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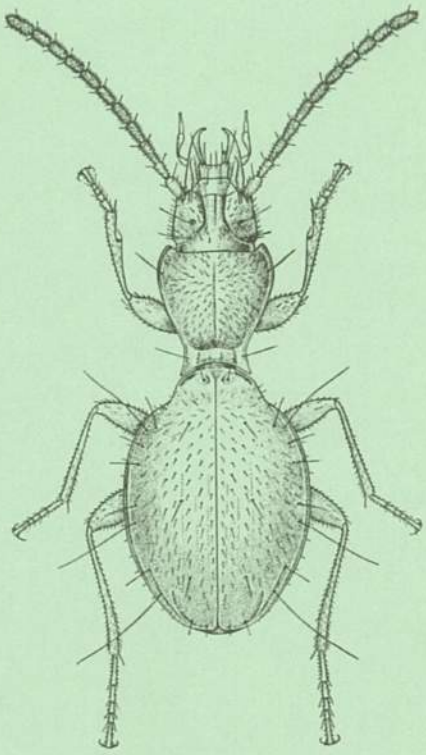

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日本鞘翅学会

THE JAPANESE SOCIETY OF COLEOPTEROLOGY
TOKYO

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The Japanese Society of Coleopterology

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Elytra, Tokyo, **24** (2): 175–179, November 15, 1996

Radiation of Several Carabina Groups (Coleoptera, Carabidae) Inferred from the Mitochondrial ND5 Gene Sequences

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Abstract The DNA sequences of the mitochondrial ND5 gene were determined for 9 French Carabina-species. The molecular phylogenetic trees were constructed from these sequences in conjunction with those from the representative Japanese Carabina-species. The results suggest that a rapid radiation of the major genera examined took place in the initial stage of the Carabina evolution.

Key words: ND5; mt DNA; phylogeny; radiation; French and Japanese Carabina beetles.

One of the papers by Su *et al.* (1996 a), in which a phylogenetic tree of the Japanese Carabinae was constructed based on the mitochondrial DN5 (NADH dehydrogenase subunit 5) gene sequences, showed that the Japanese Carabina may be classified into 5 main groups, most of which correspond to the genera [often treated as the subgenera of *Carabus* (s. lat.)] that are recognized in the current classification system based on morphological characters (see fig. 5 of Su *et al.*, 1996 a). These are *Procrustes* (*Megodontus*=*Pachycranion*), *Damaster* (*Damaster*+*Acoptolabrus*+*Coptolabrus*), *Apotomopterus* (*Limnocarabus*+*Euleptocarabus*), *Leptocarabus* (*Leptocarabus*+*Adelocarabus*+*Aulonocarabus*+*Pentacarabus*+*Asthenocarabus*), *Hemicarabus* (*Hemicarabus*+*Homoeocarabus*), and *Carabus* (*Carabus*+*Ohomopterus*). It was also noted that *Carabus* (s. str.) and *Ohomopterus* may be treated as separated groups because of the bootstrap confidence value of the cluster representing these two genera is

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Abbreviations: ND5, NADH dehydrogenase subunit 5; mt, mitochondria; bp, base pair; UPGMA, unweighted pair-group method with arithmetric mean; NJ, neighbor-joining; Myr, million years.

The nucleotide sequence data reported in this paper will appear in the DDBJ, EMBL, and GenBank nucleotide sequence databases with the accession numbers D86203–D86211.

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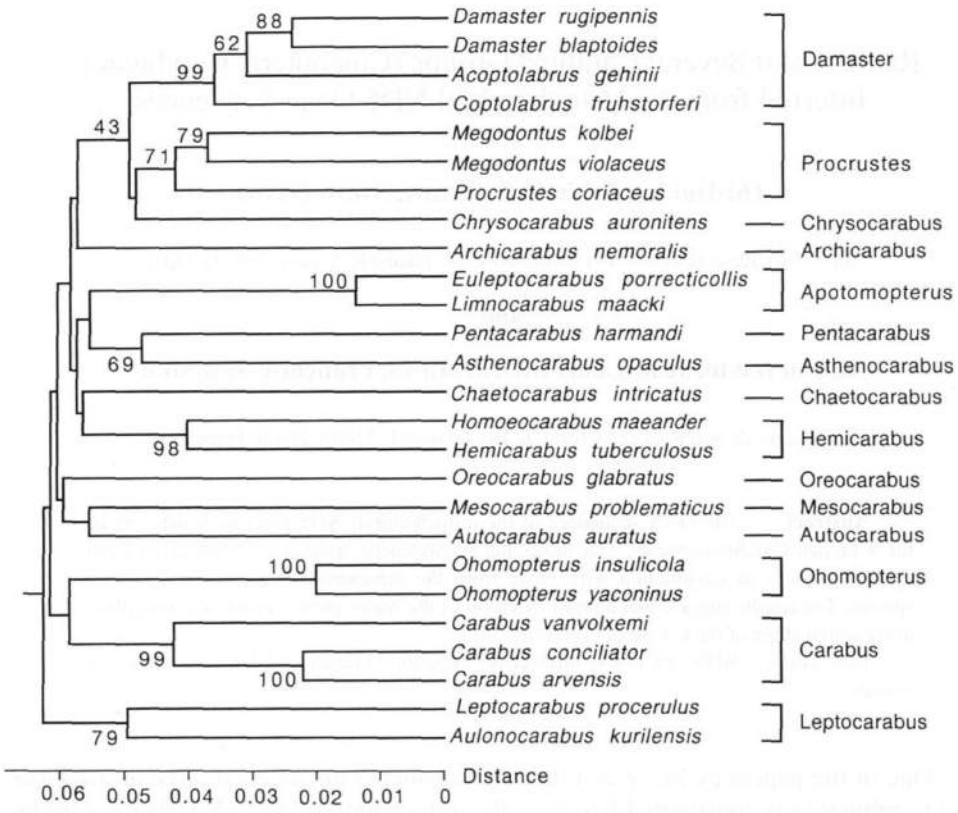

Fig. 1a

not very high. The tree suggests that the above 6 (or 7) main groups radiated more than 10 Myr ago within a short period from their common ancestor.

In the present paper, 9 French Carabina-species, the genera of 7 of which do not occur in Japan, have been examined for ND5 gene sequences to obtain further evidence for radiation of the main groups (≒genera) of the Carabina and to know the phylogenetic relationships between the Japanese and French species.

Materials and Methods

The French specimens used were collected in Burgundy, and analyzed for the 1069 bp. upstream from 3′-terminal stop codon of the mitochondrial ND5 gene sequences. For the preparation of DNA, PCR direct sequencing, and construction of the phylogenetic trees, see Su *et al.* (1996 a) and Kumar *et al.* (1993). The phylogenetic trees were constructed by the UPGMA (Kumar *et al.*, 1993), and the neighbor-joining

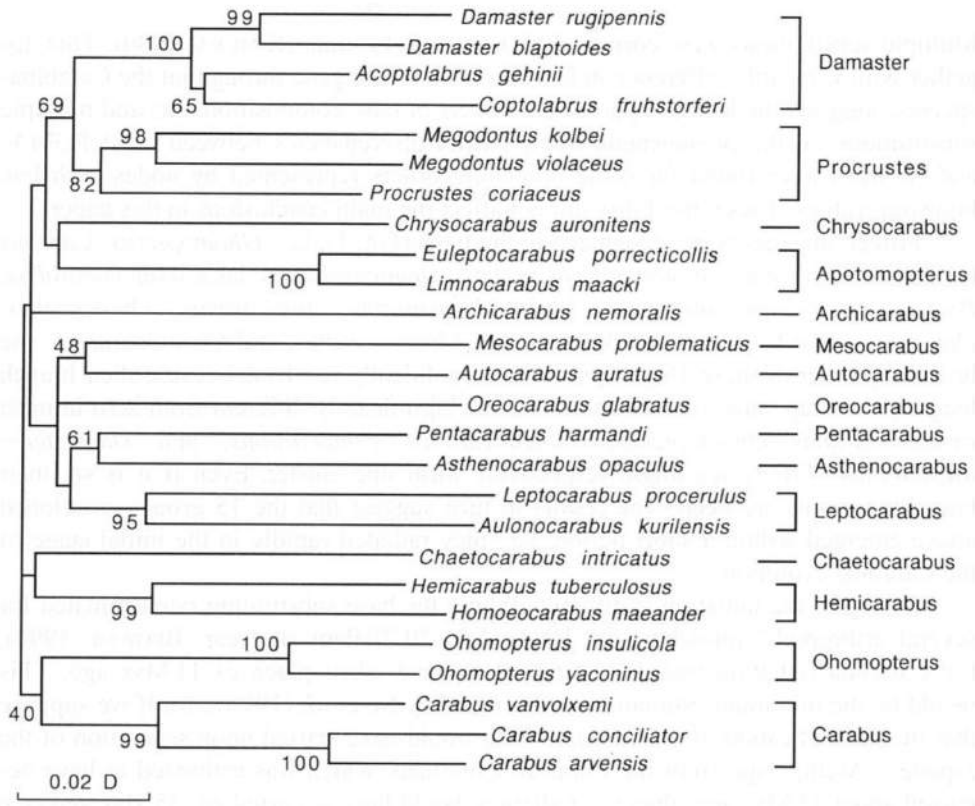

Fig. 1b

Fig. 1. Phylogenetic trees of the mitochondrial ND5 gene of the French and Japanese Carabina-species. a: UPGMA-tree. b: NJ-tree. The bootstrap confidence level (based on 1,000 resamplings) of more than 40% is shown at each branching point. D indicates KIMURA's two-parameter evolutionary distance (KIMURA, 1980).

(NJ) method (SAITOU & NEI, 1987), using the evolutionary distances computed by KIMURA's two-parameter method (KIMURA, 1980). The trees were evaluated using the bootstrap test (FELSENSTEIN, 1985). For these analyses, the ND5 gene sequences from 9 French and 17 representative Japanese Carabina-species (see SU *et al.*, 1996 a) were used.

Results and Discussion

Throughout the ND5 gene sequences used, neither deletions nor insertions were required for multiple alignment and the G+C contents were nearly constant (21.0± 1.0%). The maximum difference percent in all sites, and that at codon third positions in the ND5 gene between all the species examined were 14% and 37%, respectively.

Multiple substitutions were corrected by KIMURA's formula (KIMURA, 1980). This, together with very little difference in G+C content of the gene throughout the Carabina-species, suggests the lack of appreciable effects of base composition bias and multiple substitutions on the phylogenetic trees. Partial discrepancies between the UPGMA- and NJ-trees were found for some branching orders represented by nodes with low bootstrap values. These instability did not affect the main conclusions in this paper.

Fifteen lineages were recognized in the trees (Fig. 1), i.e., *Ohomopterus*, *Carabus* (s. str.), *Archicarabus*, *Apotomopterus* (s. lat.), *Hemicarabus* (s. lat.), *Asthenocarabus*, *Pentacarabus*, *Leptocarabus* (s. lat.), *Mesocarabus*, *Autocarabus*, *Oreocarabus*, *Damaster* (s. lat.), *Procrustes*+*Megodontus*, *Chrysocarabus*, and *Chaetocarabus*. The branching order of these 15 groups was not confidently resolved, because their branch length (bootstrap value of less than 70) is not significantly different from zero in most cases. *Carabus*+*Ohomopterus*, *Asthenocarabus*+*Pentacarabus*, and *Damaster*+*Megodontus*+*Procrustes* might respectively form one cluster. Even if it is so, their branching points are deep. The results in turn suggest that the 15 groups mentioned above emerged within a short period, i.e., they radiated rapidly in the initial stage of the Carabina evolution.

Dating of the radiation is difficult. Taking the base substitution rate estimated for several arthropods' mitochondrial DNA (1.2×10^{-8}/silent site/year; BROWER, 1994), the Carabina radiation may be estimated to have taken place ca 11 Myr ago. This would be the minimum estimation as discussed by SU *et al.* (1996 a, b). If we suppose that the diversification of *Damaster* (s. str.) would have started upon separation of the Japanese Archipelago from the Eurasian Continent, which was estimated to have occurred about 15 Myr ago, then the radiation would have occurred ca. 35 Myr ago (see SU *et al.*, 1996 b).

Six French (European) genera, *Archicarabus* (*nemoralis*), *Chaetocarabus* (*intricatus*), *Autocarabus* (*auratus*), *Mesocarabus* (*problematicus*), *Oreocarabus* (*glabratus*), and *Chrysocarabus* (*auronitens*) which are absent in Japan, do not show clear direct phylogenetic relations to any of the Japanese Carabina genera. Two *Megodontus*-species, *kolbei* (Hokkaido, Japan) and *violaceus* (France) form a clade as expected. *C. conciliator* is sometimes treated as a subspecies of *C. arvensis*. Indeed, *C. conciliator* (Hokkaido, Japan) is close to *C. arvensis* (France) on the ND5 phylogenetic trees. Suppose that these two species branched off from their common ancestor somewhere in the Eurasian Continent and reached France and Japan, respectively. The branch length from the node that supports these two species roughly represents the relative time elapsed since they split. If we assume the Carabina radiation to have occurred 35 Myr ago (see above), then the branch length of the two *Carabus*-species corresponds to 15 Myr. In other words, ca. 15 Myr were required for the respective species to have arrived at the present localities after their separation. This has also to be related to the time of separation of the Japanese Archipelago from the Eurasian Continent, and may strengthen the idea that the initial Carabina radiation is older than given by BROWER's substitution rate.

要　約

蘇　智慧，岡田節人，大澤省三，B. DAVID, J.-L. DOMMERGUES, F. MAGNIEZ: ミトコンドリアND5遺伝子のDNA塩基配列に基づくオサムシ類の放散．—— フランス産オサムシ亜族の9属（7属は日本にいない）9種について，ミトコンドリアND5遺伝子のDNA塩基配列を決定し，日本の代表的オサムシの配列とともに分子系統樹を作成した．分類学上の属（ときに亜属とされる）に相当する15の系統の存在が示されたが，これらは，オサムシ亜族の分化初期の短期間に放散したと推定される．

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Additional Records of *Euxestocis bicornutus* (Coleoptera, Ciidae)

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Euxestocis bicornutus MIYATAKE, 1954 [Japanese name: Futatsunotsuya-tsutsukinokomushi], is relatively rare among the Japanese ciid species, and it has been considered to be endemic to Shikoku (MIYATAKE, 1985). This ciid is recently collected from rather wide areas in Japan, and KITABATA (1993) recorded it from central Honshu. In this report, I will summarize

the collecting data of the species mainly on the basis of the collection of Ehime University. Second records from the same localities are omitted.

Specimens examined. [Honshu] ⟨Aomori Pref.⟩ 24 exs., Mt. Iwaki, 29–IX–1992, M. SAKAI leg. ⟨Kanagawa Pref.⟩ 1 ex., Ooiso, 30–VII–1973, Y. HIRANO leg.; 2 exs., Dôdaira, Tanzawa, 16–V–1993, Y. HIRANO leg. ⟨Hyôgo Pref.⟩ 8 exs., Mt. Maya, 19–VIII–1989, M. KAWANABE leg. ⟨Okayama Pref.⟩ 13 exs., Mt. Gagyû, 28–VII–1989, M. KAWANABE leg. [Shikoku] ⟨Ehime Pref.⟩ 66 exs., Higashino, Matsuyama, 13–IV–1953, M. MIYATAKE leg. (incl. holo-, alloand 7 paratypes); 4 exs., Shiroyama, Matsuyama, 10–IX–1950, S. HISAMATSU leg. (paratypes); 11 exs., Kashima, nr. Matsuyama, 29–VII–1953, M. MIYATAKE leg. (incl. 8 paratypes); 1 ex., Nuwa Is., 12–X–1957, F. TAKECHI leg.; 2 exs., Omogokei, 27–VII–1956, M. MIYATAKE leg.; 4 exs., Odamiyama, 25–VIII–1992, E. YAMAMOTO leg.; 2 exs., Mt. Saragamine, alt. ca. 1,000 m, 3–V–1989, M. SAKAI leg. ⟨Kagawa Pref.⟩ 1 ex., Mt. Zôzusan, 31–VIII–1975, A. ODA leg. ⟨Kôchi Pref.⟩ 4 exs., Oudaba, Kuroson, Hatta-gun, 18–VII–1953, T. EDASHIGE leg. (paratypes); 4 exs., Cape Ashizuri, 4–IV–1977, H. MIYAMA leg. [Kyushu] ⟨Miyazaki Pref.⟩ 2 exs., Mi-ike, 3–III–1984, M. ÔHARA leg. ⟨Nagasaki Pref.⟩ 26 exs., Tsushima Isls., Uchiyama, 10–V–1991, M. KAWANABE leg. ⟨Kagoshima Pref.⟩ 115 exs., Yakushima Is., Hanayamahodô-iriguchi, 23–IX–1989, M. KAWANABE leg.; 1 ex., Kusugawa, 25–IX–1989, M. KAWANABE leg.

Distribution. Honshu, Shikoku, Kyushu, Tsushima Isls., Yakushima Is.

Host fungi. Cryptoporus volvatus (PECK) SHEAR [Hitokuchitake], *Heterobasidion insularis* (MURR.) RYV. [Rengatake], *Ganoderma lucidum* (LEYSS.: FR.) KARST. [Mannentake], *G. neojaponicum* IMAZEKI [Magojakushi], *Fomitella rhodopaea* (LÉV.) AOSHIMA [Ôsurumetake], *F. fraxinea* (FR.) IMAZEKI [Bekkôtake], *Gloeoporus dichrous* (FR.) BRESADOLA. [Ebiuratake], *Daedaleopsis perlevis* AOSHIMA [Senbeitake]. In addition to the above mentioned fungi, this species is often collected from rotten wood.

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Elytra, Tokyo, **24** (2): 181–188, November 15, 1996

Notes on Carabid Beetles (Coleoptera, Carabidae) from Mt. Miao'er Shan in Northeastern Guangxi, South China

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Abstract Nine species of the genus *Carabus* are recorded from Mt. Miao'er Shan in northeastern Guangxi of South China, with descriptions of detailed structure of the male genital organ and some taxonomical notes. Three taxa, *cordithoracicus*, *philoscius*, and *adriaenssensi*, are downgraded to subspecies of previously known species.

Mt. Miao'er Shan, situated at the northeastern part of Guangxi Province near the Hunan borders, is the highest mountain in the southern part of the Chinese Continent, attaining to a height of 2,142 m. It is one of the most important nature protective areas in the same province, and a good natural forest is preserved particularly at the upper part of the mountain. However, nothing was known about the carabid fauna of this mountain range until recent years. It is DEUVE (1989, pp. 160–161) who first recorded the species belonging to the genus *Carabus* occurring on this mountain; he described two new species under the names *Carabus* (*Apotomopterus*) *guangxicus* and *C.* (*A.*) *toulgoeti* on the basis of the specimens preserved in the collection of the Academia Sinica in Beijing. Two other important papers on the carabid fauna of the same mountain range were subsequently published, first by LASSALLE and PRUNIER (1993) and then by CAVAZZUTI (1995), in which they added ten more taxa, including six "new species", to the carabid fauna of the mountain. Thus, Miao'er Shan is now known to be the place whose carabid fauna has been most satisfactorily investigated in China. It is worth noting that the mountain is above all abundant in the members of the subgenus *Apotomopterus*; as much as nine species belonging to this subgenus occur nearly sympatrically on the same range.

Late in the spring of 1996, I had an opportunity of investigating the carabid beetles of Mt. Miao'er Shan mainly at the upper part of the mountain, as one of the members of the 1996 expedition of the Sino-Japanese cooperative study on the soil fauna of Southwest China. I have succeeded in obtaining nine of twelve hitherto known species belonging to the genus *Carabus* (s. lat.). Herewith I give a list of these species, with descriptions mainly of detailed structure of the male genitalia and some notes on their taxonomic status or distribution, etc. Some specimens were immediately killed in 95% ethanol and transmitted for extraction of the mitochondrial DNA. The results will be reported in my other article to be prepared in cooperation with the staff of the Biohis-

tory Research Hall (Osaka).

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, who kindly supported me during the expedition and revised the manuscript of this paper. I am deeply indebted to the following members of the expedition for their kind help during the survey: Professor Masataka SATÔ, Professor Yoshiaki NISHIKAWA and Dr. Akiko SAITO. Hearty thanks are also due to Professor YIN Wen-ying of the Shanghai Institute of Entomology, Academia Sinica, for her kind help extended to our research, and Messrs. XIE Rong-dong of the same institute and ZHAO Cui-min of the Nanning branch for their kind assistance in the field.

1. ***Carabus*** (s. str.) ***nanosomus cordithoracicus*** DEUVE, 1989, stat. nov.

(Fig. 1)

Carabus (*Apotomopterus*) *cordithoracicus* DEUVE, 1989, Nouv. Revue Ent., (N. S.), **6**, p. 163; type locality: Chine, Guangxi, Longsheng Xian, Huaping, 1,420 m.

Carabus (s. str.) *cordithoracicus*: DEUVE, 1991, Bibliothèque Entomologique, **4**, p. 31. —— DEUVE, 1994, ibid., **5**, p. 88.

Male genitalia. Aedeagus as shown in Fig. 1 a–c. Digitulus sagittiform, about 1.6 times as long as wide, widest at the base, and gradually narrowed to the apex which is rather obtusely pointed; viewed laterally, central part of the basal ridge strikingly protuberant to form a trapezoidal projection.

Specimens examined. 1 ♂, Tieshan Ping (2,000 m), 25–V–1996; 2 ♂♂, 3 ♀♀, above Antang Ping (1,820 m), 25~27–V–1996; 3 ♂♂, 5 ♀♀, above Liangshui (1,700–1,750 m), 26~27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

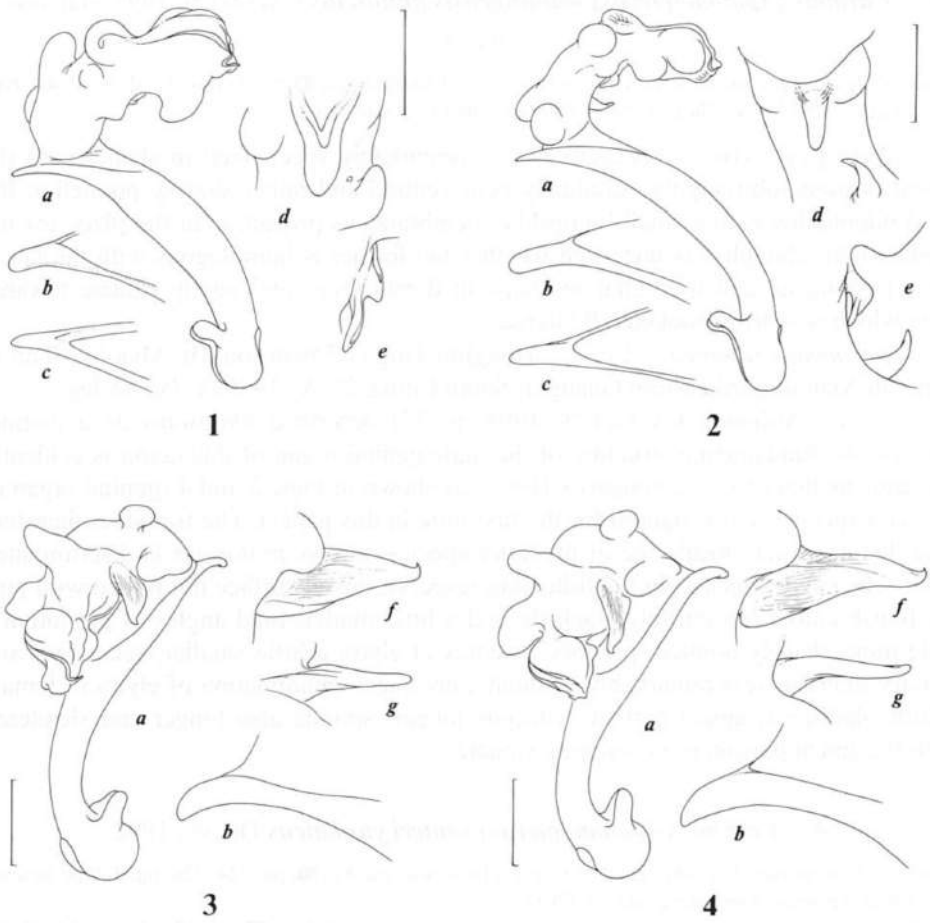
Notes. Though originally described as a distinct species, conformation of the male genitalia of this taxon agrees with the specific characters of *Carabus nanosomus* HAUSER distributed on Mt. Jinfo Shan of SE Sichuan. It is therefore downgraded to a subspecies of the latter species. Subsp. *cordithoracicus* differs from the nominotypical one in the following points: size larger; pronotum a little more elongate and more strongly narrowed towards hind angles; elytra longer and slenderer; tertiary intervals of elytra much less frequently segmented; tarsi and legs longer and slenderer; apical part of aedeagus longer; digitulus less sharply pointed at the tip, with the basal ridge more elongate longitudinally and more strongly protrudent dorsad.

2. ***Carabus* (*Isiocarabus*) *miaorum*** LASSALLE et PRUNIER, 1993

(Fig. 2)

Carabus (*Isiocarabus*) *miaorum* LASSALLE et PRUNIER,1993, Bull. Acorep, **17**, p. 17, figs. 4, 9; type locality: Chine, Guangxi, E. Longsheng, Mts. Miao Er Shan, 1,500 m.

Male genitalia. Aedeagus and endophallus as shown in Fig. 2 a–e. Apical lobe of aedeagus long and slender, subparallel-sided and gently rounded at the tip in



Figs. 1–4. Male genital organ of *Carabus* (s. lat.) spp. from Mt. Miao'er Shan (1–2, 4) and Mt. Daming Shan (3) of Guangxi Province in South China. —— 1, *Carabus* (s. str.) *nanosomus cordithoracicus* stat nov.; 2, *C.* (*Isiocarabus*) *miaorum*; 3, *C.* (*Apotomopterus*) *wumingensis*; 4, *C.* (*A.*) *w. philoscius* stat. nov.; a, aedeagus with fully everted endophallus in right (1, 2) and left (3, 4) lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, digitulus in dorsal view; e, ditto in right lateral view; f, spinula in dorsal view; g, ditto in basal view. Scale: 2 mm for a, 1 mm for b–g.

lateral view. Paraligula strongly developed and projected dorsad like a horn as shown in Fig. 2 a, d–e. Digitulus rather long and slender in dorsal view, and much thickened at the median portion to form an L-shaped sclerite in lateral view.

Specimens examined. 1 ♂, above Antang Ping (1,820 m), 27–V–1996; 8 ♂♂, 17 ♀♀, Hongjun Ting (1,550 m), 27–V–1996; 5 ♂♂, 4 ♀♀, Dujuan Yuan (1,200 m), 27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

3. *Carabus (Apotomopterus) wumingensis philoscius* CAVAZZUTI, 1995, stat. nov.

(Fig. 4)

Carabus (Apotomopterus) philoscius CAVAZZUTI, 1995, Lambillionea, **95**, p. 35, figs. 1 c–d, 3 c–d, 4 e; type locality: Mao Er [sic] Shan, 1,200–1,500 m, Guanxi [sic] sett., Cina.

Male genitalia. Aedeagus not so remarkably specialized in shape, with the apical portion subtriangular, gradually bent ventrad and rather sharply pointed at the tip. Endophallus with a small hump-like membraneous projection at the place for the median lobe, though it is uncertain whether the former is homologous with the latter. Spinula elongate and triangular in shape in dorsal view, and gently sinuate towards apex which is sharply hooked left laterad.

Specimens examined. 1 ♂, 1 ♀, Hongjun Ting (1,550 m) on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, 27–V–1996, Y. IMURA leg.

Notes. Although CAVAZZUTI (1995, p. 35) described *philoscius* as a distinct species, the fundamental structure of the male genital organ of this taxon is evidently the same as that of *C. wumingensis* DEUVE as shown in Figs. 3 and 4 (genital organ of DEUVE's species is also figured for the first time in this paper). The former is therefore regarded as a mere local race of the latter species. Subsp. *philoscius* is discriminated from subsp. *wumingensis* in the following respects: dorsal surface not tinged with purple-bluish colour but entirely blackish, and a little matter; hind angles of pronotum a little more sharply pointed; primary foveoles of elytra a little smaller; secondary and tertiary intervals less remarkably crenulate; preapical emargination of elytra in female a little shallower; apical part of aedeagus longer; spinula also longer and slenderer, with the apical portion more strongly sinuate.

4. *Carabus (Apotomopterus) sauteri yunkaicus* DEUVE, 1992

Carabus (Apotomopterus) yunkaicus DEUVE, 1991, Bull. Soc. ent. Fr., **96**, pp. 224, 226, fig. 3; type locality: Chine, Guangxi, Longsheng Xian, 1,420 m.

Carabus (Apotomopterus) sauteri yunkaicus: IMURA, 1994, Elytra, Tokyo, **22**, pp. 12–13, figs. 14–15, 23, 31, 40.

Specimens examined. 1 ♂, 1 ♀, near the summit of Mt. Miao'er Shan (2,100 m), 26~27–V–1996; 11 ♂♂, 11 ♀♀, above Antang Ping (1,820 m), 25~27–V–1996; 4 ♂♂, above Liangshui (1,700–1,750 m), 26~27–V–1996, 5 ♂♂ 5 ♀♀, Hongjun Ting (1,550 m), 27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

Notes. This carabid beetle was obtained from Hongjun Ting (1,550 m in altitude) to near the summit of the mountain (ca. 2,100 m in altitude), and its vertical distribution seems to be widest of all the species recorded by our expedition.

5. *Carabus* (*Apotomopterus*) *inagakii liaorum* CAVAZZUTI, 1995

Carabus (*Apotomopterus*) *inagakii liaorum* CAVAZZUTI, 1995, Lambillionea, **95**, p. 38, figs. 2 b, 3 e–f, 4 c; type locality: Mao Er [sic] Shan, 1,500 m, Guanxi [sic] N-occidentale, Cina.

Specimens examined. 6 ♂♂, 9 ♀♀, Hongjun Ting (1,550 m), 27–V–1996; 1 ♂, 1 ♀, Dujuan Yuan (1,200 m), 27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, Y. IMURA leg.

Notes. This taxon was obtained mainly from the middle altitudinal area, between the height of 1,200 m and 1,550 m. It is sympatric with such species as *C. miaorum*, *C. s. yunkaicus*, *C. w. philoscius* and *C. a. arrogantior*.

6. *Carabus* (*Apotomopterus*) *toulgoeti* DEUVE, 1989

(Fig. 5)

Carabus (*Apotomopterus*) *toulgoeti* DEUVE, 1989, Nouv. Revue Ent., (N. S.), **6**, p. 161; type locality: Chine, Guangxi, Miao'er Shan, 1,900 m.

Male genitalia. Aedeagus not remarkably specialized in shape, with the median portion long and almost parallel-sided, the apical lobe robust and rather acutely hooked ventrad. Endophallus also poor in the original characteristics as shown in Fig. 5 a. Spinula leaf-shaped in dorsal view, strongly narrowed towards apex, with the surface remarkably rugulose.

Specimens examined. 2 ♀♀, above Tian Hu (2,000 m), 25–V–1996; 8 ♀♀, Tieshan Ping (2,000 m), 24~25–V–1996; 5 ♂♂, 10 ♀♀, above Antang Ping (1,820 m), 25~27–V–1996; 12 ♂♂, 10 ♀♀, above Liangshui (1,700–1,750 m), 26~27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

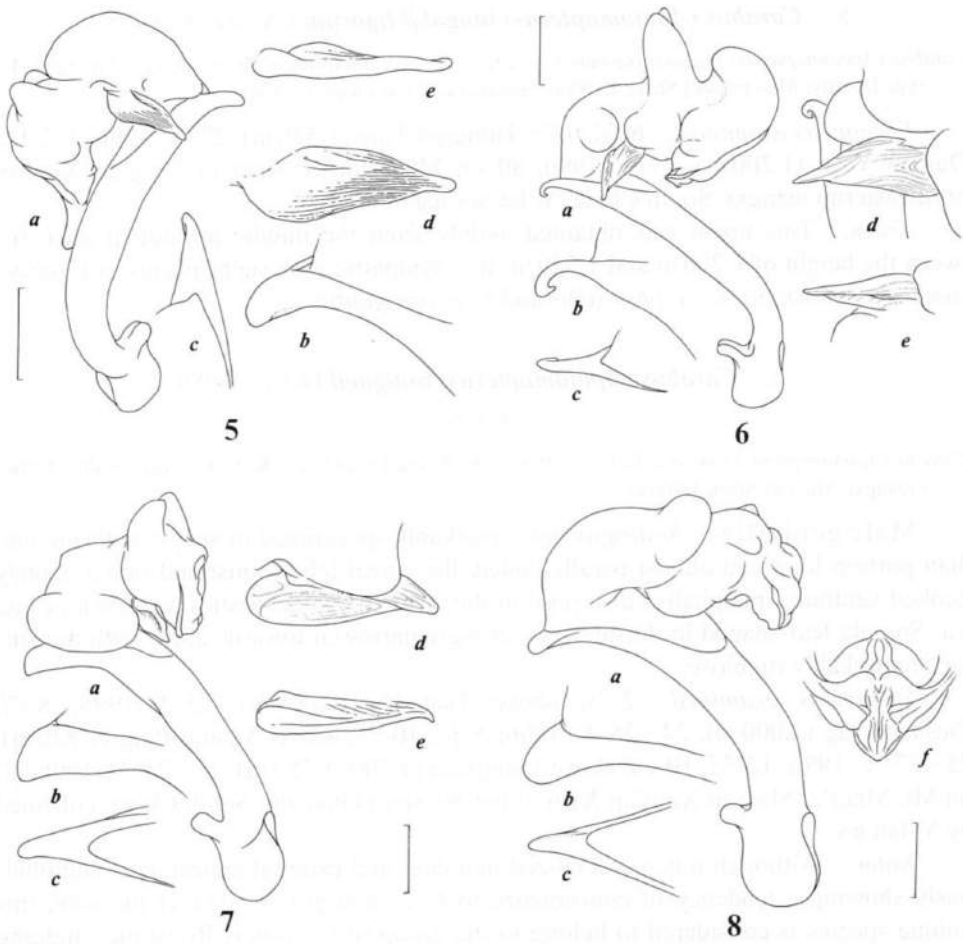
Notes. Although much specialized in colour and external appearance, and obviously showing a tendency of convergence to *C. l. acorep* LASSALLE et PRUNIER, this unique species is considered to belong to the group of *C. sauteri* ROESCHKE, judging from the conformation of the male genital organ.

7. *Carabus* (*Apotomopterus*) *longeantennatus acorep* LASSALLE et PRUNIER, 1993

(Fig. 6)

Carabus (*Apotomopterus*) *acorep* LASSALLE et PRUNIER, 1993, Bull. Acorep, **17**, p. 18, figs. 7, 8; type locality: Chine, Guangxi, Mts. Miao Er Shan, 1,800 m.
Carabus (*Apotomopterus*) *longeantennatus acorep*: DEUVE, 1994, Bibliothèque Entomologique, **5**, p. 69.

Male genitalia. Aedeagus as was already figured by LASSALLE and PRUNIER (1993, p. 18), but more precisely as in Fig. 6 a–c in the present paper. Endophallus rather peculiar in shape for a member of the subgenus; parapraeputial lobes well-developed, long and strongly projected dorsad; apical portion extraordinarily inflated, with the praeputial pad vestigial; aggonoporius forming a short gonoporal plate, with the



Figs. 5–8. Male genital organ of *Carabus* (s. lat.) spp. from Mt. Miao'er Shan of NE Guangxi in South China. —— 5, *Carabus* (*Apotomopterus*) *toulgoeti*; 6, *C.* (*A.*) *longeantennatus acorep*; 7, *C.* (*A.*) *arrowi arrogantior*; 8, *C.* (*Coptolabrus*) *pustulifer adriaenssensi* stat. nov.; a, aedeagus with fully everted endophallus in right (6–8) and left (5) lateral view; b, apical part of aedeagus in right lateral view; c, ditto in dorsal view; d, spinula in dorsal view; e, ditto in basal view; f, aggonoporius in ventral view. Scale: 2 mm for a, 1 mm for b–f.

basal part rather strongly sclerotized. Spinula as shown in Fig. 6 d–e, not so strongly sclerotized for the subgenus.

Specimens examined. 9 ♂♂, 15 ♀♀, above Antang Ping (1,820 m), 27–V–1996; 2 ♂♂, 1 ♀, above Liangshui (1,700–1,750 m), 27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

Notes. Although the two French authors described *acorep* as a distinct species, basic structure of its male genital organ suggests that this taxon should be treated as a

subspecies of *C. longeantennatus* HAUSER, as was already pointed out by DEUVE (1994, p. 69). The former is distinguished from the latter by the following characteristics: size much larger; dorsal colour a little more dark bluish; median tooth of mentum narrower and more sharply pointed; hind angles of pronotum more strongly protruded posteriad; elytra longer and slenderer; primary intervals much wider to form rows of roundly shaped large tubercles; tertiary costae almost vestigial; spinula more narrowly contracted towards apex, with the tip more sharply pointed. Of the total eleven males examined, seven (64%) were normal in position of the aedeagus, whereas the remaining four (36%) showed inversion of the same organ as shown in Fig. 6.

8. *Carabus (Apotomopterus) arrowi arrogantior* DEUVE, 1991

(Fig. 7)

Carabus (Apotomopterus) arrogantior DEUVE, 1991, Nouv. Revue Ent., (N. S.), **8**, p. 102; type locality: Chine, Guangxi, Longsheng Gezu Zizhixian, Huaping. —— LASSALLE & PRUNIER, 1993, Bull. Acorep, **17**, pp. 17–18, fig. 5. —— DEUVE, 1991, Bibliothèque Entomologique, **4**, p. 21.

Carabus (Apotomopterus) arrowi arrogantior: CAVAZZUTI, 1995, Lambillionea, **95**, p. 36.

Carabus (Apotomopterus) hector: DEUVE, 1994, Bull. Soc. Sci. Nat, (80), p. 15. —— DEUVE, 1994, Bibliothèque Entomologique, **5**, p. 75.

Male genitalia. As shown in Fig. 7, fundamental structure of aedeagus and endophallus of this taxon is not remarkably different from that of the other subspecies of *C. arrowi* HAUSER, though the spinula is much wider at the base in dorsal view.

Specimens examined. 8 ♂♂, 9 ♀♀, above Antang Ping (1,820 m), 25~27–V–1996; 9 ♂♂, 7 ♀♀, above Liangshui (1,700–1,750 m), 26~27–V–1996, 2 ♂♂, 1 ♀, Hongjun Ting (1,550 m), 27–V–1996, all on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, collected by Y. IMURA.

Notes. In the present subspecies, primary intervals consist of rows of large tubercles and the tertiary intervals are almost vestigial, and they seem to be the most noticeable subspecific characters, which are shared with subsp. *hector* BREUNING from Hunan Province. There is little doubt that these two taxa are very closely allied to each other, and the former may be regarded as a synonym of the latter, as DEUVE (1994) did so. However, I prefer to treat *arrogantior* as a distinct subspecies of *C. arrowi*, since nothing has been known about the male of subsp. *hector*. So far as I have examined, all the 19 male specimens did not show inversion of the aedeagus, a phenomenon which is commonly observed in the other subspecies of *C. arrowi*.

9. *Carabus (Coptolabrus) pustulifer adriaenssensi* LASSALLE et PRUNIER, 1993, stat nov.

(Fig. 8)

Carabus (Coptolabrus) adriaenssensi LASSALLE et PRUNIER, 1993, Bull. Acorep, **17**, p. 18, fig. 3; type locality: Chine, Guangxi, E. Longsheng, Mts. Miao Er Shan, 900–1,500 m. —— DEUVE, 1994, Bibliothèque Entomologique, **5**, p. 244.

Male genitalia. Aedeagus with the median portion comparatively long and parallel-sided, membraneous ostium comparatively small, and the apical portion longer and rather strongly bent ventrad. Parapraeputial lobes very small and not strongly protrudent dorsad. Aggonoporius is recognised as a short triangularly shaped gonoporal plate with weak pigmentation.

Specimen examined. 1 ♂, Tieshang Ping (2,000 m), on Mt. Miao'er Shan in Xing'an Xian of northeastern Guangxi, South China, 27–V–1996, Y. IMURA leg.

Notes. Both the external and genitalic morphologies of this taxon reveal that it should be regarded as a mere local race of *C. pustulifer* LUCAS, though it is worth noting that the basal three segments of the male foretarsus are dilated and hairy in the present subspecies. This character is very unique for the species, since all the segments of the male foretarsus are neither dilated nor hairy in most subspecies of *C. pustulifer*, except for subsp. *mirificus* KRAATZ of Hubei Province whose male foretarsus is dilated and hairy in the basal two segments.

要　約

井村有希：中国广西省苗儿山のオサムシ．—— 苗儿山Maio'er Shanは中国广西省の北東端に位置し，同省の重要な自然保護区のひとつで，中腹より上には豊かな原生林が残されている．この山のオサムシに関しては，1989年以後の7年間に，フランスやイタリアの研究者による報告があい次ぎ，今では中国のなかでもオサムシ相のもっともよく知られた山のひとつになっている．本論文では，1996年5月下旬に同山において行われた中日共同学術調査によって得られた9種のオサムシをリストアップしたうえで，7種の♂交尾器を詳細に図示，再記載し，あわせて若干の分類学的位置や分布に関する知見を与えた．このうち，みっつの分類単位に関しては，主として♂交尾器の基本形態に基づき，独立種から既知種の亜種へと降格した．

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Elytra, *Tokyo*, **24** (2): 189–195, November 15, 1996

A New Oculate *Trechiama* (Coleoptera, Trechinae) from the Southeastern Part of the Kitakami Mountains, Northeast Japan

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Abstract A new oculate species of the trechine genus *Trechiama* is described from the subalpine zone of a high mountain at the southeastern part of the Kitakami Mountains, Northeast Japan, under the name of *T. ohkurai*. It belongs to the *meridianus* lineage of the group of *T. oreas*, and is recognized at first sight on the large ample hind body and the absence of the second dorsal pore on the 3rd elytral stria. Comments are made on a trechine beetle probably referable to the same species, which occurs in several limestone caves lying near the foot of the mountain.

The Kitakami Mountain Range, stretching from north to south for more than 200 km on the Pacific side of northeastern Honshu, is one of the oldest massifs in the Japanese Islands. It is a kind of peneplain and is not particularly high except for the central part, which attains to a height of 1,914 m; most mountains on the other parts barely exceed 1,000 m above sea-level. Contrary to the other mountain ranges in northeastern Honshu, it is wholly non-volcanic and abounds in limestone strata, though the terrestrial cave fauna is relatively simple.

Two groups of apterous trechine beetles have been known from this mountain range, that is, *Trechiama* and *Kurasawatrechus*. The former occurs either in the subalpine zone or in caves, while the latter is either cavernicolous or upper hypogean. Most species of the former genus belong to the *oreas* lineage of the group of *T. oreas* (UÉNO, unpublished data), but an isolated species of the *meridianus* lineage occurs on Mt. Goyô-zan and its immediate vicinities at the southeastern part of the Kitakamis. The occurrence of this new species was preliminarily noticed in a previous paper of mine (UÉNO, 1994, p. 31), and I am going to introduce it into science in the present paper, which is dedicated to the memory of the late Mr. Masafumi OHKURA.

The abbreviations used herein are the same as those explained elsewhere.

I am deeply indebted to Messrs. Hirohisa KIZAKI and Yoshinari TORII, who submitted to my study rare cave specimens of the new trechine beetle.

Trechiama (s. str.) ***ohkurai*** S. UÉNO, sp. nov.

[Japanese name: Ohkura-naga-chibigomimushi]

(Figs. 1–8)

Length: 6.05–6.90 mm (from apical margin of clypeus to apices of elytra).

Belonging to the *meridianus* lineage of the group of *T. oreas*, and recognized at first sight on the large ample hind body, particularly in ♂♂, and the absence of the second setiferous dorsal pore on the 3rd elytral stria.

A relatively large species similar to *T. meridianus* S. UÉNO (1994, p. 28, figs. 5–8) in the configuration of head and prothorax, but different from the latter in the proportion of hind body to fore body and in elytral chaetotaxy. Colour as in *T. meridianus*, though usually darker, especially on the posterior half of head, pronotum, and elytra except for sutural intervals and lateral margins.

Head as in *T. meridianus*; eyes similarly variable in both size and convexity, usually flat but rarely a little convex; genae three-fifths to nine-tenths (usually about three-fourths) as long as eyes, either straight or very slightly convex; antennae usually reaching basal two-fifths of elytra, sometimes a little longer than that in ♂. Pronotum narrower on an average than in *T. meridianus*, with the sides less strongly arcuate in front and less widely divergent posteriad in basal area, widest at about three-fifths from base; PW/HW 1.41–1.50 (M 1.44), PW/PL 1.10–1.19 (M 1.14), PW/PA 1.54–1.68 (M 1.61), PW/PB 1.38–1.49 (M 1.43), PB/PA 1.07–1.18 (M 1.13); ante-basal sinuation distinct though usually shallow; hind angles more or less sharp in most individuals, sometimes nearly rectangular; sculptures as in *T. meridianus*.

Elytra obviously larger in ♂♂ than in *T. meridianus*, though similar to the latter in certain ♀♀, usually a little less convex, widest at about three-sevenths from bases; EW/PW 1.65–1.79 (M 1.72), EL/EW 1.50–1.59 (M 1.56); striae shallower than in *T. meridianus* though entire, nearly smooth; apical striole usually less divergent anteriad than in *T. meridianus*, gently arcuate, and usually joining or almost joining stria 5 through sinuation though sometimes directed to stria 7; intervals usually flat even on the disc; stria 3 with two setiferous dorsal pores at 1/12–1/10 and 3/5–2/3 from base, respectively; stria 5 also with two setiferous dorsal pores at 1/10–1/8 and 1/3–3/7 from base, respectively; preapical pore situated on or slightly behind the level of the terminus of apical striole, and evidently more distant from apex than from suture; other features as in *T. meridianus*. Ventral surface as in *T. meridianus*.

Legs relatively long and slender; protibiae straight, gently dilated towards apices, each with a deep longitudinal groove on the external face; tarsi thin, tarsomere 1 longer than tarsomeres 2–3 together but shorter than tarsomeres 2–4 together in both meso- and metatarsi; in ♂, protarsomeres 1 and 2 widely dilated and stoutly produced inwards at apices.

Male genital organ small, heavily sclerotized, similar in many respects to that of *T. oniceps* S. UÉNO (1989, p. 128, figs. 7–11) of the Kamuro Mountains. Aedeagus relatively short, about three-tenths as long as elytra, lightly depressed, hardly arcuate at

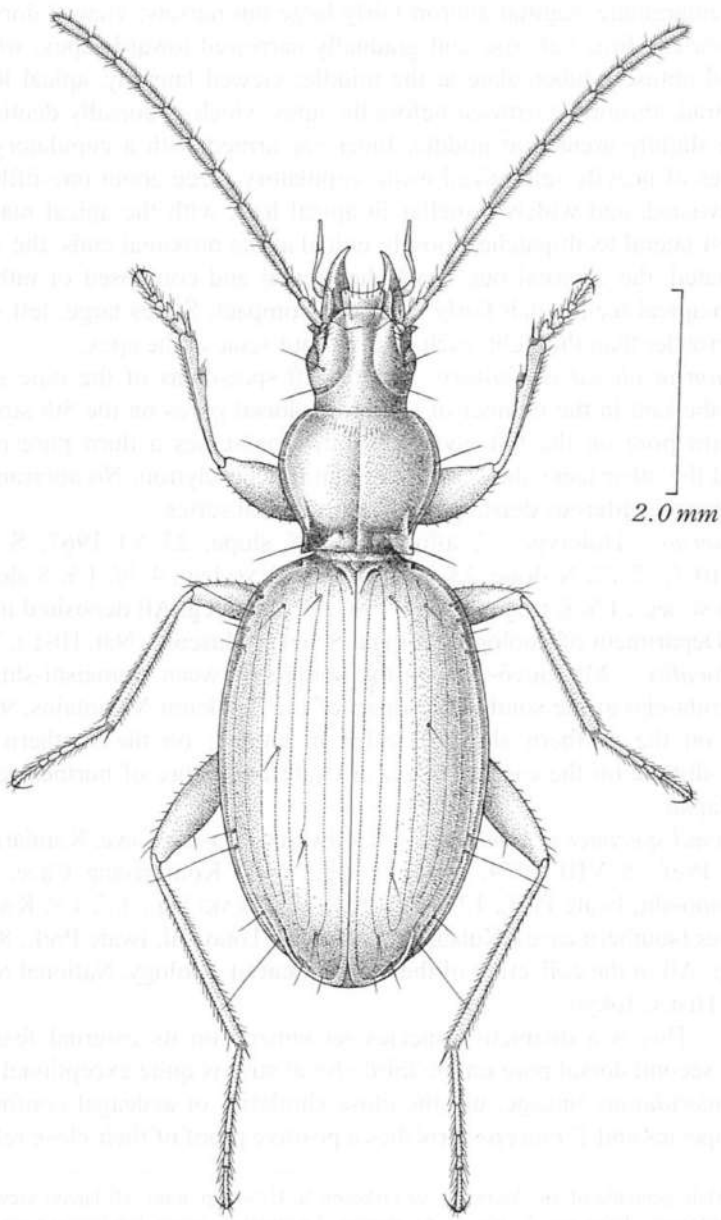


Fig. 1. *Trechiama* (s. str.) *ohkurai* S. UÉNO, sp. nov., ♂, from Mt. Goyô-zan on the Kitakami Mountains.

middle, and rather abruptly bent ventrad at the basal part; dorsal margin regularly arcuate at middle in profile; basal part large and short, with large basal orifice whose sides are deeply emarginate; sagittal aileron fairly large but narrow; viewed dorsally, apical lobe symmetrical, broad at base and gradually narrowed towards apex, which is subtruncate and obtusely tuberculate at the middle; viewed laterally, apical lobe slightly curved ventrad, abruptly narrowed before the apex which is dorsally denticulate; ventral margin slightly arcuate at middle. Inner sac armed with a copulatory piece and three patches of heavily sclerotized teeth; copulatory piece about one-fifth as long as aedeagus, twisted, and widely lamellar in apical half, with the apical margin widely rounded; left lateral teeth-patches loosely united at the proximal ends, the internal one dorsally dilated, the external one nearly horizontal and composed of rather lamellar teeth; dorso-apical teeth-patch fairly large and compact. Styles large, left style longer and much broader than the right, each bearing four setae at the apex.

Variation in elytral chaetotaxy. Of the 20 specimens of the type series, three (3 ♂♂) are aberrant in the number of setiferous dorsal pores on the 5th stria; one possesses a third pore on the left elytron, another possesses a third pore on the right elytron, and the other lacks the second pore on the left elytron. No aberrancy is found in the number of setiferous dorsal pores of the internal series.

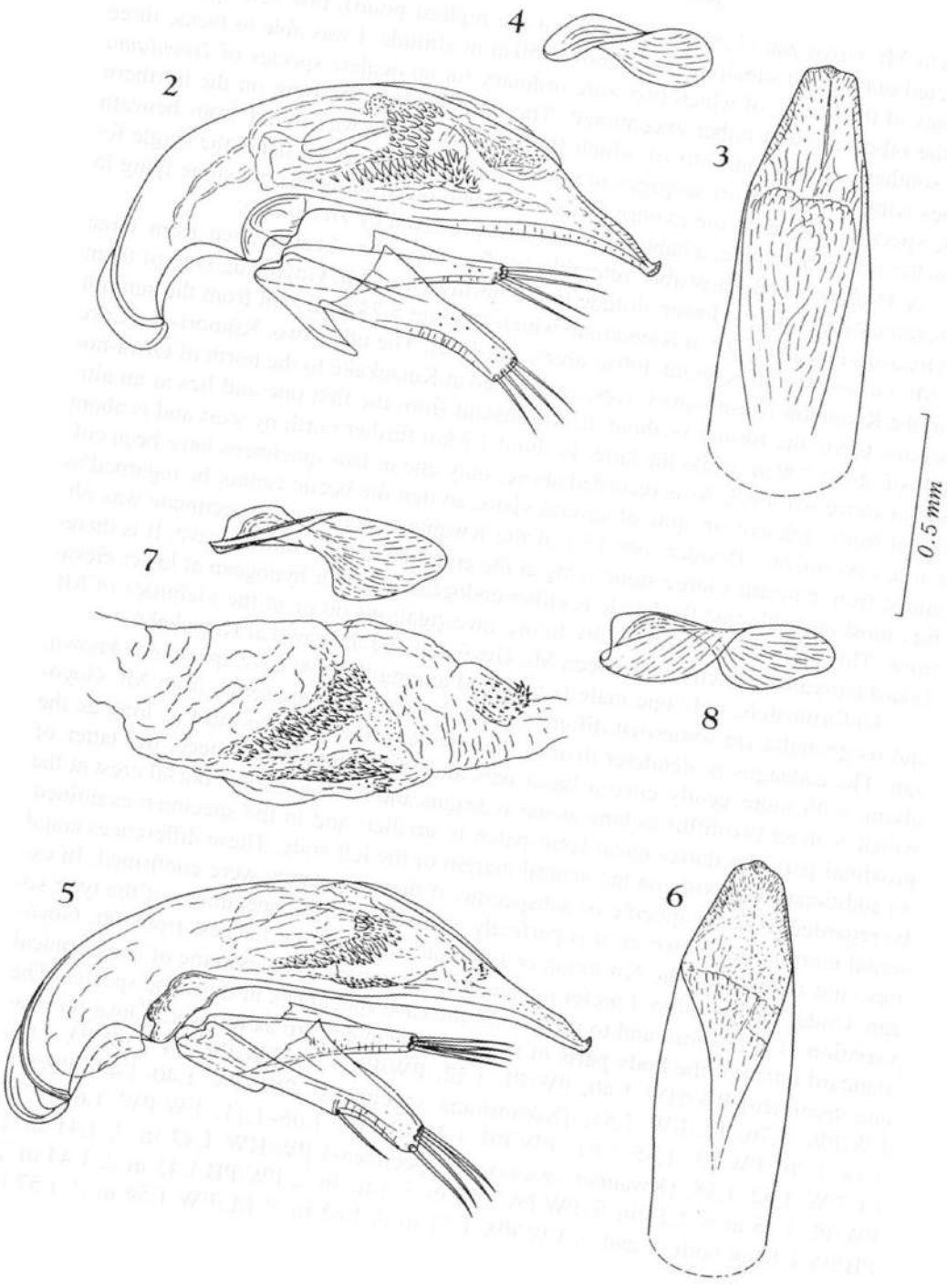
Type series. Holotype: ♂, allotype: ♀, N slope, 23–VI–1967, S. UÉNO leg. Paratypes: 10 ♂♂, 2 ♀♀, N slope, 23–VI–1967, S. UÉNO leg.; 4 ♂♂, 1 ♀, S slope, 22–VI–1967, S. UÉNO leg.; 1 ♀, E ridge, 22–VI–1967, S. UÉNO leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Mt. Goyô-zan, on the borders between Kamaishi-shi, Ohfunato-shi and Sumita-chô at the southeastern part of the Kitakami Mountains, 950–1,250 m in altitude on the northern slope, 1,280 m in altitude on the southern slope, and 1,320 m in altitude on the eastern ridge, in Iwaté Prefecture of northeastern Honshu, Northeast Japan.

Additional specimens examined. 1 ♀, Ôiwa-no-iwa-ana Cave, Kamiarisu, Sumita-chô, Iwaté Pref., 5–VIII–1979, Y. TORII leg.; 2 ♀♀, Kômori-ana Cave, Kutsukaké, Kamigô, Tôno-shi, Iwaté Pref., 17–VIII–1983, H. KIZAKI leg.; 1 ♂, 1 ♀, Kwannon-iwa-no-ana Caves (southern cave), Kutsukaké, Kamigô, Tôno-shi, Iwaté Pref., 8–VII–1954, S. UÉNO leg. All in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Notes. This is a distinctive species recognized on its external features alone. Loss of the second dorsal pore on the third elytral stria is quite exceptional for a member of the *meridianus* lineage, but the close similarity of aedeagal conformation between this species and *T. oniceps* furnishes a positive proof of their close relationship.

Figs. 2–8. Male genitalia of *Trechiama* (s. str.) *ohkurai* S. UÉNO, sp. nov.; left lateral view (2, 5), apical part of aedeagus, dorso-apical view (3, 6), separated copulatory piece, left lateral view (4), separated and extended inner sac and separated copulatory piece, left lateral view (7), and separated copulatory piece, oblique left dorsal view (8). —— 2–4. Topotypical specimen, from Mt. Goyô-zan. —— 5–8. Cave specimen, from the Kwannon-iwa-no-ana Caves.


4
2
3
0.5 mm
7
8
5
6

On Mt. Goyô-zan (1,351 m in height at the highest point), this new species was collected only in the subalpine zone above 950 m in altitude. I was able to locate three habitats of the beetle, of which two were ordinary for an oculate species of *Trechiama* but the other one was rather exceptional. The ordinary habitats were on the northern and southern slopes, on both of which the trechine beetle was found from beneath stones lying at the sides of seepages in shaded places. On the other hand, the single female specimen taken on the eastern ridge was found out from beneath a stone lying in a thicket of creeping pine, a habitat which is not preferred by *Trechiama*.

A trechine beetle probably referable to *T. ohkurai* has been known from three limestone caves lying at lower altitude to the northwest of Mt. Goyô-zan. One of them is Ôiwa-no-iwa-ana Cave at Kamiarisu, which is about 5.7 km distant from the summit of Mt. Goyô-zan and is about 400 m above sea-level. The other two, Kômori-ana Cave and the Kwannon-iwa-no-ana Caves, are located at Kutsukaké to the north of Ôiwa-no-iwa-ana Cave; the former is about 2.5 km distant from the first one and lies at an altitude of about 700 m, while the latter is about 1.3 km further north by west and is about 560 m above sea-level. As is recorded above, only one or two specimens have been collected from each cave in spite of several visits, so that the beetle cannot be regarded as a true cavernicole. Besides, one (♂) of the Kwannon-iwa-no-ana specimens was obtained from beneath a large stone lying at the entrance to the southern cave. It is therefore most probable that the beetle is either endogean or upper hypogean at lower elevations. This should be confirmed by future investigations on or in the vicinities of Mt. Takashizu-yama, which lies between Mt. Goyô-zan and the caves at Kutsukaké.

Unfortunately, only one male is included among the five cave specimens known, and its genitalia are somewhat different from those of the type series from Mt. Goyô-zan. The aedeagus is slenderer than in the type series, about one-third as long as the elytra, with more gently curved basal part and larger copulatory piece, the latter of which is about two-fifths as long as the aedeagus and bears a distinct dorsal crest at the proximal part; the dorso-apical teeth-patch is smaller; and in the specimen examined, an additional seta exists on the ventral margin of the left style. These differences could be regarded as being specific or subspecific, if their constancy were confirmed. In external morphology, however, it is perfectly identical with the specimens of the type series, and its locality, the Kwannon-iwa-no-ana Caves, is the farthest from Mt. Goyô-zan. Under this situation, I prefer to consider it to represent an extreme of geographical variation of *T. ohkurai*, and to include all the cave specimens in the same species. The standard ratios of the body parts of the cave specimens are as follows: [Ôiwa-no-iwa-ana specimen] PW/HW 1.40, PW/PL 1.12, PW/PA 1.55, PW/PB 1.47, PB/PA 1.06, EW/PW 1.76, EL/EW 1.54; [Kômori-ana specimens] PW/HW 1.40–1.44, PW/PL 1.18–1.20, PW/PA 1.55–1.61, PW/PB 1.46, PB/PA 1.06–1.11, EW/PW 1.61–1.70, EL/EW 1.52–1.58; [Kwannon-iwa-no-ana specimens] PW/HW 1.43 in ♂, 1.41 in ♀, PW/PL 1.15 in ♂, 1.18 in ♀, PW/PA 1.58 in ♂, 1.61 in ♀, PW/PB 1.43 in ♂, 1.44 in ♀, PB/PA 1.11 in both ♂ and ♀, EW/PW 1.72 in ♂, 1.63 in ♀, EL/EW 1.54 in ♂, 1.57 in ♀.

It is of particular interest from the zoogeographical viewpoint that *T. ohkurai*, a member of the *meridianus* lineage, is isolated at the eastern side of the Kitakami Mountains, or at the other side of the distributional range of the *oreas* lineage. At present, I cannot satisfactorily account for the formation of this discontinuous distribution. As was already pointed out in a previous paper of mine (UÉNO, 1994, p. 31), the members of the *meridianus* lineage are restricted to non-volcanic old mountains, whereas those of the *oreas* lineage usually occur on recent (often Postglacial) volcanoes. This seems to mean that the speciation of the former took place much earlier than that of the latter. However, the Kitakami Mountains, one of the oldest massifs in Japan, are exceptional to this generalization, since they are mostly occupied by the members of the latter lineage including at least two cave species. It is possible to regard *T. ohkurai* as a relict of an old fauna, most of which were already replaced by newcomers, but this is just a possibility and needs further investigations for verification.

This interesting new species is dedicated to the late Mr. Masafumi OHKURA, who unexpectedly passed away on August 21, 1995, at the age of 80, from aftereffect of the terrible shock caused by the Hanshin Earthquake that had destroyed his home on January 17 of the same year. OHKURA was a pioneer amateur carabidologist in Japan, taught me the rudiments of carabid taxonomy when I was a schoolboy, and was a good friend of mine ever since (cf. UÉNO, 1995, p. 1).

要　約

上野俊一：北上山地南東部に隔離されたナガチビゴミムシ属の1新種．—— 北上山地南東部の五葉山とその北西部に位置する3カ所の石灰洞から，有眼のナガチビゴミムシの一種を記載し，オオクラナガチビゴミムシ *Trechiama ohkurai* S. UÉNO と命名した．この種は，奥羽山脈から白神山地にかけての，非火山性地域に広く分布する，マヒルナガチビゴミムシ亜群に属するが，体の後半部がとくに雄で大きいことと，上翅第3条の第2孔点を欠くこととで，ほかの種から容易に区別できる．イワキナガチビゴミムシ亜群の種が広く分布する北上山地の一部に，このような別亜群の種が局在することは，生物地理学的にみてたいへん興味深い．なお，新種名は，昨年の8月に急逝された大倉正文氏に捧げたものである．

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Elytra, Tokyo, **24** (2): 196, November 15, 1996

Occurrence of an Anophthalmic Trechine Beetle in Close Proximity to a Solfatara Field

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It is well known at present that anophthalmic trechine beetles can develop on recent volcanoes (cf. UÉNO, 1995), but their occurrence has been confirmed only in lava caves lying at low elevations. Nothing has been known about dispersal of their ancestors into deserted areas, and process of their colonization in lava caves has been open for speculation. Even recent progress of studies on the upper hypogean fauna is helpless in clarifying it. Recently, however, an unexpected discovery was made by Yoshinori KANEKO on the Hakoné Volcanoes, which may give a clue for pursuing the subject.

While looking for beetles in a gully running down the northern side of the Ôwaki-dani, the best known solfatara field on the Hakoné Volcanoes, he happened to find out two specimens of an anophthalmic *Trechiama* from beneath lava blocks embedded in the ground. The collecting site is only 400 m removed from active fumaroles and only 130 m down the slope, and the eruption is considered to have taken place about 3,000 years ago. It is difficult to elucidate how and when the trechine reached and colonized there, but anyway this is the first sound proof that even such an eyeless beetle can disperse to near the solfatara field lying near the top of a volcano.

These specimens were immediately submitted to me for taxonomic study, and were found identical in external morphology with *Trechiama pallidior* S. UÉNO (1981, p. 127, figs. 3, 9–10) described from an abandoned mine adit lying at the eastern foot of the Hakoné Volcanoes, 7.7 km distant to the east by south from the gully and about 130 m above sea-level. They are darker in coloration than the topotypical specimens, and lose the left proximal teeth-patch inside the aedeagal inner sac, which is already very small and loose in the topotypical specimens. However, these minor differences can be regarded as infraspecific variation. Their collecting data are as follows:

2 ♂♂, Kamiyu, 900 m alt., Hakoné-machi, Kanagawa Pref., 9–VI–1996, Y. KANEKO leg. (coll. NSMT).

In closing this brief report, I wish to thank Mr. Yoshinori KANEKO, who kindly placed his important findings at my disposal for study.

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Elytra, Tokyo, **24** (2): 197–202, November 15, 1996

Pterostichus ohkurai (Coleoptera, Carabidae), a New Relative of *Pterostichus latistylis* from the Subalpine Zone of the Japanese Alps

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Abstract A new pterostichine carabid beetle is described from Kumonotaira of the Japanese Alps, Central Japan, under the name of *Pterostichus* (*Nialoe*) *ohkurai*. Based upon the specimens collected in the subalpine zone, *P.* (*N.*) *latistylis* TANAKA is re-described.

Describing a new pterostichine carabid beetle under the name of *Pterostichus napaea*, KASAHARA (1988) made a comment that its habitats (1,450–2,000 m alt.) on Mt. Kiso-koma-ga-take seemed to be the highest of those of the members of the group of *P. latistylis*. More than ten years before his paper appeared, however, several specimens of *P. latistylis* had already been discovered by my own investigation at the high altitude of Mt. Chausu-dake and Mt. Nitta-dake of the so-called Southern Japanese Alps, both of which attain to the height of more than 2,500 m. Besides, a new species belonging to the same group was obtained from the subalpine zone of the Northern Japanese Alps. Though only two specimens of the new species are now at my hands, I have decided to describe it in this paper.

The abbreviations used herein are the same as those explained in other papers of mine.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO for reading the manuscript of this paper. Hearty thanks are also due to Dr. Kazuo TANAKA, Messrs. Shin-ichirô FURIHATA, Hanmei HIRASAWA and Toshihiko YOSHIMURA for their kind help for this study.

The late Mr. Masafumi OHKURA of the Japan Coleopterological Society who passed away in the last year affectionately watched my study of carabid beetles for a long time. My deep thanks are also due to him, and the new species of *Pterostichus* described herein is named to his memory.

Pterostichus (*Nialoe*) *ohkurai* MORITA, sp. nov.

[Japanese name: Ohkura-naga-gomimushi]

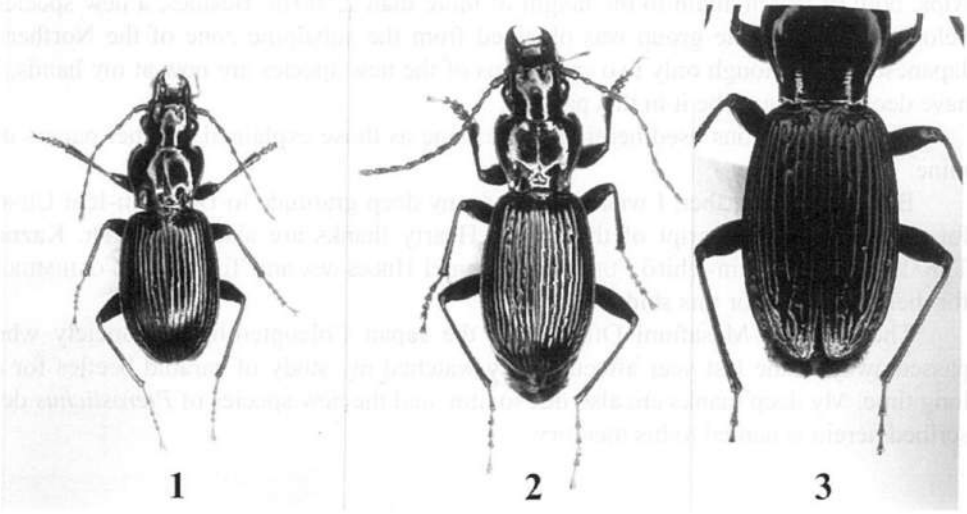
(Figs. 1, 4, 8)

Length: 9.5–9.7 mm (from apical margin of clypeus to apices of elytra).

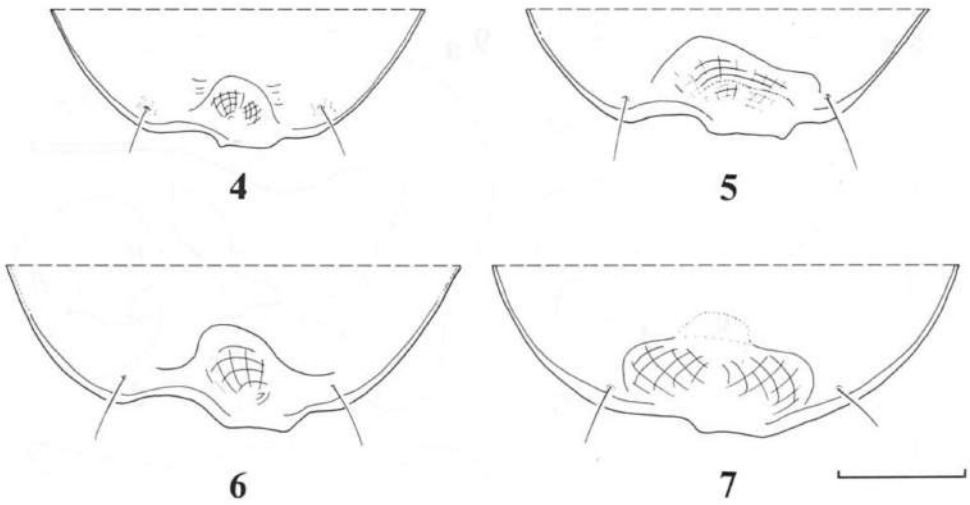
Body small and moderately convex. Colour black; labrum, clypeus, mandibles and antennae brown; femora almost black, but slightly pale at apices; tibiae almost black to dark brown, but becoming lighter towards apices; tarsi brown.

Head convex; PW/HW 1.28–1.30; frontal furrows short, rather deep and a little divergent posteriad; eyes prominent; genae short, oblique and less convex; lateral grooves deep, narrow and straight; anterior supraorbital pore situated a little before the mid-eye level, posterior one at the post-eye level; mentum tooth bifid; submentum with two pair of setae; microsculpture consisting of wide or isodiametric meshes; surface almost smooth; antennal segment 2 with 4 setae; relative lengths of antennal segments as follows: I : II: III : IV : V : VI : XI≒1 : 0.61 : 0.93 : 0.91 : 0.89 : 0.89 : 0.98.

Pronotum cordate and convex; PW/PL 1.33–1.36; PW/PA 1.32–1.36; PW/PB 1.30–1.35; apex moderately emarginate, PA/PB 0.96–1.03; sides moderately arcuate in front, slightly sinuate at about basal 1/7, and then a little divergent before hind angles; base emarginate at median part, and straight or slightly oblique at the sides; surface almost smooth in the holotype, or with several transverse wrinkles on the disc in the paratype; apical angles a little produced and narrowly rounded, hind ones acute; anterior marginal setae situated just before the widest part; posterior ones a little before



Figs. 1–3. *Pterostichus* (*Nialoe*) spp. —— 1, *Pterostichus* (*Nialoe*) *ohkurai* MORITA, sp. nov., from Kumonotaira; 2, *P.* (*N.*) *latistylis* TANAKA from Mt. Nitta-dake; 3, same species from Mt. Nitta-dake, showing disordered striae and dorsal pores on elytra.



Figs. 4–7. Anal sternite in *Pterostichus* (*Nialoe*) spp. —— 4, *Pterostichus* (*Nialoe*) *ohkurai* MORITA, sp. nov., from Kumonotaira; 5, *P.* (*N.*) *napaea* KASAHARA from Mt. Surikogi-yama; 6, *P.* (*N.*) *latistylis* TANAKA from Sarukura; 7, same species from Mt. Nitta-dake. (Scale : 1 mm.)

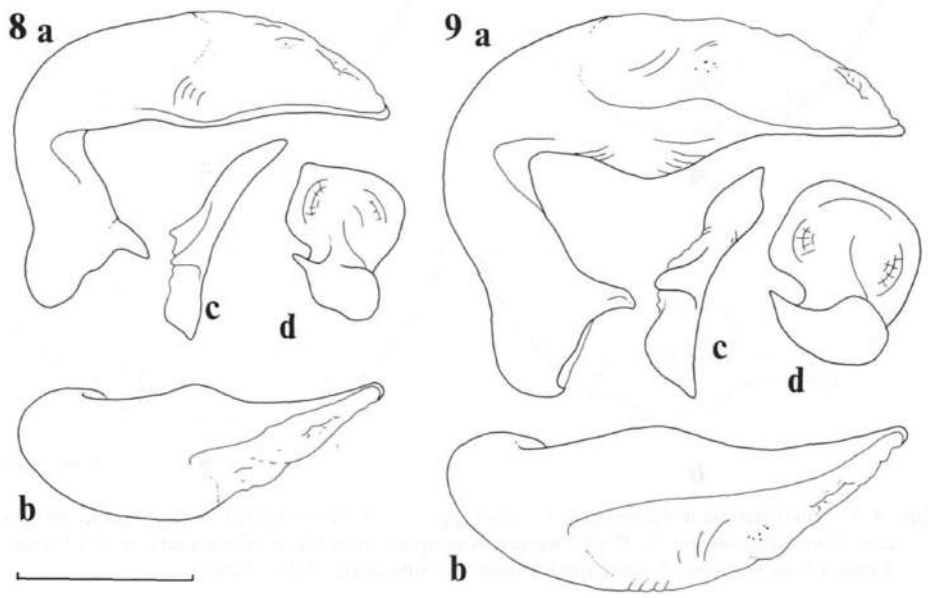
and inside hind angles; anterior transverse impression almost obsolete; median line clearly impressed between 1/6–1/4 from base; basal foveae very deep and oval; basal part smooth; microsculpture consisting of wide or transverse meshes.

Elytra elongated ovate; shoulders widely rounded; EW/PW 1.29; EL/EW 1.49–1.52; sides relatively close in basal parts, weakly and arcuately divergent towards the middle, which is the widest and moderately arcuate in apical halves; epipleuron gradually narrowed towards apex; apices slightly separated from each other, sutural angle obtuse; basal border moderately arcuate; basal pore situated at the base of stria 1; intervals slightly convex; striae smooth or slightly crenulate; three dorsal pores on interval 3, anterior one adjoining stria 3 and the others adjoining stria 2; marginal series composed of 16–17 pores; microsculpture consisting of transverse meshes, but partially disordered.

