

# ENTOMOLOGICAL PAPERS

PRESENTED TO

## YOSHIHIKO KUROSAWA

ON THE OCCASION OF HIS RETIREMENT

EDITED BY

SHUN-ICHI UÉNO



20 March 1986

THE COLEOPTERISTS' ASSOCIATION OF JAPAN

c/o Department of Zoology  
National Science Museum (Nat. Hist.)  
3-23-1 Hyakunin-chô, Shinjuku  
Tokyo 160, Japan

# ENTOMOLOGICAL PAPERS

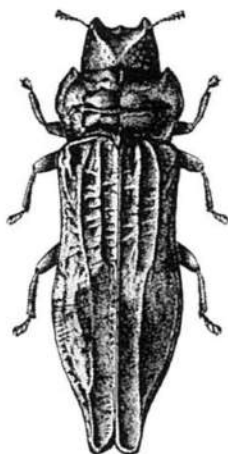
PRESENTED TO

## YOSHIHIKO KUROSAWA

ON THE OCCASION OF HIS RETIREMENT

EDITED BY

SHUN-ICHI UÉNO



20 March 1986

THE COLEOPTERISTS' ASSOCIATION OF JAPAN

c/o Department of Zoology  
National Science Museum (Nat. Hist.)  
3-23-1 Hyakunin-chô, Shinjuku  
Tokyo 160, Japan





Cover illustration: *Aphanisticus yasumatsui* Y. KUROSAWA, an agriline buprestid beetle endemic to the mainland of Japan (after KUROSAWA, 1954).

## CONTENTS

A Brief Biography of Yoshihiko KUROSAWA .....	1
Publications of Yoshihiko KUROSAWA .....	3
Papers in honour of Yoshihiko KUROSAWA	
ONO, H.: A New Spider of the Group of <i>Clubiona corticalis</i> (Araneae, Clubionidae) Found in Japan .....	19
KUROSA, K.: New Mites of the Genus <i>Petalomium</i> (Acari, Pygmephoridae) from Japan .....	26
AOKI, J.: A New Oribatid Mite of the Family Cepheidae (Acari) from Yonezawa in Northern Japan .....	33
IMADATÉ, G.: <i>Yinentulus</i> , A New Genus of Acerentomidae (Protura) from Japan .....	36
SUZUKI, K.: Variation of Abdominal Protuberances in the Japanese <i>Mnais</i> Damselflies (Odonata, Calopterygidae) .....	42
YAMASAKI, T.: Two New Species of Small Meconematine Tettigoniids (Orthoptera, Tettigoniidae, Meconematinae) from Central Honshu, Japan .....	51
OKAJIMA, S.: Three Remarkable New Species of the Subfamily Idolothripinae (Thysanoptera, Phlaeothripidae) from Southeast Asia .....	58
TOMOKUNI, M.: Occurrence of an American Tingid, <i>Corythucha cydoniae</i> (FITCH) (Hemiptera, Tingidae), on Ishigaki Island, the Ryukyus, Japan .....	66
HAYASHI, M., & T. ENDO: Treehoppers of the Genus <i>Emphusis</i> (Homoptera, Membracidae) from the Philippines .....	69
KAWABE, A.: Notes on the Tortricidae (Lepidoptera) from Taiwan, 2 .....	77
KASHIWA, N.: Butterflies of the Subgroup of <i>Mycalesis ita</i> (Lepidoptera, Satyridae) from the Philippines .....	85
SUGI, S.: The Noctuidae of Taiwan 2. Genus <i>Orthosia</i> OCHSENHEIMER (Lepidoptera) .....	98
OWADA, M.: Two New Geographic Forms of the Snow Underwing (Lepidoptera, Noctuidae) .....	106
MIYATAKE, M.: A New Species of the Genus <i>Tenomerga</i> (Coleoptera, Cupedidae) from Yakushima Island, Southwest Japan (Notes on the Genus <i>Tenomerga</i> of Japan, II) .....	111
ISHIKAWA, R.: Phylogeny and Subgeneric Classification of the Genus <i>Damaster</i> KOLLAR (Coleoptera, Carabidae) .....	115
UÉNO, S.-I.: New Oculate <i>Trechiana</i> (Coleoptera, Trechinae) from the Province of Aizu in Central Japan .....	131
MORITA, S.: A New <i>Apatrobus</i> (Coleoptera, Carabidae) from Mt. Tara-dake in Kyushu, West Japan .....	143
KASAHARA, S.: A New Callistine Carabid (Coleoptera) from Central Japan .....	147
NISHIKAWA, M.: New Silphid Beetles of the Subgenus <i>Calosilpha</i> (Coleoptera, Silphidae) .....	153



WATANABE, Y.: A Revisional Study of the Japanese Species of the Genus <i>Megalopaederus</i> (Coleoptera, Staphylinidae) .....	159
SHIBATA, Y.: Two New Muscicolous Species of the Genus <i>Quedius</i> (Coleoptera, Staphylinidae) from Taiwan .....	170
FUJITA, H., & T. ICHIKAWA: A New Species of the Genus <i>Prismognathus</i> (Coleoptera, Lucanidae) from Northern Thailand .....	177
OKAJIMA, S., & T. ICHIKAWA: A New Stag-beetle of the Genus <i>Aegus</i> (Coleoptera, Lucanidae) from Taiwan .....	180
NAGAI, S.: Studies on the Subfamily Cetoniinae (Coleoptera, Scarabaeidae) of Asia, V. ....	184
TÔYAMA, M.: The Buprestid Genus <i>Chalcophorella</i> KERREMANS and its Related Genera (Coleoptera, Buprestidae) .....	188
DESCARPENTRIES, A.: Un nouveau genre de Buprestide originaire d'Indochine et appartenant à la tribu des Polycetesini (Coleoptera, Buprestidae) .....	194
BÍLÝ, S.: Descriptions of Adult Larvae of <i>Thrincopyge alacris</i> LECONTE and <i>Aphanisticus cochinchinae seminulum</i> OBENBERGER (Coleoptera, Buprestidae) ...	198
SUZUKI, W.: Two Elaterid Beetles of the Genus <i>Megapenthes</i> (Coleoptera, Elateridae) from Japan and Taiwan .....	205
SAKAI, M.: Studies on the Anobiidae (Coleoptera) from Japan and Neighboring Countries. VII. A New Taiwanese Species of the Genus <i>Trichodesma</i> .....	211
WITTMER, W.: <i>Laius plagiat</i> (WALKER) und verwandte Arten (Coleoptera, Malachiidae) (39. Beitrag zur Kenntnis der indo-malaiischen Fauna) .....	215
SATÔ, M.: The Genus <i>Attalus</i> (Coleoptera, Melyridae) of the Ryukyu Archipelago .....	233
SASAJI, H.: Notes on the Colydiidae (Coleoptera) of Japan and Formosa .....	243
MASUMOTO, K.: Two New <i>Augolesthus</i> (Coleoptera, Tenebrionidae) from East Asia, with Notes on the Known Species of the Genus .....	250
TAKAKUWA, M.: The Group of <i>Glipa formosana</i> (Coleoptera, Mordellidae) from Amami-Oshima Island of the Ryukyus .....	257
HAYASHI, M.: The Cerambycidae (Coleoptera) of Thailand, chiefly based on the Collection made by the Japan-U.S. Co-operative Science Program in 1965 ...	264
MAKIHARA, H.: Two New Cerambycid Beetles from Kyushu —Studies on Cerambycidae (Coleoptera) of Japan (5)— .....	275
OHBAYASHI, N., & T. SHIMOMURA: Two New Lepturine Beetles of the Tribe Xylosteini (Coleoptera, Cerambycidae) from the Darjeeling District and the Malay Peninsula .....	282
SAITO, S.: Lectotype Designation of Japanese <i>Pidonia</i> (Coleoptera, Cerambycidae) Preserved in the British Museum (Natural History) .....	291
KUBOKI, M.: A New Species of the Lepturine Genus <i>Pidonia</i> (Coleoptera, Cerambycidae) from Central Honshu, Japan .....	297
NIISATO, T.: A New Cerambycid Beetle of the Genus <i>Glaphyra</i> (Coleoptera, Cerambycinae) from the Central Mountains of Taiwan, with Description of a New Subgenus .....	303
KIMOTO, S.: New or Little Known Chrysomelidae (Coleoptera) from Japan and its Adjacent Regions, IV .....	309

SENOH, T.: Two New Species of the Genus <i>Phaulimia</i> (Coleoptera, Anthribidae) from the Ryukyu Islands .....	314
MORIMOTO, K.: The Family Curculionidae of Japan. V. Tribe Camptorhinini ...	321
SHINOHARA, A.: The Sawfly Genus <i>Metallopeus</i> (Hymenoptera, Tenthredinidae) of Taiwan .....	335







### A Brief Biography of Yoshihiko KUROSAWA

Yoshihiko KUROSAWA was born in Tokyo on August 1st, 1921, as the only son of Kiyoshi and Naoko KUROSAWA. Following his father's job, Professor at Yonezawa College of Technology, KUROSAWA was brought up in Yonezawa, Yamagata Prefecture, an old city blessed with nature. While in the higher classes of elementary school, he developed interest in nature and began to collect butterflies. In junior high school, KUROSAWA joined the Insect Lovers' Association, Tokyo, started to collect carabid and cerambycid beetles to obtain foreign butterflies in exchange, and extended his interest to buprestid beetles. In this period, he already published some entomological notes in the "*Entomological World*," Tokyo. In 1940, he entered Yamagata High School and his interest in insects grew up still more.

