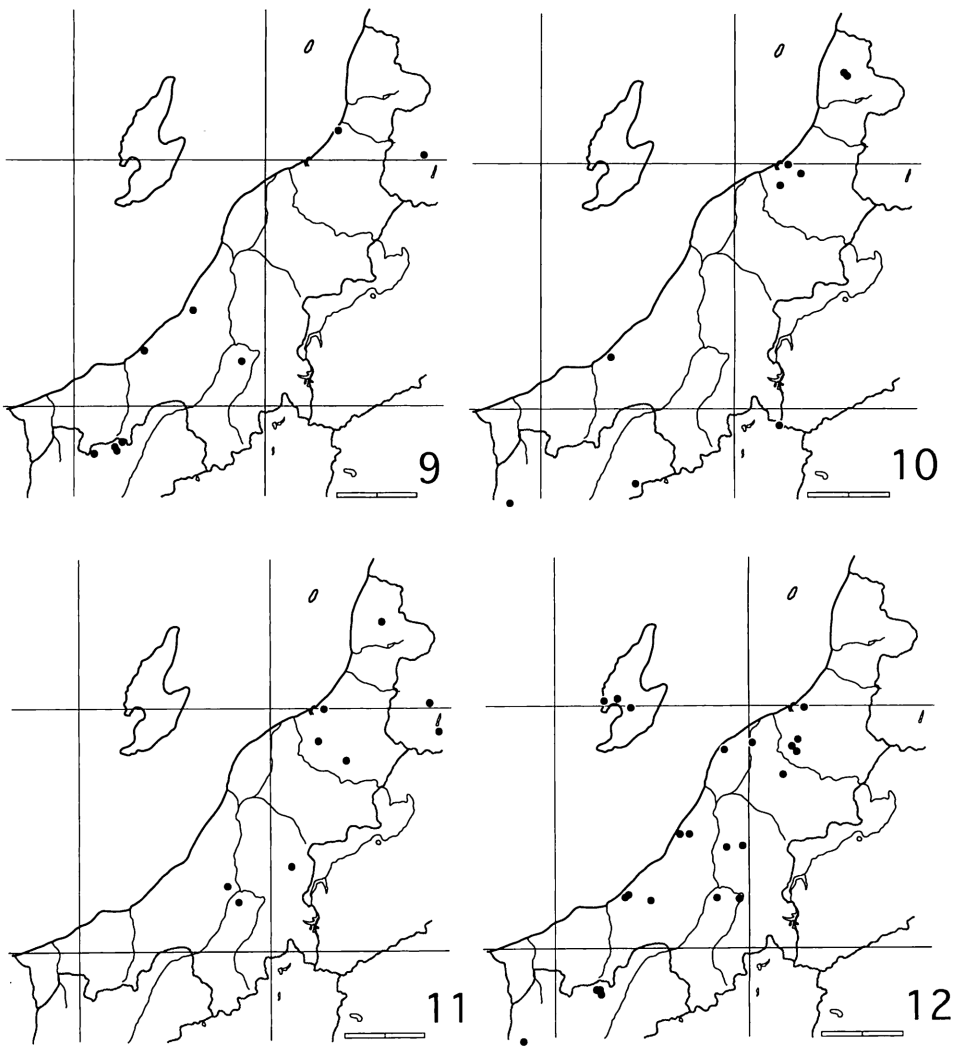
Figs. 5–8. —— Distribution: 5, *Donacia bicoloricornis* (■), *Donacia clavareaui* (○), and *Donacia nitidior* (▲); 6, *Donacia hiurai*; 7, *Donacia japana*; 8, *Donacia sparganii gracilipes*.

Donacia* (*Donaciomima*) *clavareaui JACOBSON

New records. [Niigata Pref.] 13♂, 13♀, Motomegusa, Teradomari-machi, alt. 30 m, 16–V–1998, M. HAYASHI leg.; 1♂, 1♀, Irikarui, Teradomari-machi, alt. 20 m, 16–V–1998, M. HAYASHI leg.

Remarks. This species is known only from Teradomari-machi (Fig. 5: ○).

Host plant. *Bolboschoenus fluviatilis* subsp. *Yagara*.



Figs. 9–12. Distribution: 9, *Donacia vulgaris*; 10, *Donacia ozensis*; 11, *Donacia lenzi*; 12, *Donacia provostii*.

Donacia* (*Donaciomima*) *nitidior (NAKANE)

New records. [Niigata Pref.] 1♂, Sankyôno-ike, Masaragawa, Ryôtsu City (Sado Is.), alt. 290 m, 14–VI–1987, H. OKUNO leg. (pers. comm. from Koujiro KATSURA, 1999).

Remarks. This species has been known only from Ryôtsu City (Fig. 5: ▲).

Donacia (*Donaciomima*) *hiurai* KIMOTO

New records. [Niigata Pref.] 1♂, 1♀, Miomote, Asahi-mura, alt. 180 m, 2–VI–1994, M. HAYASHI leg.; 3♂, 2♀, Kotsunagi, Tochio City, alt. 100 m, 12–V–1996, M. HAYASHI leg.; 1♂, Tsujimata, Yamato-machi, alt. 210 m, 26–V–1999, M. HAYASHI leg.; 2♂, Takinosawa, Hakka, Tôkamachi City, alt. 300 m, 14–V–1999, M. HAYASHI leg. [Gunma Pref.] 9♂, 5♀, Koike-numa, Niiharu-mura, alt. 780 m, 31–V–1992, M. HAYASHI leg.

Specimens examined. 1♂ [Holotype], Ginzandaira, Niigata Pref., 27–VI–1970, I. HIURA leg. [OMNH].

Records in Niigata Pref. Asahi-mura; Kurokawa-mura; Kamikawa-mura; Shitada-mura; Tochio City; Tôkamachi City; Yamato-machi; Yunotani-mura; Itoigawa City: BABA (1972), KIMOTO (1983), Fossil Insect Research Group for Nojiri-ko Excavation (1985), TAKAHASHI & TAKAKUWA (1993), and this report.

Remarks. This species is distributed on the hills and in mountainous districts (Fig. 6). Its vertical distribution ranges from about 100 to 1,900 m in altitude.

Host plant. *Carex* sp.

Donacia (*Donaciomima*) *japana* CHÛJÔ et GOECKE

New records. [Fukushima Pref.] 1♂, 1♀, Yanohara, Shôwa-mura, 12–VII–1992, M. HAYASHI leg.

Specimens examined. 9♂, 1♀, Kurokawa, Echigo (=Niigata Pref.), 7–V–1958, K. BABA leg. [OMNH].

Records in Niigata Pref. Kurokawa-mura; Kamikawa-mura; Shitada-mura: BABA (1972), Fossil Insect Research Group for Nojiri-ko Excavation (1985).

Remarks. This species has been known only from several localities (Fig. 7).

Host plant. *Sparganium* sp.

Donacia (*Donaciomima*) *sparganii gracilipes* JACOBY

Specimens examined. 2♂, Ozegahara, Gunma Pref., 28~31–VIII–1978, T. YAMASAKI leg. [NSMT]; 1♂, 1♀, Jûbee-ike, Hinoemata, S. Aizu, Fukushima Pref., alt. 1,490 m, 11~12–VIII–1986, M. TOMOKUNI leg. [NSMT].

Remarks. This species has been known from high altitude areas of Yamagata, Fukushima, Tochigi, Gunma and Nagano Prefectures (NAKANE, 1954; Fossil Insect Research Group for Nojiri-ko Excavation, 1985; Fig. 8). Its vertical distribution ranges from about 700 to 2,200 m in altitude. It is possible that the species is distributed in the high places of Niigata Prefecture.

Donacia (*Donaciomima*) *vulgaris* ZSCHACH

New records. [Niigata Pref.] 1♀, Sakamizu-gawa, Oide, Nakajô-machi, alt. 5 m,

29–V–1998, M. HAYASHI leg.; 6♂, 4♀, Tsujimata, Yamato-machi, alt. 210 m, 26–V–1999, M. HAYASHI leg.; 1♂, Asahi-ike, Ogata-machi, alt. 10 m, 30–V–1999, M. HAYASHI leg.; [Yamagata Pref.] 3♂, Koyasawa, Kawanishi-machi, alt. 340 m, 4–X–1998, M. HAYASHI leg.

Records in Niigata Pref. Nakajô-machi; Kashiwazaki City; Ogata-machi; Yamato-machi: INAIZUMI (1987) and this report.

Remarks. This species is widely distributed in the surveyed area but is known only from several localities (Fig. 9). Its vertical distribution ranges from about 5 to 1,200 m in altitude.

Host plants. *Sparganium* sp., *Typha latifolia*.

Donacia* (*Donacia*) *ozensis NAKANE

New records. [Niigata Pref.] 4♂, 3♀, Masugata, Ijimino, Shibata City, alt. 20 m, 27–V–1998, M. HAYASHI leg.; 1♂, 1♀, Kiyogata, Futatsuyama, Shiunji-machi, alt. 10 m, 18–VI–1998, M. HAYASHI leg., 11♂, 13♀, 19–VII–1998, M. HAYASHI leg., 8♂, 6♀, 25–IX–1999, M. HAYASHI leg.

Specimens examined. 1♂, 1♀, Ozegahara, Gunma Pref., 8–VIII–1950, S. UÉNO leg. [NSMT]; 5♂, 5♀, Shiga-kôgen, Nagano Pref., 5–VIII–1978, M. SATÔ leg. [NSMT].

Records in Niigata Pref. Asahi-mura; Shibata City; Toyosaka City; Shiunji-machi; Ogata-machi: Fossil Insect Research Group for Nojiri-ko Excavation (1981, 1985) and this report.

Remarks. This species is widely distributed in the surveyed area but is known only from several localities (Fig. 10). Its vertical distribution ranges from about 10 to 1400 m in altitude.

Host plant. *Nuphar japonicum*.

Donacia* (*Cyphogaster*) *lenzi SCHÖNFELD

New records. [Niigata Pref.] 1♂, 1♀, Kiyogata, Futatsuyama, Shiunji-machi, alt. 10 m, 25–IX–1999, M. HAYASHI leg.; 13♂, 7♀, Kagamiga-ike, Ikenodaira, Ojiya City, alt. 300 m, 23–IX–1999, M. HAYASHI leg.

Records in Niigata Pref. Asahi-mura; Shiunji-machi; Sasakami-mura; Mikawa-machi; Irihirose-mura; Ojiya City: Fossil Insect Research Group for Nojiri-ko Excavation (1981, 1985) and this report.

Remarks. This species is widely distributed in the surveyed area but is only known from several localities (Fig. 11). Its vertical distribution ranges from about 15 to 900 m in altitude.

Host plant. *Brasenia schreberi*.

Donacia (*Cyphogaster*) *provostii* FAIRMAIRE

New records. [Niigata Pref.] 5♂, 7♀, Ooura, Aikawa-machi (Sado Is.), alt. 25 m, 8–VIII–1999, M. HAYASHI leg.; 1♀, Higashi-hirashimizu, Kanai-machi (Sado Is.), alt. 55 m, 8–VIII–1999, M. HAYASHI leg.; 9♂, 5♀, Hatano, Hatano-machi (Sado Is.), alt. 20 m, 7–VIII–1999, M. HAYASHI leg.; 2♀, Kiyogata, Futatsuyama, Shiunji-machi, alt. 10 m, 18–VI–1998, M. HAYASHI leg., 9♂, 4♀, 19–VII–1998, M. HAYASHI leg., 2♂, 1♀, 25–IX–1999, M. HAYASHI leg.; 1♂, 2♀, Oodori-gawa, Shirone City, alt. 2 m, 18–VII–1998, M. HAYASHI leg.; 4♂, 5♀, Sakata, Akatsuka, Niigata City, alt. 5 m, 10–VII–1998, M. HAYASHI leg., 1♂, 2♀, 18–VII–1998, M. HAYASHI leg.; 1♂, Ushirodani, Nishiyama-machi, alt. 50 m, 7–VII–1996, M. HAYASHI leg.; 1♂, Hamatsuda, Nishiyama-machi, alt. 10 m, 7–VI–1998, M. HAYASHI leg.; 1♀, Kagamiga-ike, Ikenodaira, Ojiya City, alt. 300 m, 23–IX–1999, M. HAYASHI leg.; 3♂, 5♀, Tsubono, Yoshikawa-machi, alt. 200 m, 12–VII–1998, M. HAYASHI leg.

Specimens examined. 1♀, Nagaoka, Niigata Pref., 8–VIII–1937, A. NOHIRA leg. [NSMT]; 12♂, 5♀, Hasu-ike, Jinnoue, Muramatsu-machi, Niigata Pref., 14–VIII–1986, Y. MIYATAKE leg. [OMNH].

Records in Niigata Pref. Aikawa-machi (Sado Is.); Kanai-machi (Sado Is.); Hatano-machi (Sado Is.); Asahi-mura; Kurokawa-mura; Suibara-machi; Shiunji-machi; Niigata City; Shirone City; Muramatsu-machi; Tochio City; Koide-machi; Nishiyama-machi; Ogata-machi; Yoshikawa-machi; Nagaoka City; Ojiya City: OHNO (1968), BABA (1972), Fossil Insect Research Group for Nojiri-ko Excavation (1981, 1985), YAMAYA (1996), and this report.

Remarks. This species is widely distributed in the surveyed area (Fig. 12). Its vertical distribution ranges from about 5 to 800 m in altitude.

Host plants. *Potamogeton* sp., *Brasenia schreberi*, *Nelumbo nucifera*, *Trapa japonica*.

要　　約

林　成多：新潟県および周辺地域におけるネクイハムシ亜科（甲虫目ハムシ科）の分布記録．—— 1991年から1999年までの野外調査と，国立科学博物館・大阪市立自然史博物館の収蔵標本の検討結果，および文献記録に基づき，新潟県および周辺地域におけるネクイハムシ亜科の分布記録についてまとめた．その結果，新潟県下には11種が分布しており，それらのうちの3種が佐渡にも分布することが明らかになった．また，これらの種の多くの新産地を確認したので，本報告では従来の記録も含めて分布図を作成した．なお，アシボソネクイハムシ *Donacia sparganii gracilipes* は新潟県下での分布を確認できなかったが，隣接県での分布状況から高標高地に生息している可能性が高い．

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Elytra, Tokyo, **28** (2): 417–418, November 15, 2000

刊 行 物 紹 介

Beetles of the World (A Key and Information System for Families and Subfamilies. J. E. LAWRENCE, A. M. HASTINGS, M. J. DALLWITZ, T. A. PAINE and E. J. ZULCHER著, CD–ROM, Version 1.0 for Microsoft Windows. CSIRO Publishing.