Ventral side smooth though the genae and sides of the sternites are rugose; in ♂, anal sternite deeply and narrowly excavated at about middle, and with a very short projection; the left corner of the projection a little produced in ventral view.

Legs slender; metatibiae slightly bowed; basal two segments of meso- and metatarsi externally sulcate; TL/HW 1.03–1.05; TI/TV 0.82–0.85.

Aedeagus short, strongly bent at basal third; each ventral edge with a large tumor and a very shallow concavity at about apical third, the former lying at the right and the latter at the left; viewed dorsally, apical part slightly inclined to the right; surface of apical part with fine wrinkles on ventral side; apical lobe very short and rounded; right paramere slightly arcuate and simply rounded at apex; left one square.



Figs. 8–9. Male genital organ in *Pterostichus* (*Nialoe*) spp. —— 8, *Pterostichus* (*Nialoe*) *ohkurai* MORITA, sp. nov., from Kumonotaira; 9, *P.* (*N.*) *latistylis* TANAKA from Mt. Nitta-dake. —— a, Aedeagus, left lateral view; b, aedeagus, dorsal view; c, right paramere, left lateral view; d, left paramere, left lateral view. (Scale: 1 mm.)

Type series. Holotype: ♂ (NSMT), paratype: 1 ♂, 11–VIII–1981, S. MORITA leg.

Type locality. Near Kumonotaira, 2,300 m alt., NW of Mt. Jii-dake, Toyama Prefecture, Central Japan.

Notes. This new species is closely allied to *P. napaea* KASAHARA (1988, p. 26). It is, however, distinguished from the latter by the following points: 1) body smaller on an average; 2) appendages somewhat slenderer; 3) tarsi brown; 4) PW/PL 1.33–1.36; 5) pronotal sides less arcuate; 6) anterior marginal setae situated just before the widest part; 7) elytra narrow and less ample at the apical parts; 8) left corner of anal projection a little produced in ventral view, and 9) aedeagus with a large tumor. The following material of *P. napaea* are examined for comparison: 6 ♂♂, 15–V–1993, Mt. Surikogi-yama, Iida-shi, Nagano Pref., T. YOSHIMURA leg.

So far as I am aware, the nearest known collecting site of *P. latistylis* is Sarukura, which is about 40 km distant to the northeast in a bee-line from Kumonotaira, the type locality of the present new species. Their collecting data, body length and standard ratios of body parts are as follows: 2 ♂♂, Sarukura, foot of Mt. Shirouma-dake, Nagano Pref., 5–VI–1994, S. MORITA leg.; length 11.47–12.03 mm; PW/HW 1.33, 1.37; PW/PL 1.32, 1.38; PW/PA 1.37, 1.38; PW/PB 1.44, 1.50; PA/PB 1.05, 1.08; EW/PW 1.21, 1.23; EL/EW 1.51, 1.53. The present new species can be easily distinguished

from *P. latistylis* of Sarukura by the following points: 1) much smaller body; 2) less contracted pronotum, and 3) different shape of aedeagus.

It should be noted that the Sarukura specimens could be determined as *P. shibatai* (ISHIDA, 1961, p.7) hitherto known from Kinki District, if the shape of the apex of the right paramere is regarded as a reliable character separating it from *P. latistylis*. Judging from the meagre collecting data now available, their distributional ranges seem continuous. It is possible that *P. shibatai* merely represents an extreme of the cline of *P. latistylis*. At all events, the true systematic position of *P. shibatai* should be carefully determined in the future. I have studied the holotype of *P. shibatai* through the courtesy of the late Mr. OHKURA, and found that this was a very difficult problem.

Pterostichus* (*Nialoe*) *latistylis TANAKA

[Japanese name: Tanaka-naga-gomimushi]

(Figs. 2–3, 6–7, 9)

Pterostichus (*Nialoe*) *latistylis* TANAKA, 1958, Akitu, Kyoto, **7**, p. 95, fig. 10; type locality: Mt.Gozen. Other references are omitted.

A brief account of the Chausu-dake and Nitta-dake specimens of this widespread species will be given below for facilitating comparison with *P. ohkurai*.

Length: 11.2–12.3 mm (from apical margin of clypeus to apices of elytra).

Body elongate and moderately convex; frontal furrows shallower than in the specimen from the type locality; genae usually strongly convex. Pronotum narrow; anterior marginal setae situated a little before the widest part, and usually with an additional seta on each side; sides usually serrated near hind angles; basal part narrow, especially in ♀ (PW/PB 1.42, 1.47 in 2 ♀♀ of the Nitta-dake specimens, 1.45 in 1 ♀ of the Chausu-dake specimen) ; basal foveae with several wrinkles; in Nitta-dake specimens (2 ♂♂), PW/HW 1.26, 1.27, PW/PL 1.28, 1.32, PW/PA 1.29, 1.30, PW/PB 1.39, 1.42, PA/PB 1.07, 1.10, EW/PW 1.28, 1.29, EL/EW 1.56, 1.58; in Chausu-dake specimens (2 ♂♂), PW/HW 1.27, 1.29, PW/PL 1.26, 1.31, PW/PA 1.29, 1.32, PW/PB 1.34, 1.39, PA/PB 1.02, 1.08. Elytra elongate and with 17–32 dorsal pores; striae slightly crenulate and disordered; EW/PW 1.25, 1.29, EL/EW 1.60, 1.61. Anal sternite in ♂ as in Fig. 7; male genital organ as in Fig. 9; right paramere oblique at apex.

Specimens examined. 2 ♂♂, 1 ♀, Mt. Chausu-dake, 2,500 m alt., Shizuoka-shi, 21～23–VII–1978, S. MORITA leg.; 2 ♂♂, 2 ♀♀, Mt. Nitta-dake, 2,500 m alt., Shizuoka-shi, 22–VII–1978, S. MORITA leg.

Localities. Mt. Chausu-dake and Mt. Nitta-dake, on the borders between Shizuoka-shi, Shizuoka Prefecture, and Minamishinano-mura, Nagano Prefecture, Central Japan.

Notes. Most pronounced of the features described above is a large number of dorsal pores on the elytra. One of the most prominent examples is a specimen (♂) from Mt. Nitta-dake: 18 pores on the left elytron (1 on stria I, 2 on interval II, 8 on interval III, 1 on interval IV and 6 on interval V), and 14 pores on the right elytron (2 on

stria 1, 6 on interval III, 6 on interval V).

It is well known that this species always lives by running waters, usually under stones lying at the edges of narrow streams and waterfalls on mountains.

要　約

森田誠司：亜高山帯のタナカナガゴミムシ *Pterostichus* (*Nialoe*) *latistylis* TANAKA と近縁の1新種．—— キソコマナガゴミムシ *P.* (*N.*) *napaea* KASAHARA の記載の中に，近縁種群のなかではもっとも高所に生息している種とのコメントがつけられている．しかしすでに筆者は，日本アルプスの亜高山帯において *P.* (*N.*) *latistylis* を採集しているので，簡単な記載をつけて報告した．あわせて近縁の1新種，オオクラナガゴミムシ *P.* (*N.*) *ohkurai* を記載した．種名はゴミムシ研究者のひとりとして筆者の研究を暖かく見守ってくださった故大倉正文氏に捧げるものである．

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Elytra, Tokyo, **24** (2): 203–211, November 15, 1996

Some Species of the Genus *Trichotichnus* (Coleoptera, Carabidae, Harpalini) from Asia

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Abstract Two new species of the genus *Trichotichnus* Morawitz, *T. curvatus* and *T. depressus*, are described from the Himalaya and China, respectively. A redescription of *Trichotichnus formosus* Schauberger from Nepal is also given.

Introduction

In this paper, I am going to redescribe *Trichotichnus* (*Pseudotrichotichnus*) *formosus* Schauberger (1934). Further I will describe two new species of the genus *Trichotichnus* Morawitz, *T.* (*Pseudotrichotichnus*) *curvatus* from the Himalaya and *T.* (s. str.) *depressus* from China. *Trichotichnus curvatus* is easily distinguished from *T. formosus* by the hind wings not entire and the metepisterna much shorter. *Trichotichnus depressus* is different from *T.* (s. str.) *lewisi* Schauberger (1935) in having the body smaller in size, the elytra more weakly iridescent and not pointed at apex, and the antennae and legs lighter in color.

I wish to express my deep gratitude to Dr. Fritz Gusenleitner of the Oberösterreichisches Landesmuseum, Linz, Dr. Loberto Poggi of the Museo di Storia Naturale, Genova, Dr. Fritz Hieke of the Museum der Humboldt-Uviversität zu Berlin, and Dr. Aleš Smetana and Dr. Yves Bousquet of the Agriculture Canada, Ottawa, for their kindly offering valuable materials. I also heartily thank Mr. Taichi Shibata, Osaka, for his kind guidance.

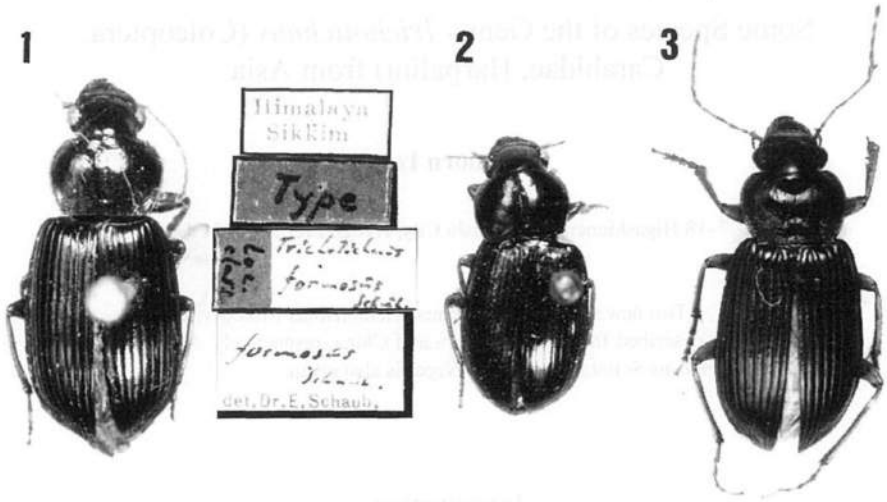
Trichotichnus (*Pseudotrichotichnus*) *formosus* Schauberger

(Figs. 1 & 4)

Trichotichnus formosus Schauberger, 1935, Ent. Anz., **15**: 110, 148–150.

Body more or less oval, thick, pitchy black and slightly brownish, shiny, with iridescent lustre on elytra; palpi and antennae yellowish brown, lateral margins of pronotum light reddish brown, labrum and legs dark reddish brown.

Head wide, seven-tenths the pronotal width, uniformly and rather well convex on vertex, flattened in triangular portion from vertex to clypeus, without punctures;



Figs. 1–3. Habitus of *Trichotichnus* spp. —— 1, *T.* (*Pseudotrichotichnus*) *formosus* Schauberger (Holotype); 2, *T.* (*Pseudotrichotichnus*) *curvatus* sp. nov.; 3, *T.* (s. str.) *depressus* sp. nov.

labrum subsquare, shallowly emarginate at apex; clypeus rather thick, weakly and transversely swollen in basal half, obscurely rugose near each side, with apex shallowly emarginate; clypeal suture clearly impressed, slant at front margin; frontal impressions deeply carved throughout, but slightly shallower than those of usual species of the subgenus; eyes large, rather prominent, though not hemispherical; temple somewhat developed, three-tenths the eye length, rather steeply contracted behind; genuine ventral margin of eye widely separated from buccal fissure; mandibles robust, vertically truncate at tip of left mandible, retinacular tooth of left mandible weakly produced, the tooth of right mandible trapezoidal; antennae submoniliform, short, reaching pronotal base, 3rd segment pubescent in apical two-thirds, a little shorter than the 4th (0.86 in ratio) and a half longer than the 2nd; labial and maxillary palpi missing; ligula triangularly emarginate, with sharp apical corners; paraglossae narrow, rounded at apical external margins, bearing pointed tips, prolonged forwards beyond ligula and separated from ligula by deep incisions; mentum sharply toothed at bottom of apical emargination, epilobes narrow and not dilated distad, suture with submentum engraved in middle; microsculpture detectable only near supraorbital grooves, composed of obscure transverse meshes.

Pronotum subsquare, widest at apical two-fifths, three-eighths wider than long, relatively convex, mostly smooth and finely and sparsely punctate only in lateral furrows and basal foveae; sides clearly arcuate lengthwise, stronger apicad than basad in the arcuation; apex shallowly emarginate, with border complete and obscure in middle;

base one-fifth wider than apex, truncate, finely and brokenly bordered; apical angles widely rounded; basal angles angulate and wider than rectangle; lateral furrows wholly carved in a line and isolated from basal foveae which are large, shallow and ill-defined; front transverse impression vaguely engraved like the hind one; median line fine and shallow, not reaching apex and base; surface vaguely micro-lined in part.

Elytra suboval, about two-fifths longer than wide, rather convex, very sparsely and microscopically punctate; sides weakly arcuate at humeri, shallowly sinuate before apices; bases shallowly emarginate, very obtuse and angulate at humeral angles; apices rather narrow, more or less prominent behind, narrowly rounded at tips and not separated from each other; striae somewhat wide, deep and finely crenulate, scutellar striole rather long; intervals weakly convex on disc, gently convex laterally and apically, 3rd interval with a setiferous pore a little behind middle along 2nd stria; marginal series interrupted in middle, composed of 8+(10−11) umbilicate pores; microsculpture invisible under 80× magnification. Hind wings entire.

Ventral surface mostly smooth, sparsely and minutely punctate medially on mesosternum and 2nd to 6th abdominal segments, the punctures bearing very short pubescence; metepisternum rather well contracted behind, three-fifths longer than wide; abdomen bearing sparse and very short pubescence along middle of 2nd to 6th segments, 6th in ♂ bisetose at each side and truncate at apex.

Hind femur bisetose along hind margin; fore tibia rather expanded distad, unispinous apico-externally, clearly sulcate to near apex on dorsal side, with apex truncate and minutely protuberant in middle, terminal spur short and robust; hind tarsus in ♂ about one-fourth shorter than the width of head including eyes (0.77 in ratio), 1st segment one-eighth shorter than the 2nd and 3rd together and a half longer than the 2nd, 3rd one and one-third as long as the 4th, claw segment bisetose along each ventral margin.

Aedeagus (Fig. 4) thick and gently arcuate, with a small hook at tip; apical lobe triangular, one-fifth longer than wide, narrowly rounded at tip; apical orifice wide and open towards the left, inner sac without sclerites.

♀ Unknown.

Length: 9.5 mm. Width: 4.4 mm.

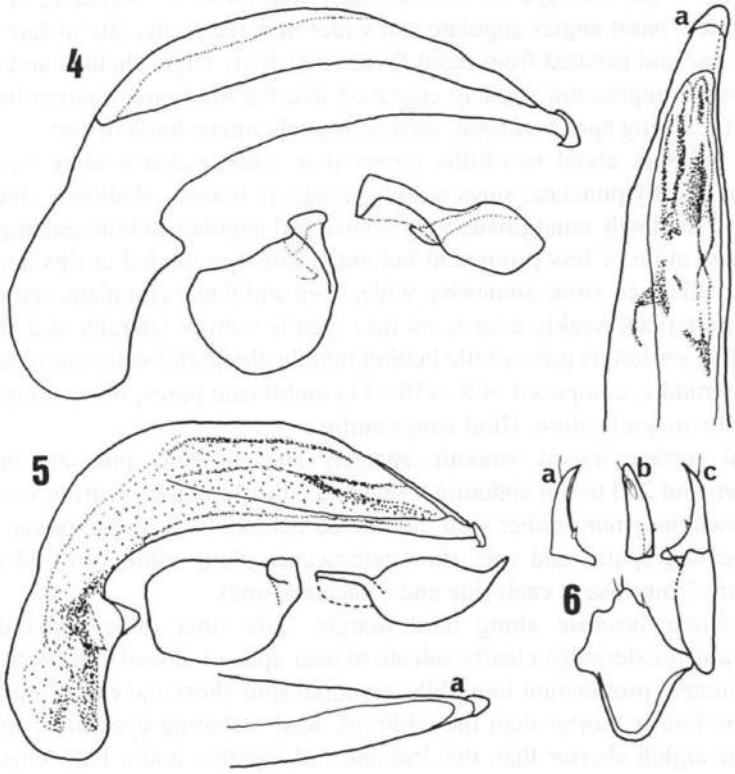
Specimen examined. 1 ♂ (Holotype), Sikkim, Himalaya (preserved in the Oberösterreichisches Landesmuseum, Linz).

This species is different from *Trichotichnus* (*Pseudotrichotichnus*) *miyakei* HABU (1980) in having the pronotum wider, more strongly contracted in front and behind from the widest point, with the sides not straight behind and with more obtuse basal angles, and the terminal spur longer.

Trichotichnus* (*Pseudotrichotichnus*) *curvatus sp. nov

(Figs. 2, 5 & 6)

Body oblong-oval, well convex, pitchy black, shiny, with slightly aeneous tinge;



Figs. 4–6. Genitalia of *Trichotichnus* spp. —— 4, *T.* (*Pseudotrichotichnus*) *formosus* Schauberger; 5 & 6, *T.* (*Pseudotrichotichnus*) *curvatus* sp. nov.; 4 & 5, male; 6, female; a, dorsal view; b, lateral view; c, ventral view.

palpi and antennae light brown, legs light reddish brown.

Head wide, seven-tenths the pronotal width, a little more convex than in *Trichotichnus* (*Pseudotrichotichnus*) *birmanicus* Bates (1982), very sparsely and microscopically punctate; labrum transversely quadrate, shallowly emarginate at apex; clypeus gently swollen transversely, with subtruncate apex; clypeal suture deeply engraved, but not slant at front side; frontal impressions abruptly divergent behind, strongly deepened, not changing in depth to supraorbital grooves; eyes more or less prominent but not hemispherical; interocular space wide, about three-fourths times the width of head; temple rather tumid, longer than in *T. birmanicus* and a half the eye length; genuine ventral margin of eye more widely separated from buccal fissure than in *T. birmanicus*; mandibles short and robust, thick at apices, left mandible weakly produced at terebral tooth and rather deeply incised before molar, retinacular tooth of right mandible more or less prominent and also incised before molar; antennae short but slender, 3rd pubescent in apical three-fifths, one-tenth longer than the 4th and

about twice the 2nd; 3rd segment of labial palpus sparsely pubescent and relatively tumid, almost equal in length to the 2nd; ligula constricted before apex, separated from paraglossae in front of the constriction, more or less prominent latero-distad at apical corners; paraglossae prolonged forwards from ligula, gradually widened towards apices; median tooth of mentum strongly produced in front and sharp at tip, epilobes narrow and subparallel-sided, suture with submentum fine, obscure near sides; microsculpture obscure, but a little more clearly observed than in *T. birmanicus*, consisting of transverse meshes behind frons.

Pronotum subquadrate, widest at basal three-fifths, two-fifths wider than long and than the width of head, widely and strongly convex, largely smooth, sparsely and minutely punctate only in baso-lateral areas; sides clearly arcuate in front and feebly so behind from the widest point, never sinuate before base, more finely bordered than in *T. birmanicus*; apex almost truncate, with fine and entire border; base one-fifth wider than apex, slightly arcuate, unbordered in most portions; apical angles widely rounded; basal angles obtuse and angulate; lateral furrows wholly engraved in a line; basal foveae very shallowly impressed and indistinct because the discal convexity approaches to near sides and base; front and hind transverse impressions vague; median line fine and shallow, obsolete near apex and base; microsculpture composed of fine and transverse meshes.

Elytra uniformly and well convex, oblong-oval, two-fifths longer than wide, very sparsely and microscopically punctate, weakly arcuately widened from behind humeri, subparalell in middle and thence gradually strongly narrowed towards apices; apical sinus shallow; apices more or less produced behind, not separated from each other, sharply angulate at sutural angles; bases shallowly sinuate, obtusely and angularly meeting with the sides; striae narrow and shallow, not deepened even near apices, finely crenulate, scutellar striole short; intervals flat lengthwise, a dorsal pore on 3rd interval at middle along 2nd stria; marginal series interrupted medially, composed of (8−9)+(10−11) umbilicate pores; surface hardly microsculptured, vaguely microlined only on 9th intervals. Hind wings rudimentary, one-fourth as long as elytra.

Ventral surface almost smooth, very sparsely punctate on metepisterna and laterally on metasternum, furnished with very short and sparse pubescence on prosternum, and medially on metasternum and 2nd to 6th abdominal segments; metepisternum not elongate, one-fourth longer than wide; 6th abdominal segment bisetose at each side in both sexes, finely bordered and feebly notched at apex in ♂ and clearly arcuate in ♀.

Mid coxae sparsely setose; hind femur bisetose along hind margin; fore tibia sulcate dorsally in basal half, weakly sinuate at apex, armed with two spines apico-externally, terminal spur lanceolate; 1st segment of mid tarsus in ♂ not bearing adhesive hairs, hind tarsus one-tenth shorter in ♂ and three-tenths in ♀ than the width of head, 1st segment one-fourth shorter than the 2nd and 3rd together and a half longer than the 2nd, 3rd one and two-fifths as long as the 4th, claw segment bisetose ventrally at each side.

Aedeagus (Fig. 5) robust, abruptly curved behind basal orifice; apex thinly knob-

shaped, obliquely directed; apical orifice widely open to the left, inner sac without any sclerites. Stylus (Fig. 6) weakly curved, bearing a short spine near base of external margin; valvifer armed apically with a short spine and seta at apex and ante-apically with a seta.

Length: 7.8–8.5 mm. Width: 3.5–3.8 mm.

Holotype: ♂, East Thieme, (Darjeeling), Himalaya (preserved in the Museum of Humboldt University). Paratypes: 1 ♂, (Darjeeling), Himalaya; 1 ♀, alt. 2,200–2,300 m, Forest S. Manisingma, Khandbari, Nepal, 11～13–IV–1984, A. Smetana & I. Löbl leg.

This new species resembles *Trichotichnus* (*Pseudotrichotichnus*) *formosus* Schauberger, but is easily distinguished from the latter by the hind wings reduced, the elytra bearing weak aeneous lustre instead of being purely black and not convex on intervals, and the metepisternum much shorter.

As compared with *Trichotichnus* (*Pseudotrichotichnus*) *uenoi* Habu (1969), this new species has the body smaller in size, the pronotum less densely and coarsely punctate in basal areas, the elytra more convex and bearing flat intervals, the hind wings rudimentary, and the metepisternum not elongate.

Trichotichnus (s. str.) ***depressus*** sp. nov.

(Figs. 3, 7 & 8)

Body oblong, similar in form to *Trichotichnus* (s. str.) *lewisi* Schauberger, shiny, slightly brownish black to blackish brown, with weak iridescent lustre on elytra; palpi and antennae light reddish brown, legs light to moderate reddish brown.

Head gently raised on vertex, obliquely flattened in frons, about two-thirds the pronotal width (0.65–0.69 in ratio), narrow at interocular space which is about two-thirds the width of head, and rather sparsely punctate, with three small and obscure foveae, one of which lies near the middle of frons and the other two between vertex and supraorbital grooves; labrum weakly arcuate at sides, deeply and triangularly emarginate at apex; clypeus vaguely and transversely depressed between a pair of lateral setae, with emarginate apex straight in the middle; clypeal suture fine and shallow, but clearly carved, from each end of which the frontal impression is arcuately divergent behind, relatively deep in apical half and well shallowed near supraorbital groove; eyes larger than in *T. lewisi* and considerably prominent; temples short, rather steeply sloping towards neck constriction; genuine ventral margin of eye not or slightly separated from buccal fissure; mandibles short and robust, abruptly curved before tips, both terebral and retinacular teeth of left mandible small and rounded at tips, right mandible rather sharp apically, well prominent at blunt retinacular tooth; antennae slender, reaching basal sixth of elytra, 3rd segment glabrous in basal three-eighths, a little shorter than the 4th (0.92 in ratio) and twice the 2nd; labial palpi slender, 2nd segment one-seventh longer than the 3rd; ligula well expanded distad, truncate at apex, separated from narrow paraglossae in apical half; mentum transverse, with clear mentum

suture, median tooth small, rounded at tip, epilobes narrow and subparallel-sided; microsculpture mostly invisible, partly and obscurely visible only near vertex.

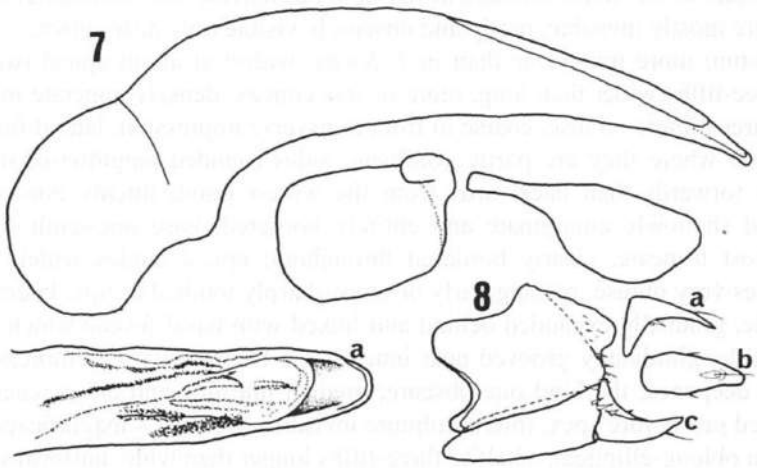
Pronotum more transverse than in *T. lewisi*, widest at about apical two-fifths, a half to three-fifths wider than long, more or less convex, densely punctate throughout, the punctures minute on disc, coarse in front transverse impression, lateral furrows and basal foveae where they are partly confluent; sides rounded lengthwise, stronger in roundness forwards than backwards from the widest point, thickly bordered; apex evenly and shallowly emarginate and entirely bordered; base one-tenth wider than apex, almost truncate, clearly bordered throughout; apical angles widely rounded; basal angles very obtuse, rectangularly or more sharply toothed at tips; lateral furrows rather wide, gradually expanded behind and linked with basal foveae which are large, deeply and longitudinally grooved near inner sides; front transverse impression comparatively deepened, the hind one obscure; median line fine and clear, reaching base and reduced just before apex; microsculpture invisible under 80× magnification.

Elytra oblong-elliptical, a half to three-fifths longer than wide, uniformly and gently convex, more steeply declivous latero-apically than in *T. lewisi*, microscopically punctate in most areas and slightly more coarsely so on 9th intervals; sides weakly arcuate at humeri, very shallowly sinuate before apices; apices more or less produced, narrowly rounded at tips; bases slightly emarginate; humeral angles angulate and much larger than rectangle; striae rather wide, deep and finely crenulate, scutellar striole long; intervals weakly convex on disc, gradually becoming more convex apicad, a setiferous pore of 3rd interval situated at about apical two-fifths; marginal series interrupted medially, consisting of (8−11)+(10−13) umbilicate pores; microsculpture very obscure on disc and somewhat clearer on 9th interval, composed of transverse lines. Hind wings fully developed.

Ventral surface rather densely covered with a mixture of fine and coarse punctures on pre-, mese- and metepisterna and laterally on prosternum and 2nd and 3rd abdominal segments, with short pubescence fine on prosternum and medially on 3rd segment of abdomen and very sparse on the remaining segments; metepisternum moderately contracted behind, a half longer than wide; 6th abdominal segment unisetose in ♂ and bisetose in ♀ at each side, truncate or hardly emarginate in ♂ and gently arcuate in ♀ at apical margin.

Hind femur bisetose on posterior margin and tri- or quadrispinous on anterior margin; fore tibia slender, truncate at apex, longitudinally sulcate, with uniseriate short spines along the sulcus, trispinous at apico-lateral portion, terminal spur lanceolate; hind tarsus one-tenth in ♂ and one-seventh in ♀ shorter than the width of head, 1st segment one-fifth shorter than the 2nd and 3rd together and one-fourth longer than the 2nd, 3rd about a half longer than the 4th, claw segment quadrisetose along each ventral margin.

Aedeagus (Fig. 7) slender, almost straight, gently curved behind basal orifice, apex thin and weakly arcuate; apical lobe subtriangular, rounded at tip; inner sac armed with a rather long peg-shaped sclerite. Stylus (Fig. 8) short, weakly curved out-



Figs. 7–8. Genitalia of *Trichotichnus* (s. str.) *depressus* sp. nov.; 7, male; 8, female; a, dorsal view; b, lateral view; c, ventral view.

wards, with a short spine on each external margin; valvifer triangular, bisetose at apex and trisetose behind the apex.

Length: 11.9–12.2 mm. Width: 4.6–5.0 mm.

Holotype: ♂, Tsa-jiu-san (=Tsa-pin-san, 25.00°N, 113.49°E, 50 km ENE Shaoguan), Guangdong, China, VII~IX–1910, S. V. MELL leg. Paratypes: 1 ♂, 3 ♀♀, same data as the holotype; 1 ♀, Kuaichang, Fanging Shan, 20 km of Jiangkou, NE Guizhou, China, 27–V–1995, E. JENDEK & O. SAUSA leg.

This new species is distinguished from *Trichotichnus* (s. str.) *lewisi* SCHAUBERGER by the elytra more weakly iridescent and not toothed at the tips of apices, besides the features mentioned in the above description.

要　　約

伊藤　昇：アジア産 *Trichotichnus* 属の数種について．—— *Trichotichnus* (*Pseudotrichotichnus*) *formosus* SCHAUBERGER を再記載した．また，ネパールから *Trichotichnus* (*Pseudotrichotichnus*) *curvatus* を，中国から *Trichotichnus* (s. str.) *depressus* を，それぞれ記載した．前者は，*T.* (*P.*) *formosus* とは，上翅が真黒ではなく微弱な青銅色の光沢をもち間室が隆起しない点，後翅が退化している点，および後胸後側板がきわめて短い点などで異なる．後者は，*Trichotichnus* (s. str.) *lewisi* SCHAUBERGER に似ているが，より小さく上翅がより弱い虹光沢をもちかつ先端に刺をもたないことなどで容易に区別できる．

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Elytra, Tokyo, **24** (2): 211–212, November 15, 1996

List of the Host Fungi of the Japanese Ciidae (Coleoptera), II

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Family Polyporaceae

Schizoporia paradoxa [Anatake]
Anoplocis poriae, *Anoplocis ryukyuensis*, *Ennearthron chujoi*

Polyporus alveolarius [Hachinosutake]
*Cis seriatulus**

Microporus vernicipes [Tsuyauchiwatake]
Cis seriatopilosus, *Cis subrobustus*, *Cis taiwanus*, *Neoennearthron hisamatsui*, *Octotemnus japonicus*, *Octotemnus laminifrons*

Microporus flabelliformis [Uchiwatake]
Cis seriatopilosus, *Cis taiwanus*, *Neoennearthron hisamatsui*, *Octotemnus japonicus*, *Octotemnus laminifrons*

Cryptoporus volvatus [Hitokuchitake]
Ennearthron chujoi, *Euxestocis bicornutus*, *Neoennearthron bicarinatum*

Piptoporus betulinus [Kanbatake]
Cis seriatopilosus, *Ennearthron robusticorne*

Picnoporus coccineus [Hiirotake]
Cis sasakawai, *Cis seriatopilosus*, *Cis seriatulus*, *Lipopterocis simplex*, *Cis subrobustus*, *Ceracis laminicollis*, *Octotemnus japonicus*, *Octotemnus laminifrons*

Gloeophyllum subferrugineum [Hirohanokikaigaratake]
Cis mikagensis

Gloeophyllum abietinum [Kogeirokaigaratake]
Cis mikagensis

Daedalea dickinsii [Hôrokutake]
Cis nipponicus, *Cis seriatopilosus*, *Nipponapterocis brevis*, *Odontocis denticollis*,

Octotemnus japonicus, *Octotemnus laminifrons*

Trametes gibbosa [Ôchirimentake]

Cis boleti, *Cis nipponicus*, *Cis seriatopilosus*, *Cis subrobusuts*, *Octotemnus japonicus*, *Octotemnus laminifrons*, *Octotemnus omogensis*, *Octotemnus parvulus*

Trametes palisotii [Chirimentake]

Cis seriatulus

Trametes orientalis [Kujiratake]

Cis seriatulus, *Cis subrobustus*, *Octotemnus japonicus*, *Octotemnus laminifrons*

Trametes pubescens [Yakifutake]

Cis nipponicus, *Cis seriatopilosus*, *Cis simplex*, *Strigocis tokunagai*, *Paraxestocis unicornis*, *Odontocis denticollis*, *Octotemnus glabriculus*, *Octotemnus laminifrons*, *Octotemnus omogensis*

Trametes platyphylla [Ômidareamitake]

Octotemnus laminifrons

Coriolus versicolor [Kawaratake]

Cis boleti, *Cis brevipennis*, *Cis hieroglyphicus*, *Cis japonicus*, *Cis jezoensis*, *Cis maculatus*, *Cis nipponicus*, *Cis sasakawai*, *Cis seriatopilosus*, *Cis seriatulus*, *Cis simplex*, *Cis subrobustus*, *Cis taiwanus*, *Sulcacis affinis*, *Paraxestocis unicornis*, *Odontocis denticollis*, *Octotemnus glabriculus*, *Octotemnus japonicus*, *Octotemnus laminifrons*, *Octotemnus omogensis*, *Octotemnus parvulus*, *Octotemnus punctidorsum*, *Euxestocis bicornutus**, *Syncosmetus japonicus**

Coriolus pinsitus [Furuikawaratake]

Lipopterocis simplex, *Paraxestocis unicornis*, *Octotemnus japonicus*, *Octotemnus laminifrons*

Coriolus hirsutus [Aragekawaratake]

Cis fukudai, *Cis nipponicus*, *Cis seriatopilosus*, *Cis seriatulus*, *Cis subrobustus*, *Sulcacis affinis*, *Octotemnus japonicus*, *Octotemnus laminifrons*, *Octotemnus parvulus*

Coriolus brevis [Nikuusubatake]

Ennearthron mohrii

Lenzites betulina [Kaigaratake]

Cis nipponicus, *Cis seriatopilosus*, *Cis seriatulus*, *Ennearthron chujoi*, *Octotemnus glabriculus*, *Octotemnus japonicus*, *Octotemnus laminifrons*, *Octotemnus parvulus*

Trichaptum abietinum [Shihaitake]

Nipponocis unipunctatus

Trichaptum fuscoviolaceum [Usubashihaitake]

Nipponocis longisetosus, *Nipponocis unipunctatus*

Trichaptum biforme [Hakawaratake]

Nipponocis longisetosus, *Cis bifasciatus**

Bjerkandera dichrous [Ebiuratake]

Euxestocis bicornutus

Bjerkandera adusta [Yakeirotake]

Ennearthron ishiharai

(To be continued)

Elytra, Tokyo, **24** (2): 213–218, November 15, 1996

Notes on the Species of *Nazeris* from Japan, VIII

A New Species of the Group of *Nazeris optatus* (Coleoptera, Staphylinidae) from Shikoku

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Abstract A new species belonging to the species of the *Nazeris optatus* group is described from Shikoku under the name of *N. yoshidai* sp. nov. It is a relative of *N. shibatai* Ito.

After my recent study of the *Nazeris* specimens collected by Mr. Masataka Yoshida mainly in Shikoku, I have found that a species belonging to the *optatus* group is new to science. In the present paper I am going to describe the new species under the name of *Nazeris yoshidai* sp. nov., to report additional data on the species of the *optatus* group from Shikoku and to give a map (Fig. 4) showing their distribution.

Nazeris yoshidai sp. nov.

(Figs. 1–3)

Body robust, subdepressed above, shiny, black, apical half of head and apex of last abdominal segment slightly reddish, mandibles, labrum and basal two segments of antennae reddish brown, the other segments of antennae, maxillary and labial palpi and legs brownish yellow, femora slightly darkened; pubescence on body brownish black to black but brownish yellow to yellow in mouth parts, some apical segments of antennae, and legs.

Length: 5.0–5.6 mm.

Head subquadrate, as long as or slightly longer than wide, coarsely, closely and mostly regularly punctate but a little more sparsely and less regularly punctate on frons, finely and faintly microsculptured; four teeth of labrum short and rather dull at tips, the inner two teeth a little shorter than the outer two; frons shallowly depressed; vertex slightly and evenly convex and impressed in a wide irregular V-shape, the ends of the impression extending to antennal prominences; eyes moderately sized, the longitudinal diameter subequal in length to a half the length of postgenae, which are subparallel at sides and clearly arcuate toward neck; antennae fully reaching the middle of pronotum, all the segments longer than wide, 1st segment robust and large, a little longer than the following two segments together, 3rd about a half longer than the 2nd

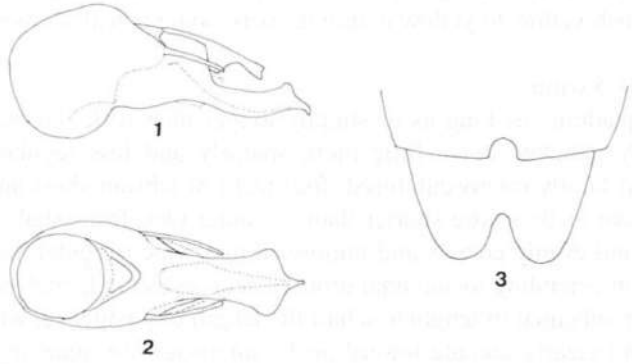
and gradually thickened to the 10th, which is distinctly smaller than the 11th. Ventral surface of head punctate and microsculptured like the dorsal surface but more regularly sculptured; mentum smooth, submentum feebly coarsened.

Pronotum nearly short-oval, longer than wide (1.15 : 1), narrower (0.85 : 1) and slightly shorter than head; three submarginal long erect setae separated from one another by unequal distance, the middle one of them being placed just in front of the widest point at apical third, from where the lateral sides are more rapidly rounded apically than basally; disc with punctures clearly coarser and deeper than on head, somewhat irregular in arrangement or size and becoming finer laterad, without any visible microsculpture; median line rather wide, long, extending from base to the middle and distinctly depressed on each side. Scutellum coarsely and not shallowly punctate.

Elytra widest near apex, about twice as wide as base and subequal to the pronotal width; surface slightly rugulose and undulate, with punctures coarse, rather deep but slightly distorted in shape by the slight undulations. Prosternum medially carinate almost to apical margin, coarsely rugosely punctate except for impunctate subapical part.

Abdomen slightly enlarged laterad, widest at 6th segment, from which tapering apically and basally; microsculpture fine and discernible; punctures coarse and close on basal tergites, fine and rather sparse on apical ones, those on sternites much coarser and deeper than on tergites. In the male 7th sternite almost entirely, weakly and rather narrowly depressed along middle; the depression gradually slanting apicad and relatively deepend in small impunctate apical area, apical margin of 7th sternite (Fig. 3) circularly excised in middle, bearing a tuft of some short, black and rather stiff hairs near each apical angle of the excision; 8th sternite deeply and triangularly excised in middle of apical margin, with a feeble depression before the excision, the depth of which is larger than its width. Legs moderately lengthened, without any distinct sexual and/or specific characters.

Aedeagus (Figs. 1–2) robust, well sclerotized except for dorsal side, slightly constricted at apical fourth; apical part of median lobe strongly expanded laterad, slightly



Figs. 1–3. *Nazeris yoshidai* sp. nov.; 1, aedeagus in lateral view; 2, ditto in ventral view; 3, outline of the 7th and 8th sternites in ♂.

curved, bluntly keeled on the ventral side and distinctly hooked at the tip; apophyses very thin and slender, not extending beyond the tip of median lobe, ill-sclerotized and easily flexible.

Holotype: ♂, Mt.Yutômaru, Kitô-son, Naka-gun, Tokushima Pref., 4–V–1976, M. YOSHIDA leg. (eventually deposited in the Osaka Natural History Museum). Paratypes: 1 ♂, 1 ♀, same locality as the holotype, 5–V–1976, M. YOSHIDA leg.

Further specimens examined. 1 ♂, 1 ♀, Mt. Ikenoko, Kitô-son, Naka-gun, Tokushima Pref., 17–VIII–1980, M. YOSHIDA leg.; 1 ♂ (teneral), same locality and date as above.

The present species is related to *Nazeris shibatai* ITO in the construction of aedeagal apophyses and in general appearance, but is clearly separable from the latter by the following points: the aedeagus with apical part of median lobe not hooked on lateral sides, the male 7th sternite more circularly excised at apical margin and bearing no emarginations on apico-lateral sides, the male 7th-sternal depression simpler and shallower, the body with a microsculpture, apparently robuster, larger in size and darker in color.

The specimens obtained on Mt. Ikenoko about 7 km northwest from Mt. Yutômaru are closely similar to the type specimens in external features, but the apical part of aedeagus is less strongly expanded laterad and the apophyses a little shorter. At the present time I would like to defer determination of geographical races until many more examples are collected from the neighboring localities.

Additional Collecting Data of the Species of the *N. optatus* Group from Shikoku

Nazeris hisamatsui ITO

Nazeris hisamatsui ITO, 1991, Ent. Rev. Japan, **46**: 8; 1994, Elytra, Tokyo, **22**: 104.

Specimens examined. 1 ♂, 1 ♀, Umanose-tôge (1,490 m), Tokushima Pref., 10–VI–1993, M. YOSHIDA leg.; 1 ♂, Mt. Tsurugi, Ichinomori, Tokushima Pref., 12–VII–1976, M. YOSHIDA leg.; 1 ♀, Mt. Tsurugi, Meotoike, Tokushima Pref., 2–V–1969, M. YOSHIDA leg.; 1 ♀, Mt. Tsurugi, Minokoshi, Tokushima Pref., 3–V–1969, M. YOSHIDA leg.; 1 ♂, 4 ♀♀, Mt. Shibakoya, Tokushima Pref., 6–IV–1975, 8–V–1977 and 2–X–1977, M. YOSHIDA leg.; 1 ♀, Harunokio, Nishiiya, Tokushima Pref., 24–VIII–1971, M. YOSHIDA leg.; 1 ♀, Mt. Nakatsuyama, Nishiiya, Tokushima Pref., 23–VIII–1971, M. YOSHIDA leg.

Nazeris pacificus ITO

Nazeris pacificus ITO, 1990, Ent. Rev. Japan, **45**: 99; 1994, Elytra, Tokyo, **22**: 104.

Specimens examined. 1 ♂, 2 ♀♀, Nakatani, Shishikui, Tokushima Pref., 24–IX–1973, M. YOSHIDA leg.; 1 ♀, Higashitanigawa, Shishikui, Tokushima Pref., 3–VIII–

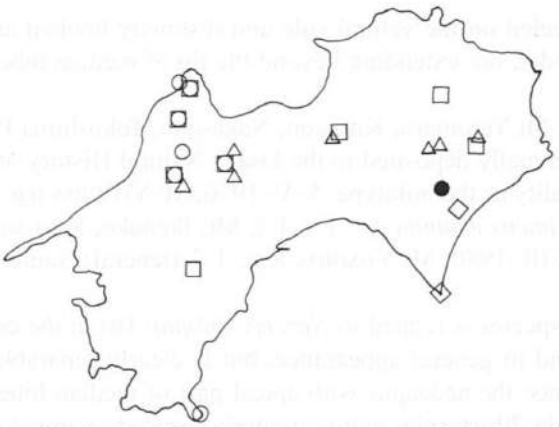


Fig. 4. Map showing the distribution of the *Nazeris optatus* group in Shikoku. ○–*N. hikosanus* ITO; △–*N. hisamatsui* ITO; □–*N. omogonis* ITO; ◇–*N. pacificus* ITO; ●–*N. yoshidai* sp. nov.

1973, M. YOSHIDA leg.

Nazeris omogonis ITO

Nazeris omogonis ITO, 1991, Ent. Rev. Japan, **46**: 10; 1994, Elytra, Tokyo, **22**: 104.

Specimens examined. 1 ♂, 1 ♀, Funato, Higashitsuno-mura, Kôchi Pref., 1–V–1977, M. YOSHIDA leg.; 2 ♀♀, Omogokei, Ehime Pref., 23–IV–1972, M. YOSHIDA leg.; 1 ♂, Sakase, Nishiiyayama, Tokushima Pref., 25–VIII–1971, M. YOSHIDA leg.; 1 ♀, Mt. Hizukayama, Takano, Tokushima Pref., 17–VIII–1981, M. YOSHIDA leg.; 2 ♂♂, 4 ♀♀, Mt. Kôtsuzan, Tokushima Pref., 29 & 30–IV and 28–VII–1972, M. YOSHIDA leg.

Nazeris hikosanus ITO

Nazeris hikosanus ITO, 1991, Ent. Rev. Japan, **46**: 7; 1994, Elytra, Tokyo, **22**: 103.

No additional records.

Acknowledgement

I would like to express my hearty thanks to Dr. Shun-Ichi UÉNO, Emeritus Curator of the National Science Museum (Nat. Hist.), Tokyo, for his kindness in critically reading and strictly revising the manuscript of this paper, and also to Mr. Masataka YOSHIDA, Tokushima, for his kind help in giving me the opportunity to examine the specimens used for this study.

要　約

伊藤建夫: 日本産*Nazeris*属ハネカクシについて，VIII. —— 本論文において，*optatus*群に属

する1新種を四国から新たに記載報告した．さらに前報に引き続き，この種群の四国におけるデータを追加し，その分布図も示した．

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Elytra, Tokyo, **24** (2): 218, November 15, 1996

Occurrence of *Curculio ishiharai* NOTSU (Coleoptera, Curculionidae) in Hokkaido, Japan

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Nothing has been recorded on *Curculio ishiharai* NOTSU, 1994, since its original description based on a single male specimen from the Ozegahara Moor, central Honshu, Japan.

Fortunately I had an opportunity to examine a female specimen of this curculionid collected by N. YASUDA on Mt. Rausu, Shari-chô, eastern Hokkaido, Japan, on September 6th, 1988. It becomes apparent that the female is different from the male in the following features: rostrum about 1.4 times longer than the length of head and pronotum combined; antenna inserted just behind the basal one-third of rostrum; scape as long as three basal funicular segments combined; 5th abdominal sternite with a shallow median sulcus.

I wish to thank Mr. N. YASUDA of Sounkyo Museum of Natural History, Hokkaido for his kind supply of this rare specimen.

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Elytra, Tokyo, **24** (2): 219–224, November 15, 1996

A New Species of the *Lathrobium pollens* Group (Coleoptera, Staphylinidae) from the Island of Shimokoshiki-jima off Southwestern Kyushu, Japan

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Abstract A new staphylinid species belonging to the *Lathrobium* (s. str.) *pollens* group is described and illustrated under the name of *L.* (s. str.) *onodai*. It was found in the litter zone of a broadleaved forest on the Island of Shimokoshiki-jima off southwestern Kyushu, Japan.

Through the courtesy of Mr. Shigeru ONODA, Kagoshima, I have had an opportunity to examine an interesting species of the *Lathrobium* (s. str.) *pollens* group found by himself in the litter zone on the Island of Shimikoshiki-jima off southwestern Kyushu, Japan. A careful examination has revealed that this species is a member of the *L. pollens* group, because of vestigial eyes, transverse elytra and degenerated hind wings, and is new to science. It will be described and illustrated in the present paper.

I wish to express my hearty thanks to Professor Shun-Ichi UÉNO of Tokyo University of Agriculture for his kind advice on the present study. Deep gratitude is also due to Mr. S. ONODA for his kindness in providing me with specimens used in this study.

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

[Japanese name: Koshiki-kobane-nagahanekakushi]

(Figs. 1–7)

Body length: 8.0–9.5 mm (from front margin of head to anal end); 3.8–4.7 mm (from front margin of head to elytral apices).

Body elongate, parallel-sided and somewhat depressed above. Colour reddish black and moderately shining, with mandibles antennae, sutural and apical marginal areas brownish red, palpi, legs and apical two abdominal segments brownish yellow.

Male. Head subtrapezoidal, slightly narrowed anteriad and feebly elevated, a little transverse (width/length=1.08); lateral sides weakly arcuate; frontal region between antennal tubercles transversely flattened and smooth, provided with a conspicuous setiferous puncture inside each antennal tubercle; surface sparingly and setiferously punctate, the punctures in the vertexal area much sparser than those in other areas; eyes

very small and flat, the longitudinal diameter less than one-fourth as long as the post-ocular region. Antennae extending to the middle of pronotum and not thickened apicad, two proximal segments polished, the remainings opaque, 1st robust and strongly dilated apicad, more than 2.5 times as long as broad, 2nd remarkably longer than broad (length/width=1.80) but a half as long as and evidently narrower than 1st (2nd/1st=0.71), 3rd more than twice as long as broad and distinctly longer than 2nd (3rd/2nd=1.22), 4th to 10th more or less moniliform, 4th apparently longer than broad (length/width=1.80) but evidently shorter than 3rd (4th/3rd=0.82), 5th 1.5 times as long as broad though a little shorter than 4th (5th/4th=0.83), 6th and 7th equal in both

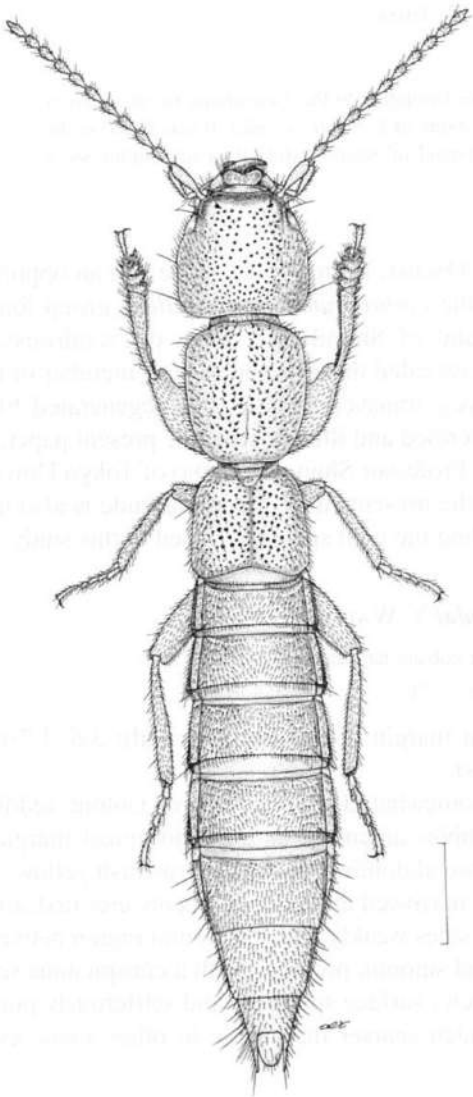


Fig. 1. *Lathrobium* (s. str.) *onodai* Y. WATANABE, sp. nov., holotype, from Sesenoura on the Island of Shimo-koshiki-jima in Kagoshima Prefecture. Scale: 1.0 mm.

length and width to each other, each somewhat longer than broad (length/width=1.40) but slightly shorter than 5th (6th or 7th/5th=0.93), 8th to 10th equal in both length and width to one another, each a little longer than broad (length/width=1.30) but slightly shorter than 7th (each of 8th to 10th/7th=0.93), apicalmost fusiform, twice as long as broad and evidently longer than broad (length/width=1.38), subacuminate at the terminal portion.

Pronotum apparently longer than broad (length/width=1.16) and much longer (pronotum/head=1.16) but somewhat narrower (pronotum/head=0.93) than head, widest just behind anterior angles and clearly narrowed posteriad; lateral sides straight at about middle though gently arcuate near both anterior and posterior angles as seen from above, anterior margin gently arcuate, posterior margin nearly truncate, anterior angles rounded but invisible from dorsal side, posterior ones narrowly rounded; surface more closely and more coarsely punctate than on head, bearing a narrow longitudinal smooth space at the middle through the whole length of pronotum. Scutellum subtriangular, sparsely scattered with obscure setiferous punctures on the surface. Elytra oblong, slightly dilated posteriad and a little transverse (width/length=1.11), conspicuously shorter (elytra/pronotum=0.79) and slightly broader (elytra/pronotum=1.02) than pronotum; lateral sides feebly arcuate, posterior margin emarginate at the middle and forming a re-entrant angle, posterior angles obliquely truncate; surface densely covered with much coarser setiferous punctures than those on pronotum. Legs relatively short; profemur markedly thickened, though abruptly constricted near the apex and excavated in apical half on the inner face, so that the anterior part of the excavation forms a subtriangular blunt tooth; protibia dilated apicad, hollowed in basal half on the inner margin and provided with five or so transverse rows of comb-like fine reddish setae in basal half within the hollow; meso- and metatibiae normal; 1st to 4th protarsal segments strongly widened, meso- and metatarsal segments thin.

Abdomen elongate, widest at 5th segment, and then more strongly narrowed posteriad than anteriad, 3rd to 6th tergites each provided with a shallow transverse depression along the base; surface of each tergite rather densely covered with fine aciculate punctures and fine brownish pubescence; 8th tergite more sparsely and more minutely

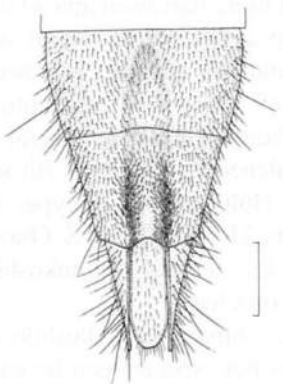
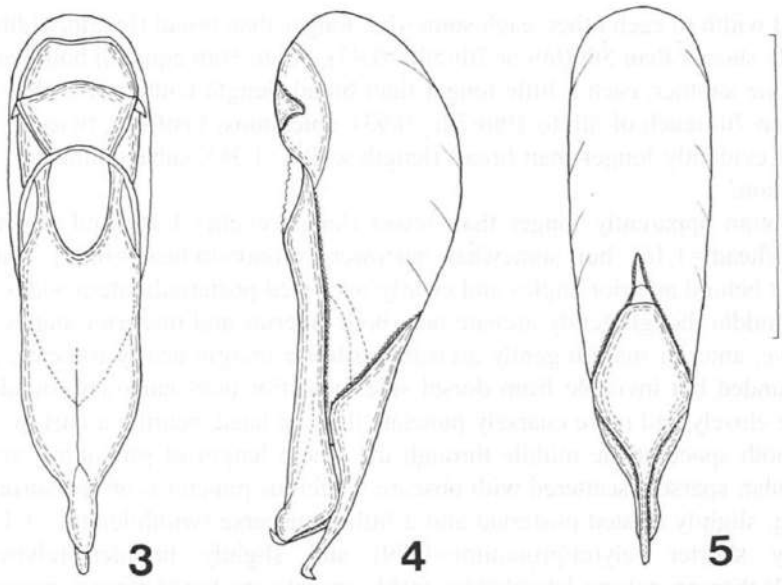


Fig. 2. Last three abdominal sternites in male of *Lathrobium* (s. str.) *onodai* Y. WATANABE, sp. nov. Scale: 0.5 mm.



Figs. 3–5. Male genital organ of *Lathrobium* (s. str.) *onodai* Y. WATANABE, sp. nov., from Sesenoura (type locality) on the Island of Shimokoshiki-jima in Kagoshima Prefecture.

punctate than in the preceding tergites; 8th sternite provided with a shallow and triangular excision at the middle of posterior margin and longitudinally depressed at the middle in front of the excision, the surface of the depression provided with a short smooth area at the middle, each side of the smooth area being covered with blackish setae somewhat denser than those in the other areas; 7th sternite also shallowly emarginate at the middle of posterior margin and with a horseshoe-like depression at the middle before the emargination.

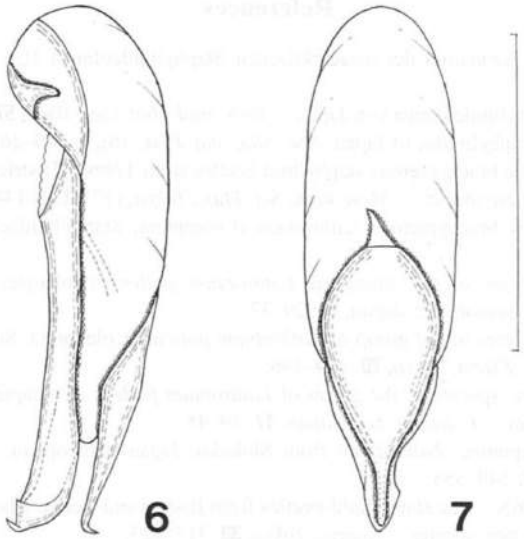
Genital organ elliptical and nearly symmetrical, moderately sclerotized except for membraneous dorsal side of median lobe; median lobe gradually narrowed apicad, provided with a well sclerotized plate on the dorsal side, the plate being widest before the middle and much more narrowed apicad than basad, and forming a minute dorsal hook at the extreme tip as seen from lateral side. Fused paramere nearly parallel-sided in basal four-fifths and then abruptly narrowed apicad as seen from ventral side, narrowly rounded at the apex which is curved ventrad with its tip acutely pointed in profile.

Female. Though similar in general appearance to male, 1st to 4th protarsal segments are less widened, and both the 7th and 8th abdominal sternites are simple.

Type series. Holotype: ♂, allotype: ♀, Sesenoura, Shimokoshiki-jima Is., Kagoshima Pref., Japan, 31–VIII–1994, S. ONODA leg. Paratypes: 2 ♂♂, 1 ♀, same data as for the holotype; 2 ♂♂, Teuchi, Shimokoshiki-jima Is., Kagoshima Pref., Japan, 31–VIII–1994, S. ONODA leg.

Distribution. Japan (Shimokoshiki-jima Is.).

Notes. This new species can be easily distinguished from the other species of



Figs. 6–7. Male genital organ of *Lathrobium* (s. str.) *onodai* Y. WATANABE, sp. nov., from Teuchi on the Island of Shimokoshiki-jima in Kagoshima Prefecture. Scale: 0.5 mm.

the species-group by the following combination of characters: head subtrapezoidal and broader than pronotum, and different configuration of the secondary sexual character of abdominal sternites and genital organ in male.

Remarks. One paratype obtained at Teuchi slightly differs from the holotype in the length and configuration of the dorsal plate of median lobe, but the difference can be regarded as infraspecific variation.

Etymology. The specific name is given after Mr. S. ONODA, who kindly supplied me with the type series.

要　　約

渡辺泰明：鹿児島県下甑島から採集されたコバネナガハネカクシ種群に含まれる1新種（甲虫目，ハネカクシ科）．—— コバネナガハネカクシ種群は，アリガタハネカクシ亜科のナガハネカクシ属に含まれる1種群で，顕著に縮小した複眼，長さより幅広い翅鞘，そして後翅が退化しているなどの点で容易に同属の他の種から区別することができる．わたしは，鹿児島県在住の小野田繁氏から，同氏が下甑島で採集されたこの種群に含まれる1種の寄贈を受けた．分類学的検討を行った結果，新種と判明したので下記のとおり命名・記載した．

Lathrobium (s. str.) *onodai* Y. WATANABE コシキコバネナガハネカクシ

本種は，下甑島の瀬々野浦および手打の広葉樹林帯の腐植層から得られたもので，体長および頭部が前胸背板より幅が広い点で，*L.* (s. str.) *densum* に似ているが，雄の腹部腹板に表われる第二次性徴や雄交尾器の形状が明らかに異なる点で区別できる．

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——— & S. SHIBATA, 1965. The staphylinid-beetles from Rishiri and Rebun Isls., Hokkaido, Japan, with descriptions of three new species. *Kontyû, Tokyo*, **33**: 317–323.

Elytra, Tokyo, **24** (2): 225–237, November 15, 1996

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

Part 7. Genus *Quedius* STEPHENS, 1829. Subgenus *Raphirus* STEPHENS, 1829. Section 2

Aleš SMETANA

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Abstract Taxonomic and faunistic data on the species of the genus *Quedius*, subgenus *Raphirus*, from the People's Republic of China are provided. Three new species are described: *Q. fen* (Sichuan), *Q. gang* (Fujian) and *Q. tian* (Sichuan). The lectotype is designated for *Quedius chinensis* BERNHAUER, 1915. *Quedius assamensis* is recorded for the first time from the People's Republic of China.

Before this series of papers on the Chinese Quediina was initiated, I published two papers that should be considered as parts of this series. One paper was on the genus *Pseudorientis* WATANABE, 1970 (SMETANA, 1995 a), with two new species *P. uenoi* and *P. gongga*, both from Sichuan. The second paper was on the genus *Strouhalium* SCHEERPELTZ, 1962 (SMETANA, 1995 b), with three new species *S. brezinai*, *S. sichuanense* and *S. farkaci*, all from Sichuan.

This is the ninth paper (two papers mentioned above included) of the series of papers dealing with the Quediina of the People's Republic of China. It treats five species, all belonging to the *Himalayicus* Group of species (SMETANA, 1988, 275). *Quedius assamensis* is recorded for the first time from the People's Republic of China (Yunnan), *Q. chinensis* BERNHAUER, 1915 is redescribed and a lectotype is designated. *Quedius fen* (Sichuan), *Q. gang* (Fujian) and *Q. tian* (Sichuan) are described as new.

Quedius (*Raphirus*) *assamensis* CAMERON

Quedius assamensis CAMERON, 1932, 293; SMETANA, 1988, 284.

New record. China: Yunnan, Ruili, 4–II–93, G. DEROUGEMONT, 2 ♂♂, in the collection DEROUGEMONT, London, and A. SMETANA, Ottawa.

Comments. New record for China. The species was until now known from the Himalaya (Uttar Pradesh, Nepal) and from the Naga Hills in Nagaland, India (SMETANA, 1988, 285).

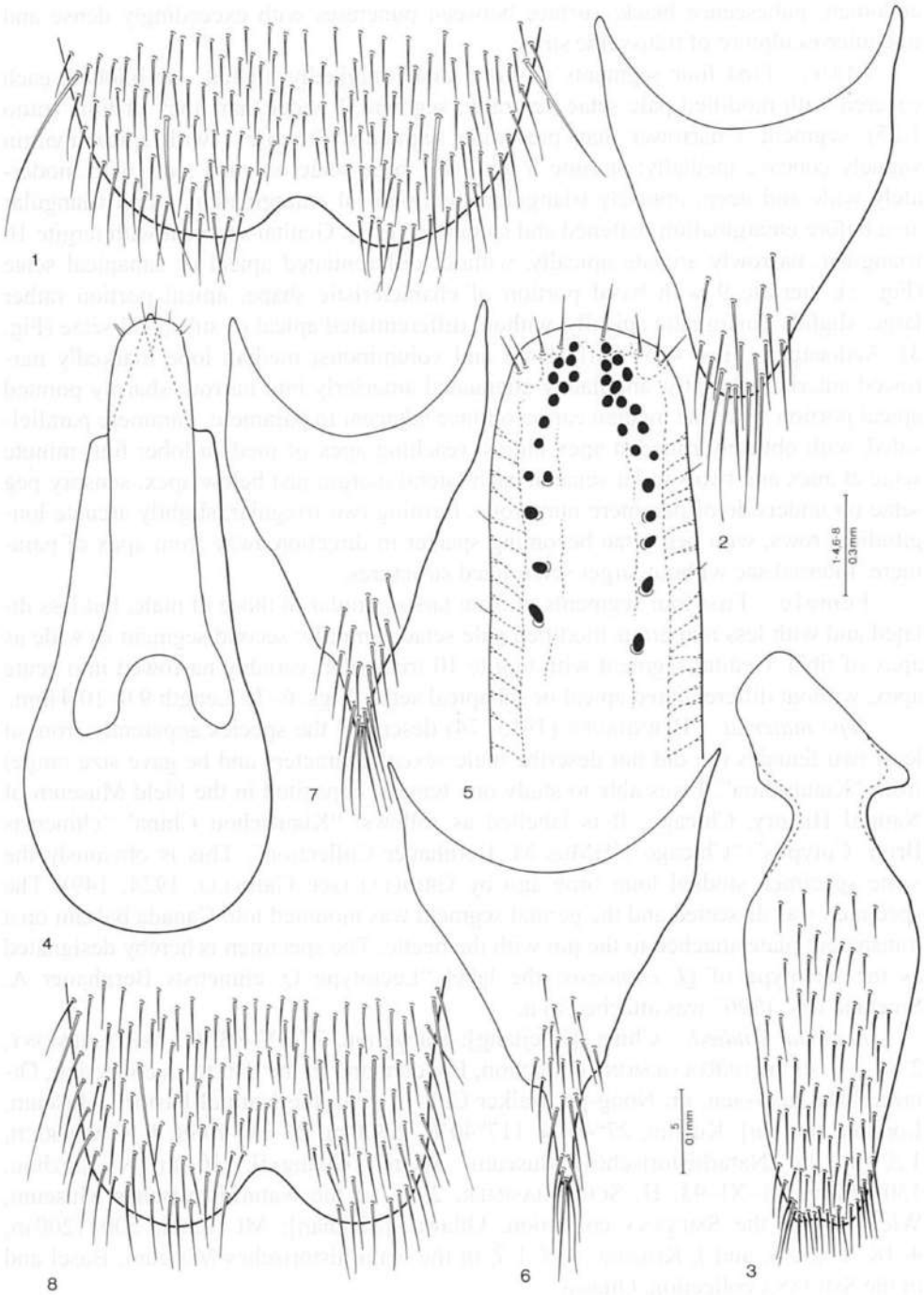
Quedius (Raphirus) chinensis BERNHAUER

(Figs. 1–7)

Quedius chinensis BERNHAUER, 1915, 74; GRIDELLI, 1924, 149; SMETANA, 1988, 285.

Description. Black, head and pronotum feebly, abdomen moderately, iridescent; maxillary and labial palpi rufo-testaceous, antennae with three basal segments rufo-brunneous with apical portions of at least segments 2 and 3 darkened, remaining segments dark brunneous, legs piceous to piceous black with apices of femora and bases of tibiae more or less paler, tarsi brunneous to testaceo-brunneous. Head rounded, wider than long (ratio 1.19), narrowed behind eyes, posterior angles entirely obsolete; eyes large and markedly convex, protruding from lateral contours of head, tempora considerably shorter than eyes seen from above (ratio 0.25); no additional setiferous punctures between anterior frontal punctures; posterior frontal puncture situated close to posterio-medial margin of eye, separated from it by distance smaller than diameter of puncture, one small puncture between it and posterior margin of head; temporal puncture almost touching posterior margin of eye; tempora impunctate; surface of head with fine, meshed microsculpture, most distinct on clypeus, with meshes becoming more or less incomplete toward posterior margin. Antenna moderately long, segment 3 longer than segment 2 (ratio 1.48), segments 4–7 longer than wide, gradually becoming shorter and wider, segments 8–10 about as long as wide, last segment about as long as two preceding segments combined. Pronotum slightly wider than long (ratio 1.13), widest at about posterior third, markedly narrowed anteriad, with lateral margins continuously arcuate with broadly rounded base, transversely convex, lateral portions not explanate; dorsal rows each with three fine punctures; sublateral rows each usually with two punctures, posterior puncture situated slightly behind level of large lateral puncture (but see Comments); microsculpture denser than that on head, consisting mostly of transverse waves with occasional longitudinal junctions. Scutellum rather densely and coarsely punctate and pubescent, surface with extremely fine and dense microsculpture of transverse striae. Elytra moderately long, at base slightly narrower than pronotum at widest point, only vaguely widened posteriad, at suture about as long as, at sides somewhat longer than pronotum at midline (ratio 1.19); punctation and pubescence fine and very dense, becoming slightly asperate toward posterior margin, interspaces mostly slightly smaller than diameters of punctures; pubescence black; surface between punctures without microsculpture. Wings fully developed. Abdomen with tergite 7 (fifth visible) bearing distinct whitish apical seam of palisade fringe; punctation and pubescence of abdominal tergites finer and denser than that on elytra, slightly denser at bases of tergites, in general becoming slightly sparser toward apex of

Figs. 1–8. —— 1–7. *Quedius chinensis*: 1, apical portion of male sternite 8; 2, tergite 10 of male genital segment; 3, sternite 9 of male genital segment; 4, aedoeagus, ventral view; 5, apical portion of underside of paramere; 6, 7, tergite 10 of female genital segment (6=lectotype). —— 8. *Quedius fen*: apical portion of male sternite 8.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abdomen; pubescence black; surface between punctures with exceedingly dense and fine microsculpture of transverse striae.

Male. First four segments of front tarsus markedly dilated, sub-bilobed, each covered with modified pale setae ventrally; segment 2 wider than apex of tibia (ratio 1.25); segment 4 narrower than preceding segments. Sternite 7 with apical margin vaguely concave medially; sternite 8 with two large setae on each side; with moderately wide and deep, obtusely triangular medio-apical emargination, small triangular area before emargination flattened and smooth (Fig. 1). Genital segment with tergite 10 triangular, narrowly arcuate apically, without differentiated apical or subapical setae (Fig. 2); sternite 9 with basal portion of characteristic shape, apical portion rather large, slightly emarginate apically, without differentiated apical or subapical setae (Fig. 3). Aedoeagus (Figs. 4–5) fairly large and voluminous; median lobe markedly narrowed anteriad, abruptly, angulately attenuated anteriorly into narrow, sharply pointed apical portion with fine median carina on face adjacent to paramere. Paramere parallel-sided, with obtusely rounded apex almost reaching apex of median lobe; four minute setae at apex and two similar setae at each lateral margin just below apex; sensory peg setae on underside of paramere numerous, forming two irregular, slightly arcuate longitudinal rows, with peg setae becoming sparser in direction away from apex of paramere. Internal sac without larger sclerotized structures.

Female. First four segments of front tarsus similar to those of male, but less dilated and with less numerous modified pale setae ventrally; second segment as wide as apex of tibia. Genital segment with tergite 10 triangular, variably narrowed into acute apex, without differentiated apical or subapical setae (Figs. 6–7). Length 9.0–10.4 mm.

Type material. BERNHAUER (1915, 74) described the species apparently from at least two females (he did not describe male sexual characters and he gave size range) from "Kiautschou". I was able to study one female, deposited in the Field Museum of Natural History, Chicago. It is labelled as follows: "Kiautschou China"/"chinensis Brnh. Cotypus"/"Chicago NHMus M. Bernhauer Collection". This is obviously the same specimen studied long time ago by GRIDELLI (see GRIDELLI, 1924, 149). The specimen was dissected and the genital segment was mounted into Canada balsam on a transparent plate attached to the pin with the beetle. The specimen is hereby designated as the lectotype of *Q. chinensis*; the label "Lectotype Q. chinensis Bernhauer A. Smetana des. 1996" was attached to it.

Material studied. China: [Zhejiang]: Hangzhou, 27–IV–93, G. DEROUGEMONT, 2 ♂♂, 1 ♀, in the DEROUGEMONT collection, London, and in the SMETANA collection, Ottawa; "Da-laen-saen. nr. Nong-po Walker Coll.", 1 ♀ in the Natural History Museum, London. [Fujian]: Kuatun, 27°40′N, 117°40′E, 2,300 m, 21–IV–1938, J. KLAPPERICH, 1 ♂, in the Naturhistorisches Museum, Wien. [Guangxi]: 10 km N Liuzhou, 150–200 m, 11–XI–93, H. SCHILLHAMMER, 2 ♀♀, in the Naturhistorisches Museum, Wien and in the SMETANA collection, Ottawa. [Sichuan]: Mt. Emei, 500–1200 m, 4–18–V–89, S. and J. KOLIBAC, 1 ♂, 1 ♀, in the Naturhistorisches Museum, Basel and in the SMETANA collection, Ottawa.

Geographical distribution. *Quedius chinensis* seems to be widely distributed. It is at present known from the provinces of Zhejiang and Sichuan, and from the Guangxi Zhuang Autonomous Region.

Bionomics. Nothing is known about the habitat requirements of this species; it seems to occur at low elevations.

Recognition, variation and comments. There are some uncertainties about this species, caused mainly by the fact that it was originally described only from females. Also, it belongs to a group of species very similar in general habitus, that can be positively distinguished mainly by the male sexual characters. There seems to be some variability in the development of the sublateral rows of punctures on the pronotum (in some specimens the posterior puncture is bilaterally missing), as well as in the development of the microsculpture on the pronotum, which is not always as I described it previously for the lectotype (see SMETANA, 1988, 285); in addition, the shape of the apical portion of tergite 10 of the female genital segment seems to vary as well (Figs. 6–7). It is therefore possible that this species, as it is interpreted here, may in fact include two taxa. This problem can only be addressed when more material is available for study.

Quedius chinensis is quite similar in most characters to *Q. fen*, but it may be distinguished by the characters given in the description of the latter species, particularly by the differently shaped aedoeagus (Figs. 4–5, 10–11).

Quedius (Raphirus) fen sp. nov.

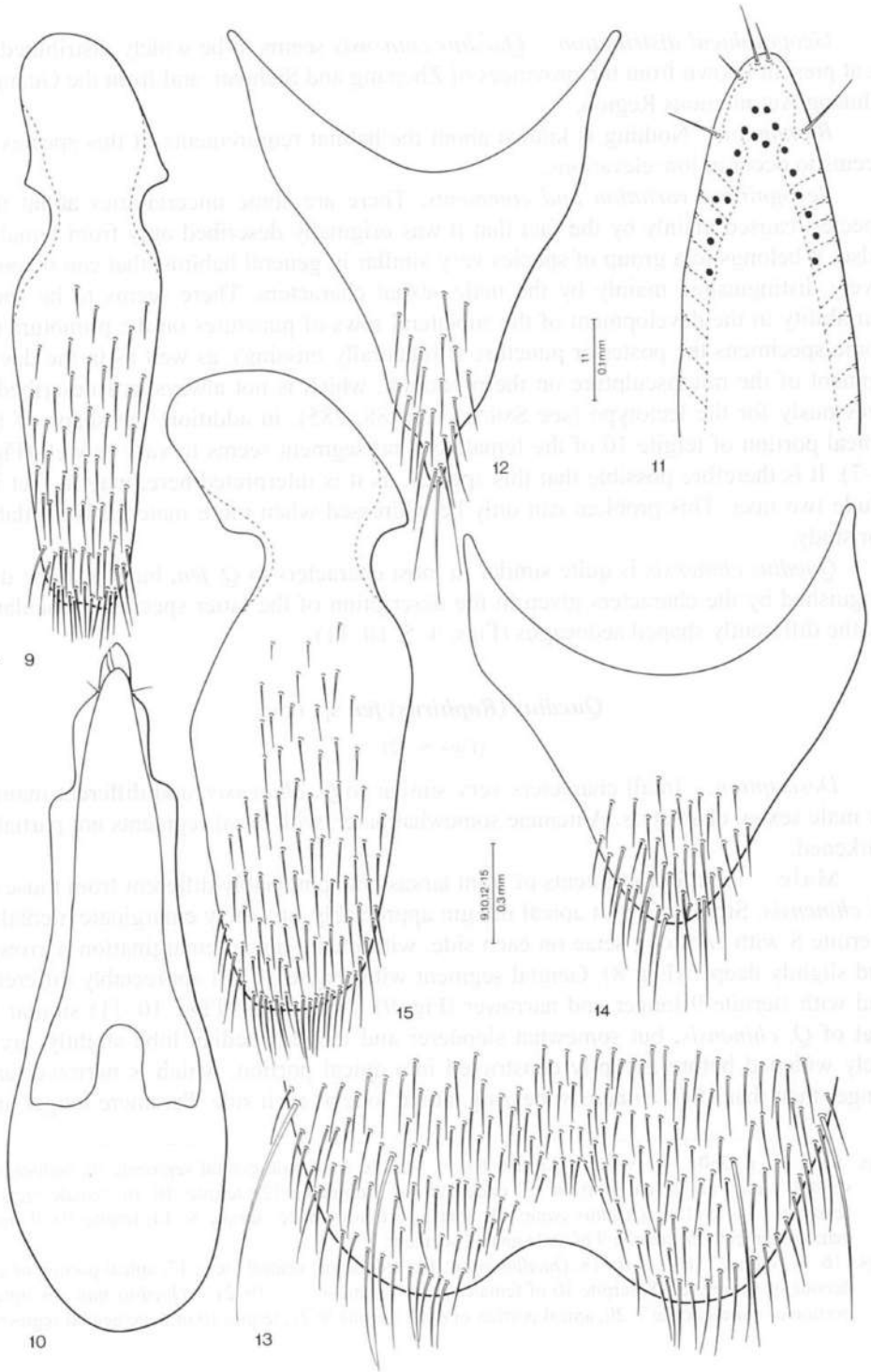
(Figs. 8–12)

Description. In all characters very similar to *Q. chinensis*, and different mainly by male sexual characters. Antennae somewhat paler, with basal segments not partially darkened.