In 1943, KUROSAWA was employed in the Entomological Laboratory, Kyushu University, Fukuoka, as a research assistant. At that time, the staff of the laboratory was Teiso ESAKI (Professor), Keizo YASUMATSU (Associate Professor), Syusiro ITO (Assistant at Hikosan Biological Laboratory), Takashi SHIRÔZU (Assistant) and Tamotsu ISHIHARA (Assistant). Through the guidance of T. ESAKI and K. YASUMATSU, he decided to pursue the taxonomic study of buprestid beetles as his life work, though his main job in the laboratory was to breed fleas. After the World



War II, KUROSAWA stayed in his father's home town, Aizu-Wakamatsu, Fukushima Prefecture, for some years, and then, in the summer of 1951, he was with the National Science Museum, Tokyo, as a curator.

KUROSAWA threw all his energies into building up insect collection which actually formed the foundation of the present collection of the museum, and after 1980 he served as the director of the Department of Zoology at the museum. On the other hand, KUROSAWA was appointed as the secretary of the Entomological Society of Japan and made effort to reorganize the society which, at that time, was in quite a critical situation because of the aftereffect of the war in the Pacific. Since then, he has been elected to the council of the society many times. Besides these activities, KUROSAWA published many entomological papers, and in February 1962, he was awarded his doctorate from the Faculty of Agriculture, Kyushu University, his dissertation being entitled: A revisional study on the Buprestidae in Saghalien, Japan, the Loo-choos, and the Bonin Islands (Insecta, Coleoptera).

KUROSAWA has covered quite an extensive field in entomology. He is interested not only in beetles but also in dragonflies, mantes, phasmids, orthopterans, cicadas, aphids, bugs, scorpionflies, neuropterans, butterflies and moths, hymenopterans, and so on. In the Coleoptera other than buprestids, KUROSAWA published papers and notes on more than 25 families (see Bibliography). KUROSAWA was also interested in zoogeography. Even in taxonomic works, he always gave due consideration to the mode of distribution of the insects concerned. From early times, he was aware of the fact that some insects did migrate on typhoons or on ocean currents. His interest was extended to mimicry phenomena, resulting in the discovery of a remarkable convergence in some Southeast Asian buprestids, so-called "a modelless numerical mimicry."

In 1954 KUROSAWA organized the Coleopterists' Association of Japan. At the beginning, the association held meetings only, but in 1968, KUROSAWA started to issue the publication, the "*Coleopterists' News*," which now consists of four numbers with about 48 pages a year and offers important informations.

KUROSAWA is always helpful and friendly to everyone who loves insects. Many entomologists, not only professionals but also amateurs, have sought his expert advice on their own problems and allowed to examine beautiful specimens laboriously accumulated by him. KUROSAWA loves whole insects, especially large and beautiful creatures. In April 1986, he will end his occupation, but will continue to carry on his researches as a guest of the museum.

(Mamoru OWADA)

## Publications of Yoshihiko KUROSAWA

### 1936

- 米沢付近昆虫目録 (一). 大阪昆虫同好会会報, 1: 75-82.

### 1937

- 斜平山のヒメギフテフ. 昆虫界, 5: 141.

### 1938

- 南部米沢盆地に於けるオサムシ相. 昆虫界, 6: 867-869.

### 1941

- 置賜地方昆虫雑記 (1). 昆虫界, 9: 710-712.

### 1942

- 置賜地方昆虫雑記 (2). 昆虫界, 10: 245-246.
- クロヒメタマムシの二変異に就いて. 昆虫界, 10: 421-423.
- 置賜地方昆虫雑記 (3). 昆虫界, 10: 779-795.
- 蔵王山お釜付近の昆虫に就いて. 山形高校報国団誌, (3): 19-23.

### 1946

- 日本産及び近隣産吉丁虫数種の学名に就いて (一新亜種の記載を含む). 昆虫世界, 50(2): 1-5; 50(3): 7-10.
- 山形県南部の膜翅目に就いて (1). 東北昆虫学会報告, (3): 1. (鈴木章夫と共著.)

### 1947

- *Agrilus cyaneoniger* E. SAUNDERS クロナガタマムシの分布に就いて. 近畿甲虫同好会会報, 2: 1-3.
- 吉丁虫雑記 (1). 近畿甲虫同好会会報, 2: 25-29, 1 pl. (伊賀正汎と共著.)
- 本州未記録の花天牛 1 種に就いて. 近畿甲虫同好会会報, 2: 29.

### 1948

- Description of new and rare species of the genus *Chrysobothris* ESCH. from eastern Asia (Col., Buprestidae). *Mushi, Fukuoka*, 19: 15-29, pls. 3-5.
- 日本産 *Anthaxia* 属に就いての覚書. 昆虫学評論, 1: 1-4.
- 喜界ヶ島産吉丁虫 2 種に就いて. 昆虫学評論, 1: 15-16.



## 1949

- 福島県若松市附近に於ける秋の蚜虫類. 東北昆虫学会会報, 2: 1-4.
- 奥羽地方に於けるトゲアワフキムシ科 2 種の分布資料. 東北昆虫学会会報, 2: 19-20.  
(白畑孝太郎と共著.)
- Description of a new Lymexylonidae of the genus *Lymexylon* FABRICIUS from Japan.  
*Ent. Rev. Japan, Osaka*, 1: 26-28.
- タマムシの解説. 採集品同定の手引 1. 新昆虫, 2(12): 9-11.

## 1950

- タマムシの解説. 採集品同定の手引 2. 新昆虫, 3(1): 13-15, 28.
- タマムシの解説 (完). 採集品同定の手引 3. 新昆虫, 3(2): 12-14.
- 日本産タマムシ科の分布 (1). 新昆虫, 3(6): 11.
- 四国のタマムシ類. 四国昆虫学会会報, 1: 1-16. (中條道夫と共著.)
- 日本産クリタマムシの学名に就いて. 昆虫学評論, 5: 27-30.
- 雑言. 昆虫学評論, 5: 30.
- ヒラタムシ科, マルドロムシ科, タマムシ科, コメツキダマシ科, ヒゲブトコメツキ科, ツツシンクイ科. 石井 悌ほか(編), 日本昆虫図鑑, 改訂版, pp. 1070-1074, 1107, 1111-1122, 1136-1139. 北隆館, 東京.

## 1951

- On a new leaf mining buprestid beetle from Japan. *Ent. Rev. Japan, Osaka*, 5: 73-74.

## 1952

- ミカンナガタマムシ和歌山に分布す. 新昆虫, 5(5): 36.
- *Hololepta higoniae* LEWIS の新産地. 昆虫学評論, 6: 24.

## 1953

- 日本, 朝鮮及び満州産キンヘリタマムシ群の再検討. 国立科学博物館研究報告, (32): 67-82, 1 pl.
- ヒョウモンチョウ類の黒化異常型. 自然科学と博物館, 20(1/2): 13-16.
- Synonymies and identifications of genus *Coraebus* from eastern Asia, with descriptions of several new forms (Coleoptera). *Bull. natn. Sci. Mus., Tokyo*, (33): 96-109.
- Description of a new species of genus *Figulus* (Coleoptera: Lucanidae). *Bull. natn. Sci. Mus., Tokyo*, (33): 110-111. (With T. NAKANE.)
- A new Buprestidae from Marianne Islands, Micronesia. *Kontyû, Tokyo*, 20: 36-39.
- 上野公園でのイチモンジセセリの渡り. 新昆虫, 6(13): 14.

## 1954

- Buprestid-fauna of eastern Asia (Coleoptera) (1). *Bull. natn. Sci. Mus., Tokyo*, (34): 29-39, pl. 16.
- Buprestid-fauna of eastern Asia (2). *Bull. natn. Sci. Mus., Tokyo*, 1: 82-93.
- 日本産モンキチョウの異常型及び雌雄型 (蝶類の異常型 2). 自然科学と博物館, 21: 167-171, 2 pls. (尾本恵一と共著.)