コウチュウ目の科レベルの分類について，オーストラリアのJ. F. LAWRENCE博士とその共同研究者たちが数年来にわたって取り組んでいることはよく知られている．"Insects of Australia（第2版）"や"Australian Beetles"は，オーストラリアばかりでなく世界的に有用なテキストである．また，LAWRENCE博士らはコンピュータ上での分類同定検索システムの開発にも取り組んでおり，1993年に，"Beetle Larvae of the World" (CD–ROM)を刊行した．また，Elateriformia幼虫の分類データベースをインターネットで公開している(URL:http://biodiversity.uno.edu/delta/beetle/www/index.htm).

さて，今回刊行された“Beetles of the World”は，“Beetle Larvae of the World”の成虫版といった感じのスタイルで刊行されたが，内容はぐっと整備され，洗練されている．まずメニュー画面から，同定検索メニューを選択すると，上半分に形質の選択メニュー，下半分に検索された分類群（科および亜科レベル）が表示される．形質の選択メニュー中から，特徴のある形質を選択すると，それがどういう形態かを選択する画面が現れる．この画面は単純な形質の場合には文章を選択するか，数字を入力（例えば，触角の節数など）することによって選択される．わかりにくい，または判断のつきにくい形質の場合，詳細な部分図や走査電顕による写真が表示され，該当するもの，またはいちばん似たものを選択できるようになっている．該当する形質を選択すると，該当する分類群が瞬時に示され，再度，形質選択メニューが表示されるので，これをくり返せば，調べようとする虫の所属する分類群にたどり着けるようになっている．

それぞれの分類群に関する情報も充実している．同定検索を進めた時点で，“information”のボタンをクリックすると，情報メニューが示され，テキスト情報，画像情報を選択し，表示できるようになっている．テキスト情報は，形態の記述，分布，参考文献が詳しく示される．画像情報はひとつの科（亜科）につき，数種（または数属）の画像が並べて表示される．

この同定検索システムは科（亜科）の所属のわからない甲虫を同定するのにきわめて有用であるし，また，大変懇切である．素人にはわかりにくい形態を説明するのに，美しいイラストレーションや写真が表示される．また，“glossary”のボタンをクリックすると形態学用語が一覧表示され，知りたい語句を選択するとそれが甲虫の体のどの部分に該当するのかが，わかりやすいイラスト上に表示される．

この同定検索システムをより効率よく使いこなすためには，その甲虫のもっとも著しい特徴が何であるかを的確に判断することが必要である．煩雑な形態学的な特徴よりも，むしろ「体長50mm（非常に大きい）」とか，「触角は枝状」などのようなおおざっぱな特徴の方が有効な場合が多いのではないだろうか．

やや気になった点として，グループによっては，表示される画像（全形図）が古い図ばかりで，かならずしも正確な情報を伝えていない場合がある（アリヅカムシなど）．また，そのグループについて，形態についてのかなりの知識がなければ使いこなせない点があるようだ．

このCD-ROMはCSIROの出版部(http://www.ento.csiro.au/research/natres/pub.htm#cd-rom)で取り扱っており，左記のURLにアクセスし，注文することができる．定価は130オーストラリアドル（1ドル=63.81円，2000年8月）．

本稿を書くにあたり，東京農業大学昆虫資源学研究室の中原直子氏に，コンピュータに関するご協力をいただいた．記して厚くお礼を申し上げる．

（野村　周平）

Elytra, *Tokyo*, **28** (2): 419–427, November 15, 2000

Two New Species of the Genus *Megopis* (Coleoptera, Cerambycidae) from Thailand and Vietnam, with Notes on *Megopis pici* LAMEERE and *Megopis annamensis* PIC

Ziro KOMIYA

Shimouma 3–2–14, Setagaya-ku, Tokyo, 154–0002 Japan

Abstract Two new cerambycid species allied to *Megopis* (*Aegosoma*) *pici* LAMEERE are described from Indochina under the names *M.* (*A.*) *katsurai* and *M.* (*A.*) *cuneicornis*. Taxonomic notes on *M.* (*A.*) *pici* LAMEERE and *M.* (*A.*) *annamensis* PIC are also given.

Two new species of the cerambycid genus *Megopis* are recently found in Thailand and Vietnam. In this paper, I am going to describe them under the names *M.* (*Aegosoma*) *katsurai* and *M.* (*A.*) *cuneicornis* spp. nov. These new species are considered to be the members of the *pici* species-group of the subgenus *Aegosoma* in LAMEERE's sense (1915 a). *Megopis* (*Aegosoma*) *annamensis* PIC (1930) was found from the same area and proved also to belong to the *pici* species-group. A description of the male of *M. annamensis* will be given for the first time. I will also give a short note on *M.* (*A.*) *pici* based on the materials collected in the past decade, though they do not perfectly accord with the original description.

Before going further, I would like to express my sincere gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for kindly revising my original manuscript.

Megopis* (*Aegosoma*) *katsurai sp. nov.

(Fig. 1)

A middle-sized species of slightly depressed and elongated body form. Integument chestnut-brown, eyes black, clothed with yellow hairs on head, pronotum and most part of venter. Female similar to male and seemingly more difficult to obtain.

Male. Head about as long as wide, clothed with thin but distinct yellow hairs; frons concave at middle; vertex finely punctured, with shiny median groove; eyes large, the interspace between them obviously shorter than each upper eyelobe; antennal tubercles smoothly but strongly raised; mandibles about 0.37 times as long as head, sharply curved inwards, finely granulated except on inner blades, and acutely pointed at apices, each mandible with an internal dent at basal quarter and an obtuse external

angle slightly beyond the middle.

Antennae short, about 0.81 times as long as body; segment 1 thick, strongly punctured; segment 3 slightly arcuate, thinner than segment 1 but thicker than segment 4, 3.3 times as long as segment 1; segments 2–4 strongly granulated, segments 3 and 4 provided with longitudinal inner grooves and also with indistinct longitudinal depressions on the ventral side, united length of segments 4–6 slightly shorter than segment 3; segments 5–10 gradually decreasing in length and width, sparsely but distinctly granulated, each thickened apicad.

Pronotum clothed with yellow hairs which are longer and thicker than those on head, transverse, moderately convex, with basal and apical angles obtuse, widest at the base, parallel-sided in basal quarter, and then straightly, strongly narrowed apicad, apical width about the same as the maximum width of head. Scutellum lingulate, finely punctured.

Elytra glabrous, finely punctured and granulated except on costae, 2.36 times as long as wide, widest at about middle and gradually narrowed to round apices which are provided with very small but distinct sutural teeth; lateral margins moderately rounded; each disc furnished with four costae, first and second internal costae starting from humerus, third and fourth starting one after the other from a little before the middle on intervals between lateral margin and the second costa, four costae converging and disappearing near the apex, typical pattern of costae as shown in Fig. 1.

Ventral surface smooth, finely punctured, with thin and rather long pubescence; legs long, slender, finely punctured and partly minutely granulated; tarsal segments slender, segment 1 longer than segment 3, segment 2 the shortest, segment 3 not so strongly broadened as in most species of the same genus, claw segment slightly longer than united length of three tarsal segments.

Body length: 25.4–46.1 mm.

Female. Similar to the male in general appearance. Antennae about 0.65 times as long as body, segments 5–10 serrated, segment 11 somewhat rounded. Elytra about 2.10 times as long as wide.

Body length: 33.1–34.8 mm.

Type series. Holotype: ♂, Sapa, Lao Cai Prov., northern Vietnam, 13–VI~9–VII–1994, N. KATSURA leg. Deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. Paratypes: 6 ♂♂, same data as the holotype; 7 ♂♂, same locality, V–1994, 5 ♂♂, same locality, VII–1994, 4 ♂♂, same locality, VII–1995; 3 ♂♂, 2 ♀♀, Mt. Pia Oac, Cao Bang Prov., northern Vietnam, IV–1995; 2 ♂♂, Fang, Chiang Mai Prov., northern Thailand, VII–1990 & VI–1994; Nan, northern Thailand, 2 ♂♂, 3–VI–1994, K. DOI leg.

Distribution. Northeastern Thailand and northern Vietnam.

Notes. *Megopis* (*Aegosoma*) *katsurai* sp. nov. is allied to *M.* (*A.*) *pici*, but can easily be distinguished from the latter by shorter antennae, different ratio of antennal segments, with segment 3 longitudinally grooved internally, and elytron with four distinct costae.

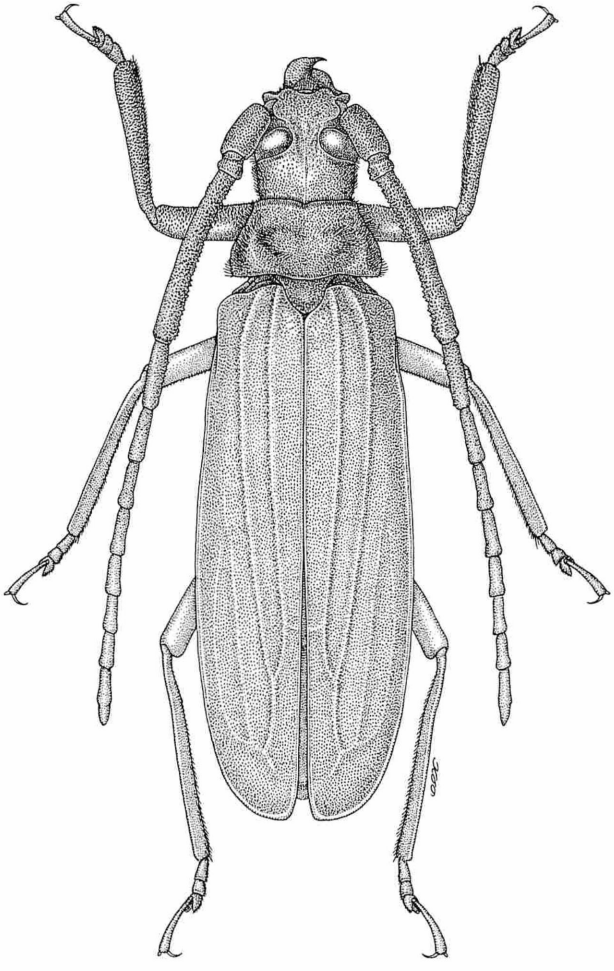

Fig. 1 *Megopis* (*Aegosoma*) *katsurai* KOMIYA, sp. nov., ♂.

Megopis* (*Aegosoma*) *cuneicornis sp. nov.

(Fig. 2)

A middle-sized species of elongated body form. Body chestnut-brown, close to *M. katsurai* sp. nov. in general structure, though a little slenderer and darker. Female unknown.

Male. Head about 1.1 times as long as wide, with thin yellow pubescence; frons smooth, with a distinct carina at each side, which is connected with each antennal tubercle, and concave between the two carinae; vertex strongly punctured, with a deep median groove; eyes bulging; antennal tubercles large, not acute but massively

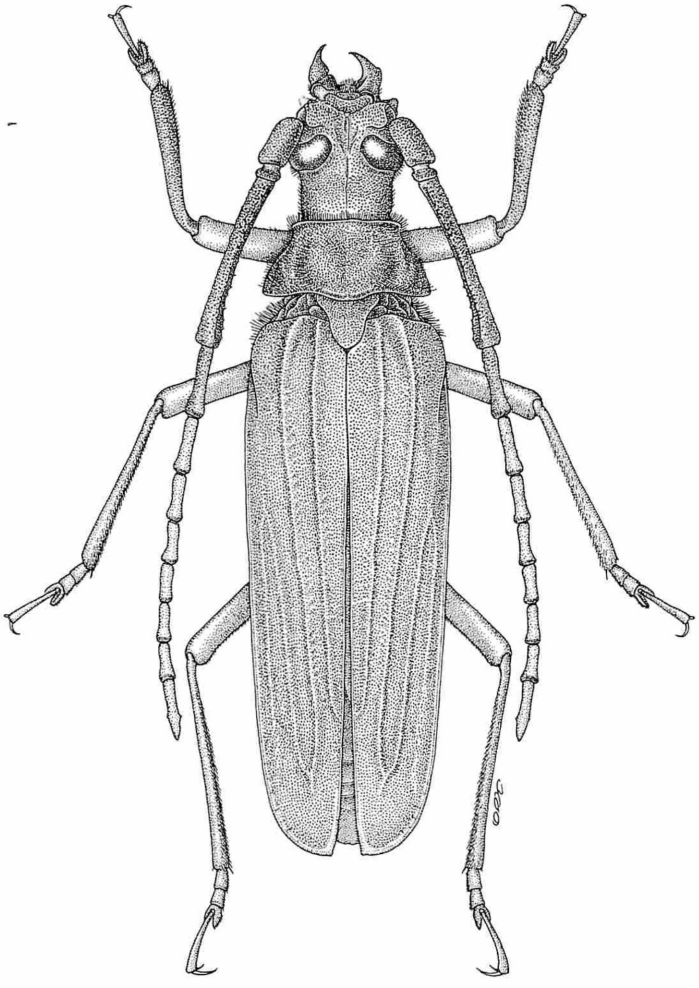

Fig. 2 *Megopis* (*Aegosoma*) *cuneicornis* KOMIYA, sp. nov., ♂.

raised; mandibles about 0.41 times as long as head, sharply curved, each with an internal dent close to the base and a distinct but blunt dent at or a little before the middle on external margin.

Antennae about 0.82 times as long as body; segment 1 2.2 times as long as wide, obliquely truncated apicad, deeply punctured; segment 3 thinnest at about middle and thickened towards each apex which is much thicker than base, with a pair of longitudinal carinae running along the upper and lower sides on the inner face, flat and shiny between the carinae, the other part finely granulated, with rather large granules along the carinae; segment 3 3.4 times as long as segment 1, united length of segments 4–6 about as long as segment 3, segments 4–10 gradually diminishing and decreasing in

length, segment 11 as long as segment 5, acutely pointed apicad; segments 4–10 distinctly thickened apicad.