Male. First four segments of front tarsus not appreciably different from those of *Q. chinensis*. Sternite 7 with apical margin appreciably, arcuately emarginate medially. Sternite 8 with two long setae on each side, with medio-apical emargination narrower and slightly deeper (Fig. 8). Genital segment with tergite 10 not appreciably different, and with sternite 9 longer and narrower (Fig. 9). Aedoeagus (Figs. 10–11) similar to that of *Q. chinensis*, but somewhat slenderer and longer; median lobe slightly, arcuately widened before abruptly constricted into apical portion, which is narrower and longer than that of *Q. chinensis*, bearing lateral lobe at each side. Paramere longer and

Figs. 9–15 (on p. 230). —— 9–12. *Quedius fen*: 9, sternite 9 of male genital segment; 10, aedoeagus, ventral view; 11, apical portion of underside of paramere; 12, tergite 10 of female genital segment. —— 13–15. *Quedius gang*: 13, apical portion of male sternite 8; 14, tergite 10 of male genital segment; 15, sternite 9 of male genital segment.

Figs. 16–21 (on p. 231). —— 16–18. *Quedius gang*: 16, aedoeagus, ventral view; 17, apical portion of underside of paramere; 18, tergite 10 of female genital segment. —— 19–21. *Quedius tian*: 19, apical portion of male sternite 7; 20, apical portion of male sternite 8; 21, tergite 10 of male genital segment.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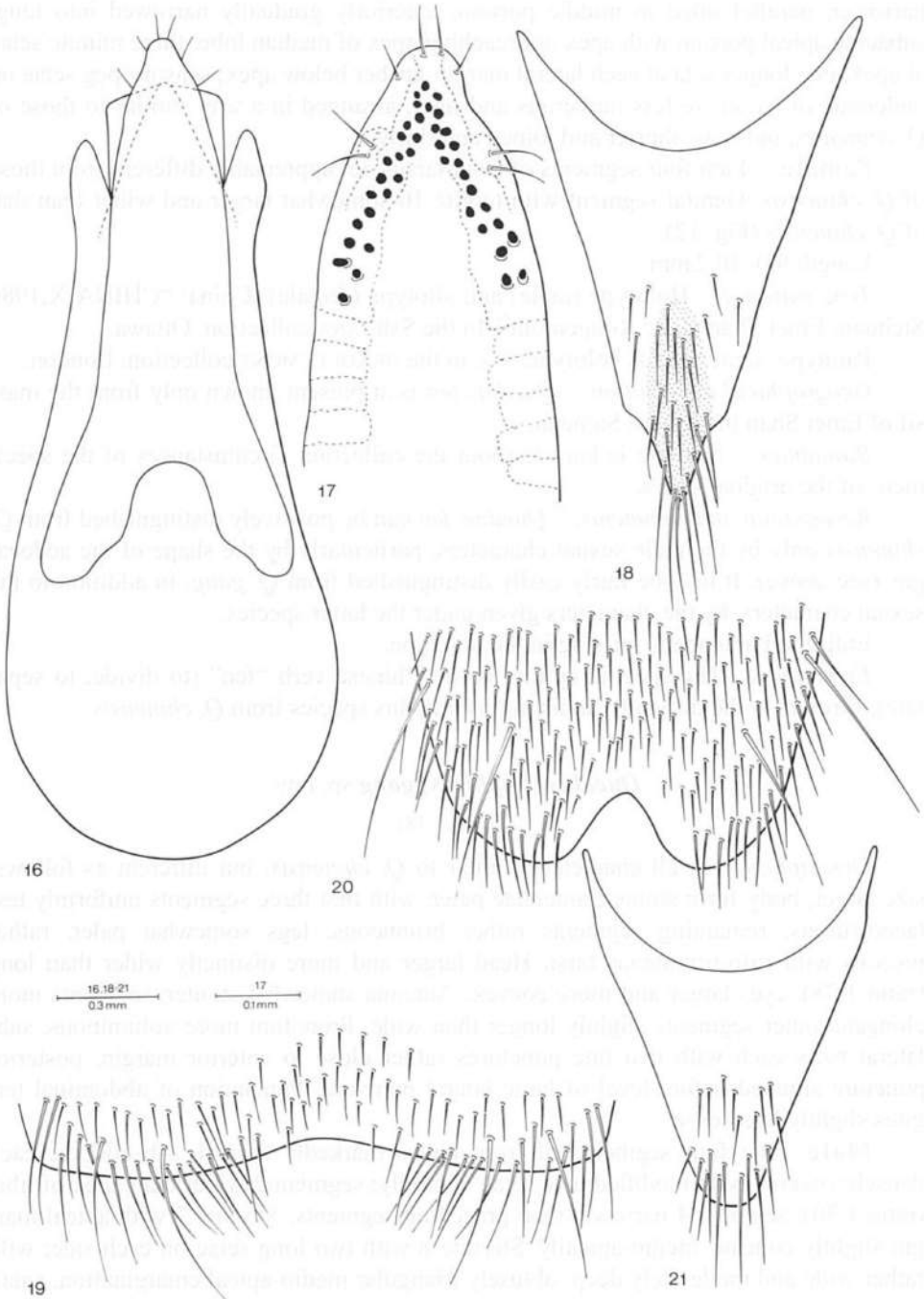
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narrower, parallel-sided in middle portion, anteriorly gradually narrowed into long, subacute apical portion with apex not reaching apex of median lobe; three minute setae at apex, one longer seta at each lateral margin farther below apex; sensory peg setae on underside of paramere less numerous and finer, arranged in a way similar to those of *Q. chinensis*, but rows shorter and joined anteriorly.

Female. First four segments of front tarsus not appreciably different from those of *Q. chinensis*. Genital segment with tergite 10 somewhat larger and wider than that of *Q. chinensis* (Fig. 12).

Length 9.0–10.2 mm.

Type material. Holotype (male) and allotype (female): China: "CHINA X.1986 Sichuan: Emei Shan G. de Rougemont". In the SMETANA collection, Ottawa.

Paratype: same data as holotype, 1 ♀, in the DEROUGEMONT collection, London.

Geographical distribution. *Quedius fen* is at present known only from the massif of Emei Shan in western Sichuan.

Bionomics. Nothing is known about the collection circumstances of the specimens of the original series.

Recognition and comments. *Quedius fen* can be positively distinguished from *Q. chinensis* only by the male sexual characters, particularly by the shape of the aedoeagus (see above). It may be fairly easily distinguished from *Q. gang*, in addition to the sexual characters, by the characters given under the latter species.

Entire left antenna is missing in the holotype.

Etymology. The specific epithet is the Chinese verb "fen" (to divide, to separate). It refers to the difficulty in distinguishing this species from *Q. chinensis*.

Quedius* (*Raphirus*) *gang sp. nov.

(Figs. 13–18)

Description. In all characters similar to *Q. chinensis*, but different as follows: size larger, body form stouter; antennae paler, with first three segments uniformly testaceo-rufous, remaining segments rather brunneous, legs somewhat paler, rather piceous with rufo-brunneous tarsi. Head larger and more distinctly wider than long (ratio 1.38), eyes larger and more convex. Antenna somewhat stouter, segments more elongate, outer segments slightly longer than wide. Pronotum more voluminous, sublateral rows each with two fine punctures rather close to anterior margin, posterior puncture situated before level of large lateral puncture. Punctation of abdominal tergites slightly less dense.

Male. First four segments of front tarsus markedly dilated, sub-bilobed, each densely covered with modified pale setae ventrally; segment 2 wider than apex of tibia (ratio 1.30); segment 4 narrower than preceding segments. Sternite 7 with apical margin slightly concave medio-apically. Sternite 8 with two long setae on each side; with rather wide and moderately deep, obtusely triangular medio-apical emargination, small triangular area before emargination flattened and smooth (Fig. 13). Genital segment

with tergite 10 wide, triangular, arcuate apically, with numerous setae at apex and numerous shorter, finer setae in front of them, without differentiated apical or subapical setae (Fig. 14); sternite 9 with basal portion short, of similar shape as in *Q. chinensis*, apical portion relatively short and stout, subtruncate apically, without differentiated apical or subapical setae (Fig. 15). Aedoeagus (Figs. 16–17) large and voluminous; median lobe markedly, evenly narrowed anteriad, in apical fourth on each side with blunt, tooth-like process at base of narrow apical portion with subacute apex and fine, short, medial longitudinal carina on face adjacent to paramere, and with small lateral lobe at each side. Paramere large, almost parallel-sided in middle portion, slightly concavely narrowed into narrowly obtuse apex, slightly exceeding apex of median lobe; four setae at apex, medial pair longer than lateral pair, two rather long setae at each lateral margin far from apex; underside of paramere with numerous, fine sensory peg setae, forming two irregular, longitudinal rows diverging posteriad. Internal sac without larger sclerotized structures.

Female. First four segments of front tarsus considerably less dilated than those of male, only slightly bilobed, with less numerous modified pale setae ventrally; second segment narrower than apex of tibia (ratio 0.84); segment 4 narrower than preceding segments. Genital segment with tergite 10 relatively narrow, slightly, narrowly pigmented medio-apically, anteriorly rather abruptly narrowed into acute apical portion, without differentiated apical or subapical setae (Fig. 18).

Length 9.0–11.0 mm.

Type material. Holotype (male) and allotype (female): China: "Kuatun (2300 m) 27, 40 n. Br. 117, 40 ö. L. J. Klapperich 19. 4. 1938 (Fukien)". In the Naturhistorisches Museum, Wien, Austria.

Paratypes: 17 ♂♂, 21 ♀♀, same data as holotype, dates 9–IV–, 12–IV–, 14–IV–, 15–IV–, 19–IV–, 21–IV–, 28–IV–, 3–V–, 4–V–, 6–V, 8–V–, 13–V–, 25–V–1938, in the Naturhistorisches Museum, Wien, and in the SMETANA collection, Ottawa; 7 ♂♂, 4 ♀♀, Kuatun, 1– and 14–V–1946, Tschung SEN, in the Naturhistorisches Museum, Wien, Musém d'Histoire naturelle, Geneva, Switzerland and in the SMETANA collection, Ottawa.

Geographical distribution. *Quedius gang* is at present known only from the province of Fujian.

Bionomics. Nothing is known about the collection circumstances of the specimens of the original series.

Recognition, variability and comments. *Quedius gang* may be fairly easily distinguished from the two similar species, *Q. chinensis* and *Q. fen*, in addition to the characters on the aedoeagus, by the larger, stouter body form.

The sublateral rows of punctures on the pronotum show some variability. In a few specimens, the posterior puncture is situated almost at the level of the large lateral puncture, in some specimens it is entirely missing.

The locality "Kuatun" is the village Guadun in Wuyi Shan, Chongan Xian.

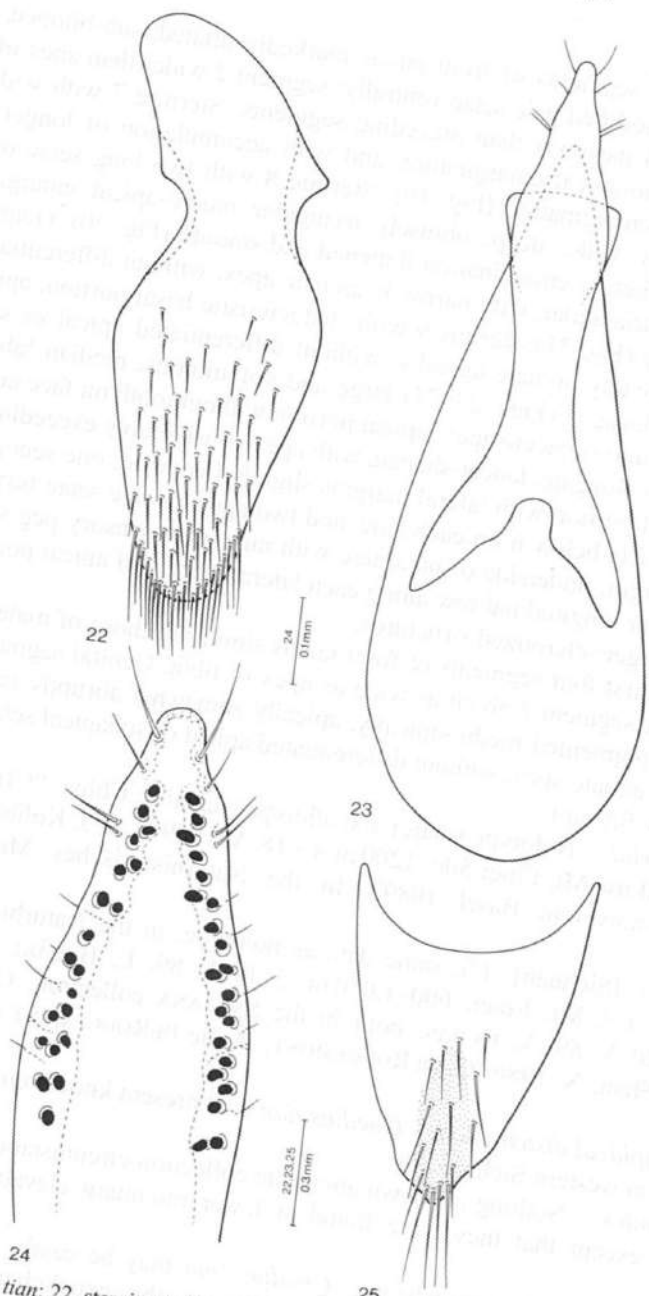
Etymology. The specific epithet is the Chinese adjective "gang" (strong). It

refers to the large, stout body form of the species.

Quedius (*Raphirus*) *tian* sp. nov.

(Figs. 19–24)

Description. Black, head and pronotum with vague metallic lustre; head and pronotum vaguely, abdomen appreciably iridescent. Maxillary and labial palpi brunneous to brunneo-piceous, antennae piceous-black, sometimes becoming somewhat paler toward apex, bases of first three segments paler, rufo-brunneous, legs piceous-black with distinctly paler, sometimes almost testaceous, tarsi, dorsal faces of front tibiae sometimes paler, rufo-brunneous. Head rounded, distinctly wider than long (ratio 1.32), markedly narrowed posteriad behind eyes, posterior angles entirely obsolete. Eyes very large and conspicuously convex, markedly protruding from lateral contours of head, tempora considerably shorter than eyes seen from above (ratio 0.22); no additional setiferous punctures between anterior frontal punctures; posterior frontal and temporal punctures almost touching posterior margin of eye, temporal puncture situated somewhat closer to posterior frontal puncture than usual, one puncture between posterior frontal puncture and posterior margin of head; tempora almost impunctate; surface of head with dense and very fine microsculpture of oblique and transverse waves, becoming to various extent submeshed on frons. Antenna moderately long, segment 3 longer than segment 2 (ratio 1.47), segments 4–7 distinctly longer than wide, gradually becoming shorter, segments 8–10 slightly longer than wide, last segment shorter than two preceding segments combined. Pronotum vaguely wider than long (ratio 1.06), widest at about posterior third, markedly narrowed anteriad, with lateral margin continuously arcuate with broadly rounded base, transversely convex, lateral portions not explanate; dorsal rows each with three punctures; sublateral rows each with two punctures, posterior puncture situated before level of large lateral puncture; microsculpture similar to that on head, but transverse and oblique waves with occasional longitudinal junctions denser, particularly toward posterior margin of pronotum. Scutellum with very fine and dense microsculpture of transverse waves, sparsely, moderately coarsely punctate and pubescent on apical portion. Elytra fairly long, at base somewhat narrower than pronotum at widest point, slightly widened posteriad, at suture vaguely longer (ratio 1.04), at sides appreciably longer (ratio 1.23) than pronotum at midline; punctation and pubescence dense, moderately coarse, transverse interspaces between punctures mostly as wide as diameters of punctures; pubescence pale brownish to almost yellowish–brown; surface between punctures without microsculpture, but with numerous microscopical irregularities, surface therefore appearing somewhat rough. Wings fully developed. Abdomen with tergite 7 (fifth visible) bearing distinct whitish apical seam of palisade fringe; punctation and pubescence of abdominal tergites distinctly finer and denser than that on elytra, becoming slightly sparser toward apex of each tergite and in general toward apex of abdomen; pubescence brunneo-piceous; surface between punctures with exceedingly dense and fine microsculp-



Figs. 22–25. *Quedius tian*: 22, sternite 9 of male genital segment; 23, aedoeagus, ventral view; 24, apical portion of underside of paramere; 25, tergite 10 of female genital segment.

ture of transverse striae.

Male. First four segments of front tarsus markedly dilated, sub-bilobed, each densely covered with modified pale setae ventrally; segment 2 wider than apex of tibia (ratio 1.22); segment 4 narrower than preceding segments. Sternite 7 with wide, not deep, subarcuate medio-apical emargination and with accumulation of longer black setae at each side of emargination (Fig. 19). Sternite 8 with two long setae on each side; with moderately wide, deep, obtusely triangular medio-apical emargination, small triangular area before emargination flattened and smooth (Fig. 20). Genital segment with tergite 10 triangular, with narrowly arcuate apex, without differentiated apical or subapical setae (Fig. 21); sternite 9 with characteristic basal portion, apical portion rather short, broadly arcuate apically, without differentiated apical or subapical setae (Fig. 22). Aedoeagus (Figs. 23–24) large and voluminous; median lobe almost conically narrowed into subacute apex, apical portion without tooth on face adjacent to paramere. Paramere elongate, lancet-shaped, with apex considerably exceeding apex of median lobe, apical portion with lateral margins slightly bisinuate; one seta just below apex, one smaller seta below it on each side, and two approximate setae further below at each lateral margin; underside of paramere with numerous sensory peg setae forming a long, irregular longitudinal row along each lateral margin of apical portion. Internal sac without larger sclerotized structures.

Female. First four segments of front tarsus similar to those of male, but somewhat less dilated, segment 2 about as wide as apex of tibia. Genital segment with tergite 10 slightly pigmented medio-apically, apically somewhat abruptly narrowed into short, narrowly arcuate apex, without differentiated apical or subapical setae (Fig. 25).

Length 8.0–9.5 mm.

Type material. Holotype (male) and allotype (female): China: "CHINA/Sichuan 103.20 el/29.30 nw Mt. Emei 500–1200 m 4.–18. V. 1989 S. & J. Kolibác leg."/"Freiwilliger Museumverein Basel 1989". In the Naturhistorisches Museum, Basel, Switzerland.

Paratypes: [Sichuan]: 1 ♀, same data as holotype, in the Naturhistorisches Museum, Basel; 1 ♂, Mt. Emei, 600–1,050 m, 5–19–V–89, L. BOCÁK; 1 ♀, Mt. Emei, 1,000 m, 4–20–V–89, V. KUBÁN, both in the SMETANA collection, Ottawa, Canada; 2 ♂♂, Emei Shan, X–1986, G. DEROUGEMONT, in the DEROUGEMONT collection, London.

Geographical distribution. *Quedius tian* is at present known only from the Emei Shan range in western Sichuan.

Bionomics. Nothing is known about the collection circumstances of the original specimens except that they were found at lower mountain elevations from 500 to 1,200 m.

Recognition and comparisons. *Quedius tian* may be easily recognized among the Chinese species of similar habitus, in addition to the sexual characters, particularly by the shape of the aedoeagus, by the very large, conspicuously convex eyes, and by the faint metallic lustre on the head and pronotum. On the other hand, it in general

habitus closely resembles *Q. aureipilis* CAMERON, 1932 from the Naga Hills in Nagaland. However, the latter species differs, in addition to sexual characters, by the partially pale appendages and by the pale pubescence of the elytra and abdomen (see SMETANA, 1988, 288).

Etymology. The specific epithet is the Chinese noun "tian" (heaven, god). It refers to the occurrence of this species on the sacred mountain Emei Shan.

Acknowledgments

I thank Dr. E. C. BECKER and A. DAVIES from the Biological Resources Division, CLBRR, Ottawa, for their criticisms of the manuscript, and Mr. Go SATO for finishing all 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．7．ツヤムネハネカクシ属 *Raphirus* 亜属の2．—— 中国産ツヤムネハネカクシ属のうち，*Raphirus* 亜属の3新種を四川省と福建省から記載し，それぞれ *Quedius* (*Raphirus*) *fen*, *Q.* (*R.*) *gang* および *Q.* (*R.*) *tian* と命名した．また，*Q. chinensis* BERNHAUER に後基準標本を指定し，*Q. assamensis* CAMERON を中国から初めて記録した．

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—— 1995 a. Two new species of *Pseudorientis* WATANABE (Coleoptera, Staphylinidae, Staphylinini, Quediina) from China. *Spec. Bull. Jpn. Soc. Coleopterol., Tokyo*, (4): 341–346.

—— 1995 b. Four new species of *Strouhalium* SCHEERPELTZ from Sichuan and Himalaya (Coleoptera, Staphylinidae: Quediina). *Klapalekiana*, **31**: 131–139.

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Elytra, Tokyo, **24** (2): 238, November 15, 1996

New Localities of *Pseudotarphius lewisi* WOLLASTON (Coleoptera, Colydiidae)

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The colydiid beetle, *Pseudotarphius lewisi* WOLLASTON, 1873, was originally described from Nagasaki and Yuyama in Kyushu, and Hagi in Honshu, Japan. After that, SASAJI (1985) recorded the species from Yaku-shima Island and Amami-Ôshima Island without detailed collecting data. Recently, I had an opportunity to examine some specimens of this colydiid species collected from Shikoku and the Tokara Islands in the collection of the Entomological Laboratory, Ehime University, and the private collection of Dr. Masahiro SAKAI of the same university. These are the first records of the species from the two areas.

Specimens examined. [Shikoku] 〈Kagawa Pref.〉 1 ex., Mt. Zôzu-san, 16–VII–1978, M. SAKAI leg.; 2 exs., Mt. Zôzu-san, 16–VII–1978, A. ODA leg. [Tokara Isls.] 1 ex., Nakanoshima Is., 28–VII–1969, M. SAKAI leg.; 2 exs., same locality and collector, 2–V–1971; 1 ex., same locality and collector, 4–V–1971.

Distribution. Japan (Honshu, Shikoku, Kyushu, Yaku-shima Is., Tokara Isls., Amami-Ôshima Is.).

I wish to express my sincere gratitude to Dr. Masahiro SAKAI for his kind supply of specimens.

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Elytra, Tokyo, **24** (2): 239–243, November 15, 1996

Discovery of the Genus *Mycetoporus* (Coleoptera, Staphylinidae) from Japan with Description of a New Species

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Abstract A new species, *Mycetoporus japonicus*, is described based on the specimens collected in Hokkaido. This is the first representative of the genus *Mycetoporus* Mannerheim from Japan.

It has been pointed out from a recent study (Li & Sakai, 1996) that all the Japanese species formerly placed in the genus *Mycetoporus* Mannerheim, 1831 actually belong to the genus *Ischnosoma* Stephens, 1829, and that representatives of *Mycetoporus* eventually became disappeared from the Japanese fauna.

Pursuing studies on the Japanese Tachyporinae, however, we found some specimens apparently bearing the features of true *Mycetoporus*. By subsequent examination, they were proved to be a new species belonging to the Consors group (Campbell, 1991).

Before going further, we would like to express our sincere gratitude to Dr. M. Sakai, Department of Parasitology, Ehime University, for his kind help in many ways and critical reading of the manuscript. Our hearty thanks are also due to Mr. N. Yasuda, Sounkyo Museum, Hokkaido, for his kindness in giving us the opportunity to study the interesting species.

Mycetoporus japonicus sp. nov.

(Figs. 1–8)

Body length: 4.4–4.8 mm (from front margin of head to anal end), 2.1–2.3 mm (from front margin of head to elytral apices); width: 0.9–1.0 mm.

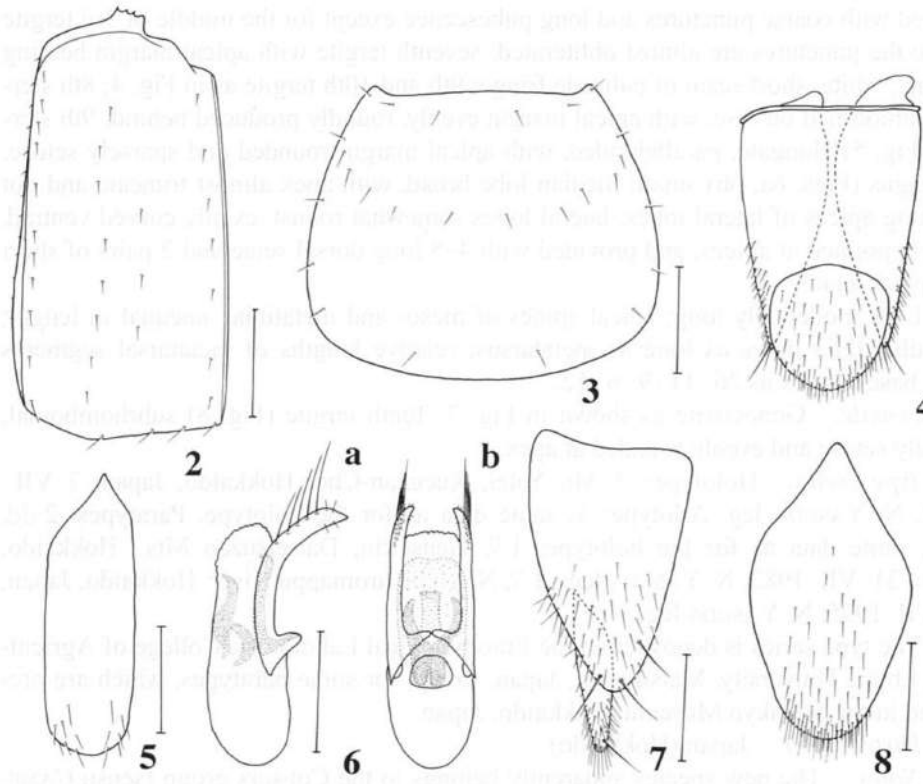
Male. Body (Fig. 1) small, narrow, nearly parallel-sided, moderately convex. Color dark brown to brown, shiny; head piceous-black, maxillary palpi brownish with tip of each segment more or less paler, basal three antennal segments, elytra, apical margins of abdominal segments and legs reddish brown.

Head small, about as long as wide, 0.6 times as wide as pronotum, widest near base; surface impunctate, but distinctly ornamented with microsculpture of fine transverse lines. Eyes moderately large, elliptical, about as long as temple, slightly convex,

Fig. 1. *Mycetoporus japonicus* sp. nov.

a little prominent laterally; ocular punctures large and distinct; ocular setae long, robust and located near inner posterior margin of eye, separated from the margin by a distance equal to about half the diameter of puncture. Antennae moderately short, with apex not reaching the posterior margin of pronotum; 1st to 4th segments sparsely setose, 5th to 11th densely and finely pubescent, slightly compressed and gradually increasing in width toward apical segments; relative lengths of antennal segments from base to apex: 14.0 : 7.5 : 8.5 : 6.0 : 6.5 : 6.5 : 6.5 : 6.5 : 6.5 : 6.5 : 10.0; 7th to 10th segments transverse, 1.06, 1.11, 1.15 and 1.23 times as wide as long, respectively. Maxillary palpus with 1st segment small; 2nd and 3rd large, rather widening apicad and sparsely pubescent; last segment conical, 0.7–0.8 times as long as, and about 0.6 times as wide as 3rd, respectively. Labial palpus with last segment narrow, about half as wide as 2nd.

Pronotum (Fig. 2) broad, distinctly transverse, 0.86 times as long as wide, widest near basal third, rather convex above, though less so on basal portion; anterior margin slightly bisinuate; lateral margins arcuate, evenly narrowed toward anterior angles; basal margin roundly and broadly arcuate; posterior corners rounded; surface smooth, without any trace of punctures, but obsoletely microsculptured; anterior, lateral, and



Figs. 2–8. *Mycetoporus japonicus* sp. nov. —— 2, Pronotum; 3, elytron, 4, male 9th and 10th tergites; 5, male 9th sternite; 6, aedeagus (a, lateral view, b, ventral view); 7, female gonocoxite (lateral view); 8, female 10th tergite. (Scale: 0.25 mm).

basal margins each with series of 4 moderately coarse punctures, antero-medial and postero-medial punctures each separated from the margin by a distance equal to 1–1.5 times the diameter of puncture; disc with 5 pairs of additional punctures, arranged as shown in Fig. 2, each puncture bearing a moderately long, suberect seta. Scutellum small, subtriangular, and impunctate.

Elytra (Fig. 3) moderately long, in sutural length 1.13 times as long as the median length of pronotum, 0.88 times as long as wide, subparallel-sided; conjoint apical margin slightly emarginate at the middle, apical corners almost obliquely truncated; surface without microsculpture and interstitial micropunctures, only having distinct rows of setulose punctures, sutural row consisting of 6–8, discal row of 6–8, lateral row of 10–11 and apical row of 4 punctures, respectively; inner discal row between sutural and discal rows present, usually comprising 3 punctures; each puncture provided with a moderately long seta. Hind wings fully developed.

Abdomen elongate, subparallel-sided in basal four segments, moderately densely

clothed with coarse punctures and long pubescence except for the middle of 3rd tergite where the punctures are almost obliterated; seventh tergite with apical margin bearing distinct, white, short seam of palisade fringe; 9th and 10th tergite as in Fig. 4; 8th sternite unmodified on disc, with apical margin evenly, roundly produced behind; 9th sternite (Fig. 5) elongate, parallel-sided, with apical margin rounded and sparsely setose. Aedeagus (Figs. 6a, 6b) small; median lobe broad, with apex almost truncate and not reaching apices of lateral lobes; lateral lobes somewhat robust, evenly curved ventrad, acutely pointed at apices, and provided with 4–5 long dorsal setae and 2 pairs of short subapical setae.

Legs moderately long; apical spines of meso- and metatibiae unequal in length; metatibia 0.63 times as long as metatarsus; relative lengths of metatarsal segments from base to apex as 26 : 11 : 9 : 6 : 12.

Female. Gonocoxite as shown in Fig. 7. Tenth tergite (Fig. 8) subrhomboidal, densely setose and evenly rounded at apex.

Type series. Holotype: ♂, Mt. Yotei, Kucchan-Cho, Hokkaido, Japan, 7–VII–1989, N. Yasuda leg. Allotype: ♀, same data as for the holotype. Paratypes: 2 ♂♂, 2 ♀♀, same data as for the holotype; 1 ♀, Genseirin, Daisetsuzan Mts., Hokkaido, Japan, 31–VII–1982, N. Yasuda leg.; 1 ♀, Niseichiyaromappu River, Hokkaido, Japan, 28–VII–1995, N. Yasuda leg.

The type series is deposited in the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama, Japan, except for some paratypes, which are preserved in the Sounkyo Museum, Hokkaido, Japan.

Distribution. Japan (Hokkaido).

Notes. The new species apparently belongs to the Consors group (sensu Campbell, 1991) and seems to be related to the European species *M. brunneus* (Marsham), 1802, but can be distinguished from the latter by the presence of the distinct inner discal row of elytral punctures. It is also similar to *M. lucidulus* LeConte, 1863 from North America, but differs from the latter in the number and arrangement of punctures on the pronotum and elytra.

要　約

李 利珍・大林延夫：日本から発見された*Mycetoporus*属ハネカクシの1新種．—— 従来，日本から記録されていた*Mycetoporus*属の種は，Li & Sakai (1996)によっていずれも*Ischnosoma*属に所属することが指摘され，真の*Mycetoporus*属は未発見であった．今回，層雲峡博物館の保田信紀氏から送られた北海道産の標本中に本属の種を見出し，これがCampbell (1991)の示したConsorsグループに属する新種であると認め，命名記載した．

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Elytra, Tokyo, **24** (2): 243–244, November 15, 1996

First Description of the Male of *Tachinus* (*Tachinus*) *longulus* LI et OHBAYASHI (Coleoptera, Staphylinidae)

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Through the courtesy of Professor M. SATÔ, we had an opportunity to examine some specimens of the genus *Tachinus* collected from Nepal. Among them the male of *Tachinus* (*Tachinus*) *longulus*, which was described by the present authors in March, 1996 on the basis of the female, has been found. It will be briefly reported in the following lines.

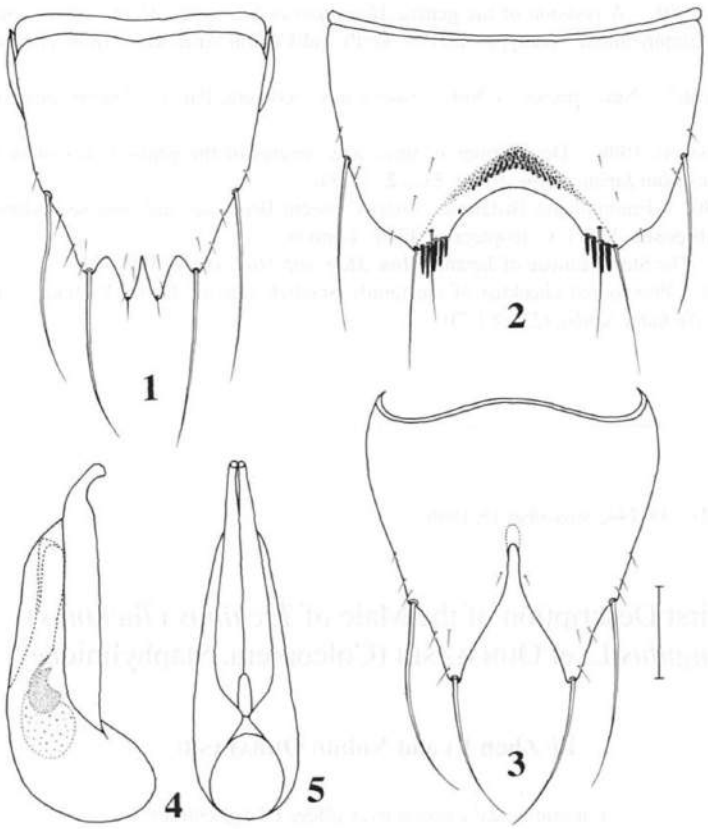
Tachinus* (*Tachinus*) *longulus LI et OHBAYASHI

(Figs. 1–5)

Tachinus (*Tachinus*) *longulus* LI et OHBAYASHI, 1996, 158.

The male of this species is similar to the female in general appearance, but differs from the latter in the following features:

Anterior tarsal segments 1–4 distinctly dilated. Eighth abdominal tergite (Fig. 1) 4-lobed, with inner lobes much longer than outer lobes. Seventh sternite (Fig. 2) semicircularly emarginate apically, broadly depressed around apical margin, provided with a sickle-shaped patch of granules located in the basal part of the depressed area, bearing 4–5 broad setae at each side of



Figs. 1–5. *Tachinus* (*Tachinus*) *longulus* LI et OHBAYASHI. —— 1, Male 8th tergite; 2, male 7th sternite; 3, male 8th sternite; 4, aedeagus (in lateral view); 5, aedeagus (in ventral view). Scale: 0.25 mm.

apical margin. Eighth sternite (Fig. 3) with outer lobes reduced; inner lobes long and robust. Aedeagus (Figs. 4–5) large; median lobe gradually tapered apicad; lateral lobes with apical parts strongly narrowed in lateral view and remarkably curved ventrad.

Specimens examined. 1 ♂, Kharte Danda, 2,700–3,081 m, Solukhumbu, Nepal, 7–X–1979, M. SATÔ leg.; 1 ♂, Junbesi, 10–X–1979, Y. NISHIKAWA leg.; 2 ♀♀, Kalinchok Danda, 2,900-3,200 m, Sindhu Dist., East Nepal, 12–XI–1979, M. TOMOKUNI leg.

Distribution. Nepal.

Reference

LI, L.-Z., & N. OHBAYASHI, 1996. The genus *Tachinus* (Coleoptera, Staphylinidae) from the Himalayas with descriptions of three new species. *Jpn. J. Ent.*, **64**: 151–162.

Elytra, Tokyo, **24** (2): 245–278, November 15, 1996

A Revision of the Tychine Pselaphids (Coleoptera, Pselaphidae) of Japan and its Adjacent Regions

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3–23–1 Hyakunin-chô, Shinjuku, Tokyo, 169 Japan

Abstract Fourteen species of the pselaphid tribe Tychini from Japan, the Russian Far East, Korea and Taiwan are revised. Seven species of the genus *Tainochus* are recognized and four new species, *iwaoi*, *nitidus*, *puncticeps* and *minutus* are described. Four species of the genus *Tychus* are recorded including two new species, *yezoensis* and *yukihikoi*. A new genus, *Hyugatychus*, is defined and three new species, *teizonagatomoi*, *tokunoshimensis* and *formosanus* are described.

Introduction

The tribe Tychini is a relatively small group of pselaphid beetles comprising ten genera and about 150 species. This tribe is widely distributed in the Holarctic Region, and only the genus *Atychodea* is known from the tropical area of the Oriental Region. In East Asia, two genera and six species were previously recorded from the Russian Far East, South Korea and Japan.

The present study deals with fourteen species of three genera including a new genus and nine new species from Japan and its adjacent regions. The systematic positions of these genera are also discussed.

Tribe **Tychini** RAFFRAY

Tychini RAFFRAY, 1904, Annls. Soc. ent. Fr., **73**: 254; RAFFRAY, 1908, Gen. Ins., (64): 256; RAFFRAY, 1911, Coleopt. Cat., (27): 111; JEANNEL, 1949, Mém. Mus. Hist. nat., Paris, (n. s.), **29**: 42; JEANNEL, 1950, Fn. Fr., **53**: 331; JEANNEL, 1958, Mém. Mus. Hist. nat., Paris, (A), **18**: 105; CHANDLER, 1988, Trans. Am. ent. Soc., **114**: 147; KURBATOV, 1992, Zool. Zh., Moskow, **71** (10): 143; NOMURA & LEE, 1992, Esakia, Fukuoka, (32): 72; NOMURA & LEE, 1993, ibid., (33): 32.

Remarks. This tribe belongs to the section Tychomorphi defined by JEANNEL (1959) together with the small tribe Speleobamini PARK, 1951 known from the Nearctic Region. The tribe Tychini is characterized by the large maxillary palpus with the elongate and internally expanded third segment. In this tribe, nine genera and more than 140 species have been known from the Holarctic Region, and only the genus *Atychodea* including four species are recorded from Tropical Asia.

Key to the Genera of the Tychini of the Oriental Region

1. Elytra each with 3 basal foveae ..... 2.
— Elytra each with 2 basal foveae ..... 3.
2. Third segment of maxillary palpi with an acute projection on its inner side, 4th segment without apophysis ..... [*Atychodea* REITTER].
— Third segment of maxillary palpi with an obtuse angle or a round expansion on its inner side, 4th segment with a small apophysis just inside palpal spine ..... *Tainochus* KURBATOV.
3. Postgena with a large ventral process, abdomen short, 7th to 8th tergites each with a large sexual patch on posterior side in male ..... *Hyugatychus* nov.
— Postgena flat or roundly expanded, abdomen normal, without sexual patch in male ..... *Tychus* LEECH.

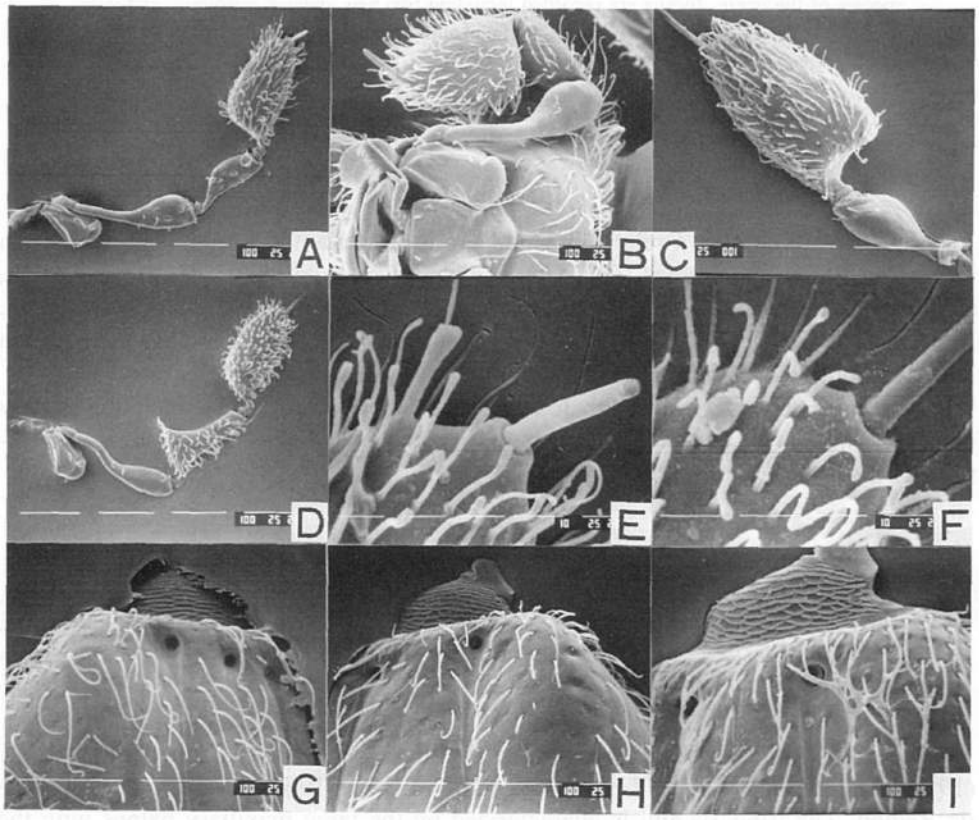

Fig. 1. Diagnostic characters of the four genera of Tychini. —— A, E, G, *Tainochus iwaoi* sp. nov.; B, H, *Tychus yezoensis* sp. nov.; C, I, *Hyugatychus teizonagatomoi* sp. nov.; D, F, *Atychodea simoniana* REITTER. —— A–D, Maxillary palpi; E, F, ditto, enlarged; G–I, elytra.

Genus *Tainochus* KURBATOV

[Japanese name: Mukuge-arizukamushi Zoku]

Tainochus KURBATOV, 1992, Zool. Zh., Moskow, **71** (2): 32; NOMURA & LEE, 1993, Esakia, Fukuoka, (33): 32. Type species: *Tainochus imperator* KURBATOV, by original designation.

Body elongate and thick, broadened posteriorly, densely covered with long pubescence. Head nearly ovoid and thick, constricted behind bases of antennae, convex on posterior part of vertex, with large ventral process projecting posteriorly. Antennae strongly thickened at 9th to 11th segments. Maxillary palpi (Fig. 1 A) large and elongate, 1st segment very short, 2nd large and long, thickened distally, 3rd shorter than 2nd, narrowed basally, 4th large and ovoid, with a short and slender palpal spine at apex, and with a pick-like apophysis near apex (Fig. 1 E). Mesosternum short and transverse, with a pair of median and a pair of lateral foveae, metasternum large and transverse, with a pair of mesocoxal foveae at lateral sides of mesocoxae and a pair of metasternal foveae just behind mesocoxae. Elytra (Fig. 1 G) wider than long, broadened posteriorly, each elytron with 3 basal foveae and 2 longitudinal sulci. Legs short and slender. Abdomen short and rounded posteriorly, 8th tergite nearly pentagonal, 8th sternite transverse, more or less emarginate at postero-median part in male, with a basal expansion and a membranous sac (see Remarks), 9th sternite weakly sclerotized, composed of a median and a pair of lateral plates, median plate well sclerotized and attached to emargination of 8th sternite at apical part, lateral plates broad and lamellar, each with a well sclerotized and narrowed ventral strut at base. Aedeagus well sclerotized, symmetrical to completely asymmetrical, parameres paired and lamellar, median lobe generally composed of large basal bulb, ventral stalk, and movable and more or less complicated dorsal apophysis.

Remarks. This genus is characterized by having some primitive characters, namely trifoveate each elytron, the rudimentary organ of the defence gland on eighth abdominal sternite, the ninth abdominal sternite consisting of three sclerites, and the symmetrical aedeagi of some species with complete parameres. On the other hand, it also has very unique derived characters, the ventral process of the head and the pick-like apophysis on the fourth segment of the maxillary palpus. This genus is similar to the genus *Atychodea* REITTER in having trifoveate each elytron. However, it seems more closely allied to the genus *Lucifotychus*, because of the presence of the pick-like apophysis on the 4th segment of the maxillary palpus.

Key to the Species of the Genus *Tainochus* from Japan and its Adjacent Regions

1. Body small (length 1.3–1.5 mm); head densely covered with coarse punctures on dorsal surface; metasternum without median projection in male ..... 2.
— Body large; head sparsely covered with minute punctures; metasternum with median projection in male ..... 3.

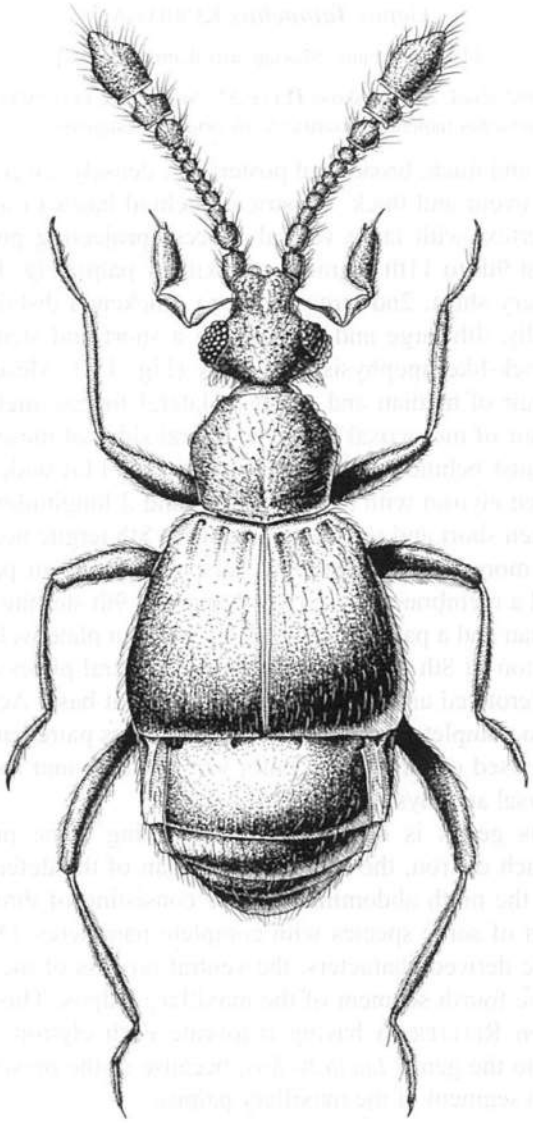

Fig. 2. Dorsal aspect of *Tainochus puncticeps* sp. nov., male.

2. Eyes large, each composed of about 30 facets in male; aedeagus with asymmetrical ventral stalk . . . . . *T. puncticeps* sp. nov.
— Eyes small, each composed of about 20 facets in male; aedeagus with symmetrical and trapezoidal ventral stalk . . . . . *T. minutus* sp. nov.
3. Pronotum with coarse punctures on ante-basal part . . . . . 4.
— Pronotum without coarse punctures . . . . . 6.

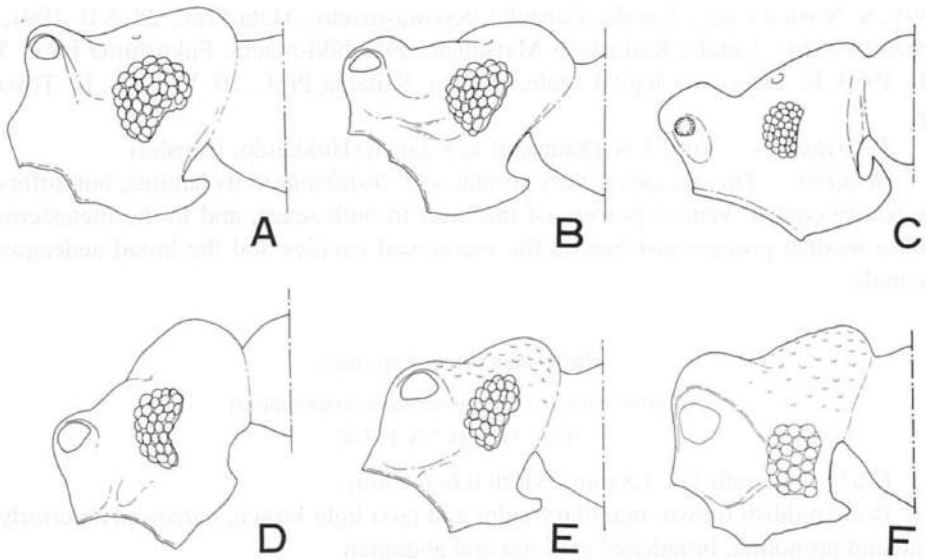

Fig. 3. Heads of *Tainochus* spp. in lateral view. —— A, *T. insulicola* (NOMURA et LEE); B, *T. iwaoi* sp. nov.; C, *T. exiguus* KURBATOV; D, *T. nitidus* sp. nov.; E, *T. puncticeps* sp. nov.; F, *T. minutus* sp. nov.

4. Ventral process of head well projected posteriorly, though rounded at apex, metasternum with a median process at middle in male ..... *T. insulicola* (NOMURA et LEE).
— Ventral process of head nearly conical, pointed at apex, metasternum with a median process just behind mesocoxal cavities in male ..... 5.
5. Aedeagus with a narrow ventral stalk and a pair of ventrally curved apical spines on dorsal apophysis ..... *T. imperator* KURBATOV.
— Aedeagus with a broad ventral stalk and a pair of dorsally curved apical spines on dorsal apophysis ..... *T. iwaoi* sp. nov.
6. Ventral process of head large and acute; aedeagus with an asymmetrical dorsal apophysis ..... *T. exiguus* KURBATOV.
— Ventral process of head short and angulate; aedeagus symmetrical, without dorsal apophysis ..... *T. nitidus* sp. nov.

Tainochus imperator KURBATOV

[Japanese name: Chishima-mukuge-arizukamushi]

(Fig. 7 A)

Tainochus imperator KURBATOV, 1992, Zool. Zh., Moskow, **71** (2): 33.

Specimens examined. 1 male, Noboribetsu, Noboribetsu-shi, Hokkaido, 18–IX–1994, N. TAMIYA leg.; 2 males, 1 female, Mt. Komagatake, Oshima, Hokkaido, 30–VI–

1991, S. NOMURA leg.; 1 male, Funaoka, Kyôwa-machi, Akita Pref., 28–VII–1991, E. TERAZAWA leg.; 1 male, Kadoshika Matsuuchi, Funahiki-machi, Fukushima Pref., 30–VII–1989, E. TERAZAWA leg.; 1 male, Sugaya, Saitama Pref., 30–V–1994, K. TOYODA leg.

Distribution. Kuril Isls. (Kunashir Is.), Japan (Hokkaido, Honshu).

Remarks. This species is very similar to *T. insulicola* in its habitus, but differs in the nearly conical ventral process of the head in both sexes, and in the metasternum with a median process just behind the mesocoxal cavities and the broad aedeagus in the male.

Tainochus iwaoi sp. nov.

[Japanese name: Okamoto-mukuge-arizukamushi]

(Figs. 3 B, 4 B, 5 A–F, 7 A)

Male. Length 1.7–1.8 mm. Width 0.6–0.7 mm.

Body reddish brown, maxillary palpi and tarsi light brown, narrowed anteriorly in head and pronotum, broadened in elytra and abdomen.

Head rounded at base, strongly constricted at anterior 1/3, frons swollen, strongly convex dorsad in front of the constriction, vertex roundly convex posteriad, postgenae rounded and covered with long hairs, ventral process nearly conical, shorter and acuter than in *insulicola*. Eyes small and ovoid, each composed of about 30 facets. Maxillary palpi very large, reaching 9th antennal segment, 1st segment short and slender, 2nd elongate, strongly swollen in apical half, 3rd shorter than 2nd, strongly narrowed in basal 1/4, broadened at apical part, widest at middle, 4th largest, strongly narrowed at base, widest at basal 2/5, then gently narrowed distad, rounded at apex, with long and slender palpal spine and a short apophysis just inside the apex. Antennae short and robust, reaching basal margin of pronotum, 1st segment large and cylindrical, 2nd subcylindrical, slightly longer than wide, 3rd to 8th subequal, each short and subglobose, 9th subcylindrical, about as long as wide, 10th wider than 9th, transverse, 11th largest, 1.5 times as long as wide, conical at apical part; relative length (width) of each segment from base to apex: 1.0 (0.9): 0.8 (0.7): 0.6 (0.6): 0.5 (0.5): 0.5 (0.5): 0.5 (0.5): 0.5 (0.5): 0.5 (0.5): 0.9 (0.9): 0.9 (1.0): 2.2 (1.5).

Pronotum slightly longer than head, transverse, weakly convex on dorsal surface, roundly expanded on both sides, widest at middle, sparsely punctate on anterior surface, coarsely and densely punctate on dorso-median part, with a pair of indistinct depressions on both basilateral sides. Elytra wider than long, weakly broadened posteriad, slightly convex and sparsely punctate, each elytron with expanded humerus, 3 basal foveae and 3 shallow longitudinal sulci running from basal foveae. Metasternum transverse, with a median process just behind mesocoxal cavities and shallow depression between the median process and metacoxae. Legs short and slender.

Abdomen slightly narrower than elytra, rounded posteriorly, 4th segment longest, with a small and transverse basimedian depression, 5th slightly shorter than 4th, 6th to

8th successively shortened posteriad, 8th sternite transverse, shallowly emarginate at postero-median part, with a short and membranous expansion at basimedian part, 9th sternite composed of 3 plates, lateral plates paired, narrowed and strongly sclerotized at basal part, broadened and lamellar at apical part, median plate small, apical part nearly pentagonal, basal part membranous.

Aedeagus well sclerotized, parameres very slender, median lobe bulbous at basal part, with large and pentagonal basal foramen, robust ventral stalk and dorsal apophysis, ventral stalk weakly narrowed apicad, slightly broadened and truncate at apex, with a pair of small spines on both sides at apical 1/4, dorsal apophysis broad at base, with a pair of slender and dorsally curved dorso-apical spines at apical part.

Female. Length 1.7–1.8 mm. Width 0.6–0.7 mm. Very similar to male, but eyes smaller than in male, 8th sternite arcuate on apical margin, without emargination.

Holotype, male (preserved in National Science Museum, Tokyo), Kurose-chô, Kamo-gun, Hiroshima Pref., 4~12–VI–1988, I. OKAMOTO leg. Paratypes: 10 males, 1 female, same data as holotype; 1 female, same locality as above, 12–XII–1987, I. OKAMOTO leg.; 1 male, same locality as above, 30–I–1988, I. OKAMOTO leg.; 1 female,

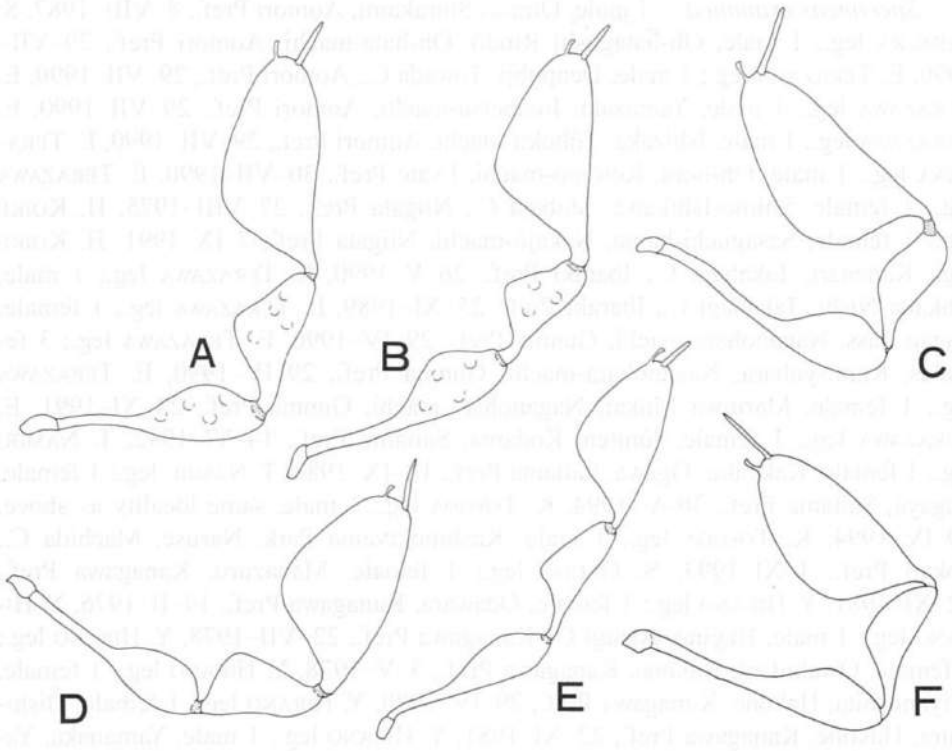

Fig. 4. Maxillary palpi of *Tainochus* spp. —— A, *T. insulicola* (NOMURA et LEE); B, *T. iwaoi* sp. nov.; C, *T. exiguus* KURBATOV; D, *T. nitidus* sp. nov.; E, *T. puncticeps* sp. nov.; F, *T. minutus* sp. nov.

Akiyoshidai, Yamaguchi Pref., 20–XI–1983, collector unknown; 1 female, same locality as above, 29–VI–1987, S. NOMURA leg.

Distribution. Japan (Honshu: Chûgoku District).

Remarks. This new species is very closely allied to *T. imperator* in the conical ventral process of the head and the metasternum with a median process just behind the mesocoxal cavities, but this species is distinguished by the aedeagus with a broad ventral stalk of the median lobe and the dorsally curved apical spines of the dorsal apophysis.

This species is dedicated to an excellent amateur entomologist, Mr. Iwao OKAMOTO for his kind assistance to my work.

Tainochus insulicola (NOMURA et LEE)

[Japanese name: Shima-mukuge-arizukamushi]

(Figs. 3 A, 4 A, 7 B)

Atychodea insulicola NOMURA et LEE, 1992, Esakia, Fukuoka, (32): 74.
Tainochus insulicola: NOMURA & LEE, 1993, Esakia, Fukuoka, (33): 32.

Specimens examined. 1 male, Oirase, Shirakami, Aomori Pref., 8–VIII–1987, S. NOMURA leg.; 1 male, Oh-hatagoshi Rindô, Oh-hata-machi, Aomori Pref., 29–VII–1990, E. TERAZAWA leg.; 1 male, Denpohji, Towada C., Aomori Pref., 29–VII–1990, E. TERAZAWA leg.; 1 male, Yamazaki, Imabetsu-machi, Aomori Pref., 29–VII–1990, E. TERAZAWA leg.; 1 male, Ishizaka, Tôhoku-machi, Aomori Pref., 29–VII–1990, E. TERAZAWA leg.; 1 male, Oh-hora, Kotomo-machi, Iwate Pref., 30–VII–1990, E. TERAZAWA leg.; 1 female, Shimo-Ishikawa, Shibata C., Niigata Pref., 27–VIII–1975, H. KOIKE leg.; 1 female, Sasaguchi-hama, Nakajô-machi, Niigata Pref., 7–IX–1991, H. KOIKE leg.; Kanenari, Takahagi C., Ibaraki Pref., 26–V–1990, E. TERAZAWA leg.; 1 male, Ohkada Nishi, Takahagi C., Ibaraki Pref., 25–XI–1989, E. TERAZAWA leg.; 1 female, Sugao Pass, Naganohara-machi, Gunma Pref., 29–IV–1990, E. TERAZAWA leg.; 3 females, Kami-yuhara, Naganohara-machi, Gunma Pref., 29–IV–1990, E. TERAZAWA leg.; 1 female, Maruiwa Mukai, Naganohara-machi, Gunma Pref., 24–XI–1991, E. TERAZAWA leg.; 1 female, Jûniten, Kodama, Saitama Pref., 14–VI–1992, T. NAMBU leg.; 1 female, Kakkaku, Ogawa, Saitama Pref., 18–IX–1988, T. NAMBU leg.; 1 female, Sugaya, Saitama Pref., 30–V–1994, K. TOYODA leg.; 1 male, same locality as above, 20–IV–1994, K. TOYODA leg.; 1 male, Kashinokiyama Park, Naruse, Machida C., Tokyo Pref., 1–XI–1993, S. ONODA leg.; 1 female, Manazuru, Kanagawa Pref., 22–XI–1981, Y. HIRANO leg.; 1 female, Odawara, Kanagawa Pref., 14–II–1976, Y. HIRANO leg.; 1 male, Hagino, Atsugi C., Kanagawa Pref., 22–VII–1978, Y. HIRANO leg.; 1 female, Ôwakidani, Hakone, Kanagawa Pref., 3–V–1978, Y. HIRANO leg.; 1 female, Miyanoshita, Hakone, Kanagawa Pref., 29–IV–1980, Y. HIRANO leg.; 1 female, Ôishidaira, Hakone, Kanagawa Pref., 22–XI–1981, Y. HIRANO leg.; 1 male, Yamanaka, Yamanashi Pref., 22–VII–1978, Y. HIRANO leg.; 1 female, Mt. Shiritaka, Tsurugi-machi, Ishikawa Pref., 16–XI–1991, K. NAKATA leg.; 1 female, same locality as above,

15–XII–1991, K. NAKATA leg.; 1 female, Mt. Shiroyama, Takayama C., Gifu Pref., 27–X–1980, G. IMADATÉ leg.; 1 male, Mt. Mikusayama, Osaka Pref., 26–VIII–1993, Y. SAWADA leg.; 1 male, Mt. Daisen, Tottori Pref., 24–V–1985, S. NOMURA leg.; 1 female, Nanatsukahara, Shôbara C., Hiroshima Pref., 2–VIII–1987, I. OKAMOTO leg.; 1 male, Kurose-chô, Hiroshima Pref., 12–XII–1987, I. OKAMOTO leg.; 1 male, Kurosegawa, Hiroshima Pref., 11～14–II–1988, I. OKAMOTO leg.; 1 female, Akiyoshidai, Yamaguchi Pref., 20–XI–1983, collector unknown.

Distribution. South Korea (Cheju Is.), Japan (Honshu).

Remarks. This species is very similar to *T. imperator* KURBATOV in its habitus, but is different in the well projected but dull ventral process of the head, the metasternum with a median process at the center in male and the slender aedeagus. It was described from Cheju Is. off South Korea and is recorded for the first time from Japan.

Tainochus nitidus sp. nov.

[Japanese name: Tsuya-mukuge-arizukamushi]

(Figs. 3 D, 4 D, 5 G–L, 7 C)

Male. Length 1.8 mm. Width 0.7 mm.

Body reddish brown and shiny, maxillary palpi and legs light brown, narrowed anteriorly, broad in elytra and abdomen.

Head as long as wide, nearly ovoid, minutely punctate, covered with long hairs, clypeus very short, connected with frons by a broad vertical carina, frons strongly convex, weakly constricted at base, with a short and shallow longitudinal depression from apex to basal constriction, vertex gently convex, with a pair of small dorsal tentorial pits inside eyes, postgenae rounded, densely covered with long hairs, ventral process short and angulate. Eyes very small, reniform, each composed of about 20 facets. Maxillary palpi (described below under bad condition) long, 1st segment short and tubular, 2nd elongate, strongly swollen in apical half, 3rd short, wider than 2nd, angularly expanded inward at basal 2/5, with a few short setae at apex of the expansion, 4th widest and ovoid, twice as long as wide, with a long and slender palpal spine and small apophysis near apex. Antennae long and slender, reaching base of elytra, 1st segment long, thick and tubular, 2nd thick and subcylindrical, longer than wide, 3rd to 7th subequal, each subcylindrical, slightly longer than wide, 8th short and subglobose, 9th thick and subglobose, 10th larger than 9th, subglobose, 11th largest and ovoid, 1.7 times as long as wide, pointed at apex; relative length (width) of each segment from base to apex: 1.1 (0.8): 1.0 (0.7): 0.6 (0.5): 0.6 (0.5): 0.7 (0.5): 0.6 (0.5): 0.7 (0.5): 0.6 (0.6): 1.0 (1.0): 1.0 (1.1): 2.2 (1.4).

Pronotum slightly wider than long, weakly convex, sparsely covered with very minute punctures, roundly expanded on both sides, with a pair of shallow basilateral foveae and a basimedian depression near the basal margin. Elytra wider than long, weakly convex, each elytron with expanded humerus, 3 basal foveae and 2 shallow longitudinal sulci running from inner and outer basal foveae. Metasternum transverse,

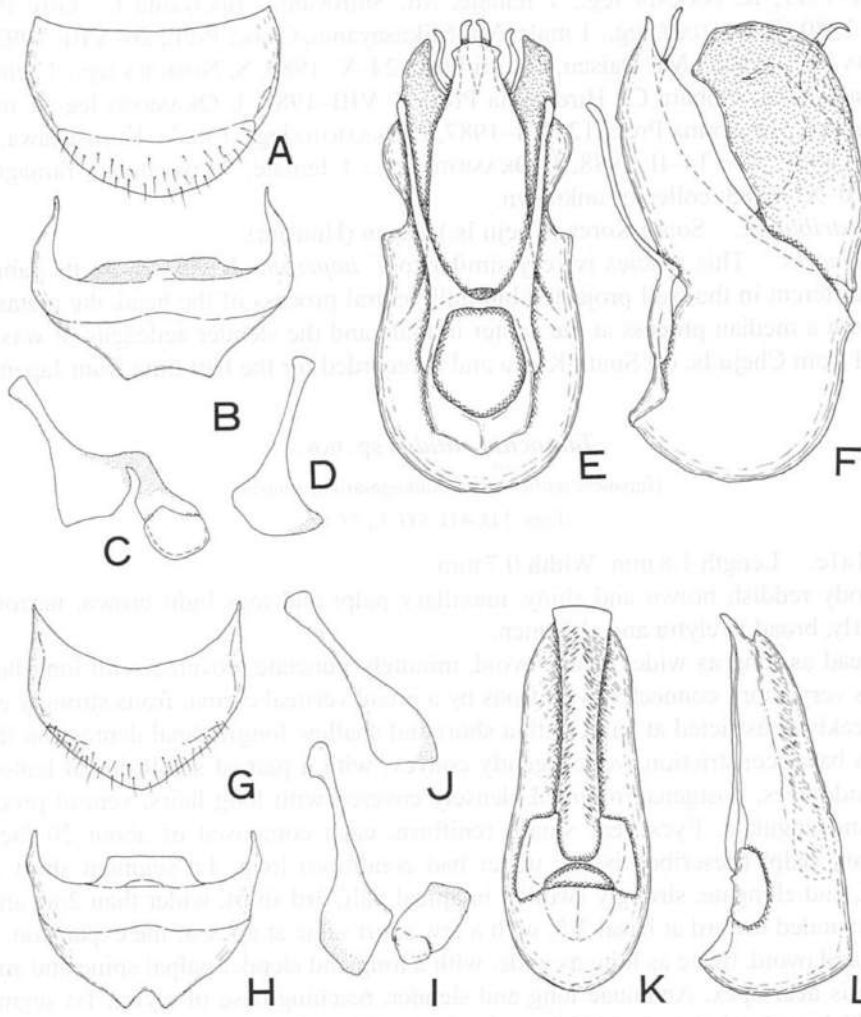

Fig. 5. Male 8th to 9th abdominal segments and aedeagi of *Tainochus* spp. —— A–F, *T. iwaoi* sp. nov.; G–L, *T. nitidus* sp. nov. —— A, G, 8th tergite; B, H, 8th sternite; C, I, right lateral sclerite (left) and median sclerite (right) of 9th sternite; D, J, left lateral sclerite of 9th sternite; E, K, aedeagus in ventral view; F, L, ditto, in lateral view.

roundly convex at middle. Legs short and thick, hind tibiae almost straight, each with an acute mucro at apex.

Abdomen slightly narrower than elytra, rounded posteriorly, 4th to 5th segments subequal in length in dorsal view, 6th to 8th successively shortened posteriad, 8th sternite transverse, weakly depressed on ventral surface, triangularly emarginate on posterior margin, with a short and trapezoidal expansion at basimedian part, 9th sternite

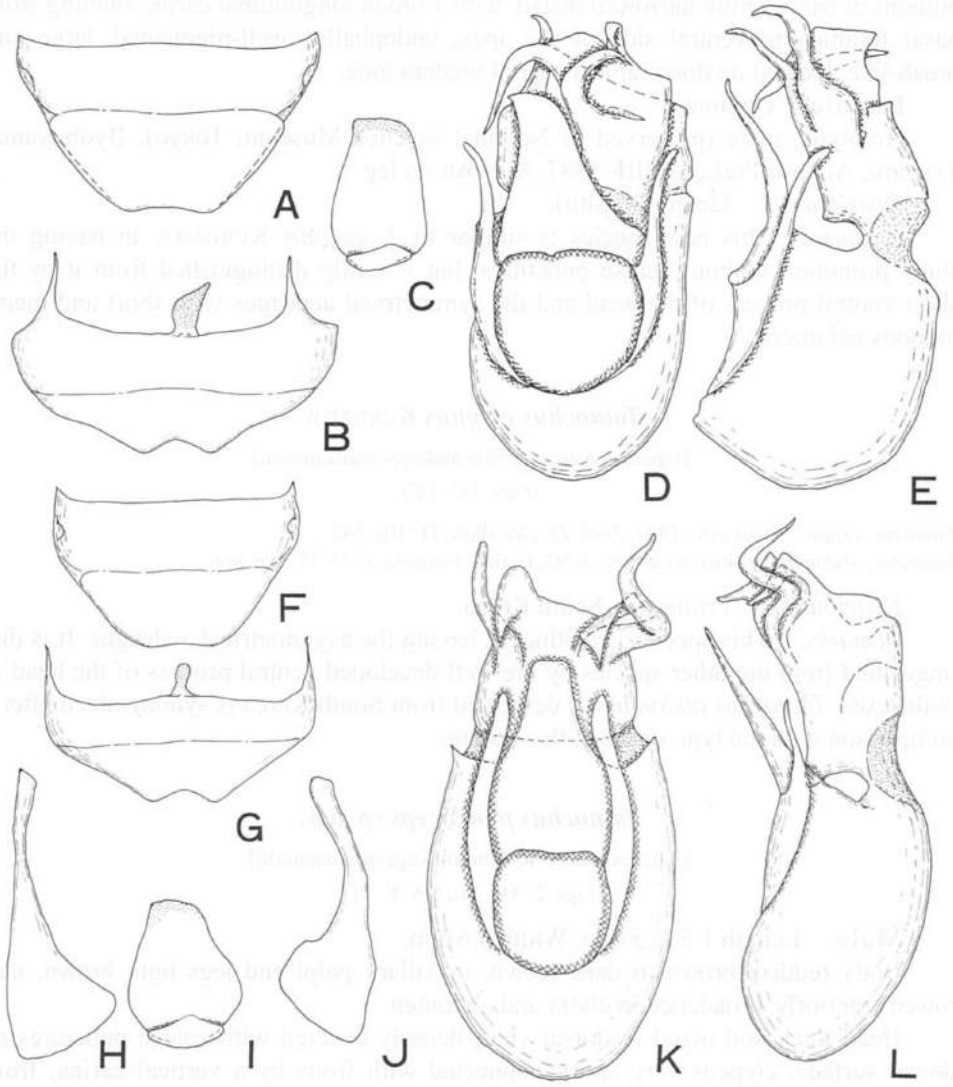

Fig. 6. Male 8th to 9th abdominal segments and aedeagi of *Tainochus* spp. —— A–E, *T. puncticeps* sp. nov.; F–L, *T. minutus* sp. nov. —— A, F, 8th tergite; B, G, 8th sternite; C, H, median sclerite of 9th sternite; H, right lateral sclerite of 9th sternite; J, left lateral sclerite of 9th sternite; D, K, aedeagus in ventral view; E, L, ditto, in lateral view.

composed of 3 plates, lateral plates paired, each elongate, strongly broadened in apical 1/3, median plate small and ovoid, with a nearly quadrangular lobe attached to the emargination of 8th sternite.

Aedeagus symmetrical, parameres short, broad and membranous, median lobe

bulbous at base, gently narrowed distad, with a broad longitudinal carina running from basal foramen to ventral side of the apex, endophallus well-pigmented, large and brush-like, located on dorso-apical part of median lobe.

Female. Unknown.

Holotype, male (preserved in National Science Museum, Tokyo), Byôbuyama, Tsugaru, Aomori Pref., 6–VIII–1987, S. NOMURA leg.

Distribution. Japan (Honshu).