## 1955

- 琉球列島産ツマベニチョウの地方変異に就いて. 国立科学博物館研究報告, 2: 64-69. (尾本恵一と共著.)
- キボンタマムシとヤツボンタマムシは樺太に産するか. 昆虫, 23: 142

## 1956

- 四国で採れたというツマベニチョウについて. 新昆虫, 9(2): 46.
- 琉球以北のイワサキコノハチョウの記録について. 自然科学と博物館, 23: 24-28.
- Buprestid-fauna of eastern Asia (3). *Bull. natn. Sci. Mus., Tokyo*, 3: 33-41.
- 上野原のアイノミドリシジミ. *Insect Magazine, Tokyo*, (37): 13.
- A new genus and the species of the family Lymexylonidae with the additional notes on some Japanese species (Coleoptera). *Bull. natn. Sci. Mus., Tokyo*, 3: 80-82.

## 1957

- Buprestid-fauna of eastern Asia (4) (Coleoptera). *Bull. natn. Sci. Mus., Tokyo*, 3: 183-194.
- オオオサムシの分布東限. 昆虫, 25: 49.
- わが10代を語る. 新昆虫, 10(5): 18-19.
- グライアスオオツノコガネ. 自然科学と博物館, 24(3/4): 表紙 2.

## 1958

- 飯豊連峰, 吾妻山, 裏盤梯. 京浜昆虫同好会(編), 新しい昆虫採集(上), pp. 140-144. 内田老鶴圃, 東京.
- 原色図鑑世界の蝶. 146+32 pp., 132 pls. 北隆館, 東京. (中原和郎と共著.)
- エゾゼミの畸型. 自然科学と博物館, 25: 133.
- 上野公園で採れたミルンヤンマ. 自然科学と博物館, 25: 179.

## 1959

- 日本から始めて記録されるゴミムシ類2種について. 自然科学と博物館, 26: 20-22. (田中和夫と共著.)
- A revision of the leaf-mining buprestid-beetles from Japan and the Loo-Choo Islands. *Bull. natn. Sci. Mus., Tokyo*, 4: 202-268.

- Notes on the cetoniid-beetles in Japan and its adjacent regions (Coleoptera, Scarabaeidae). *Bull. natn. Sci. Mus., Tokyo*, **4**: 337-340.
- A new form of *Coptolabrus* from Formosa. *Bull. natn. Sci. Mus., Tokyo*, **4**: 341-342.
- A new species of the genus *Cicindela* from the Bonin Islands. *Bull. natn. Sci. Mus., Tokyo*, **4**: 372-373. (With T. NAKANE.)
- 日本未記録のキシタバ類の一種. 蛾類同志会通信, (18): 169. (岡嶋清行と共著.)
- サツマスズメ和歌山県に産する. 蛾類同志会通信, (18): 175.
- オオミズアオとオナガミズアオ. 博物館研究, **32**(4): 14-15.

## 1960

- 世界のちょうちゅう. 嗜好 [株式会社明治屋発行の広告誌], (408): 42-56, pl. 7.
- 本州未記録のヤガの一種. 蛾類通信, (19): 5.
- 冬の昆虫採集記. 自然科学と博物館, **27**: 113-114.

## 1961

- 鳥翅蝶 (1). 自然科学と博物館, **28**: 113-114.
- 鳥翅蝶 (2). 自然科学と博物館, **28**: 142-143.

## 1962

- 鳥翅蝶 (3). 自然科学と博物館, **29**: 26-29.
- 林さんの思い出. *Insect Magazine, Tokyo*, (57): 10-12.

## 1963

- Buprestid-fauna of eastern Asia (5) (Coleoptera). *Bull. natn. Sci. Mus., Tokyo*, **6**: 90-111. [Dated 30 Dec. 1962.]
- タマムシ科, コメツキダマシ科, ツツシンクイムシ科, ヒラタムシ科, ツチハンミョウ科. 中根猛彦ほか, 原色昆虫大図鑑, **2**: 147-156, 167-168, 187-188, pls. 74-78, 84, 94. 北隆館, 東京.

## 1964

- 新潟県のタマムシ科. 新潟県の昆虫, (8): 33-38.
- モンシロチョウの交通事故. インセクタリウム, **1**: 67.
- タマムシの幼虫. インセクタリウム, **1**: 68-69.
- Descriptions of several new species and subspecies of the genus *Agrilus* CURTIS from Amami-Oshima of the Loo-Choo Archipelago. *Kontyû, Tokyo*, **32**: 323-334.
- The stag-beetles of the Amami Islands of the Loo-Choos (Coleoptera, Lucanidae). *Kontyû, Tokyo*, **32**: 443-447.
- 昆虫類. 朝日連峰, pp. 185-202. 山形県総合学術調査会, 山形. (白畑孝太郎と共著.)

## 1965

- キマダラセセリ. インセクタリウム, 2: 97.
- Revisional notes of two *Mycetoporus*-species (Coleoptera, Staphylinidae) described by the late Dr. Tadao KANO. *Bull. natn. Sci. Mus., Tokyo*, 8: 351-354. (With Y. WATANABE.)
- ニホンキクイムシの食痕. インセクタリウム, 2: 109.

## 1966

- 松の木のはかま. インセクタリウム, 3: 29.
- ヒオドシチョウ. インセクタリウム, 3: 45.
- オサ掘りの火つけ役と火消し役. インセクトジャーナル, (2): 9-10.
- 世界のアゲハチョウ (6). キンタアゲハ・トリパネアゲハ. 昆虫と自然, 1 (6): 2-7.
- 脈翅目, 長翅目, 広翅目, 鱗翅目 (チョウ), 甲虫目. 黒沢良彦・日高敏隆 (編), 日本百科大事典・別冊, 原色昆虫図鑑. 475 pp., 160 pls. 小学館, 東京. (1967年に原色昆虫百科図鑑という表題で再発行された.)
- 高山蝶. インセクタリウム, 3: 124.
- Description of two new species of the genus *Lucanus* SCOPOLI from Formosa (Coleoptera, Lucanidae). *Bull. natn. Sci. Mus., Tokyo*, 9: 339-344, 1 pl.
- カバマダラと台風. 自然科学と博物館, 33: 205-207.
- 秋の虫が鳴いてますよ. 月刊ペットマガジン, 1 (2): 29-34.

## 1967

- でんでん虫. インセクタリウム, 4: 28.
- オオカバマダラ. 自然科学と博物館, 34: 1-2.
- 千葉県のカバマダラ後記. 自然科学と博物館, 34: 66-67.
- 台風の落し子. インセクタリウム, 4: 76.
- ナナフシ. インセクタリウム, 4: 130.
- チャイロコメノゴミムシダマシとコメノゴミムシダマシ. インセクタリウム, 4: 169.
- 八木先生と私. *New Entomologist, Ueda*, 16 (2): 36.
- 「昆虫記」とわたし. 少年少女世界の文学, 別巻 2, 大岡信 (訳), 昆虫記, 解説, pp. 318-326. 河出書房, 東京.

## 1968

- 日本産タマムシ科概説 (1). 甲虫ニュース, (1): 1-2.
- サメハダハマキチョッキリの加害植物. 甲虫ニュース, (1): 3.
- マルクビツチハンミョウ. インセクタリウム, 5: 58.
- 日本産タマムシ科概説 (2). 甲虫ニュース, (2): 1-2.
- ケブカヒラタカミキリの記録. 甲虫ニュース, (2): 4.

- クサキリを巢に運ぶクロアナバチ. インセクタリウム, 5: 157.
- Notes on the Formosan cetoniid beetles (I). A revision of the Formosan species of the genus *Dicranocephalus* WESTWOOD. *Bull. natn. Sci. Mus., Tokyo*, 11: 225-234, 1 pl.
- A revision of the subfamily Ochodaeninae in the Loo-choos, Formosa, and their adjacent regions (Coleoptera, Scarabaeidae). *Bull. natn. Sci. Mus., Tokyo*, 11: 235-243.
- 山形県のクロナガオサムシ. 甲虫ニュース, (3): 4.
- クリの花に集まるカミキリムシ(1). 甲虫ニュース, (3): 4.
- アキアカネの産卵. インセクタリウム, 5: 198.
- 小笠原諸島の昆虫. インセクタリウム, 5: 214-215.
- ウラギンシジミの越冬. インセクタリウム, 5: 217.
- 日本産タマムシ科概説 (3). 甲虫ニュース, (4): 1-3.
- アオオサムシの異常活動. 甲虫ニュース, (4): 5-6.
- コメツキモドキ科 5 種の食草. 甲虫ニュース, (4): 6.
- 新潟県のタマムシ (第 2 報). 越佐昆虫同好会会誌, (3): 6-10.