Pronotum with thick yellow hairs, slightly convex, transverse, about a half as long as wide, widest at the base, straightly narrowed apicad and constricted just behind apex. Scutellum lingulate, with lateral lines sinuate, thinly pubescent.

Elytra glabrous, finely granulated except on costae, about 2.56 times as long as wide, widest at about basal quarter and almost straightly narrowed to rounded apices, with rather small sutural teeth; each elytron with four costae which run as shown in Fig. 2; first internal costa not joining second costa but connected with sutural margin at about apical fourth, external two costae meeting with each other anteriad and separately disappearing apicad.

Prosternum and metasternum with thick hairs. Abdomen with sparse short hairs.

Legs long, slender, finely punctured and thinly pubescent.

Body length: 31.5–36.5 mm.

Type series. Holotype: ♂, Mae Sot, western Thailand, IX–1996 (no further data available). Deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. Paratypes: 3 ♂♂, same data as the holotype; 1 ♂, same locality, 3–IX–1997.

Distribution. Western Thailand.

Notes. *Megopis* (*Aegosoma*) *cuneicornis* sp. nov. is allied to *M. katsurai* sp. nov., but can easily be distinguished by the following points: antenna slenderer, less granulated, with segment 3 relatively long and strongly thickened both basad and apicad, segments 4–10 each strongly thickened apicad, with segment 11 acutely pointed at apex, pronotum more hairy and shorter, elytron with innermost costa joining not with second costa but with sutural margin.

Megopis* (*Aegosoma*) *annamensis PIC, 1930

(Fig. 3)

Megopis annamensis PIC, 1930, Mél. exot.-ent., (55), p. 15.

Middle-sized species with cylindrical body; very distinctive in having completely edged lateral margins of pronotum and in exhibiting prominent sexual dimorphism.

Male. Body blackish brown with charcoal black elytra. Head robust, thinly pubescent, slightly longer than wide, roughly granulated and punctured, the punctures being stronger on vertex; fronto-clypeal suture distinctly grooved; interspace between eyes about as long as each eyelobe; antennal tubercles weakly elevated, surrounded by less-granulated and shiny band. Mandibles about 0.60 times as long as head, longitudinally grooved on the underside, each with a blunt but distinct dent on the external side and a small dent on the internal side very close to the base.

Antennae about 0.92 times as long as body; segment 1 robust, segment 3 robust but narrower than segment 1, about 3 times as long as segment 1, longer than the united length of segments 4 and 5, segments 1–4 strongly granulated, segments 3 and 4 provided with longitudinal depressions on the underside, segments 4–10 gradually de-

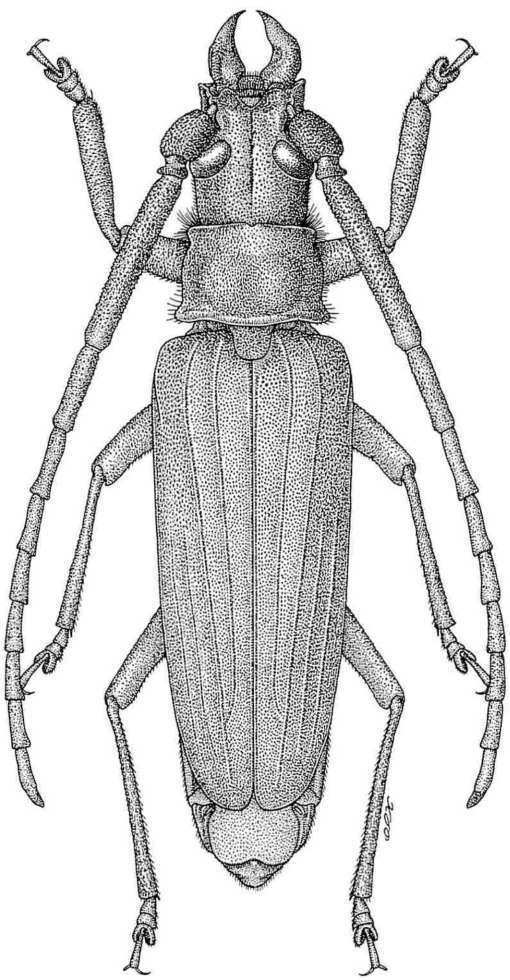

Fig. 3 *Megopis* (*Aegosoma*) *annamensis* PIC, ♂, from Mt. Bao Loc, southern Vietnam.

creasing in length and width and segments 5–10 depressed, sparsely granulated and angulated at the inner side of each apex, segment 11 shorter than segment 5, longer than segment 6 and slightly hooked.

Pronotum clothed with sparse and rather long yellowish white hairs, widest at the base, sinuately narrowed apicad, constricted at a short distance from base and slightly behind apex, with lateral margins distinctly edged, basal and apical angles prominent. Scutellum lingulate, with yellowish white hairs.

Elytra glabrous except at the extreme bases which are furnished with yellowish white hairs, finely granulated throughout except on costae, about 2.32 times as long as wide, not reaching the apex of abdomen, widest just after humeri, almost straightly

narrowed to apical two-fifths, then more strongly narrowed posteriad and contractedly rounded apicad, with small sutural teeth, which are sometimes lacking; each elytron with two distinct internal costae and two feeble external costae, typical pattern of costae as shown in Fig. 3.

Ventral surface with whitish gray tomentum which is thickened on prosternum, metasternum, coxae and trochanters.

Legs stout; fore legs robust, coarsely granulated; middle and hind legs slender and finely granulated; tarsal segments broad, with segments 3 rounded apically, claw segments shorter than united length of segments 1–3.

Body length: 26.0–32.8 mm.

Female. Agreeing with the original description. Color chestnut-brown. Fore legs and antennae normal, not modified as in male. Not similar in general appearance to the male of the same species, but somehow similar to the female of *M. pici* or to the male of *M. katsurai* sp. nov. Head not robust as in male; mandibles with external dents not so distinct, antennae slender, about 0.70 times as long as body, weakly granulated, slightly depressed.

Pronotum with lateral margins strongly edged throughout.

Elytra glabrous, finely granulated, subparallel-sided at basal three-fourths and then narrowed apicad, each with four distinct costae which are stronger than in male and having a pattern more similar to those of *M. katsurai* sp. nov. than to those of the male of *M. annamensis* (see Figs. 1 and 3).

Legs slender, without granules; fore legs not robust and almost of similar appearance to middle and hind legs.

Body length: 31.6–34.5 mm.

Specimens examined. 1 ♂, 1 ♀, Mt. Bao Loc, southern Vietnum, 29~30–VIII–1998, M. ITOH leg.; 5 ♂♂, 2 ♀♀, same locality, 29–VIII–1999.

Notes. This species can be distinguished from all the other known species of the subgenus *Aegosoma* by having grooved fronto-clypeal suture, distinct pronotal margins and prominent structural differences between male and female.

Megopis (Aegosoma) pici LAMEERE, 1915

(Fig. 4)

Megopis pici LAMEERE, 1915, Bull. Soc. ent. France, **1915**: 178.
Megopis pici: GRESSITT, 1951, Longicornia, **2**: 16.
Megopis pici: HUA, 1982, Check List of Longicorn Beetles of China, p. 3.

This species was described on a pair of the specimens from Yunnan, China, and since then, no additional record has been reported. In the recent ten years, several specimens were brought about from the area close to the original locality. These recent materials almost agree with the original description of *M. pici*, though they have some different characteristics as given below.

Male. Each mandible with a distinct internal dent, smoothly curved externally.

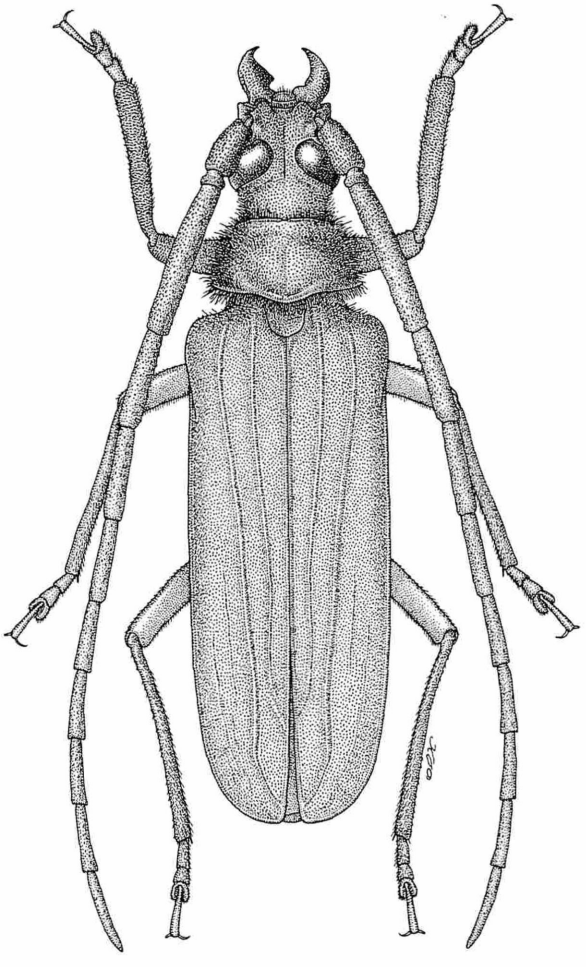

Fig. 4 *Megopis* (*Aegosoma*) *pici* LAMEERE, ♂, from Daju, Yunnan, China.

Antennae about 1.16 times as long as body, segment 1 entirely glabrous, segment 3 with a longitudinal depression on the underside, segments 4–11 slightly depressed dorso-ventrally. Elytra almost black, not margined with dark lines, with feeble impression of external costae around apical two-thirds.

Underside clothed with thick whitish gray tomentum, which is so dense that the metasternal structures are invisible under superficial observation.

Body length: 28.0–33.5 mm.

Female. Antenna about 0.68 times as long as body, slightly depressed. Similar in general appearance to the female of *M. annamensis* or to the male of *M. katsurai* sp. nov.

Body length: 33.0 mm.

Specimens examined. 1 ♂, Daju, Yunnan, China, 24~28–VI–1992, 2 ♂♂, same locality, VI–1994, 1 ♀, same locality, 7~8–III–1995, E. KUČERA leg.

Additional Notes. *Megopis katsurai* sp. nov. and *M. cuneicornis* sp. nov. are obviously close to each other and closest to *M. pici*, but they share several important characteristics with the *gigantea* species-group of *Megopis*.

LAMEERE (1915 b) also described *Megopis* (*Aegosoma*) *guerryi* from Yunnan, China as a species of the same group as *M. pici*. *Megopis katsurai* sp. nov. and *M. cuneicornis* sp. nov. are not compared in detail with *M. guerryi*, because in my view, *M. guerryi* does not belong to the same species-group due to the pubescent elytra and haired antennae.

要　　約

小宮次郎：タイおよびヴェトナムから発見された*Megopis*属の2新種，ならびに同属2種の再記載．—— 近年タイおよびヴェトナムから*Megopis*属の新種が発見されたので，*M.* (*Aegosoma*) *katsurai* sp. nov.と命名して記載した．雄触角第3節の内側に縦の溝があり，*Aegosoma*亜属の*sinica*種群および*gigantea*種群のものに似ているが，雄触角は体長の0.8倍で，同亜属の他の種の場合に比較してはるかに短い．またタイ西部より近似の別の1新種が得られ，*M.* (*A.*) *cuneicornis* sp. nov.として同時に記載した．前種によく似ているが，頭部が細長く，前胸背板は短く，雄の触角は3，4節の中央部が細く，それぞれの先端部がくさび状に太まるため，容易に区別できる．*Megopis* (*A.*) *annamensis*は，PICにより1雌に基づいて1930年に記載され，以後報告がなかった．この種の雄が発見されたので，新たに記載した．雄は体が炭黒色で触角第3節および前腿節が非常に太く，雌と大きく違う．またこの種は前胸背板の側縁が明瞭に角張るなど際立った特徴をもつ．*Megopis* (*A.*) *pici*は，LAMEEREによって1915年に記載されて以来新しい記録や追加的特徴の報告はないが，近年数個体が得られている．これら最近得られた個体は*M. pici*と同一種と考えられるが，雄の触角が体長の1.2倍近くあり，上翅が黒いなど，体長と触角が等しく上翅が褐色で黒く縁取られるとした原記載に合わないので，近年得られた個体の特徴を記載し，今後の検討に資する．LAMEEREが同じグループのものとした*M.* (*A.*) *guerryi* LAMEERE, 1915は，本文の中で詳細に比較しなかった．この種は上翅と触角が毛に覆われるとされ，別のグループに所属すると考えられる．

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Elytra, *Tokyo*, **28** (2): 428, November 15, 2000

Records of Two Species of the Genus *Glipa* (Coleoptera, Mordellidae) from Nias Island, West Indonesia

Masatoshi TAKAKUWA

Kanagawa Prefectural Museum of Natural History,
499, Iryuda, Odawara, 250–0031 Japan

Recently, I had an opportunity to examine some specimens of the genus *Glipa* from Nias Island off Sumatera, West Indonesia, collected by Mr. Shin-ichi NAKAMURA. These comprise two species belonging to the subgenus *Stenoglipa* as below. Both are newly recorded from the island.

Glipa (*Stenoglipa*) *annulata annulata* (REDTENBACHER, 1868)

Specimens examined. Mt. Hitori, Nias Is.: 2♂♂, 27–IV–1999, S. NAKAMURA leg.; 2♂♂, 29–IV–1999, S. NAKAMURA leg. (all in my coll.).

These specimens perfectly agree with this subspecies of the Sundalands, though they are rather characterized by the following three points: body relatively small, 8.2–9.0 mm in length (incl. head); middle annular maculation of each elytron distinctly angulate at the front margin of anterior fascia; apical maculation of each elytron evidently prolonged anteriad along suture.

Glipa (*Stenoglipa*) *longispinosa* TAKAKUWA, 2000

Specimen examined. 1♂, Mt. Hitori, Nias Is., 29–IV–1999, S. NAKAMURA leg. (in my coll.).