Remarks. This new species is similar to *T. exiguus* KURBATOV in having the shiny pronotum without coarse punctures, but is easily distinguished from it by the short ventral process of the head and the symmetrical aedeagus with short and membranous parameres.

Tainochus exiguus KURBATOV

[Japanese name: Tairiku-mukuge-arizukamushi]

(Figs. 3 C, 4 C)

Tainochus exiguus KURBATOV, 1992, Zool. Zh., Moskow, **71** (10): 143.
Tainochus abdominalis NOMURA et LEE, 1993, Esakia, Fukuoka, (33): 33. *Syn. nov.*

Distribution. Primorsky, South Korea.

Remarks. This species is distinct in having the asymmetrical aedeagus. It is distinguished from the other species by the well developed ventral process of the head in both sexes. *Tainochus abdominalis* described from South Korea is synonymized after a comparison with the type series of this species.

Tainochus puncticeps sp. nov.

[Japanese name: Kyushu-mukuge-arizukamushi]

(Figs. 2, 3 E, 4 E, 6 A–E, 7 C)

Male. Length 1.3–1.5 mm. Width 0.6 mm.

Body reddish brown to dark brown, maxillary palpi and legs light brown, narrowed anteriorly, broadened in elytra and abdomen.

Head thick and ovoid in dorsal view, densely covered with coarse punctures on dorsal surface, clypeus very short, connected with frons by a vertical carina, frons strongly convex, depressed just before eyes, vertex weakly convex, roundly expanded posteriad, with a pair of indistinct dorsal tentorial pits inside eyes, postgenae very short and flat, with dense pubescence, ventral process large and conical. Eyes very large and ovoid, 1/3 times as long as head, each composed of about 30 facets. Maxillary palpi long and slender, reaching 10th antennal segment, 1st segment short and tubular, 2nd large, swollen in apical half, 3rd elongate, nearly triangular, widest at basal 3/7, 4th widest and ovoid. Antennae short and thick, reaching hind margin of pronotum, 1st segment thick and subcylindrical, 2nd subcylindrical, slightly longer than wide, 3rd small, as long as wide, weakly narrowed basad, 4th to 8th subequal, each short and

subcylindrical, wider than long, 9th to 11th very thick, 9th as long as wide, subcylindrical in basal part, narrowed distally in apical part, 10th slightly larger than 9th, 11th largest and ovoid, 1.6 times as long as wide; relative length (width) of each segment from base to apex: 1.1 (0.7): 0.7 (0.7): 0.5 (0.5): 0.4 (0.5): 0.4 (0.5): 0.4 (0.5): 0.5 (0.5): 0.5 (0.5): 0.8 (1.0): 1.0 (1.0): 1.9 (1.2).

Pronotum wider than long, gently convex, roundly expanded on both sides, sparsely covered with minute punctures on dorso-apical part, sparsely with coarse punctures on basimedian part, with a basimedian and a pair of basilateral foveae on antebasal part. Elytra wider than long, gently convex, humeri weakly expanded, each elytron with 3 basal foveae and 3 shallow longitudinal sulci, outer sulcus running from outer basal fovea to the middle, median sulcus very short and indistinct. Metasternum transverse, almost glabrous, gently convex. Legs short and slender.

Abdomen short and broad, rounded posteriorly, 4th tergite remarkably large, about 2.5 times as long as 5th, with a small basimedian depression, 5th to 7th subequal in length in dorsal view, successively narrowed posteriad, each short and transverse, 8th tergite short and transverse, nearly trapezoidal, 8th sternite short and transverse, with small, shallow and arcuate emargination on postero-median margin, 9th sternite consisting of a small and ovoid median and a pair of elongate lateral plates.

Aedeagus asymmetrical, parameres weakly sclerotized, short and slender, weakly narrowed distad, median lobe bulbous at basal part, with a large basal foramen and broad ventral stalk, ventral stalk narrowed and pointed apically, weakly curved leftward, dorsal apophysis much complicated, right sclerite very broad and strongly sclerotized, with 3 strongly bent spines, left sclerite short and narrow, with a dorso-apically curved large spine.

Female. Length 1.3 mm. Width 0.5–0.6 mm. Similar to male, but differs in the following characters: eyes very small, each composed of 3 to 4 facets, abdomen longer than in male, slightly shorter than elytra.

Holotype, male (preserved in National Science Museum, Tokyo), Daisen-rindô, Kujû Mts., Ôita Pref., 5–VI–1983, S. NOMURA leg. Paratypes: 2 females, Mt. Ichifusa, Kumamoto Pref., 27–X–1985, T. TANABE leg.; 1 male, Ebino, Miyazaki Pref., 20–IV–1977, S. TANAKA leg.; 1 female, same locality as above, 9–VI–1979, S. HARADA leg.; 1 female, Takaoka, Miyazaki Pref., 13–III–1980, S. TANAKA leg.; 1 male, Toi-misaki, Kushima C., Miyazaki Pref., 31–VIII–1974, A. NAGAI leg.; 1 female, Aoidake, Yamanokuchi-chô, Miyazaki Pref., 21–XII–1974, A. NAGAI leg.

Distribution. Japan (Kyushu).

Remarks. This new species is very distinct in having the small body, the coarsely punctate head, the large 4th abdominal segment and the asymmetrical aedeagus.

Tainochus minutus sp. nov.

[Japanese name: Shikoku-mukuge-arizukamushi]

(Figs. 3 F, 4 F, 6 F–L, 7 C)

Male. Length 1.3 mm. Width 0.6 mm. Very similar to *puncticeps*, but eyes smaller, each composed of about 20 facets.

Aedeagus weakly flattened dorso-ventrally more than in *puncticeps*, parameres paired and symmetrical, each slender, gently narrowed apicad, basal bulb ovoid, with a large and circular basal foramen, ventral stalk symmetrical, short and trapezoidal, narrowed distally, dorsal apophysis asymmetrical and broad, with 2 pairs of spines, right outer spine largest, slender and of spiral form, acute and bent dorsally at apex, left outer spine slender, weakly curved dorsad, rounded at apex, right and left inner spines each lamellar, projected ventrally.

Female. Unknown.

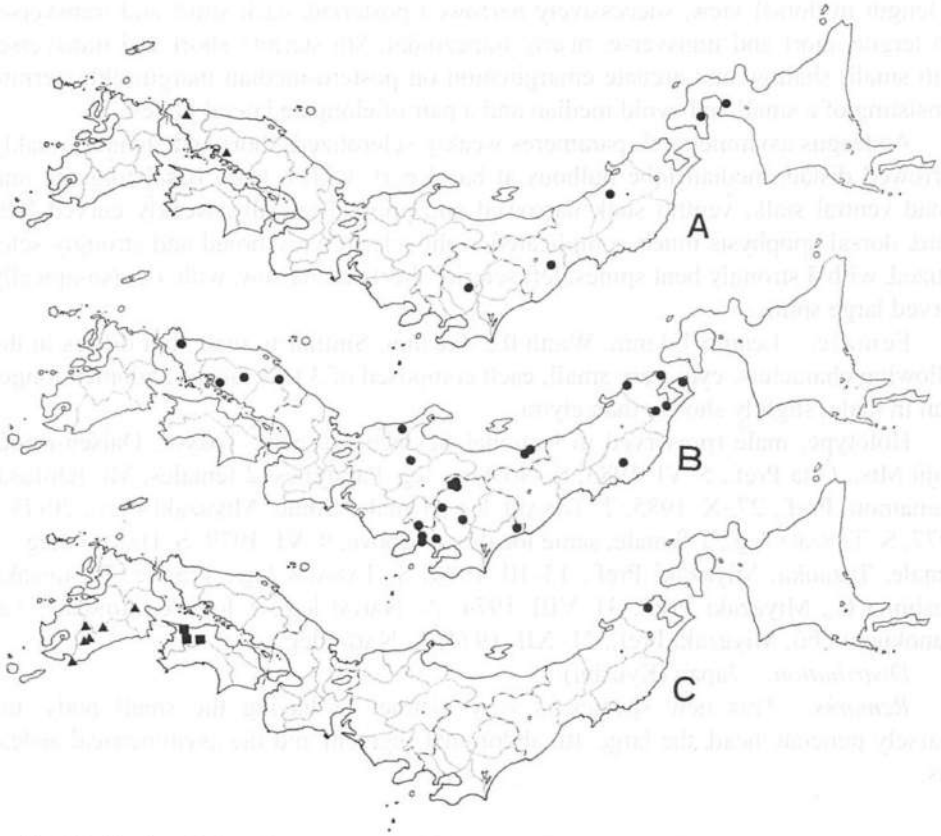

Fig. 7 Distribution of *Tainochus* spp. —— A, *T. imperator* KURBATOV (circle) and *T. iwaoi* sp. nov. (triangle); B, *T. insulicola* NOMURA et LEE; C, *T. nitidus* sp. nov. (circle), *T. puncticeps* sp. nov. (triangle), and *T. minutus* sp. nov. (square).

Holotype, male (preserved in National Science Museum, Tokyo), Omogo, Ehime Pref., 26–V–1985, S. TANAKA leg. Paratypes: 1 male, Makigoya, Mt. Odamiyama, Oda-chô, Ehime Pref., 1–VIII–1995, E. YAMAMOTO leg.; 1 male, Shiromeguri, Uchiko-chô, Ehime Pref., 9–VII–1995, E. YAMAMOTO leg.

Distribution. Japan (Shikoku).

Remarks. This species is very closely allied to *puncticeps*, but is different in the small eyes and the aedeagus with a symmetrical ventral stalk and two pairs of spines on the dorsal apophysis. This structure of aedeagus is regarded as a more primitive character, as compared with the completely asymmetrical aedeagus of *puncticeps*.

Genus ***Tychus*** LEECH

[Japanese name: Mori-arizukamushi Zoku]

Tychus LEECH, 1817, Zool. Misc., **3**: 84; AUBÉ, 1833, Psel. Mon., 42; REITTER, 1881, Verh. zool.-bot. Ges. Wien, **31**; 454; GUILLEBEAU, 1888, Rev. Ent., **7**: 368; PEYERIMHOFF, 1904, Abeille, **30**: 169; RAFFRAY, 1904, Annls. Soc. ent. Fr., **73**: 412; RAFFRAY, 1908, Gen. Ins., (64): 291; RAFFRAY, 1911, Coleopt. Cat., (27): 128; DODERO, 1919, Annli. Mus. civ. Stor. nat. Genova, **48**: 225; JEANNEL, 1950, Fn. Fr., **53**: 332; JEANNEL, 1956, Mém. Mus. Hist. nat., Paris, **14**: 131; JEANNEL, 1958, ibid., (A), **18**: 105; CHANDLER, 1988, Trans. Am. ent. Soc., **114**: 154; NEWTON & CHANDLER, 1989, Fieldiana, Zool., (N. S.), (53): 53; NOMURA & LEE, 1992, Esakia, Fukuoka, (32): 72; NOMURA & LEE, 1993, ibid., (33): 32. Type species: *Pselaphus niger* REICHENBACH, by monotypy.

Tychoides KARAMAN, 1955, Acta Mus. maced. Sci. nat., Skopje, **3**: 124. Type species: *Tychus hirtulus* REITTER, by original designation.

Body generally small, elongate and weakly narrowed anteriad, densely covered with pubescence. Head nearly ovoid, weakly constricted behind bases of antennae, densely covered with long hairs behind eyes. Antennae short and thick, strongly thickened in 9th to 11th segments. Maxillary palpi (Fig. 1B) large, 4th segment largest and nearly ovoid. Meso- and metanota each with 2 pairs of foveae as in *Tainochus*. Elytra (Fig. 1H) gently narrowed anteriad, each elytron with 2 basal foveae and 2 longitudinal sulci. Legs short and slender. Abdomen short and rounded posteriorly, 4th segment largest, with a pair of basilateral foveae and a transverse basimedian depression, 9th sternite composed of 3 plates in male as in *Tainochus*, but each lateral plate is more strongly broadened at apical part than in *Tainochus*. Aedeagus completely asymmetrical, parameres rudimentary, median lobe consisting of large basal bulb, asymmetrical ventral stalk and complicated or twig-shaped dorsal apophysis.

Remarks. The genus *Tychus* is a large genus including diversified species distributed in the Holarctic Region. This genus is characterized by the small body, the bifoveate elytra and the asymmetrical aedeagus.

Key to the Species of the Genus *Tychus* from Japan and its Adjacent Regions

1. Body larger (1.5–1.6 mm) and usually blackish, maxillary palpi and legs yellowish, aedeagus with broad ventral stalk and slender and incurved dorsal apophysis . . . .

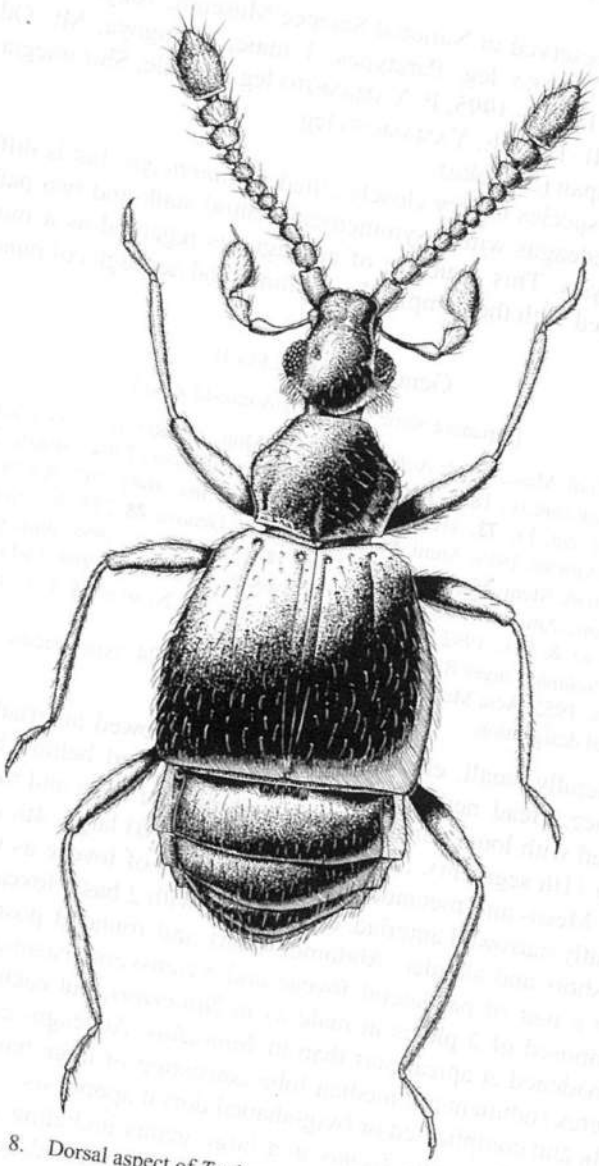

Fig. 8. Dorsal aspect of *Tychus yezoensis* sp. nov., male.

. . . . . .

— Body smaller (less than 1.5 mm) and reddish brown . . . . . *Ty. yezoensis* sp. nov.

2. Antennae longer, 5th and 9th segments each slightly longer than wide, mid trochanters each with a very small spine in male . . . . . 2.

— Antennae shorter, 5th and 9th segments each transverse, mid trochanters without

spine in male ..... 3.
3. Maxillary palpi large, aedeagus with a broad ventral stalk and medially thickened dorsal apophysis ..... *Ty. crassicornis* RAFFRAY.
— Maxillary palpi small, aedeagus with a very slender ventral stalk and bifurcate dorsal apophysis ..... *Ty. dichotomus* NOMURA et LEE.

Tychus dichotomus NOMURA et LEE

[Japanese name: Tairiku-mori-arizukamushi]

(Figs. 9 B, 10 B, 18 A)

Tychus dichotomus NOMURA et LEE, 1992, Esakia, Fukuoka, (32): 72; NOMURA & LEE, 1993, ibid., (33): 32.

Tychus kurilensis KURBATOV, 1992, Zool. Zh., Moskow, **71** (10): 142. *Syn. nov.*

Specimens examined: 1 male, Shimono-Kurosawa, Shizukuishi-machi, Iwate Pref., 29–VII–1990, E. TERAZAWA leg.; 1 male, Iwagasaki, Sanpoku-machi, Niigata Pref., 8–IX–1984, K. BABA leg.; 1 female, Gochi, Jôetsu C., Niigata Pref., 29–III–1981, K. BABA leg.; Mt. Nasudake, Tochigi Pref., 3–VI–1994, S. NAOMI leg.; 2 males, Sakatsura-Isozaki Shrine, Nakaminato C., Ibaraki Pref., 6–VIII–1990, E. TERAZAWA leg.; 1 male, same locality as above, 21–II–1991, E. TERAZAWA leg.; 1 male, Namegawa, Chiba Pref., 17–V–1983, S. TANAKA leg.; 1 male, Ishidojuku, Kitamoto C., Saitama Pref., 26–V–1990, T. NAMBU leg.; 1 male, Sugaya, Saitama Pref., 20–IX–1994, K. TOYODA leg.; Kashinokiyama Park, Naruse, Machida C., Tokyo Pref., 1–XI–1993, S. ONODA leg.; 1 female, Hayama, Kanagawa Pref., 18–IX–1989, H. HARADA leg.; 1 male, Mt. Mikusayama, Osaka Pref., 12–V–1993, Y. SAWADA leg.; 1 female, Mt. Hyônosen, Hyôgo Pref., 5–VI–1984, S. NOMURA leg.: 1 male, Mt. Takasu, Fukutomi-chô, Hiroshima Pref., 31–V–1987, I. OKAMOTO leg.; 1 male, Mt. Noro, Kure C., Hiroshima Pref., 15–IX–1988, I. OKAMOTO leg.; 1 male, Kurose-chô, Hiroshima Pref., 2–V–1988, I. OKAMOTO leg.; 1 male, Kamizaka, Tsushima Is., Nagasaki Pref., 27–IV–1992, K. OGATA leg.; 1 female, Mt. Kurodake, Kujû-machi, Ôita Pref., 9–X–1988, K. SASAKI leg.; 1 male, Ishizakihama, Sadowara-chô, Miyazaki Pref., 5–IX–1993, S. NOMURA leg.

Distribution. Kuril Isls. (Kunashir Is.), South Korea including Cheju Is., Japan (Honshu, Kyushu, Tsushima Is.)

Remarks. This species is widely distributed, but is reported from Japan for the first time. It is distinguished from the other species by the bifurcate dorsal apophysis of the aedeagus and the small maxillary palpi.

Tychus crassicornis RAFFRAY

[Japanese name: Mori-arizukamushi]

(Figs. 9 A, 10 A, 18 B)

Tychus crassicornis RAFFRAY, 1909, Annls. Soc. ent. Fr., **78**: 40; RAFFRAY, 1911, Coleopt. Cat., (27): 130;

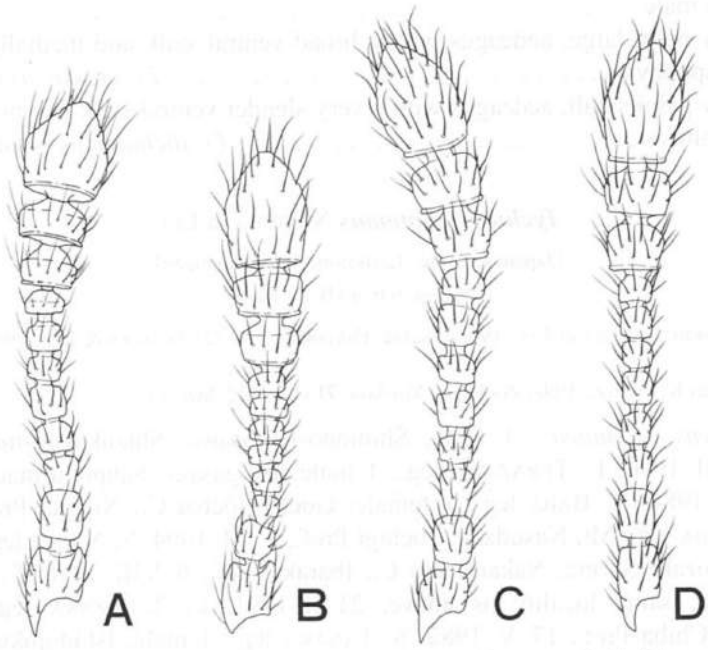

Fig. 9. Male antennae of *Tychus* spp. —— A, *T. crassicornis* RAFFRAY; B, *T. dichotomus* NOMURA et LEE; C, *T. yezoensis* sp. nov.; D, *T. yukihikoi* sp. nov.

JEANNEL, 1958, Mém. Mus. Hist. nat., Paris, (A), **18**: 105; NOMURA, 1989, Check List Jpn. Ins., Fukuoka, **1**: 291.

Specimens examined. 1 male, Nakatsuya Vall., Hiroshima Pref., 8–VI–1987, S. NOMURA leg.; 3 females, Tainai-daira, Kurokawa-mura, Niigata Pref., 2–IX–1991, H. KOIKE leg.

Distribution. Japan (Honshu), Yunnan?.

Remarks. This species is very similar to *T. dichotomus* in the small body and the short antennae, but is separated by the large maxillary palpi and the male genitalia with a broad ventral stalk and medially thickened dorsal apophysis.

Tychus yukihikoi sp. nov.

[Japanese name: Hirano-mori-arizukamushi]

(Figs. 9 D, 10 D, 11, 18 B)

Male. Length 1.4 mm. Width 0.6 mm.

Body reddish brown, maxillary palpi and legs light brown, weakly narrowed anteriad.

Head slightly longer than wide, sparsely with minute punctures, shiny on dorsal surface, clypeus very short, arcuate on anterior margin, frons narrowed and strongly

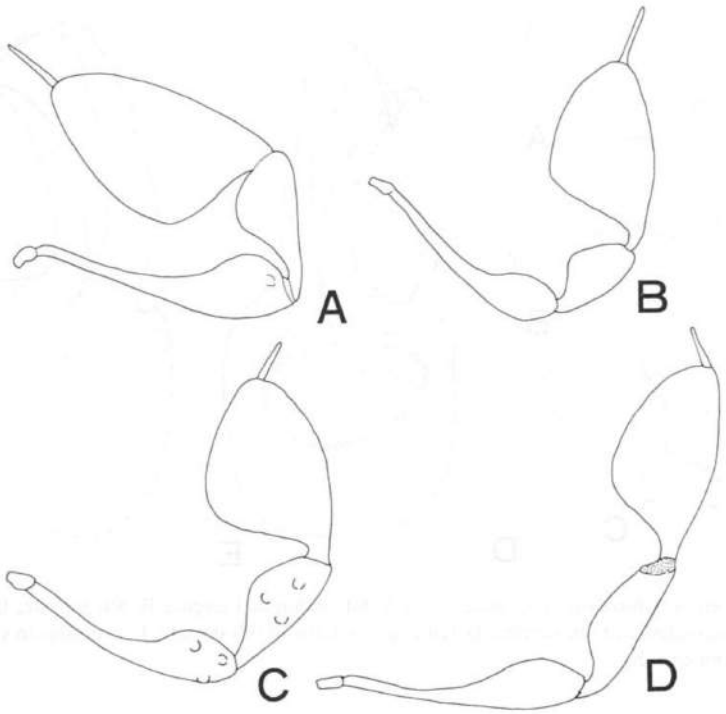

Fig. 10. Maxillary palpi of *Tychus* spp. —— A, *T. crassicornis* RAFFRAY; B, *T. dichotomus* NOMURA et LEE; C, *T. yezoensis* sp. nov.; D, *T. yukihiko*i sp. nov.

convex, weakly projected anteriad, slightly depressed on dorsal side, gently constricted just behind antennal articulation, vertex broad and convex, rounded posteriorly, with a pair of small dorsal tentorial pits just inside eyes and a shallow dorso-median fovea between eyes, postgenae broad and almost flat, densely covered with long hairs. Eyes small and ovoid, each composed of 25 facets. Maxillary palpi large and elongate, reaching 8th antennal segment, 1st segment very short and tubular, 2nd long and slender, tapered in basal half, swollen in apical half, 3rd shorter than 2nd, twice as long as wide, widest at basal 2/5, roundly expanded inward, 4th largest and nearly ovoid, twice as long as wide, palpal spine long and slender, 1/3 times as long as 4th. Antennae elongate, reaching basal part of elytra, 1st segment longer than wide, thick and subcylindrical, 2nd slightly narrower than 1st, 1.2 times as long as wide, 3rd to 8th subequal in width, 3rd slightly longer than wide, weakly narrowed basad, 4th to 8th each subcylindrical, 9th to 11th thick, 9th slightly longer than wide, subglobose, 10th slightly wider than 9th, 11th largest and ovoid, truncate at base; relative length (width) of each segment from base to apex: 1.1 (0.7): 0.8 (0.6): 0.6 (0.5): 0.5 (0.5): 0.6 (0.5): 0.4 (0.5): 0.5 (0.5): 0.4 (0.5): 0.9 (0.8): 0.9 (1.0): 2.0 (1.2).

Pronotum wider than long, roundly expanded on both sides, gently convex and

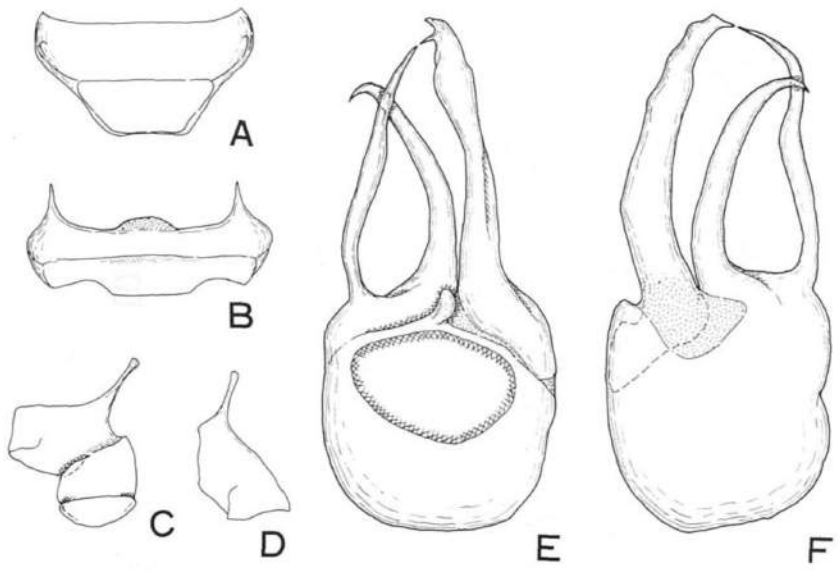

Fig. 11. *Tychus yukihikoi* sp. nov., male. —— A, 8th abdominal tergite; B, 8th sternite; C, right lateral and median sclerite of 9th sternite; D, left lateral sclerite of 9th sternite; E, aedeagus in ventral view; F, ditto, in dorsal view.

shiny on dorsal surface, with a shallow median and a pair of lateral depressions at antebasal part. Elytra wider than long, convex and nearly trapezoidal, sparsely covered with minute punctures, outer longitudinal sulcus reaching the middle. Legs short and slender, mid trochanters short, each quadrangular, with a small spine on posterior side.

Abdomen broad and transverse, rounded posteriorly, 4th segment largest, about 1.3 times as long as 5th on dorsal side, with a small basimedian depression, 8th tergite narrowed posteriorly, arcuately emarginate on apical margin, 8th sternite short and transverse, broadened at median part, 9th sternite well sclerotized and broad, composed of an ovoid median and a pair of nearly quadrangular lateral plates.

Aedeagus well sclerotized and elongate, parameres reduced to a small spine, basal bulb of aedeagus rounded at basal part, with a large and ovoid basal foramen on ventral side, ventral stalk consisting of two very long and slender spines, left spine extending apically from ventro-apical part of basal bulb, weakly bent inward in apical 1/3, right spine slightly bolder than the left, arising from dorso-apical part of basal bulb, weakly narrowed apicad and gently outcurved, dorsal apophysis longer than these spines and elongate, attached to left side of basal bulb, slightly narrowed posteriad and bent ventrally, sharpened and closed to apex of left spine of ventral stalk at apex.

Female. Unknown.

Holotype, male (preserved in National Science Museum, Tokyo), Shôji-ko, Yamanashi Pref., 6–VIII–1987, Y. HIRANO leg.

Distribution. Japan (central Honshu).

Remarks. This new species is very similar to *T. dichotomus* NOMURA et LEE in body size and small maxillary palpi. It is however, separated from *dichotomus* by having the long and slender antennae and the mid trochanters each with a small spine.

Tychus yezoensis sp. nov.

[Japanese name: Ezo-mori-arizukamushi]

(Figs. 8, 9C, 10C, 12, 18B)

Male. Length 1.5–1.6 mm. Width 0.6–0.7 mm.

Body dark brown to blackish, maxillary palpi and legs light brown, broadened posteriorly.

Head about as long as wide, weakly constricted at anterior 1/4, gently convex on dorsal surface, sparsely covered with minute punctures on dorsal side, clypeus very short, hidden by antennal nodule, arcuate on anterior margin, frons strongly convex, weakly concave on median part, vertex roundly expanded posteriad with a pair of small dorsal tentorial pits just inside eyes, postgenae almost flat, densely covered with long hairs. Eyes small and ovoid, each composed of about 25 facets. Maxillary palpi short, reaching 6th antennal segment, 1st segment very short and tubular, 2nd longest, very slender at basal part, strongly swollen and covered with large and semispherical granules in apical 3/7, 3rd as wide as 2nd, short and thick, twice as long as wide, roundly expanded inward, covered with large and semispherical granules, 4th segment widest and ovoid, 1.5 times as long as wide, densely covered with pubescence, palpal spine short and slender. Antennae short and thick, reaching hind margin of pronotum, 1st segment thick and subcylindrical, 2nd slightly longer than wide, subcylindrical, 3rd to 8th subequal in width, 3rd narrowed in basal part, 4th to 8th each subcylindrical, 9th to 11th very thick, 9th as long as wide, slightly thickened apicad, 10th as long as 9th, transverse and thickened distally, 11th largest, nearly ovoid and truncate at base; relative length (width) of each segment from base to apex: 1.2 (0.8): 0.8 (0.7): 0.6 (0.6): 0.5 (0.6): 0.6 (0.6): 0.5 (0.6): 0.6 (0.6): 0.4 (0.6): 0.9 (0.9): 0.9 (1.0): 1.3 (2.0).

Pronotum slightly wider than long, widest at anterior 3/7, weakly convex and sparsely with minute punctures on dorsal surface, with a pair of shallow lateral foveae at posterior 1/3 and a shallow basimedian fovea near basal margin. Elytra wider than long, slightly convex and sparsely with minute punctures on dorsal surface, outer longitudinal sulcus running from outer basal foveae to the middle. Legs short and slender.

Abdomen short and transverse in dorsal view, rounded posteriorly, 4th segment largest, 1.5 times as long as 5th, with a small basimedian depression, 4th to 7th sternites weakly depressed at median part, 8th tergite arcuately emarginate on apical margin, 8th sternite very short and transverse, with a small concavity at basimedian part, 9th sternite composed of an ovoid median and a pair of quadrangular lateral plates.

Aedeagus well sclerotized, parameres reduced and membranous, basal bulb of aedeagus nearly subglobose, with a small and transverse basal foramen at ventro-api-

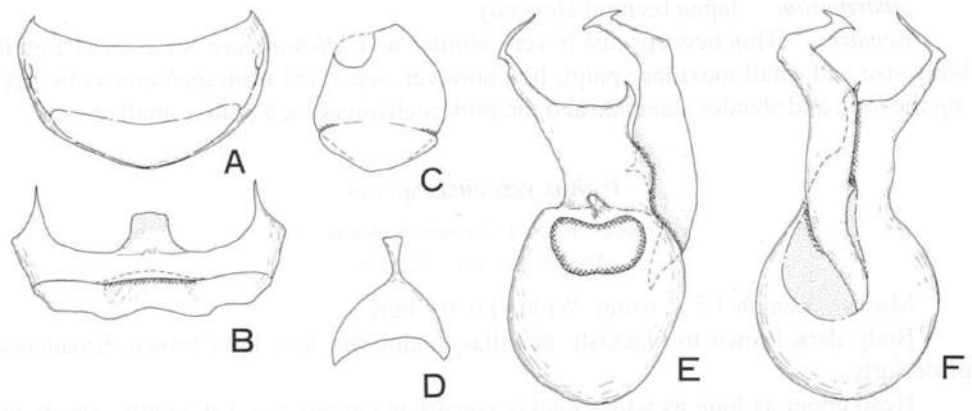

Fig. 12. *Tychus yezoensis* sp. nov., male. —— A, 8th abdominal tergite; B, 8th sternite; C, median sclerite of 9th sternite; D, lateral sclerite of 9th sternite; E, aedeagus in ventral view; F, ditto, in dorsal view.

cal part, ventral stalk broad at base, with a short spine at right side, and long and slender spine at the left, left spine tapered distally, sharply curved leftward near the middle, forming about 100° angle, dorsal apophysis very long and elongate, articulated with basal bulb at middle of dorsal surface and base of left spine of ventral stalk, widest near the middle, narrowed and slightly bent in basal part, narrowed and S-curved in apical part.

Female. Length 1.5–1.6 mm. Width 0.6–0.7 mm. Very similar to male, but abdomen gently convex on ventral surface; 8th tergite rounded on apical margin, 8th sternite almost flat at basimedian part.

Holotype, male (preserved in National Science Museum, Tokyo), Higashi-Ohnuma, Nanae-chô, Hokkaido, 14~16–VI–1986, S. NOMURA leg. Paratypes: 12 males, 16 females, same data as holotype; 1 male, 1 female, same locality as holotype, 30–VI–1991, S. NOMURA leg.; 1 male, Mt. Komagatake, Oshima, Hokkaido, 30–VI–1991, S. NOMURA leg.; 1 female, Horokayantou Pond, Taiki-chô, Tokachi, Hokkaido, 9–VI–1993, K. SHIBATA leg.

Distribution. Japan (Hokkaido).

Remarks. This new species is easily distinguished from the other Japanese congeners by the large and blackish body and the aedeagus with a broad ventral stalk and a slender incurved dorsal apophysis.

Biological notes. Many individuals of this species were collected from decayed leaves of the common reed (*Phragmites australis* (CAV.) TRIN.) on wetland. Only one male was found from litter of a broadleaved forest with the specimens of the other species.

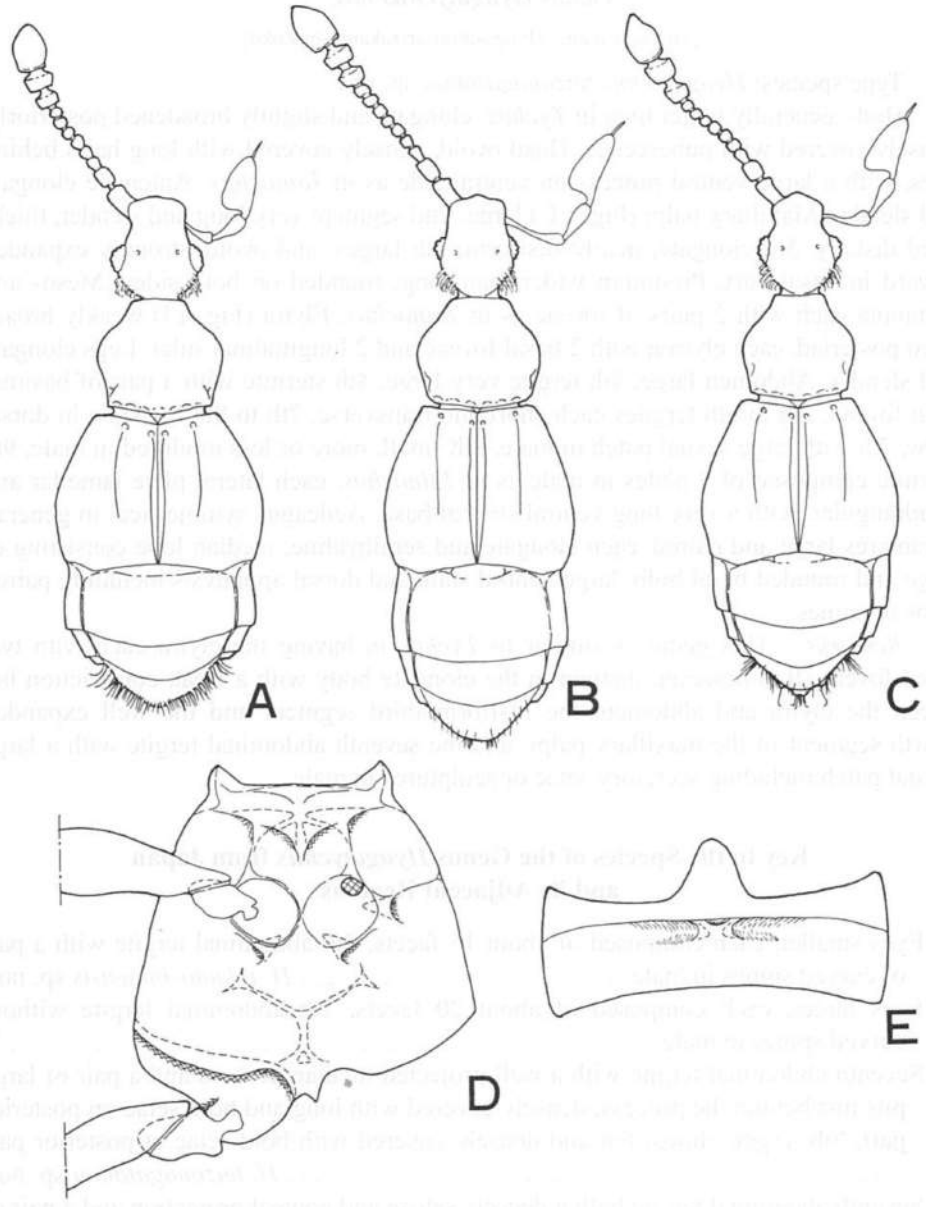

Fig. 13. Genus *Hyugatychus* nov. —— A, D, E, *H. teizonagatomoi* sp. nov.; B, *H. tokunoshimensis* sp. nov.; C, *H. formosanus* sp. nov. —— A–C, Dorsal aspect; D, meso- and metathoraces in ventral view; E, 3rd to 4th abdominal sternites.

Genus ***Hyugatychus*** nov.

[Japanese name: Hyuga-mori-arizukamushi Zoku]

Type species: *Hyugatychus teizonagatomoi* sp. nov.

Body generally larger than in *Tychus*, elongate and slightly broadened posteriorly, densely covered with pubescence. Head ovoid, densely covered with long hairs behind eyes, with a large ventral process on ventral side as in *Tainochus*. Antennae elongate and slender. Maxillary palpi (Fig. 1 C) large, 2nd segment very long and slender, thickened distally, 3rd elongate, nearly fusiform, 4th largest and ovoid, strongly expanded inward in basal part. Pronotum wider than long, rounded on both sides. Meso- and metanota each with 2 pairs of foveae as in *Tainochus*. Elytra (Fig. 1 I) weakly broadened posteriad, each elytron with 2 basal foveae and 2 longitudinal sulci. Legs elongate and slender. Abdomen large, 4th tergite very large, 4th sternite with a pair of basimedian foveae, 5th to 6th tergites each short and transverse, 7th to 8th invisible in dorsal view, 7th with large sexual patch in male, 8th small, more or less modified in male, 9th sternite composed of 3 plates in male as in *Tainochus*, each lateral plate lamellar and quadrangular, with a very long ventral strut at base. Aedeagus symmetrical in general, parameres large and paired, each elongate and semihyaline, median lobe consisting of large and rounded basal bulb, large ventral stalk and dorsal apophysis including paired arms or spines.

Remarks. This genus is similar to *Tychus* in having the elytra each with two basal foveae. It is however, distinct in the elongate body with a weak constriction between the elytra and abdomen, the fusiform third segment and the well expanded fourth segment of the maxillary palpi, and the seventh abdominal tergite with a large sexual patch including secretory setae or sculptures in male.

Key to the Species of the Genus *Hyugatychus* from Japan and its Adjacent Regions

1. Eyes smaller, each composed of about 15 facets, 7th abdominal tergite with a pair of curved spines in male . . . . . *H. tokunoshimensis* sp. nov.
— Eyes larger, each composed of about 20 facets, 7th abdominal tergite without curved spines in male . . . . . 2.
2. Seventh abdominal tergite with a well projected median process and a pair of large pits just behind the process, densely covered with long and bold setae on posterior part, 8th tergite almost flat and densely covered with bold setae at posterior part . . . . . *H. teizonagatomoi* sp. nov.
— Seventh abdominal tergite with a densely setose and conical projection and a pair of fringes each including a bold seta, 8th tergite with a trapezoidal postero-median projection . . . . . *H. formosanus* sp. nov.

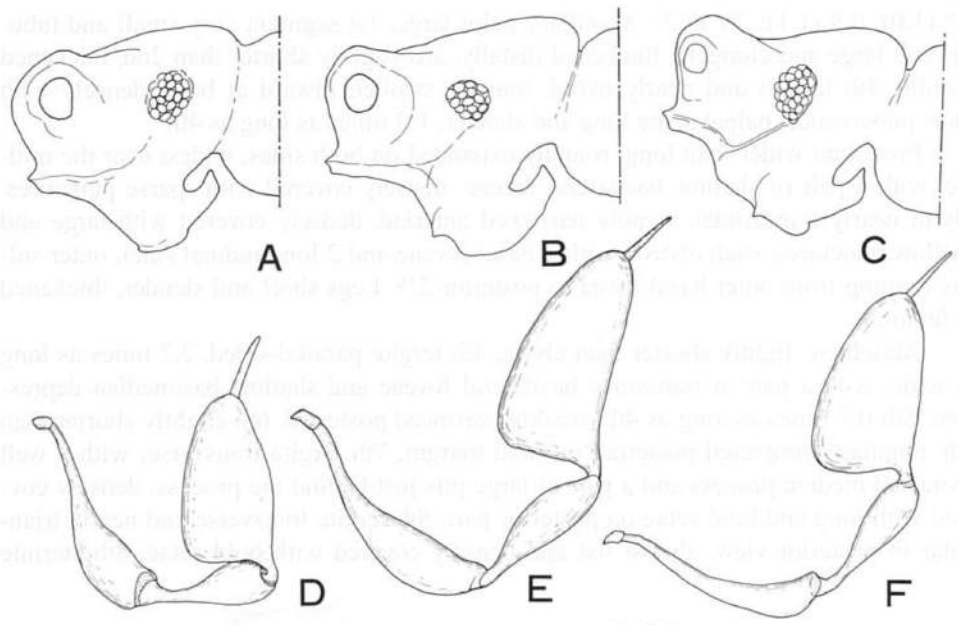

Fig. 14. Heads and maxillary palpi of *Hyugatychus* spp. —— A, D, *H. teizonagatomoi* sp. nov.; B, E, *H. tokunoshimensis* sp. nov.; C, F, *H. formosanus* sp. nov. —— A–C, Heads in lateral view; D–F, maxillary palpi.

Hyugatychus teizonagatomoi sp. nov.

[Japanese name: Hyuga-mori-arizukamushi]

(Figs. 13 A, D, E, 14 A, D, 15 A–B, 16 A–F, 18 C)

Male. Length 1.5–1.6 mm. Width 0.6 mm.

Body reddish brown, maxillary palpi and tarsi light brown, weakly narrowed anteriorly.

Head longer than wide, nearly ovoid, clypeus very short, invisible in dorsal view, arcuate on anterior margin, frons strongly convex, weakly constricted just behind bases of antennae, densely with minute punctures, vertex gently convex, with a pair of small dorsal tentorial pits, sparsely covered with minute punctures, postgenae broad and almost flat, densely covered with long hairs just behind eyes, with a large and dorsally curved ventral process on ventral surface. Eyes small and ovoid, each composed of about 20 facets. Antennae short and thick, reaching base of pronotum, 1st segment thick, longer than wide, 2nd about as long as wide, subcylindrical, 3rd to 8th subequal in width, successively shortened toward apex, each segment small and subglobose, 9th thick and transverse, 10th slightly larger than 9th, transverse, 11th largest, 1.6 times as long as wide, truncate at base; relative length (width) of each segment from base to apex: 1.5 (0.8): 0.8 (0.7): 0.6 (0.6): 0.5 (0.6): 0.5 (0.6): 0.5 (0.6): 0.5 (0.6): 0.4 (0.6):

0.7 (1.0): 0.8 (1.1): 2.1 (1.3). Maxillary palpi large, 1st segment very small and tubular, 2nd large and elongate, thickened distally, 3rd slightly shorter than 2nd, thickened distally, 4th largest and nearly ovoid, roundly swollen inward at base, densely with short pubescence, palpal spine long and slender, 1/3 times as long as 4th.

Pronotum wider than long, roundly expanded on both sides, widest near the middle, with a pair of shallow basilateral foveae, densely covered with sparse punctures. Elytra nearly trapezoidal, weakly narrowed anteriad, densely covered with large and shallow punctures, each elytron with 2 basal foveae and 2 longitudinal sulci, outer sulcus running from outer basal fovea to posterior 2/5. Legs short and slender, thickened in femora.

Abdomen slightly shorter than elytra, 4th tergite parallel-sided, 2.7 times as long as wide, with a pair of transverse basilateral foveae and shallow basimedian depression, 5th 0.7 times as long as 4th, weakly narrowed posteriad, 6th slightly shorter than 5th, angularly projected posteriad on hind margin, 7th tergite transverse, with a well projected median process and a pair of large pits just behind the process, densely covered with long and bold setae on posterior part, 8th tergite transverse and nearly triangular in posterior view, almost flat and densely covered with bold setae, 8th sternite

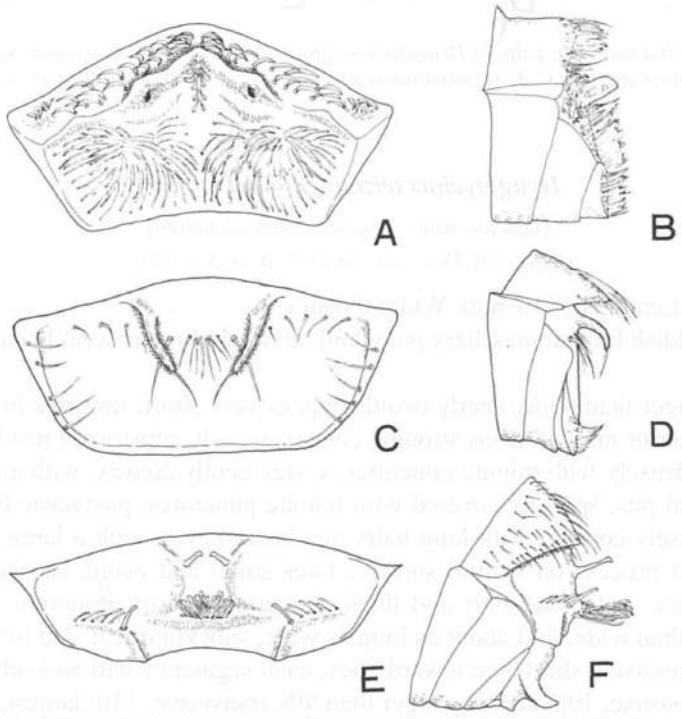

Fig. 15. Male 6th to 8th abdominal segments of *Hyugatychus* spp. —— A, B, *H. teizonagatomoi* sp. nov.; C, D, *H. tokunoshimensis* sp. nov.; E, F, *H. formosanus* sp. nov. —— A, C, E, 7th tergite; B, D, F, 6th to 8th segments in lateral view.

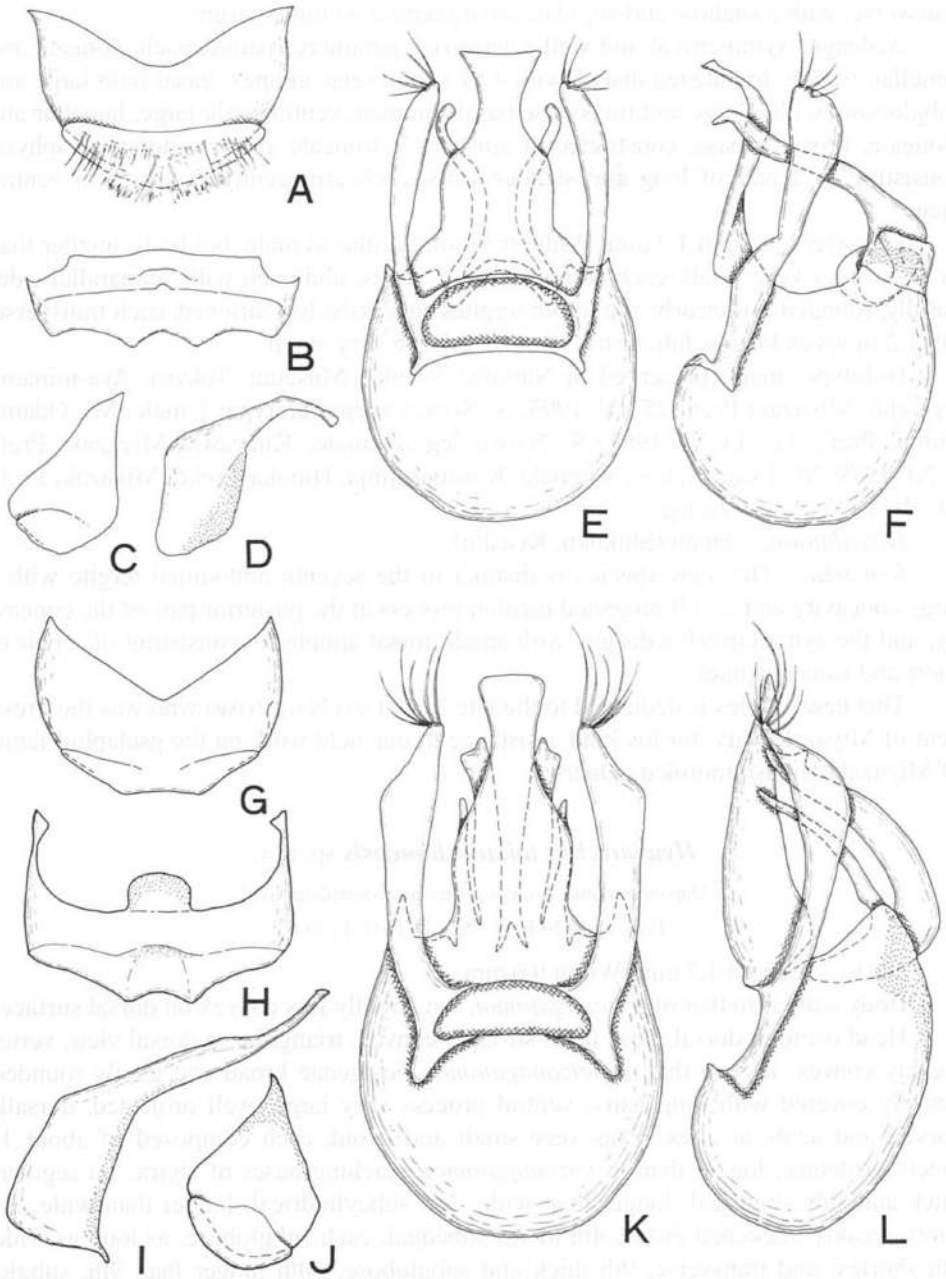

Fig. 16. Male 8th to 9th abdominal segments and aedeagi of *Hyugatychus* spp. —— A–F, *H. teizonagatomoi* sp. nov.; G–L, *H. tokunoshimensis* sp. nov. —— A, G, 8th tergite; B, H, 8th sternite; C, J, median sclerite of 9th sternite; D, I, left lateral sclerite of 9th sternite; E, K, aedeagus in ventral view; F, L, ditto, in lateral view.

transverse, with a shallow and angulate emargination on hind margin.

Aedeagus symmetrical and well sclerotized, parameres paired, each elongate and lamellar, weakly broadened distad, with 4 to 5 long setae at apex, basal bulb large and subglobose, with a large and transverse basal foramen, ventral stalk large, lamellar and elongate, broad at base, constricted at apical 1/3, truncate at apex, dorsal apophysis consisting of a pair of long and slender arms, each arm gently S-curved in ventral view.

Female. Length 1.3 mm. Width 0.5 mm. Similar to male, but body smaller than in male, eyes very small, each composed of 5 facets, abdomen with subparallel sides basally, rounded posteriorly, 4th to 6th tergites successively shortened, each transverse, 7th 1.2 times as long as 6th, nearly trapezoidal, 8th very small.

Holotype, male (preserved in National Science Museum, Tokyo), Aya-minami, Aya-chô, Miyazaki Pref., 25–IV–1993, S. NOMURA leg. Paratype: 1 male, Mt. Odami, Ehime Pref., 11~13–VI–1981, S. NAOMI leg.; 1 male, Kitagawa, Miyazaki Pref., 3–XI–1979, M. TAKEISHI leg.; 1 female, Kusubarujinja, Hinokage-chô, Miyazaki Pref., 31–III–1995, A. NAGAI leg.

Distribution. Japan (Shikoku, Kyushu).

Remarks. This new species is distinct in the seventh abdominal tergite with a large concavity and a well projected median process at the posterior part of the concavity, and the symmetrical aedeagus with small dorsal apophysis consisting of a pair of short and sinuate spines.

This new species is dedicated to the late Mr. TEIZO NAGATOMO who was the President of Miyazaki City, for his kind assistance to our field work on the pselaphid fauna of Miyazaki Higashimorokata District.

Hyugatychus tokunoshimensis sp. nov.

[Japanese name: Tokunoshima-mori-arizukamushi]

(Figs. 13 B, 14 B, E, 15 C–D, 16 G–L, 18 C)

Male. Length 1.7 mm. Width 0.6 mm.

Body similar to that of *teizonagatomoi*, but slightly less convex on dorsal surface.

Head ovoid in dorsal view, frons strongly convex, triangular in dorsal view, vertex weakly convex, less so than in *teizonagatomoi*, postgenae broad and gently rounded, densely covered with long hairs, ventral process very large, well projected, dorsally curved and acute at apex. Eyes very small and ovoid, each composed of about 15 facets. Antennae longer than in *teizonagatomoi*, reaching bases of elytra, 1st segment thick and subcylindrical, longer than wide, 2nd subcylindrical, longer than wide, 3rd short, weakly thickened distad, 4th to 7th subequal, each subglobose, as long as wide, 8th shortest and transverse, 9th thick and subglobose, 10th longer than 9th, subglobose, 11th largest and ovoid, truncate at base; relative length (width) of each segment from base to apex: 1.4 (1.0): 1.0 (0.7): 0.6 (0.7): 0.6 (0.6): 0.6 (0.6): 0.6 (0.6): 0.6 (0.6): 0.5 (0.6): 1.0 (0.9): 1.1 (1.1): 2.2 (1.2). Maxillary palpi similar to those of

teizonagatomoi, 2nd segment elongate, thickened in apical half, with 5–6 indistinct granules in apical 1/3, 3rd shorter than 2nd, elongate, slender in basal 2/5, swollen in apical 3/5, 4th slightly shorter than 3rd, nearly ovoid, palpal spine about 1/4 times as long as 4th, very slender.

Pronotum as long as wide, roundly expanded on both sides, slightly convex on dorsal surface, sparsely covered with minute punctures on dorsal surface. Elytra nearly trapezoidal, weakly flattened on dorsal surface, outer sulcus of each elytron reaching the middle. Legs slender, hind trochanter short, with a short, broad, and antero-ventrally curved process on posterior side.

Abdomen as long as elytra, angularly expanded posteriad on dorsal surface, 4th tergite longer than in *teizonagatomoi*, transverse, 2.3 times as wide as long, 5th tergite short, 0.7 times as long as 4th, 6th 0.8 times as long as 5th at median part, densely covered with long hairs on posterior margin, 7th transverse, hidden by 6th in dorsal view, broadly flattened posteriad, with a pair of large, acute and ventrally curved spines on basal part, 8th very short and transverse in posterior view, densely setose, 8th sternite transverse, weakly emarginate on posterior margin, slightly cancave at the middle, 9th sternite consisting of small and quadrangular median plate and a pair of large lateral plates each with very long ventral struts.

Aedeagus symmetrical and well sclerotized, parameres each large and elongate, widest at apical 1/3, then narrowed distally, with 5 to 6 long setae at apex, basal bulb large and rounded posteriorly, ventral stalk elongate and narrowed in apical half, dorsal apophysis with two pairs of spines, dorsal spine long and thick, broadened at apex, ventral spine short and very slender, simply narrowed distad.

Female. Unknown.

Holotype, male (preserved in National Science Museum, Tokyo), Mt. Inokawa-dake, Tokunoshima Is., Kagoshima Pref., 2–V–1988, S. NOMURA leg.

Distribution. Japan (Tokunoshima Is.).

Remarks. This new species is similar to *teizonagatomoi*, but differs in having very small eyes, the longer antennae and the seventh tergite with a pair of curved spines.

Hyugatychus formosanus sp. nov.

[Japanese name: Taiwan-mori-arizukamushi]

(Figs. 13 C, 14 C, F, 15 E–F, 17, 18 C)

Male. Length 1.7 mm. Width 0.6 mm. Similar in body form to *teizonagatomoi*.

Head longer than wide, ovoid, frons strongly convex, with a short vertical carina at median part of anterior margin, vertex gently convex as in *teizonagatomoi*, but with a pair of large dorsal tentorial pits, postgena broad and gently rounded, densely covered with long hairs, ventral process very large and well projected, curved dorsally and sharpened at apex. Eyes small and ovoid, each composed of about 20 facets. Antennae short and thick, reaching base of pronotum, 1st segment longer than wide, thick and

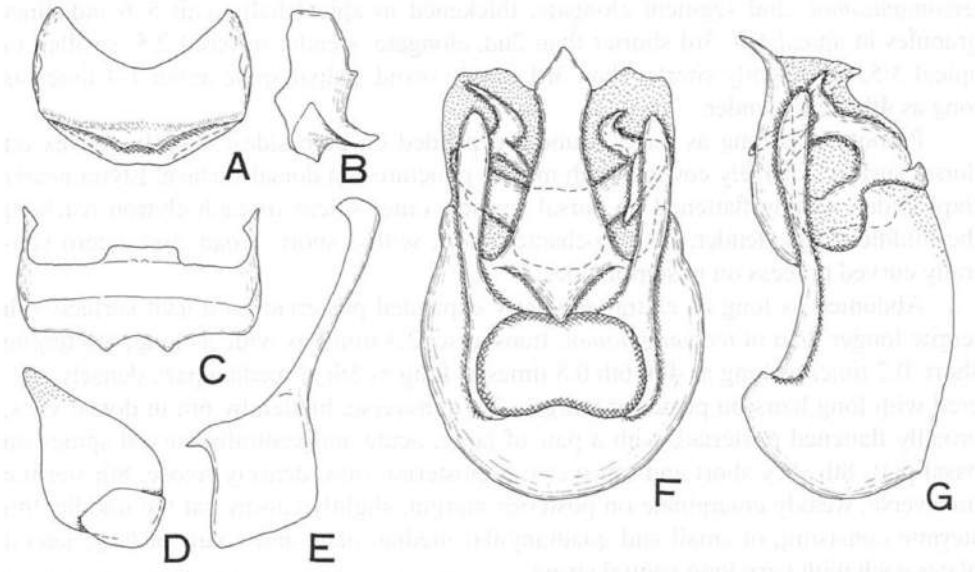

Fig. 17. *Hyugatychus formosanus* sp. nov., male. —— A, 8th abdominal tergite in dorsal view; B, ditto, in lateral view; C, 8th sternite; D, median sclerite of 9th sternite; E, left lateral sclerite of 9th sternite; F, aedeagus in ventral view; F, ditto, in lateral view.

subcylindrical, 2nd thick, nearly ovoid, 3rd to 5th subequal, each as long as wide, subglobose, 6th to 8th subequal, each short and transverse, 9th to 10th thickened, 10th as long as wide, 11th wider than 10th, wider than long, 11th largest and ovoid, 1.5 times as long as wide, truncate at base; relative length (width) of each segment from base to apex: 1.2 (0.8): 0.7 (0.6): 0.6 (0.6): 0.6 (0.6): 0.6 (0.6): 0.5 (0.6): 0.5 (0.6): 0.5 (0.6): 0.8 (0.8): 0.9 (1.0): 2.0 (1.3). Maxillary palpi large, 1st segment very small and tubular, 2nd elongate and slender, weakly thickened in apical 1/3, 3rd shorter than 2nd, elongate, thickened distally, 4th widest, slightly longer than 3rd, nearly ovoid, palpal spine slender, 1/3 times as long as 4th.

Pronotum wider than long, roundly expanded on both sides, widest at anterior 2/5, sparsely covered with minute punctures. Elytra wider than long, weakly broadened posteriad, slightly convex, each elytron with shallow outer sulcus reaching the middle of elytra. Legs short and slender, fore trochanters very short, each with a small and pointed denticle at anterior side, hind trochanters short and thick, each with a small and ventrally curved process on posterior margin.

Abdomen slightly longer than elytra, narrowed posteriorly, 4th segment largest, 4th tergite with a pair of shallow and transverse basilateral foveae and a transverse basimedian depression, 5th 0.6 times as long as 4th, weakly narrowed posteriad, 6th slightly shorter than 5th, densely covered with long hairs, 7th slightly shorter than 6th, with a pair of bold setae at basimedian part, a densely setose and conical projection at the middle, and a pair of fringes each including a bold seta, 8th short and transverse,

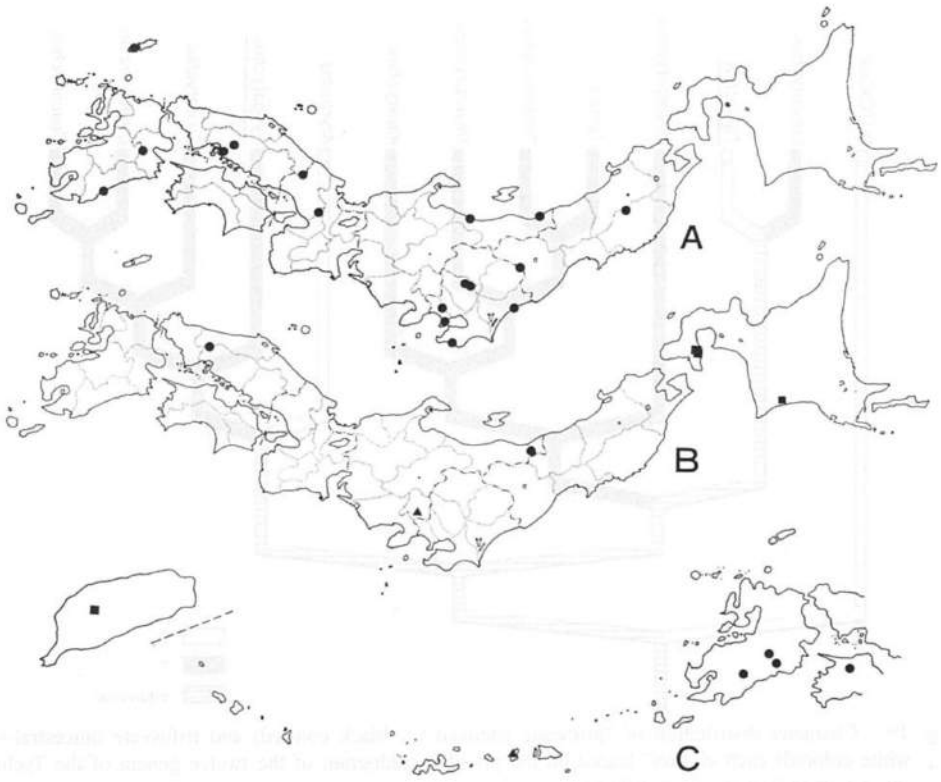

Fig. 18. Distributions of *Tychus* and *Hyugatychus* spp. in Japan and Taiwan. —— A, *Tychus dichotomus* NOMURA et LEE; B, *T. crassicornis* RAFFRAY (circle), *T. yukihikoi* sp. nov. (triangle), and *T. yezoensis* sp. nov. (square); C, *Hyugatychus teizonagatomoi* sp. nov. (circle), *H. tokunoshimensis* sp. nov. (triangle), and *H. formosanus* sp. nov. (square).

with a trapezoidal projection at postero-median part, 8th sternite short and transverse, weakly emarginate at postero-median part, 9th sternite composed of a nearly ovoid median plate and a pair of large and quadrangular lateral plates, each bearing a very long and slender ventral strut.

Aedeagus nearly symmetrical, parameres each large and elongate, basal bulb very large and rounded basally, ventral stalk elongate, weakly constricted at apical 1/3, triangular at apex, dorsal apophysis including membrane and a pair of asymmetrical and bifurcate arms, right arm with a long basal and a short apical spines, left arm with an incurved basal and an outcurved apical spines.

Female. Unknown.

Holotype, male (preserved in National Science Museum, Tokyo), Fenchihu, Chiai Hsien, S. Taiwan, 25–VIII–1993, H. URUSHIHARA leg.

Distribution. Taiwan.

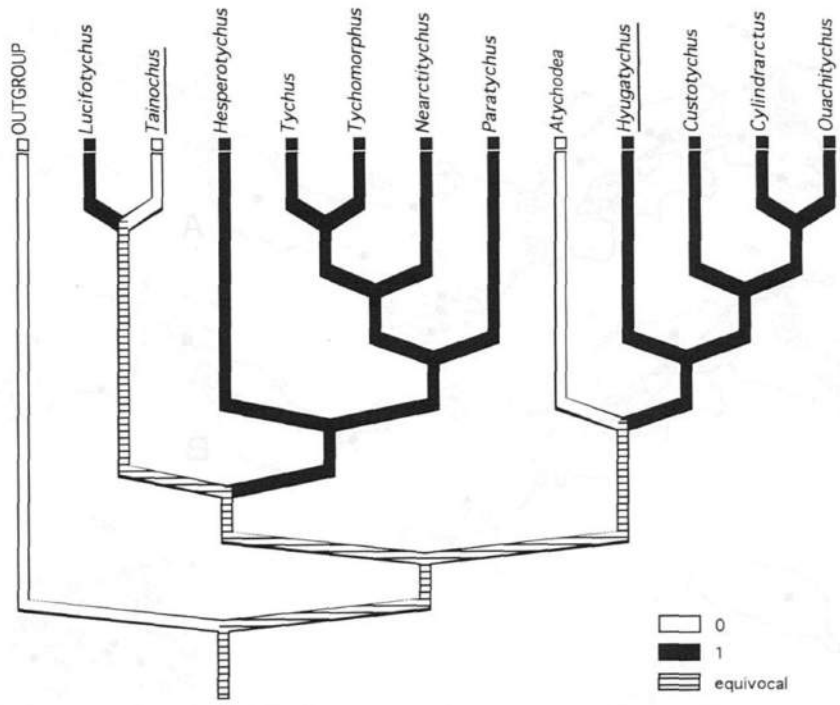

Fig. 19. Character distribution of "bifoveate (derived=1: black colored) and trifoveate (ancestral=0: white colored) each elytron" traced on the possible cladogram of the twelve genera of the Tychini (grey parts indicate equivocal clades).

Remarks. This new species is similar in habitus to the other species of the genus, but it is distinguished from them by having the seventh abdominal tergite with a conical median projection and a pair of fringes, and the eighth tergite with a trapezoidal postero-median projection.

Phylogenetic Notes

The phylogenetic relationship of the world genera of the Tychini is discussed by CHANDLER (1988), who presented a cladogram of ten genera. On the basis of his phylogenetic hypothesis, the systematic positions of the genera *Tainochus* and *Hyugatychus* are inferred as follows.

As to the genus *Hyugatychus*, its similarity to the clade containing *Custotychus*, *Cylindrarctus* and *Ouachitychus* is suggested, because these genera share the bifurcate dorsal apophysis ("dorsal lobe" in CHANDLER, 1988) of the aedeagus. However, this genus is separated from the three genera by having the unique maxillary palpus with nearly fusiform 3rd and basally expanded 4th segments and the complete parameres of

male genitalia. As the result, *Hyugatychus* should be considered to take position between the former three genera and the genus *Atychodea*.

On the other hand, the genus *Tainochus* is apparently close to *Lucifotychus* in having pick-like projection of the 4th segment of the maxillary palpus as a synapomorphic character 8b numbered by CHANDLER (1988), though this genus is different from the latter in possessing the trifoveate elytron.

In conclusion, cladistic relationship of the twelve genera of the Tychini is resumed as shown in Fig. 19. This cladogram contains several homoplasies, for example, the bifoveate elytron, the asymmetrical aedeagus, the reduced medio-basal foveae of the 4th abdominal sternite, and so on. The bifoveate elytron as a derived character is traced on this cladogram as Fig. 19 (drawn by MacClade, ver. 3.04). In the case that this character is considered to be an irreversible change, the equivocal branches (grey colored in Fig. 19) must represent an ancestral state (white colored) and the derived state is estimated to have been evolved three times at least.

Acknowledgement

I wish to express my hearty thanks to Dr. Shun-Ichi UÉNO for his continuous guidance and reading the manuscript. My special thanks are due to Dr. S. KURBATOV of Moskow for his kind advice and invaluable suggestions. I am also much indebted to the following entomologists for their kind offer of the materials: the late Dr. Kintaro BABA, Dr. Shun-Ichiro NAOMI, Mr. Iwao OKAMOTO, Mr. Yukihiko HIRANO, Mr. Eizo TERAZAWA, Mr. Atsushi NAGAI, Mr. Shigeru ONODA, Mr. Shigemi SASAKI, Mr. Eiji YAMAMOTO, Mr. Hiroshi KOIKE, Mr. Katsuyuki NAKATA, Mr. Toshiaki NAMBU, Mr. Yoshihiro SAWADA, Mr. Tsutomu TANABE, Mr. Koichi SHIBATA and Mr. Toshio KISHIMOTO.

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要　約

野村周平：日本およびその周辺地域産モリアリヅカムシ族の分類学的再検討（コウチュウ目，アリヅカムシ科）．—— 日本ならびに極東ロシア，韓国，台湾に産するモリアリヅカムシ族の3属14種を記録した．*Tainochus*（ムクゲアリヅカムシ属）は7種を記録し，4新種，*iwaoi*, *nitidus*, *puncticeps*, *minutus*を記載し，*insulicola* NOMURA et LEEを初めて日本から記録した．*Tychus*（モリアリヅカムシ属）は2新種，*yezoensis*, *yukihikoi*を記載し，日本初記録の*dichotomus* NOMURA et LEEを含む合計4種を記録した．さらに新属*Hyugatychus*（ヒュウガモリアリヅカムシ属）を定義し，3新種，*teizonagatomoi*, *tokunoshimensis*, *formosanus*を記載した．また，CHANDLER（1988）の系統仮説に基づき，*Tainochus*, *Hyugatychus*の2属の系統学的位置を推定した．*Tainochus*属は北米産の*Lucifotychus*属，*Hyugatychus*属は*Ouachitychus*など3属からなる単系統群の，それぞれ姉妹群であると推定された．しかしこの系統仮説には多数の同型形質が含まれているので，その信頼性にはなお検討の余地がある．

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Elytra, Tokyo, **24** (2): 278, November 15, 1996

A New Record of *Rybaxis lamellifer* LÖBL (Coleoptera, Pselaphidae) from Kyushu, Japan

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Rybaxis lamellifer is described by LÖBL (1973) from North Korea. NOMURA and LEE (1993) recorded this species from Kangweon Do, South Korea. This report presents the first record of this species from Japan.

Rybaxis lamellifer LÖBL

Rybaxis lamellifer LÖBL, 1973, Annls. zool., Warszawa, **30**: 326; KURBATOV, 1989, Opred. Nasek. Dal'nego Vostoka, **3** (1): 357; NOMURA & LEE, 1993, Esakia, Fukuoka, (33): 19.

Specimen examined. 1 ♂, Ike, Mt. Hachimandake, Nishitaku-machi, Taku C., Saga Pref., 21~22–III–1989, S. NOMURA leg.

Distribution. North Korea, South Korea and Japan (Kyushu).

Remarks. This species is similar to the other congeners in the habitus, but is very distinct in having the slender and bifurcate each paramere of the aedeagus.

Elytra, Tokyo, **24** (2): 279–292, November 15, 1996

Five New Passalid Beetles of the Genus *Leptaulax* (Coleoptera, Passalidae) from the Philippines, with a Key to the Species of the Philippinese *Leptaulax* in the Author's Collection

Kazuo IWASE

3–15–10, Shirasagi, Nakano-ku, Tokyo, 165 Japan

Abstract Five new passalid beetles of the genus *Leptaulax* KAUP are described from the Philippines. *Leptaulax intermedius* sp. nov. from Mindoro, *Leptaulax luzonicus* sp. nov. from Luzon, *Leptaulax sakaii* sp. nov. and *Leptaulax negrosensis* sp. nov. from Negros are related to *L. uenoi* IWASE; *Leptaulax mindanaoensis* sp. nov. from Mindanao resembles *L. cyclotaenius* KUWERT. As an appendix, a key to the species of the genus *Leptaulax* from the Philippines is provided.

In this paper, the author is going to describe five Philippinese passalid beetles of the genus *Leptaulax* KAUP. All the holotypes will be preserved in the National Science Museum (Nat. Hist.), Tokyo. As an appendix, a tentative key to the species of Philippinese *Leptaulax* is provided based on the materials in the author's collection.

Leptaulax intermedius sp. nov.

(Figs. 1–2)

Black and shining, ventral surface somewhat reddish.

Anterior margin of head with four tubercles, median tubercle absent; inner tubercle parabolic, larger than outer one, the distance between the two inner tubercles 1.8–1.9 times as long as that between inner and outer ones; outer tubercle triangular, acute; frontal ridge joining central tubercle with a short longitudinal ridge, slightly tuberculate and strongly curved at the middle, and extending to inner tubercle; central tubercle moderately raised, parietal ridge joining supraorbital one; supraorbital ridge indistinctly joining supraoccipital one; frontal area quadrangular or semicircular, convergent anteriorly, wider than long (L/W=0.5–0.6), with scattered hair-bearing punctures; depressed area of head including the part just behind outer tubercles rather densely covered with large punctures, some of which bear a hair near the tubercles of frontal ridges and behind parietal ridges; eye canthus shagreened and opaque, with a short longitudinal ridge smooth, anterior angle rounded; eye moderately large; hypostomal process smooth and shining, with a longitudinal groove shagreened and opaque. Labrum with anterior border almost straight. Antennal lamellae short. Middle part of

mentum with some large punctures, anterior border protrudent anteriorly at the middle, scar rather large, J-shaped; lateral piece with scattered hair-bearing punctures. Ligula lacking longitudinal ridge. Second segment of labial palpus shorter than third one. Mandible obtusely angulate and slightly protrudent at the middle on external side in ventral view; upper tooth obtuse in lateral view; left anterior lower tooth acute, larger than right one, with inner edge vertically truncate.