## 1969

- 甲虫界・続く種の細分化 ('68 年の回顧と '69 年の展望). 昆虫と自然, 4(1): 2-3.
- ヤクシマコエゾゼミとコエゾゼミは同一種か (附. 日本産エゾゼミ属の分布地理). 自然科学と博物館, 36: 11-20.
- コンボウアメバチの寄生したクスサンのサナギ. インセクタリウム, 6: 37.
- 日本産タマムシ科概説 (4). 甲虫ニュース, (5): 1-3.
- アオムシコマユバチ. インセクタリウム, 6: 57.
- A splendid new buprestid-beetle from Formosa. *Bull. natn. Sci. Mus., Tokyo*, 12: 191-194, 1 pl.
- コフキコガネの雌雄型. 甲虫ニュース, (6): 1-2.
- 勝村一男 (計報). 甲虫ニュース, (6): 4.
- A revision of the genus *Platycerus* GEOFFROY in Japan (Coleoptera, Lucanidae). *Bull. natn. Sci. Mus., Tokyo*, 12: 475-484, 1 pl.
- 日本産タマムシ科概説 (5). 甲虫ニュース, (7): 1-2.
- コルリクワガタの発見. 甲虫ニュース, (7): 3.
- 国立科学博物館所蔵対馬産蟬科標本. 国立科学博物館専報, (2): 73-78, pl. 4.
- 生き残りのアブラゼミ. インセクタリウム, 6: 236.
- むし. ひかりのくに自然科学ライブラリー 5, むし (解説), pp. 1-3.

## 1970

- 日本産タマムシ科概説 (6). 甲虫ニュース, (8): 1-4.

- 御蔵島のオオヒラタエンムシ. 甲虫ニュース, (8): 6.
- ヤニサシガメ. インセクタリウム, 7: 38.
- 日本昆虫学会と磐瀬さん. 昆虫と自然, 5(3): 4-5.
- 磐瀬太郎先生を憶う. インセクタリウム, 7: 83.
- カワトンボ. インセクタリウム, 7: 118.
- キマダラカミキリの初見日. 甲虫ニュース, (9): 6.
- セミの初鳴き. インセクタリウム, 7: 176.
- マダラアシゾウムシ. インセクタリウム, 7: 178.
- コミスジ. インセクタリウム, 7: 198.
- 国立科学博物館所蔵対馬産 クワガタムシ科標本. 国立科学博物館専報, (3): 289-296, 1 pl.
- ヤスマツトビナナフシ. インセクタリウム, 7: 218.
- The stag-beetles collected by the Lepidopterological Research Expedition to Nepal Himalaya in 1963. *Spec. Bull. lepidopt. Soc. Japan*, (4): 159-167.
- 日本産タマムシ科概説 (8). 甲虫ニュース, (10): 1-3.
- 奄美大島の食糞コガネムシ追記. 甲虫ニュース, (10): 4.
- クラズミウマ. インセクタリウム, 7: 238.
- 昆虫類. 飯豊連峰, pp. 179-214. 山形県総合学術調査会, 山形. (白畑孝太郎と共著.)

## 1971

- アゲハ. インセクタリウム, 8: 5.
- 日本産タマムシ科概説 (9). 甲虫ニュース, (11): 1-4.
- ムネアカセンチコガネの飛翔. 甲虫ニュース, (11): 6.
- 紹介. Coleoptera of the Loo-choo Archipelago (II), Mem. Fac. Educ. Kagawa Univ., 2(192): 63 pp. (1970). 甲虫ニュース, (11): 6.
- 枯葉の上で陽光を浴びるギフチョウ. 自然科学と博物館, 38(3/4): 表紙 2.
- 春の蝶. 自然科学と博物館, 38: 73-87.
- ウスバシロチョウ. インセクタリウム, 8: 65.
- トゲニセマダラコガネの生息場所. 甲虫ニュース, (12): 5-6.
- カマキリ. インセクタリウム, 8: 185.
- 岩手県で採れたニホンホホビロコメツキモドキ. 甲虫ニュース, (13): 4.
- 世界のコヒオドシ属. やどりが, (65): 8-20.

## 1972

- 学会. 甲虫談話会, 会誌を 14 号まで発行. 昆虫と自然, 7(1): 16.
- ツマグロキチョウ. インセクタリウム, 9: 69.
- イボタガ. インセクタリウム, 9: 91.
- 台湾から始めて記録されるクワガタムシ. 甲虫ニュース, (14): 4-5.



- 南大東島のタマムシ. 甲虫ニュース, (14): 5.
- オオカバマダラはどこから飛んできたか. 自然科学と博物館, 39: 62-68.
- ミドリヒョウモン. インセクタリウム, 9: 154.
- マヌタテアカネ. インセクタリウム, 9: 202.
- クジャクチョウ. インセクタリウム, 9: 226.
- タマムシ科の分布から見た小笠原諸島の昆虫相の起源. 自然科学と博物館, 39: 179-192.
- Occurrence of Mastogeniinae in the Oriental Region (Coleoptera, Buprestidae). *Bull. natn. Sci. Mus., Tokyo*, 15: 617-618.
- 鳥海山・飛島の昆虫類. 鳥海山・飛島, pp. 218-262. 山形県総合学術調査会, 山形.

## 1973

- タマムシ. インセクタリウム, 10: 10.
- 五十嵐邁氏採集のイラクのタマムシ類. 甲虫ニュース, (15/16): 6.
- 有田豊氏採集のアフガニスタンのタマムシ類. 甲虫ニュース, (15/16): 6.
- 伊豆諸島から新記録のタマムシ. 甲虫ニュース, (15/16): 8.
- キイロスズメバチの巣についたヒョウホンムシ. 甲虫ニュース, (15/16): 8.
- オナガカツオゾウムシの食草. 甲虫ニュース, (15/16): 8.
- クロホシビロードコガネの斑紋変化. 甲虫ニュース, (15/16): 8.
- 虫好き虫嫌い. 保育としぜん, 1973(4): 6-7.
- フタオチョウ. インセクタリウム, 10: 227.
- アオタテハモドキ. インセクタリウム, 10: 250.
- ホリジャカバマダラの再発見. 付, 村山修一・下野谷豊一両氏記載の新種及び新亜種に対する疑問. 蝶と蛾, 23: 99-102.
- A new cetoniid beetle from Iriomote-jima Island of the Ryukyus (Coleoptera, Scarabaeidae). *Mem. natn. Sci. Mus., Tokyo*, (6): 109-112.

## 1974

- テントウムシ. インセクタリウム, 11: 10.
- ツチハンミョウと私. インセクタリウム, 11: 58.
- 琉球列島の昆虫. 自然科学と博物館, 41: 106-110, 2 pls.
- トラフシジミ. インセクタリウム, 11: 82.
- 日本産タマムシ科概説(10). 甲虫ニュース, (17/18): 1-4.
- ハナムグリは雨を予知するか. 甲虫ニュース, (19/20): 4-5.
- 日本新記録のシデムシ. 甲虫ニュース, (19/20): 7.
- A stag-beetle new to the Formosan fauna (Coleoptera, Lucanidae). *Bull. natn. Sci. Mus., Tokyo*, 17: 103-104, 1 pl.
- A list of Papilionidae (Lepidoptera) collected in the Santa Marta Mountains and the

- vicinity, Colombia, S.A.—Biological report on the 1st scientific expedition of Shizuoka University to the Andes, 1967. *Rept. Fac. Sci. Shizuoka Univ.*, **9**: 107–113. (With M. TAKAHASHI.)
- A revision of the East Asian species of the genus *Chalcophora* (Coleoptera, Buprestidae), with special reference to their distribution and differentiation. *Mem. natn. Sci. Mus., Tokyo*, (7): 169–192, pl. 19.
  - 日本産タマムシ科概説 (11). 甲虫ニュース, (21/22): 1–2.
  - ダイコクコガネの分布南限. 甲虫ニュース, (21/22): 8.
  - タイワンキンオニクワガタの亜種名. 甲虫ニュース, (21/22): 8.
  - イソジョウカイモドキの分布北限. 甲虫ニュース, (21/22): 9.
  - オトシブミ類の越冬. 甲虫ニュース, (21/22): 11.
  - 和泉泰吉 (計報). 甲虫ニュース, (21/22): 12.
  - 日本産タマムシ科概説 (12). 甲虫ニュース, (23/24): 1–4.
  - 西表島のクロテンシロチョウ. 月刊むし, (41): 35.
  - アカエゾゼミ情報. 月刊むし, (41): 36.
  - チョウの大きさについて. 世界動物百科, (170): 27–28. 朝日新聞社, 東京.
  - 幻のチョウ. 世界動物百科, (170): 27. 朝日新聞社, 東京.
  - チョウ. 世界動物百科, (176): 1–9. 朝日新聞社, 東京.