The specimen cited above is no doubt identical with this species in the characters of male genitalia and others, but differs from the specimens of other localities in the shorter body, for example, elytra 2.28 times as long as wide and 1.33 times as long as pygidium.

I greatly thank Mr. Shin-ichi NAKAMURA of Yokohama for his kindness in supplying me with valuable materials.

Reference

TAKAKUWA, M., 2000. A taxonomic study of the mordellid subgenus *Stenoglipa* (Coleoptera, Mordellidae). *Bull. Kanagawa pref. Mus.*, (Nat. Sci.), (29): 53–105.

Elytra, *Tokyo*, **28** (2): 429–435, November 15, 2000

A Review of *Obrium longicorne* BATES (Coleoptera, Cerambycidae)

Tatsuya NIISATO

Bioindicator Co., Ltd., Yarai-chô 126, Shinjuku-ku, Tokyo, 162–0805 Japan

Abstract The type series of *Obrium longicorne* BATES preserved in the Natural History Museum, London, is reexamined, and the lectotype is designated for a female specimen from Nagasaki. The correct name of the other two specimens of the series is determined as *Stenhomalus lighti*. *Obrium longicorne* is transferred to the genus *Stenhomalus* based mainly on the thoracic character. The lectotype is redescribed and illustrated, and some taxonomic comments are also given.

Obrium longicorne BATES is one of the most problematical species among the well clarified fauna of the Japanese cerambycid beetles. Although the name of this obriine has been additionally recorded by several Japanese authors, all those reports were based on misidentification of *Obrium japonicum* PIC. True *O. longicorne* has not yet been rediscovered from Japan and its adjacent areas since BATES' original description was published.

Recently I was able to reexamine the type series of *O. longicorne* preserved in the Natural History Museum, London. In this paper, I am going to deal with some taxonomical problems of the species. The abbreviations used in the redescription are the same as those explained in previous papers of mine.

Before going into further details, I wish to express my heartfelt thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and reading through the original manuscript of this paper. Thanks are also due to Mrs. Sharon SHUTE of the Natural History Museum, London, for her kind help for my reexamination of BATES' type specimens.

Lectotype Designation of *Obrium longicorne* and its Systematic Position

The type series of *Obrium longicorne* BATES includes two different species; a female is true *longicorne* agreeing well with BATES' original description, while the other two belong to a rather common obriine species in Japan, *Stenhomalus lighti* GRESSITT. Although the two species are distinct in coloration and structure, they have such common characters as the unicolored and immaculate elytra, and large, strongly approximate eyes. It is most probable that BATES considered the series of the three specimens as representing infraspecific variation of the same species, and the two specimens be-

longing to *S. lighti* as the dark form of *O. longicorne*.

I would like to designate the pale female specimen collected at Nagasaki as the lectotype of *O. longicorne*. The other two specimens should be excluded from the type series of *O. longicorne,* since they were identified with *Stenhomalus lighti*.

Lectotype: ♀, *Obrium longicorne* BATES: "Japan G. Lewis 1910-320" "Nagasaki" "Obrium longicorne Bat" "Nag. 54 346 (underside of mounting card)."

According to the present reexamination, it is obvious that *O. longicorne* should belong to the genus *Stenhomalus*. It is true that the lectotype of this species looks like a member of the *Obrium* due to short, broad, uniformly yellowish body. Apart from such an external appearance, *O. longicorne* not only has posteriorly well extended metepisternum, a weak longitudinal costa between the metepisternum and metepimeron, and dense recumbent pubescence on the pronotum, but lacks deep longitudinal concavity between the metepisternum and metepimeron, all of which are autapomorphies of the genus *Stenhomalus* in the tribe Obriini. Therefore, *O. longicorne* should be transferred from *Obrium* to *Stenhomalus*.

Stenhomalus longicornis (BATES, 1873), comb. nov.

[Japanese name: Higenaga-ameiro-kamikiri]

(Figs. 1–2, 3a)

Obrium longicorne BATES, 1873, Ann. Mag. nat. Hist., (4), **12**, p. 155. — NIISATO, 1992, Illustr. Guide Identif. Longic. Beetles Japan, p. 485.

Relatively small species of uniformly light yellowish brown body, with very large approximate eyes.

Colour light yellowish brown, more reddish on fore body, infuscate at genae and along margins of mandibles, ventral surface except for apical three sternites invisible, eyes black, slightly shiny.

Female. Head large and voluminous, wholly distinctly convex, distinctly wider than pronotum, coarsely shagreened, clothed with pale pubescence, densely so on fore body and near antennal cavities, HW/PA 1.29, HW/PW 0.85; frons short, strongly narrowed anteriad, weakly raised though slightly impressed at sides, almost transversely truncate at apex, with a deep median groove extending from apical margin to anterior part of vertex, FL/FB 0.47, FB/FA 1.21; clypeus long, strongly narrowed anteriad, transversely truncate at apex, smooth on surface, CL/CB 0.33, CB/CA 1.30; mandibles rather long and stout, strongly arcuate, with acute extremities; genae very shallow, one-fourteenth of the depth of eye-lobes, obtuse at corners in frontal view; vertex and occiput rather strongly convex, almost parallel at neck; eyes very large, strongly prominent laterad, coarsely faceted, remarkably emarginate at inner margins, separated from each other by a little less than 2/11 on dorsum and 3/11 on venter of the width of occiput. Antennae moderately long and slender, reaching elytral apices at basal third of segment 7, densely clothed with pale minute pubescence and sparsely with pale medium-sized hairs on segments 1–4; scape moderately clavate, widest at apical 5/12,

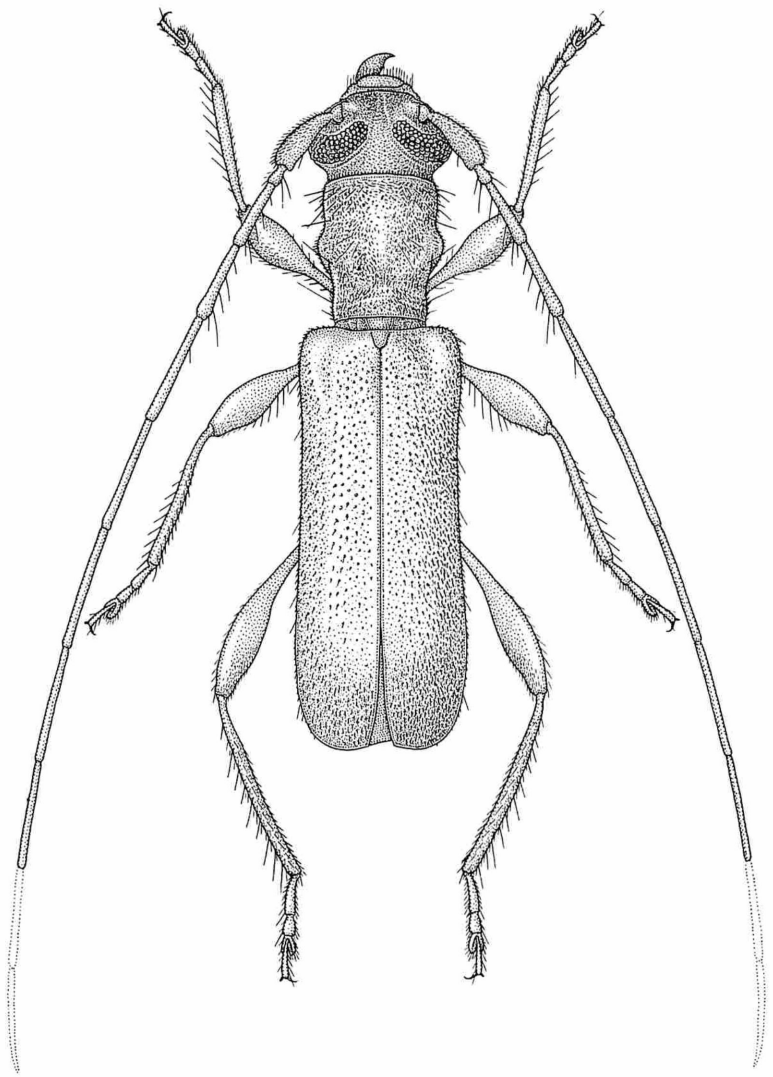

Fig. 1. *Stenhomalus longicornis* (BATES), comb. nov., lectotype female.

shagreened, slightly longer than segment 3, densely with pale short hairs, segment 2 distinctly reduced, slightly longer than width, moderately dilated apicad, segments 3 and 4 moderately thickened apicad, the latter almost equal in length to scape, segment 5 weakly thickened apicad, 1.42 times as long as segment 4, segment 6 the longest, segment 7 slightly shorter than the preceding segment (segments 10–11 missing in the lectotype).

Pronotum distinctly divergent to apex, distinctly constricted at apical fourth and rather weakly so at basal eighth, PL/PA 1.43, PB/PA 0.80, PL/PW 1.05, PW/EW 0.76,

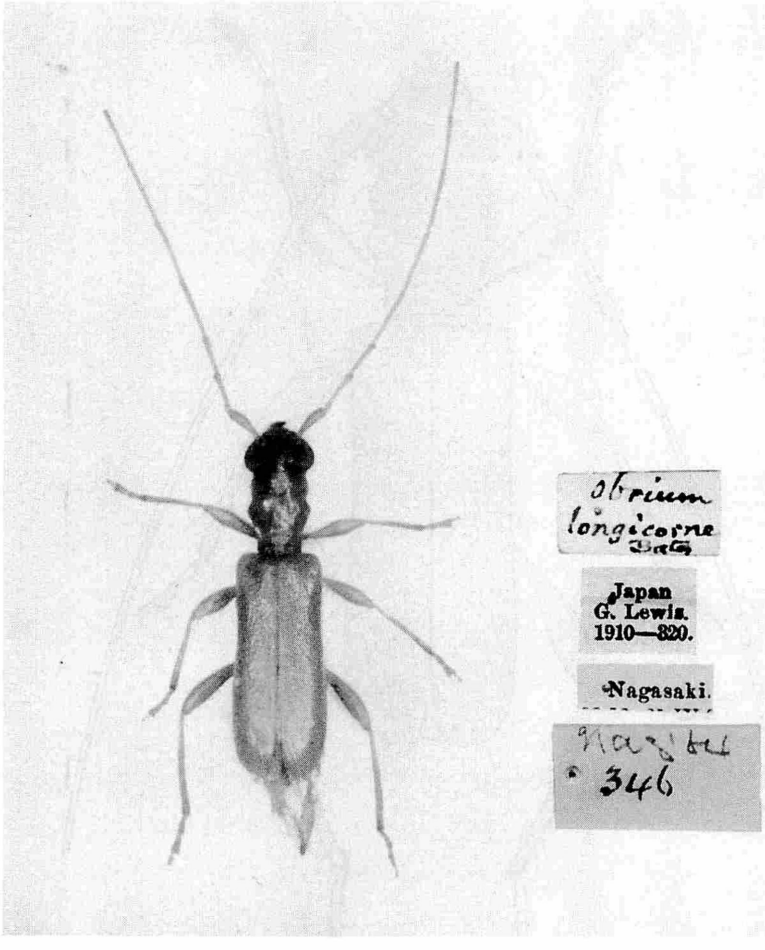

Fig. 2. *Stenhomalus longicornis* (BATES), comb. nov., lectotype female, deposited in the Natural History Museum, London, with the labels attached to the specimen.

PL/EL 0.32; apex slightly arcuate and not bordered, base gently sinuate, very narrowly bordered; sides subparallel in front, moderately arcuate to apical fourth, with lateral tubercles strongly dilated to middle and almost straightly narrowed to basal fifth, basal collar gently narrowed to basal angles; disc moderately convex, uneven, rather weakly raised near apical fourth, with a pair of oblique oblong swellings near middle and a median indistinct one just behind middle, slightly raised at middle of basal margin; surface almost impunctate though provided with a few shallow punctures on dorsum, sparsely clothed with long pale frying hairs mostly on apical half, and densely with pale recumbent pubescence, which is conspicuous at sides and on impressed parts except for dorsal swellings. Scutellum small, rather elongate trapeziform, almost smooth and glabrous.

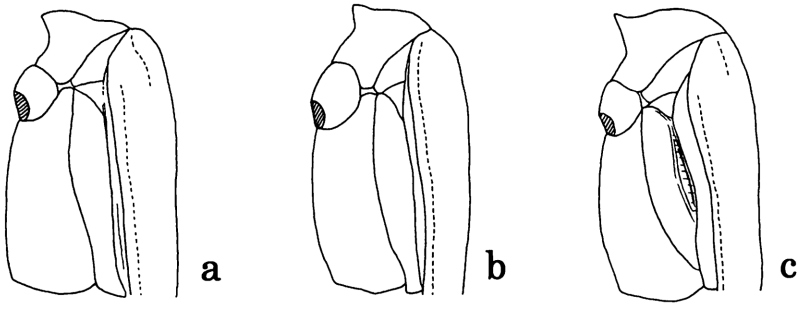

Fig. 3. Lateral view of meso- and metathoraces in the female; *Stenhomalus longicornis* (BATES), from Nagasaki, Japan (a), *S. fenestratus* WHITE from Taiwan, type species of the genus *Stenhomalus* (b), and *Obrium cantharium shimomurai* TAKAKUWA from Hokkaido, type species of the genus *Obrium* (c).

Elytra fairly broad, weakly ample postriad, EL/EW 2.48; sides with roundly angulate humeri, straightly narrowed to basal 5/12, and then weakly divergent and arcuate to apices which are completely rounded; disc uniformly weakly convex, almost even, weakly raised near suture just behind scutellum, rather densely and somewhat irregularly provided with medium-sized punctures, the punctures shallower and sparser on basal 2/5, almost smooth near humeri and apical fifth, densely clothed with pale yellow pubescence and sparsely with short hairs of the same colour.

Ventral surface of thoraces almost smooth and thinly haired, partly provided with punctures; prosternum with coarse punctures near middle, with prosternal process constricted at basal third, gradually dilated to just behind middle, and then strongly dilated apicad; metasternum with a few shallow indistinct punctures in middle of apical half, with a median furrow extending from apical margin to basal fourth. Abdomen broad, somewhat lingulate in dry condition (apical segments reduced); sternite 3 (1 invisible) very wide, 6/11 as long as the basal width, gently narrowed apicad, with a few punctures on posterior part to middle, sternite 4 almost straightly narrowed postriad, deeply arcuately emarginate at apical margin, provided with dense fringes of long pale orange hairs along the arcuate line in middle, sternite 5 transversely truncate at apical margin; sternite 6 deeply triangularly concave at apical margin, sternite 7 rounded at apical margin and punctured along the margin.