Pronotum weakly convex, hairless; anterior angle obtuse, not distinctly protrudent, scars indistinctly depressed, median groove short; surface rather densely covered with large punctures on lateral 1/4–1/3.

Elytra weakly convex, hairless; dorsal grooves distinctly punctate, lateral ones broader than the adjoining ribs, with transverse punctures; dorsal ribs very slightly convex.

Prosternum shagreened and subopaque; posterior plate smooth, shining and somewhat raised along all borders, shagreened with indistinct punctures at the middle. Mesosternum smooth at the middle; scars broad, shagreened and subopaque along inner wall and outer border, rather smooth and shining at the middle, inner wall extending to near posterior border of sternum. Metasternum with central area almost smooth, with scattered large punctures at the middle, anterior depression almost absent; anterior intermediate area smooth, with some punctures near middle coxa, posterior one rather densely punctate, but smooth along lateral area; lateral area very narrow, finely and irregularly punctate along intermediate area, shagreened and subopaque along external border. Abdominal sternites finely and densely punctate at sides; sixth sternite truncate at the median 1/3, finely and densely punctate at sides and along anterior border, rather widely polished at the posterior middle, with marginal groove distinct at the medial 3/5. Integument of external face of middle tibia smooth and shining, with scattered hair-bearing punctures.

Male genitalia as shown in Fig. 2.

Length: 15.0 mm.

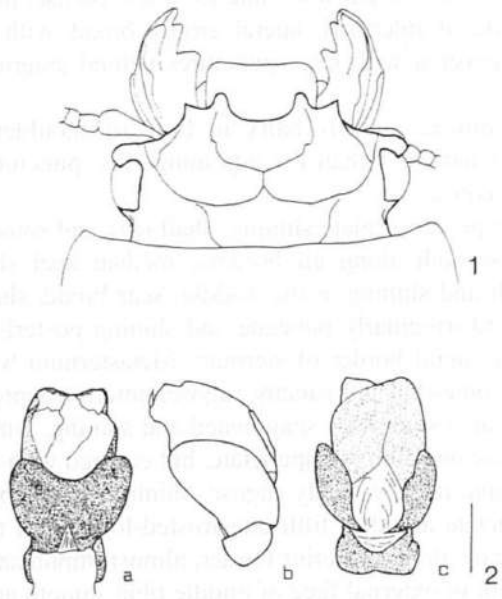
Holotype: ♂, Durangan, Mindoro Is., the Philippines, 11～13–IX–1983; paratypes: 2 ♀♀, same data as the holotype.

This new species is running down to *L. cyclotaenius* in GRAVELY's (1918) table, but is different from the latter in the absence of median tubercle of anterior margin of head. Incidentally, the new species is characterized by a combination of the following points: hypostomal process grooved; ligula without median keel; second segment of labial palpus shorter than the third; sides of elytra hairless. Therefore, it resembles *L. uenoi* and the following three new species, but the elytral shoulders are hairy in the latters.

Leptaulax luzonicus sp. nov.

(Figs. 3–4)

Black and shining.



Figs. 1–2. *Leptaulax intermedius* sp. nov.; 1, head; 2, male genitalia: a, dorsal view, b, lateral view, c, ventral view (Scale 0.5 mm).

Anterior margin of head with five tubercles, median one minute and obtuse, inner tubercle triangular, larger than outer one, with apex rounded, the distance between the two inner tubercles 1.8–1.9 times as long as that between inner and outer ones; outer tubercle triangular, with apex sharp; anterior angle of head minutely angulate; frontal ridge joining central tubercle with a short longitudinal ridge, tuberculate and strongly curved at the middle, and extending to base of inner tubercle; central tubercle moderately raised, parietal ridge very indistinctly joining supraorbital ridge, occasionally not joining it; supraorbital ridge rather distinctly joining supraoccipital one; frontal area quadrangular, convergent anteriorly, wider than long (L/W=0.6–0.7), smooth, with several hair-bearing punctures; depressed area of head almost smooth, with several hair-bearing punctures near the tubercles of frontal ridges, and before and behind parietal ridges; eye canthus smooth and shining, with a fine longitudinal ridge, anterior angle acute and somewhat reflexed, lateral border slightly notched; eye rather small; hypostomal process shagreened, subopaque, with a shallow longitudinal groove. Labrum with anterior border nearly straight. Antennal lamellae short. Middle part of mentum smooth, anterior border weakly arcuate; scar large, J-shaped; lateral piece with several large hair-bearing punctures. Ligula lacking median keel. Second segment of labial palpus shorter than third one. Mandible obtusely protrudent at the middle on external side in ventral view; left upper tooth obtuse, with a low convexity behind anterior tip; left anterior lower tooth sharp, larger than right one, with inner edge obtuse.

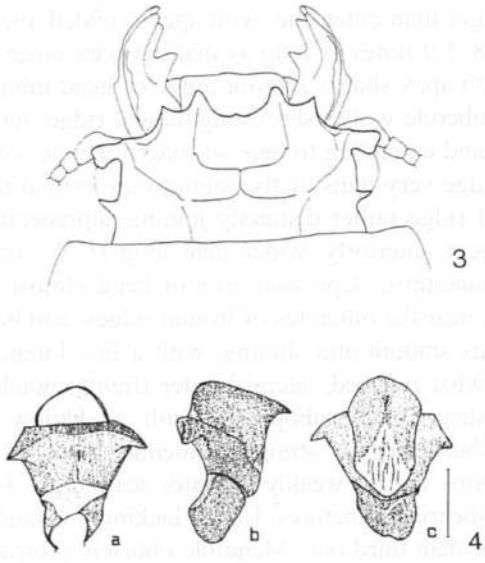
Pronotum weakly convex, hairless; anterior angle obtuse, not protrudent, median groove broad, abbreviated anteriorly, lateral groove broad, with large punctures; surface rather sparsely covered with large punctures behind anterior angles, and in and around lateral scars.

Elytra weakly convex, sparsely hairy in front of shoulders; grooves distinctly punctate, lateral ones narrower than the adjoining ribs, punctures in lateral grooves rounded; ribs weakly convex.

Prosternum with posterior plate shining, shallowly and somewhat rugosely punctate at the middle, smooth along all borders; median keel shagreened and hairy. Mesosternum smooth and shining at the middle; scar broad, shagreened and opaque anteriorly, sparsely and irregularly punctate and shining posteriorly, inner wall about 1/3 to 1/2 as long as lateral border of sternum. Metasternum with central area shallowly, minutely and somewhat indistinctly rugose, anterior depression almost absent; anterior intermediate area somewhat shagreened and shining, with scattered hair-bearing punctures, posterior one almost impunctate, but covered with large punctures along central area; lateral area narrow, finely rugose, shining. Each abdominal sternite narrowly and finely punctate at sides; fifth one frosted-looking at the middle; sixth one rather sharply marginate along posterior border, almost impunctate, frosted-looking at the middle. Integument of external face of middle tibia smooth and shining, with scattered hair-bearing punctures.

Male genitalia as shown in Fig. 4.

Length: 15.5 mm.



Figs. 3–4. *Leptaulax luzonicus* sp. nov.; 3, head; 4, male genitalia: a, dorsal view, b, lateral view, c, ventral view (Scale 0.5 mm).

Holotype: ♂, Banaue, Ifugao, Luzon Is., the Philippines, V–1988; paratypes: 2 ♂♂, 4 exs., same data as the holotype; 2 ♀♀, same locality as the holotype, V–1987; 1 ♀, same locality as the holotype, V–1991.

This new species is running down to *L. bicolor* in GRAVELY's (1918) table, but is different by the hairy shoulders. The new species is characterized by a combination of the following points: 1) hypostomal process shagreend and grooved; 2) ligula lacking median keel; 3) second segment of labial palpus shorter than third one; 4) frontal area with scattered hairs; 5) elytra hairless at sides, hairy in front of shoulders. It is different from *L. uenoi* IWASE and the following two new species in a combination of the following characters: median tubercle of anterior border of head present; head very sparsely punctate; mesosternal scars almost shining; last abdominal sternite almost impunctate; body small.

Leptaulax negrosensis sp. nov.

(Figs. 5–6)

Black and shining, ventral surface somewhat reddish.

Anterior margin of head with four or five tubercles, median one absent or very slightly and obtusely pointed anteriad; inner tubercle triangular, larger than outer one, with apex rounded, the distance between the two inner tubercles 1.5–1.7 times as long as that between inner and outer ones; outer tubercle triangular, acute; frontal ridge joining central tubercle with a short longitudinal ridge, tuberculate and strongly curved at the middle, and extending to inner tubercle; central tubercle rather highly raised; parietal ridge gradually becoming lower from middle to side, very indistinctly extending to supraorbital ridge, frequently short, ending before supraorbital ridge; supraorbital ridge indistinctly joining supraoccipital one; frontal area quadrangular, convergent anteriorly, wider than long (L/W=0.6), with scattered hair-bearing punctures; depressed area of head rather densely covered with large punctures in most part, sparsely so before and behind parietal ridges, some of the punctures bearing a hair near the tubercles of frontal ridges and near parietal ridges; eye canthus shining, with a fine longitudinal ridge, anterior angle rather acute, with apex rounded; eye large: hypostomal process shagreened and subopaque, with a shallow longitudinal groove. Labrum with anterior border very slightly arcuate or straight. Antennal lamellae rather long. Middle part of mentum with anterior border rather strongly protrudent anteriad; scar large, U-shaped; lateral piece with scattered hair-bearing punctures. Ligula lacking longitudinal keel. Second segment of labial palpus shorter than third one. Mandible obtusely angulate on external side in ventral view; left upper tooth rectangular, with a rather high convexity behind anterior tip; left anterior lower tooth triangular, larger than right one, with inner edge truncate.

Pronotum weakly convex, hairless; anterior angle slightly protrudent anteriorly, with apex rectangular; lateral groove rather broad, with two or three irregular rows of punctures; median groove short; surface rather densely covered with large punctures

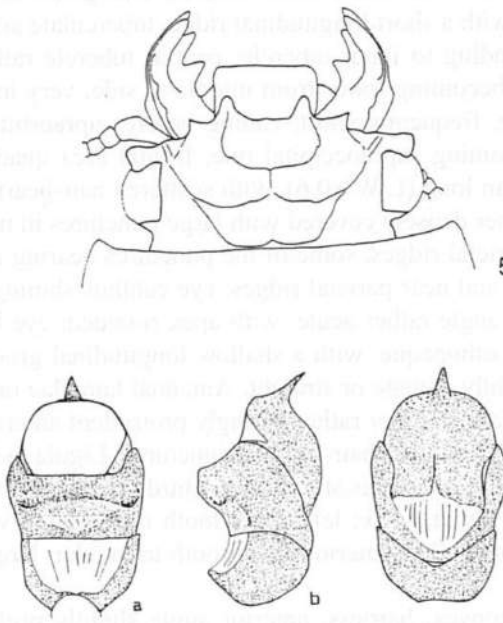
on lateral 1/3.

Elytra slightly convex, sparsely hairy in front of shoulders; four dorsal grooves with small punctures, fifth to tenth ones with large round punctures, narrower than the adjoining ribs; dorsal ribs almost flat.

Prosternum with posterior plate smooth and weakly raised along all borders, shining, finely punctate or rugose at the middle. Mesosternum indistinctly frosted-looking at the middle, rather widely shagreened and opaque along lateral borders and in scars; scar rather broad, rather shallow, inner wall of scar about 1/2 as long as lateral border of sternum. Central area of metasternum slightly uneven, with a few large punctures, and with shallow triangular depression anteriorly; anterior intermediate area indistinctly shagreened and shining, with scattered shallow punctures and several hairs; posterior one rather densely punctate along central area, with several punctures at the middle; lateral area not sharply defined from intermediate area, narrow, finely rugose and subopaque.

Lateral scars of abdominal sternites narrow, finely punctate; fifth one frosted-looking at the middle; sixth one sharply marginate along posterior border, weakly emarginate at the middle of posterior margin, finely punctate at sides and along anterior border, impunctate and frosted-looking at the middle, with posterior marginal groove at the median 1/2.

Integument of external face of middle tibia smooth and shining, with scattered



Figs. 5–6. *Leptaulax negrosensis* sp. nov.; 5, head; 6, male genitalia: a, dorsal view, b, lateral view, c, ventral view (Scale 0.5 mm).

hair-bearing punctures.

Male genitalia as shown in Fig. 6.

Length: 15.5–16.5 mm.

Holoype: ♂, Mambucal, Negros Is, the Philippines, V–1988; paratypes: 2 ♂♂, 4 ♀♀, 5 exs., same data as the holotype.

The new species resembles the preceding new species, *L. luzonicus*, but is different from the latter in the following points: head densely punctate; mesosternal scars opaque; lateral area of metasternum rugose and subopaque.

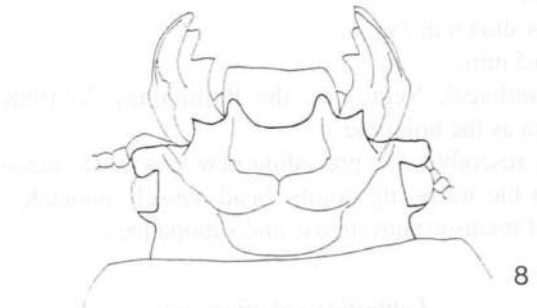
Leptaulax sakaii sp. nov.

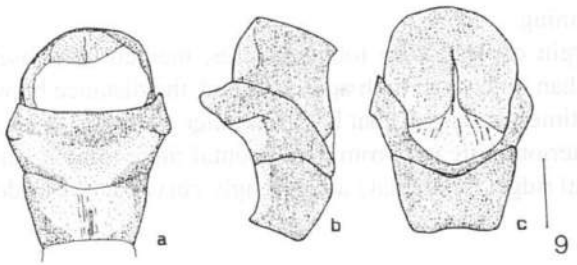
(Figs. 7–9)

Black and shining.

Anterior margin of head with four tubercles, median one absent; inner tubercle triangular, larger than outer one, with apex rounded, the distance between the two inner tubercles 1.9–2.0 times as long as that between inner and outer ones; outer tubercle triangular, acute; anterior angle not prominent; frontal ridge joining central tubercle with a short longitudinal ridge, tuberculate and strongly curved at the middle, and extending

Fig. 7. *Leptaulax sakaii* sp. nov., dorsal aspect.





Figs. 8–9. *Leptaulax sakaii* sp. nov.; 8, head; 9, male genitalia: a, dorsal view, b, lateral view, c, ventral view (Scale 0.5 mm).

to inner tubercle; central tubercle moderately raised, rectangular in lateral view; parietal ridge gradually becoming lower from the middle to side, joining supraorbital one; supraorbital ridge indistinctly joining supraoccipital one; frontal area quadrangular, wider than long (L/W=0.5), with scattered hair-bearing punctures; depressed area of head including the part just behind outer tubercles rather sparsely covered with large punctures, some of which bear a hair near the tubercles of frontal area, and before and behind parietal ridges; eye canthus smooth with several hair-bearing punctures, anterior angle widely rounded; eye rather large; hypostomal process shagreened and subopaque, with a longitudinal groove shallow. Labrum with anterior border slightly emarginate. Antennal lamellae rather short. Middle part of mentum smooth, with anterior border arcuate, scar rather small, elliptical; lateral piece with scattered hair-bearing punctures. Ligula with vestigial median keel. Second segment of labial palpus shorter than third one. Mandible very obtusely angulate on external side in ventral view; left upper tooth rectangular, with a higher convexity behind anterior tip; left anterior lower tooth triangular, larger than right one, with inner edge vertically truncate.

Pronotum moderately convex, hairless; anterior angle not protrudent, lateral groove broad, with two irregular rows of punctures, posterior border distinctly emarginate at median 1/3; median groove fine, lateral scars small, rounded; surface sparsely punctate on lateral 1/4 (female) or sparsely so behind anterior angles, and in and

around scars (male).

Elytra weakly convex, with hair tufts in front of shoulders, fused; grooves distinctly punctate, lateral ones narrower than the adjoining ribs, but punctures in lateral grooves somewhat transverse; dorsal ribs weakly convex; hindwings incipiently reduced.

Prosternum with posterior plate smooth along all borders, shining and minutely punctate at the middle. Mesosternum indistinctly frosted-looking, very shallowly and semicircularly depressed at the middle, shagreened and subopaque along lateral borders and in scars; scar rather broad, inner wall not sharp, about 2/5 as long as lateral border of sternum. Central area of metasternum polished, with a slight transverse depression behind the middle, anterior depression triangular and shallow; anterior intermediate area smooth and shining, with scattered hair-bearing punctures; posterior intermediate area with scattered large punctures along central area and at the middle; lateral area not sharply defined from intermediate area, somewhat broad, widest at basal 2/3, finely rugose, shining. Lateral scars of abdominal sternites rather narrow; sixth one almost smooth, finely punctate along anterior border, sharply marginate along posterior border. Integument of external face of middle tibia smooth, with scattered hair-bearing punctures.

Male genitalia as shown in Fig. 9.

Length: 18.5 (male)–19.0 (female) mm.

Holotype: ♂, Mambucal, Negros Is., the Philippines, VI–1990; paratype: 1 ♀, same locality as the holotype, VIII–1990.

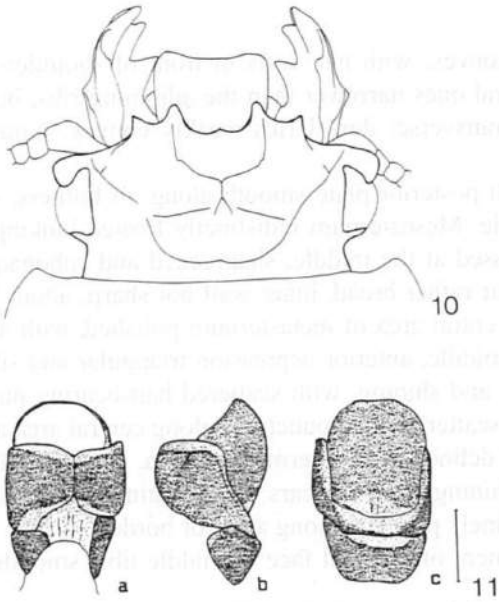
This new species resembles *L. uenoi* IWASE and two preceding species, but is different from the latters in a combination of the following points: median tubercle of anterior margin of head absent; head rather densely punctate; pronotum moderately convex.

Leptaulax mindanaoensis sp. nov.

(Figs. 10–11)

Black and shining, ventral surface somewhat reddish.

Anterior margin of head with five tubercles, median one small and very obtuse; inner tubercle triangular, rather acute, somewhat larger than outer one, with apex rounded, the distance between the two inner tubercles 2.0 times as long as that between inner and outer ones; outer tubercle triangular, with apex rather sharp; anterior angle not prominent; frontal ridge joining central tubercle with a short longitudinal ridge, slightly tuberculate at the middle, obtusely, angulately curved before the middle, and extending to inner tubercle; central tubercle rather highly raised, acute in lateral view; parietal ridge short, gradually becoming lower from the middle to side; supraorbital ridge joining supraoccipital one; frontal area semicircular, wider anteriorly, wider than long (L/W=0.6–0.7), hairless, with scattered large punctures; depressed area of head with scattered large hairless punctures just behind outer tubercles, and with hair-bear-



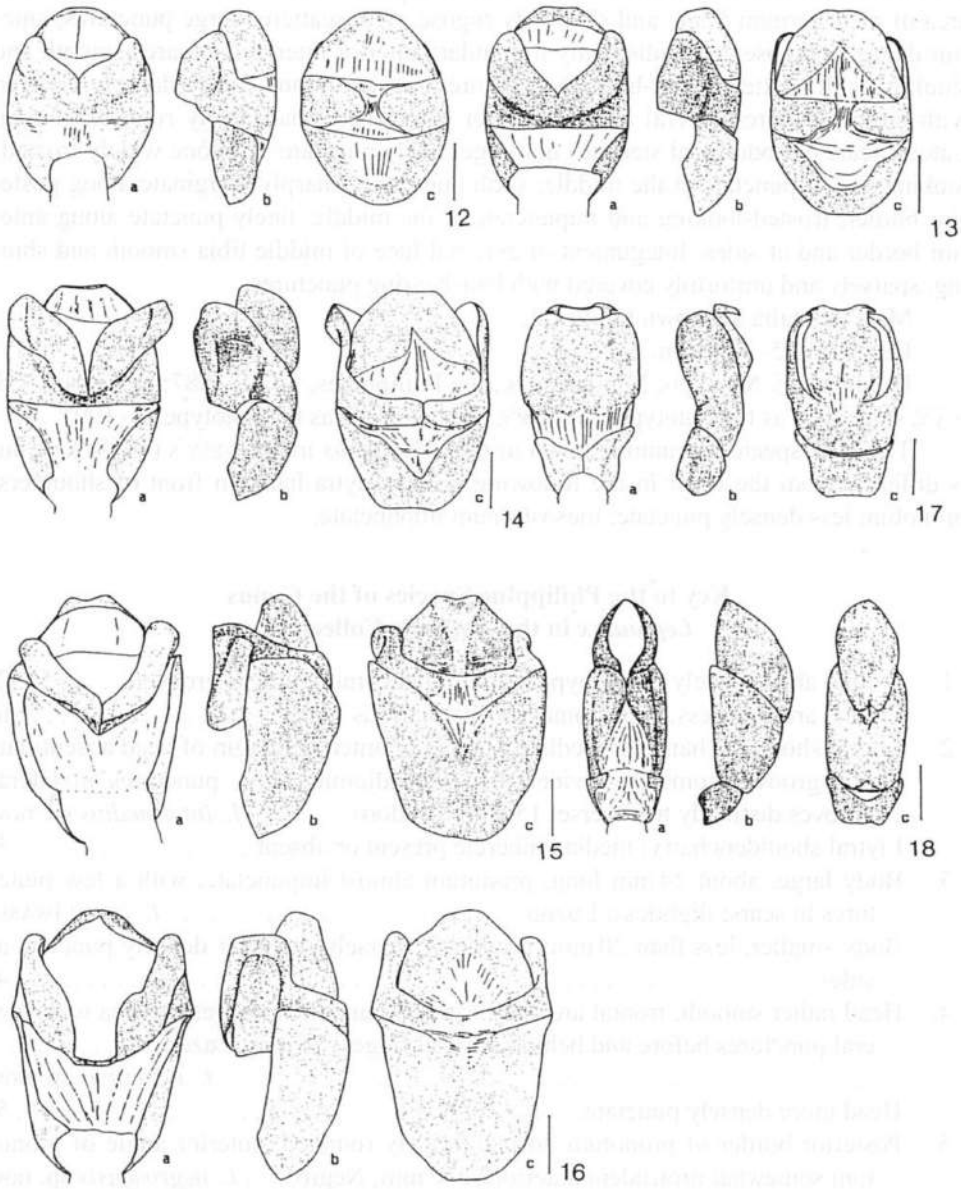
Figs. 10–11. *Leptaulax mindanaoensis* sp. nov.; 10, head; 11, male genitalia: a, dorsal view, b, lateral view, c, ventral view (Scale 0.5 mm).

ing ones before and behind parietal ridges; eye canthus with a fine longitudinal ridge, shagreened in front of the ridge, smooth and shining behind it, anterior angle widely rounded; eye rather large; hypostomal process smooth with a longitudinal groove, the bottom of which is shagreened. Labrum with anterior border weakly emarginate, left anterior angle more pointed anteriorly than right one. Antennal lamellae short. Middle part of mentum frequently with a few punctures, anterior border moderately arcuate, scar large, J-shaped; lateral piece with scattered hair-bearing punctures. Ligula with a fine median keel indistinct. Second segment of labial palpus as long as third one. Ventral face of mandible weakly but rather sharply pointed at the middle on external side in ventral view; left upper tooth rather low, gradually and slightly raised posteriorly, with anterior tip rectangular; left anterior lower tooth triangular, larger than right one, with inner edge sharp.

Pronotum weakly convex, convergent anteriorly, hairless; anterior border weakly emarginate in lateral 1/4, anterior angle obtuse, slightly protrudent or not, lateral scar shallow; surface rather densely punctate on lateral 1/3 including scars.

Elytra hairy on anterior vertical portion and in front of shoulders; dorsal grooves distinctly punctate, punctures in lateral ones transverse; dorsal ribs slightly convex, lateral one somewhat narrower than the adjoining grooves.

Prosternum with posterior plate shining, smooth and somewhat raised along all borders, indistinctly punctate inside the smooth margins, smooth at the middle. Mesosternum smooth at the middle, shagreened and opaque along lateral borders and



Figs. 12–18. Male genitalia of *Leptaulax* spp.; a, dorsal view, b, lateral view, c, ventral view (Scale: 0.5 mm). —— 12, *L. manillae* KUWERT from Luzon; 13, *L. manillae* KUWERT from Mindanao; 14, ? *L. bicolor* (F.) from Luzon; 15, ? *L. bicolor* (F.) from Negros; 16, ? *L. bicolor* (F.) from Mindanao; 17, *L. humerosus* KUWERT from Palawan; 18, ? *L. dentatus* (F.) from Luzon (body length: 29 mm).

in scars; scar rather broad, inner wall 2/5 as long as lateral border of sternum. Central area of metasternum finely and shallowly rugose, with scattered large punctures, anterior depression absent or indistinctly triangular; anterior intermediate area smooth and shining, with scattered hair-bearing punctures, posterior one rather densely covered with large punctures; lateral area narrow or somewhat broad, finely rugose, shining. Lateral scars of abdominal sternites not large, finely punctate; fifth one widely frosted-looking and impunctate at the middle; sixth one rather sharply marginate along posterior border, frosted-looking and impunctate at the middle, finely punctate along anterior border and at sides. Integument of external face of middle tibia smooth and shining, sparsely and uniformly covered with hair-bearing punctures.

Male genitalia as shown in Fig. 11.

Length: 15.5–18.0 mm.

Holotype: ♂, Mt. Apo, Mindanao Is., the Philippines, 15–II–1987; paratypes: 1 ♂, 3 ♀♀, same date as the holotype; 1 ♂, 2 ♀♀, same locality as the holotype, II–1991.

This new species is running down to *L. cyclotaenius* in GRAVELY's (1918) key, but is different from the latter in the following points; elytra hairy in front of shoulders; pronotum less densely punctate; mesosternum impunctate.

Key to the Philippine Species of the Genus *Leptaulax* in the Author's Collection

1. Frontal area sparsely hairy; hypostomal process more or less grooved . . . . . 2.
— Frontal area hairless; hypostomal process various . . . . . 6.
2. Elytral shoulders hairless; median tubercle of anterior margin of head absent; lateral grooves somewhat wider than the adjoining ribs, punctures in lateral grooves distinctly transverse; 15 mm; Mindoro . . . . . *L. intermedius* sp. nov.
— Elytral shoulders hairy; median tubercle present or absent . . . . . 3.
3. Body large, about 24 mm long; pronotum almost impunctate, with a few punctures in scars; flightless; Luzon. . . . . *L. uenoi* IWASE.
— Body smaller, less than 20 mm; pronotum sparsely or rather densely punctate at sides . . . . . 4.
4. Head rather smooth, frontal area with several punctures, depressed area with several punctures before and behind parietal ridges; 16 mm; Luzon . . . . . *L. luzonicus* sp. nov.
— Head more densely punctate. . . . . 5.
5. Posterior border of pronotum normal, widely rounded; anterior angle of pronotum somewhat protrudent anteriorly; 16 mm; Negros . . . *L. negrosensis* sp. nov.
— Posterior border of pronotum emarginate at the middle; anterior angle of pronotum not protrudent; flightless; 19 mm; Negros. . . . . *L. sakaii* sp. nov.
6. Hypostomal process with a longitudinal groove; elytral shoulders hairy; central area of metasternum punctate; 16–18 mm; Mindanao . . . . . *L. mindanaoensis* sp. nov.

— Hypostomal process without groove ..... 7.
7. Parietal ridge short ..... 8.
— Parietal ridge joining supraorbital ridge ..... 9.
8. Elytral shoulders hairy; eighth to tenth grooves of elytra worn-looking; 16 mm; Palawan ..... *L. humerosus* KUWERT (Fig. 17).
— Elytral shoulders hairless; elytra almost shining; 21–30 mm; Luzon, Mindoro, Negros, Mindanao, Palawan ..... ? *L. dentatus* (FABRICIUS) (Fig. 18).
9. Elytral shoulders hairy; pronotum with a few hairs in lateral scars; 19–23 mm; Mindanao ..... ?*L. bicolor* (FABRICIUS) (Fig. 16) (=*eschscholtzi* KAUP, sensu KUWERT).
— Elytral shoulders hairless or with a few hairs; pronotum hairless ..... 10.
10. Last abdominal sternite rather densely hairy; marginal groove of anterior femur vestigial ; 15–18 mm; Luzon, Negros, Mindanao ..... *L. manillae* KUWERT (Figs. 12–13).
— Last abdominal sternite hairless ..... 11.
11. Pronotum sparsely punctate behind anterior angles, and in and around scars, anterior angles not protrudent; 17–20 mm; Luzon ..... ? *L. bicolor* (FABRICIUS) (Fig. 14).
— Pronotum rather uniformly punctate at sides, anterior angles somewhat protrudent; 19–22 mm; Negros ..... ? *L. bicolor* (FABRICIUS) (Fig. 15).

List of the Available Names (Described from the Philippines)
Excluding those in the Above Key

Specific name	Author	Year	GRAVELY (1914, 1918)
differentispina	KUWERT	1891	*bicolor*
separandus	KUWERT	1891	*bicolor*
medius	KUWERT	1891	*bicolor*
	(type loc.=Ceram and the Philippines)		
medius ab. *divaricatus*	KUWERT	1898	*bicolor*
geminatus	KUWERT	1898	*dentatus*
palawanicus	ZANG	1905	*bicolor*

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要　約

岩瀬一男：フィリピン産クロツヤムシ，*Leptaulax* 属の5新種．—— フィリピンに産するクロツヤムシの *Leptaulax* 属に属する5種を，新種として記載した．ミンドロ島の *L. intermedius*，ルソン島の *L. luzonicus*，ネグロス島の *L. sakaii* と *L. negrosensis* の4種は，ルソン島から記載された *L. uenoi* IWASE に近縁なものと思われる．ミンダナオ島の *L. mindanaoensis* は，大スンダ地域に広く分布する *L. cyclotaenius* KUWERT に似ている．また，著者の手元にある標本をもとに，フィリピン産の *Leptaulax* 属の暫定的な種検索表を付載した．

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Analysis of Wood Sugars in the Dead Wood Eaten by the Larvae of *Ceruchus lignarius* and *Prismognathus angularis* (Coleoptera, Lucanidae) by Gas-liquid Chromatography

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Abstract The sugar contents in the dead wood eaten by the larvae of *C. lignarius* and *P. angularis* are analyzed by using gas-liquid chromatography (GLC). The content of xylose in all the *C. lignarius* samples is markedly small, whereas those in the samples of *P. angularis* is relatively large. The contents of alkaline extractives and total wood sugars in all the samples of *C. lignarius* correspond to those of the advanced decay stage of brown rotten wood, and those of the samples of *P. angularis* to those of various stages of white rotten wood.

Both *Ceruchus lignarius* and *Prismognathus angularis* are small-sized lucanid beetles with overlapped distribution in the Cool-temperature Zone of Japan. The previous studies (ARAYA, 1993 a–b) revealed that *C. lignarius* is stenophagous for advanced decay stage of brown rot, whereas *P. angularis* is euryphagous for both decay stages and decay types.

Holocellulose is the total sugar content in wood cell wall and is a mixture of both cellulose and hemicellulose. Of these, cellulose consists solely of glucose, whereas hemicellulose is non-cellulosic polysaccharides comprising various sugars such as glucose, galactose, mannose and xylose. Compared with cellulose, hemicellulose is easily decomposed by wood decaying fungi, and composition of each hemicellulose fraction changes in a characteristic fashion depending on both the decay type and stage (TAKAHASHI, 1986). Thus, detailed analysis of wood sugars is needed to know precisely relationship between the occurrence of lucanid larvae and chemical properties of the decayed wood. In the present study, the sugar contents in the dead wood eaten by the larvae of *C. lignarius* and *P. angularis* are analyzed by using gas-liquid chromatography (GLC).

Materials and Methods

Sample materials. Four pieces of wood in which the larvae of *C. lignarius* occurred and four in which *P. angularis* occurred were collected randomly at Inabu-chô, northeastern Aichi Prefecture, the same place as in the previous studies in 1990

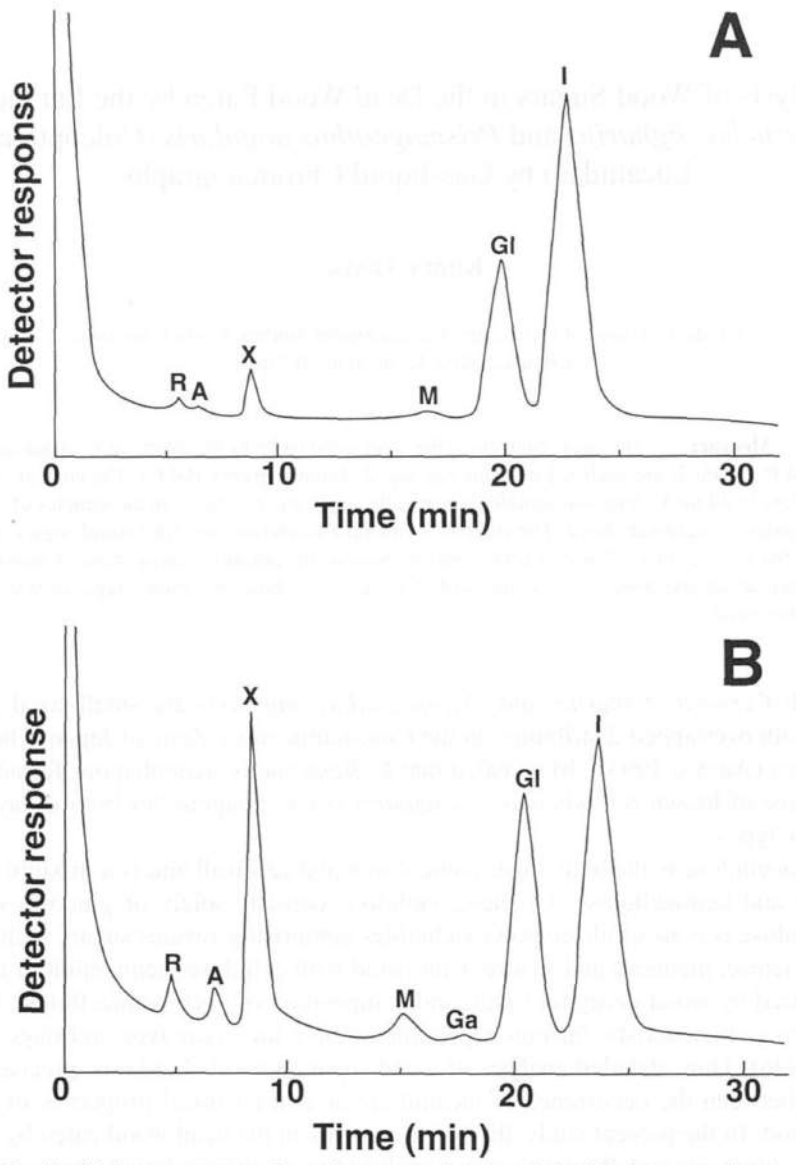

Fig. 1. Gas-liquid chromatograms of wood sugars analyzed as their alditol acetates in a sample of *C. lignarius* (top, sample No. 1) and a *P. angularis* (bottom, No. 5) with their relative retention times to inositol (t_R). R=rhamnose, t_R=0.15; A=arabinose, t_R=0.23; X=xylose, t_R=0.30; M=mannose, t_R=0.65; Ga=galactose, t_R=0.74; Gl=glucose, t_R=0.81; I=inositol (internal standard).

(ARAYA, 1993 a–b). Decay types and wood species were identified by macroscopic observation for each sample. A small wood piece was taken from the vicinity of a 3rd (final) instar larva in the collected dead wood piece. The wood piece was ground into

Table 1. The results of analysis of chemical components in the wood samples.

Samples code	Lucanid species	Tree species	Decay type	Rhamnose (%)	Arabinose (%)	Xylose[a] (%)	Mannose (%)	Galactose (%)	Glucose (%)	Total sugar (%)	Alkaline[a] extractives (%)
1	Cl	Fc	B.R.	0.3	N.D.	1.6	0.2	N.D.	14.3	16.4	77.4
2	Cl	Fc	B.R.	N.D.	N.D.	2.2	N.D.	0.1	18.3	20.6	77.2
3	Cl	Qm	B.R.	N.D.	N.D.	1.8	1.3	0.2	16.2	19.5	79.8
4	Cl	Bp	B.R.	0.5	0.3	2.7	0.6	N.D.	12.0	16.1	77.5
5	Pa	Fc	W.R.	1.0	1.0	15.7	1.2	N.D.	26.9	45.8	33.4
6	Pa	Qm	W.R.	0.6	N.D.	3.3	N.D.	N.D.	14.0	17.9	50.7
7	Pa	Qm	W.R.	0.6	0.6	13.3	1.0	N.D.	16.9	32.4	45.1
8	Pa	Bp	W.R.	1.5	1.3	22.0	N.D.	N.D.	26.9	51.7	33.9
9	—	Fc	S.W.	0.8	0.35	16.1	0.8	N.D.	39.0	57.0	22.1

Cl=*Ceruchus lignarius*; Pa=*Prismognathus angularis*; Fc=*Fagus crenata*; Qm=*Quercus mongolica*; Bp=*Betula platyphylla*; B.R=brown rot.; W.R.=white rot.; S.W=sound wood.; N.D=not determined.
[a]significantly different between the samples of *C. lignarius* and *P. angularis* ($p<0.05$, MANN-WHITNEY's U-test).

meal, and then contents of wood sugars and alkaline extractives were analyzed for each sample. The analysis was also made for a piece of sound wood of the Japanese beech, *Fagus crenata*.

Analysis of alkaline extractives. Alkaline extractives were calculated from weight loss after refluxing the wood meal with 1% sodium hydroxide solutions for one hour at 100°C. These include extraneous components (protein, pectin, tannin, etc.), low-molecular weight lignin and hemicellulose.

Analysis of wood sugars. Lipophilic components were removed from the wood meal by extraction with ethanol/benzene (1/1) in the same way as in the previous study (ARAYA, 1993 b), and then the wood meal was hydrolyzed with 72% sulfuric acid. Acid hydrolysates, which include wood polysaccharides, were reduced with sodium borohydride, and then the reduced monosaccharides, i.e. alditols, were analyzed by GLC after acetylation: alditol-acetate method (see BORCHARD & PIPER, 1970; SHINODA & INABA, 1985 for detail). Inositol solution was added as the internal standard (Alditol-Acetates Method, see SHINODA & INABA, 1985 for detail). GLC analysis was performed on a Shimadzu GC–14 Gas Chromatograph equipped with FID detector. The alditol acetates were separated on a glass column (2 m×3.0 mm I.D.) packed with 3% ECNSS–M coated on Gas Chrom Q (60–80 mesh). Carrier gas: N_2, 1.25 kg/cm^2, column temp.: 190°C, injection and detection temp.: 230°C. The contents of each sugar are calculated by using the formula shown by BORCHARD and PIPER (1970).

Estimation of decay stage. Decay stage was estimated by comparing the contents of alkaline extractives and the total wood sugars (the latter was nearly equivalent to the holocellulose contents) of each sample with those of the typical both brown and white rotten woods (TAKAHASHI, 1986; ARAYA, 1993 b).

Results and Discussion

Representative gas-liquid chromatograms for each species are shown in Fig. 1, and the results of the analyses are listed in Table 1. All the results are presented as the percentage to the moisture free samples weight.

All the materials from the wood eaten by *C. lignarius* contained significantly larger amounts of alkaline extractives (77.2 to 79.8%) than those eaten by *P. angularis* (33.4 to 50.7%) (MANN-WHITNEY's U-test, $p<0.05$).

In both *C. lignarius* and *P. angularis* samples, the contents of galactose, mannose, arabinose and rhamnose were quite small and not determinable in some samples. This is because the contents of these sugars were also quite small in the sound wood. The glucose contents of *P. angularis* samples (14.0 to 26.9%) were relatively larger than those of *C. lignarius* (12.0 to 18.3%), but no significant difference was detected. The content of xylose in all the *C. lignarius* samples was markedly small (1.6 to 2.7%), whereas those in the samples of *P. angularis* was relatively large (3.3 to 22.0%) though it varied considerably. Significant difference in the xylose contents was detected between the samples of two lucanid species (MANN-WHITNEY's U-test, $p<0.05$).

The contents of alkaline extractives and total wood sugars in all the samples of *C. lignarius* corresponded to those of the advanced decay stage of brown rotten wood (total weight loss 40 to 50%), whereas those of the samples of *P. angularis* to those of various stages of white rotten wood (total weight loss 20 to 60%). These results agree well with those of the previous study (ARAYA, 1993 b).

Brown rotten wood is fewer in frequency than white rotten one in cool temperature forest (ARAYA, 1993 a). It is known that brown rotten wood of the middle and advanced decay stages contains much greater amount of lignin than white rotten wood does (TAKAHASHI, 1986; ARAYA, 1993 b). Lignin is generally regarded as a quantitative digestion inhibiting factor for insects (OGUSHI, 1992). Further, as shown in the present study, brown rotten wood contained markedly small amounts of wood sugars which are regarded as calorific nourishments. These facts suggests that brown rotten wood (at least that eaten by *C. lignarius*) is inferior to white rotten wood as diet. If so, it is rather strange that *C. lignarius* is stenophagous for brown rotten wood in spite of its inferiority as diet.

Anyway, further rearing experiments of larvae using the brown and white rotten wood of various decay stages will be necessary to confirm the above-mentioned suggestion.

Acknowledgments

I wish to thank Prof. K. MURAKAMI and Dr. F. NAKATSUBO, Kyoto University, for technological support, and Dr. M. KON, Shiga Prefectural University, for his critical reading of the manuscript. I also thank Emeritus Prof. T. HIDAKA, Kyoto University, for his kind advice and encouragement during the course of this study. This study is sup-

ported in part by a Grant-in-Aid from the Ministry of Education, Science and Culture, Japan, and JSPS Research Fellowships for Young Scientists.

要　約

荒谷邦雄：ガスクロマトグラフィーによるツヤハダクワガタとオニクワガタの発生している腐朽材中の木材構成糖の分析．—— ツヤハダクワガタとオニクワガタの発生している腐朽材の成分化学的な特性を調べるために，材中の木材構成糖をガスクロマトグラフィーによって分析・定量した．また，同時にそれぞれの材について，腐朽のタイプとその進度を推定するのに有効なアルカリ抽出物量の測定も行った．

ツヤハダクワガタの発生している腐朽材中の木材構成糖類は，健全材と比べるといずれもかなり減少していたが，とくにキシロースの減少がいちじるしかった．これに対して，オニクワガタの発生している腐朽材では，材によって差はあったが，ツヤハダクワガタの場合に比べると，糖類全体の減少の程度は低く，どの糖類も一様に減少していた．アルカリ抽出物量は，ツヤハダクワガタの材でいちじるしく多く，オニクワガタの材では，材によってばらつきがあったものの比較的少なかった．これらの分析結果は，ツヤハダクワガタが褐色腐朽の末期の状態にある材に特異的に穿孔すること，また，オニクワガタは主として白色腐朽のかなり幅広い腐朽進度にある材に穿孔することをあらためて裏づけるものである．

ところで，褐色腐朽材は，白色腐朽材に比べると出現頻度が低いだけでなく，昆虫にとって量的阻害物質となるリグニンを多量に含んでいる．そのうえ，今回の結果から，ツヤハダクワガタが特異的に穿孔する褐色腐朽材は，代謝のエネルギー源として消化・利用され得る木材構成糖類の含有量が低く，白色腐朽材と比べるに栄養面でもかなり劣ったものであることも示唆された．ツヤハダクワガタが，なぜこのように餌資源として質の良くない褐色腐朽材を選好するのか非常に興味深い．もしかすると，褐色腐朽材におけるキシロースの含有量の低さがなにか関係しているのかもしれない．いずれにせよ今後は，さまざまな腐朽進度にある褐色・白色腐朽材が幼虫の生存や成長に与える影響について，飼育実験で確認することが不可欠であろう．

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Glipa sauteri PIC (Coleoptera, Mordellidae) Newly Recorded from Northern Vietnam

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The mordellid beetle, *Glipa sauteri* PIC, 1911, has hitherto been known from the Islands of Taiwan and Japan. However, I was recently able to examine Vietnamese materials of the species. I am going to record them as the first record from Continental Asia.

Glipa sauteri PIC

Glipa sauteri PIC, 1911, Dtsch. ent. Nat.-Bibl., (2): 190 (Taiwan). —— TAKAKUWA, 1976, Elytra, Tokyo, **3**: 15 (Ishigaki-jima of the Ryukyus); 1990, Bull. Kanagawa pref. Mus., (Nat. Sci.), p. 101, figs. (Taiwan, Yaku-shima, Nakano-shima, Amami-oshima & Ishigaki-jima of the Ryukyus).

Glipa (*Macroglipa*) *sauteri*: NAKANE, 1960, Ent. Rev. Japan, **12**: 17 (Yaku-shima & Amami-oshima of the Ryukyus).

Glipa masatakai CHÛJÔ, 1960, Niponius, Takamatsu, **1** (8):1, fig. (Nakano-shima of the Ryukyus).

Glipa sauteri masatakai: NOMURA, 1963, Icon. Ins. Japon. Col. nat. ed., **2**: 247.

Specimens examined. Cuc Phuong, Ninh Binh Prov., N. Vietnam: 1 ♀, 30–IV–1994, H. KARUBE leg.; 1 ♀, 7–V–1994, S. KARUBE leg. Tam Dao, Vinh Phu Prov., N. Vietnam: 1 ♀, VI~VII–1992, local collector; 1 ♂, 1~7–V–1996, Y. ARITA leg.; 2 ♂♂, 1 ♀, VI–1996, local collector.

Distribution. Taiwan, N. Vietnam, Japan (Yaku-shima, Nakano-shima, Amami-oshima and Ishigaki-jima of the Ryukyus).

The Vietnamese individuals are doubtless identical with the Taiwanese and Japanese ones in their characteristic facies and male genitalia.

I am grateful to Prof. Dr. Yutaka ARITA, Mr. Haruki KARUBE and Mrs. Sachiyo KARUBE for their kindness in supplying with valuable materials.

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Hybosorine Scarabaeid Beetles from Northwest Thailand

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Abstract Four species of hybosorine scarabaeid beetles are recorded from Northwest Thailand, with description of a new species belonging to the genus *Phaeochroops*. The new species is similar to *P. laotianus* PAULIAN, but can be distinguished from the latter mainly by the configuration of male genitalia.

Recently, Dr. Kimio MASUMOTO kindly lent me for taxonomic study many specimens of hybosorine scarabaeid beetles from his collection made in Northwest Thailand. On the other hand, I also made a small collection of hybosorines some years ago in the vicinities of Chiang Mai, Northwest Thailand. The collections consist of four species, which apparently include a new species of the genus *Phaeochroops*. In the present paper, I am going to record them, with description of the new species. The abbreviations used herein are already explained in my previous paper (cf. NISHIKAWA, 1989).

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his kindness in critically reading the original manuscript of this paper. I am also grateful to Dr. Kimio MASUMOTO, Institute of Human Living Sciences, Otsuma Women's University, Tokyo, for giving me the opportunity to examine many hybosorines. My thanks are due to Messrs. MANIT Yimyaem of Chiang Mai, Thailand, Yoshikazu MIYAKE of Tama City, Terutsune ABE, Tokyo, Yuzuru NAKAMURA of Japan Teachers Union, Tokyo, and Koichi KAWASAKI of Higashi Chûgakkô Junior High School, Zama, for their kind help.

Phaeochroops lakhonicus KUIJTEN, 1981

Phaeochroops lakhonicus KUIJTEN, 1981, Zool. Verh., Leiden, (183), pp. 35–36, figs. 42–44; type locality: Lakhon.

Specimens examined. 48 exs., Mt. Doi Inthanon, NW Thailand, 24–III–1988, K. MASUMOTO & Y. MANIT leg.; 46 exs., same locality, 1,700–1,750 m in alt., 31–III–1989, M. NISHIKAWA leg. (carrion traps); 11 exs., Mt. Doi Pui and Mt. Doi Suthep, Chiang Mai, NW Thailand, 22–III–1988, 30–VII~5–VIII–1988, 24–V–1989, and 17–VI–1989, K. MASUMOTO & Y. MANIT leg.; 184 exs., Mt. Doi Suthep, 1,100 m in alt., 1~6–IV–1989 and 21–IX–1993, M. NISHIKAWA leg. (carrion traps); 2 exs., Mt. Doi Angkhang, 1,750 m in alt., Amphoe Fang, Chiang Mai, NW Thailand, 23–V and 19–

VI–1989, K. MASUMOTO & Y. MANIT leg.; 1 ex., Maesa Villege, Chiang Mai, NW Thailand, 4–VII–1990, Y. MANIT leg.; 1 ex., Mt. Doi Mon Unggate, Samoeng, Chiang Mai, NW Thailand, 11–VIII–1989, Y. MANIT leg.

Phaeochroops masumotoi M. NISHIKAWA, sp. nov.

(Figs. 1–3)

Male and female. Length 8.55–8.92 mm in male, 8.01–9.10 mm in female; width 4.75–5.00 mm in male, 4.50–5.15 mm in female.

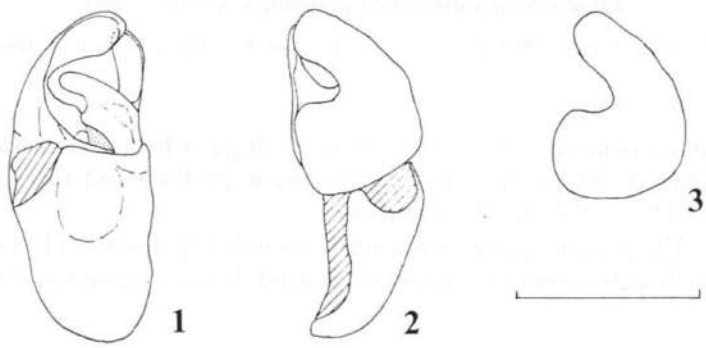
Body small in size, elongate-pyriform, blackish brown except for mouth-parts, labrum, head, antennae, epipleura and appendages reddish brown; pronotum also reddish brown, though the middle part is blackish brown; surface clothed with suberect yellowish setae; ventral surface almost reddish brown.

Head subtrapezoidal, slightly depressed, distinctly longer than width; labrum transverse, trapezoidal, foveate, the fovea with a thick, erect seta, which is shorter than those on head, pronotum and elytra; front margin weakly rounded and bordered; genae with a tuft of setae; eyes slightly prominent; surface setiferous, densely foveate, the foveae being smaller and sparser than those on labrum.

Pronotum trapezoidal, gently convex, distinctly depressed along lateral margins in basal halves, widest at base, PW/HW 1.86–1.97 (M 1.92) in male, 1.88–2.09 (M 2.00) in female, PW/PL 1.40–1.52 (M 1.46) in male, 1.40–1.49 (M 1.46) in female; front margin broadly emarginate and bordered, the border continuing to hind angles; front angles strongly projected forwards; lateral margins converging apicad, gently arcuate, weakly crenulate, with a low of erect setae, which are longer and thicker than those on surface, and become shorter posteriad; hind angles subrectangular, crenulate as on lateral margins; basal margin bisinuate; surface densely punctate, the punctures smaller than those on head. Scutellum tongue-shaped, sparsely punctate, the punctures setiferous.

Elytra convex, widest behind the middle, EW/PW 1.37–1.45 (M 1.39) in male, 1.38–1.45 (M 1.41) in female, EL/PL 2.43–2.59 (M 2.50) in male, 2.37–2.56 (M 2.47) in female, EL/EW 1.20–1.27 (M 1.23) in male, 1.18–1.22 (M 1.20) in female; lateral margins arcuate and carinate, entirely setiferous, the setae in basal 2/3 longer and thicker than those along the lateral margins of pronotum, becoming shorter apicad; apices with sutural angles minutely pointed; disc slightly depressed in mid-basal portion, suddenly descending towards apex at about apical 1/7, with a pair of three almost bifarious costae, the first costa disappearing at apical 1/7, with a low of punctures, the punctures equal in shape to those on intervals; the second one shorter than the first; the third one indistinct, the shortest; intervals weakly depressed, rather regularly punctate, the punctures small, horseshoe-shaped, umbilicate on apical portion, almost setiferous; the interspace among the punctures polished; epipleura entire, slightly concave, clothed with short setae.

Ventral surface almost entirely clothed with adpressed setae as long as those on



Figs. 1–3. *Phaeochroops masumotoi* M. NISHIKAWA, sp. nov., from Mt. Doi Suthep in Chiang Mai, Northwest Thailand. —— 1, Male genitalia in dorsal view; 2, same in lateral view; 3, right paramere in oblique lateral view. (Scale: 1.0 mm.)

elytra. Mesosternum strongly punctate, the punctures sparse, the interspace among them polished. Metasternum longitudinally sulcate. Abdominal sternites with obliquely rugose punctuations.

Legs with profemur bearing several wavy lines near inner margin of under side, though the outer part is sparsely foveate, the fovea longitudinal and setiferous; protibia serrate and tridentate at outer margin; meso- and matatibiae with a transverse ridge behind the middle of outer side; meso- and metatarsi slightly longer than meso- and metatibiae in male, though they are distinctly shorter in female.

Male genitalia with parameres simple in shape, the right one broadly projected on dorsal side of apical edge, slightly twisted in the projection, which is hooked at the apex, the left one bilobate.

Type series. Holotype: ♂, Mt. Doi Suthep, ca. 1,100 m in alt., Chiang Mai, NW Thailand, 6–IV–1989, M. NISHIKAWA leg. Paratypes: 6 ♂♂, 4 ♀♀, same data as for the holotype; 1 ♂, Mt. Doi Pui, Chiang Mai, 22–III–1988, K. MASUMOTO leg.; 1 ♂, 1 ♀, same locality and collector as for the holotype, 1–IV–1989 and 21–IX–1993.

The holotype will be deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are preserved in my collection, except for one paratype specimen from Mt. Doi Pui which was returned to Dr. MASUMOTO.

Notes. The present new species is similar in general appearance to *Phaeochroops laotianus* PAULIAN (1945, pp. 36–37, fig. 22; KUIJTEN, 1981, pp. 40–42, figs. 51–55) originally described from Nam Tien of Laos, but can be clearly separable from the latter by the elytral costae bifarious at least in the first costae, the projection of the right paramere in the male genitalia broader, with the apex hooked, and the left paramere different in shape.

Phaeochrous dissimilis dissimilis ARROW, 1909

Phaeochrous dissimilis ARROW, 1909, Trans. ent. Soc. London, **4**, p. 496; type locality: Tenasserim, Moulmein.
Other references are omitted.

Specimens examined. 3 ♂♂, 5 ♀♀, Phrao Village, Chiang Mai, NW Thailand, 14～15–V–1988, Y. MANIT leg.; 6 ♂♂, 24 ♀♀, between Fang and Chiang Dao, NW Thailand, 22～23–V–1989, K. MASUMOTO leg.

Notes. The present species was already recorded by HIRANO (1985) from Amphoe Sai Yok, Kanchanaburi in Southwest Thailand. It is also distributed in Northwest Thailand.

Phaeochrous emarginatus emarginatus CASTELNAU, 1840

Phaeochrous emarginatus CASTELNAU, 1840, Hist. nat. Ins., Coléopt., Paris, **2**, p. 109; type locality: Java.
Other references are omitted.

Specimens examined. 3 exs., Chiang Dao, Chiang Mai, NW Thailand; 24 exs., Mesa Vill.; 124 exs., between Fang and Chiang Dao; 6 exs., Pao District; 41 exs., Phrao Vill.; 2 exs., Doi Angkhang, 1,750 m in alt.; 7 exs., Mon-Angget, nr. Chiang Mai; 1 ex., Mt. Doi Suthep; 1 ex., Ban Pang O Mai, Mt. Doi Mae Tho; 1 ex., Mt. Doi Mae Salong; 2 exs., Mae Suai, Chiang Rai. (Dates and collectors are omitted.)

要　約

西川正明：タイ国北西部産のアツバコガネ類．―― タイ国北西部産のアツバコガネ類4種を報告した．このうちの1種は，ラオスから記載された*Phaeochroops laotianus* PAULIANに似ているが，検討の結果，新種と認められたので，*Phaeochroops masumotoi* sp. nov.と命名・記載した．

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Two New Species of the Genus *Flavohelodes* (Coleoptera, Scirtidae) from Taiwan

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Abstract Two new scirtid beetles belonging to the genus *Flavohelodes*, *viz.* *F. taiwanensis* sp. nov. and *F. humeralis* sp. nov., are described from Taiwan. This is the first record of the genus *Flavohelodes* from Taiwan.

The genus *Flavohelodes* KLAUSNITZER, 1980 has been represented by fifteen species recorded from the Holarctic and Oriental Regions. Recently, we had an opportunity to examine some Taiwanese specimens of the genus hitherto unrecorded from the island. After a careful study, we have come to the conclusion that they comprise two new species.

In this paper, we are going to describe them under the names *Flavohelodes taiwanensis* sp. nov. and *F. humeralis* sp. nov. It is interesting to note that the present species are more closely related to the Holarctic species than to the Oriental ones in view of male genitalic features. They may be the relicts of Holarctic element which spread from the continent in the past.

The abbreviations used in the present paper are as follows: PL – length of pronotum; PW – width of pronotum; EL – length of elytra; EW – width of elytra; TL – total length (PL plus EL).

The holotypes to be designated are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo, and the paratypes are in the Biological Laboratory, Nagoya Women's University.

Flavohelodes taiwanensis YOSHITOMI et M. SATÔ, sp. nov.

(Figs. 1–9)

Male. Body oval, moderately convex, shining, closely covered with yellowish

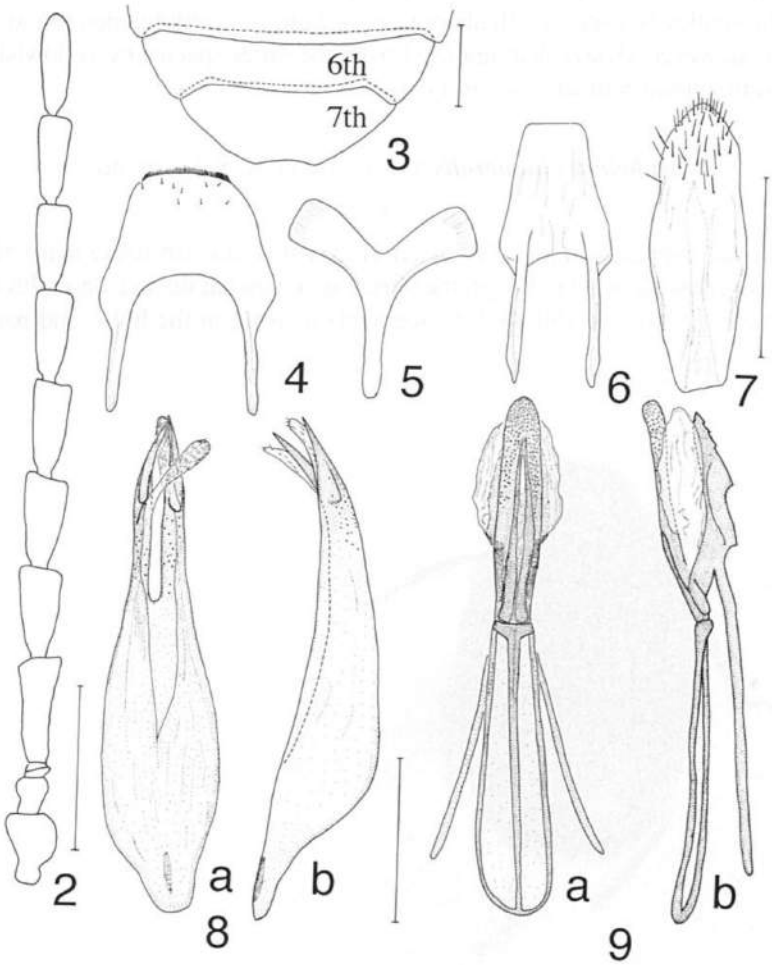
Fig. 1. *Flavohelodes taiwanensis* sp. nov., holotype male.

white hairs. Head brown; labrum and maxillary palpus yellowish brown; antenna brown except for basal three segments which are yellowish brown; pronotum and scutellum yellowish orange; elytra and ventral surface of body black, with the apex of 7th abdominal sternite somewhat pale; legs yellowish orange.

Head slightly convex, minutely granulate. Clypeus closely and minutely granulate, with the front margin almost straight. Labrum transverse, covered with long hairs. Eye large, prominent; the distance between eyes about 1.3 times as long as the diameter of an eye. Antennae long, thick, reaching about proximal 1/3 of elytra; 4th to 10th segments slightly serrate; approximate ratio of each segment (paratype) as 4.5 : 2.5 : 1.0 : 7.0 : 6.0 : 6.5 : 6.5 : 6.3 : 5.8 : 5.8 : 6.8. Pronotum semicircular, broadest at posterior end, wider than long (PW/PL = 1.6–1.8), moderately granulate. Scutellum triangular, finely punctate. Elytra oval, broadest at middle, distinctly and closely punctate; EL larger than EW (EL/EW = 1.3) and than PL (EL/PL = 3.0–3.4); EW larger than PW (EW/PW = 1.4). Ventral surface of thoraces and abdominal sternites closely covered with punctures and short hairs; apical margin of 7th abdominal sternite shallowly concave.

Eighth tergite well sclerotized, trapezoidal, covered with minute spines on posterior margin and some minute setae in posterior area, with a pair of stout apodemes pro-

jecting from near antero-lateral corners; 8th sternite slightly sclerotized, Y-shaped; 9th tergite weakly sclerotized, trapezoidal, with a pair of apodemes protruding from near antero-lateral corners; 9th sternite oblong-oval, weakly sclerotized, covered with short setae in caudal 1/3. Tegmen long, well sclerotized, bifid in about apical 1/3 (parameres), with pointed apices; a pair of membranous lobes projecting from inner margins of parameres, closely covered with minute spines. Penis long, well sclerotized; dorsal piece about 6.8 times as long as wide, subparallel-sided from near anterior end to near posterior end, its proximal half elongated elliptical, its caudal half lobed in a club-like form, clearly punctate in apical area; ventral piece connected with the middle of dorsal



Figs. 2–9. *Flavohelodes taiwanensis* sp. nov., male. —— 2, Antenna; 3, 6th to 7th abdominal sternites; 4, 8th tergite; 5, 8th sternite; 6, 9th tergite; 7, 9th sternite; 8, tegmen (a, dorsal aspect; b, left lateral aspect); 9, penis (a, dorsal aspect; b, left lateral aspect). (Scale=0.5 mm.)

piece, with a pair of rod-like lobes protruding antero-laterally, its ventral edge sharp and serrate, with pointed apex.

Measurements (n=2). TL, 3.5–3.6 mm; EW, 1.9–2.0 mm; PL, 0.8–0.9 mm; EL, 2.7 mm; PW, 1.4 mm.

Female. Unknown.

Type series. Holotype: ♂, Kao-i, alt. 600 m, Taoyuan Hsien, Taiwan, 17–III–1981, T. SHIMOMURA leg. (genitalia on slides Nos. HY 163 and 164; abdominal sternite on slide No. HY 162). Paratype: ♂, same data as for the holotype (right antenna on slide No. HY 161; genitalia on slide No. HY 210).

Remarks. This species is similar to *F. protecta* (HAROLD, 1881) known from Japan in the shallowly concave 7th abdominal sternite and bifid tegmen (KLAUSNITZER, 1973). It is, however, clearly distinguished from the latter species by yellowish orange scutellum and unique conformation of penis.

Flavohelodes humeralis YOSHITOMI et M. SATÔ, sp. nov.

(Figs. 10–22)

Body oval, convex, shining, closely covered with yellowish white hairs. Head and mouth parts yellowish brown, though the vertex is somewhat dusky; 1st to 7th antennal segments yellowish brown (8th to 11th segments missing in the holo- and paratypes);

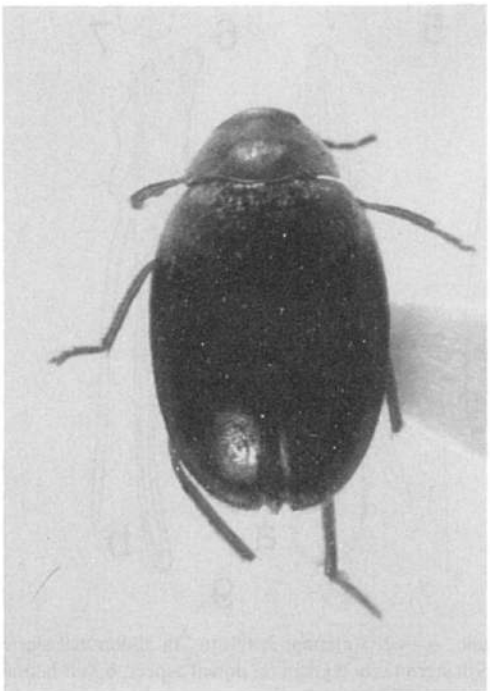
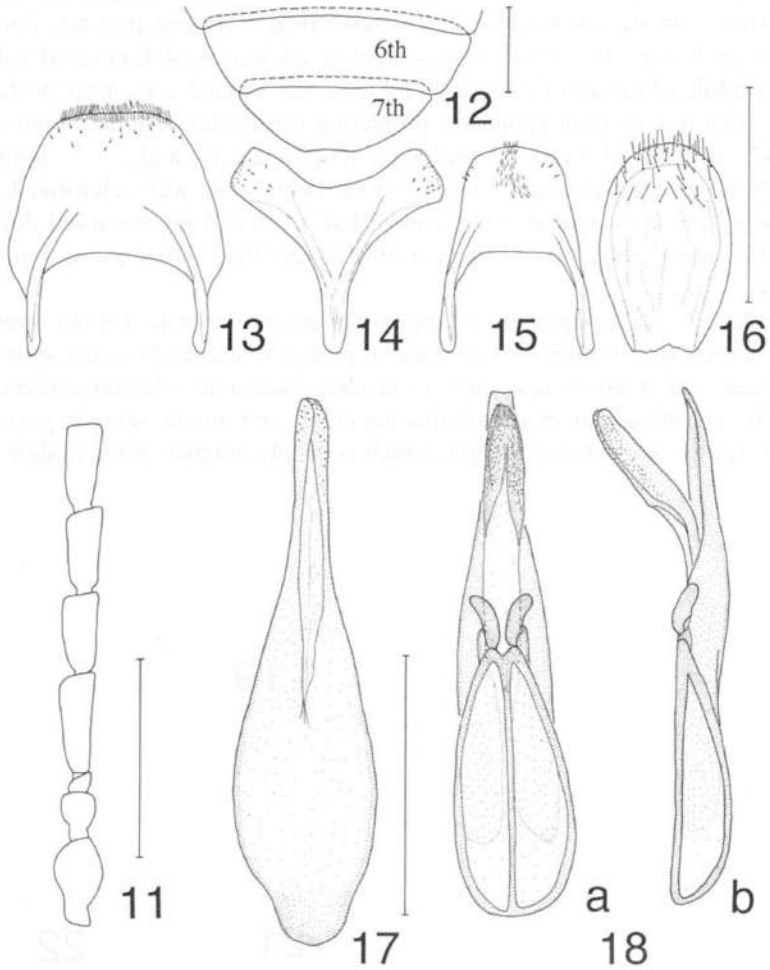


Fig. 10. *Flavohelodes humeralis* sp. nov., holotype male.

pronotum yellowish orange; scutellum yellowish brown; elytra brownish black, with a pair of yellowish orange markings on humeral angles, which reach about proximal 1/5 of elytral margins, oblique in the holotype and fan-shaped in the paratypes; ventral surface of body brownish black, except for yellowish orange proximal 1/5 of epipleura and fuscous apex of 7th abdominal sternite; legs orange.

Head slightly convex, minutely granulate. Clypeus closely and minutely granulate, its front margin somewhat concave. Labrum transverse, covered with long hairs. Eye large, prominent; the distance between eyes about 1.2 times as large as the diameter of an eye. Antennae somewhat thin, not serrate; approximate ratio of 1st to 7th seg-

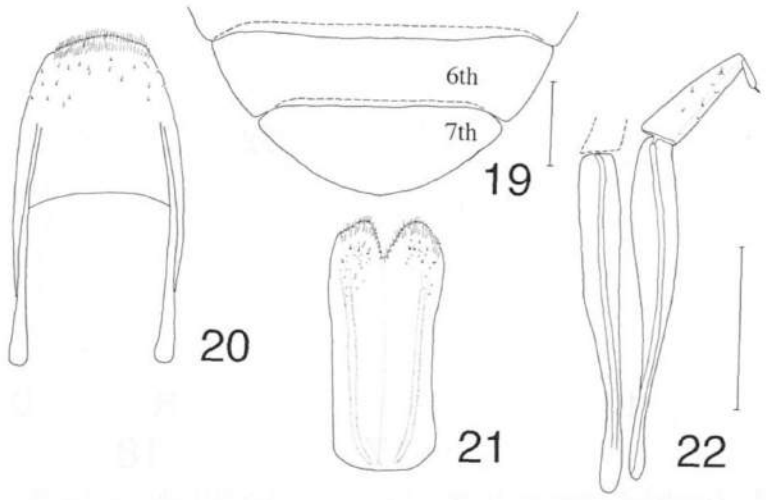


Figs. 11–18. *Flavohelodes humeralis* sp. nov., male. —— 11, Antenna (holotype); 12, 6th to 7th abdominal sternites; 13, 8th tergite; 14, 8th sternite; 15, 9th tergite; 16, 9th sternite; 17, tegmen; 18, penis (a, dorsal aspect; b, left lateral aspect). (Scale=0.5 mm.)

ments in male (n=2, mean) as 3.8 : 2.0 : 1.0 : 4.6 : 3.8 : 3.9 : 3.7. Pronotum semicircular, broadest at posterior end, wider than long (PW/PL=1.9), closely covered with long hairs. Scutellum triangular, closely punctate. Elytra oblong-oval, broadest a little before the middle, distinctly and closely punctate; EL larger than EW (EL/EW=1.4) and than PL (EL/PL=3.8–3.9 in male, 3.3 in female); EW larger than PW (EW/PW=1.5 in male, 1.4 in female). Ventral surface of thoraces and abdominal sternites closely covered with fine punctures and short hairs.

Male. Apical margin of 7th abdominal sternite almost straight. Eighth tergite well sclerotized, trapezoidal, covered with long spines on posterior margin and some minute setae in posterior area, with a pair of apodemes protruding from near antero-lateral corners; 8th sternite slightly sclerotized, broad Y-shaped, punctate finely in apical area of each arm; 9th tergite weakly sclerotized, trapezoidal, covered with minute spines in middle of posterior margin and with a few minute setae near postero-lateral corners, with a pair of stout apodemes projecting from antero-lateral corners; 9th sternite weakly sclerotized, oval, covered with long setae in caudal 1/3. Tegmen long, moderately sclerotized, punctate in apical area. Penis long, well sclerotized; proximal half of dorsal piece elongated ovate; caudal half of dorsal piece curved dorsally, and punctured in apical area; ventral piece a little longer than dorsal piece, with the apex biangulate.

Female. Apical margin of 7th abdominal sternite arcuate. Eighth tergite poorly sclerotized, trapezoidal, with minute setae in posterior area and minute spines on posterior margin, with a pair of apodemes protruding from antero-lateral corners; 8th sternite weakly sclerotized, covered with fine punctures and minute setae in posterior area, with small spines on posterior margin, which is deeply notched at the middle. Oviposi-



Figs. 19–22. *Flavohelodes humeralis* sp. nov., female. —— 19, Sixth to 7th abdominal sternites; 20, 8th tergite; 21, 8th sternites; 22, ovipositor. (Scale=0.5 mm.)

tor moderate in length; stylus with two setae at the apical end; coxite with some minute setae; approximate ratio of the lengths of stylus, coxite and baculus as follows: 1.0 : 4.0 : 11.2.

Measurements. Male (n=2): TL, 3.8–3.9 mm; EW, 2.2 mm; PL, 0.8 mm; EL, 3.0–3.1 mm; PW, 1.5 mm. Female (n=1): TL, 4.3 mm; EW, 2.4 mm; PL, 1.0 mm; EL, 3.3 mm; PW, 1.7 mm.

Type series. Holotype: ♂, Meifeng, Nantou Hsien, Taiwan, 13–V–1975, S. IMASAKA leg. (right antenna on slide No. HY 245). Paratypes: 1 ♂, same data as for the holotype (left antenna on slide No. HY 242; 8th and 9th abdominal segments on slide No. HY 243); 1 ♀, Sungkang, Nantou Hsien, Taiwan, 24–IV–1988, no collector's name (genitalia on slide No. HY 244).

Remarks. This species is very similar in male genitalic structure to *F. flavicollis* (KIESENWETTER, 1859), the type species of the genus, known from Europe and Siberia, and also to *F. thoracica* (MELSHEIMER, 1864) from North America (KLAUSNITZER, 1973, 1974). It is, however, easily distinguished from them by the yellowish orange markings on the humeral angles.

Acknowledgments

We wish to express our deep gratitude to Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for critical reading of the original manuscript, and to Mr. S. IMASAKA (Kurume-shi) and Mr. T. SHIMOMURA (Tokyo) for their kind help in offering precious materials. In addition, YOSHITOMI thanks Prof. Dr. Y. ARITA and Dr. S. HASHIMOTO of Meijo University for their advice and encouragement.