## 1975

- 日本産タマムシ科概説 (13). 甲虫ニュース, (25/26): 1–2.
- 八重山諸島産ハナムグリ 3 種の記録. 甲虫ニュース, (25/26): 9.
- ルリクワガタとコルリクワガタの分布. 甲虫ニュース, (25/26): 10–11.
- Additional notes on the genus *Chrysobothris* ESCHSCHOLTZ from Japan and the adjacent regions (Coleoptera, Buprestidae). *Bull. natn. Sci. Mus., Tokyo*, (A), **1**: 67–75.
- 日本産タマムシ科概説 (14). 甲虫ニュース, (27/28): 1–4.
- 台湾新記録のクワガタムシ. 甲虫ニュース, (29/30): 5.
- チュウジョウアオゴミムシの習性. 甲虫ニュース, (29/30): 7.
- シリグロオオキノコムシの分布. 甲虫ニュース, (29/30): 7.
- ムラサキシジミ. インセクトarium, **12**: 274.
- New stag-beetles of the genus *Prismognathus* from southwestern Japan (Coleoptera, Lucanidae). *Mem. natn. Sci. Mus., Tokyo*, (8): 155–160, 1 pl.
- A new may-beetle of the genus *Fruhstorferia* KOLBE from Formosa (Coleoptera, Scarabaeidae). *Bull. natn. Sci. Mus., Tokyo*, (A), **1**: 213–215. (With H. KOBAYASHI.)
- 日本産タマムシ科概説 (15). 甲虫ニュース, (31/32): 1–4.
- シラホシカミキリの加害植物. 甲虫ニュース, (31/32): 14.
- 中国の蝶. やどりが, (80): 4–11.

- 中国大陸のアゲハ類. やどりが, (80): 21-33. (五十嵐邁ほか2名と共著.)
- 出羽三山 (月山・羽黒山・湯殿山)・葉山の昆虫類. 出羽三山 (月山・羽黒山・湯殿山)・葉山, pp. 229-260. 山形県総合学術調査会, 山形. (白畑孝太郎と共著.)
- 書評, 藤岡知夫著検索図鑑日本の蝶. 科学朝日, 1975 (7): 127.

## 1976

- 日本産タマムシ科概説 (16). 甲虫ニュース, (33): 1-5.
- 福島県会津地方のオオヒメゲンゴロウ. 甲虫ニュース, (33): 8.
- ツシマムツボシタマムシの学名と分布. 甲虫ニュース, (33): 10.
- アカアリヅカエンタムシの採集記録. 甲虫ニュース, (33): 11.
- Notes on the Oriental species of the coleopterous family Buprestidae (I). *Bull. natn. Sci. Mus., Tokyo*, (A), 2: 51-58.
- Notes on the Oriental species of the coleopterous family Buprestidae (II). *Bull. natn. Sci. Mus., Tokyo*, (A), 2: 129-136.
- 日本産タマムシ科概説 (17). 甲虫ニュース, (34): 1-5.
- 甌島のクロカナブン. 甲虫ニュース, (34): 6.
- Notes on the systematic position of *Neptis thisbe* Ménétrières and its allies (Lepidoptera, Nymphalidae). *Bull. natn. Sci. Mus., Tokyo*, (A), 2: 179-182.
- Additional notes on Japanese stag-beetles. *Bull. natn. Sci. Mus., Tokyo*, (A), 2: 189-194, 1 pl.
- 日本産タマムシ科概説 (18). 甲虫ニュース, (35): 1-5.
- ヤノナミガタチビタマムシの大発生. 甲虫ニュース, (35): 5.
- 日本未記録のクワガタムシ. 甲虫ニュース, (35): 7.
- 標本害虫異変. 甲虫ニュース, (35): 8.
- 小笠原諸島の甲虫相—その構成と起源 (1). 月刊むし, (68): 21-26.
- 小笠原諸島の甲虫相—その構成と起源 (2). 月刊むし, (69): 3-8.
- 日本産タマムシ科概説 (19). 甲虫ニュース, (36): 1-7.
- シロオビアゲハの分布とベニモン型. *Tsu · I · So*, (99): 551-555.

## 1977

- 小笠原諸島の食葉性コガネムシ類. 甲虫ニュース, (38): 7.
- A revision of the buprestid beetles of the genera *Toxoscelus* and *Cryptodactylus* in Japan and its adjacent regions. *Bull. natn. Sci. Mus., Tokyo*, (A), 3: 169-186.
- ソロモン諸島レンネル島のタマムシ. 昆虫と自然, 12 (12): 10.
- Systematic position of the genus *Tamamushia* Miwa et Chûjô (Coleoptera, Buprestidae) endemic to the Ogasawara Islands. *Mem. natn. Sci. Mus., Tokyo*, (10): 163-169.
- コオロギ. 明治村通信, (87): 790-791.
- List of the butterflies from Philippines (Pieridae). *Tsu · I · So*, (114): 161-165.

- List of the butterflies from Philippines (Amathusidae & Danaidae). *Tsu · I · So*, (122): 260-263.

## 1978

- Notes on the Oriental species of the coleopterous family Buprestidae (III). *Bull. natn. Sci. Mus., Tokyo*, (A), 4: 75-77.
- タマムシの占有行動. 甲虫ニュース, (41): 5.
- 奥多摩のチャイロヒメコブハナカミキリ. 甲虫ニュース, (41): 8.
- ウスバシロチョウの思い出とその問題点. 昆虫と自然, 13(7): 13-14.
- 神津島天上山のゲンゴロウ類. 甲虫ニュース, (42): 3.
- A revision of the buprestid beetles of the genus *Megaloxantha* KERREMANS. *Bull. natn. Sci. Mus., Tokyo*, (A), 4: 207-232.
- 甕島のタマムシ類. 甲虫ニュース, (43): 5.
- 花に来るクワガタムシ (1). 甲虫ニュース, (43): 6.
- 伊豆諸島特産種ミクラミヤマクワガタの系統と分布. 国立科学博物館専報, (11): 141-153.
- 神室山系及び丁山系の昆虫類. 神室山・加無山, pp. 186-229. 山形県総合学術調査会, 山形. (白畑孝太郎と共著.)
- 沖縄のアカボシゴマダラについて. やどりが, (93/94): 44.

## 1979

- On the genus *Thymedes* WATERHOUSE (Coleoptera, Buprestidae) endemic to the Philippines. *Bull. natn. Sci. Mus., Tokyo*, (A), 5: 51-60.
- カブトムシの雌雄型. 甲虫ニュース, (45): 9.
- キイロゲンセイの雌雄. 甲虫ニュース, (45): 10.
- 野村 鎮 (計報). 甲虫ニュース, (45): 11.
- New buprestid beetles from the Philippines. *Bull. natn. Sci. Mus., Tokyo*, (A), 5: 127-133.
- オオルリタマムシ属の分類. 月刊むし, (100): 21-29.
- 富士山麓のムネアカセンチコガネ. 甲虫ニュース, (48): 5.
- 高山の蝶たち. 自然科学と博物館, 46: 61-68.
- フェーブルの昆虫記と私. 自然科学と博物館, 46: 88-92.
- 新潟県より新たに記録されるタマムシ類. 新潟県の昆虫 (越佐昆虫同好会会報 50 号 慶祝論文集), pp. 209-210.

## 1980

- 白畑孝太郎氏を偲ぶ. インセクト, 31(1): 54-56.
- 白畑孝太郎氏をしのんで. 月刊むし, (113): 32-33.

- アオカミキリ備忘録 (1). 甲虫ニュース, (50): 7-13.
- 日本新記録のシデムシ (2). 甲虫ニュース, (50): 14.
- 白畑孝太郎 (訃報). 甲虫ニュース, (50): 15.
- New forms of *Coptolabrus* (Coleoptera, Carabidae) from Formosa and Korea. *Bull. natn. Sci. Mus., Tokyo, (A)*, 6: 175-177. (With Y. KUDO.)
- 日本産潜葉性タマムシ類 3 種の分布に及ぼした黒潮の影響. 国立科学博物館専報, (13): 45-51.
- アオカミキリ備忘録 (2). 甲虫ニュース, (51): 5-6.
- オオウグイスナガタマムシの分布北限. 甲虫ニュース, (51): 6.
- チョウセンマメハシミョウの学名. 甲虫ニュース, (51): 7.
- 「日本新記録のシデムシ (2)」の訂正. 甲虫ニュース, (51): 7.
- 伊賀正汎氏を偲ぶ. 月刊むし, (118): 16.

## 1981

- アオカミキリ備忘録 (3). 甲虫ニュース, (53): 5-7.
- 訂正「アオカミキリ備忘録 (2)」。甲虫ニュース, (53): 7.
- A new buprestid beetle of the genus *Agrilus* from northern Thailand, with description of a new subgenus (Coleoptera, Buprestidae). *Ent. Rev. Japan, Osaka*, 36: 5-8.
- ウンナンシボリアゲハ. インセクタリウム, 18: 256-257.
- ウンナンシボリアゲハ. 国立科学博物館ニュース, (15): 3.
- 玉虫色. 多摩虫, 4(10): 3-4.
- 故野村 鎮氏蒐集品. 甲虫ニュース, (54): 3.
- 北洋材のタマムシ類. 月刊むし, (130): 2.
- 迷蝶と台風. 昆虫と自然, 16(13): 8-12.
- 白畑孝太郎氏の思い出. やどりが, (105/106): 36-37.
- 蝶の渡り. 自然科学と博物館, 48: 148.