Legs moderate in length, stout; femora slightly compressed, with hind pair weakly clavate in apical 2/5; hind tibiae weakly arcuate, compressed; hind tarsi with 1st segment 0.77 times as long as the following two segments combined.

Body length: 5.3 mm.

Specimen examined. 1♀ (lectotype), "Japan G. Lewis 1910-320", "Nagasaki", "Obrium longicorne Bat", "Nag. 54 346 (underside of mounting card)." The specimen examined is in rather a good condition though the apical two segments of the right antenna and the apical three segments of the left antenna are missing.

Distribution. Kyushu (Nagasaki), Japan.

Notes. No additional record of this obriine species has been available from Japan and its adjacent areas, and no close relatives of the species are known in the obriine fauna of Japan. It is possible that *S. longicornis* comb. nov. may have been described on a foreign specimen from somewhere in East Asia, but we cannot confirm the matter until additional specimens are obtained.

In my present opinion, *S. longicornis* is probably closest to *S. unicolor* NIISATO et HUA, which is quite recently described from East China as a relative of *S. lighti*. However, the Chinese species is clearly separable from *S. longicornis* by its long and rather slender body, more approximate eyes, strong constriction just before and behind lateral tubercles of the pronotum, and longer elytra.

要　　約

新里達也：ヒゲナガアメイロカミキリの分類学的再検討．—— ヒゲナガアメイロカミキリ *Obrium longicorne* BATESの基準標本系列（ロンドン自然史博物館所蔵）を詳細に検討し，本論文において必要な分類学的処置を行った．

本種の基準標本系列には2種が含まれている．1個体はBATES (1873)の原記載によく適合する真のヒゲナガアメイロカミキリであり，ほかの2個体はトワダムモンメダカカミキリ *Stenhomalus lighti* GRESSITTであった．BATESは，記載作成に際して扱った3個体の標本のうち，真の本種を除く2個体を，同一種の黒化個体とみなしたようである．今回，原記載によく適合する長崎産の1個体を後基準標本に指定した．

一方，このヒゲナガアメイロカミキリが，実はメダカカミキリ属 *Stenhomalus* に所属すべきものであることが判明した．メダカカミキリ属は，他のアメイロカミキリ族の諸属から，長く発達した後胸前側板や後胸前側板・後側板間の縦隆起の存在，前胸背板に密生する軟毛などによって区別されるが，ヒゲナガアメイロカミキリの後基準標本は，それらの特徴をすべて備え，ムナミゾアメイロカミキリ属 *Obrium* の固有形質である後胸前側板・後側板間の深い縦溝を欠いている．なお，和名は普及性を配慮し，旧来どおりの名称を残した．

本種にもっとも類縁が近いのは，中国東部から比較的最近に発見された *Stenhomalus unicolor* NIISATO et HUAだと考えられる．この種は，トワダムモンメダカカミキリとも近縁な種であるが，ヒゲナガアメイロカミキリとは，細長い体やより近接する複眼，前胸背板両側の中央隆起前後の強いくびれ，より長い翅鞘などの特徴から容易に区別することができる．また，後基準標本に付されたラベルによれば，本種の産地は「Nagasaki（長崎）」となっているが，日本国内はおろか周辺地域からも，この種に該当するアメイロカミキリ族の種は，現在までのところ再発見されていない．

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Elytra, *Tokyo*, **28** (2): 436, November 15, 2000

Notes on *Macrosiagon nasutum* (Coleoptera, Rhipiphoridae) from the Southern Ryukyus

Masatoshi TAKAKUWA[1] **and Takeichiro HATAYAMA**[2]

[1] Kanagawa Prefectural Museum of Natural History,
499, Iryuda, Odawara, 250–0031 Japan
[2] 1–12, Yamanouchimoto-machi, Sumiyoshi-ku,
Osaka, 558–0024 Japan

In the Ryukyu Archipelago, *Macrosiagon nasutum* (THUNBERG) has hitherto been known only from the Island of Ishigaki-jima of the Yaeyama group (HATAYAMA, 1985), though the species is widely distributed in East to Southeast Asia. The record of that island is, however, based on the unrecorded materials. We herewith record the species formally from the island.

Specimens examined. [Ishigaki-jima Is., Yaeyama Isls., SE Japan] 1 ♀, Yonehara, 10–VI–1971, S. OKAJIMA leg. (in TAKAKUWA's coll.); 1 ♀, Mt. Omotodake, 10–IV–1973, K. SUGINO leg. (in HATAYAMA's coll.)

These two specimens are doubtless identical with this species, but somewhat differ from females of Honshu and Mikura-jima of the Izu Islands, Central Japan in the following respects: antennal pectinate parts rather long, the pectinations being longer particularly in the apical parts; median lobe of pronotal base transversely truncate at the top (narrowly bilobed in the latter); lateral margins of pronotum almost straight (arcuate in the latter) near posterior corners which are apparently angulate (narrowly rounded or dully angulate in the latter); mesepimera more coarsely and more densely punctate.

We deeply thank Prof. Dr. Shûji OKAJIMA of the Laboratory of Entomology, Tokyo University of Agriculture, and to Mr. Koichi SUGINO of Nishinomiya for their kindness in supplying with valuable materials used in this paper.

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Elytra, *Tokyo*, **28** (2): 437–442, November 15, 2000

Additional Records of Clytine Species (Coleoptera, Cerambycidae) from the Ogasawara Islands

Tatsuya NIISATO

Bioindicator Co., Ltd., Yarai-chô 126, Shinjuku-ku, Tokyo, 162–0805 Japan

and

Haruki KARUBE

Kanagawa Prefectural Museum of Natural History, 499, Iryuda, Odawara, Kanagawa Pref., 250–0031 Japan

Abstract Clytine cerambycid beetles are newly or additionally recorded from solitary islands off the main islands of the Ogasawaras. *Chlorophorus kusamai* is briefly described based on additional specimens including a female.

In his recent field surveys made in the Ogasawara Islands, the junior author, H. KARUBE, collected a short series of four clytine species from such solitary islands as Muko-jima, Otôto-jima, Ani-jima and Ane-jima. Although the cerambycid fauna of the Ogasawara Islands is well surveyed, very few records have been made from the above islands. In this short report we are going to newly or additionally record the clytine species from these islands.

Total nine species of three genera of the tribe Clytini have hitherto been recorded from the Ogasawara Islands. Most of them excluding *Chlorophorus muscosus* (BATES) are endemic to the islands and very important for analysing the species diversity in northern Micronesia. The clytine species are seldom found in the forest areas of the islands investigated after abrupt change of vegetation took place by human impact. On Muko-jima Island, most forests have been changed into grassland by feeding of introduced goats. All the clytines seem to be endangered now, even though *Chlorophorus kobayashii* KOMIYA was abundant at least 15 years ago.

The abbreviations used in the description were already explained in recent papers by the first author.

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 reading through the original manuscript of this paper. Thanks are also due to Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, Dr. Kouichi MATSUMOTO of Tokyo University of Agriculture, Atsugi, Messrs. Toshikazu SAKURAI, Mamoru

KIKUCHI and Norikazu TANAKA of Ogasawara-mura for their kind help in the field works.

Xylotrechus ogasawarensis MATSUSHITA, 1933

[Japanese name: Ogasawara-ikarimon-tora-kamikiri]

(Fig. 1)

Xylotrechus ogasawarensis MATSUSHITA, 1933, Trans. Sapporo nat. Hist. Soc., **12**, p. 43; type locality: Bonins.

Xylotrechus (*Xylotrechus*) *ogasawarensis*: Keihin Konchû Dôkôkai (KUSAMA), 1959, New Insect Collect., p. 406.

Specimens examined. 1♂, 1♀, Otôto-jima Is., Chichi-jima group of Ogasawara Isls., Ogasawara-mura, Tokyo, Japan, 29–VI–1998, H. KARUBE leg.

Distribution. Ogasawara Islands: Otôto-jima Is. (new record), Ani-jima Is., Chichi-jima Is. and Haha-jima Is.

Chlorophorus kobayashii KOMIYA, 1976

[Japanese name: Ogasawara-kiiro-tora-kamikiri]

(Figs. 2–3, 9)

Chlorophorus kobayashii KOMIYA, 1976, Elytra, Tokyo, **4**, p. 31, figs 1–2, pl. 5, figs. 2, 2 a, b; type locality: Nagahama – Kitamura, Is. Haha-jima, Bonin Isls.

Chlorophorus boninensis: GRESSITT, 1956, Ins. Micronesia, **17**(2), p. 106 (nec KANO, 1930).

Chlorophorus yayeyamensis: KOJIMA *et al.*, 1965, Res. Rept. Kochi Univ., **14** (Nat. Sci.), **2**(9), p. 85 (nec KANO, 1933).

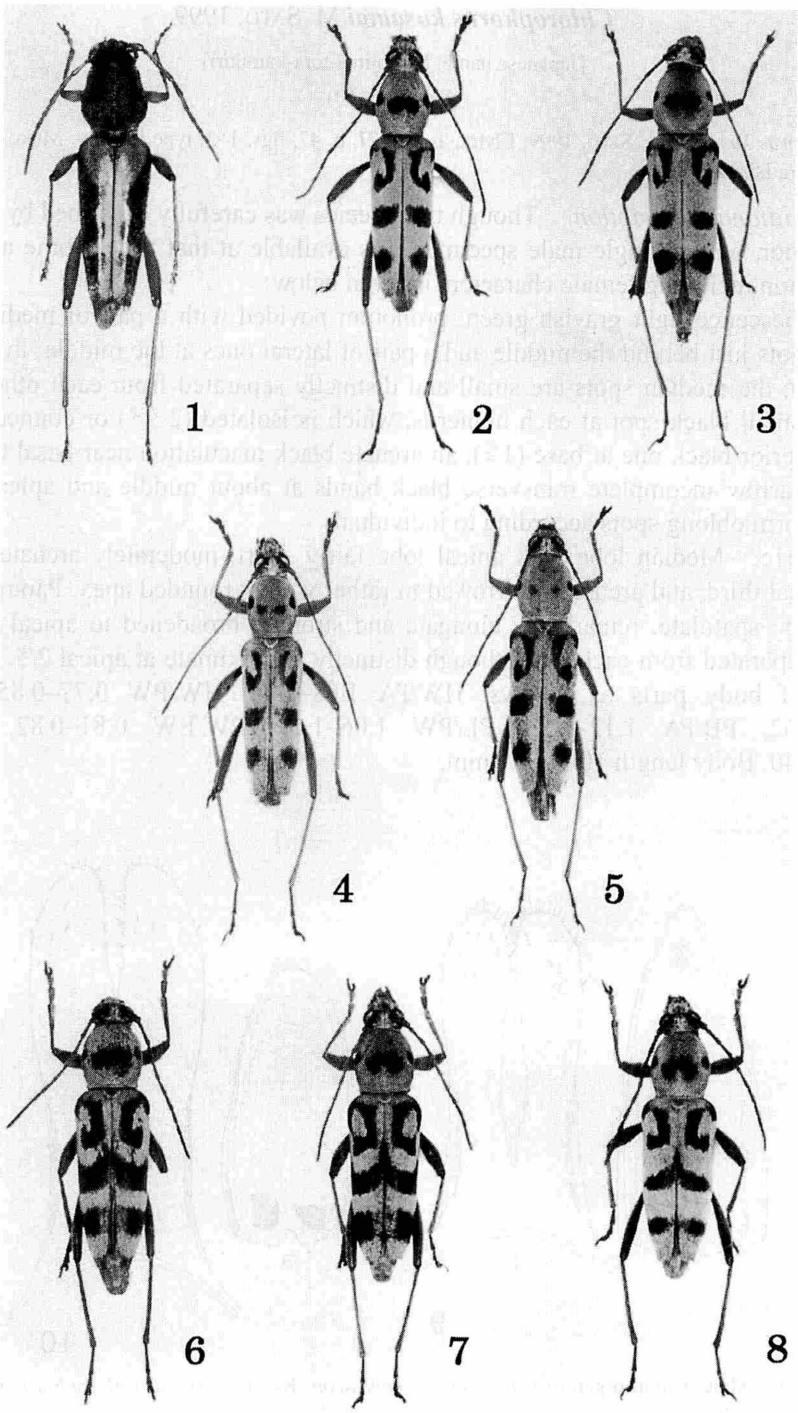
Chlorophorus boninensis f. *yaeyamaformis* KUSAMA, 1973, Rept. Fac. Sci. Shizuoka Univ., **8**, p.125; type locality: Chichi-jima, Yoakeyama.

Specimens examined. 3♂♂, 5♀♀, Otôto-jima Is., Chichi-jima group, 20–VI–2000, H. KARUBE leg.

Distribution. Ogasawara Islands: Otôto-jima Is. (new record), Chichi-jima Is., Higashi-jima Is. and Haha-jima Is.

Notes. The specimens from Otôto-jima Island are almost identical with the Chichi-jima ones. In eight specimens examined in total, the black maculation on the pronotum are clearly separated into a median spot and a pair of lateral ones (the median spot is divided again into two small spots in two specimens), and the elytral black bands are rather reduced and narrowed as in the Chichi-jima specimens.