要　約

吉富博之・佐藤正孝：台湾のキムネマルハナノミ属の2新種．—— 台湾から未記録であったキムネマルハナノミ属*Flavohelodes*の2新種，*F. taiwanensis* YOSHITOMI et M. SATÔ と *F. humeralis* YOSHITOMI et M. SATÔ を記載した．この2種は雄交尾器の特徴から，東洋区の種類より全北区のものに近縁であり，生物地理学的に興味が深い．

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Elytra, *Tokyo*, **24** (2): 310, November 15, 1996

New Record of *Flavohelodes burmensis* (KLAUSNITZER, 1974) (Coleoptera, Scirtidae) from Thailand

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Up to the present, only two males of *Flavohelodes burmensis* (KLAUSNITZER, 1974) have been known from Myanmar (type area) and Nepal. Recently, I had an opportunity to examine four male specimens of this species collected from Thailand and Nepal. In this short paper, I am going to give a new record from Thailand and an additional record from Nepal.

Before going further, I wish to sincerely thank Professor M. SATÔ, Nagoya Women's University, for giving me the opportunity to examine the specimens, and Prof. Dr. Y. ARITA and Dr. S. HASHIMOTO, Meijo University, for their advice and encouragement.

Flavohelodes burmensis (KLAUSNITZER, 1974)

Helodes burmensis KLAUSNITZER, 1974, Ent. Nachr., Dresden, **18**: 19–20.
Flavohelodes burmensis: KLAUSNITZER, 1980, Reichenbachia, **18**: 85; 1980, Ent. basil., **5**: 196, 199.

Measurements (n=4). Pronotal width 1.3–1.4 (x=1.35) mm; pronotal length 0.8–1.0 (x=0.88) mm; elytral length 2.8–3.2 (x=2.98) mm; elytral width 1.7–1.9 (x=1.78) mm; total length (pronotal length plus elytral length) 3.6–4.2 (x=3.85) mm.

Specimens examined. [Thailand] 2 ♂♂, Maeo Khun Klang, 1,350 m, Doi Inthanon, 20–X–1983, M. SAKAI leg. (male genitalia on slides Nos. HY 293–294). [Nepal] 2 ♂♂, Bogara, 1,700–2,200 m, 83°23′E, 28°35′N, 19~20–IX–1971, Malaise trap, A. NAKANISHI leg. (male genitalia on slide No. HY 295).

Distribution. Myanmar, Nepal, Thailand (new record).

Fig. 1. *Flavohelodes burmensis* (KLAUSNITZER), male, from Nepal.

Elytra, Tokyo, **24** (2): 311–316, November 15, 1996

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

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Abstract A new species and two new subspecies of elaterid beetles are described from Japan. They are named *Actenicerомorphus hiramatsui*, *Hypolithus motschulskyi yoshizawai* and *Hypolithus motschulskyi kaniei*.

In the present study, I am going to describe a new species and two new subspecies of elaterid beetles from Japan. The holotypes of each species and subspecies 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 reading the manuscript and giving me useful suggestions, and to Messrs. Hiroyoshi HIRAMATSU of Wakayama, Naohiro YOSHIZAWA of Iida and Noboru KANIE of Nagoya for their kindness in offering the specimens in this study.

Actenicerомorphus hiramatsui sp. nov. [Denticollinae]

(Fig. 1 A–K)

Male. Length 10.5 mm, width about 2.5 mm. Body slender, nearly parallel-sided and moderately convex above; surface shining, with dark aeneous luster except for mouth parts, apical portion of prosternal process and elytral epipleura more or less dark reddish brown; antennae dusky brown (basal 2 or 3 segments somewhat reddish brown) and legs yellowish brown; vestiture pale aeneous, becoming paler and longer on head and pronotum.

Head almost flattened between eyes, broadly depressed between antennae; clypeal margin transverse, obliterated at middle (Fig. 1 D). Mandible with broad micro-toothed structure on upper surface of basal area (Fig. 1 G). Antenna elongate, extending beyond posterior angle of pronotum at least by 2 apical segments; basal segment robust and cylindrical, 2nd small and subclavate, 3rd subtriangular and clearly shorter than 4th, 4th to 10th moderately serrate (Fig. 1 K).

Pronotum subquadrate, widest at posterior angles, weakly rounded at middle; disc rather gently convex, surface deeply, densely and regularly punctate, with neither me-

dian longitudinal smooth line nor canaliculation (Fig. 1 C); posterior angles projected postero-laterad, each with a shallow carina above. Scutellum lingulate, punctulate and pubescent. Prosternal process narrow and elongate, straightly projecting posteriad just behind procoxal cavities (Fig. 1 F).

Elytra about 3 times as long as its basal width, with sides almost parallel in basal two-thirds, thence gradually convergent towards apices which are normally pointed; striae shallow; intervals weakly elevated, irregularly and transversely rugose. Legs slender, with tarsi and claws simple.

Apical portion of aedeagus (dorsal aspect) as figured (Fig. 1 J); median lobe narrow and gradually tapered towards obtusely pointed apex, with outer margin of each lateral lobe obtusely angulate and gradually tapered towards apex.

Female. Very similar to male, but the body is robuster and the sides more parallel (Fig. 1 B). Antenna shorter, not attaining to the posterior angle of pronotum, with 3rd segment nearly as long as 4th one (Fig. 1 H). Apical portion of ovipositor (Fig. 1 I) and the surface of membrane of bursa copulatrix (Fig. 1 E) as illustrated.

Holotype: ♂, Mt. Gomanodan, Wakayama Prefecture, 31–V–1986, H. HIRAMATSU leg. Paratypes: 2 ♂♂, 7 ♀♀, same locality as for the holotype, 16~27–V–1957, H. HIRAMATSU leg.; 3 ♂♂, 2 ♀♀, same locality as for the holotype, 24~31–V–1986, H. HIRAMATSU leg.

Distribution. Honshu, Japan.

This new species is closely allied to *Actenicerомorphus tengu* (LEWIS, 1894) from Honshu, Japan, but can be distinguished from the latter by the slender body, reddish brown and more elongate 3rd segment of antennae, and different shape of aedeagus, especially of lateral lobes.

Hypolithus motschulskyi yoshizawai subsp. nov. [Hypnoidinae]

(Fig. 2 A–F)

Male and female. Length 10–12 mm, width about 4–5 mm. Body robust and oblong-ovate; black and shining except for the portion of prosternal lobe and 7th sternite of abdomen more or less blackish brown; antennae blackish brown except for basal 2 or 3 segments somewhat reddish brown; legs reddish brown except for femora a little darker; vestiture short, semidecumbent and fulvous on dorsum, denser and decumbent on ventral surfaces.

This new subspecies somewhat resembles subsp. *fleutiauxi* ÔHIRA, 1968 from Hirayu to the Tokugô Pass in Nagano Prefecture, but differs from the latter by the following points: the body robuster and more gently convex above; the head clearly impressed longitudinally between eyes; the sides of pronotum more distinctly sinuate just before posterior angles; the striae of elytra shallow, with the intervals almost flattened. Some principal structures of this unique subspecies are as illustrated (Fig. 2 B–F).

Holotype: ♂, Shirabiso Pass in Kamimura, Ina in Nagano Prefecture, 25–VI–1995, N. YOSHIZAWA leg. Paratypes: 3 ♂♂, 7 ♀♀, same data as for the holotype; 2 ♂♂,

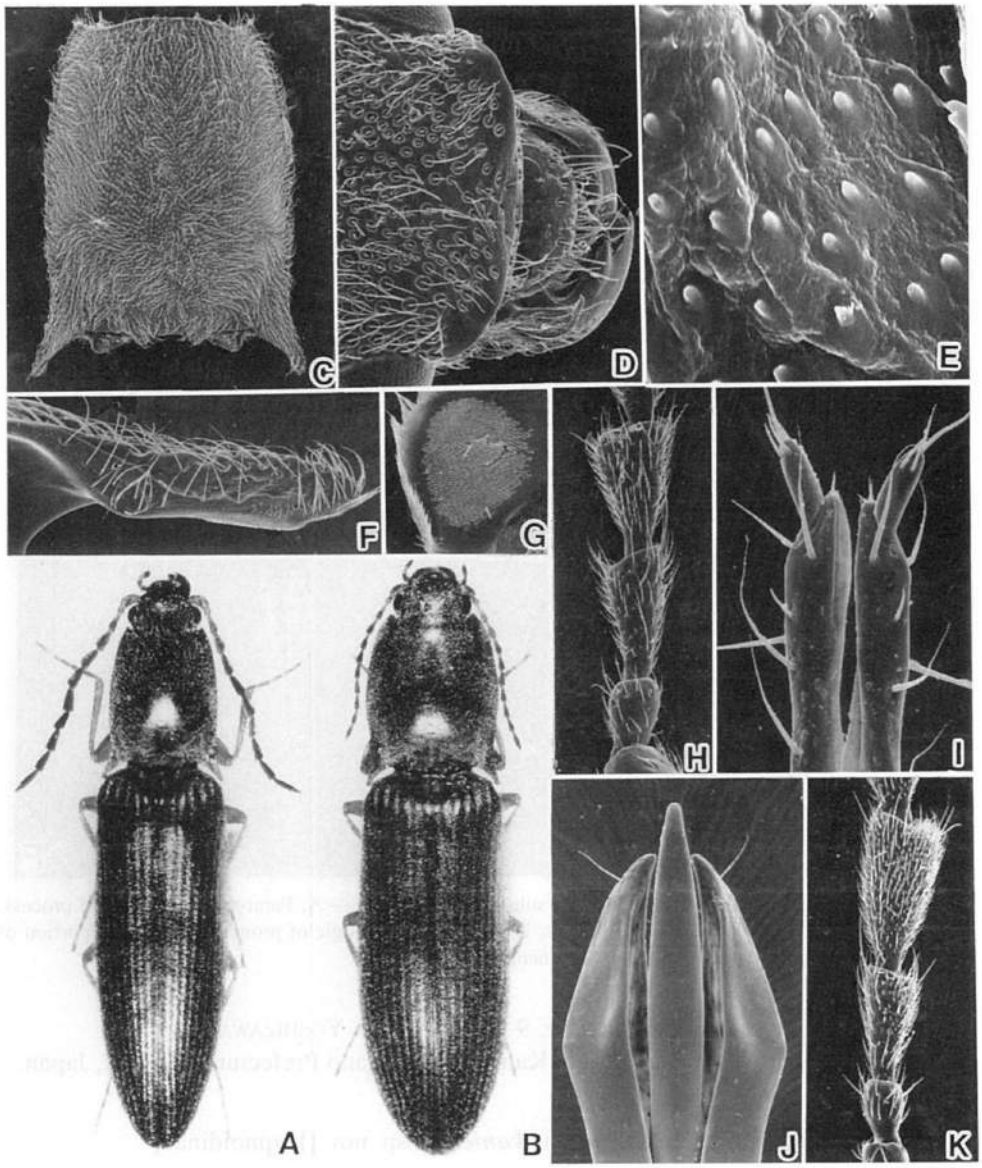

Fig. 1. *Actenicerомorphus hiramatsui* sp. nov., male (except B, E, H and I which are of a female). —— A, Holotype; B, paratype; C, pronotum, dorsal aspect; D, head and clypeal margin, dorsal aspect; E, a portion of sclerotized surface of bursa copulatrix; F, prosternal process, lateral aspect; G, minute brush-like structure of upper surface of basal area of mandible; H, K, 2nd to 4th segments of antenna; I, apical portion of ovipositor; J, apical portion of aedeagus, dorsal aspect.

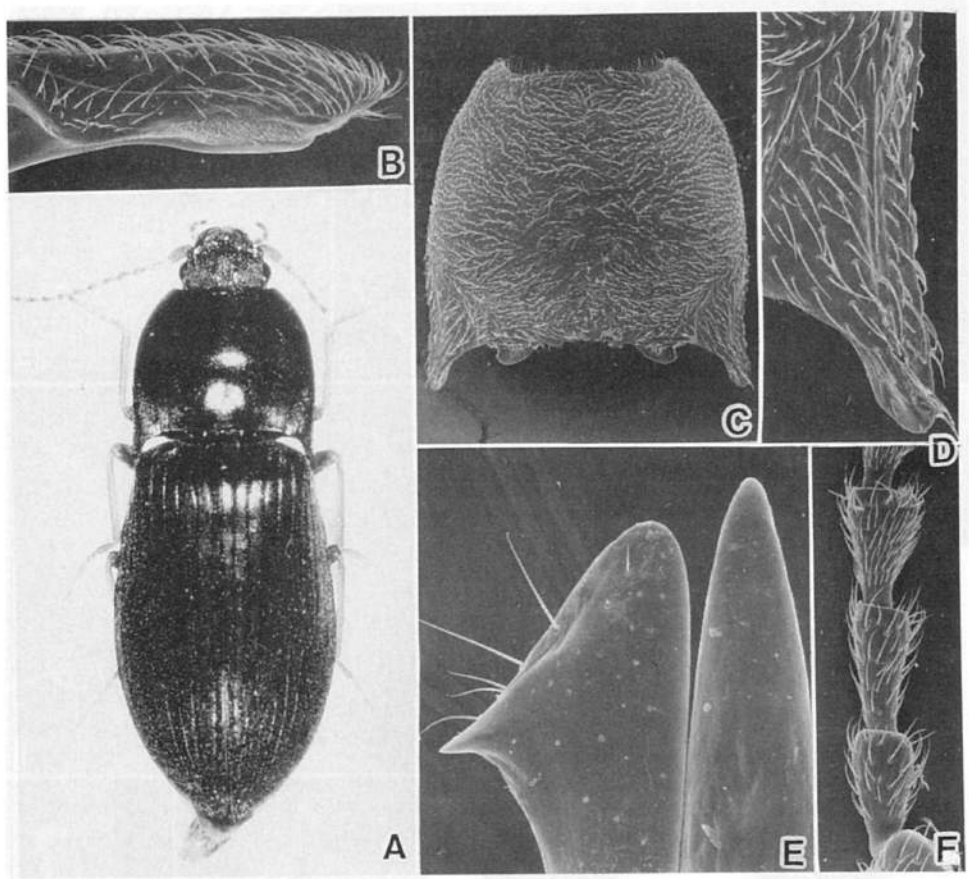

Fig. 2. *Hypolithus motschulskyi yoshizawai* subsp. nov., male. —— A, Paratype; B, prosternal process, lateral aspect; C, pronotum, dorsal aspect; D, right posterior angle of pronotum; E, apical portion of aedeagus, dorsal aspect; F, 2nd to 4th segments of antenna.

2 ♀♀, same locality as for the holotype, 9–VII–1995, N. YOSHIZAWA leg.

Distribution. Shirabiso Pass in Kamimura, Nagano Prefecture, Honshu, Japan.

Hypolithus motschulskyi kaniei subsp. nov. [Hypnoidinae]

(Fig. 3 A–F)

Male and female. Length 9–10 mm, width about 3–3.5 mm. Body oblong-ovate and convex above; black and shining except around margins of pronotum and most parts of ventral surfaces more or less dusky brown; antennae (anterior portion of each segment dusky brown) and legs reddish brown (femora more or less infuscate); vestiture short, semidecumbent and fulvous on dorsum, denser and paler on ventral sur-

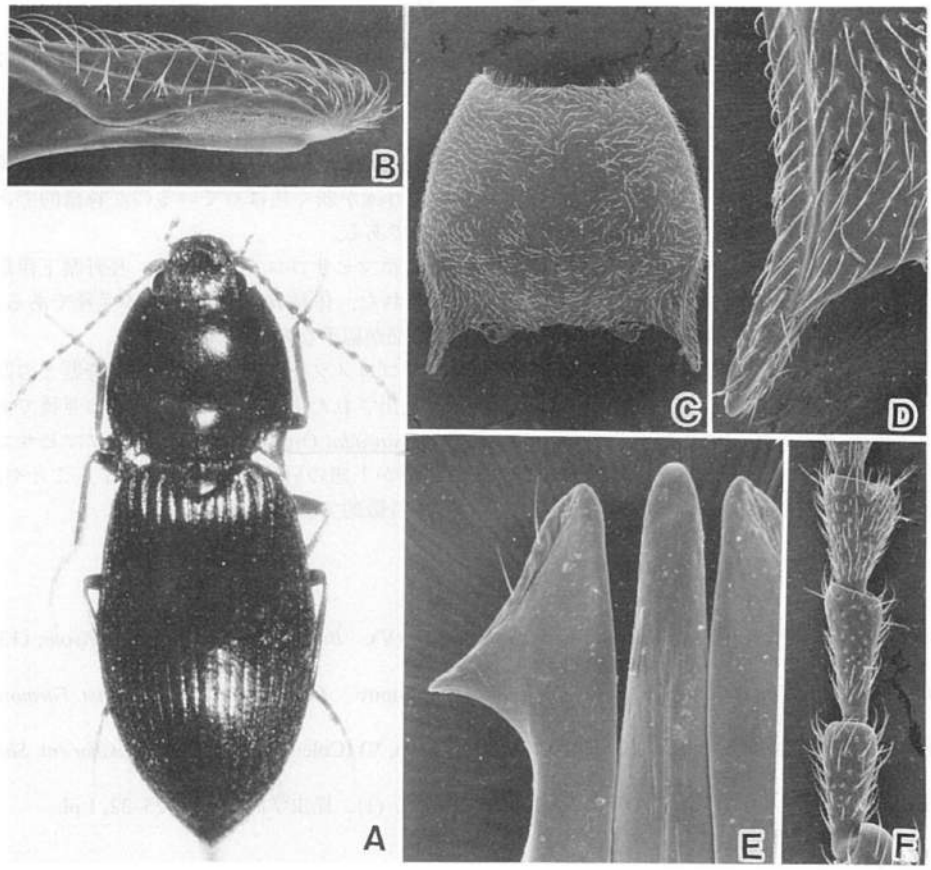

Fig. 3. *Hypolithus motschulskyi kaniei* subsp. nov., male. —— A, Holotype; B, prosternal process, lateral aspect; C, pronotum, dorsal aspect; D, left posterior angle of pronotum; E, apical portion of aedeagus, dorsal aspect; F, 2nd to 4th segments of antenna.

faces.

This new subspecies resembles in general structure subsp. *sawadai* ÔHIRA, 1963 from Mt. Kisokoma in Nagano Prefecture, but can be distinguished from the latter in the following points: the body more clearly constricted at the bases of elytra; the posterior angles of pronotum more sharply pointed posteriad; the head more deeply impressed between antennae; the striae of elytra deep, with the intervals elevated and somewhat rugose. Aedeagus and some principal structures of this new subspecies are as illustrated (Fig. 3 B–F).

Holotype: ♂, Kamisaka Pass in Nakatsugawa City, Gifu Prefecture, 7–V–1995, Noboru KANIE leg. Paratypes: 1 ♂, 6 ♀♀, same data as for the holotype.

Distribution. Kamisaka Pass in Nakatsugawa City, Gifu Prefecture, Honshu, Japan.

要　約

大平仁夫：日本産コメツキムシ科の新種，XXXV. —— 本報告では2亜科に属する1新種2新亜種を記載した．

Actenicerомorphus hiramatsui ÔHIRA（キイフトヒラタコメツキ）は，和歌山県の平松広吉氏によって和歌山県護摩壇山で見出された．体長10.5 mm内外でやや暗い真鍮色の光沢を有する種である．触角の第3節が細長く，雄交尾器の側突起の外縁が弱く角ばっているのが特徴的である．本種は紀伊半島の山地には広く分布しているようである．

Hypolithus motschulskyi yoshizawai ÔHIRA（シラビソミヤマヒサゴコメツキ）は，長野県下伊那郡上村のしらびそ峠地域で吉沢尚宏氏によって見出された，体長10–12 mm内外の亜種である．体が比較的大型で，上翅の条線は浅く印刻され，間室部が扁平なのが特徴的である．

Hypolithus motschulskyi kaniei ÔHIRA（エナミヤマヒサゴコメツキ）は，岐阜県と長野県との県境の神坂峠（恵那山の近く）で蟹江　昇氏によって見出された，体長10.5 mm内外の亜種である．一般外形は，木曽駒ケ岳から知られているsubsp. *sawadai* ÔHIRA, 1963（キソミヤマヒサゴコメツキ）に類似しているが，体はより大型で，両側が上翅の肩角部で顕著に細まることや，前胸背板の後角がより鋭く後方に突出することなどが特徴的である．

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Elytra, *Tokyo*, **24** (2): 317–329, November 15, 1996

The Genus *Stethorus* WEISE (Coleoptera, Coccinellidae) of China[1)]

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Abstract Three subgenera and twenty-two species of the genus *Stethorus* WEISE from China are taxonomically studied. *Stethorus* (*Stethorus*) *sichuanensis* and *Stethorus* (*Parastethorus*) *baiyunshanensis* are described as new to science. *Stethorus* (*Parastethorus*) *truncatus* KAPUR is recorded for the first time in China. Keys to the subgenera and species of the genus *Stethorus* are given.

Key words: Coleoptera, Coccinellidae, *Stethorus*, China.

The genus *Stethorus* was originally proposed by WEISE (1885) as a subgenus of *Scymnus*, but in 1899 both WEISE and CASEY regarded it as a valid genus. This genus has usually been placed in the tribe Scymnini. DOBRZANSKY (1924) erected the tribe Stethorini for a single genus *Stethorus*, but KORSCHEFSKY (1931) synonymized Stethorini with Scymnini. KAPUR (1948), MADER (1955) and GORREAU (1974) agreed with KORSCHEFSKY's placement, but SASAJI (1968), PANG and MAO (1979), HOANG (1982), GORDON and CHAPIN (1983) and CHAZEAU, FURSCH and SASAJI (1989) followed DOBRZANSKY in considering Stethorini as a valid tribe, and we concur with this treatment. The Stethorini is easily separated from all other tribes of the Scymninae because the clypeus is not emarginate around the antennal bases, and the prosternum is arcuately produced in front, partly concealing the mouthparts.

The genus *Stethorus* has approximately 82 described species in the world. Its distribution is worldwide, feeding mainly on mites. Some of them have been reported to be valuable predators of phytophagous mites, and great attention is being paid to the genus *Stethorus* in respect to biological control.

All the type specimens to be designated in this paper are deposited in the Insect collection of South China Agricultural University, Guangzhou.

Genus ***Stethorus*** WEISE

Scymnus (*Stethorus*) WEISE, 1885, 74.

Stethorus: WEISE, 1899, 64; CASEY, 1899, 135; KAPUR, 1948, 300; LIU, 1963, 86; PANG, 1966, 76; PANG & MAO, 1975, 418; BELICEK, 1976, 297; PANG & MAO, 1979, 29; GORDON & CHAPIN, 1983, 236;

1) This study is supported by the National Science Foundation of P. R. China (39000019).

BIELAWSKI, 1984, 329. Type species: *Stethorus punctillum* WEISE (by subsequent designation of KORSCHEFSKY, 1931).

Nephopullus BRETHES, 1925, 167; KAPUR 1948, 300; GORDON & CHAPIN, 1983, 236. Type species: *Nephopullus darwini* BRETHES (by subsequent designation of KORSCHEFSKY, 1931).

Body small, long, oblong-oval to round, moderately to strongly convex. Black except for antenna, mouthparts and legs usually yellow. Head transverse, subquadrangular, with large, moderately coarsely faceted eyes. Clypeus truncate or feebly emarginate anteriorly, anterolateral angle nearly rounded. Antenna short, 11–segmented, with first two segments large and oblong, terminal four wider, together forming a club. Maxillary palpus with apical segment oblong, obliquely truncate and narrowed toward apex. Prosternum without carinae, produced anteriorly to partly conceal mouthparts. Abdomen with postcoxal line on 1st abdominal sternum complete or incomplete. Tarsus trimerous or cryptotetramerous, tarsal claw bifid, inner claw shorter in male than in female. Male genitalia with median piece of tegmen symmetrical or asymmetrical. Female spermathecal capsule present or absent, genital plate small, not triangular.

Key to the Subgenera of *Stethorus*

1 (2) Sipho of male genitalia slender, long; median piece of tegmen slender, long; stub shorter than median piece . . . . . *Stethorus* WEISE.

2 (1) Sipho of male genitalia short; median piece of tegmen stout, short; stub longer than median piece.

3 (4) Lateral lobes of tegmen with many hairs and without short stout setal process on the inner region . . . . . *Allostethorus* IABLOKOFF-KHNZORIAN.

4 (3) Lateral lobes of tegmen with many short stout setal processes on the inner and a few long hairs on the apical regions . . . *Parastethorus* PANG et MAO.

Subgenus ***Stethorus*** WEISE

Scymnus (*Stethorus*) WEISE, 1885, 74.

Stethorus: CASEY, 1899, 135; IABLOKOFF-KHNZORIAN, 1972, 116; PANG & MAO, 1975, 419; 1979, 30; HOANG, 1982, 112; GORDON & CHAPIN, 1983, 236. Type species: *Stethorus punctillum* WEISE (by subsequent designation of KORSCHEFSKY, 1931).

Postcoxal line on 1st abdominal sternum complete. Male genitalia with sipho slender, elongate; median piece and lateral lobes of tegmen slender, usually elongate; stub usually shorter than median piece.

Key to the Species of *Stethorus* (*Stethorus*) of China

1 (14) Postcoxal line not arched beyond the middle of 1st abdominal sternum.

2 (5) Postcoxal line only extending about 1/3 length of 1st abdominal sternum.

3 (4) Lateral lobes of tegmen extending about 1/2 length of median piece . . . . . .

. . . . *S. siphonulus* KAPUR.

4 (3) Lateral lobes of tegmen extending about 2/3 length of median piece . . . . *S. loi* SASAJI.

5 (2) Postcoxal line usually extending to the middle of 1st abdominal sternum.

6 (9) Lateral lobes of tegmen with setae on apex extending about 2/3 length of median piece.

7 (8) Subapical setae of lateral lobes reaching near their apices; base of siphonal capsule without coloration . . . . *S. cantonensis* PANG.

8 (7) Subapical setae of lateral lobes extending far beyond apices; base of siphonal capsule with deep coloration . . . . *S. aptus* KAPUR.

9 (6) Lateral lobes of tegmen with setae on apex equal to or beyond the length of median piece.

10 (11) Lateral lobes of tegmen with hair pocess beyond the length of median piece; apex of the hair process bifurcate; median piece curved nearly in an "S", the apex bent up to form a hook, and with a thread-like appendix at the tip . . . . *S. yingjiangensis* CAO et XIAO.

11 (10) Lateral lobes of tegmen with hair process nearly equal to the length of median piece.

12 (13) Lateral lobes of tegmen extending about 1/2 length of median piece; the hair process on each apex of lateral lobes polyfurcate; sipho tapered on apical 1/4 . . . . *S. sichuanensis* sp. nov.

13 (12) Lateral lobes of tegmen extending about 4/5 length of median piece; the hair process on each apex of lateral lobes not furcate; sipho tapered in 1/2 to apex. . . . . *S. punctillum* WEISE.

14 (1) Postcoxal line arched beyond middle of 1st abdominal sternum.

15 (16) Lateral lobes of tegmen extending beyond the length of median piece; sipho tapered in 1/2 to apex and irregularly curved. . . . . *S. rani* KAPUR.

16 (15) Lateral lobes of tegmen equal to median piece in length; sipho tapered in 1/4 to apex . . . . *S. longisiphonulus* PANG.

1. *Stethorus (Stethorus) siphonulus* KAPUR

Stethorus siphonulus KAPUR, 1948, 314; CHUNRAM & SASAJI, 1980, 476.
Stethorus (*Stethorus*) *siphonulus*: PANG & MAO, 1975, 419; 1979, 31.

Distribution. China (Fujian, Guangdong, Guangxi); Malaya; Thailand.

Specimens examined. [Guangxi]: 1 ♂, 3 ♀♀, Guilin, 15–IX–1987, PANG Xiongfei leg.

2. *Stethorus (Stethorus) loi* SASAJI

Stethorus loi SASAJI, 1968, 2.

Distribution. China (Taiwan).

No specimen has been examined.

3. *Stethorus* (*Stethorus*) *cantonensis* PANG

Stethorus cantonensis PANG, 1966, 77.
Stethorus (*Stethorus*) *contonensis*: PANG & MAO, 1975, 419; 1979, 30; HOANG, 1982, 113.

Distribution. China (Guangdong, Fujian, Hubei); Vietnam.

Specimens examined. [Guangdong]: 1 ♂ (holotype), 1 ♀ (allotype), 3 ♂♂, 1 ♀ (paratypes), Guangzhou, III–1964; 5 ♂♂, 1 ♀ (paratypes), Guangzhou, IV–1964, PANG Xiongfei leg.; 1 ♂, Guangzhou, 12–IV–1989; 1 ♂, Guangzhou, 22–X–1989, REN Shunxiang leg.

4. *Stethorus* (*Stethorus*) *aptus* KAPUR

Stethorus aptus KAPUR, 1948, 314.
Stethorus (*Stethorus*) *aptus*: PANG & MAO, 1975, 419; 1979, 32.

Distribution. China (Guangdong, Hainan, Fujian, Zhejiang, Taiwan).

Specimens examined. [Guangdong]: 1 ♂, 1 ♀, Guangzhou, 21–IV–1989; 2 ♂♂, 2 ♀♀, Mt. Dinghu, 16~17–V–1989; 1 ♂, 1 ♀, Guangzhou, 29–VII–1989, REN Shunxiang leg. [Hainan]: 4 ♂♂, Haikou, 5–XI–1989; 2 ♂♂, 1 ♀, Haikou, 6–XI–1989, REN Shunxiang leg. [Taiwan]: 1 ♂, Shanwei, 2–V–1977; 1 ♀, Fenchihu, 11–IV–1977; 2 ♀♀, Fenchihu, 14–V–1977; 1 ♀, Taibei, 3–IV–1977; 1 ♀, Taibei, 5–IV–1977, J. KLAPPERICH leg.

5. *Stethorus* (*Stethorus*) *yingjiangensis* CAO et XIAO

Stethorus (*Stethorus*) *yingjiangensis* CAO et XIAO, 1984, 124; CAO, 1992, 112.

Distribution. China (Yunnan, Guizhou).

Specimens examined. [Guizhou]: 1 ♂, 1 ♀, Luo Dian, 10–VIII–1986, REN Shunxiang leg.

6. *Stethorus* (*Stethorus*) *sichuanensis* sp. nov.

(Fig. 1)

Length 1.19–1.27 mm, width 0.87–0.91 mm.

Short oval, widest in the middle, convex. Black, except for clypeus, antennae, mouthparts, tarsi, tibiae, and apical parts of femora testaceous; basal parts of femora castaneous and trochanter testaceous. Dorsal pubescence long, greyish. Head finely and sparsely punctuate, pronotum with almost uniformly fine punctures, elytral punctures slightly coarser. Underside with greyish, short pubescence and with coarse punctures on poststernum. Postcoxal line complete, extending about 1/2 length of 1st ab-

dominal sternum, rounded (Fig. 1 A). Apex of sixth abdominal sternum rounded in male.

Male genitalia:— Sipho very long, narrow, tapering towards the apex, siphonal capsule very small, like a dark knob (Fig. 1 B). Lateral lobes of tegmen extending about 1/2 length of median piece, lateral lobes each with polyfurcate hair process nearly equal to the median piece in length; median piece of tegmen elongate, tubular and tapering at the apex which is slightly bent upwards and with a short brush-like appendix at its tip (Fig. 1 C).

Holotype: 1 ♂ (No. 890050), Zhong County, Sichuan, China, 23–VIII–1989, REN Shunxiang leg. Paratype: 1 ♂, same data as holotype.

Remarks. This new species is similar to *Stethorus* (*S.*) *rani* KAPUR and *S.* (*S.*) *yingjiangensis* CAO et XIAO, but is easily distinguished from the latter two by the lateral lobes of tegmen with hair processes nearly equal to median piece in length, and the apex of the sixth abdominal sternum rounded, devoid of any emargination. It is also

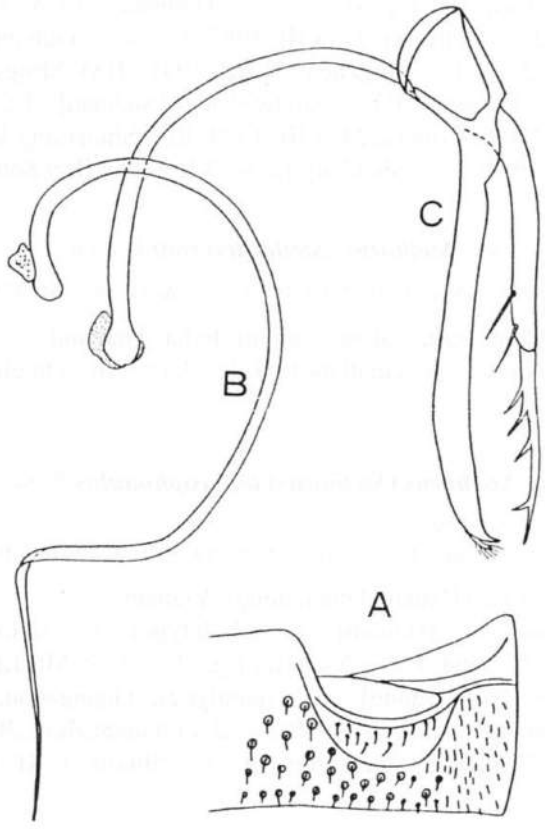

Fig. 1. *Stethorus* (*Stethorus*) *sichuanensis* sp. nov.; A, first abdominal sternum; B, sipho; C, tegmen.

related to *Stethorus* (*S.*) *longisiphonulus* PANG, but has the apex of median piece of tegmen with a short brush-like appendix and the sipho with a small, dark knob of siphonal capsule.

7. *Stethorus* (*Stethorus*) *punctillum* WEISE

Stethorus punctillum WEISE, 1891, 281; CASEY, 1899, 136; KORSCHEFSKY, 1931, 112; KAPUR, 1948, 302; MADER, 1955, 867; LIU, 1963, 86; GORREAU, 1974, 35; BELICEK, 1976, 298; BIELAWSKI, 1984, 329.
Stethorus (*Stethorus*) *punctillum*: PANG & MAO, 1975, 419; 1979, 33; GORDON & CHAPIN, 1983, 270.
Coccinella minima ROSSI, 1794, 89 (not *Coccinella minima* MÜLLER, 1776, 65).
Scymmus (*Stethorus*) *minimus*: WEISE, 1885, 74.
Coccinella pusilla HERBST, 1794, 346 (not *Coccinella pusilla* MÜLLER, 1776, 65).
Coccinella atra ILLIGER, 1798, 413 (not *Coccinella atra* GMELIN, 1790, 1664).

Distribution. China (Beijing, Heilongjiang, Liaoning, Hebei, Gansu, Xinjiang, Shandong, Zhejiang, Jiangsu, Hubei, Sichuan, Guizhou, Guangxi, Fujian); Palearctic Region; North America (intoduced from Europe).

Specimens examined. [Jiangsu]: 1 ♂, 2 ♀♀, Dongshan, 13–V–1978, LIAO Dingxi leg. [Guizhou]: 1 ♂, 2 ♀♀, Guiyang, 11–VIII–1987; 1 ♂, 4 ♀♀, Guiyang, 18–VIII–1987, PANG Xiongfei leg.; 2 ♂♂, 1 ♀, Qingzhen, 21–III–1991, TIAN Mingyi leg. [Guangxi]: 1 ♂, 3 ♀♀, Guilin, 23–IV–1987, PANG Xiongfei leg. [Sichuan]: 3 ♂♂, Zhong County, 23–VIII–1989; 1 ♂, Zhong County, 24–VIII–1989, REN Shunxiang leg. [Hubei]: 8 ♂♂, 1 ♀, Xiangxi, 5–VII–1989; 3 ♂♂, Shenlongjia, 16–VII–1989, REN Shunxiang leg.

8. *Stethorus* (*Stethorus*) *rani* KAPUR

Stethorus rani KAPUR, 1948, 313; MADER, 1955, 1024; CHUNRAM & SASAJI, 1980, 475.

Distribution. China (Guangdong, Fujian); India; Thailand.

Specimens examined. [Guangdong]: 9 ♂♂, 3 ♀♀, Mt. Dinghu, I–1987, PANG Xiongfei leg.

9. *Stethorus* (*Stethorus*) *longisiphonulus* PANG

Stethorus longisiphonulus PANG, 1966, 78.
Stethorus (*Stethorus*) *longisiphonulus*: PANG & MAO, 1975, 419; 1979, 32; HOANG, 1982, 115.

Distribution. China (Hainan, Guangdong); Vietnam.

Specimens examined. [Hainan]: 1 ♂ (holotype), 1 ♀ (allotype), 4 ♂♂, 1 ♀ (paratypes), Haikou, V–1964, PANG Xiongfei leg.; 1 ♂, 2 ♀♀, Mt. Limu, 10–XI–1989, REN Shunxiang leg. [Guangdong]: 1 ♂ (paratype), Guangzhou, III–1964, PANG Xiongfei leg.; 1 ♂, Guangzhou, 2–IV–1989; 1 ♂, 2 ♀♀, Guangzhou, 30–VII–1989; 3 ♂♂, Guangzhou, 14–III–1990, REN Shunxiang leg.; 1 ♂, Shixin, 3–XI–1981, ZHANG Jian leg.

Subgenus ***Allostethorus*** IABLOKOFF-KHNZORIAN

Allostethorus IABLOKOFF-KHNZORIAN, 1972, 121; PANG & MAO, 1975, 419; 1979, 34; HOANG, 1982, 117. Type species: *Stethorus* (*Allostethorus*) *amurensis* IABLOKOFF-KHNZORIAN, 1972 (by original designation).

Postcoxal line on 1st abdominal sternum complete. Male genitalia with sipho short, stout; median piece of tegmen flattened, subtriangular or nearly quadrate; lateral lobes of tegmen short, stout; stub longer than median piece.

Key to the Species of *Stethorus* (*Allostethorus*) of China

1 (10) Postcoxal line reaching about 1/2 length of 1st abdominal sternum.
2 (3) Median piece of tegmen deeply bifurcate into two lobes ..... *S. vietnamicus* HOANG.
3 (2) Apex of median piece of tegmen not furcate.
4 (5) Median piece of tegmen quadrate, apex of median piece even straight ..... *S. shaanxiensis* PANG et MAO.
5 (4) Median piece of tegmen subtriangular in ventral aspect.
6 (7) Preapex of each lateral lobe of tegmen with a distinct expansion at inner surface ..... *S. klapperichi* YU.
7 (6) Preapex of each lateral lobe of tegmen simple, without expansion.
8 (9) Outer side of siphonal apex with a small appendix ..... *S. dongchuanensis* CAO et XIAO.
9 (8) Subapex of sipho distinctly swollen, provided with a rather long appendix which tapers towards a rounded tip. ..... *S. chengi* SASAJI.
10 (1) Postcoxal line reaching about 2/3 length of 1st abdominal sternum.
11 (14) Apex of sipho complex.
12 (13) Subapex of sipho with a hook-like appendix. ..... *S. binchuanensis* PANG et MAO.
13 (12) Apex of sipho with a small nodule-like appendix ..... *S. muriculatus* YU.
14 (11) Apex of sipho simple, bent outwards ..... *S. parapauperculus* PANG.

10. ***Stethorus* (*Allostethorus*) *vietnamicus*** HOANG

Stethorus (*Allostethorus*) *vietnamicus* HOANG, 1979, 11; 1982, 118; PU, 1990, 112.

Distribution. Vietnam; China (Guangxi, Hainan).

Specimens examined. [Hainan]: 4 ♂♂, Haikou, 6–XI–1989; 3 ♂♂, Haikou, 7–XI–1989, REN Shunxiang leg.; 1 ♂, Nada, 8–XI–1989, REN Shunxiang leg.; 2 ♂♂, Nada, 8–XI–1989, OU Zhuangjie leg.

11. ***Stethorus* (*Allostethorus*) *shaanxiensis*** PANG et MAO

Stethorus (*Allostethorus*) *shaanxiensis* PANG et MAO, 1975, 420; 1979, 35.

Distribution. China (Shaanxi, Hubei).

Specimens examined. [Shaanxi]: 1 ♂ (holotype), Mei County, VIII–1974, JIANG Yuanzheng leg. [Hubei]: 1 ♂, 2 ♀♀, Shenlongjia, 6–VII–1989; 1 ♂, 1 ♀, Shenlongjia, 14–VII–1989; 5 ♂♂, 1 ♀, Shenlongjia, 16–VII–1989; 4 ♂♂, Mt. Wudang, 18–VII–1989, REN Shunxiang leg.

12. ***Stethorus (Allostethorus) klapperichi*** YU

Stethorus (*Allostethorus*) *klapperichi* YU, 1995, 125

Distribution. China (Taiwan).

Specimens examined. [Taiwan]: 1 ♂ (holotype), 1 ♀ (allotype), 2 ♂♂ (paratypes), Fenchihu, 10–VI–1977; 2 ♂♂ (paratypes), 28–IV–1977, J. KLAPPERICH leg.

13. ***Stethorus (Allostethorus) dongchuanensis*** CAO et XIAO

Stethorus (*Allostethorus*) *dongchuanensis* CAO et XIAO, 1984, 124; CAO, 1992, 115.

Distribution. China (Yunnan).

No specimen has been examined.

14. ***Stethorus (Allostethorus) chengi*** SASAJI

Stethorus chengi SASAJI, 1968, 4.
Stethorus (*Allostethorus*) *chengi*: PANG & MAO, 1975, 419; 1979, 34.

Distribution. China (Shaanxi, Hubei, Hunan, Sichuan, Taiwan).

Specimens examined. [Hubei]: 2 ♂♂, Xiangxi, 5–VII–1989; 2 ♀♀, Shenlongjia, 14–VII–1989; 1 ♂, Shenlongjia, 15–VII–1989; 4 ♂♂, 1 ♀, Shenlongjia, 16–VII–1989, REN Shunxiang leg. [Sichuan]: 1 ♂, Zhong County, 24–VIII–1989, REN Shunxiang leg. [Hunan]: 3 ♂♂, 1 ♀, Yueyang, 29–VIII–1989; 2 ♂♂, Zhangjiajie, 10–VII–1990; 2 ♂♂, Jishou, 16–VII–1990, REN Shunxiang leg.

15. ***Stethorus (Allostethorus) muriculatus*** YU

Stethorus (*Allostethorus*) *muriculatus* YU, 1995, 126.

Distribution. China (Taiwan).

Specimens examined. [Taiwan]: 1 ♂ (holotype), 1 ♀ (allotype), 1 ♂, 4 ♀♀ (paratypes), Fenchihu, 13–VI–1977; 3 ♂♂, 3 ♀♀ (paratypes), Alishan, 10–VI–1977, J. KLAPPERICH leg.

16. ***Stethorus (Allostethorus) binchuangensis*** PANG et MAO

Stethorus (*Allostethorus*) *binchuanensis* PANG et MAO, 1975, 419; 1979, 36; CAO, 1992, 113.

Distribution. China (Yunnan).

Specimens examined. 1 ♂ (holotype), 2 ♂♂ (paratypes), Binchuan, 10–V–1974, MAO Jinglong leg.

17. ***Stethorus (Allostethorus) parapauperculus*** PANG

Stethorus parapauperculus PANG, 1966, 79.
Stethorus (Allostethorus) parapauperculus: PANG & MAO, 1975, 419; 1979, 45; CAO, 1992, 114.

Distribution. China (Hainan, Guangdong, Fujian, Guangxi, Yunnan).

Specimens examined. [Hainan]: 1 ♂ (holotype), Nada, V–1964; 1 ♀ (allotype), Nada, V–1964; 5 ♂♂, 1 ♀ (paratypes), Haikou, Nada, V–1964, PANG Xiongfei leg.; 1 ♂, 2 ♀♀, Haikou, 5–XI–1989, REN Shunxiang leg. [Guangxi]: 1 ♂, 4 ♀♀, Nanling, 29–VII–1985; 1 ♂, Longguang, 31–VII–1985; 1 ♀, Nanling, 4–VIII–1985; 2 ♀♀, Nanling, 5–VIII–1985, PANG Xiongfei leg.

Remarks. *Stethorus hirashimai* described by SASAJI (1968) was based on four female specimens. It is very similar to *Stethorus parapauperculus* PANG, 1966, in the characters of male genitalia described by YANG and WU (1972).

Subgenus ***Parastethorus*** PANG et MAO

Stethorus (Parastethorus) PANG et MAO, 1975, 421; 1979, 35; HOANG, 1982, 117; GORDON & CHAPIN, 1983, 272. Type species: *Stethorus (Parastethorus) yunnanensis* PANG et MAO (by original designation).

Postcoxal line on 1st abdominal sternum incomplete or complete. Male genitalia with sipho short, stout; median piece of tegmen with lateral margins subparallel, dorsoventrally flattened; lateral lobes of tegmen short, oblong-oval; stub longer than median piece.

Key to the Species of *Stethorus (Parastethorus)* of China

1 (2) Postcoxal line on 1st abdominal sternum complete ..... *S. indira* KAPUR.
2 (1) Postcoxal line on 1st abdominal sternum incomplete.
3 (4) Postcoxal line reaching about 2/3 length of 1st abdominal sternum ..... *S. baiyunshanensis* sp. nov.
4 (3) Postcoxal line reaching about 3/4 length of 1st abdominal sternum.
5 (6) Median piece of tegmen rounded at the apex, with two small subtriangular processes ..... *S. guangxiensis* PANG et MAO.
6 (5) Median piece of tegmen rounded at the apex, with a deep semicircular emargination.
7 (8) Lateral lobes of tegmen elongate, as long as median piece ..... *S. truncatus* KAPUR.
8 (7) Lateral lobes of tegmen elongated oval, reaching about 2/3 length of median piece ..... *S. yunnanensis* PANG et MAO.

18. *Stethorus* (*Parastethorus*) *indira* KAPUR

Stethorus indira KAPUR, 1950, 148; CHUNRAM & SASAJI, 1980, 475.
Stethorus (*Parastethorus*) *indira*: CAO, 1992, 116.

Distribution. China (Yunnan, Guangxi); India; Thailand.
Specimens examined. [Guangxi]: 1 ♂, Guilin, 10–X–1986, PU Tianshen leg.

19. *Stethorus* (*Parastethorus*) *baiyunshanensis* sp. nov.

(Fig. 2)

Length 1.02 mm, width 0.81 mm.

Short oval, widest in the middle, moderately convex. Black, except for antennae and mouthparts yellow; legs yellow except for femora brown. Dorsal pubescence short, yellowish white. Head finely and sparsely punctate, pronotal punctures slightly coarser than head; elytron with rather coarse and dense punctures. Underside with greyish, short, sparse pubescence and with rather coarse and fairly close punctures. Postcoxal line incomplete, extending about 2/3 length of 1st abdominal sternum, rounded (Fig. 2 A). Apex of sixth abdominal sternum truncate in male.

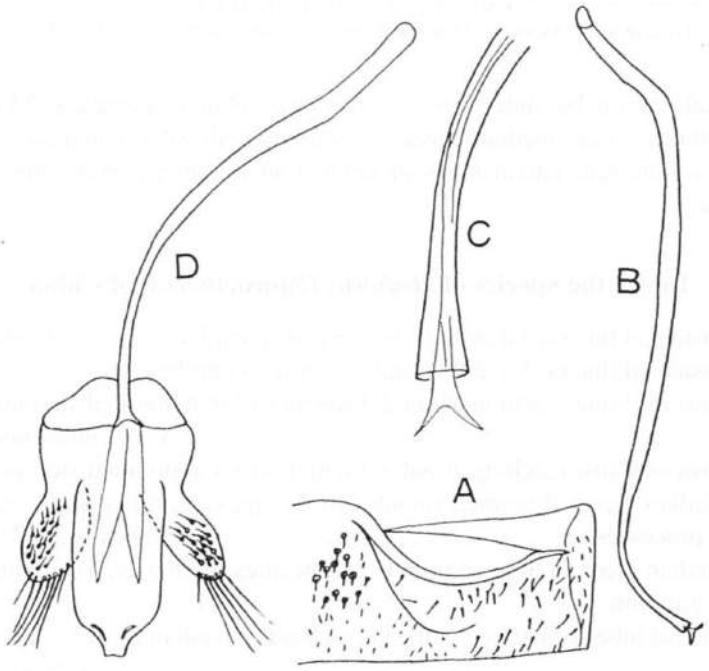

Fig. 2. *Stethorus* (*Parastethorus*) *baiyunshanensis* sp. nov.; A, first abdominal sternum; B. sipho; C, apex of sipho; D, tegmen.

Male genitalia:— Sipho slender, the apex bent outwards with a bifurcate appendix (Fig. 2 B–C). Lateral lobes of tegmen oblong-ovate, extending about 2/3 length of median piece, with many short, stout seta-like processes in the inner and with a few long hairs in the apical regions; median piece of tegmen elongate, nearly straight at its tip (Fig. 2 D).

Holotype: 1 ♂ (No. 890206), Mt. Baiyun, Guangzhou, Guangdong, China, 2–IV–1989, REN Shunxiang leg.

Remarks. This species is similar to *Stethorus* (*Parastethorus*) *guangxiensis* PANG et MAO, but is easily distinguished from the latter by the postcoxal line extending about 2/3 length of the 1st abdominal sternum and the median piece of tegmen nearly straight at its tip, devoid of two small subtriangular processes.

20. ***Stethorus* (*Parastethorus*) *guangxiensis*** PANG et MAO

Stethorus (*Parastethorus*) *guangxiensis* PANG et MAO, 1975, 421; 1979, 37.

Distribution. China (Guangxi, Hubei).

Specimens examined. [Guangxi]: 1 ♂ (holotype), Guilin, 10–VI–1974; 1 ♂ (paratype), Guilin, 8–VI–1974, MAO Jinglong leg. [Hubei]: 1 ♂, Xiangxi, 5–VII–1989, REN Shunxiang leg.

21. ***Stethorus* (*Parastethorus*) *truncatus*** KAPUR

Stethorus truncatus KAPUR, 1948, 315.

Distribution. Malaya; China (Guangdong; new record).

Specimen examined. [Guangdong]: 1 ♂, Guangzhou, 22–X–1989, REN Shunxiang leg.

22. ***Stethorus* (*Parastethorus*) *yunnanensis*** PANG et MAO

Stethorus (*Parastethorus*) *yunnanensis* PANG et MAO, 1975, 421; 1979, 36; CAO, 1992, 115.

Distribution. Chain (Yunnan).

Specimens examined. [Yunnan]: 1 ♂ (holotype), Simao, 17–IV–1974; 1 ♂ (paratype), Binchuan, 10–V–1974, MAO Jinglong leg.

要　　約

任 順祥・庞 雄飞：中国のダニクイヒメテントウ属. —— 中国からこれまでに知られた，3亜属22種のダニクイヒメテントウ類をまとめた．うち2種は新種で，それぞれ*Stethorus sichuanensis*および*S. baiyunshanensis*と命名した．また，*S. truncatus* KAPURを，中国から初めて記録した.

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Elytra, Tokyo, **24** (2): 329–330, November 15, 1996

Discovery of *Aesalus yongi* (Coleoptara, Lucanidae) from Borneo

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Aesalus yongi was originally described on the basis of several specimens collected at the Gombak Valley, near Kuala Lumpur of the Malay Peninsula (ARAYA, 1993), but no additional specimens have been recorded since then. Recently, three specimens of this species were found out in the entomological collections of the Forest Research Section of the Forest Department Sarawak, Malaysia. They were kept in a large collections of beetle materials from the Lambir Hills National Park, near Miri, northeast Sarawak. Here we will report the new record of this interesting lucanid beetle from Borneo. In the following description, PEL denotes pronotum-elytra length, and EW elytra width.

Specimens examined. 1 ♂, Lambir Hills National Park, Miri Division, Sarawak, East Malaysia (60 m in altitude), 2~3–XII–1994; 1 ex., ditto, 9~10–VI–1994; 1 ex., ditto, 7~8–VIII–1994.

Notes. All of these Bornean materials were captured by using ultra violet light-traps set in a tropical lowland dipterocarp forest. This fact indicates that this species is an active nocturnal flier. The Bornean individuals are almost identical with the type specimens of the Malay Peninsula in both their external (Fig. 1) and peculiar bottle-shaped male genitalic morphologies

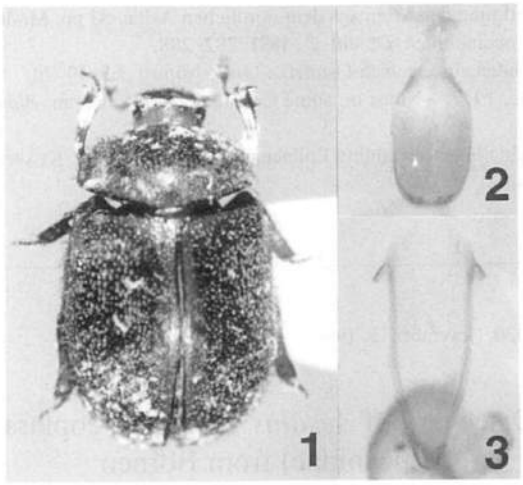

Fig. 1. *Aesalus yongi* from the Lambir Hills National Park in Borneo.
Figs. 2–3. Genital organs of Bornean *A. yongi* observed in 70% ethanol after treated with weak solution of potassium hydroxide.

(Figs. 2–3), though the body of Bornean samples is somewhat larger (PEL: 3.18–3.60, $\bar{x}$=3.44) and slenderer (EW/PEL: 0.68–0.74, $\bar{x}$=0.71) than those of the peninsular ones (PEL: 2.75–3.05; $\bar{x}$=2.90; EW/PEL: 0.80–0.84, $\bar{x}$=0.81).

The Sontheast Asian *Aesalus* shows a remarkable speciation, and until now more than ten species of this genus, including several undescribed species (ARAYA, unpublished), have been recorded from the Malay Peninsula alone (*e.g.*, ARAYA, 1993; ARAYA *et al.*, 1994). It is therefore unexpected that *A. yongi* is discovered from Lambir in Borneo which is about 1,400 km distant from its type locality on the Malay Peninsula. *Aesalus yongi* may be widely distributed over the lowland forests in the Great Sunda.

We thank Prof. T. INOUE and Dr. M. KATO, Kyoto University, and Dr. S. YAMANE, Kagoshima University, for useful information on Bornean materials. We also express our gratitude to Dr. M. MATSUI, Kyoto University, for his kind advice and encouragement during the course of this study. This study was partly supported by the Japan Ministry of Education, Science and Culture Grant-in-Aid for International Scientific Research (Leader: T. INOUE, Nos. 04041067 and 06041013) and was approved by the State Secretary, Sarawak and Director of Forests, Sarawak under the reference number 80/PKM/1335/5/79 on October 6, as "The long term forest ecology research project at Lambir National Park".

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Elytra, *Tokyo*, **24** (2): 331–336, November 15, 1996

A New Genus of the Family Ciidae (Coleoptera), with Description of a New Species from the Ryukyu Islands, Southwest Japan

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Abstract A new genus, *Anoplocis*, is erected for the ciid beetle *Ennearthron poriae*, and a new species, *Anoplocis ryukyuensis* sp. nov. is described from Okinawa of the Ryukyu Islands, Japan. A key to the species is given.

In 1955, NAKANE and NOBUCHI described a strange species of ciid beetle under the name of *Ennearthron poriae*. Because of the 9-segmented antennae, it was originally placed in the genus *Ennearthron*, but LAWRENCE (1965, 1971) threw doubt upon this treatment in his revisional studies. After that, this species was placed by MIYATAKE (1985) in the genus *Dolichocis* without detailed comparison with other genera.

In the spring of 1994, I was able to collect a species related to *Ennearthron poriae* on a collecting trip to the Ryukyu Islands. My careful examination has revealed that the two species do not belong to any known genera and the species collected in the Ryukyus is new to science. In this paper, I am going to describe the new species, and to erect a new genus on the basis of *Ennearthron poriae*. A key will be provided to these species.

The abbreviations used herein are the same as those explained in previous papers of mine. All the type specimens to be designated in this paper are preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama.

Before going further, I wish to express my hearty thanks to Dr. M. MIYATAKE of Matsuyama, the late Dr. A. NOBUCHI, and Prof. Dr. N. OHBAYASHI and Dr. M. SAKAI of Ehime University, for their encouragement and advice. Deep gratitude is also due to Prof. Dr. S.-I. UÉNO, Tokyo University of Agriculture, for critically reading the manuscript of this paper.

Genus ***Anoplocis*** nov.

Type species: *Ennearthron poriae* NAKANE et NOBUCHI, 1955.

Body narrow and cylindrical; vestiture consisting of short stout bristles. Head moderately declined, slightly covered by pronotum as seen from above; fronto-clypeal ridge slightly produced on each side, without distinct sexual modification in male;

maxilla with lacinia, labial palpus and prementum not elongate; genal ridge slightly carinate; antennal fossa shallow. Antenna 9-segmented, three terminal segments forming a loose club; terminal segment of the club provided with four sensillifers, one of which is situated at the apex. Pronotum subquadrate; lateral margins narrowly ridged, and weakly crenulate; anterior margin simple in both sexes; anterior corners angulate. Elytra parallel-sided, irregularly punctate; punctures uniform in size; suture margined posteriorly, but without apical inflexed margin. Prosternal disc in front of coxae rather flat; prosternal process rather thick, and on the same level as prosternum; procoxae subtransverse. Protibia slightly expanded apicad, outer apical angle truncate. Abdominal fovea present in male.

Remarks. This genus is closely related to *Orthocis* CASEY in general features, but each elytron is devoid of apical inflexed margin, maxilla with lacinia is not elongate, and the antenna is 9-segmented. Though NAKANE and NOBUCHI placed their new species in the genus *Ennearthron* because of the number of antennal segment, LAWRENCE (1965, 1971) threw doubt on its systematic position. Since he did not propose taxonomic change, however, a new genus is established herein on the basis of this peculiar species.

Anoplocis poriae (NAKANE et NOBUCHI, 1955), comb. nov.

[Japanese name: Poria-hime-tsutsukinokomushi]

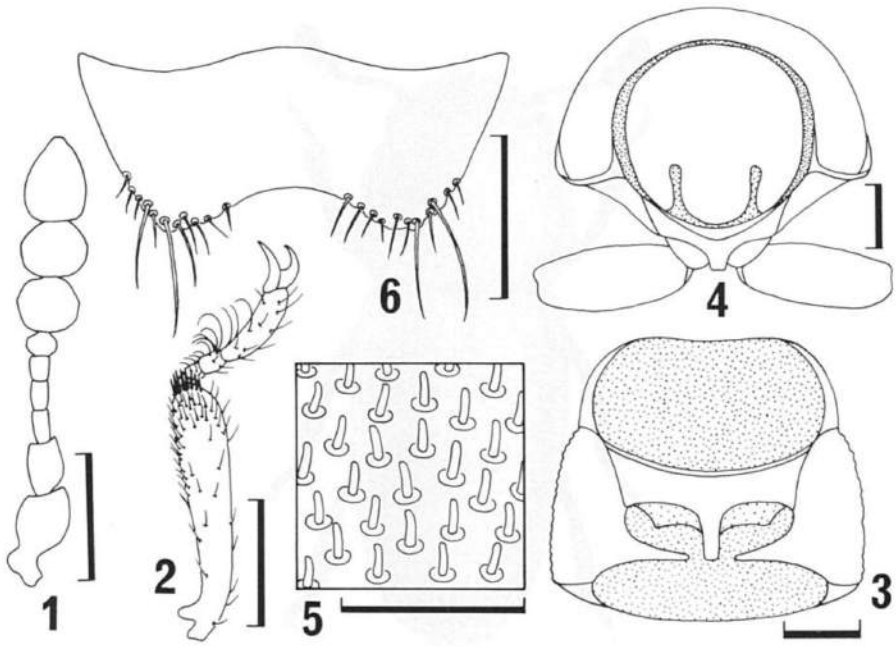
(Figs. 1–6)

Ennearthron (s. str.) *poriae* NAKANE et NOBUCHI, 1955, Scient. Rept. Saikyo Univ., **2A**: 49 (1 ex., Inogashira Park, Tokyo; 21 exs., Noziri, Nagano).
Orthocis ? poriae: LAWRENCE, 1965, Bull. Mus. comp. Zool., **133**: 284.
Ennearthron ? poriae: LAWRENCE, 1971, Bull. Mus. comp. Zool., **142**: 480.
Cis poriae: ABDULLAH, 1973, Zool. Beitr., **19**: 221.
Dolichocis poriae: MIYATAKE, 1985, Coleopt. Japan Col., Osaka, **3**: 284.

Variation in the type series and specimens from Mannô-chô, Kagawa Pref., Shikoku.

Male (n=15)	Female (n=15)
TL (mm): 1.18–1.37 (1.25±0.06)	TL (mm): 1.23–1.45 (1.29±0.08)
EW (mm): 0.49–0.55 (0.52±0.02)	EW (mm): 0.51–0.6 (0.54±0.03)
TL/EW: 2.33–2.48 (2.41±0.05)	TL/EW: 2.32–2.48 (2.39±0.05)
PL/PW: 0.8–0.86 (0.83±0.02)	PL/PW: 0.81–0.88 (0.84±0.02)
EL/EW: 1.53–1.67 (1.62±0.04)	EL/EW: 1.57–1.66 (1.62±0.03)
EL/PL: 1.94–2.12 (2.06±0.05)	EL/PL: 2.0–2.15 (2.07±0.06)

Specimens examined. [Honshu] ⟨Nagano Pref.⟩ 1 ex., Noziri, 21–VII–1941, T. NAKANE leg. (cotype); 6 exs., same locality, 1–V–1942, T. NAKANE leg. (cotypes). [Shikoku] ⟨Kagawa Pref.⟩ 59 exs., forest near Hirooka Shrine, Mannô-chô, 24～26–X–1989, Y. UTSUNOMIYA leg.; 52 exs., same locality, 13～15–XII–1989, M. KAWANABE



Figs. 1–6. *Anoplocis poriae* (NAKANE et NOBUCHI), comb. nov. —— 1, Antenna; 2, right protibia; 3, prothorax, ventral view; 4, prothorax, frontal view; 5, surface of pronotum; 6, eighth abdominal sternite in male. Scales for Figs. 1–5: 0.1 mm; for Fig. 6: 0.05 mm.

leg.; 21 exs., same locality, 25–VI–1990, M. KAWANABE leg. ⟨Ehime Pref.⟩ 1 ex., Kyôga-mori, 22–X–1968, K. ISHIKAWA leg. [Kyushu] ⟨Nagasaki Pref.⟩ 4 exs., Tsushima Is., Hachiman Shrine, Izuhara-chô, 9–V–1991, M. KAWANABE leg.; 3 exs., Tsushima Is., Agami-iriguchi–Uchiyama, Izuhara-chô, 10–V–1991, M. KAWANABE leg.

Distribution. Honshu, Shikoku, Kyushu (Tsushima Is.).

Host fungus. *Schizoporia paradoxa* (SCHRAD. ex FR.) DONK (Anatake in Japanese).

Anoplocis ryukyuensis sp. nov.

[Japanese name: Minamino-poria-hime-tsutsukinokomushi]

(Figs. 7–10)

Male (Holotype). Body length (excluding head): 1.12 mm; greatest breadth of elytra: 0.49 mm.

Body narrowly elongate and cylindrical, 2.31 times as long as elytral breadth, somewhat strongly convex. Color black; antennal funicles, palpi and legs yellowish brown, antennal clubs somewhat darker. Punctures on dorsum each bearing a short, robust, suberect and yellowish seta.

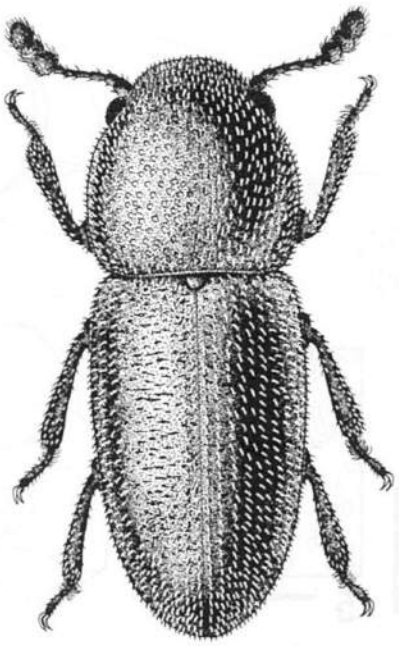


Fig. 7. *Anoplocis ryukyuensis* sp. nov., male.

Head weakly convex, slightly and transversely depressed from side to side between eyes, rather closely and finely punctate, finely reticulate, covered with setae which are slightly finer than those on pronotum and elytra; fronto-clypeal ridge weakly produced forward and forming small arcuate lamella on each side, though flat in the middle of clypeus. Third antennal segment 1.36 times as long as 4th.

Pronotum 0.77 times as long as broad; anterior margin not ridged, gently rounded; anterior corners obtusely angulate, forming an angle of about 130°, not protruding beyond the anterior margin in lateral view; lateral margins narrowly ridged, finely crenulate, entirely visible from above; sides nearly subparallel though weakly arcuate in dorsal view; posterior margin narrowly ridged, and weakly arcuate; posterior angles nearly rounded; dorsum irregularly and somewhat closely punctate; punctures uniform in size, shallow, somewhat umbiliform, separated by a distance about 1.5 to 2.5 times their diameters; interstices between punctures finely shagreened. Scutellum small, semicircular, rugulose. Elytra elongate, 1.56 times as long as broad, and 2.07 times as long as pronotum; sides subparallel though weakly divergent from base to the middle, then gradually convergent toward apices; surface covered with setae which are sometimes seriate, closely and irregularly punctate; punctures very small and inconspicuous, considerably smaller than those on pronotum; interstices between punctures rugulose; suture narrowly margined but without inflected area at apex.

Prosternal disc in front of coxae slightly tumid medio-longitudinally, shallowly and transversely depressed just before each coxa; prosternal process broad, subparallel-sided, on the same level as the base of pronotum. First abdominal sternite with a large, oval and somewhat inconspicuous pubescent fovea in the middle.

Eighth abdominal sternite a little wider than long, with the apical margin slightly emarginate, armed with mixed long and short setae on lateral projections, devoid of setae at the bottom of the emargination. Tegmen rather stout, subparallel-sided, apical area divided into two broad lobes.

Female. First abdominal sternite devoid of pubescent fovea.

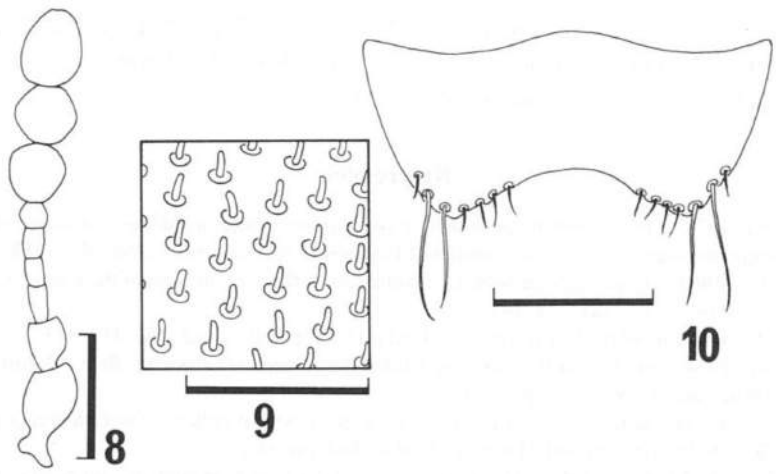
Variation in the type series.

Male (n=3)	Female (n=7)
TL (mm): 1.11–1.16 (1.14±0.02)	TL (mm): 0.96–1.23 (1.11±0.08)
EW (mm): 0.49–0.5 (0.49±0.01)	EW (mm): 0.42–0.53 (0.48±0.03)
TL/EW: 2.28–2.39 (2.33±0.04)	TL/EW: 2.23–2.33 (2.29±0.04)
PL/PW: 0.77–0.8 (0.79±0.02)	PL/PW: 0.76–0.81 (0.79±0.02)
EL/EW: 1.53–1.58 (1.56±0.02)	EL/EW: 1.51–1.58 (1.54±0.02)
EL/PL: 1.97–2.07 (2.04±0.04)	EL/PL: 2.0–2.23 (2.08±0.07)

Type series. Holotype: ♂, Hiji-ôtaki Falls, Kunigami-gun, Okinawa-hontô Is., 19–IV–1994, M. KAWANABE leg. Paratypes: 1 ♂, 7 ♀♀, same data as holotype; 1 ♂, Kanna, Ginoza-son, Kunigami-gun, Okinawa-hontô Is., 20–VII–1993, M. KIMURA leg. All the specimens of the type series are preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama.

Distribution. Ryukyu Islands (Okinawa-hontô Is.).

Host fungus. *Schizoporia paradoxa* (SCHRAD. ex FR.) DONK (Anatake in Japa-



Figs. 8–10. *Anoplocis ryukyuensis* sp. nov. —— 8, Antenna; 9, surface of pronotum; 10, eighth abdominal sternite in male. Scales for Figs. 8–9: 0.1 mm; for Fig. 10: 0.05 mm.

nese).

Remarks. This new species is closely allied to *A. poriae* in general features, but in the latter the anterior corner of pronotum is slightly protrusive and the punctuation of pronotum is denser.

Key to the Japanese Species of the Genus *Anoplocis*

1. Body dark brown. Pronotum with anterior corners slightly protruding beyond the anterior margin in lateral view; punctures on dorsum denser, separated by a distance about 1 to 1.5 times their diameters; PL/PW usually more than 0.81. ..... *A. poriae*

— Body black. Pronotum with anterior corners not protruding beyond the anterior margin in lateral view; punctures on dorsum sparser, separated by a distance about 1.5 to 2.5 times their diameters; PL/PW usually less than 0.8. ..... *A. ryukyuensis* sp. nov.

要　約

川那部　真：ツツキノコムシ科の1新属ならびにこれに所属する琉球列島産の1新種．——中根と野淵によって，*Ennearthron poriae* の名で1955年に命名記載されたポリアヒメツツキノコムシは，当時の属の定義から触角の節数が9節であることをおもな根拠にして，*Ennearthron* 属に含められた種である．LAWRENCE (1965, 1971)は，世界各地の種を広範に検討する過程で，本種が *Ennearthron* 属に含まれていることに疑問を投げかけたが，その帰属についてはとくに言及しなかった．その後，*Dolichocis* 属のものとして扱われているが(宮武，1985)，真の所属は未検討のまま残されている．筆者は，本種に酷似した1新種を，1994年に琉球列島で発見し，ポリアヒメツツキノコムシとあわせて近縁の属の種と詳細に比較検討した結果，既知のいずれの属にも含まれない独自の属を形成するものと認めた．そこで新属 *Anoplocis* を創設して，*Ennearthron poriae* を *Anoplocis poriae* に変更し，琉球列島で発見された1新種はミナミノポリアヒメツツキノコムシ *Anoplocis ryukyuensis* と新しく命名して記載した．

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Elytra, *Tokyo*, **24** (2): 337–366, November 15, 1996

Study of Asian Strongyliini (Coleoptera, Tenebrionidae)

II. New *Strongylium* Species from Northern Thailand (Part 1)

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Abstract This is the second part of a study of the Asian Strongyliini. Twenty new species of the genus *Strongylium* from northern Thailand are described as follows: *S. doisuthepense* sp. nov., *S. taoi* sp. nov., *S. fangense* sp. nov., *S. maleengthai* sp. nov., *S. soncai* sp. nov., *S. hirasawai* sp. nov., *S. tsuyukii* sp. nov., *S. phomae* sp. nov., *S. phraense* sp. nov., *S. nakpraati* sp. nov., *S. miikhonum* sp. nov., *S. doipuiense* sp. nov., *S. hideoi* sp. nov., *S. sawaiae* sp. nov., *S. roifeedaatum* sp. nov., *S. roiyonum* sp. nov., *S. lanathai* sp. nov., *S. chiangdaoense* sp. nov., *S. siisuai* sp. nov., and *S. siidemum* sp. nov.

For these 15 years, I have been studying tenebrionid beetles in northern Thailand, mainly in Chiang Mai, Chiang Rai and some other prefectures, and collected *Strongylium* materials in this area. Many other interesting specimens are submitted to me for the present study by my friends in entomology. Recently Mr. S. Bečvář, Czech Academy of Sciences, has permitted me to examine his invaluable collections and other materials under his care.

In the course of this study, I went to Europe twice, in the autumn of 1995 and the spring of 1996, to examine the types preserved in the Muséum National d'Histoire Naturelle, Paris and the Natural History Museum, London, and to find certain original descriptions of Pic, Fairmaire and other authors.

In the present paper, I will describe the first 20 new species from northern Thailand. Other new species probably attaining almost to the same number, will be reported in the following part of this series.

I wish to express my heartfelt thanks to Messrs. Stanislav Bečvář (Czech Academy of Sciences), Hanmei Hirasawa (Matsumoto City), Yoshiaki Komiya (Tokyo), Minoru Tao (Yokohama City), M. Nishimura (Akishima City), Shigeo Tsuyuki (Zushi City), Kunio Kume (Tokyo), Hideo Akiyama (Yokohama City), Sigeaki Kondo (Urayasu City), and Terutsune Abe (Tokyo). Deep indebtedness should be expressed to Dr. Claude Girard, Muséum National d'Histoire Naturelle, Paris, and Mr. Martin J. D. Brendell, the Natural History Museum, London, for their invaluable consideration in the course of the present study. Thanks are also due to Mr. Kaoru Sakai in Tokyo for taking photographs inserted in this paper. Finally, I wish to express my deepest appreciation to Dr. Shun-Ichi Uéno, Emeritus Curator of the National Science Museum

(Nat. Hist.), Tokyo, for his constant guidance on my taxonomic studies.

The abbreviation 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; NMP–National Museum in Prague; ZSM–Zoologische Staatssamlung München; BC–BEČVÁŘ collection.

Depositories of the holotypes of the new species to be described are given in the text.

Strongylium doisuthepense sp. nov.

(Fig. 1)

Brownish black, with mouth parts, gula, claws, etc., lighter in colour; head and pronotum feebly shining, elytra moderately and slightly vitreously shining, ventral surface gently and somewhat alutaceously shining; each surface almost glabrous. Subcylindrical.

Head subdecagonal and convex above, weakly micro-shagreened, closely and finely punctate; clypeus semicircular, flattened in basal portion, slightly divergent apicad and bent downwards in front, with fronto-clypeal sulcus fine and widely arcuate; genae rather strongly raised, with outer margins subrectangular; frons somewhat T-shaped, steeply inclined forwards; eyes large, somewhat transversely comma-shaped, strongly convex laterad, rather triangularly inlaid into head, diatone about 1/15 times the width of an eye diameter; vertex weakly, longitudinally impressed in the middle. Antennae rather filiform, reaching basal 1/6 of elytra, 7 apical segments weakly flattened and slightly dilated to each apex, ratio of the length of each segment from basal to apical: 0.85, 0.2, 1.0, 0.95, 0.85, 0.8, 0.8, 0.8, 0.75, 0.7, 0.7.