## 1982

- ヒメテントウノミハムシの加害植物. 甲虫ニュース, (56): 8.
- ダイセツオサムシの模式標本. 甲虫ニュース, (57): 5.
- 日本産ハシミョウ類の分布 3 題. 甲虫ニュース, (58): 4-5.
- 台湾のシロスジカミキリ. 甲虫ニュース, (60): 9-12.
- A remarkable convergence found in Malayan buprestid beetles, with description of two new species from Thailand and Hainan. *Bull. natn. Sci. Mus., Tokyo, (A)*, 8: 173-204, 1 pl.
- 山をおりた昆虫たち. 最上のながれ, pp. 88-90. 山形県総合学術調査会, 山形.
- 峡谷を通った昆虫たち. 最上のながれ, pp. 142-152. 山形県総合学術調査会, 山形.
- 山形県産昆虫目録. 最上川, pp. 463-553. 山形県総合学術調査会, 山形. (白畑孝太

郎, 菊地賢治と共著.)

## 1983

- アカアシオオアオカミキリの趨光性. 甲虫ニュース, (61): 5.
- ドウガネサルハムシの体色. 甲虫ニュース, (61): 7.
- 書評: T. RIGOUT 著 Les Coléoptères du Monde I. Batocerini I (1981). 甲虫ニュース, (61): 8.
- 栗の花にきたコクワガタ. 甲虫ニュース, (62): 3.
- A new buprestid beetle unexpectedly found on the Island of Peleng, off the east coast of Celebes. *Bull. natn. Sci. Mus., Tokyo*, (A), 9: 137-140.
- アカボシゴマダラ属とその周辺 (1). 月刊むし, (149): 2-8.
- アカボシゴマダラ属とその周辺 (2). 月刊むし, (150): 2-11.
- アカボシゴマダラ属とその周辺 (3). 月刊むし, (152): 2-5.
- 南会津 (福島県) のフタスジチョウ. 月刊むし, (154): 35.
- 鳥翅蝶と私. 蝶 (*Acta Rhopalocerologica*), (4): 1.
- (訳) F. E. ZEUNER (1943): 鳥翅蝶類 (鱗翅目, アゲハチョウ科) の系統学的研究; アジアオーストラリア島弧地域の地史より見た鳥翅蝶類の分布と系統. 蝶 (*Acta Rhopalocerologica*), (4): 2-65.

## 1984

- A new subspecies of *Attacus edwardsii* from the Malay Peninsula (Lepidoptera, Saturniidae). *Tyô to Ga, Osaka*, 35: 132-134. (With Y. KISHIDA.)
- Discovery of a new long-armed scarabaeid beetle (Coleoptera) on the Island of Okinawa. *Bull. natn. Sci. Mus., Tokyo*, (A), 10: 73-78.
- ヤンバルテナガコガネ. うえの (上野のれん会発行), (299): 6-8.
- クワガタムシの寄生蜂. 甲虫ニュース, (65): 8.
- 徳之島のケブカコフキコガネ. 甲虫ニュース, (66): 4.
- 沖縄本島から新たに記録される甲虫2種. 甲虫ニュース, (66): 7.
- 南朝北朝. 磐瀬太郎集 II, 集報, (2): 5-6.

## 1985

- 甲虫. 野外ハンドブック (12), 240 pp. 山と溪谷社. (渡辺泰明と共著.)
- シデムシ科, クワガタムシ科, クロツヤムシ科, コガネムシ科 (テナガコガネ亜科, カブトムシ亜科, ハナムグリ亜科). 上野俊一・黒沢良彦・佐藤正孝 (編著), 原色日本甲虫図鑑, 2: 247-252, 329-346, 404-419, pls. 44-45, 58-63, 73-76. 保育社, 大阪.
- A new silphid genus and species (Coleoptera, Silphidae) from Nepal. *Bull. natn. Sci. Mus., Tokyo*, (A), 11: 45-48.

- A new lucanid beetle of the genus *Aesalus* FABRICIUS (Coleoptera, Lucanidae) from the Himalayas. *Bull. natn. Sci. Mus., Tokyo*, (A), 11: 49-51.
- ヤンバルテナガコガネについて. 沖縄県天然記念物調査シリーズ, (26): 1-20, 1 pl. 沖縄県教育委員会, 那覇. (東 清二, 金城正勝と共著.)
- ギフチョウ — 春の女神. 国立科学博物館ニュース, (192): 2.
- ヒラズゲンセイ 備忘録. 甲虫ニュース, (67/68): 7-10.
- Revisional notes on the family Lymexylonidae (Coleoptera) in eastern and southeastern Asia. *Bull. natn. Sci. Mus., Tokyo*, (A), 11: 109-119.
- A new subspecies of blister beetle (Coleoptera, Meloidae) from the Ryukyu Archipelago. *Bull. natn. Sci. Mus., Tokyo*, (A), 11: 121.
- ハムシ 2 種の加害植物. 甲虫ニュース, (69): 5.
- 福島県会津地方のツヤネクイハムシなど. 甲虫ニュース, (69): 7-8.
- 磐瀬さんは知っていた! 鞍馬山のヒサマツミドリシジミ. やどりが, (121): 24-25.
- オオムラサキの思い出. 国立科学博物館ニュース, (194): 3-4.
- Notes on the Oriental species of the coleopterous family Buprestidae (IV). *Bull. natn. Sci. Mus., Tokyo*, (A), 11: 141-170.
- タマムシ科, ホソクシヒゲムシ科, クシヒゲムシ科, ツツシンクイ科, ツチハンミョウ科. 黒沢良彦, 久松定成, 佐々治寛之(編著), 原色日本甲虫図鑑, 3: 2-38, 167-169, 411-414, pls. 1-7, 27, 70. 保育社, 大阪.
- 北陸・山陰地域の自然史科学的総合研究. 実施の目的と昭和 59 年度の調査の記録. 国立科学博物館専報, (18): 1-3.



Papers in honour of  
Yoshihiko KUROSAWA



## A New Spider of the Group of *Clubiona corticalis* (Araneae, Clubionidae) Found in Japan

by

Hirotsugu ONO

Department of Zoology, National Science Museum (Nat. Hist.),  
Shinjuku, Tokyo 160, Japan

**Abstract** A new spider species, *Clubiona kurosawai*, is described from Japan. It shows the unique construction of sexual organ peculiar to the *corticalis* group of the genus *Clubiona* LATREILLE, 1804. The species-group has hitherto been monotypic, comprising only one European spider, *Clubiona corticalis* (WALCKENAER, 1802). The characteristics in the female genitalia and male palp of the constituents of the species-group are analysed and compared with those of the remaining species of the genus *Clubiona*.

*Clubiona corticalis* (WALCKENAER, 1802) widespread in Europe and commonly found under tree-barks and stones has been known as an exceptional species in the phylogeny of the genus *Clubiona* LATREILLE, 1804 (SIMON, 1932; LOCKET & MILLIDGE, 1951; WIEHLE, 1965; etc.). It possesses very unique sexual organs, e.g., extremely large and expanded bulb of male palp as in a haplogyne spider, though its general appearance shows a typical *Clubiona* form and though the condition of its eyes and chelicerae is within the range of variation of the other congeners. Designating this species as the type, LOHMANDER (1944) established the genus *Paracubiona*, but his classification has not been accepted by any other araneologist.

About ten years ago, I collected with my wife two pair of an undescribed clubionid spider wandering at night on the wooden wall of a house at Karuizawa in Nagano Prefecture, situated at the centre of the main island of Japan. I was pleasantly surprised to find that the spider was very peculiar in the construction of genital organ theretofore unknown in Japan but basically similar to that of European *Clubiona corticalis*.

Since then, I have examined specimens of some undescribed species collected in the Nepal Himalayas and the syntypes (BM(NH)) of *Clubiona concinna* (THORELL, 1887) recorded from Tharrawaddy in Burma. The latter was described as the type species of the genus *Atalia* THORELL, 1887, currently regarded as a synonym of *Clubiona* (SIMON, 1897; GRAVELY, 1931). These inhabitants of the mountain areas of South Asia also have genitalic construction of the *corticalis* type.

Thus, it can be safely concluded that *Clubiona corticalis*, *C. concinna*, the undescribed Himalayan species and the new species from Japan constitute a peculiar

group in the heterogeneous genus *Clubiona*, though its taxonomic status is not yet clarified. Its members are widely distributed in the temperate areas of Eurasia, from Europe to Japan, as well as in the mountain areas of South Asia.

In the present paper, the new species from Japan will be described first of all, and the characteristics of its genitalic structure will be pointed out. It is named in honour of Dr. Yoshihiko KUROSAWA on the occasion of his retirement from the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Dr. S.-I. UÉNO revised the manuscript of this paper; Dr. F. R. WANLESS of the British Museum (Natural History) kindly lent me invaluable specimens; I wish to thank these persons for their kindness.