Figs. 1–8. Four species of the tribe Clytini from solitary islands of the Ogasawara Islands. —— 1, *Xylotrechus ogasawarensis* MATSUSHITA, male from Otôto-jima Is.; 2, *Chlorophorus kobayashii* KOMIYA, male from Otôto-jima Is.; 3, same species, female from Otôto-jima Is.; 4, *C. kusamai* M. SATÔ, male from Muko-jima Is.; 5, same species, female from Muko-jima Is.; 6, *C. boninensis* KANO, male from Ane-jima Is.; 7, same species, male from Ani-jima Is.; 8, same species, female from Muko-jima Is.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Chlorophorus kusamai M. SATÔ, 1999

[Japanese name: Mukojima-tora-kamikiri]

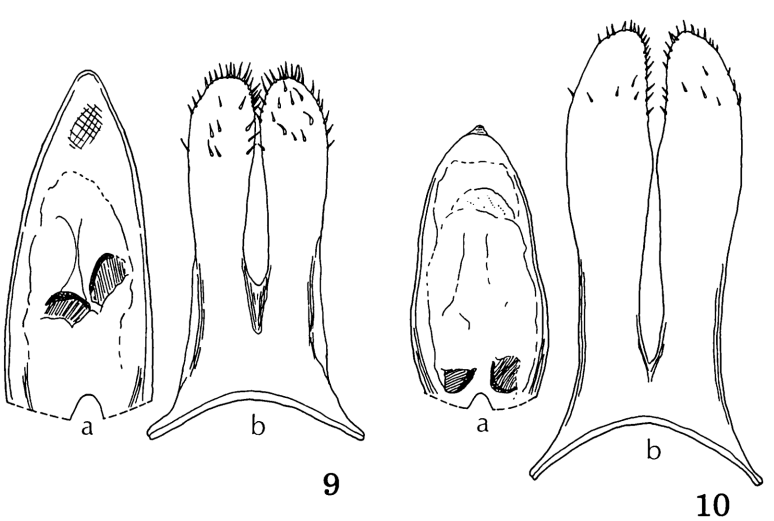
(Figs. 4–5, 10)

Chlorophorus kusamai M. SATÔ, 1999, Elytra, Tokyo, **27**, p. 47, figs. 1–3; type locality: Muko-jima, Ogasawara Islands.

Additional description. Though this species was carefully described by the original author, only a single male specimen was available at that time. Some additional description including female characters is given below:

Pubescence light grayish green; pronotum povided with a pair of median small black spots just behind the middle and a pair of lateral ones at the middle; in a female speimen, the median spots are small and distinctly separated from each other; elytra with a small black spot at each humerus, which is isolated (2♂♂) or connected with the posterior black one at base (1♀), an arcuate black maculation near basal third, and rather narrow incomplete transverse black bands at about middle and apical fourth, which form oblong spots according to individuals.

Male. Median lobe with apical lobe fairly short, moderately arcuate at sides near basal third, and arcuately narrowed to rather widely rounded apex. Paramere with each lobe spatulate, remarkably elongate and strongly broadened to apical 2/5, narrowly separated from each other though distinctly approximate at apical 2/5. Standard ratios of body parts as follows: HW/PA 1.08–1.14, HW/PW 0.77–0.85, PL/PA 1.48–1.62, PB/PA 1.12–1.23, PL/PW 1.06–1.14, PW/EW 0.81–0.82, EL/EW 2.35–2.40. Body length 10.1–10.8 mm.



Figs. 9–10. Male genital organ of *Chlorophorus kobayashii* KOMIYA (9) and *Chlorophorus kusamai* M. SATÔ (10); a, apical part of median lobe in dorsal view; b, paramere in dorsal view.

Female. Body broader than in male. Head a little smaller than in male, distinctly narrower than pronotum, with thinner antennae barely reaching the middle of elytra. Pronotum as long as wide, slightly narrower than elytra, widest at middle, strongly narrowed apicad. Elytra broad, well convex, rather weakly narrowed apicad. Last sternite trapeziform, arcuate at apical margin. Standard ratios of body parts as follows: HW/PA 1.13, HWPW 0.64, PL/PA 1.75, PB/PA 1.38, PL/PW 1.00, PW/EW 0.88, EL/EW 2.44. Body length 12.8 mm.

Specimens examined. 2♂♂, 1♀, Muko-jima Is., Muko-jima group, 28–VI–2000, H. KARUBE & K. MATSUMOTO leg.

Distribution. Ogasawara Islands: Muko-jima Is.

Notes. *Chlorophorus kusamai* is closest to *C. kobayashii* in the pattern of pubescent maculation on the dorsum and basic structure of the male genital organ. The two species are allopatric in the Ogasawara Islands, and form a small complex in the group of *C. yaeyamensis*.

Chlorophorus boninensis KANO, 1933

[Japanese name: Ogasawara-tora-kamikiri]

(Figs. 6–8)

Chlorophorus boninensis KANO, 1933, Kontyû, Tokyo, **7**, p. 135, fig.; type locality: Is. Chichi-jima, Bonin Isls.

Xylotrechus boninensis KANO, 1930, Bull. biogeogr. Soc. Japan, **1**, p. 242, pl. 15, fig. 3; type locality: Bonin Isls.

Chlorophorus quinquefasciatus (CASTELNAU et GORY) subsp. *boninensis*: MITONO, [1941], Cat. Coleopt. Japon., (8), p.120; type locality: Bonin Islands (Titisima).

Specimens examined. 2♀♀, Muko-jima Is., Muko-jima group, 28–VI–2000, H. KARUBE leg.; 1♂, Uguisu-hama Beach, Ani-jima Is., Chichi-jima group, 27–VI–1998, M. TAKAKUWA leg.; 1♂, Ane-jima Is., Haha-jima group, 19–VI–1999, H. KARUBE leg.

Distribution. Ogasawara Islands: Muko-jima Is. (new record), Ani-jima Is. (new record), Chichi-jima Is., Haha-jima Is. and Ane-jima Is. (new record).

Notes. Geographical variation in new localities, Ani-jima Is., Ane-jima Is. and Muko-jima Is., is not apparent, since we were able to examine only one or two specimens from respective islands. Externally, the specimens from new localities show the following characteristics.

Muko-jima Is. (2♀♀): The colour of dorsal pubescence is ochraceous yellow, almost as in *C. kobayashii*. The dorsal black maculation is fairly reduced as in sympatric *C. kusamai*. The black maculation on the pronotum forms three isolated spots (the median spot in one female is almost divided into two small ones). Of the black maculation of each elytron, the small humeral spot is narrowly connected with the J-shaped maculation near basal third, and the transverse bands at about middle and apical third are narrow, the median one not reaching the external margin in one female specimen.

Ani-jima Is. (1♂): The colour of dorsal pubescence is slightly reddish ochraceous

yellow, fairly yellowish as compared with that of Chichi-jima specimens. The black maculation on the pronotum is narrowly separated into three spots, and the black one near basal third of the elytron forms a J-shape (widely open externally).

Ane-jima Is. (1♂): The colour of dorsal pubescence is reddish ochraceous yellow, almost intermediate in coloration between Chichi-jima and Ani-jima specimens. The black maculation on the pronotum is rather widely separated into three spots, and the black one near basal third of the elytra forms semi-quadrate ring-shape as in Haha-jima and Chchi-jima specimens.

要　　約

新里達也・苅部治紀：小笠原諸島の小島嶼におけるトラカミキリの記録．—— 小笠原諸島のカミキリムシ科甲虫類の記録は，父島および母島に集中し，そのほかの小島嶼の分布記録がほとんど知られていない．今回，これら小島嶼のうち弟島，兄島，姉島および聟島において，昆虫類調査を行った際に得られた4種のトラカミキリ類を記録した．各島嶼における新記録および追加知見は以下のとおりである．

1）オガサワライカリモントラカミキリ：弟島新記録．

2）オガサワラキイロトラカミキリ：弟島新記録．前胸背板の中央黒紋は2つに分離する個体があるが，基本的には父島の個体群と変わらない．

3）ムコジマトラカミキリ：原記載以来の追加記録．雌は初記録となる．

4）オガサワラトラカミキリ：兄島，姉島および聟島新記録．検した個体数は1~2個体に過ぎないが，既産地の父島および母島の個体群に比べると，背面被毛の色彩や黒紋の形状に島嶼ごとの地理的変異が認められる．とくに聟島の個体は，同所的にいるムコジマトラカミキリに似て，黒紋が縮小傾向にある．

なお，今回の調査において採集されたトラカミキリの個体数は，一部の例外を除けばきわめてわずかであった．これは，人為的遷移による森林植生の変化や，野生化したヤギの食害による森林の草原化が主要な原因だと考えられ，食材性カミキリムシの多くの種が絶滅の危機に瀕していることを推測させる．

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Elytra, *Tokyo*, **28** (2): 443–444, November 15, 2000

The Cerambycidae Collected on Pohnpei (Ponape) Island, Micronesia, with Reference to Individual Variation of *Paremeopedus minimus*

Ryûtarô IWATA

Forest Zoology Laboratory, Department of Forest Science and Resources,
College of Bioresource Sciences, Nihon University,
Fujisawa, 252–8510 Japan

Although the cerambycid fauna of Japan, including the Bonin Islands, has been almost completely clarified, that of Micronesia, consisting of numerous islands, still needs survey since the publication of GRESSITT's (1956) monograph; very little works have been published thereafter (BREUNING, 1983; IWATA, 1993; SAITO, 1994). This is to report the result of study on the cerambycid collected on Pohnpei (Ponape) Island, the Federated States of Micronesia, on Dec. 19–21, 1991. All the specimens were collected by me and my family, and deposited in my collection.

Family Cerambycidae

Sybra convexa GRESSITT

1♂, 1♀, from Kolonia to Nett, 20–XII–1991.

Sybra ponapensis BLAIR

1♂, 1♀, Nett, 19–XII–1991; 1♂, 2♀♀, Nett, 20–XII–1991: 1♀, from Nett to Nanpil Waterfall, 20–XII–1991; 1♂, 3♀♀, from Kolonia to Nett, 20–XII–1991.

Sciades (*Acanthosciades*) *latispina* (GRESSITT)

1♂, 1♀, Nett, 19–XII–1991; 1♂, from Kolonia to Sokehs, 19–XII–1991; 1♂, 2♀♀, Sokehs, 19–XII–1991; 1♂, 3♀♀, Tomorolong, 19–XII–1991; 1♂, 2♀♀, from Nett to Nanpil Waterfall, 20–XII–1991; 9♂♂, 2♀♀, from Kolonia to Nett, 20–XII–1991; 6♂♂, 1♀, Kolonia, 21–XII–1991.

The male of this species has a very outstanding double-cusped spine on each elytron (Fig. 1), which seems to be allometric. Also, larger individuals are always males, not females. These strongly suggest a peculiar system of mating behavior in this species, the spines presumably being used to grasp female body.

Sciades (*Micronesiella*) *townesi* (GRESSITT)

1 ex., Sokehs, 19–XII–1991; 2 exs., Nett, 19–XII–1991; 5 exs., Tomorolong, 19–XII–1991; 3 exs., from Nett to Nanpil Waterfall, 20–XII–1991; 9 exs., from Kolonia to Nett, 20–XII–1991; 6 exs., Kolonia, 21–XII–1991.

Paremeopedus minimus (BLAIR)

2 exs., Nett, 19–XII–1991; 4 exs., Sokehs, 19–XII–1991; 2 exs., Tomorolong, 19–XII–1991; 9 exs., from Nett to Nanpil Waterfall, 20–XII–1991; 3 exs., Nett, 20–XII–1991; 44

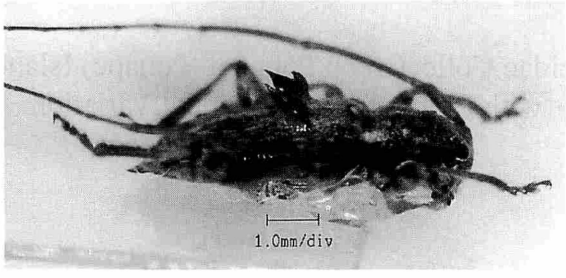
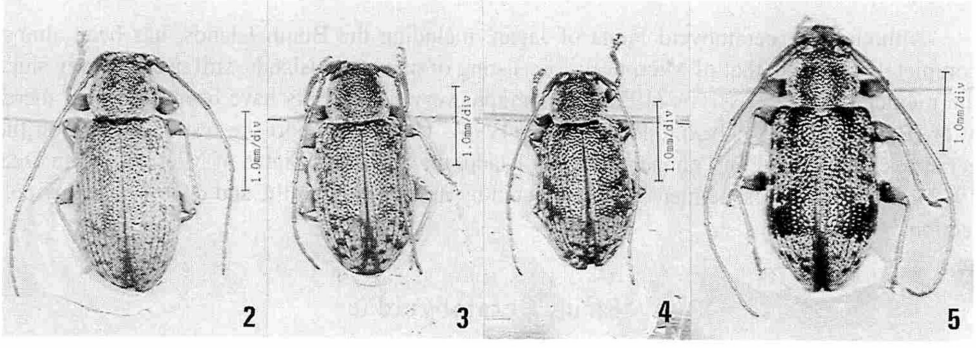


Fig. 1. Male of *Sciades* (*Acanthosciades*) *latispina* (GRESSITT), showing spines on the elytra (scale: 1 mm).



Figs. 2–5. Individual variation of *Paremeopedus minimus* (BLAIR) (scale: 1 mm).

exs., from Kolonia to Nett, 20–XII–1991; 1 ex., Kolonia, 21–XII–1991.

Since individual variation of the elytral patterns of this species is considerable, and since this has not been shown in detail, some examples are presented in Figs. 2–5.

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Elytra, *Tokyo*, **28** (2): 445, November 15, 2000

The Cerambycidae Collected on the Belau (Palau) Islands, Micronesia

Ryûtarô IWATA

Forest Zoology Laboratory, Department of Forest Science and Resources,
College of Bioresource Sciences, Nihon University,
Fujisawa, 252–8510 Japan

Following my cerambycid-collecting trip to Pohnpei, Micronesia, in 1991 (IWATA, 2000), I had an opportunity to visit the Belau (Palau) Islands, Micronesia, on Jan. 4–6, 1994 to collect the following cerambycids. All the specimens were collected by me and deposited in my collection.

Family Cerambycidae

Prosoplus lividus MATSUSHITA

1 ♂, Hotel Nikko, Koror Is. (at light), 4–I–1994.

Ropica squamulosa BREUNING

3 exs., Hotel Nikko, Koror Is. (at light), 4–I–1994; 2 exs., ditto (at light), 5–I–1994.

Ropica palauana (MATSUSHITA)

2 exs., Hotel Nikko, Koror Is. (at light), 5–I–1994; 6 exs., ditto, 6–I–1994.

This species is fairly variable in its elytral pattern as shown by GRESSITT (1956).

Sybra alternans (WIEDEMANN)

1 ♀, National Museum, Koror Is., 5–I–1994.