Pronotum subquadrate, 1.25 times as wide as long, widest slightly before the middle; apex slightly and widely produced apicad, rimmed, the rim feebly thickened in middle; base very slightly bisinuous, clearly bordered and boldly rimmed; sides steeply declined to gently produced lateral margins, which are finely rimmed though the rims are invisible from above; front angles rounded, hind angles rather acute; disc gently convex, weakly micro-shagreened, rather closely scattered with small punctures, which are larger than the cephalic ones. Scutellum subcordate and slightly elevated, scattered with fine punctures.

Elytra 2.4 times as long as wide, 4.8 times the length and 1.55 times the width of pronotum, very weakly widened posteriad, widest slightly before apical 1/3; dorsum strongly convex longitudinally, highest at basal 1/3; disc punctato-striate, the striae fine, the punctures in striae small and rounded, notching intervals; intervals gently convex, microscopically punctate and transversely micro-aciculate.

Male anal sternite weakly depressed in apical portion. Legs slender; male metatibiae weakly twisted, with inner faces slightly gouged in basal halves; ratios of the lengths of pro-, meso- and metatarsomeres: 0.35, 0.25, 0.25, 0.3, 1.2; 1.85, 0.8, 0.7, 0.6, 1.45; 1.9, 0.8, 0.7, 1.4.

Male genitalia fusiform, feebly curved in lateral view, 4 mm in length, 0.7 mm in width; fused lateral lobes 1.6 mm in length, finely punctate, with pointed apex.

Body length: 21.5–27.5 mm.

Holotype: ♂, Doi Suthep, Chiang Mai Pref., 1–V–1984, M. NISHIMURA leg. (NSMT). Paratypes: 3 exs., Ban Huai Po, Mae Hong Son Pref., 1,600–2,000 m alt., 8~18–V–1992, Jan HORÁK leg., 21 exs., Chiang Mai env., V–1995, no collector's name, 13 exs., 7~12–V–1996, Soppong, 1,500 m alt., Mae Hong Son Pref., S. BEČVÁR leg. (BC); 5 exs., Doi Sang, Chiang Mai Pref., 3~6–V–1990, 3 exs., Memalo, nr. Chiang Mai, 18~20–V–1990, 3 exs., nr. Chiang Mai, 3–V–1994, K. KUME leg.; 4 exs., Mt. Doi Pui, nr. Chiang Mai, 3–VI–1986, 1 ex., Doi Suthep, 1,300 m alt., 17–V–1987, 4 exs., Doi Suthep, 22–V–1987, 2 exs., Doi Suthep, 18–V–1987, 1 ex., Mt. Doi Inthanon, 1,250 m alt., Chiang Mai Pref., 2~3–V–1989, H. HIRASAWA leg.; 3 exs., Doi Suthep, 29–V–1983, Y. KOMIYA leg.; Doi Suthep, 1,100 m alt., 2 exs., 14–V–1982, 2 exs., 17–V–1982, 1 ex., 19–V–1982, 4 exs., 20–V–1982, 4 exs., 23–V–1982, 1 ex., 9–IV–1983, T. SHIMOMURA leg.; Doi Suthep, 2 exs., 3–V–1985, 2 exs., 11–V–1985, M. TAO leg.; 3 exs., Phuping Palace, Chiang Mai City, 20~21–V–1985, H. AKIYAMA leg.; 2 exs., Phuping Palace, 7–V–1984, M. NISHIMURA leg.; 2 exs., Mt. Doi Pui, V–1986, A. COTTON leg.; 2 exs., Doi Sang, 3~6–V–1990, M. ITO leg.; 2 exs., Doi Mon Angget, Chiang Mai Pref., 31–V–1990, 1 ex., Fang–Chiang Dao, Chiang Mai Pref., 22~23–V–1989, 1 ex., Doi Suthep, 11–V–1996, K. MASUMOTO leg.; 1 ex., Doi Suthep, VII–1985, 4 exs., Chiang Mai, VI–1989, N. KOYAMA leg.; 1 ex., Doi Pui, 1,500 m alt., 4–V–1980, K. KINUGASA leg.; 1 ex., Phuping Palace, 21–V–1985, M. SAWAI leg.; 1 ex., Doi Suthep, 27–IV–1989, S. TSUYUKI leg.; 2 exs., Doi Suthep, 21–V–1988, 1 ex., Doi Angkhang, Chiang Mai Pref., 1–V–1989, Manit Y. leg.; 19 exs., Doi Inthanon, Chiang Mai Pref., 16–VII–1989, 4 exs., same loc., 27–IV–1989, 7 exs., Doi Sang, 28–V–1990, 8 exs., Chiang Mai, 1988, 1 ex., Wiang Papao, Chiang Rai Pref., 2–VI–1993, no collector's name; 1 ex., Chiang Dao, no further detailed data; 1 ex., Doi Suthep, 31–V–1983, 1 ex., Doi Pui, 9–VI–1984, no collector's name; 2 exs., Wiang Papao, 15–V–1996, 2 exs., Fang, 14–V–1996, 1 ex., nr. Chiang Mai, VII–1996, native collector.

Notes. This new species resembles *S. carbonarium* GEBIEN, 1913, from Taiwan, but can be distinguished from the latter by the larger eyes, the pronotum more transverse and more clearly punctate, the elytral punctures in striae rounded and clearer, and the shorter legs. As compared with the type of *S. atricolor* PIC, 1922, from Tonkin, the present new one is differentiated by the shape of eyes, genae, pronotum, etc., and also by easily visible microscopic punctures on the elytral intervals.

Strongylium taoi sp. nov.

(Fig. 2)

Piceous, with mouth parts and major portions of ventral surface brownish; posterior portion of head and pronotum sericeously shining, elytra, legs, mesosternum ex-

cept for antero-lateral portions and abdominal sternites gently shining; almost glabrous. Rather robust.

Head somewhat rounded, rather closely and finely punctate, micro-shagreened in posterior portion; clypeus semicircular, gently inclined forwards, slightly depressed in the postero-medial portion, weakly raised on each side, haired in front, clearly bordered from frons by a widely V-shaped sulcus; genae gently raised, with subrectangular outer margins; frons boldly Y-shaped, longitudinally impressed in the postero-medial portion; eyes transversely comma-shaped, gently convex laterad, obliquely and parabolically inlaid into head, diatone about 1/4 times the width of an eye diameter. Antennae subfiliform, reaching basal 1/5 of elytra, ratio of the length of each segment from basal to apical: 0.4, 0.2, 0.8, 0.65, 0.55, 0.55, 0.55, 0.5, 0.45, 0.4, 0.4.

Pronotum subquadrate, 1.3 times as wide as long, widest slightly before the middle; apex nearly straight, widely triangularly rimmed; base feebly bisinuous, slightly more thickly rimmed than apex; sides steeply declined to lateral margins, which are weakly produced laterad in posterior portions, finely rimmed in anterior portion, the rim being visible from above; front angles obtuse, hind angles rather acute; disc gently convex, micro-shagreened, rather sparsely and irregularly scattered with small punctures, with a medial longitudinal groove and two pairs of impressions behind the middle. Scutellum subcordate, slightly convex, sparsely scattered with minute punctures.

Elytra subfusiform, nearly 3 times as long as wide, 4.8 times the length and 1.6 times the width of pronotum, weakly widened posteriad and widest at apical 1/3; dorsum longitudinally convex, highest at basal 1/3; disc punctato-striate, the striae grooved, the punctures in striae small and slightly longitudinal, very weakly notching intervals and feebly forming crenulations, with basal portions of 5th striae rather clearly impressed; intervals rather noticeably ridged, weakly micro-shagreened and scattered with microscopic punctures; humeri somewhat remarkably swollen; apices slightly, roundly produced.

Male anal sternite parabolically concave and haired; apex truncate and slightly emarginate, with each side pointed. Protibiae gently curved downwards, with ventral sides weakly gouged and haired in apical 2/3; metatibiae very slightly twisted, with inner side feebly gouged and haired in apical 3/4; ratios of the lengths of pro-, meso- and metatarsomeres: 0.6, 0.22, 0.22, 0.2, 1.2; 1.85, 0.9, 0.6, 0.4, 1.25; 2.1, 0.7, 0.35, 1.25.

Male genitalia elongated fusiform, and gently curved in lateral view, 3.8 mm in length and 0.6 mm in width, with prolonged and pointed fused lateral lobes 1.65 mm in length.

Body length: 19.5–22.5 mm.

Holotype: ♂, Doi Suthep, Chiang Mai Pref., 21–V–1985, M. TAO leg. (NSMT). Paratypes: 1 ex., Doi Sang, Chiang Mai Pref., 3~6–V–1990, K. KUME leg.; 1 ex., Doi Sang, 26–V–1990, no collector's name.

Notes. This new species somewhat resembles the preceding new one, but can be distinguished from the latter by the robuster body with mat pronotum and longitudinal

elytral punctures.

Strongylium fangense sp. nov.

(Fig. 3)

Almost wholly black with feebly brownish tinge; head and pronotum slightly shining, elytra moderately shining, ventral surface moderately shining though feebly alutaceous; almost glabrous. Elongate and subcylindrical.

Head transversely subelliptical, moderately convex above, closely punctate; clypeus rather transverse, semicircularly flattened in basal portion, weakly bent downwards in front, fronto-clypeal border widely arcuate and finely sulcate; genae rather strongly raised with rounded outer margins; frons very narrow, steeply inclined forwards; eyes large and somewhat securiform, noticeably convex laterad, broadly inlaid into head, diatone about 1/8 times the width of an eye diameter; vertex short, with an impression at the middle. Antennae nearly filiform, reaching basal 1/4 of elytra, ratio of the length of each segment from basal to apical: 0.8, 0.2, 1.4, 1.0, 0.95, 1.0, 0.98, 0.96, 0.9, 0.8, 0.89.

Pronotum 1.3 times as wide as long, widest at the middle; apex very weakly produced forwards and rimmed, the rim feebly thickened in middle; base feebly bisinuous, bordered and rimmed; sides weakly swollen laterad, steeply declined to lateral margins, which are invisible from above; front angles rounded, hind angles rather acute; disc moderately convex above, closely rugoso-punctate, weakly depressed in the posteromedial portion, with a pair of oblique impressions at basal 1/3. Scutellum slightly elongated triangular, very feebly convex, sparsely scattered with fine punctures.

Elytra 2.4 times as long as wide, 5 times the length and slightly less than 1.7 times the width of pronotum, subparallel-sided and widest at apical 1/3; dorsum rather strongly convex longitudinally and highest at basal 1/4; disc rather noticeably punctato-striate, the punctures in internal portion fine and closely set, those in antero-external portions becoming larger and forming foveae, basal portions of 1st–5th striae impressed, especially distinctly so in 5th; intervals convex, feebly micro-shagreened, somewhat transversely aciculate, scattered with microscopic punctures; humeri rather noticeably swollen; apices without peculiarities.

Male anal sternite weakly, semicircularly depressed in apical portion. Legs slender; protibiae with ventral faces weakly gouged in apical 2/3; ratios of the lengths of pro-, meso- and metatarsomeres: 0.62, 0.33, 0.31, 0.3, 1.67; 2.3, 1.05, 0.85, 0.73, 1.78; 2.78, 1.05, 0.75, 1.95.

Male genitalia short fusiform, very weakly curved in lateral view, 3.6 mm in length and 0.78 mm in width; fused lateral lobes 2 mm in length, with prolonged and very slightly thickened apices.

Body length: 18.5–23.5 mm.

Holotype: ♂, Fang District, Chiang Mai Pref., 25–V～1–VI–1993, no collector's name (NSMT). Paratypes: 3 exs., same data as for the holotype; 3 exs., Fang, 22–V–

1993, 1 ex., 14–V–1996, 12 exs., nr. Chiang Mai, VII–1996, native collector; 7 exs., Chiang Mai env., N. Thailand, V–1995, no collector's name (BC).

Notes. This new species somewhat resembles *S. longurium* FAIRMAIRE, 1903, from Tonkin, but can be distinguished from the latter by the legs almost wholly black, and the elytra with intervals weakly micro-shagreened, somewhat transversely acicu-late, and scattered with microscopic punctures, and also with the punctures in striae of antero-external portions rather distinctly foveolate.

Strongylium maleengthai sp. nov.

(Fig. 4)

Brownish black, with 6 apical segments of antennae, tarsi, gula, postero-lateral portions of abdominal sternites lighter in colour; head and pronotum weakly, feebly metallically shining, pronotum strongly and somewhat vitreously so, pro- and mesosterna weakly shining, ventral surface of head, metasternum rather strongly so, abdominal sternites weakly and alutaceously so; each surface almost glabrous. Sub-cylindrical.

Head subdecagonal, slightly micro-shagreened and closely punctate; clypeus semicircular, inclined forwards, feebly divergent towards apex, with fronto-clypeal border arcuately sulcate; genae rather strongly raised, with rounded outer margins; frons elongated T-shaped and steeply inclined forwards, almost impunctate in anterior portion, with a longitudinal impression between eyes; eyes large and somewhat reni-form, convex laterad, diatone about 1/6 the width of an eye diameter; vertex with a vague longitudinal impression medially. Antennae subfiliform, slightly thickened apicad, reaching basal 1/6 of elytra, ratio of the length of each segment from basal to apical: 0.6, 0.2, 1.1, 0.8, 0.8, 0.75, 0.6, 0.55, 0.5, 0.5, 0.55.

Pronotum almost quadrate, 1.3 times as wide as long, widest at apical 1/3; apex almost straight, narrower than base, finely rimmed on each side; base very feebly, widely bisinuous and gently reflexed, rather strongly bordered in middle; sides steeply declined to lateral margins, which are finely rimmed and visible from above; disc mod-erately convex, though weakly depressed in the postero-medial portion, slightly micro-shagreened and closely, irregularly punctate, the punctures often fused with one an-other and forming rugosities, with an oblique impression at basal 2/5 on each side. Scutellum short linguiform, almost flat, sparsely scattered with fine punctures.

Elytra 2.2 times as long as wide, 5.1 times the length and slightly less than twice the width of pronotum, feebly widened posteriad and widest at apical 1/3; dorsum lon-gitudinally convex, highest slightly before the middle; disc with rows of punctures, those in antero-internal portion small and rather closely set, those in antero-medial and antero-lateral portions large and sparsely set, often longitudinal and forming foveae, and those in posterior portion becoming finer and almost connected with one another; intervals feebly convex in antero-internal portion, moderately so in antero-lateral, and almost flat in posterior portion, microscopically punctate and transversely micro-acicu-

late; humeri rather noticeably swollen; apices not modified.

Male anal sternite weakly depressed in apical portion. Legs slender; male metatibiae very weakly twisted, with inner faces slightly gouged widely in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.4, 0.25, 0.25, 0.23, 1.2; 1.75, 0.75, 0.6, 0.45, 1.25; 1.9, 0.8, 0.7, 1.3.

Male genitalia fusiform, 3 mm in length and 0.6 mm in width; fused lateral lobes 0.4 mm in length, gently pointed at apex, with dorsal surface finely punctate.

Body length: 18.5–22.5 mm.

Holotype: ♂, Fang Dist., Chiang Mai Pref., 25–V~1–VI–1993, no collector's name (NSMT). Paratypes: 11 exs., same data as for the holotype; 3 exs., Fang, 22–V–1993, 1 ex., 14–V–1996, 7 exs., Wiang Papao, Chiang Rai Pref., 2–VI–1993, 5 exs., nr. Chiang Mai, VII–1996, native collector; 13 exs., Fang Dist., V–1992, native collector, 10 exs., Chiang Mai env., V–1995, no collector's name (BC).

Notes. This new species somewhat resembles *S. alishanum* MASUMOTO, 1981, from Taiwan, but can be distinguished from the latter by the wider pronotum with apex not ridged medially, the elytra with rows of punctures, which are larger and somewhat foveolate in antero-medial and antero-lateral portions. The present species also somewhat resembles *S. subaeneum* PIC, 1917, from Yunnan, but can be differentiated from the latter by the larger body with pronotal punctures larger and often fused with one another, and the coarser elytral punctures.

Strongylium soncai sp. nov.

(Fig. 5)

Brownish black, with antennae, mouth parts, gula, mesosternum, legs, etc., more or less lighter in colour; head and pronotum weakly, somewhat sericeously shining, scutellum and elytra dark copper-coloured or brassy and rather distinctly, metallically shining, ventral surface somewhat alutaceous; each surface almost glabrous. Elongate and subcylindrical.

Head subdecagonal, feebly micro-shagreened, rather closely and finely punctate; clypeus rather semicircular and widely flattened in basal portion, gently bent downwards in front, with fronto-clypeal border widely arcuate and finely sulcate; genae oblique, with outer margins rather strongly and roundly raised; frons somewhat T-shaped, gently inclined forwards; eyes very large and somewhat reniform, strongly convex laterad, widely inlaid into head, diatone 1/7 times the width of an eye diameter; vertex with a longitudinal and impunctate impression medially. Antennae subfiliform, reaching basal 1/4 of elytra, ratio of the length of each segment from basal to apical: 0.85, 0.33, 1.6, 1.15, 1.25, 1.2, 1.05, 0.85, 0.8, 0.8, 0.9.

Pronotum rather quadrate, 1.23 times as wide as long, widest at apical 2/5; apex weakly produced forwards, feebly bordered on each side; base slightly bisinuate, wider than apex, rather boldly ridged; sides rather steeply declined to lateral margins, which are produced laterad, feebly sinuous before base, and finely rimmed; front angles

rounded, hind angles angulate in dorsal view; disc gently convex, weakly micro-shagreened, rather closely scattered with fine punctures, with a fine longitudinal impunctate area medially. Scutellum subcordate, weakly ridged postero-medially, sparsely scattered with minute punctures.

Elytra 2.4 times as long as wide, 5.2 times the length and 1.7 times the width of pronotum, slightly widened posteriad, widest at apical 1/3; dorsum strongly convex longitudinally, very faintly flattened medially; disc punctato-striate, the striae very fine and often vanished, the punctures in striae small and somewhat longitudinal, those in lateral portion becoming larger and coarser, often forming longitudinal foveae, and those in posterior portions becoming sparser and finer; intervals very feebly micro-shagreened, often transversely micro-aciculate, and sparsely scattered with microscopic punctures, those in inner portion feebly convex, those in lateral portion gently so, and those in posterior portion almost flattened and smooth; humeri roundly swollen; apices rounded and very slightly acuminate.

Male anal sternite very weakly depressed in apical portion. Legs slender; ratios of the lengths of pro-, meso- and metatarsomeres: 0.55, 0.35, 0.45, 0.4, 1.5; 2.25, 1.2, 1.0. 0.75, 1.7; 2.8, 1.35, 0.95, 2.0.

Male genitalia elongated fusiform, gently curved in lateral view, 3 mm in length and 0.6 mm in width; fused lateral lobes 1.4 mm in length, with apex slightly prolonged and acutely pointed.

Body length: 20.5–21.5 mm.

Holotype: ♂, Fang Dist., Chiang Mai Pref., 25–V~1–VI–1993, no collector's name (NSMT). Paratypes: 1 ex., Wiang Papao, 2–VI–1993, no collector's name; 9 exs., Hte. Birmanie, Mines des Rubis, 1,200–2,300 m alt., DOHERTY leg., 1880 (MNHNP); 4 exs., Ruby Mines, Burma, 5,500–7,500 ft. alt., 1904–150, 6 exs., Ruby Mines, Birmah, DOHERTY leg., 5 exs., Ruby-mines, Upper Burmah, 5–7,000 ft. alt. DOHERTY leg., 2 exs., NE Burma, Kambaiti, 7,000 ft. alt., 22–VI–1934, R. MALAISE leg., 1 ex., 4~8–VI–1934, same locality and collector as for the preceding, 1 ex., Bhamo, Burma, Thos. SELKIRK leg., 1910–267 (NHML).

Notes. This new species resembles the preceding, *S. maleengthai* sp. nov., but can be distinguished from the latter by the narrower body with head and pronotum more finely punctate, elytra more strongly shining with punctures less distinctly foveolate, and slenderer legs.

Although slight difference can be observed in the body shape between Burmese and Thai populations, it might be due to local variation.

Strongylium hirasawai sp. nov.

(Fig. 6)

Black with a feeble iron-grayish tinge, antennae, mouth parts, gula, tarsi, etc., more or less lighter in colour; head and pronotum weakly shining, elytra moderately and metallically so, ventral surface weakly and alutaceously shining except for major

part of metasternum, which is moderately so; each surface almost glabrous. Elongate and subcylindrical.

Head subdecagonal, very weakly micro-shagreened, closely and finely punctate, each puncture with a microscopic bent hair; clypeus semicircular and widely flattened in basal portion, bent downwards in apical portion, which is widely triangular, with fronto-clypeal border slightly arcuate and finely sulcate; genae moderately raised, with outer margins rounded; frons somewhat T-shaped; eyes large, rather strongly convex laterad, obliquely inlaid into head, diatone 1/6 times the width of an eye diameter; vertex longitudinally impunctate medially, with a subrhombic impression between posterior portions of eyes. Antennae subfiliform, reaching basal 1/5 of elytra, ratio of the length of each segment from basal to apical: 0.8, 0.25, 1.5, 1.1, 1.2, 1.15, 0.85, 0.8, 0.75, 0.75, 0.85.

Pronotum subquadrate, 1.3 times as wide as long, widest at apical 2/5; apex almost straight, finely bordered and rimmed; base slightly bisinuate, wider than base, bordered and ridged, the ridge shining, finely punctate, and feebly thickened in medial portion; sides steeply declined to lateral margins, which are gently produced laterad, sinuous before base, and finely ridged, the ridge almost invisible from above; front angles rounded, hind angles rather acute; disc moderately convex with an oblique impression at basal 1/3 on each side, very weakly micro-shagreened, closely and irregularly punctate, the punctures larger than those on head, each with a microscopic bent hair. Scutellum triangular, feebly convex above, weakly micro-shagreened, punctato-aciculate on each side.

Elytra 2.3 times as long as wide, 4.8 times the length and 1.6 times the width of pronotum, subparallel-sided though weakly widened posteriad, widest at apical 2/5; dorsum strongly convex longitudinally, highest at basal 1/3; disc finely punctato-striate, the punctures in striae small, somewhat longitudinal and rather closely set, those in apical portion becoming smaller; intervals in basal portion feebly raised, weakly micro-shagreened, scattered with microscopic punctures, and rather transversely, sparsely aciculate, those in posterior portion almost flat and smooth, only scattered with more microscopic punctures; humeri bordered by basal portion of impressed 5th striae and gently swollen; apices without peculiarity.

Male anal sternite weakly depressed and haired in apical portion. Legs slender; male protibiae with ventral faces weakly gouged and haired in apical halves; male mesotibiae with inner faces very weakly gouged and haired in apical halves; male metatibiae with inner faces weakly gouged and haired in basal 1/3 and again very weakly so in apical 1/3; ratios of the lengths of pro-, meso- and metatarsomeres: 0.6, 0.3, 0.3, 0.25, 1.4; 1.55, 1.0, 0.8, 0.65, 1.65; 2.7, 1.2, 0.7, 1.65.

Male genitalia elongated fusiform, and almost straight in lateral view, 3.7 mm in length and 0.7 mm in width; fused lateral lobes 1.6 mm in length, with weakly prolonged, acute apex.

Body length: 22 mm.

Holotype: ♂, Mt. Doi Inthanon, 1,250 m alt., Chiang Mai Pref., 2~3–V–1989, H.

HIRASAWA leg. (NSMT). Paratypes: 1 ex., Chiang Mai env., V–1995, no collector's name (BC); 1 ex., Doi Suthep, VII–1985, N. KOYAMA leg.

Notes. The present new species resembles *S. maleengthai* sp. nov., but can be distinguished from the latter by the larger and more elongate body, with strial punctures on the elytra obviously finer and closer, and slenderer male genitalia.

Strongylium tsuyukii sp. nov.

(Fig. 7)

Brownish black, dorsal surface and some parts of ventral surface with golden coppery tinge, ventral surfaces of head and legs more or less lighter in colour; head and pronotum feebly shining, elytra strongly and metallically so, major portions of ventral surface alutaceous, central part of metasternum strongly and somewhat vitreously shining; dorsal surface almost glabrous, ventral surface clothed with pale bent hairs. Elongate and convex longitudinally.

Head subdecagonal, closely punctate, the punctures sometimes fused with one another; clypeus semicircular, rather strongly bent downwards in front, with frontoclypeal border arcuately and finely sulcate; genae oblique, rather strongly raised, with obtuse outer margins; frons finely T-shaped, rather steeply inclined forwards, with area between posterior portions of eyes impressed in rhombic shape, each side of the impression slightly ridged; eyes medium-sized, somewhat securiform, moderately convex laterad, slightly obliquely inlaid into head, diatone about 1/7 times the width of an eye diameter. Antennae reaching basal 1/8 of elytra, 5 apical segments gently flattened and thickened towards each apex, ratio of the length of each segment from basal to apical: 1.0, 0.25, 1.25, 1.25, 1.13, 1.1, 1.0, 0.84, 0.72, 0.6, 0.6.

Pronotum quadrate, slightly longer than wide; apex very slightly arcuate posteriad, rather noticeably, widely triangularly rimmed; base slightly wider than apex, very weakly bisinuous and rimmed; sides rather steeply declined to lateral margins, which are weakly ridged and invisible from above; front angles subrectangular, hind angles slightly acute in dorsal view; disc gently convex, irregularly and coarsely punctate, the punctures often fused with one another, with a longitudinal groove in the middle, and also with an impression behind the middle on each side. Scutellum linguiform, impressed medially, and minutely rugoso-punctate.

Elytra elongate, about 2.4 times as long as wide, 5 times the length and 1.7 times the width of pronotum, widest at apical 1/3; dorsum distinctly tri-undulate, with a pair of subconical swellings at basal 1/8, which is the highest; disc punctato-striate, the striae in inner portion grooved, those in outer portion often disappearing, the strial punctures in inner portion small and closely set, those in lateral portion becoming larger and coarser, often fused with one another, forming large longitudinal foveae; intervals in inner portion gently convex, those in lateral portion strongly ridged, basal portion of 3rd rather distinctly so; humeri feebly swollen; apices slightly dehiscent.

Male anal sternite semicircularly concave and pubescent, shallowly emarginate at

apex. Legs slender; male protibiae with ventral sides weakly gouged in apical 2/3 and haired; male metatibiae with inner margins weakly twisted, feebly gouged in basal 3/4; ratios of the lengths of pro-, meso- and metatarsomeres: 0.31, 0.2, 0.22, 0.24, 1.2; 1.84, 0.78, 0.64, 0.55, 1.47; 1.82, 0. 69, 0.54, 1.39.

Male genitalia slender, gradually thinned apicad, and gently curved in lateral view, 3.7 mm in length and 0.65 mm in width, slightly constricted between basal piece and fused lateral lobes, whose apices are sharply pointed.

Body length: 16–23 mm.

Holotype: ♂, near Chiang Mai, 1,300 m, 17–V–1987, H. HIRASAWA leg. (NSMT). Paratypes: 2 exs., same data as for the holotype; 2 exs., Ban Huai Po, 800–1,600 m alt., Mae Hong Son Pref., 1～15–V–1991, S. BILY leg. (coll. PICKA); 1 ex., Ban Huai Po, 1,600–2,000 m alt., 30–IV～4–V–1991, J. HORÁK leg. (BC); 2 exs., Mt. Doi Pui, near Chiang Mai, V–1986, A. COTTON leg.; 5 exs., Chiang Mai, 1988, native collector; 1 ex., Doi Suthep, Chiang Mai, 27–IV–1980, S. TSUYUKI leg.; 1 ex., Doi Suthep, 24–V–1985, M. Tao leg.

Notes. This new species resembles *S. sinuatipenne* MIWA, 1939, from Taiwan, but can be distinguished from the latter by the slightly robuster body with golden copper-coloured dorsal surface, the pronotum more coarsely punctate with a medial groove and a pair of impressions, and the elytra more strongly undulate with a pair of swellings at basal 1/8, and punctures in the striae coarser in the lateral portions.

Strongylium phomae sp. nov.

(Fig. 8)

Blackish brown, with mouth parts, gula, femora and tibiae except for their apical portions, etc., lighter in colour; dorsal surface feebly, alutaceously shining and almost glabrous, ventral surface gently shining and clothed with microscopic hairs. Rather elongate and subcylindrical.

Head subrhombic, slightly micro-shagreened, closely rugoso-punctate, each puncture with a microscopic bent hair; clypeus quadrate, widely flattened in basal portion, weakly bent downwards and truncate in front, with fronto-clypeal border widely triangular and finely impressed; genae obliquely raised, with obtuse outer margins; frons finely Y-shaped; eyes large and close to each other, strongly convex laterad and broadly inlaid into head, diatone about 1/7 times the width of an eye diameter; vertex with a rather large impression medially. Antennae subfiliform, reaching basal 1/5, ratio of the length of each segment from basal to apical: 0.5, 0.2, 0.8, 0.55, 0.55, 0.5, 0.45, 0.4, 0.35, 0.3, 0.4.

Pronotum quadrate, 1.3 times as wide as long, widest at the middle; apex almost straight and rimmed, the rim slightly thickened medially; base feebly bisinuous, clearly bordered and boldly rimmed; sides steeply declined to lateral margins, which are produced laterad and finely rimmed, though the rims are hardly visible from above; front angles rounded, hind angles acute; disc gently convex with a shallow, longitudinal me-

dial groove, micro-shagreened and closely rugoso-punctate, each puncture with a microscopic bent hair. Scutellum sublinguiform, rather closely and finely rugoso-punctate, with a longitudinal impunctate part.

Elytra elongate, 2.3 times as long as wide, 4.5 times the length and 1.5 times the width of pronotum, subparallel-sided though feebly widened posteriad, widest at apical 1/3; dorsum strongly convex longitudinally, highest slightly before the middle; disc micro-shagreened, scattered with microscopic punctures and finely, transversely wrinkled, punctato-striate, the striae fine and often interrupted, the punctures coalesced with one another and forming short longitudinal grooves, those in lateral portion becoming coarser and foveolate, those in posterior portion finer; intervals strongly convex in antero-lateral portion, becoming flat apicad; base of elytra bisinuously raised due to strongly impressed basal portions of 1st to 5th striae; humeri moderately raised; apices slightly dehiscent.

Male anal sternite without peculiarities. Legs simple in shape; ratios of the lengths of pro-, meso- and metatarsomeres: 0.35, 0.25, 0.26, 0.27, 1.2; 1.35, 0.65, 0.55, 0.45, 1.3; 1.65, 0.65, 0.5, 1.3.

Male genitalia elongated fusiform, 2.7 mm in length and 0.4 mm in width; fused lateral lobes 1.1 mm in length and sharply nib-shaped.

Body length: 16 mm.

Holotype: ♂, Fang Dist., Chiang Mai Pref., 25–V~1–VI–1993, no collector's name (NSMT). Paratypes: 13 exs., Soppong, 1,500 m alt., Mae Hong Son Pref., 7~12–V–1996, 5 exs., Doi Pui, 1,600 m alt., 8–V–1996, S. BEČVÁŘ leg., 5 exs., Doi Pui, 2~6–V–1996, Vit KUBÁN leg., 1 ex., Fang env., V–1992, native collector, 2 exs., Doi Pui, 2~6–V–1996, J. HORÁK leg. (BC); 2 exs., same data as for the holotype; 1 ex., Fang Dist., 22–V–1993, no collector's name; 1 ex., Mt. Doi Pui, 3–V–1980, S. TSUYUKI leg.; Doi Suthep, 3 exs., 11–V–1996, 1 ex., 15–V–1996, 1 ex., 19–V–1996, K. MASUMOTO leg.

Notes. This new species belongs to a group widespread from Yunnan to northern India. I will deal with the other species in near future.

Strongylium phraense sp. nov.

(Fig. 9)

Brownish black, dorsal surface slightly with dark bluish tinge, head and legs weakly, metallically shining, pronotum and elytra feebly, somewhat alutaceously shining, ventral surface dark bluish and metallically shining; dorsal surface almost glabrous though the apical portion of clypeus is rather densely clothed with long bent hairs, ventral surface clothed with short and fine hairs. Oblong-ovate and strongly convex above.

Head subdecagonal, very weakly micro-shagreened, closely and finely punctate; clypeus transverse, weakly bent downwards, fronto-clypeal border almost straight and finely sulcate; genae obliquely raised, with obtuse outer margins; frons somewhat

finely T-shaped, gently inclined forwards; eyes large and transversely comma-shaped, moderately convex laterad and broadly inlaid into head, diatone about 1/6 the width of an eye diameter. Antennae slightly thickened apicad, reaching basal 1/6 of elytra, ratio of the length of each segment from basal to apical: 0.57, 0.2, 0.69, 0.57, 0.46, 0.43, 0.41, 0.39, 0.35, 0.32, 0.38.

Pronotum quadrate, 1.3 times as wide as long, widest slightly before the middle; apex almost straight and rimmed, the rim rather noticeably thickened in middle; base very feebly bisinuous, slightly wider than apex, rimmed, the rim gently thickened in middle; sides steeply declined to lateral margins, whose basal halves are subparallel and apical halves are rounded, ridged, apical halves of the ridges being visible from above; front angles rounded, hind angles subrectangular; disc gently convex and longitudinally grooved medially, with a pair of impressions at base, weakly micro-shagreened, rather closely, strongly punctate, the punctures sometimes fused with one another. Scutellum subcordate, flattened, micro-shagreened and sparsely scattered with minute punctures.

Elytra oblong, 1.9 times as long as wide, 3.5 times the length and 1.3 times the width of pronotum, widest at apical 1/3, though almost parallel-sided; disc strongly convex, highest at basal 1/3, with a pair of low swellings at basal 1/7; disc punctato-striate, the striae very shallow, punctures in inner portion small, almost rounded and rather closely set, those in medial and lateral portions becoming larger and sparsely set, often forming longitudinal foveae; intervals micro-shagreened, scattered with microscopic punctures, gently convex in inner portion, remarkably raised in medial and lateral portions; 1st to 3rd intervals distinctly flattened in apical 1/4, since the 4th and 6th are ridged; humeri moderately swollen; apices slightly truncate and emarginate, with 1st interval feebly produced posteriad.

Male anal sternite broadly, semicircularly concave in apical 4/5, with truncate apex. Male protibiae with ventral faces very weakly gouged in middle; male metatibiae rather distinctly twisted, with inner margins gouged in basal 2/5 and ridged in apical halves; ratios of the lengths of pro-, meso- and metatarsomeres: 0.4, 0.2, 0.22, 0.2, 1.2; 2.8, 1.23, 0.97, 0.64, 1.61; 2.23, 0.79, 0.51, 1.57.

Male genitalia elongated fusiform, 2.3 mm in length and 0.4 mm in width; fused lateral lobes somewhat nib-shaped, 1 mm in length, with a fine longitudinal impression in apical 1/4.

Body length: 12 mm.

Holotype: ♂, Wieng Ko Sai National Park, Phrae Pref., N. Thailand, 18–V–1985, M. SAWAI leg. (NSMT). Paratypes: 6 exs., Ban Van Eua, Vientiane, Laos, 15–VI–1969, 1 ex., 15–VI–1967, 1 ex., 16–VI–1969, 1 ex., 14–VI–1965, J. RONDON leg.; Phou Khao Khouai, Vientiane, 1 ex., 15–VI–1966, 1 ex., 8–VI–1965, J. RONDON leg.; 1 ex., Sayabouri, Laos, 18–VIII–1966, J. RONDON leg.; 1 ex., Wapi, Sud Laos, 30–VI–1967, J. RONDON leg.; 1 ex., Packadine, Laos, 13–V–1966, J. RONDON leg.; 1 ex., Vientiane, VII–1963, A. BAUDON leg. (MNHNP); 1 ex., Wiang Ko Sai, 19–V–1985, Y. KOMIYA leg.; 1 ex., Doi Suthep, 1,100 m alt., 16–VI–1983, T. SHIMOMURA leg.; 1 ex., Soppong-

Pai, 1,800 m alt., 1~8–V–1993, PACHOLATKO & DEMBICKY leg. (coll. BREMER); 2 exs., Chiang Dao env., 17~19–VI–1995, M. SNIZEK leg. (BC).

Notes. This new species somewhat resembles *S. azuripes* ARDOIN, 1976, from Laos, but can be distinguished from the latter by the elytra with a pair of swellings in basal 1/7, 4th intervals distinctly raised in the posterior portions, the area between the ridges flattened, and the modified elytral apices.

Strongylium nakpraati sp. nov.

(Fig. 10)

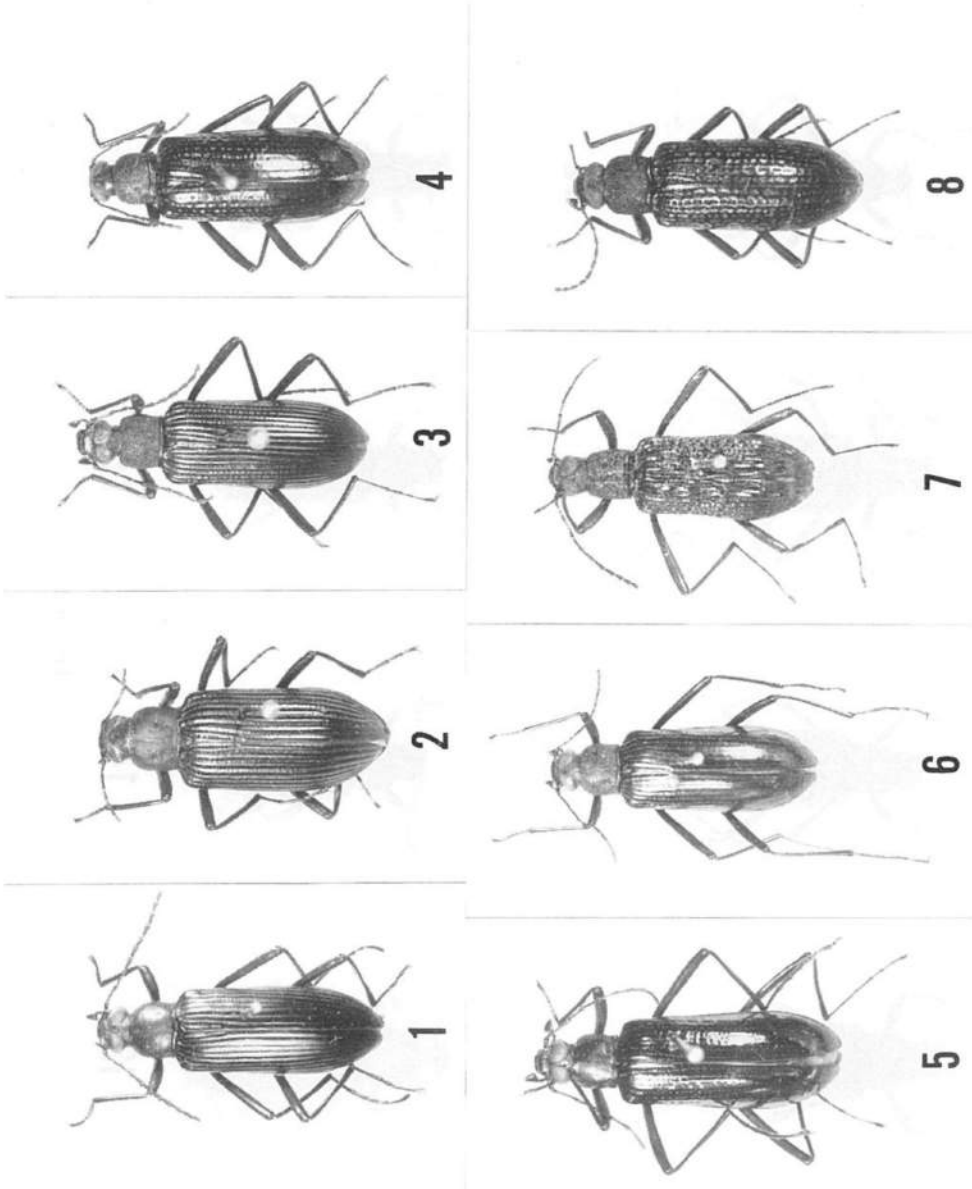
Piceous, apical portion of head, ventral surface and legs with dark bluish tinge; dorsal surface gently shining and almost glabrous, ventral surface feebly, somewhat alutaceously shining, metasternum and abdomen microscopically haired. Oblong-ovate and rather strongly convex above.

Head subdecagonal, closely punctate, the punctures often fused with one another and each with a microscopic bent hair; clypeus somewhat transversely hexagonal, bent downwards and truncate in front, bordered from frons by nearly straight fine sulcus; genae gently raised, with obtuse outer margins; frons wide, moderately inclined forwards, with a longitudinal impunctate part between eyes; eyes medium-sized, roundly convex laterad, gently inlaid into head and somewhat securiform, diatone about the width of an eye diameter. Antennae feebly thickened and weakly flattened apicad, reaching base of elytra, ratio of the length of each segment from basal to apical: 0.6, 0.2, 0.8, 0.7, 0.55, 0.45, 0.45, 0.4, 0.35, 0.3, 0.3.

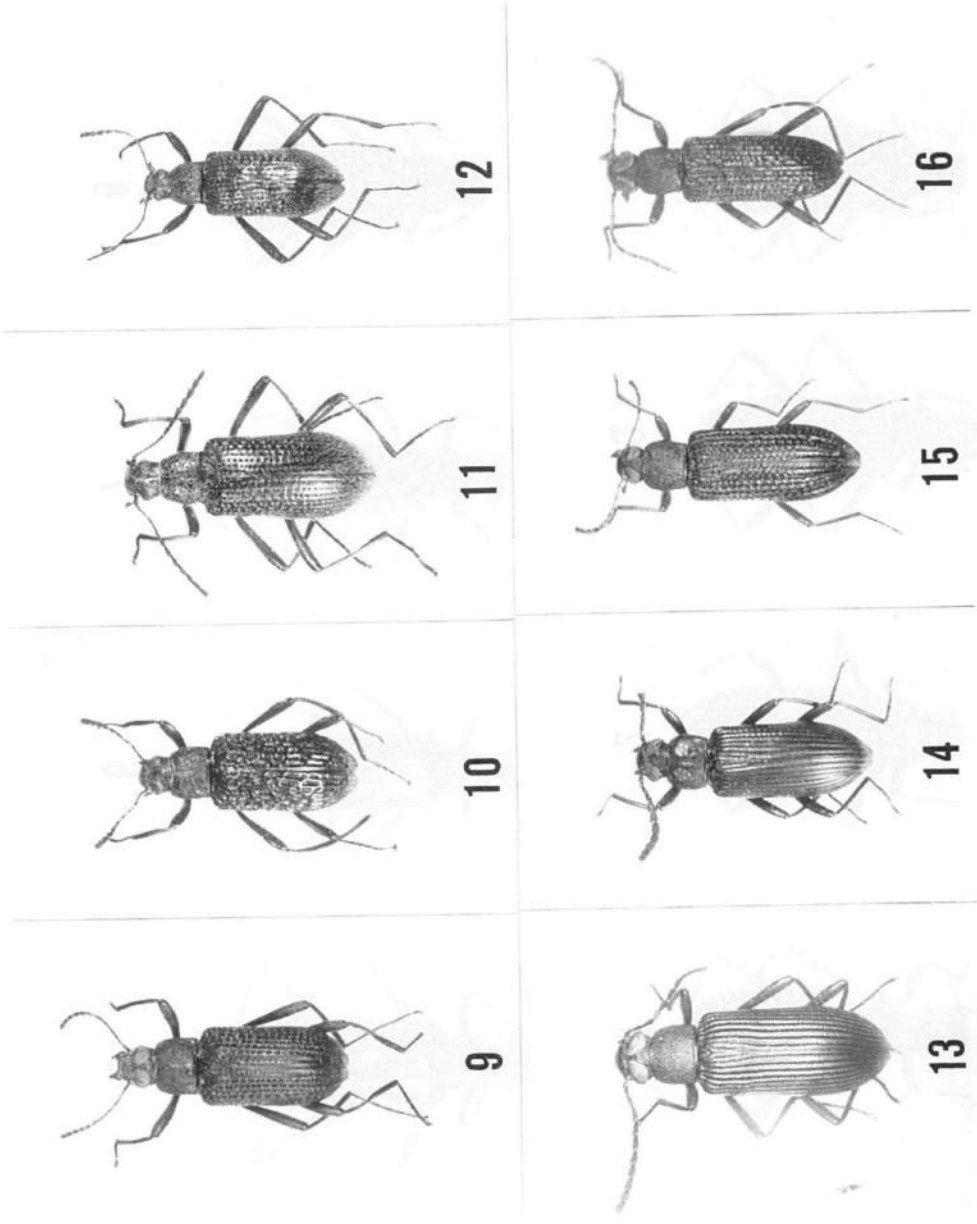
Pronotum quadrate, 1.25 times as wide as long, widest both before and behind the middle; apex almost straight and rimmed, the rim gently thickened in middle; base very slightly sinuous on each side, rimmed, the rim weakly thickened in middle; sides produced laterad, though very slightly constricted in the middle, steeply declined to lateral margins, which are finely rimmed, the rim barely visible from above; front angles rounded, hind angles nearly rectangular in dorsal view; disc gently convex, with a shallow, somewhat I-shaped groove in the medial portion, a pair of vague rounded impressions before the middle, and also with a pair of oblique ones at the base, closely and coarsely punctate, the punctures often fused with one another, each with a microscopic bent hair. Scutellum sublinguiform, weakly elevated, rather closely scattered with small punctures.

Elytra 1.9 times as long as wide, about 3.8 times the length and 1.6 times the width of pronotum, widest slightly behind the middle; dorsum strongly convex, highest at basal 1/8; disc with rows of large and longitudinal foveae, which are rather irregularly set, each with an interrupted punctato-stria in the bottom; intervals ridged, irregularly and transversely united with one another, often forming carinae, weakly microshagreened, and scattered with microscopic punctures; 3rd intervals distinctly ridged in basal portion; humeri and apices not modified.

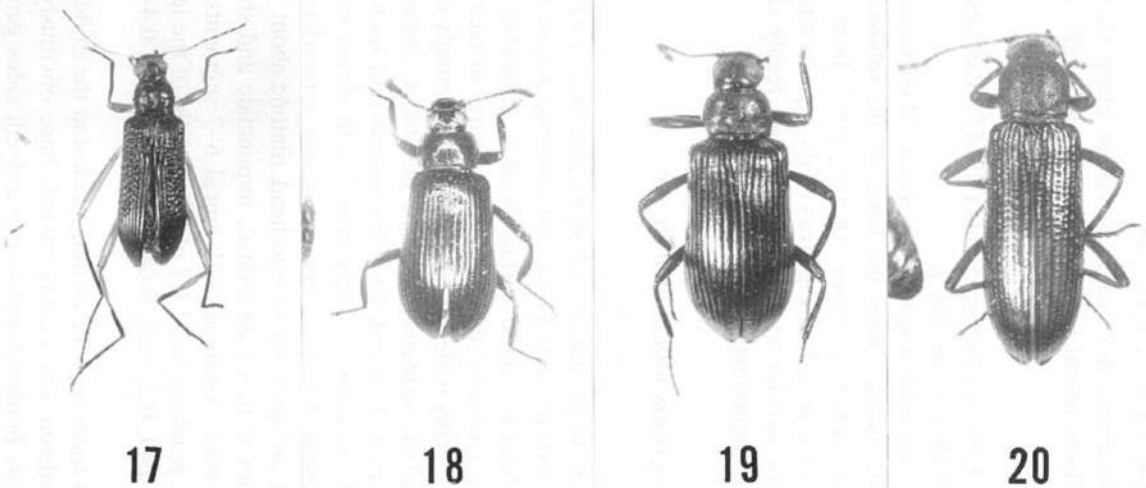
Male anal sternite semicircularly concave and pubescent in apical 3/4, with apex



Figs. 1–8.



Figs. 9–16.



Figs. 17–20.

Explanation of the Figures.

Figs. 1–8 (on p. 351). Habitus of *Strongylium* spp. —— 1, *S. doisuthepense* sp. nov., holotype, ♂; 2, *S. taoi* sp. nov., holotype, ♂; 3, *S. fangense* sp. nov., holotype, ♂; 4, *S. maleengthai* sp. nov., holotype, ♂; 5, *S. soncai* sp. nov., holotype, ♂; 6, *S. hirasawai* sp. nov., holotype, ♂; 7, *S. tsuyukii* sp. nov., holotype, ♂; 8, *S. phomae* sp. nov., holotype, ♂.

Figs. 9–16 (on p. 352). Habitus of *Strongylium* spp. —— 9, *S. phraense* sp. nov., holotype, ♂; 10, *S. nakpraati* sp. nov., holotype, ♂; 11, *S. miikhonum* sp. nov., holotype, ♂; 12, *S. doipuiense* sp. nov., holotype, ♂; 13, *S. hideoi* sp. nov., holotype, ♂; 14, *S. sawaiae* sp. nov., holotype, ♂; 15, *S. roifeedaatum* sp. nov., holotype, ♂; 16, *S. roiyonum* sp. nov., holotype, ♂.

Figs. 17–20 (on p. 353). Habitus of *Strongylium* spp. —— 17, *S. lanathai* sp. nov., holotype, ♂; 18, *S. chiangdaoense* sp. nov., holotype, ♀; 19, *S. si-isuai* sp. nov., holotype, ♀; 20, *S. siidemum* sp. nov., holotype, ♂.

truncate and roundly produced on each side. Male femora flattened, thickened apicad; male protibiae with ventral faces gouged and haired widely in middle, thickened and tufted at apices; male metatibiae weakly twisted, with ventral faces weakly gouged and haired in apical 3/4; ratios of the lengths of pro-, meso- and metatarsomeres: 0.3, 0.2, 0.2, 0.2, 1.2; 1.4, 0.6, 0.5, 0.4, 1.5; 1.3, 0.55, 0.45, 1.45.

Male genitalia elongated fusiform, and weakly curved in lateral view, 2.2 mm in length and 0.45 mm in width; fused lateral lobes about 1 mm in length, with slightly prolonged apices.

Body length: ca. 10 mm.

Holotype: ♂, Chiang Mai, 1988, no further details (NSMT). Paratype: 1 ex., Doi Suthep–Pui, 13~23–IV–1991, J. HORÁK leg. (BC).

Notes. This new species somewhat resembles *S. zoltani* MASUMOTO, 1981, from central Taiwan, but can be distinguished from the latter by the robuster body with glabrous dorsum. As compared with *S. azuripes* ARDOIN, 1967, from Laos, which might be a relative distributed in the neighbouring areas of the type locality of the new species, it is distinguished by the smaller and darker body with feebly clavate antennae, and the elytra covered with longitudinal foveae.

Strongylium miikhonum sp. nov.

(Fig. 11)

Dark reddish brown, with head, pronotum and elytra dark blue, fore legs, middle and hind legs except for basal half of each femur, and antennae almost black; dorsal surface somewhat vitreously shining, ventral surface weakly somewhat alutaceously shining; dorsal surface distinctly clothed with pilose hairs, ventral surface clothed with fine bent hairs. Rather elongate, feebly widened posteriad, fairly strongly convex.

Head subdecagonal, irregularly scattered with fine punctures; clypeus somewhat parabolical, rather strongly projected apicad, bent downwards and truncate in front, with arcuate fronto-clypeal sulcus; genae strongly raised, with obtuse outer margins; frons rather narrow and somewhat T-shaped; eyes large and somewhat transversely comma-shaped, convex laterad, obliquely inlaid into head, diatone about 1/7 times the width of an eye diameter; vertex with a longitudinal, impunctate and shallowly concave area posteriorly between eyes. Antennae with apical 6–7 segments weakly flattened and dilated to each apex, reaching basal 1/7 of elytra, ratio of the length of each segment from basal to apical: 0.49, 0.2, 0.68, 0.64, 0.56, 0.48, 0.46, 0.44, 0.42, 0.39, 0.38.

Pronotum trapezoidal, 1.3 times as wide as long, widest at the middle; apex sublinear, widely triangularly bordered and weakly ridged; base obviously wider than apex, feebly bisinuous, straightly bordered and weakly ridged; sides gently produced laterad, steeply declined to finely ridged lateral margins, which are invisible from above; front angles rounded, hind angles rather acute in dorsal view; disc gently convex with a longitudinal median impression, irregularly scattered with punctures, each

puncture with a bent pilose hair. Scutellum triangular, sparsely scattered with small punctures.

Elytra twice as long as wide, 4.6 times the length and 1.7 times the width of pronotum, widest at apical 2/7; dorsum rather strongly convex, highest at basal 2/7; disc with rows of small punctures, becoming larger and coarser laterad and forming foveae in lateral portion; intervals gently convex, often feebly, transversely wrinkled in antero-lateral portion, scattered with minute punctures, each with a rather erect hair; humeri and apices not modified.

Male anal sternite semicircularly concave, with apex truncate, widely and feebly emarginate; male protibiae with inner sides feebly gouged widely in middle; male metatibiae remarkably twisted, with inner sides widely gouged in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.29, 0.21, 0.25, 0.26, 1.2; 1.61, 0.7, 0.59, 0.43, 1.37; 1.57, 0.67, 0.53, 1.39.

Male genitalia elongated fusiform, 2.65 mm in length and 0.5 mm in width; fused lateral lobes 1/3 times the total length of genitalia, with feebly prolonged apices.

Body length: 12–15.5 mm.

Holotype: ♂, near Chiang Mai, NW Thailand, 23–IV–1985, M. TAO leg. (NSMT). Paratypes: 1 ex., Samoeng Dist., Chiang Mai Pref., 3–V–1994, K. MASUMOTO leg.; 1 ex., 14–V–1982, 1 ex., 19–V–1982, 1 ex., 20–V–1982, Doi Suthep, Chiang Mai Pref., T. SHIMOMURA leg.; 1 ex., Doi Suthep, 11–V–1986, M. TAO leg.; 1 ex., Doi Suthep, 1–V–1980, K. KINUGASA leg.; 1 ex., Doi Pui, Chiang Mai Pref., 23–V–1982, T. SHIMOMURA leg.; 1 ex., Doi Pui, V–1985, A. COTTON leg.; 1 ex., Doi Pui, 2–VII–1984, no collector's name; 1 ex., Phuping Palace, Chiang Mai Pref., 31–V–1983, Y. KOMIYA leg.; 2 exs., Ban Huai Po, Mae Hong Son Pref., 30–IV~4–V–1991, 1 ex., 17~23–V–1991, L. DEMBICKY leg. (Nat. Hist. Mus. Viden).

Notes. The present new species resembles *S. albopilosum* GEBIEN, 1913, from Taiwan, but can be distinguished from the latter by the more stout body covered with harder and shorter hairs, the head with larger eyes and slenderer antennae, the pronotum scattered with sparser and slightly coarser punctures, the elytra with rows of stronger punctures, which are foveolate in the antero-lateral portions, and the intervals scattered with finer punctures. The known species distributed in the neighbouring area is *S. laosense* PIC, 1917, from Laos. Its holotype is a female, but a comparison with it proves that the present species can be distinguished by the slenderer bluish body with larger eyes, stronger pronotal punctation and clearer elytral punctation.

Strongylium doipuiense sp. nov.

(Fig. 12)

Piceous, head feebly greenish and metallically shining, pronotum and scutellum slightly, vitreously shining, pronotum with apex, base and discal punctures golden greenish, elytra vitreously shining and clothed with fine, rather long hairs, those in postero-lateral portions noticeably pale golden in apical halves, major portions of ven-

tral surface dark blue and gently shining, legs dark blue and partly greenish. Oblong and strongly convex, very slightly widened posteriad.

Head subdecagonal, closely punctate; clypeus semicircular, bent downwards and truncate in front, fronto-clypeal border widely arcuate, finely sulcate; genae roundly produced laterad and moderately raised; frons somewhat T-shaped, gently inclined forwards; eyes medium-sized and somewhat transversely comma-shaped, moderately convex laterad, obliquely inlaid into head, diatone about 1/4 times the width of an eye diameter; vertex longitudinally impressed in middle. Antennae reaching basal 1/5 of elytra, 7 apical segments gently flattened, dilated to each apex, ratio of the length of each segment from basal to apical: 0.6, 0.2, 0.99, 0.86, 0.75, 0.73, 0.68, 0.59, 0.51, 0.49, 0.44.

Pronotum subquadrate, 1.2 times as wide as long, widest slightly before the middle; apex almost straight and rimmed, the rim feebly thickened in middle; base wider than apex, slightly bisinuous, bordered and more thickly rimmed than apex; sides gently produced laterad, steeply declined to lateral margins, which are barely bordered and invisible from above; front angles rounded, hind angles angulate in dorsal view; disc gently convex, impressed longitudinally in the middle, and also impressed slightly behind the middle on each side, rather closely, coarsely punctate, the punctures with fine bent hairs and sometimes fused with one another. Scutellum linguiform, finely impressed medially and rugoso-punctate.

Elytra twice as long as wide, 3.9 times the length and 1.6 times the width of pronotum, widest at apical 1/3; dorsum rather strongly convex, highest at basal 1/4, somewhat tri-undulate, the basal undulation indistinct; disc with rows of punctures, the punctures in inner portion small and often finely striate, those in lateral portion becoming coarser and foveolate; intervals gently convex in inner portion, rather strongly raised in lateral portion, scattered with microscopic punctures, each with a fine, long hair; base weakly ridged due to depressed basal portions of 5 inner rows of punctures; humeri feebly swollen; apices without any peculiarities.

Male anal sternite semicircularly concave at apex, which is slightly emarginate. Male protibiae with ventral sides very weakly gouged in medial 3/5; male metatibiae very weakly twisted, with inner sides gouged in basal halves; ratios of the lengths of pro-, meso- and metatarsomeres: 0.24, 0.2, 0.2, 0.22, 1.2; 2.42, 0.86, 0.65, 0.53, 1.39; 1.97, 0.62, 0.48, 1.51.

Male genitalia rather robust, strongly curved near base in lateral view, 2.7 mm in length, 0.63 mm in width; basal piece slightly elongated oval, 1.5 mm in length; fused lateral lobes somewhat nib-shaped, 1.2 mm in length.

Body length: 13.5–15.5 mm.

Holotype: ♂, Mt. Doi Pui, nr. Chiang Mai, V–1985, A. COTTON leg. (NSMT). Paratypes: 1 ex., same data as for the holotype; 1 ex., 3–V–1985, 2 exs., 17–V–1985, Doi Suthep, Chiang Mai Pref., M. TAO leg.; 1 ex., Phuping Palace, Chaing Mai Pref., 20~21–V–1985, H. AKIYAMA leg.; 1 ex., Chaing Mai, 1988, 1 ex., Doi Sang, 26–V–1990, 1 ex., Wiang Pa Pao, Chaing Mai, 3–III–1988, 1 ex., Chiang Dao, Chiang Mai

Pref., 1989, no collector's name; 1 ex., Fang, 14–V–1996, native collector; 1 ex., Chiang Mai env., V–1995, 1 ex., Doi Pui, 9–V–1985, no collector's name (BC).

Notes. This new species resembles *S. nodieri* PIC, 1936, from Tonkin, but can be easily distinguished from the latter by the larger and stouter body with stronger and closer pronotal punctures, and clearly undulate elytra with stronger punctures.

Strongylium hideoi sp. nov.

(Fig. 13)

Piceous, with mouth parts, gula, claws, etc., lighter in colour; head and pronotum feebly alutaceously shining, elytra, metasternum and abdomen gently, rather vitreously shining; each surface almost glabrous except for abdomen, which is microscopically haired. Rather elongate and moderately convex longitudinally.

Head transversely elliptical, very weakly micro-shagreened, rather closely and finely punctate, each puncture with a microscopic bent hair; clypeus wide, feebly depressed in basal portion, weakly bent downwards in front, bordered from frons and genae by a fine, widely arcuate suture; genae oblique, with roundly raised outer margins; frons somewhat T-shaped, gently inclined forwards; eyes large and transversely comma-shaped, strongly convex laterad, rather triangularly inlaid into head, diatone about 1/9 times the width of an eye diameter; vertex with a shallow impression between posterior parts of eyes. Antennae reaching basal 1/5 of elytra, 8 apical segments more or less flattened and dilated to each apex, ratio of the length of each segment from basal to apical: 0.65, 0.2, 0.75, 0.8, 0.7, 0.7, 0.65, 0.65, 0.6, 0.6, 0.65.

Pronotum quadrate, 1.25 times as wide as long, widest at the middle; apex nearly straight, finely rimmed, the rim rather closely and finely punctate; base slightly wider than apex, very slightly bisinuous and rimmed, the rim gently thickened in middle, and scattered with fine punctures; sides feebly produced laterad, steeply declined to lateral margins, which are finely though clearly ridged, the ridges barely visible from above; front angles rounded, hind angles rectangular; disc gently convex, weakly depressed before base in middle and obliquely impressed at base on each side, very weakly micro-shagreened, closely punctate, each puncture with a microscopic short bent hair. Scutellum subcordate and slightly elevate, polished though scattered with fine punctures in lateral portions.

Elytra 2.2 times as long as wide, 4 times the length and 1.5 times the width of pronotum, very weakly widened posteriad, widest at apical 4/9; dorsum gently convex, highest at basal 1/3; disc punctate-grooved, the punctures in grooves small and rounded at each bottom, rhombically notching intervals at upper edges, those in lateral portions distinctly so; intervals gently convex, very weakly micro-shagreened, scattered with minute punctures, sparsely and somewhat transversely micro-aciculate; humeri and apices not modified.

Male anal sternite weakly depressed in apical portion and slightly truncate at apex; male legs without any peculiarities, ratios of the lengths of pro-, meso- and

metatarsomeres: 0.3, 0.25, 0.25, 0.25, 1.2; 1.35, 0.75, 0.65, 0.5, 1.3; 1.2, 0.7, 0.5, 1.3.

Male genitalia somewhat elongated fusiform, almost straight in lateral view, very weakly constricted between basal piece and lateral lobes, 2.6 mm in length and 0.6 mm in width; fused lateral lobes 1.3 mm in length with rather stout apices.

Body length: 13.5 mm.

Holotype: ♂, nr. Chiang Mai, 3–V–1994, K. KUME leg. (NSMT). Paratypes: 2 exs., same data as for the holotype; 1 ex., 14–V–1985, 1 ex., 18–V–1985, Ban Nang Bang, nr. Sai Yok National Park, Kanchanaburi Pref., W Thailand, H. AKIYAMA leg.; 1 ex., 11–V–1985, 1 ex., 14–V–1985, Ban Nang Bang, M. SAWAI leg; 1 ex., Ban Huai Po, 1,700 m alt., Mae Hong Son Pref., 24~30–VI–1993, 1 ex., Khun Yuan, 3–VII–1993, J. SCHNEIDER leg., 1 ex., Pai, 20~26–V–1996, A. KUDRNA leg.; 1 ex., Nna Pha Knab, 11~15–V–1993, P. PACHOLATKO & L. DEMBICKY leg. (BC); 1 ex., Ban Si Lang, Mae Hong Son Pref., 23~31–V–1991, L. DEMBICKY leg., 1 ex., Ban Pha Knap, Nan Pref., 15~20–V–1992, P. PACHOLATKO leg. (Nat. Hist. Mus. Viden).

Notes. This new species somewhat resembles *S. fujitai* MASUMOTO, 1981, from Taiwan, but can be distinguished from the latter by the body darker in colour with head and pronotum closely punctate, pronotum without medial groove, and elytral punctate-grooves obviously coarser.

Strongylium sawaiae sp. nov.

(Fig. 14)

Brownish black, with 2 basal segments of antennae and apical halves of 11th, mouth parts, gula, tibiae, etc., lighter in colour; head and pronotum gently shining, elytra feebly sericeously so, ventral surface weakly, somewhat alutaceously shining; each surface almost glabrous. Rather elongate and moderately convex.

Head transversely elliptical, weakly micro-shagreened, rather closely scattered with small punctures; clypeus almost elliptical, gently inclined forwards, moderately bent downwards in apical portion, clearly bordered from frons and genae by arcuate sulcus; genae oblique, gently raised, with rounded outer margins; frons somewhat T-shaped, moderately inclined forwards, coarsely punctate before eyes; eyes subreniform, rather strongly convex laterad, obliquely inlaid into head, diatone about 1/5 times the width of an eye diameter; vertex with a shallow, somewhat rhombical impression between posterior portions of eyes. Antennae reaching basal 1/5 of elytra, 7 apical segments weakly flattened and rather distinctly dilated to each apex, ratio of the length of each segment from basal to apical: 0.4, 0.2, 0.4, 0.35, 0.55, 0.5, 0.55, 0.5, 0.5, 0.5, 0.6.

Pronotum quadrate, 1.3 times as wide as long, widest slightly before the middle; apex very feebly emarginate and rimmed, the rim slightly thickened in middle and microscopically punctate; base wider than apex, very slightly bisinuous and ridged, the ridge being thicker than the apical rim, microscopically punctate; sides gently produced laterad, rather steeply declined to lateral margins, which are finely rimmed, the rim barely visible from above; front angles rounded, hind angles obtusely angulate;

disc gently convex, longitudinally grooved in basal 2/3, impressed on each side at apical 2/5, basal 1/3, and also impressed at base, very weakly micro-shagreened, rather closely and irregularly scattered with small punctures, which are almost rounded and slightly larger than pronotal ones. Scutellum triangular with rounded apex, depressed at base and raised in apical portion, rather distinctly polished.

Elytra elongated subelliptical, 2.2 times as long as wide, 4 times the length and 1.4 times the width of pronotum, feebly widened apicad and widest at apical 2/5; dorsum moderately convex and highest at the middle; disc punctate-grooved, the punctures in grooves longitudinal and rather closely set; intervals gently convex, very weakly micro-shagreened, scattered with microscopic punctures, very weakly, somewhat transversely wrinkled; humeri and apices without any peculiarities.

Male anal sternite weakly emarginate at apex; legs without peculiarities, ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.18, 0.2, 0.2, 1.2; 1.5, 0.6, 0.5, 0.35, 1.25; 1.5, 5.5, 0.4, 1.3.

Male genitalia slender, and weakly curved in lateral view, 2.4 mm in length and 0.35 mm in width; fused lateral lobes 0.8 mm in length with acute apices.

Body length: 11 mm.

Holotype: ♂, Doi Pa Muang, Hang Chat, Lampang Pref., N. Thailand, 18–V–1985, M. SAWAI leg. (NSMT).

Notes. This new species also resembles *S. fujitai* MASUMOTO, 1981, from Taiwan, but can be distinguished from the latter by the smaller and slightly robuster body with somewhat serrated antennae, more oblique eyes, and elytral punctures obviously longitudinal.

Strongylium roifeedaatum sp. nov.

(Fig. 15)

This new species resembles *S. cultellatum* MÄKLIN, 1864, originally described from Hongkong and widely distributed in Southeast Asia including Japan, but can be distinguished from the latter by the following characteristics:

Body a little robuster with basal halves of antennae, mouth parts and legs rather distinctly reddish brown. Head less convex; clypeus more finely punctate, more clearly bordered from frons by arcuate sulcus; outer margins of genae not rounded but obtusely angulate; frons more boldly T-shaped, less steeply inclined forwards, more coarsely rugoso-punctate; eyes comparatively narrowly inlaid into head, diatone wider and about 1/4 times the width of an eye diameter; vertex more distinctly impressed between posterior portions of eyes. Antennae obviously shorter, barely reaching basal 1/5 of elytra, 5 apical segments shortened, 5th to 10th rather triangular, ratio of the length of each segment from basal to apical: 0.5, 0.25, 0.7, 0.6, 0.4, 0.4, 0.35, 0.35, 0.3, 0.3, 0.4.

Pronotum subquadrate, 1.2 times as wide as long, more convex above; base more thickly bordered. Scutellum not triangular but widely subcordate, more distinctly ele-

vated, closely rugoso-punctate.

Elytra 2.3 times as long as wide, 4 times the length and 1.54 times the width of pronotum; dorsum more noticeably depressed longitudinally; disc with rows of larger punctures, which are more sparsely set (3 punctures in a central 1 mm), upper edge of each puncture with a small tubercle on each side; intervals more distinctly clothed with microscopic hairs, 3rd, 5th and 7th intervals more distinctly ridged; apices more distinctly produced posteriad.

Male anal sternite not truncate but rounded at apex; legs without any peculiarities; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.15, 0.2, 0.2, 1.2; 1.25, 0.65, 0.5, 0.4, 1.25; 1.5, 0.65, 0.45, 1.3; claws slightly more developed.

Male genitalia smaller, weakly curved in lateral view, 2.3 mm in length and 0.4 mm in width, very slightly constricted between basal piece and lateral lobes; fused lateral lobes 1 mm in length, scattered with punctures and shallowly grooved only in apical half, with apices more sharply pointed.

Body length: 12.5 mm.

Holotype: ♂, Doi Pui, approx. 1,600 m alt., 3–VI–1986, H. HIRASAWA leg. (NSMT). Paratypes: 1 ex., Doi Suthep, 15–V–1996, 1 ex., 19–V–1996, K. MASUMOTO leg.; 9 exs., Soppong, 1,500 m alt., 7~12–V–1996, S. BEČVÁŘ leg., 3 exs., Doi Pui, 1,600 m alt., 2~6–V–1966, V. KUBÁN leg., 3 exs., same data, J. HORÁK leg. (BC).

Strongylium roiyonum sp. nov.

(Fig. 16)

Blackish brown, with antennae, mouth parts, legs, etc., lighter in colour; head and pronotum somewhat alutaceous, elytra feebly shining, ventral surface partly alutaceous; each surface almost glabrous, though each puncture on dorsal surface is clothed with a microscopic bent hair. Rather elongate and strongly convex longitudinally.

Head rather transversely elliptical, micro-shagreened, closely and finely punctate, each puncture with a microscopic bent hair; clypeus short pentagonal, rather distinctly flattened in basal portion, gently inclined forwards, moderately bent downwards in front, with fronto-clypeal border widely triangular; genae oblique and gently raised, with outer margins rounded; frons finely Y-shaped, gently inclined forwards; eyes very large, widely convex laterad, rather broadly and obliquely inlaid into head, diatone 1/14 times the width of an eye diameter; vertex with a longitudinal impression between posterior portions of eyes. Antennae subfiliform, reaching basal 1/3 of elytra, ratio of the length of each segment from basal to apical: 0.45, 0.2, 0.78, 0.63, 0.6, 0.6, 0.6, 0.55, 0.55, 0.5, 0.6.

Pronotum quadrate, slightly wider than long, widest at the middle; apex nearly straight and finely rimmed, the rim being scattered with minute punctures; base slightly wider than apex, very slightly bisinuous, bordered and ridged, the ridge being thicker than the apical rim, and scattered with minute punctures; sides gently produced laterad and sinuate before base, rather steeply declined to lateral margins, which are very

finely ridged in anterior halves, the ridge almost invisible from above; front angles rounded, hind angles angulate; disc moderately convex though weakly depressed medially in basal portion, and obliquely impressed at base in lateral portions, micro-shagreened, closely rugoso-punctate, each puncture with a microscopic bent hair. Scutellum subcordate, slightly elevated posteriad, rather polished though feebly micro-shagreened and sparsely scattered with small punctures in middle.

Elytra elongate, 2.5 times as long as wide, 4 times the length and 1.4 times the width of pronotum, very slightly narrowed posteriad; dorsum rather strongly convex, though weakly flattened in antero-medial 2/3; disc with rows of rather large and deep punctures, rounded at bottom and subquadrate at upper edge, each puncture with 3 small, inwardly pointed granules, one on inner margin, another on front margin and the other on hind margin; intervals very weakly micro-shagreened, finely ridged, the ridges irregularly curved or somewhat feebly wrinkled, with rows of sparse and small punctures, and irregularly scattered with small punctures, which are clothed with microscopic bent hairs; humeri normal in shape; apices feebly dehiscent.

Male anal sternite unmodified; legs without peculiarities; ratios of the lengths of pro-, meso- and metatarsomeres: 0.45, 0.25, 0.3, 0.25, 1.2; 1.3, 0.7, 0.55, 0.45, 1.25; 1.6, 0.65, 0.55, 1.2.

Male genitalia fusiform, gently curved in lateral view, 1.5 mm in length and 0.3 mm in width; basal piece weakly narrowed in apical portion; fused lateral lobes 0.6 mm in length, with rather acute apices.

Body length: ca. 8.5 mm.

Holotype: ♂, Doi Pui, 1,620 m alt., Chiang Mai Pref., N Thailand, 29–IV–1989, H. HIRASAWA leg. (NSMT). Paratypes: 1 ex., Soppong, Pai Dist., Mae Hong Son Pref., 1,800 m alt., 1~8–V–1993, PACHOLATKO & DEMBICKY leg. (coll. H. J. BREMER); 1 ex., Doi Pui, 1,600 m alt., 2~6–V–1966, V. KUBÁN leg., 1 ex., same data, J. HORÁK leg., 2 exs., Soppong, 1,500 m alt., S. BEČVÁŘ leg. (BC).

Notes. This new species is a member of the species-group of *S. cultellatum*. It is distinguishable from others by the smaller body with hairy and feebly rugose elytra. The arrangement of granules around elytral punctures is also an important character for classification of the group.

Strongylium lanathai sp. nov.

(Fig. 17)

A remarkable species with no close relative previously known.

Piceous, with femora except for basal portions, basal portions of tibiae, claws, etc., reddish brown, 3 basal segments of antennae, and basal portions of femora pale yellow; each surface somewhat alutaceously shining and almost glabrous. Fairly elongate and rather strongly convex.

Head subdecagonal, weakly micro-shagreened, rather closely and finely punctate; clypeus semicircular and gradually inclined forwards, gently bent in front, subparallel-

sided in anterior portion, bordered from frons by widely arcuate, fine sulcus; genae oblique, rather strongly raised, with rounded outer margins; frons rather widely T-shaped, moderately inclined forwards; eyes medium-sized, somewhat cordate, roundly convex laterad, gently inlaid into head, diatone about 1/3 the width of an eye diameter; vertex with shallow longitudinal groove medially. Antennae filiform, reaching the middle of elytra, ratio of the length of each segment from basal to apical: 0.35, 0.2, 1.05, 0.9, 0.75, 0.65, 0.6, 0.55, 0.5, 0.45, 0.55.