The abbreviations used in this report are as follows: ALE, anterior lateral eye; AME, anterior median eye; AME-AME, distance between AMEs; AME-ALE, distance between AME and ALE; ap, apical; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye; PME-PME, distance between PMEs; PME-PLE, distance between PME and PLE.

*Clubiona kurosawai* sp. nov.

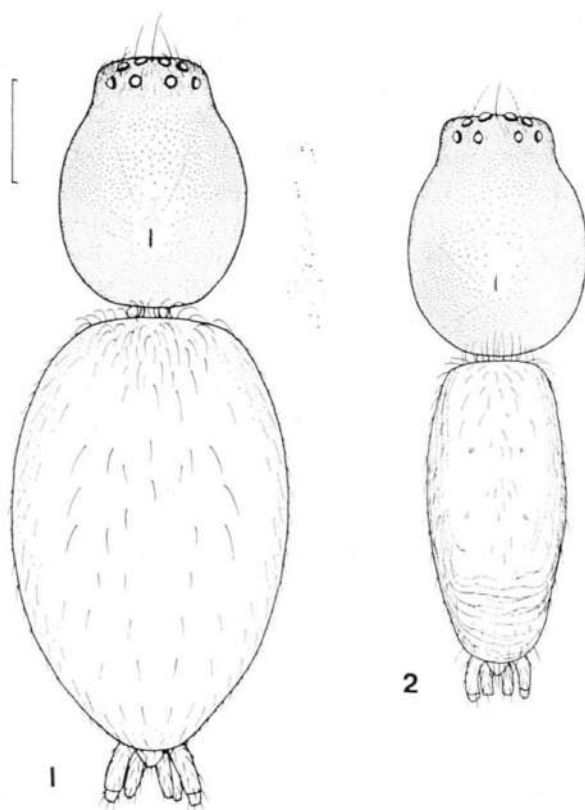
[Japanese name: Kurosawa-fukurogumo]

(Figs. 1-8)

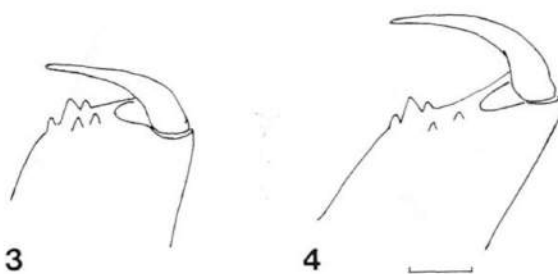
Measurements. Body length ♀ 4.66-7.26 mm, ♂ 4.67-5.11 mm; prosoma length ♀ 2.37-2.52 mm, ♂ 2.37-2.44 mm, width ♀ 1.70-1.78 mm, ♂ 1.63-1.70 mm; opisthosoma length ♀ 2.44-4.44 mm, ♂ 2.52-2.81 mm, width ♀ 1.33-2.89 mm, ♂ 1.33-1.35 mm. Lengths of legs of the holotype and allotype (in mm; ♀/♂):

Leg	Tarsus	Metatarsus	Tibia	Patella	Femur	Total
I	0.60/0.76	1.16/1.36	1.40/1.88	0.92/1.00	1.60/1.88	5.68/6.88
II	0.68/0.88	1.24/1.80	1.56/2.32	0.96/1.00	1.88/2.12	6.32/8.12
III	0.52/0.60	1.48/1.60	1.08/1.32	0.80/0.80	1.60/1.64	5.48/5.96
IV	0.64/0.68	1.68/2.48	2.28/2.00	1.00/0.88	2.12/2.20	7.72/8.24

Prosoma longer than wide (length/width ♀ 1.39-1.42, ♂ 1.43-1.46) covered with short hairs; head with some weak setae: anterior row of eyes recurved in dorsal view, posterior row almost straight, AME, PME and PLE similar in size, ALE slightly larger than the others, ALE/AME ♀ 1.20-1.25, ♂ 1.16-1.20, PLE/PME ♀ 1.00-1.13, ♂ 0.80-1.00, AME-AME/AME-ALE ♀ 1.83-2.00, ♂ 1.80-2.50, PME-PME/PME-PLE ♀ 1.42-1.58, ♂ 1.42-1.47, MOA wider than long (length/width ♀ 0.71-0.75, ♂ 0.73-0.78), anterior width/posterior width of MOA ♀ 0.71-0.75, ♂ 0.68-0.73, clypeus/AME-AME ♀ 0.50-0.75, ♂ 0.60-0.65. Chelicera in male slender, with a ridge along prolateral margin, the inner part from the ridge depressed, in female shorter and without ridge; promargin of cheliceral fang furrow with three teeth, the middle one larger, retromargin with two teeth (Figs. 3-4); maxilla length/labium length ♀ 1.66-1.73, ♂ 1.68-1.82, labium longer than wide



Figs. 1-2. *Clubiona kurosawai* sp. nov. — 1. Female, dorsal view. 2. Male, dorsal view. (Scale: 1 mm.)



Figs. 3-4. *Clubiona kurosawai* sp. nov. — 3. Distal part of chelicera in female, ventral view. 4. The same in male. (Scale: 0.2 mm.)

(length/width ♀ 1.38-1.72, ♂ 1.46-1.58); sternum longer than wide (length/width ♀ 1.33-1.41, ♂ 1.42-1.43). Leg formula IV-II-I-III.

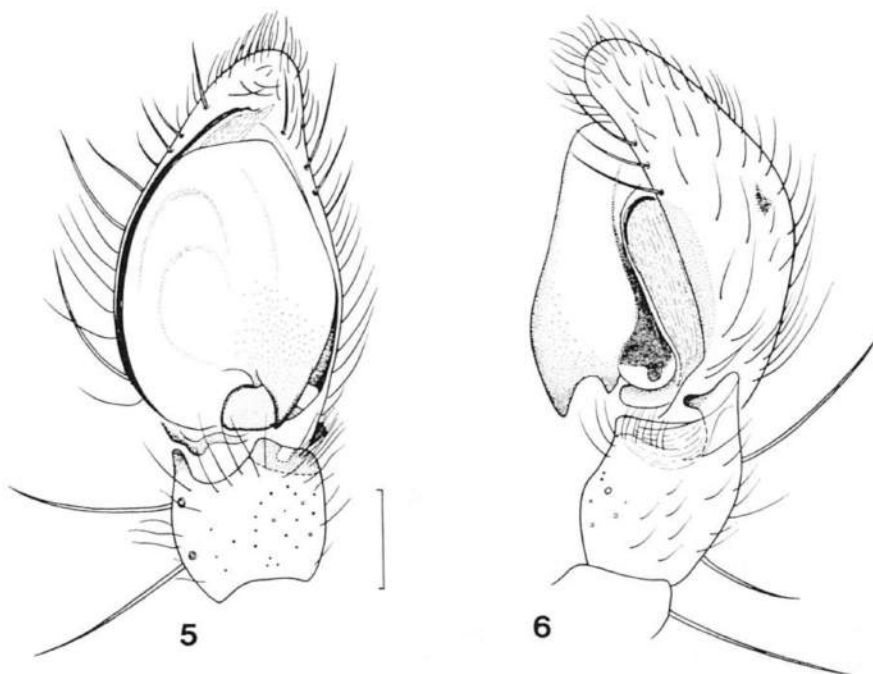
Spiniformation of legs. ♀ (holotype): Femur: I-IV dorsal 1-1-1, prolateral 0-0-1, III-IV retrolateral 0-0-1; patella: I-IV dorsal 1-1 (weak); tibia:

I-IV dorsal 1-1 (weak), I-II ventral 2-2-0, III-IV pro- and retrolateral 1-1, ventral 1-1-2ap; metatarsus: I-II ventral 2-0-0, III-IV dorsal 1, prolateral 1-1-2, III retrolateral 1-0-2, ventral 2-0-2, IV retrolateral 1-1-2, ventral 2-1-2.

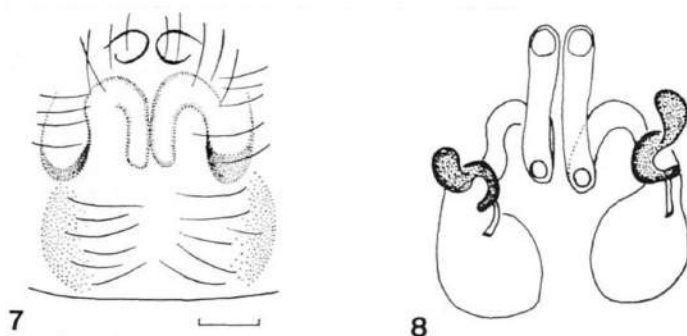
♂ (allotype): Femur: I-IV dorsal 1-1-1, I-II prolateral 0-0-1, III pro- and retrolateral 0-1-1, IV pro- and retrolateral 0-0-1; patella: I-IV dorsal 1-0 (weak), III-IV retrolateral 1; tibia: I-IV dorsal 1-0 (weak), I-II ventral 2-2-0, III pro- and retrolateral 2-2, ventral 0-1-2ap, IV pro- and retrolateral 2-0-2, ventral 1-1-2ap; metatarsus: I-II ventral 2-0-0, III-IV dorsal 1, prolateral 1-1-2ap, III retrolateral 1-0-2ap, ventral 2-0-2ap, IV retrolateral 1-1-2ap, ventral 2-1-2ap.