Sybra oreora GRESSITT

1 ♂, Palau International Airport, Babelthuap Is., 6–I–1994.

Acalolepta magnetica auripilis (MATSUSHITA)

1 ♀, Hotel Nikko, Koror Is. (at light), 4–I–1994; 1 ♂, 1 ♀, ditto (at light), 5–I–1994.

Batocera oceanica SCHWARZER

1 ♀, Hotel Nikko, Koror Is. (at light), 4–I–1994.

Sciades (*Micronesiella*) *palauicola* (GRESSITT)

1 ex., Ngercheu Is. ("Carp Is.") (new locality), 4–I–1994; 1 ex., Ngardmau Waterfalls, Babelthuap Is., 5–I–1994; 4 exs., Hotel Nikko, Koror Is., 6–I–1994; 2 exs., Palau International Airport, Babelthuap Is., 6–I–1994.

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Elytra, *Tokyo*, **28** (2): 446, November 15, 2000

The Cerambycidae Collected on the Chuuk (Truk) Islands, Micronesia

Ryûtarô IWATA

Forest Zoology Laboratory, Department of Forest Science and Resources,
College of Bioresource Sciences, Nihon University,
Fujisawa, 252–8510 Japan

Following my cerambycid-collecting trips to Pohnpei in 1991 (IWATA, 2000 a) and to Belau in 1994 (IWATA, 2000 b), I had an opportunity to visit the Chuuk (Truk) Islands, Micronesia, on Jan. 5–7, 1995 to collect the following cerambycids. All the specimens were collected by me and my family, and are deposited in my collection.

Family Cerambycidae

Ropica squamulosa BREUNING

1♂, Mwan, Weno (Moen) Is., 5–I–1995; 2♀♀, Fanip, Fefan Is. (new locality), 6–I–1995; 1♀, Enin, Tonoas (Dublon) Is. (new locality), 6–I–1995; 1♀, from Tunnuk to Wonip, Udot Is. (new locality), 7–I–1995; 1♂, Neauo, Weno (Moen) Is., 7–I–1995.

Sybra ponapensis BLAIR

1♂, 1♀, Mwan, Weno (Moen) Is., 5–I–1995; 2♀♀, Mt. Tonachau, Weno (Moen) Is., 5–I–1995; 1♀, Fanip, Fefan Is., 6–I–1995; 1♂, 3♀♀, Sapeta, Fefan Is., 6–I–1995; 1♀, Enin, Tonoas (Dublon) Is., 6–I–1995; 4♀♀, from Tunnuk to Wonip, Udot Is., 7–I–1995; 1♀, Neauo, Weno (Moen) Is., 7–I–1995.

Sciades (*Estoliops*) *aureopleura* (GRESSITT)

1♀, Neauo, Weno (Moen) Is., 7–I–1995.

Sciades (*Estoliops*) *argentipleura* (GRESSITT)

1♂, 1♀, Mt. Tonachau, Weno (Moen) Is., 5–I–1995.

Paremeopedus minimus (BLAIR)

2 exs., Mwan, Weno (Moen) Is., 5–I–1995; 6 exs., Mt. Tonachau, Weno (Moen) Is., 5–I–1995; 6 exs., Fanip, Fefan Is., 6–I–1995; 11 exs., Sapeta, Fefan Is., 6–I–1995; 24 exs., from Tunnuk to Wonip, Udot Is. (new locality), 7–I–1995; 11 exs., Neauo, Weno (Moen) Is., 7–I–1995.

As compared with those collected on Pohnpei Is. (IWATA, 2000 a), the specimens from the population of this island group tend to be paler in elytral color.

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Elytra, *Tokyo*, **28** (2): 447–451, November 15, 2000

A New Species and New Records of Anthribidae (Coleoptera) from Vietnam

Toshio SENOH

Department of Biology, Chuo University High School,
Koganei, Tokyo, 184–8575 Japan

Abstract A new species of the anthribid genus *Mecotropis* is described from southern Vietnam under the name of *M. nakamurai*. Two species, *Apolecta aspericollis* KIRSCH and *Xenocerus phaleratus* JORDAN, are newly recorded from Vietnam.

Recently, a lot of Vietnamese anthribids was submitted to me for taxonomic research through the courtesy of Mr. Hiroyuki NAKAMURA of Tokyo. In this collection, I found a new species of the genus *Mecotropis*, *Apolecta diversa* JORDAN and *Xenocerus phaleratus* JORDAN, which are new records from Vietnam. These anthribids were collected by himself from Bao Loc, Lam Dong Prov., southern Vietnam.

Before going further, I wish to express my sincere gratitude to Professor Y. WATANABE of the Laboratory of Entomology, Tokyo University of Agriculture, and Emeritus Professor K. MORIMOTO of Kyushu University, for their constant guidance and encouragement. I am much indebted to Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for kindly reading the original manuscript of the present paper, and to Mr. H. NAKAMURA, for his kindness in providing me with the specimens used in this research.

Mecotropis nakamurai SENOH, sp. nov.

(Figs. 1, 2)

Length: 17 mm (from apical margin of rostrum to apices of elytra).

Male. Body relatively thick. Colour predominantly black, antennae, tibiae and tarsi brown. Pubescence dense, black, mud yellow and white; antennae with white hairs in apical parts of 4th; pronotum with a pair of white small patches at the centre and with also three ones on both sides; elytra with a broad black transverse band in apical halves and a pair of black irregular patches in basal parts, and many black spots in the remaining parts; pro-, meso- and metasterna mainly covered with mud yellow hairs; 1st to 4th sternites each with three white spots on both sides.

Head thick, extending forwards, parallel-sided in occipital parts, and with a deep median longitudinal sulcus from between eyes to between antennal scrobes, and with a

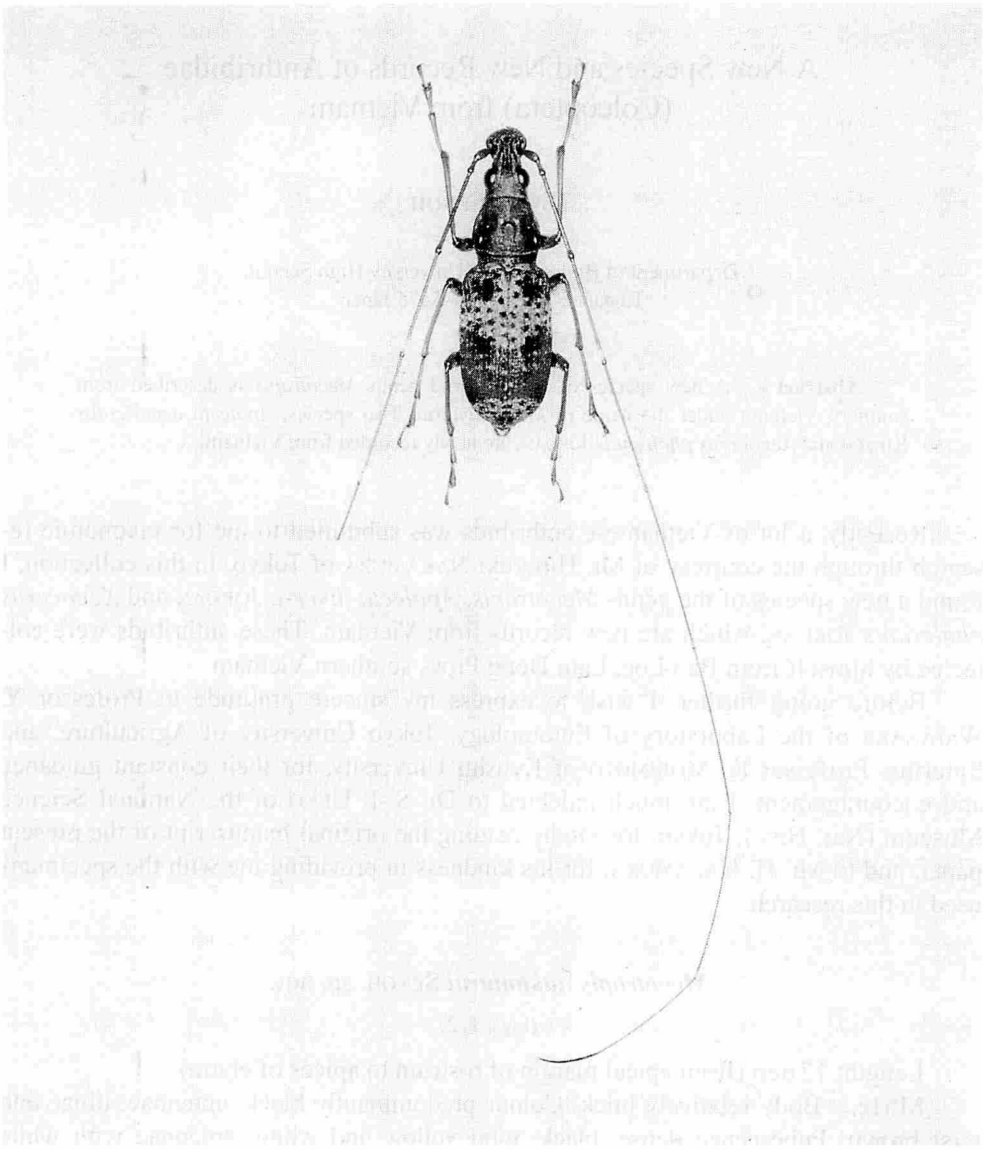

Fig. 1. *Mecotropis nakamurai* SENOH, sp. nov., ♂ (holotype) from S. Vietnam.

longitudinal depression from upper margin of each eye to the middle of rostrum; eyes moderately large, rounded, moderately convex above, relatively estranged from each other; rostrum robust, gradually narrowed towards basal parts of antennae, then gradually widened anteriorly, widest at the bases of mandibles, strongly emarginate at the middle of anterior margin, and with a pair of deep triangular fossae in front of the

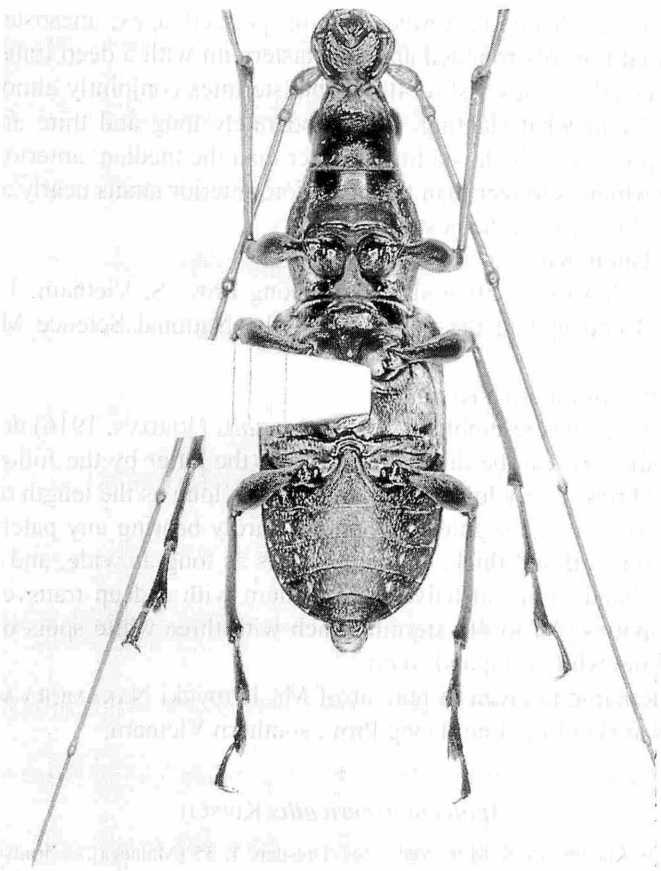

Fig. 2. Ventral surface of *Mecotropis nakamurai* SENOH, sp. nov.

basal parts of antennae; maximum width of rostrum about 2.0 times as wide as the shortest distance between eyes. Antennae very long, about 3.6 times as long as the length of body, scape thick, larger than pedicel in size, proportions in length from 2nd to 11th about 5 : 33 : 40 : 49 : 61 : 65 : 67 : 51 : 6 : 12, apical segment somewhat curved and pointed.

Pronotum barrel-shaped, convex above, about 0.96 times as long as wide, widest at basal two-fifths; disc slightly swollen at the centre; dorsal transverse carina almost straight, and connected with each lateral carina at an obtuse angle, the latter declivous in basal half and horizontally extending to the subapical part of side margin; carinula obscure. Scutellum linguiform. Elytra oval and thick, about 1.7 times as long as wide, parallel-sided in basal three-fourths, then narrowed posteriorly; strial punctures small but distinct. Pygidium subtriangular, vertical, about 1.2 times as wide as long, lateral margins reflexed, and gradually convergent towards broadly rounded apex.

Prosternum with a deep transverse sulcus in front of coxal cavities; prosternal process triangular, gradually narrowed towards pointed apex; mesosternal process gradually narrowed towards rounded apex; metasternum with a deep transverse sulcus in front of hind coxal cavities; 1st to 4th visible sternites conjointly almost horizontal in side view, 5th somewhat slanting. Legs moderately long and thin; anterior femur shorter than the posterior which is a little shorter than the median; anterior tibia longer than the median which is longer than the posterior; anterior tarsus nearly as long as the median which is longer than the posterior.

Female. Unknown.

Holotype ♂, Bao Loc (850 m alt.), Lam Dong Prov., S. Vietnam, 1–V–2000, H. NAKAMURA leg. Deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Distribution. Southern Vietnam.

Notes. This species resembles *Mecotropis vitalis* (JORDAN, 1916) described from Sambor, Cambodia, but can be distinguished from the latter by the following characteristics: antenna brown, very long, about 3.6 times as long as the length of body, without white broad ring in 3rd segment; pronotum hardly bearing any patch, rounded in side margin; elytra oval and thick, about 1.7 times as long as wide, and with a broad black transverse band in apical halves; prosternum with a deep transverse sulcus in front of coxal cavities; 1st to 4th sternites each with three white spots on both sides; legs brown, without white ring; and so on.

The specific name is given in honour of Mr. Hiroyuki NAKAMURA who collected this new species at Bao Loc, Lam Dong Prov., southern Vietnam.