Pronotum somewhat short barrel-shaped, slightly wider than long, widest at the middle; apex almost straight, widely triangularly ridged and bordered, the ridge scattered with fine punctures; base feebly bisinuous, almost straightly bordered and ridged, the ridge thickened in middle and scattered with fine punctures; sides steeply inclined, neither ridged nor bordered, with a pair of tubercles at the middle, which are easily visible from above; front angles obtuse, hind angles angulate; disc moderately convex, longitudinally grooved medially, obliquely impressed at base on each side, weakly micro-shagreened, sparsely scattered with small punctures, each with a microscopic hair. Scutellum linguiform, rather strongly raised posteriad, micro-shagreened, sparsely punctato-aciculate.

Elytra 2.5 times as long as wide, 4.1 times the length and 1.5 times the width of pronotum, feebly widened posteriad, widest at apical 2/7; dorsum bi-undulate, the posterior undulation more distinct, highest at apical 3/7; disc with rows of punctures, those in internal and posterior portions small, closely set, and striated, those in antero- and medio-lateral portions large and coarse, forming slightly transverse foveae; intervals in internal and posterior portions gently convex, 3rd and 5th ridged in basal portions, those in antero-lateral portion rather transversely connected with one another; humeri unmodified; apices truncate, slightly toothed on each side.

Male anal sternite parabolically depressed in apical portion; male legs distinctly slender; male protibiae with ventral sides weakly gouged and haired in apical halves; male metatibiae distinctly twisted, with the inner faces distinctly gouged widely in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.4, 0.25, 0.25, 0.25, 1.2; 2.55, 0.8, 0.7, 0.5, 1.3; 3.0, 1.05, 0.6, 1.35.

Male genitalia short fusiform, and gently curved in lateral view, 1.8 mm in length and 0.4 mm in width, fused lateral lobes nib-shaped, 0.6 mm in length.

Body length: 9.6 mm.

Holotype: ♂, Doi Suthep, Chiang Mai Pref., N Thailand, 31–V–1985, no collector's name (NSMT). Paratype: 1 ex., Ban Van Eua, Vientiane, Laos, 15–VI–1969, J. RONDON leg. (MNHNP).

Strongylium chiangdaoense sp. nov.

(Fig. 18)

A beautiful species not closely related to any of the known congeners.

Purplish, with basal portion of elytra brassy, antennae black, mouth parts and two

apical sternites of abdomen yellowish; each surface metallically shining and almost glabrous. Oblong-oval, moderately convex above.

Female. Head subdecagonal, irregularly and not so closely punctate, longitudinally impressed between eyes; clypeus transverse and gently inclined apicad, subparallel-sided in middle, and weakly bent downwards in front, bordered from frons by widely U-shaped sulcus; genae obliquely and gently raised, with rounded outer margins; frons rather wide, moderately inclined forwards; eyes medium-sized, somewhat securiform, moderately convex laterad, rather triangularly inlaid into head, diatone about 1.1 times the width of an eye diameter. Antennae reaching base of elytra, 7 apical segments flattened and rather distinctly clavate, ratio of the length of each segment from basal to apical: 0.33, 0.2, 0.55, 0.35, 0.35, 0.35, 0.4, 0.4, 0.35, 0.35, 0.4.

Pronotum transverse, 1.6 times as wide as long, widest at the middle; apex nearly straight and rimmed, the rim slightly thickened in middle and scattered with microscopic punctures; base bordered and almost straightly rimmed, the rim widened in middle, scattered with microscopic punctures; sides gradually declined to lateral margins, which are widely triangular and distinctly punctate-grooved and finely rimmed; front angles rounded, hind angles obtuse; disc gently and broadly convex, irregularly, not so closely scattered with small punctures, with a longitudinal impunctate area in middle. Scutellum subcordate, almost smooth, though sparsely scattered with minute punctures and aciculations.

Elytra rather oblong-ovate, 1.8 times as long as wide, 4.6 times the length and 1.5 times the width of pronotum, feebly widened posteriad, widest at apical 1/3; dorsum gently convex, very slightly flattened in antero-medial portion, highest at basal 1/3; disc punctato-striate, the striae often obsolete, the punctures small and rather closely set, those in lateral portion larger and coarser, forming slightly transverse foveae, 5th striae impressed at base; intervals feebly convex, scattered with minute punctures, and very slightly, transversely wrinkled; humeri moderately swollen; apices without any peculiarities.

Legs not slender; femora and tibiae distinctly flattened and gently thickened in middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.25, 0.2, 0.2, 0.2, 1.2; 1.5, 0.7, 0.5, 0.35, 1.3; 1.25, 0.35, 0.3, 1.3.

Body length: ca. 8 mm.

Holotype: ♀, Between Fang and Chiang Dao, Chiang Mai Pref., 22~23–V–1989, K. MASUMOTO leg. (NSMT).

Strongylium siisuai sp. nov.

(Fig. 19)

An isolated species recognized at first sight on its coloration.

Head and pronotum partly purple, cyaneous, or greenish golden, moderately shining, scutellum and its marginal portions of elytra purple, elytra reddish copper-coloured, rather strongly, metallically shining, with area in basal 1/8 transversely

greenish golden, area between basal 1/8 to the middle with a transversely quadrate, dark bluish patch, whose marginal portions are purplish, and lateral portion of the purplish areas finely cyaneous, area between the middle to basal 5/8 again transversely greenish golden, its posterior margin finely cyaneous, area in apical 1/8 somewhat triangularly greenish golden, marginal portions of the triangular area cyaneous, ventral surface dark blue and moderately shining, antennae and legs almost brownish black, though more or less purplish or dark bluish in some parts; each surface almost glabrous. Oblong-ovate, rather strongly convex above.

Female. Head almost rounded, rather closely, irregularly punctate, the punctures sometimes fused with one another; clypeus transverse, subparallel-sided and bent downwards in anterior portion, bordered from frons by widely U-shaped sulcus; genae oblique, gently raised, with obtuse margins; frons rather wide, moderately inclined forwards, longitudinally impressed in the medial portion; eyes medium-sized and transversely comma-shaped, gently convex laterad, roundly inlaid into head, diatone about 2/3 times the width of an eye diameter. Antennae reaching basal 1/8 of elytra, distinctly claviform, 5th to 10th segments flattened and dilated to each apex, ratio of the length of each segment from basal to apical: 0.35, 0.2, 0.9, 0.55, 0.5, 0.5, 0.6, 0.45, 0.35, 0.3, 0.4.

Pronotum subquadrate, 1.5 times as wide as long, widest slightly behind the middle; apex almost straight and ridged, the ridge feebly thickened medially, smooth though microscopically punctate; base ridged and slightly bisinuous, the ridge being thicker and more closely scattered with microscopic punctures than apex; sides gradually declined to lateral margins, which are rounded, clearly bordered and finely rimmed, the rim visible from above; front angles rounded, hind angles obtusely angulate; disc moderately, somewhat transversely convex, with a pair of oblique impressions at basal 1/3, rather closely, irregularly punctate, each puncture with a microscopic bent hair. Scutellum triangular and smooth, sparsely scattered with microscopic punctures.

Elytra about twice as long as wide, 4.7 times the length and 1.5 times the width of pronotum, weakly widened posteriad and widest at apical 3/8, very slightly micro-shagreened and feebly wrinkled; dorsum rather strongly convex, slightly undulate at basal 1/7; disc finely punctato-striate, the punctures small and closely set; intervals weakly convex, scattered with microscopic punctures, each puncture with a microscopic bent hair; sides steeply declined to lateral margins, weakly impressed from lateral portions at basal 1/3; humeri rather distinctly swollen; apices roundly produced posteriad.

Anal sternite feebly truncate; legs without peculiarities; ratios of the lengths of pro-, meso- and metatarsomeres: 0.3,0.25, 0.25, 0.25, 1.2; 1.5, 0.8, 0.6, 0.4, 1.35; 1.5, 0.6, 0.4, 1.25.

Body length: 8.5–9 mm.

Holotype: ♀, Doi Pui, Chiang Mai Pref., 20–VI–1984, no collector's name (NSMT). Paratypes: 1 ex., Ban Huai Po, 1,600–2,000 m alt., Mae Hong Son Pref., NW Thailand, 9~16–V–1991, J. HORÁK leg. (Coll. H. J. BREMER); 3 exs., Soppong,

1,500 m alt., 7~12–V–1996, S. BEČVÁŘ leg. (BC); 1 ex., Doi Suthep, 3–VI–1986, H. HIRASAWA leg.

Strongylium siidemum sp. nov.

(Fig. 20)

Blackish brown, with mouth parts, tibiae and tarsi lighter in colour; head and pronotum feebly, somewhat sericeously shining, elytra rather strongly, vitreously shining, pro- and mesosterna feebly shining, metasternum and abdomen moderately so; each surface almost glabrous except for abdomen, which is sparsely and finely haired. Rather elongate and subcylindrical.

Head subdecagonal, weakly micro-shagreened and rather closely punctate, the punctures often fused with one another, each with a microscopic bent hair; clypeus somewhat trapezoidal and not so wide, gently inclined forwards, weakly bent downwards in front, bordered from frons by sublinear groove; genae obliquely, rather strongly raised, with obtuse outer margins subparallel in basal portions; frons rather steeply inclined forwards; eyes medium-sized, subreniform, rounded laterad, rather triangularly inlaid into head, grooved along each inner margin, diatone about 2/7 the width of an eye diameter; vertex convex though flattened medially. Antennae subfiliform, though slightly thickened apicad, reaching basal 1/8 of elytra, ratio of the length of each segment from basal to apical: 0.4, 0.2, 0.7, 0.55, 0.45, 0.45, 0.45, 0.4, 0.4, 0.45, 0.52.

Pronotum subquadrate, 1.2 times as wide as long, widest slightly before the middle; apex almost straight and rimmed, the rim slightly thickened in middle, scattered with minute punctures; base bordered by groove and bisinuously rimmed, the rim scattered with minute punctures; sides weakly produced laterad and steeply declined to lateral margins, which are finely ridged, though the ridges are hardly visible from above; front angles rounded, hind angles slightly angulate; disc moderately convex, with a shallow longitudinal groove medially, and also with a pair of oblique impressions at base, weakly micro-shagreened and rather closely punctate, the punctures often fused with one another, each with a microscopic bent hair. Scutellum triangular, micro-shagreened and micro-aciculate, weakly depressed in the medial portion, with lateral portions scattered with a few fine punctures.

Elytra rather elongate, 2.4 times as long as wide, 4.5 times the length and 1.4 times the width of pronotum, widest at apical 3/8; dorsum gently convex longitudinally, very weakly undulate, slightly flattened in antero-internal portion; disc with rows of punctures, the rows often shallowly grooved in inner portion, the punctures small, rather deep, and somewhat elongate, those in lateral portion becoming larger and forming foveae and areas between them often very weakly, transversely raised, 5th striae rather noticeably impressed in basal portion; intervals feebly convex, very slightly, finely undulate, scattered with microscopic punctures, with sutural intervals ridged in basal portion due to rather distinctly impressed sutural strioles; humeri moderately

swollen; apices slightly dehiscent.

Male anal sternite almost simple in shape; male legs without peculiarities; ratios of the lengths of pro-, meso- and metatarsomeres: 0.5, 0.25, 0.25, 0.2, 1.2; 1.4, 0.65, 0.55, 0.4, 1.25: 1.65, 0.75, 0.5, 1.3.

Male genitalia subfusiform, weakly curved in lateral view, 2 mm in length and 0.4 mm in width; fused lateral lobes nib-shaped, 0.7 mm in length, with pointed apices.

Body length: ca. 11 mm.

Holotype: ♂, near Chiang Mai, 3–V–1994, K. KUME & M. ITO leg. (NSMT).

Notes. The present new species somewhat resembles *S. gardneri* BLAIR, 1930, from northern India, but can be distinguished from the latter by the smaller body with head and pronotum more closely punctate, elytra with obvious rows of often striated punctures, and with shorter and bolder antennae.

要　約

益本仁雄：アジア産ナガキマワリ族（Strongyliini）の研究．II．北部タイのナガキマワリ属（*Strongylium*）の新種（その1）．—— アジア産ナガキマワリ族の研究の第2回として，北部タイで採集されたナガキマワリ属を取り上げた．これまで，本属に関するこの地域からの報告や新種記載は皆無であるが，少なくとも50種以上が分布している．今回の小論では，そのうちの20種を新種として記載した．*Strongylium doisuthepense* sp. nov., *S. taoi* sp. nov., *S. fangense* sp. nov., *S. maleengthai* sp. nov., *S. soncai* sp. nov., *S. hirasawai* sp. nov., *S. tsuyukii* sp. nov., *S. phomae* sp. nov., *S. phraense* sp. nov., *S. nakpraati* sp. nov., *S. miikhonum* sp. nov., *S. doipuiense* sp. nov., *S. hideoi* sp. nov., *S. sawaiae* sp. nov., *S. roifeedaatum* sp. nov., *S. roiyonum* sp. nov., *S. lanathai* sp. nov., *S. chiangdaoense* sp. nov., *S. siisuai* sp. nov., および *S. siidemum* sp. nov. である．

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Notes on the Lepturine Genus *Pidonia* (Coleoptera, Cerambycidae) from East Asia

VI. A New *Pidonia* from the Shin-etsu District, Central Honshu, Japan

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Abstract A new species of the lepturine genus *Pidonia* is described from the northern side of central Honshu, Japan, under the name of *P. tsutsuii*. Its vertical distribution is noted with reference to the forest zones across the Northern Japanese Alps and the Myôkô–Togakushi Mountains.

The species of the genus *Pidonia* mainly occur in the temperate zone of the Holarctic Region, and about 110 species have been known to belong to this genus. Up to the present, more than 50 species have been recorded from Japan. Most species of the genus *Pidonia* occurring in Japan mainly inhabit the montane deciduous broadleaved forest zone. *Fagus crenata* forests are the most important climax forest type in this zone. It is luxuriant and rich in relict living things, which include many species endemic to Japan. The forests of *Fagus crenata* are strongly influenced by climatic differentiation of mainland Japan into the Pacific and the Japan Sea types. These differences may be the result of heavy winter snowfall on the Japan Sea side of Honshu, in contrast with relatively dry winter on the Pacific side. Studies of the *Pidonia* fauna in the heavy snowy region of the Japan Sea side of Honshu remain still quite insufficient in spite of their importance for analysing the *Pidonia* fauna of Japan from the standpoint of historical biogeography.

Messrs. K. TSUTSUI and S. TAKECHI investigated the *Pidonia* fauna in the heavy snowy region soon after the thawing of snow. They collected 7 species on flowers of *Weigela hortensis* and *Viburnum plicotum* var. *glabrum* in Hisui-kyô, Itoigawa-shi and Hashidate Hisui-kyô, Oumi-machi, Nishikubiki-gun, Niigata Prefecture, the northernmost part of the Northern Japanese Alps on April 28, 1994. These are *P. amentata*, *P. miwai*, *P. aegrota*, *P. discoidalis*, *P. signifera*, *P. chairo* and the new species to be described in this paper.

Description of the new species and some notes on its vertical distribution are given in the following lines. The holotype designated in this study is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Before going further, I wish to express my hearty thanks to Messrs. T. KITAMURA,

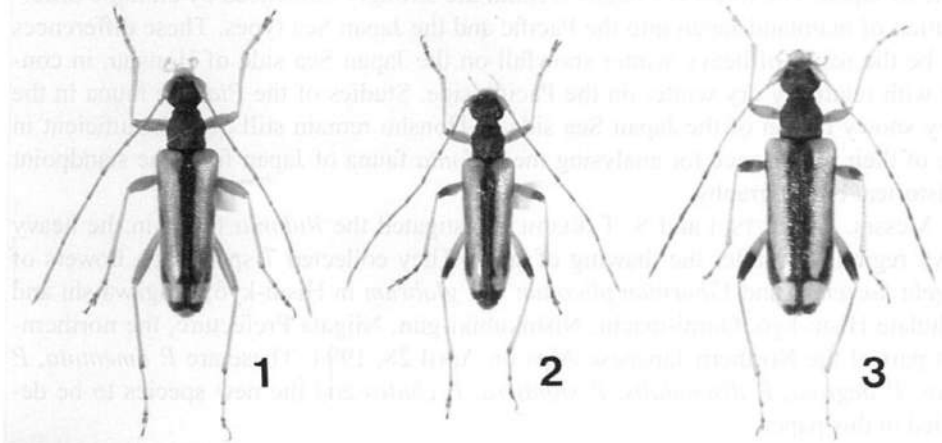
K. MORIKAWA, H. SUDÔ, S. TAKECHI, K. TSUTSUI and S. YAMAYA, who gave me the opportunity to work with these interesting materials.

Pidonia (Pidonia) tsutsuii KUBOKI, sp. nov.

[Japanese name: Hisui-hime-hanakamikiri]

(Figs. 1–8)

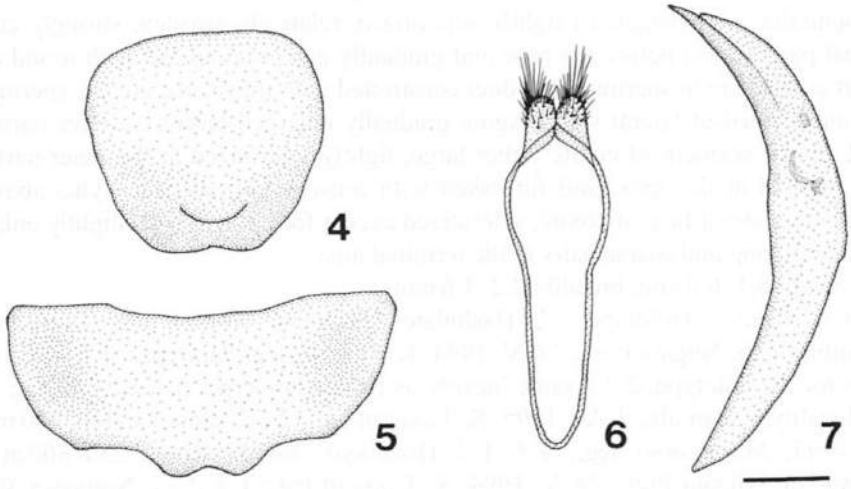
Male. Form relatively small, elongate, slightly tapered apicad; colour yellowish fulvous to black and furnished with pale fulvous pubescence. Head black; mouthparts yellowish fulvous except for reddish brown apex of each mandible; antennae fulvous to black; 1st and 2nd segments fulvous; 3rd and following segments infuscate at their apices; the black portion of 5th segment the widest. Prothorax and scutellum black. Legs almost fulvous; apices of hind femora infuscate, sometimes apices of mid femora slightly infuscate; tarsi slightly infuscate at apices; claws infuscate. Elytra yellowish fulvous with black markings. Ventral surface:— Gena black; gula fulvous, sometimes reddish black; thoraces almost black, sometimes pro-, meso- and metasterna fulvous; abdomen black, 3rd to 5th sternites fulvous. Elytral markings:— Sutural marking narrowly present, vanishing behind scutellum; basal marking narrowly present; humeral angle yellowish fulvous; latero-basal marking small; latero-median marking very small, sometimes entirely absent; latero-posterior marking deltoid, variable, sometimes linearly developing towards base and sometimes reduced to a small spot; apical band broadly present.



Figs. 1–3. *Pidonia* (*Pidonia*) *tsutsuii* KUBOKI, sp. nov., from Hashidate Hisui-kyô, Niigata Prefecture; 1–2, ♂; 3, ♀.

Head across the middle of eyes 1.17 times as long as basal width of prothorax; terminal segment of maxillary palpus broadened apically with straight outer margin; temples moderately produced, convergent, gently constricted at neck; frons subvertical and transverse, covered with coarse punctures, bearing a fine but distinct median longitudinal furrow extending backwards to vertex; vertex convex above. Eyes relatively prominent, moderately faceted, strongly emarginate at middle of inner margins. Antennae relatively long and slender; apical two segments surpassing elytral apices; comparative length of each segment as follows:— 5>1+2>3≧6>4. Prothorax 1.15 times as long as basal width, deeply constricted both behind apex and before base; sides subangular; breadth across prominent portions as broad as or slightly wider than basal width; disc of pronotum convex above, finely and closely punctate and sparsely clothed with fine pubescence. Scutellum small, triangular, slightly longer than broad and bearing thin pubescence on the surface. Elytra 2.71 times as long as basal width, gradually narrowed posteriorly and separately subtruncate at apices; surface sparsely and shallowly punctate and densely clothed with subappressed pubescence; interspace between punctures broader than diameter of each puncture. Legs relatively slender, finely punctate and clothed with short pubescence; femora clavate; hind femora reaching elytral apices; tibiae linear and straight; tarsi densely clothed with short pubescence on under surface. Abdomen elongate and gradually narrowed towards apex; apex of last sternite shallowly emarginate at middle (Fig. 5); apex of last tergite shallowly emarginate; both lateral angles slightly truncate (Fig. 4).

Genitalia:— Median lobe relatively slender, gently curved ventrad and acutely pointed at apex (Fig. 7); lateral lobes distinctly shorter than median lobe, each apex roundly produced and sparsely furnished with relatively long terminal hairs (Fig. 6);



Figs. 4–7. *Pidonia* (*Pidonia*) *tsutsuii* KUBOKI, sp. nov., ♂. —— 4, Last tergite; 5, last sternite; 6, lateral lobes of male genitalia, ventral view; 7, median lobe of the same, lateral view. Scale: 0.3 mm.

endophallus long and furnished with a pair of falcate sclerites; diverticulum located at the apical portion of endophallus relatively short, thick and spindle-sharped.

Length: 8.5–6.3 mm, breadth: 2.2–1.5 mm.

Female. Body coloration and markings distinctly more developed in female than in male. Form more robust. Antennae fulvous to black; 1st and 2nd segments fulvous; 3rd to 5th segments infuscate at their apices; 6th to 11th segments entirely darkened. Legs almost fulvous, apex of each hind femur black, sometimes apex of each mid femur black, and each apex of mid and hind tibiae infuscate. Ventral surface:— Head black; gula reddish brown, sometimes almost black; thoraces almost black, sometimes pro-, meso- and metasterna reddish brown; abdomen almost yellowish fulvous, both sides of 1st to 3rd sternites slightly infuscate.

Elytral markings:— Sutural marking broadly present; basal marking narrowly present; humeral angle yellowish fulvous; latero-basal and latero-median markings small; latero-posterior marking comparatively large, triangulate, sometimes linearly developing towards base; lateral three markings frequently fused with one another, forming a longitudinal submarginal vitta; latero-posterior marking sometimes united with sutural marking at apical part; apical band broadly present.

Head 1.07 times as long as basal width of prothorax. Antennae relatively short, thick and barely reaching elytral apices; comparative length of each segment as follows:— 5>1+2>3=6>4. Prothorax 1.09 times as long as basal width; sides subangular; breadth across prominent portions slightly narrower than basal width. Elytra 2.52 times as long as basal width, almost parallel-sided and separately subtruncate at apices. Legs relatively thick; hind femora not reaching elytral apices. Apex of last sternite round; apical margin of last tergite subtruncate, sometimes slightly emarginate at apex.

Genitalia:— Spermatheca lightly sclerotized, relatively swollen, strongly curved at apical part, widest before the base and gradually narrowed apicad with round apex; the part continuing to spermathecal duct constricted with transverse crease; spermathecal gland located at lateral wall; vagina gradually enlarged basad; valvifer narrowed apicad; apical segment of coxite rather large, lightly sclerotized at the inner part, obtusely pointed at the apex, and furnished with sensory pubescence; stylus abaxially united to the lateral face of coxite, sclerotized except for apex, broad, slightly enlarged apicad, with long and sparse hairs in the terminal area.

Length: 8.1–6.0 mm, breadth: 2.2–1.6 mm.

Type series. Holotype: ♂, Hashidate Hisui-kyô, 200 m alt., Oumi-machi, Nishikubiki-gun, Niigata Pref., 28–V–1994, K. TSUTSUI leg. Paratypes: 1 ♂, 2 ♀♀, same data as for the holotype; 2 ♂♂, same locality as for the holotype, S. TAKECHI leg.; 2 ♀♀, same locality, 280 m alt., 3–VI–1995, S. TAKECHI leg.; 2 ♂♂, same locality, 280 m alt., 3–VI–1995, M. KUBOKI leg.; 1 ♂, 1 ♀, Hisui-kyô, Kotaki River, 250–300 m alt., Itoigawa-shi, Niigata Pref., 28–V–1994, S. TAKECHI leg.: 1 ♂, 2 ♀♀, Nougawa Valley, 600 m alt., Nou-machi, Nishikubiki-gun, Niigata Pref., 3–VI–1995, K. TSUTSUI leg.; 1 ♀, Nadachi River, 200 m alt., Nadachi-machi, Nishikubiki-gun, Niigata Pref., 3–VI–

1995, K. TSUTSUI leg.; 3 ♂♂, 3 ♀♀, same locality, 600 m alt., 3~4–VI–1995, K. TSUTSUI leg.; 2 ♂♂, 5 ♀♀, same data, K. MORIKAWA leg.; 2 ♂♂, 13 ♀♀, same data, T. KITAMURA leg.; 1 ♂, Mushio, Nakaotari, 750 m alt., Otari-mura, Kitaazumi-gun, Nagano Pref., 3–VI–1995, M. KUBOKI leg.; 2 ♀♀, same locality, 750–800 m alt., 3–VI–1995, S. TAKECHI leg.; 11 ♂♂, 7 ♀♀, Ootokoro River, 700–800 m alt., Itoigawa-shi, 20–VI–1992, H. SUDÔ leg.; 8 ♂♂, 4 ♀♀, Himekawa-Myôkô-rindô, 1,000 m alt., near Yu-tôge Pass, Otari-mura, 27–VI–1992, M. KUBOKI & H. SUDÔ leg.; 8 ♂♂, 3 ♀♀, Hirogawara, Oomi River, 1,100–1,200 m alt., Otari-mura, 28–VI–1992, M. KUBOKI leg.; 8 ♂♂, 4 ♀♀, Matsuo River, 1,180 m alt., near Otomiyama-tôge Pass, Otari-mura, 27–VI–1992, M. KUBOKI & H. SUDÔ leg.; 2 ♂♂, Otomiyama-tôge Pass, Myôkôkôgen-machi, Nakakubiki-gun, Niigata Pref., 29–VI–1991, S. YAMAYA leg.; 6 ♂♂, 4 ♀♀, Sasagamine, 1,250–1,300 m alt., Myôkôkôgen-machi, 27–VI–1992, M. KUBOKI & H. SUDÔ leg.; 2 ♂♂, Togakushi-bokujô, 1,250 m alt., Togakushi-mura, Kamiminochi-gun, Nagano Pref., 12–VI–1995, M. KUBOKI leg.; 2 ♂♂, 1 ♀, Uenodaira, Okushiga-rindô, 1,000 m alt., Nozawaonsen-mura, Shimotakai-gun, Nagano Pref., 1–VI–1995, K. TSUTSUI leg.; 1 ♂, Zakogawa-rindô, Akiyama, Sakae-mura, Shimominochi-gun, Nagano Pref., 1–VI–1995. T. KITAMURA leg.

Distribution. Northern part of Chûbu District (Central Japan).

Flight periods. April to July.

Flower records. *Weigela hortensis*, *Viburnum plicotum* var. *glabrum*, *Acer*, *Aesculus turbinata*, *Hydrangea petiolaris*.

Remarks. This new species is closely similar to *Pidonia signifera* (BATES). The weakly swollen lateral sides of prothorax, the fulvous to reddish black gula in the male and the almost yellowish fulvous abdomen in the female will separate it from *P. signifera*.

This new species is closely allied to *P. michinokuensis* occurring in Tôhoku District. The two species *P. michinokuensis* and *P. tsutsuii* form a species-group in the subgenus *Pidonia* s. str., mainly characterized by the following combination of morphological features: ventral surface of head almost fulvous except for temples in male; ventral surface of abdomen almost yellowish fulvous in female; median lobe of male genitalia relatively slender, gently curved ventrad and acutely pointed at apex.

Vertical Distribution of *Pidonia tsutsuii* with Reference to Vegetational Zonations

The vertical vegetational zones on high mountains in Central Japan from low to high altitudes are the piedmont laurel-leaved forest zone, the montane deciduous broadleaved forest zone, the subalpine evergreen coniferous forest zone and the alpine zone. The vertical vegetational zonations are strongly influenced by the climatic differentiation of mainland Japan into the Pacific and the Japan Sea types. IMANISHI (1937) pointed out this phenomenon for the first time based on studies of vegetational zonations of the Northern Japanese Alps. At the southern parts of this area, a mixed transi-

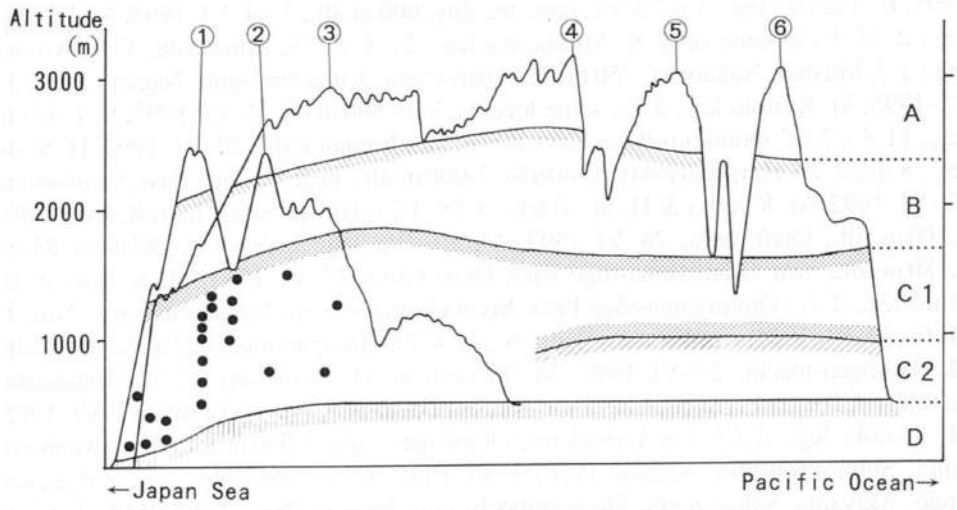


Fig. 8. Vertical distribution of *Pidonia tsutsuii* KUBOKI in connection with vertical vegetational zones of the Northern Japanese Alps and the Myôkô–Togakushi Mountains. —— A, Alpine zone; B, subalpine evergreen coniferous forest zone; C, montane deciduous broadleaved forest zone (1, including *Abies homolepis*; 2, including *A. firma*); D, piedmont laurel-leaved forest zone. ①, Mt. Myôkô-san; ②, Mt. Takazuma-yama; ③, Mt. Shirouma-dake; ④, Mt. Hodaka-dake; ⑤, Mt. Norikura-dake; ⑥, Mt. Ontake.

tional forest represented by *Abies firma* occurs between the hilly and montane zones. In the montane zone, the cool-temperate deciduous forests of *Fagus crenata* are mostly replaced by cool-temperate coniferous forests of *Abies homolepis*, *Chemaecyparis obtusa*, *C. pisifera*, etc. At the northern parts of this area, *Fagus crenata* forests predominate in the montane zone and are always bounded by evergreen broadleaved forests of the warm-temperate zone.

Pidonia tsutsuii is distributed in the northern part of the Northern Japanese Alps and the Myôkô–Togakushi Mountains. Vertically, it occupies an area from the hilly to the montane deciduous broadleaved forest zone (Fig. 8). It appears in the coastal areas of about 200 m in altitude on the last ten days of April and in the inland areas of about 1,400 m on the last ten days of June. The distributional range of *P. tsutsuii* coincides with that of the cool-temperate deciduous forests of *Fagus crenata*.

要　　約

窪木幹夫:東アジア産ヒメハナカミキリ属の知見．VI．信越地方で発見された*Pidonia*亜属の1新種．—— 本州中部の日本海地域から採集された*Pidonia*属の1新種，*P.* (*P.*) *tsutsuii* ヒスイヒメハナカミキリを記載した．本種は*P. signifera* (BATES) に似ているが，前胸側部のふくらみがより弱く，雄の頭部腹面の総基節が黄褐色から赤みをおびた黒色で，雌の腹部腹面の黄褐色部がより広い点で区別できる．

北アルプスと妙高・戸隠山塊の植生の垂直分布帯からみて，*P. tsutsuii* の垂直分布域はブナを優占種とする落葉広葉樹林帯と一致する．

Reference

IMANISHI, K., 1937. The altitudinal vegetation zones of the Japanese North Alps. *Sangaku, Tokyo*, **32**: 269–364. (In Japanese.)

Elytra, Tokyo, **24** (2): 373, November 15, 1996

Occurrence of *Siagonium gracile* SHARP (Coleoptera, Staphylinidae) on Izu-ôshima Island, Central Japan

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Fifteen species of staphylinid beetles were recorded from Izu-ôshima Island by ADACHI (1973), AOKI (1954), SAWADA (1971) and WATANABE (1974).

Through the courtesy of Dr. K. KUROSA, Tokyo, a staphylinid beetle obtained by Mr. J. OKUMA on Izu-ôshima Island was given to me. It agrees with *Siagonium gracile* SHARP which is new to the fauna of this island. It is recorded below with the collecting data.

1 ♀, Mt. Mihara-yama, Sueyoshi, Izu-ôshima, 21–IV–1978, J. OKUMA leg.

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

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ADACHI, T., 1937. The staphylinid fauna of Izu-ôshima, I (Contribution to the knowledge of Staphylinidae of Japan, VI). *Nippon no Kôchû, Tokyo*, **1**: 52–60. (In Japanese.)

AOKI, T., 1954. Aquatic insects of Izu-ôshima Island. *Shin Konchû, Tokyo*, **7** (9): 40. (In Japanese.)

SAWADA, K., 1971. Aleocharinae (Staphylinidae, Coleoptera) from the intertidal zone in Japan. *Publ. Seto mar. biol. Lab., Shirahama*, **19**: 81–110.

WATANABE, Y., 1974. Miscellaneous notes on staphylinid beetles (4). Staphylinids inhabiting the intertidal zone. *Coleopterists' News, Tokyo*, (21/22): 3–5. (In Japanese.)

Elytra, Tokyo, **24** (2): 374, November 15, 1996

New Records of *Batraxis splendida* NOMURA (Pselaphidae, Goniacerinae) from Tokunoshima and Okinawa-hontô Islands, Ryukyus, Japan

Shûhei NOMURA

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A brachyglutine species, *Batraxis splendida* NOMURA is described in 1986 from Iriomote Is., Ryukyu, Japan. It is also known from Kwangnung, Kyonggi-do, South Korea (NOMURA & LEE, 1993). The present report is the first records of this species from Tokunoshima Is. in Kagoshima Prefecture and Okinawa-hontô Is. in Okinawa Prefecture, Ryukyus, Southwest Japan.

I wish to express my special thanks to Messrs. Masahiro SAKAI and Tsutomu TANABE for their kind offer of invaluable specimens.

Batraxis splendida NOMURA

[Japanese name: Tsuya-atokiri-arizukamushi]

Batraxis splendida NOMURA, 1986, Kontyû, Tokyo, **54**: 501; NOMURA, 1989, Check List Jpn. Ins., Fukuoka, **1**: 290; NOMURA & LEE 1993, Esakia, Fukuoka, (33): 19.

Specimens examined. 1 ♂, Ohhara, Tokunoshima Is., Kagoshima Pref., 13–VII–1983, K. SUGAWARA leg.; 1 ♀, Mt. Nishimedake (360 m), Kunigami-son, Okinawa-hontô Is., Okinawa Pref., 19–X–1987, M. SAKAI leg.

Distribution. South Korea, Japan (Tokunoshima, Okinawa-hontô and Iriomote Isls., Ryukyus).

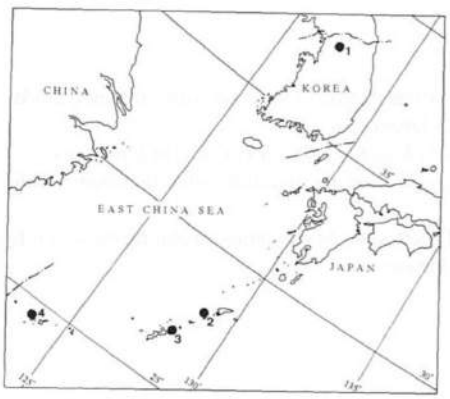

Fig. 1 Distribution of *Batraxis splendida* NOMURA. —— 1, Kwangnung, Kyonggi-do, South Korea; 2, Tokunoshima Is., Kagoshima Pref., Japan; 3, Okinawa-hontô Is., Okinawa Pref., Japan; 4, Iriomote Is., Okinawa Pref., Japan.

Elytra, Tokyo, **24** (2): 375–381, November 15, 1996

Occurrence of an Archaic Molorchine Beetle (Coleoptera, Cerambycidae) in Western Sichuan, Southwest China

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Abstract A new species of the genus *Molorchus* is described from western Sichuan, Southwest China, under the name of *M. relictus*. It closely resembles *Molorchus pinivorus* of central Honshu, Japan, and seems to belong to the same lineage as the latter. This new species shows some plesiomorphy in body structure like *M. pinivorus*.

The brachelytrous cerambycid beetles of the genus *Molorchus* in a narrow sense, comprising about eight species, are characterized by the small eyes, posteriorly open fore coxal cavities and two anal veins of hind wing connected with a short cross vein. Most members of the genus occur as relicts in their own narrow ranges of the Temperate to Subarctic Zones of Eurasia including the Japanese Islands, and the West Coast of North America, with the exception of *M. minor*, the type species, which is widespread in Eurasia. The beetles of this genus are found in coniferous forests or broadleaved and coniferous mixed forests, since their larvae live under barks of decayded coniferous trees. SAMA (1994) reviewed the genus *Molorchus*, and discussed on the taxonomy of the West Eurasian species, *viz.*, *M. minor* LINNAEUS, *M. monticola* DANILEVSKY et MIROSHNIKOV, *M. juglandis* SAMA and *M. pallidipennis* (HEYDEN). In our knowledge, three other species of the genus occur in East Asia, *viz.*, *M. changi* GRESSITT, *M. pinivorus* TAKAKUWA et IKEDA and *M. ikedai* TAKAKUWA, and *M. eburneus* LINSLEY in North America.

Molorchus pinivorus TAKAKUWA et IKEDA (1980, pp. 35–39, figs. 1–A, 2–1a, 2–1b) seems to be a relict species in central Honshu of the Japanese Islands. It resembles *M. minor* in basic characters, though a direct relationship between the two species cannot be inferred because of major differences. *Molorchus pinivorus* has such unique characters as the robust body, distinctly attenuate elytra, short antennae, and stout legs with developed femoral clubs. These diagnostic characters remind us of an Asia Minor relict, *M. juglandis*, though geographical gap between this and the Japanese species exceeds 7,000 km in a bee-line.

Recently, I received a rather long series of specimens of a molorchine beetle taken in western Sichuan, Southwest China. It turned out to be a close relative of *M. pinivorus* long waited for, because it has many important characters in common with the Japanese species. This discovery is very important in several respects. In the first

place, the type locality of this new species, western Sichuan, lies about a half way from central Honshu of the Japanese Islands to Asia Minor, and neatly falls in the centre of the blank in our knowledge about the distribution of the relict species of the genus. The occurrence of such relict species on the high mountains of Southwest China is an irrefutable proof that those mountains were once spread by ancestors of certain *Molorchus*. Secondly, *M. relictus* has still retained such archaic characters as the large fore body with short stout antennae, and apically attenuate elytra. Besides, it has gently oblique pale maculations on the elytra. They seem rather plesiomorphic as compared with those in other *Molorchus* whose maculations are distinctly inclined. These ancestral characters are commonly found in the Japanese species. It is most probable that the origin of the beetles belonging to the genus *Molorchus* may be traced back to sometime in the Tertiary. The ancestral beetles were once widespread in the ancient continent of the Northern Hemisphere, but remain now as relicts in limited places of Eurasia and North America. The widespread Eurasian species, *M. minor* may be a rather advanced member derived from certain ancestor in rather a recent period.

The abbreviations used herein are as follows: BL – body length, measured from apical margin of clypeus to elytral apices; HW – maximum width of head across eyes; AL – antennal length; FL – length of frons, measured along the median line; FB – basal width of frons; CL – length of clypeus, measured along the median line; CB – basal width of clypeus; PL – length of pronotum; PW – maximum width of pronotum; PA – apical width of pronotum; PB – basal width of pronotum; EL – length of elytra; EW – maximum width of elytra; M – arithmetic mean.

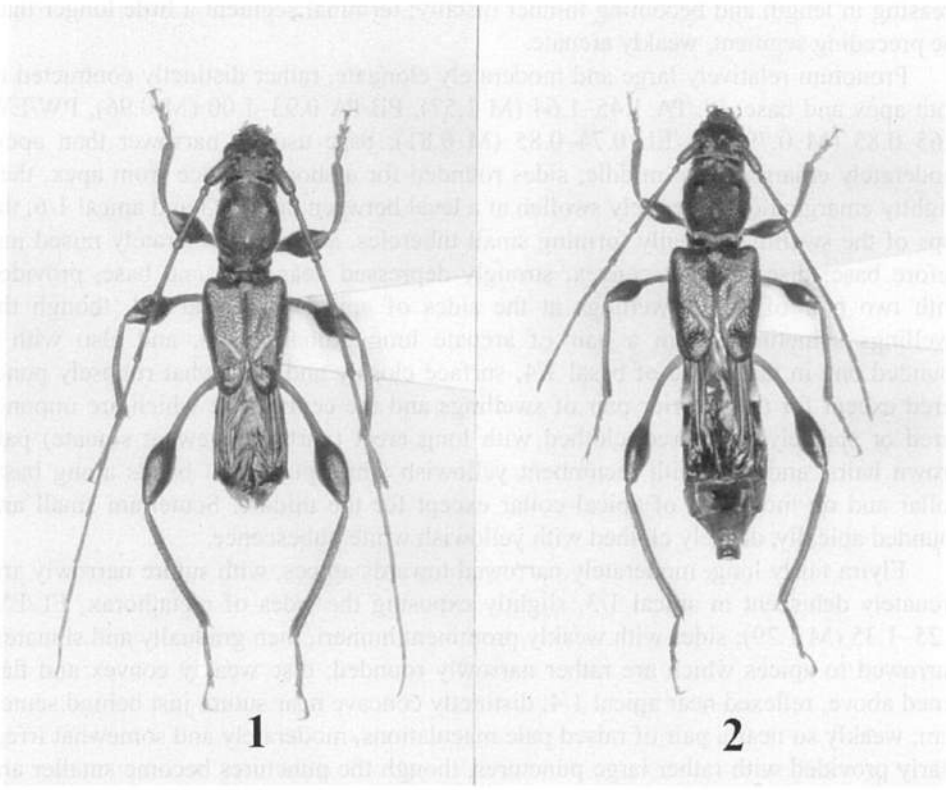
I would like to thank Mr. Yasushi SORIMACHI of Kitamoto-shi in Saitama Prefecture for his offer of invaluable specimens and useful suggestion. Hearty thanks are also due to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his guidance and reading through the original manuscript of this paper.

Molorchus relictus sp. nov.

(Figs. 1–12)

Medium to large-sized species of robust brown-coloured body, with a pair of white oblique elytral maculations as in other congeners, with antennae and legs very stout. Colour light chocolate brown, slightly yellowish in antennae, palpi and legs except for each femoral club, and also usually infuscate on both basal and apical collars of pronotum, eyes, and mandibular tips; elytra light chocolate brown, usually infuscate near apices and sometimes also near suture behind scutellum, provided with a pair of oblique raised pale-yellow maculations behind the middle, the inner angle of each maculation being usually about 90° in degree; hind wings translucent dark brown; ventral surface dark chocolate brown, usually infuscate in pro- and metasterna, with anal sternite dark yellowish brown.

Male. Head moderately voluminous, rather long and rather weakly convex, HW/PA 0.95–1.03 (M 0.99), HW/PW 0.8–1.02 (M 0.84), closely and somewhat ru-



Figs. 1–2. Habitus of *Molorchus relictus* sp. nov. from Wolong in Sichuan Province, Southwest China; 1, holotype ♂; 2, allotype ♀.

gosely punctured, rather sparsely clothed with erect pale-yellow hairs; frons gently raised, weakly narrowed apicad, with a distinct median longitudinal groove extending to just before vertex, lateral grooves deep and wide, FL/FB 0.53–0.63 (M 0.60); vertex depressed, with distinctly prominent antennal tubercles at the sides; occiput moderately raised; clypeus wide and rather long, CL/CB 0.22–0.29 (M 0.25), strongly punctured, gently bisinuate at the basal margin; mandibles short and broad, briefly hooked at apices; genae rather deep, strongly angulate ventrad in frontal view, nearly 4/7 the depth of lower eye-lobes; eyes fairly small, gently prominent, separated from each other by a little less than 5/8 the maximum width of head. Antennae 12-segmented, stout and rather short, 1.35–1.58 times as long as body, clothed with dense minute pubescence on segments 5–12 and most of segment 4, and also with long erect and somewhat sinuate light brown hairs on segments 1–6; scape short and thick, coarsely punctured, less than 5/8 the length of segment 3; segments 3 and 4 distinctly thickened at each apex, the former one slightly shorter than the latter; segment 5 the longest, a little longer than segment 3, rather weakly thickened apicad; segments 6–11 slightly de-

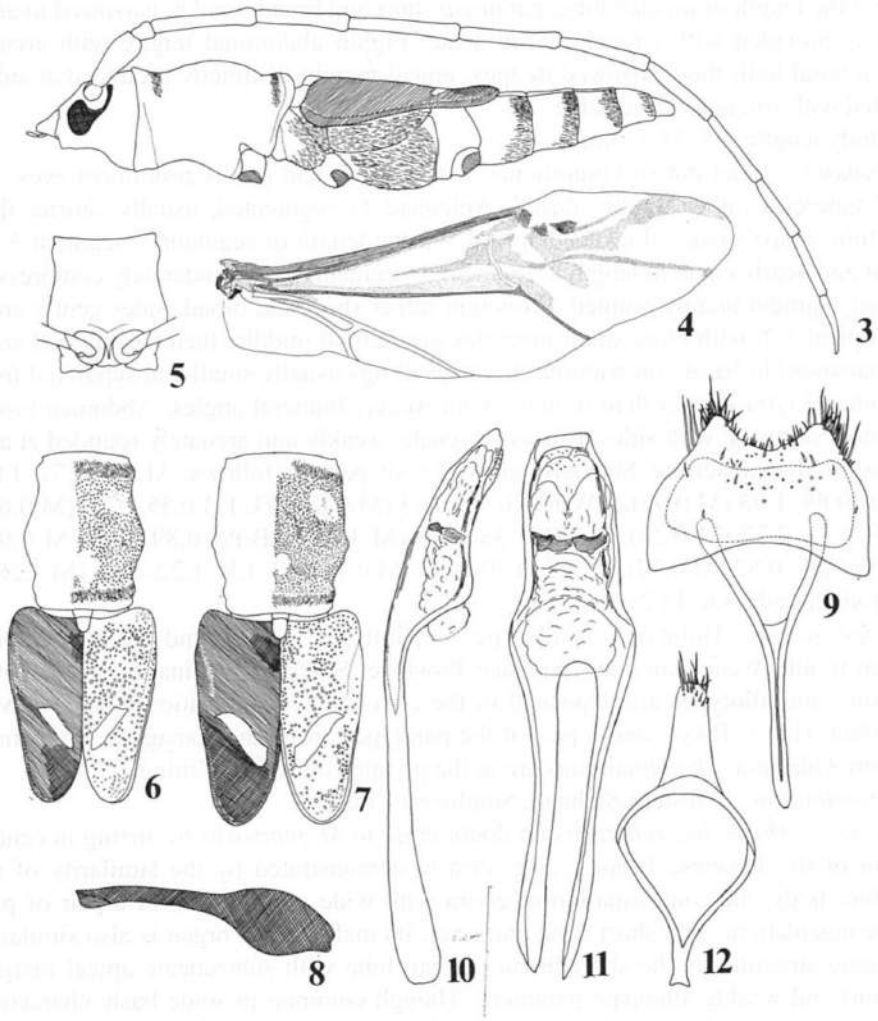
creasing in length and becoming thinner distally; terminal segment a little longer than the preceding segment, weakly arcuate.

Pronotum relatively large and moderately elongate, rather distinctly contracted to both apex and base, PL/PA 1.45–1.64 (M 1.57), PB/PA 0.93–1.00 (M 0.96), PW/EW 0.65–0.83 (M 0.79), PL/EL 0.74–0.85 (M 0.81); base usually narrower than apex, moderately emarginate in middle; sides rounded for a short distance from apex, then slightly emarginate, moderately swollen at a level between basal 1/3 and apical 1/6, the tops of the swellings usually forming small tubercles, and also moderately raised just before base; disc strongly convex, strongly depressed near apex and base, provided with two pair of weak swellings at the sides of apical and basal 1/4, though the swellings sometimes form a pair of arcuate longitudinal ridges, and also with a rounded one in the centre of basal 1/4; surface closely and somewhat rugosely punctured except for the anterior pair of swellings and the central one which are impunctured or sparsely punctured, clothed with long erect (partly somewhat sinuate) pale brown hairs, and also with recumbent yellowish white pubescent bands along basal collar and on most part of apical collar except for the middle. Scutellum small and rounded apically, densely clothed with yellowish white pubescence.

Elytra fairly long, moderately narrowed towards apices, with suture narrowly and arcuately dehiscent in apical 1/3, slightly exposing the sides of metathorax, EL/EW 1.25–1.35 (M 1.29); sides with weakly prominent humeri, then gradually and sinuately narrowed to apices which are rather narrowly rounded; disc weakly convex and flattened above, reflexed near apical 1/4, distinctly concave near suture just behind scutellum, weakly so near a pair of raised pale maculations, moderately and somewhat irregularly provided with rather large punctures, though the punctures become smaller and sparser near apices, clothed with brownish hairs near the middle. Hind wings about 1 + 1/4 the length of hind body.

Prosternum arcuately emarginate in basal 2/3, closely provided with deep transverse furrows and thinly haired; prosternal process triangularly pointed and produced ventrad in basal 1/2, then strongly compressed between fore coxae; fore coxal cavities open posteriorly in 1/3 the width of prosternal base; furcasternum hardly produced posteriad. Meso- and metathoraces densely clothed with silvery white pubescence, though the pubescence becomes especially denser at the internal part of mesepimeron, apical part of metepisternum, and on metasternum; punctures close and somewhat rugose in most parts; mesosternal process rather wide. Abdomen short and rather broad, gently arcuate at sides, provided with dense silvery white pubescent maculations on posterior parts of sternites 3–6; anal sternite arcuately and distinctly concave, arcuately emarginate on apical margin, clothed with rather long yellowish brown hairs near sides.

Legs long and very stout, with femoral clubs well developed, tibiae distinctly arcuate; hind legs nearly 1.2 times as long as body length, with femoral club occupying apical 7/11, tibia weakly sinuate in apical half; first tarsal segment a little shorter than the following two segments combined.



Figs. 3–12. Diagnostic characters of *Molorchus relictus* sp. nov., from Wolong in Sichuan Province, Southwest China. —— 3, Body in profile, ♂; 4, right hind wing, ♂; 5, prosternum, ♂; 6, pronotum and elytra, ♂; 7, ditto, ♀; 8, right hind femur, ♂; 9, 8th abdominal segment in dorsal view, ♂; 10, median lobe of male genitalia in lateral view; 11, ditto, dorsal view; 12, tegmen in dorsal view.

Male genital organ rather small and moderately sclerotized. Median lobe short and broad, rather weakly convex and gently arcuate in profile, with fairly broad apical lobe; median struts fairly short, 5/8 the whole length of median lobe; dorsal plate

broad, subtruncate at apical margin; ventral plate in apical part arcuately narrowed to broadly rounded apex, slightly shorter than dorsal plate. Tegmen small, a little less than 5/8 the length of median lobe; paramere short and broad, weakly narrowed to apex which is provided with irregular-sized setae. Eighth abdominal tergite with arcuate sides in basal half, then narrowed to apex, apical margin disitinctly produced at sides, provided with irregular-sized setae.

Body length: 9.5–15.7 mm.

Female. Head not so voluminous, with smaller and hardly prominent eyes, antennal tubercles rather weakly raised. Antennae 11-segmented, usually shorter than body, thin; scape weakly thickened apicad, 4/5 the length of segment 3, segment 3 the longest and nearly equal in length to segment 5, segments 6–10 moderately compressed, terminal segment bluntly pointed. Pronotum rather short and broad; sides gently arcuate in apical 1/2, with blunt small tubercles just behind middle, then weakly and arcuately narrowed to basal constriction; discal swellings usually small and separated from each other. Elytra shorter than in male, with weaker humeral angles. Abdomen broad, with short sternites, with sides distinctly arcuate, weakly and arcuately rounded at apical margin of anal sternite. Standard ratios of body parts as follows: AL/BL 0.72–1.00, HW/PA 0.88–1.03 (M 0.96), HW/PW 0.75–0.93 (M 0.81), FL/FB 0.55–0.75 (M 0.61), CL/CB 0.22–0.37 (M 0.28), PL/PA 1.33–1.63 (M 1.45), PB/PA 0.89–1.00 (M 0.96), PW/EW 0.67–0.82 (M 0.77), PL/EL 0.70–0.80 (M 0.74), EL/EW 1.22–1.36 (M 1.28).

Body length: 8.6–14.2 mm.

Type series. Holotype ♂, allotype ♀, paratypes: 15 ♂♂ and 19 ♀♀, Wolong, 2,200 m in alt., Wenchuan Xian, Sichuan Province, Southwest China, 6~7–VI–1992. The holo- and allotypes are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and a pair of the paratypes are in the Kanagawa Prefectural Museum, Odawara. The remainings are in the private collection of mine.

Distribution. Western Sichuan, Southwest China.

Notes. *Molorchus relictus* is no doubt close to *M. pinivorus* occurring in central Honshu of the Japanese Islands, as is clearly demonstrated by the similarity of the large fore body, the comformation of elytra with wide inner angles of a pair of pale oblique maculations, and short stout antennae. Its male genital organ is also similar in such basic structure as the short broad median lobe with subtruncate apical margin, and short and weakly attenuate paramere. Though common in some basic characters, this new species is also clearly discriminated from *M. juglandis* by the larger and robuster body form, especially of fore body, closely punctured pronotum, and wider inner angle of a pair of pale oblique maculations on the elytra, which are less than 75° in degree in the latter species.

All the specimens of the type series of this new molorchine were collected on white blossom of a shrub related to *Spiraea thunbergi* (Rosaceae) growing at the edge of a mixed broadleaved forest. The type locality is highly humid in climate, and usually covered with fog even in the daytime. The surface of branches and trunks of trees are densely covered with lichens. The molorchine came flying to the blossom in mid-

day in clear weather, together with such other cerambycids as *Anastrangalis dissimilis* and clytine species.

要　約

新里達也：中国四川省西部に隔離されたシラホシヒゲナガコバネカミキリ属の1新種．――シラホシヒゲナガコバネカミキリ属の種は，ユーラシアおよび北米西海岸の温帯から亜寒帯にかけて8種が知られ，幼虫は衰弱した針葉樹のおもに形成層に食入する．このうち，ユーラシアに広く分布する属基準種のシラホシヒゲナガコバネカミキリを除く7種は，いずれも比較的狭い分布域に隔離されている．日本の本州中部に分布するオニヒゲナガコバネカミキリもそのような遺存種のひとつであるが，その特異な形態的特徴から，直接の類縁関係を特定することはできなかった．なお，この種は小アジアに隔離分布する*M. juglandis*に比較的よく似ているが，両者の分布域はユーラシアの東西に局在している．このたび，中国四川省西部の高地で採集された本属の標本を検討したところ，外部形態および雄交尾器の形態から，オニヒゲナガコバネカミキリにきわめて近縁な種であることが判明した．この種は，明るい褐色の色彩と，大きく頑強な体前半部，短く太い触角をもち，上翅は先端に向かって強く狭められ，上翅の1対の白色斜紋の内角は広くてほぼ90度を示す．本論文では，オニヒゲナガコバネカミキリに近縁の新種*M. relictus* sp. nov.として，本種を記載命名した．

シラホシヒゲナガコバネカミキリ属の起源はおそらく第三紀まで遡り，そのころの古大陸で針葉樹の分布拡散とともに一度ひろがったが，現在はユーラシアから北米にかけての温帯林に，その子孫が隔離分布しているのであろう．一方，ユーラシアの亜寒帯に広く分布するシラホシヒゲナガコバネカミキリは，分化の起源が比較的新しい種でないかと推定される．

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Additional Record of *Chlorophorus signaticollis* (Coleoptera, Cerambycidae) from the Ryukyu Islands, Southwest Japan

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Chlorophorus signaticollis (CASTELNAU et GORY, 1855) has hitherto been recorded from East India (type area), Taiwan, a few localities in the Chinese Continent, and the Ryukyu Islands of Southwest Japan (cf. GRESSITT, 1951, p. 282; HUA, 1982, p. 33; etc.). KUSAMA and TAKAKUWA (1984, p. 333) suggested that previous records of *C. signaticollis* from the Ryukyu Islands might be due to misidentification of a grayish form of *C. yaeyamensis* which is common and widespread, and they formally recorded it from Ishigaki-jima Island of the Ryukyus based on a female specimen with reliable collecting data. However, the clytine species seems very rare in the Ryukyu Islands, and no additional specimen has yet been collected since then. On a collecting trip made in the spring of 1987, I was able to find three specimens of the clytine species on Mt. Banna-dake on Ishigaki-jima Island. This is an exact and second record of the species from the Ryukyu Islands.

Specimens examined. 2 ♂♂, 1 ♀, Mt. Banna-dake, Ishigaki-jima Is., Yayeyama Isls., Okinawa Pref., Southwest Japan, 6–V–1987, T. OHMOTO leg.

All the specimens examined were found on a fresh dead trunk of *Syzygium buxifolium* (Myrtaceae) in the late morning in cloudy weather. I found first a mating pair on the trunk, and after a few minutes, another male specimen came flying to near the same part of the trunk. It is most probable that *S. buxifolium* is one of the host plants of the species in the Ryukyu Islands.

I wish to thank Mr. Tatsuya NIISATO for his kind help in preparing the manuscript of this report.

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ヒメコマツ枯れ枝寄生のカミキリムシ7種の脱出消長と材直径選好性

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Emergence Patterns and Host Wood Diameter Preference of Seven Cerambycid Beetle Species Emerging from *Pinus parviflora* Dead Branches

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Abstract　*Pinus parviflora* SIEB. et ZUCC. dead branches were collected in Ishikawa Prefecture, Japan, to observe emergence of cerambycid beetles. With regard to individual number, the most dominant species was *Leiopus guttatus* BATES (50%) among the seven species obtained, followed by *Monochamus saltuarius* (GEBLER) (32.4%), while with regard to the biomass value the latter species was more dominant than the former.

The productivity of wood was positively correlated with its diameter.

I. はじめに

各樹種の枯死木には，多種のカミキリムシが寄生する（小島・中村，1986；ほか）．山上（1982）はケヤキの枯れ枝の調査で，分類群別に比較すると甲虫類ではカミキリムシ科が，種数，個体数と生物量において優占すると報告している．枯れ枝に寄生するカミキリムシ類の種構成や構成比は，樹種，立木の大きさ，部位，枯死時期，立地環境によって異なる．山上（1982）は，ケヤキ枯れ枝に侵入するカミキリムシでは，枯れ枝の太さと体の大きさに正の相関関係が認められることを示しており，山上・三島（1990）は，多摩川流域におけるケヤキ枯れ枝の侵入種の違いは，気候的要因だけではなく，都市化や市街地化による人為的な影響も強く受けていると述べている．

ヒメコマツ *Pinus parviflora* SIEB. et ZUCC. に寄生するカミキリムシは6種が記録されているが，アカマツやクロマツなどの二葉松に寄生する種数に比較すると少ない（小島・中村，1986）．これはヒメコマツの分布が狭く，調査記録が少ないことによる．本報では，ヒメコマツの枯損木について群集構造や種の特性を明らかにするために，脱出消長と枝の直径別種構成に関する調査を行ったので報告する．

本稿を執筆するにあたり，枝の採集をお手伝いいただいた石川県林業試験場の森　吉昭氏，野外成虫の発生のデータについてご助言いただいた金沢市の井村正行氏に厚くお礼を申し上げる．

II. 材料と方法

石川県石川郡白峰村のヒメコマツを優占樹種とする林分で，林道脇のヒメコマツ（D. B. H.: 37.9 cm，標高550 m）が1994年の雪害で根元から倒れた．この倒木に，同年の5月下旬から6月上旬にニセハイイロハナカミキリ *Rhagium femorale* N. OHBAYASHIが飛来し，6月上旬にカラフトヒゲナガカミキリ *Monochamus saltuarius* (GEBLER)が，7月下旬から8月上旬にツシマムナクボカミキリ *Cephalallus unicolor* (GAHAN)，ヒゲナガカミキリ *M. grandis* WATERHOUSE，ヒゲナガモモブトカミキリ *Acanthocinus griseus* (FABRICIUS)，ナカバヤシモモブトカミキリ *Leiopus guttatus* BATESが飛来した．

この倒木の枝の一部を1994年9月30日に採集して，石川郡鶴来町の石川県林業試験場（標高165 m）の野外網室内に搬入し，さらに1995年の4月に実験室内に移動した．採集した枝は12 cm以下から直径別に6段階に分けて，1995年5~8月に約1週間隔で脱出虫を回収した．回収したカミキリムシは十分に乾燥させたのち，重量を測定した．採集した枝の材積と樹皮面積をTable 1に示した．

材の管理を行った実験室は，空調設備のない鉄筋2階建ての2階のフロアーで，1階のフロアーより熱がこもりやすい．1階フロアーの5, 6, 7, 8月の平均気温は，17.2, 19.1, 24.5, 28.1°Cであった．実験終了後に，それぞれの枝の一部を割材して，カミキリムシ科幼虫がいないことを確認した．

Table 1. The volume and bark area in each class of wood diameter.

Diameter (cm)	12–8.1	8–5.1	5–4.1	4–3.1	3–1.1	1–0
Bark area (cm^2)	191	416	944	774	918	4311
Volume (cm^3)	15011	13786	15011	7443	2882	3384

III. 結　　果

脱出したカミキリムシは，カラフトヒゲナガカミキリ，ヒゲナガカミキリ，ビロウドカミキリ *Acalolepta fraudatrix* (BATES)，ニセビロウドカミキリ *A. sejuncta* (BATES)，ヒメシラオビカミキリ *Pogonocherus fasciculatus* (DE GEER)，ナカバヤシモモブトカミキリ，シラホシカミキリ *Glenea relicta* PASCOEの7種であった（Fig. 1）．カミキリムシ以外の穿孔虫やカミキリムシの天敵となる種の出現は僅少であった．

1週間ごとの脱出消長をFig. 2に，枝の直径別種構成をFig. 3に示した．脱出虫は5月中旬から8月上旬まで見られた．直径8.1~12 cmの枝が種数，個体数ともにもっとも多く，枝の直径が小さくなるほど，ともに少なくなる傾向を示した．これら7種の総乾燥重量と平均値をTable 2に示した．

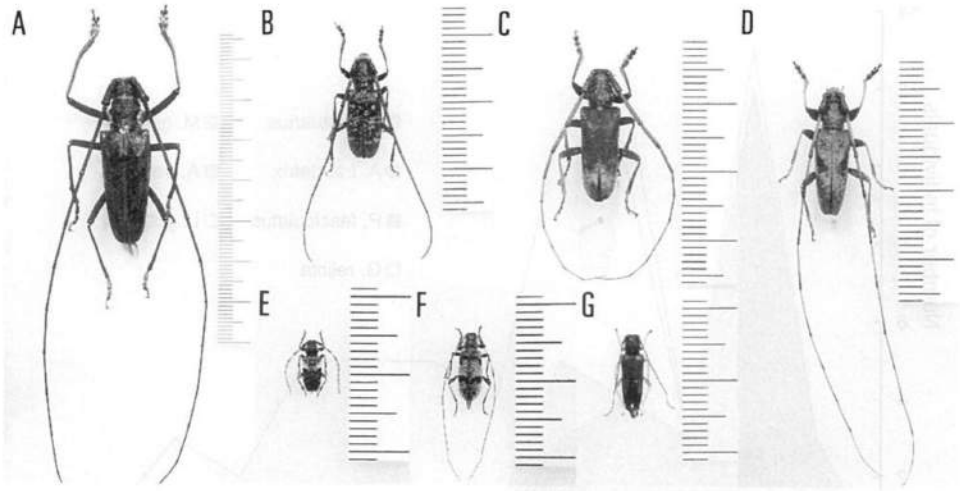

Fig. 1. Cerambycid beetles emerged from the dead branches of *Pinus parviflora* SIEB. et ZUCC. —— A, *Monochamus grandis* WATERHOUSE; B, *M. saltuarius* (GEBLER); C, *Acalolepta fraudatrix* (BATES); D, *A. sejuncta* (BATES); E, *Pogonocherus fasciculatus* (DE GEER); F, *Leiopus guttatus* BATES; G, *Glenea relicta* PASCOE.

Table 2. Total and average dry weight of seven cerambycid beetle species.

Species	No.	Weight of	
		tot. (mg)	ave. (mg)
M. saltuarius	22	851	38.7±20.6
M. grandis	2	1340	670.0±470.9
A. fraudatrix	4	254	63.5±15.0
A. sejuncta	2	75	37.5±17.7
P. fasciculatus	1	4	4.0±0.0
L. guttatus	34	223	6.6±2.9
G. relicta	3	2	37.7±2.9

IV. 考　　察

カラフトヒゲナガカミキリは，5月中旬から6月中旬までの1ヵ月間に発生して5月下旬に発生のピークがあるが，ナカバヤシモモブトカミキリは，6月上旬から8月上旬の2ヵ月間に発生して，目立ったピークが見られない（Fig. 2）．山上（1989）は，春早く出現する種ほど羽化時期が短期間に集中する傾向があると述べているが，この2種を比較しても前種で同様な傾向が見られた．

カラフトヒゲナガカミキリは3.1 cm以上の枝から発生し，直径が大きくなると発生個体数が多くなり，8.1～12 cmの枝でもっとも多くの個体が発生した．ナカバヤシモモブトカミキリは直径5.1～8 cmの枝からもっとも多くの個体が発生しているが，いずれの直径級からも発生した（Fig.

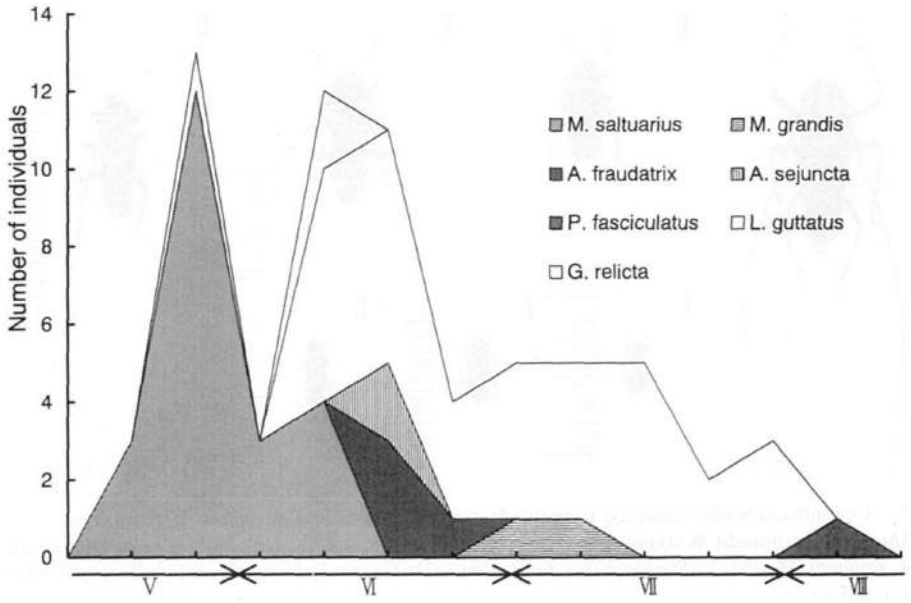

Fig. 2. Emergence periods of seven cerambycid beetle species.

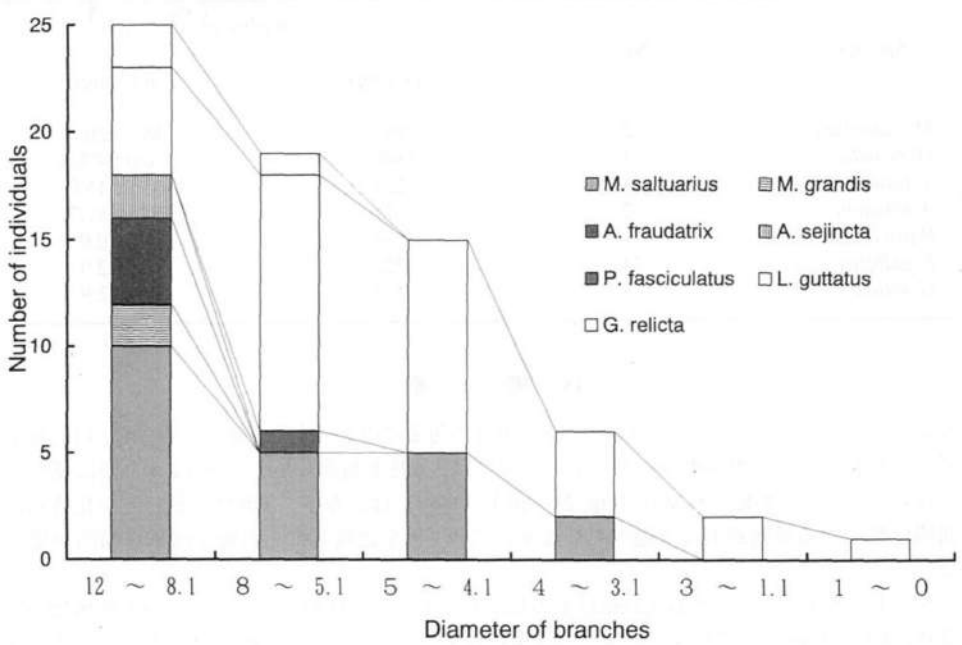

Fig. 3. Composition of cerambycid beetle species in each class of wood diameter.

3)．体サイズはカラフトヒゲナガカミキリの方が大きいので（Fig. 1），枯れ枝に侵入するカミキリムシは枯れ枝の太さと体の大きさに正の相関関係がある，とした山上（1982）の報告と一致する．

カラフトヒゲナガカミキリの発生個体数割合は32.4%，ナカバヤシモモブトカミキリは50.0%で，これら2種では82.4%であった（Figs. 2, 3）．カラフトヒゲナガカミキリは，発生個体数の割合がナカバヤシモモブトカミキリに劣るが，種別の総乾燥重量ではカラフトヒゲナガカミキリが851 mgで，ナカバヤシモモブトカミキリの223 mgより大きい値を示した（Table 2）．発生個体数ではナカバヤシモモブトカミキリが優占して，生産量ではカラフトヒゲナガカミキリが優占しているので，これら2種の優占度の比較は難しい．さらにヒゲナガカミキリの総乾燥重量は1340 mgで最高値を示したが（Table 2），発生個体数割合は3.0%で低く，8.1～12 cmの枝からのみ発生していることから，この種を優占種としては評価できない．

この2種がこれらの枝から優占的に発生したのは，この2種の分布地である白峰村に，寄生に適した樹種が出現したこと，産卵時期に適した枯損状態であったこと，寄生部位と食害材採取部位が一致したことの3点がそろった結果で，発生が少なかった5種はこれらの条件のいずれかが欠けていることにより劣性種となったと考えられる．すなわち，ビロウドカミキリ，ニセビロウドカミキリ，シラホシカミキリの3種は，おもに広葉樹寄生であり（小島・中村，1986），ヒゲナガカミキリは大型種のため単位材積当たりの発生個体数が少なく，おもに大径幹に寄生する（岩田，1992），またヒメシラオビカミキリは石川県下では低標高の二葉マツに寄生し（井村，1993），いずれもヒメコマツが最適樹種ではなかったことで個体数が制限されたのであろう．

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A New Record of *Chlorophorus yedoensis* (KANO) (Coleoptera, Cerambycidae) from Amami-Ohshima Island, Southwest Japan

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Chlorophorus yedoensis (KANO, 1933) has hitherto been known as a species endemic to Honshu, Central Japan. Through the courtesy of Mr. Noboru KANIE of Nagoya City, I was able to examine a single female specimen of the species collected on Amami-Ohshima Island of the Ryukyus. The specimen was found by himself on the flowers of *Melisma hachijoensis* NAGAI (Sabiaceae) growing in the natural forest on the island. It is new to the fauna of the Ryukyu Islands including Amami-Ohshima Island; details of the collecting data are as shown below.

Specimen examined. 1 ♀, Akatsuchiyama-Rindô, Uken-son, Amami-Ohshima Is., Southwest Japan, 24–VI~1–VII–1995, N. KANIE leg.

The specimen examined almost agrees with the Honshu specimens in external features except for its smaller body size. It is uncertain whether the Amami-Ohshima specimen examined was a natural individual or a naturalized one imported from its original habitat. The final determination of this insular specimen had better be postponed until additional specimens including males will be found.

I wish to express my deep gratitude to Mr. Noboru KANIE who always provides me with the cerambycid specimens for my study, and also to Mr. Tatsuya NIISATO for his help in preparing the manuscript of this short report.

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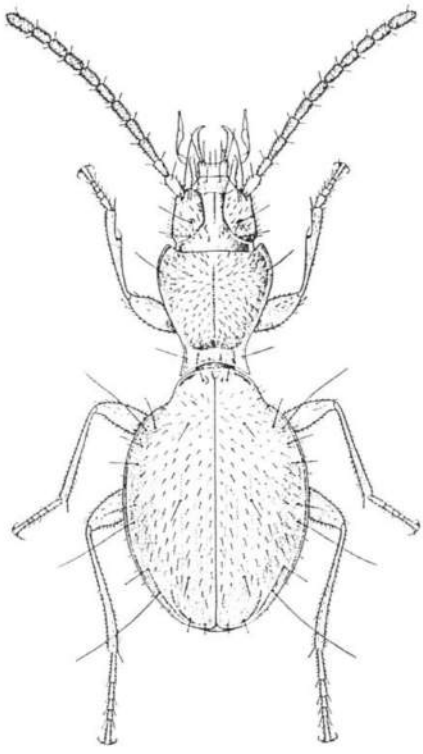

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