Apolecta aspericollis KIRSCH

Apolecta aspericollis KIRSCH, 1875, Mitt. zool. Mus. Dresden, **1**: 55 (Malacca). — JORDAN, 1916, Novit. zool., **23**: 347 (Malay Pen., Singapore, Sumatra); 1928, ibid., **34**: 103 (Pahang). — SENOH, 1995, Elytra, Tokyo, **23**: 144 (South Thailand, West Malaysia, Singapore, Sumatra).

Specimen examined. 1 ♂, Bao Loc, Lam Dong Prov., S. Vietnam, 3–V–2000, H. NAKAMURA leg.

Distribution. S. Vietnam (new record), S. Thailand, W. Malaysia, Singapore, Sumatra.

Notes. The specimen recorded above somewhat differs from the Malayan specimens in having the following characteristics: dorsal transverse carina of pronotum more angulate at the middle; small black spots of elytra sometimes combine with each other.

Xenocerus phaleratus JORDAN

Xenocerus phaleratus JORDAN, 1945, Proc. r. ent. Soc. Lond., (B), **14**: 19 (Cambodia).

Specimens examined. 1♂, 1♀, Bao Loc, Lam Dong Prov., S. Vietnam, 4–V–

2000, H. NAKAMURA leg.

Distribution. S. Vietnam (new record), Cambodia.

要　約

妹尾俊男：ベトナムから新たに発見されたヒゲナガゾウムシ. —— 今年（2000年）の5月上旬に，ベトナム南部のBao Loc周辺の昆虫類調査を実施された中村裕之氏より，そのときに採集されたヒゲナガゾウムシ類の分類学的研究を託された．そのなかに，*Mecotropis*属に含まれる1新種とベトナムからはこれまでに報告のない*Apolecta aspericollis* KIRSCHおよび*Xenocerus phaleratus* JORDANが含まれていた．*Mecotropis*属の新種には，*Mecotropis nakamurai* SENOHと命名して記載した．この種は，触角が茶色できわめて長く，体長の3.6倍に達し，第3節には幅広い白色環をもたない，前胸背板の両側は強く丸みをおびる，鞘翅は太短い，それぞれの腹板の両側に3個の白色小紋をもつ，などの点により，近縁と思われる*M. vitalis* (JORDAN, 1916)より容易に区別できる．

一方，ベトナムからこれまでに記録のなかった*Apolecta aspericollis* KIRSCHの分布域が，ベトナム南部（新記録），マレー半島（タイ南部，西マレーシア，シンガポール）およびスマトラ島となり，また，*Xenocerus phaleratus* JORDANの分布域は，カンボジアおよびベトナム南部（新記録）となった．

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Elytra, *Tokyo*, **28** (2): 452, November 15, 2000

Two New Records of Anthribinae (Coleoptera, Anthribidae) from Thailand

Toshio SENOH

Department of Biology, Chuo University High School,
Koganei, Tokyo, 184–8575 Japan

At the end of the spring of this year, Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, visited the peninsular parts of Thailand for collecting insects. Some anthribids collected on that occasion were submitted to me for taxonomic study, all collected at the Si Phangnga National Park, Phang Nga Prov., near the Island of Phuket. These contained nine species, two of which were newly recorded from Thailand.

Before going further, I wish to express my hearty thanks to Dr. M. TAKAKUWA for his kindness in submitting invaluable specimens to me for taxonomic study.

Cedus nigropictus KIRSCH, 1875

Cedus nigropictus KIRSCH, 1875, Mitt. zool. Mus. Dresden, **1**: 53 (Malacca).

Specimens examined. 3♂♂, 2♀♀, Si Phangnga N.P., Phang Nga, S. Thailand, 21~25–IV–2000, M. TAKAKUWA leg.

Distribution. South Thailand (new record), Malacca.

Habrissus heros PASCOE, 1871

Habrissus heros PASCOE, 1871, Ann. Mag. nat. Hist., (4), **8**: 359 (Labuan Is., off Borneo). —— JORDAN, 1913, Rec. Ind. Mus., **9**: 208 (Shinkip Is., off Sumatra); 1928, Novit. zool., **34**: 100 (Gunong Tahan, W. Malaysia). —— HELLER, 1918, Tydschr. Ent., **61**: 256.

Specimen examined. 1♂, Si Phangnga N.P., Phang Nga, S. Thailand, 21~25–IV–2000, M. TAKAKUWA leg.

Distribution. South Thailand (new record), West Malaysia, Shinkip Is. (off Sumatra), Labuan Is. (off Borneo).

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Elytra, *Tokyo*, **28** (2): 453–454, November 15, 2000

Discovery of *Mecysmoderes nigrinus* (Coleoptera, Curculionidae, Ceutorhynchinae) from Japan[1)]

Hiraku YOSHITAKE

Entomological Laboratory, Division of Bioresource and Bioenvironmental Science, Graduate School, Kyushu University, 812–8581 Japan

The ceutorhynchine weevil *Mecysomoderes nigrinus* was originally described by HONG *et al.* (1999) from Central and South Korea on the basis of the specimens taken on *Rhododendron mucronulatum* TURCZ. Any records have not been made after the original description.

Through my recent study of the Japanese Ceutorhynchinae, I found a number of specimens of this species collected from Japan in several private collections. After a close examination, I now find that they are identical with the Korean specimens. Their collecting data will be shown in the following lines.

I wish to express my thanks to Dr. Hiroaki KOJIMA, Mr. Kenichi EMOTO and Mr. Masami HORIKAWA for their kind offer of invaluable specimens.

Mecysmoderes nigrinus HONG et WOO, 1999

(Fig. 1)

Mecysmoderes nigrinus HONG et WOO, 1999, Ins. Koreana, **16**: 189–191.

Specimens examined. [Honshu] 1♀, Ura-Takao, Tokyo, 3–V–1970, K. EMOTO leg.; 1♂, 2♀♀, Hatouchi-rindô, Iida-shi, Nagano Pref., 29~30–IV–1998, H. YOSHITAKE leg.; [Kyushu] 3♀♀, Mt. Unzen, Shimabara, Nagasaki Pref., 24–VI–1981, S. IMASAKA leg.; 14♂♂, 13♀♀, Mt. Hiko-san, Fukuoka Pref., 25–V–1993, H. KOJIMA leg.; 1ex., Mt. Kujû, Ôita Pref., 13~15–V–1967, H. TAKIZAWA leg.; 3♂♂, 1♀, Chôjabaru–Bôgatsuru, Ôita Pref., 22–V–1994, H. KOJIMA leg.; 5♂♂, 5♀♀, Mt. Kujû-san, Kumamoto Pref., 26–VI–1992, H. KOJIMA leg.; 3♀♀, Mt. Shiraiwa, Gokase-chô, Miyazaki Pref., 22–V–1998, H. KOJIMA leg.

Distribution. Japan (new record): Honshu, Kyushu; C. and S. Korea.

Biological note. In my observation in Nagano, the adults were found on the young branches of *Rhododendron obtusum* (LINDL.) PLANCH. var. *kaempferi* (PLANCH.) WILS. [*yamatsutsuji* in Japanese] with the flower buds (Fig. 2), and they fed on the leaves and flower buds.

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1) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 5, No. 49).

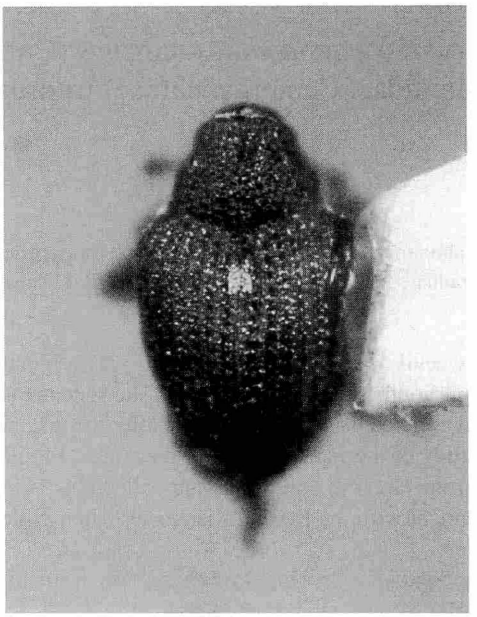

Fig. 1. *Mecysmoderes nigrinus* HONG et WOO, male in dorsal view.



Fig. 2. —— A, Habitat of *Mecysmoderes nigrinus* on Hatouchi-rindô, Iida-shi, Nagano; B, *Rhododendron obtusum* (LINDL.) PLANCH., one of the food plants of the adult of *Mecysmoderes nigrinus*.

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HONG, K-J., A. B. EGOROV & K-S. WOO, 1999. Taxonomic review of Korean Ceutorhynchinae (Coleoptera, Curculionidae). II. Subtribe Coeliodina, Ceutorhynchina, Hypurina, Mecysmoderina, and Tribe Orobitini. *Ins. Koreana*, **16**: 163–195.

Elytra, *Tokyo*, **28** (2): 455–456, November 15, 2000

Occurrence of *Trichocoeliodes excavatus* (Coleoptera, Curculionidae, Ceutorhynchinae) in South Korea[1)]

Hiraku YOSHITAKE[2)], Satoshi KAMITANI[3)] and Jong-cheol PAIK[4)]

[2)] Entomological Laboratory, Division of Bioresource and Bioenvironmental Science, Graduate School, Kyushu University, 812–8581 Japan
[3)] Entomological Laboratory, Faculty of Agriculture, Kyushu University, 812–8581 Japan
[4)] Department of Agricultural Biology, College of Agriculture, Sunchon National University, 315, Maegokdong, Sunchon, 540–742 Korea

Trichocoeliodes excavatus was originally described by HUSTACHE (1916) on the basis of specimens collected from mont Kinkazan près Gifu and Nagasaki, Japan as a member of the genus *Micrelus*. After that, COLONNELLI (1986) transferred it to the genus *Trichocoeliodes*. This species is known to occur in Honshu, Shikoku and Kyushu, Japan, but no record from the neighboring country is available up to the present.

In late May, 2000, we made a short collecting trip to the vicinity of Mt. Jiri-san, Sang-Nan-Do, South Korea, and were able to collect many individuals of the species by net-sweeping from young branches of a chestnut tree, *Castanea crenata* SIEB. et ZUCC. [*kuri* in Japanese].

After a careful examination, it has become clear that they are identical with the Japanese specimens. It is therefore newly recorded from Korea with a brief biological note.

Trichocoeliodes excavatus (HUSTACHE, 1916)

(Fig. 1 A, B)

Micrelus excavatus HUSTACHE, 1916, Annals. Soc. ent. Fr., **85**: 128.
Trichocoeliodes excavatus: COLONNELLI, 1986, Fragm. ent., Roma, **18**: 435.

Specimens examined. 9♂♂, 26♀♀, Piagol, Mt. Jiri-san, Sang-Nan-Do, S. Korea, 30–V–2000, S. KAMITANI & H. YOSHITAKE leg.

Distribution. Japan: Honshu, Shikoku, Kyushu; S. Korea (new record).

Biological note. According to MORIMOTO (1984), adults of this species were taken on inflorescence of the chestnut trees in the spring and early summer. In our observation on a chestnut field in South Korea, the adults gathered on inflorescence before the flowering of the cultivated chestnut trees (Fig. 2), and they fed on the flower buds by thrusting their rostrums (Fig. 1 B).

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1) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 5, No. 50).

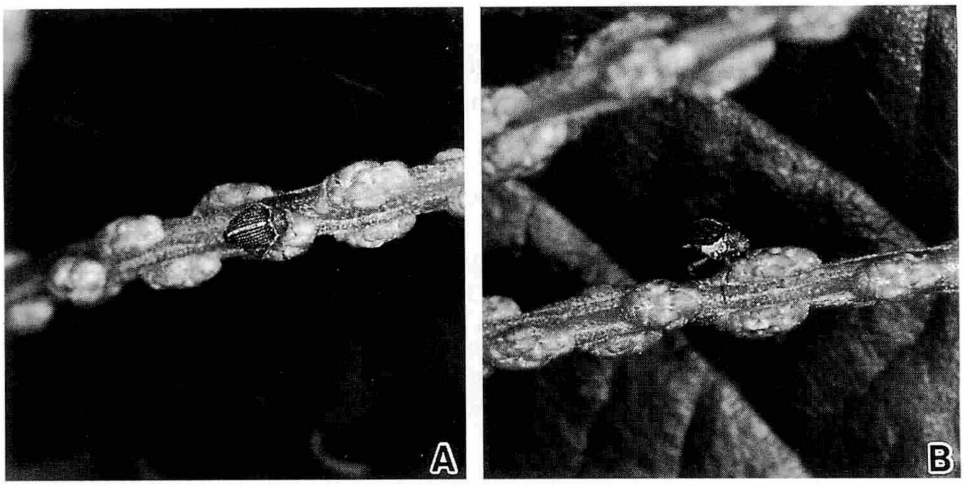

Fig. 1. *Trichocoeliodes excavatus* (HUSTACHE); A, an adult on inflorescense of the chestnut tree; B, ditto, feeding on a flower bud.



Fig. 2. Habitat of *Trichocoeliodes excavatus* (HUSTACHE), a chestnut field at Piagol on Mt. Jiri-san, South Korea.

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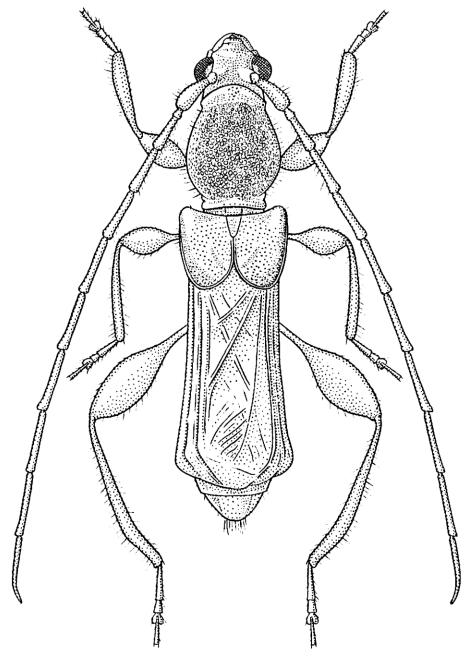

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