Male palp (Figs. 5-6). Tibia with strong spines, distally sclerotized; retrolateral apophysis not so developed as in the typical *Clubiona* species, thin and folded, apically with an obtuse process; distal margin of tibia from retrolateral apophysis to ventral side covered by a hyaline sclerite (ventral apophysis?), prolaterally also sclerotized and forming an apophysis. Cymbium basally sclerotized; bulb large, expanded, with tegular apophysis not much sclerotized and extending in the proximal direction, shaped like a human nose in the retrolateral view; embolus long and filiform, apically spiraled; conductor a separate piece, membranous.

Opisthosoma longer than wide (length/width ♀ 1.53-1.84, ♂ 1.89-2.09), with long hairs.



Figs. 5-6. *Clubiona kurosawai* sp. nov. — 5. Male palp, ventral view. 6. Ditto, retrolateral view. (Scale: 0.2 mm.)



Figs. 7-8. *Clubiona kurosawai* sp. nov. — 7. Epigynum. 8. Female genitalia, dorsal view. (Scale: 0.1 mm.)

Female genitalia (Figs. 7-8). Epigynum not much sclerotized, intro-mittent orifices situated in the anterior part and distant from epigastric furrow. Intromittent canal long and curved; atrium present, an oval bladder like a spermatheca; real spermatheca tube-shaped, very small, with a gland digitiform and as large as spermatheca.

Coloration and markings. ♀♂ Prosoma yellow to light yellowish brown, without any marking; chelicerae darker, maxillae, labium, sternum and legs dark yellow. Opisthosoma gray or grayish brown without markings, excepting in the female paratype posteriorly with several chevrons consisting of black hairs.

*Range.* Known only from the type locality.

*Specimens examined.* Holotype: ♂, Izuminosato, Karuizawa-machi, Kitasaku-gun, Nagano Pref., Japan, 1-VI-1976, K. & H. ONO leg. (NSMT-Ar 905); allotype: ♀, same data as holotype (NSMT-Ar 906); paratypes: 1♀1♂, *ibid.* (NSMT-Ar 907). The type specimens are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Discussion.* As mentioned in the introduction of this paper, this new species belongs to the group represented by *Clubiona corticalis*. Following SIMON and WIEHLE, the group of *corticalis* is tentatively used here and redefined with the characteristics shown in the table given on the following page.

The sexual organ in the group of *corticalis* is so remarkably different in structure from those of the remaining species of the genus *Clubiona* (cf. SIMON, 1932; EDWARDS, 1958; LOCKET & MILLIDGE, 1951; WIEHLE, 1965; DONDALE & REDNER, 1982; etc.), that the species-group could be raised to the generic or subgeneric level. However, it seems preferable to set aside the problem of its taxonomic status at the present moment, since the clubionid fauna of Asia has been only poorly studied, and since there is a high possibility of further discovery of new species belonging to the same group.

At the species level, *C. kurosawai* can be easily distinguished from *C. corticalis* and *C. concinna* by the long intromittent canal of female genitalia and the filiform



	Group of <i>C. corticalis</i>	Remaining <i>Clubiona</i> species including many groups diagnosed by DONDALE & REDNER (1982)
Female genitalia:		
intromittent orifice	situated in the anterior part of epigynum and distant from epigastric furrow	situated in the posterior part of epigynum, frequently on posterior margin
intromittent canal	extending in posterior direction	extending in anterior direction
atrium	a bladder organ, large, soft, situated in the posterior part of genitalia	smaller, harder, situated usually in the anterior part of genitalia
spermatheca	tubular, remarkably smaller than atrium (excepting in <i>C. concinna</i> : globular and as large as atrium)	ovoid or globular, as large as atrium
Male palp:		
retrolateral tibial apophysis	not much developed, relatively simple in shape	much developed, strongly sclerotized, frequently of complicated shape
bulb	large, expanded	smaller and elongate
conductor	a separate piece, membranous (absent in <i>C. corticalis</i> )	not forming a separate piece (excepting in the <i>reclusa</i> group)
tegular apophysis	absent in <i>C. corticalis</i> , at the basal part of embolus in <i>C. concinna</i> , large and not sclerotized in <i>C. kurosawai</i> sp. nov.	heavily sclerotized, usually at the basal part of embolus and in the distal part of tegulum
embolus	filiform or spiniform, extending in distal direction	acicular, usually extending in retrolateral or proximal direction

embolus, the proximally extending tegular apophysis and the shape of the retrolateral tibial apophysis of male palp.

### References

- DONDALE, C. D., & J. H. REDNER, 1982. The Insects and Arachnids of Canada. Part 9. The Sac Spiders of Canada and Alaska, Araneae: Clubionidae and Anyphaenidae. 194 pp. Research Branch, Agriculture Canada, Ottawa.
- EDWARDS, R. J., 1958. The spider subfamily Clubioninae of the United States, Canada and Alaska (Araneae: Clubionidae). *Bull. Mus. comp. Zool. Harvard Univ.*, **118**: 365-436, figs. 1-250.

- GRAVELY, F. H., 1931. Some Indian spiders of the families Ctenidae, Sparassidae, Selenopidae and Clubionidae. *Rec. Ind. Mus.*, **33**: 211-282.
- LATREILLE, P. A., 1804. Tableau Méthodique des Insectes. *Dictionnaire (Nouveau) d'Histoire Naturelle*, **24**: 129-200. Paris.
- LOCKET G. H., & A. F. MILLIDGE, 1951. British Spiders. Vol. 1. 310 pp. Ray Society, London.
- LOHMANDER, H., 1944. Vorläufige Spinnennotizen. *Ark. Zool.*, **35A** (16): 1-21.
- SIMON, E., 1897. Histoire Naturelle des Araignées. Deuxième édition. Tome 2, fascicule 1, 192 pp. Roret, Paris.
- 1932. Les Arachnides de France. Tome 6, 4<sup>me</sup> partie (pp. 773-978). Roret, Paris.
- THORELL, T., 1887. Viaggio di L. FEA in Birmania e regioni vicini. II. Primo saggio sui Ragni birmani. *Ann. Mus. civ. Stor. nat. Genova*, (2), **5**: 5-417.
- WALCKENAER, C. A., 1802. Araignées. In: *Faune Parisienne, Insectes*, **2**: 187-250. Paris. (Non vidi.)
- WIEHLE, H., 1965. Die *Clubiona*-Arten Deutschlands, ihre natürliche Gruppierung und die Einheitlichkeit im Bau ihrer Vulva (Arach., Araneae). *Senckenbergiana biol.*, **46**: 471-505.

## New Mites of the Genus *Petalomium* (Acari, Pygmephoridae) from Japan

by

Kazuyoshi KUROSA

Department of Parasitology, Institute of Medical Science,  
University of Tokyo, Tokyo 108, Japan

**Abstract** A new species and a new subspecies of pygmephorid mites belonging to the genus *Petalomium* are described from Japan under the names of *P. kurosawai* and *P. aculeatum japonicum*. The female mites are found in association with the ants, *Formica* (*Serviformica*) *japonica* MOTSCHULSKY and *Camponotus* (*Camponotus*) *obscuripes hemichlaena* YASUMATSU et BROWN, respectively. The male and immature stages are unknown.

*Petalomium* is a mite genus of the family Pygmephoridae and now comprises about 30 species described from various parts of the world, many of which are associates of ants. Concerning the Japanese members of the genus, I reported the occurrence of five species known so far from Europe, Korea and India (KUROSA, 1980), viz., *P. aculeatum* MAHUNKA, *P. carelitschensis* (SEVASTIANOV), *P. nataliae* (SEVASTIANOV), *P. scyphicum* (SEVASTIANOV) and *P. ucrainicum* (SEVASTIANOV). However, some other *Petalomium* species, mostly myrmecophilous, still remain unreported, including a new species closely related to *P. aculeatum* MAHUNKA. On the other hand, re-examination of the Japanese specimens recorded as *P. aculeatum* has revealed that they do not agree in some features with the original description of *P. aculeatum* from India and seem to represent its geographical race.

In the present paper will be given descriptions of the above-mentioned new species of *Petalomium* and a new subspecies of *P. aculeatum*. The terminology used herein is mainly the same as that explained in the preceding paper of mine (1979). The holotypes of the new species and subspecies are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and the paratypes are retained in my collection.

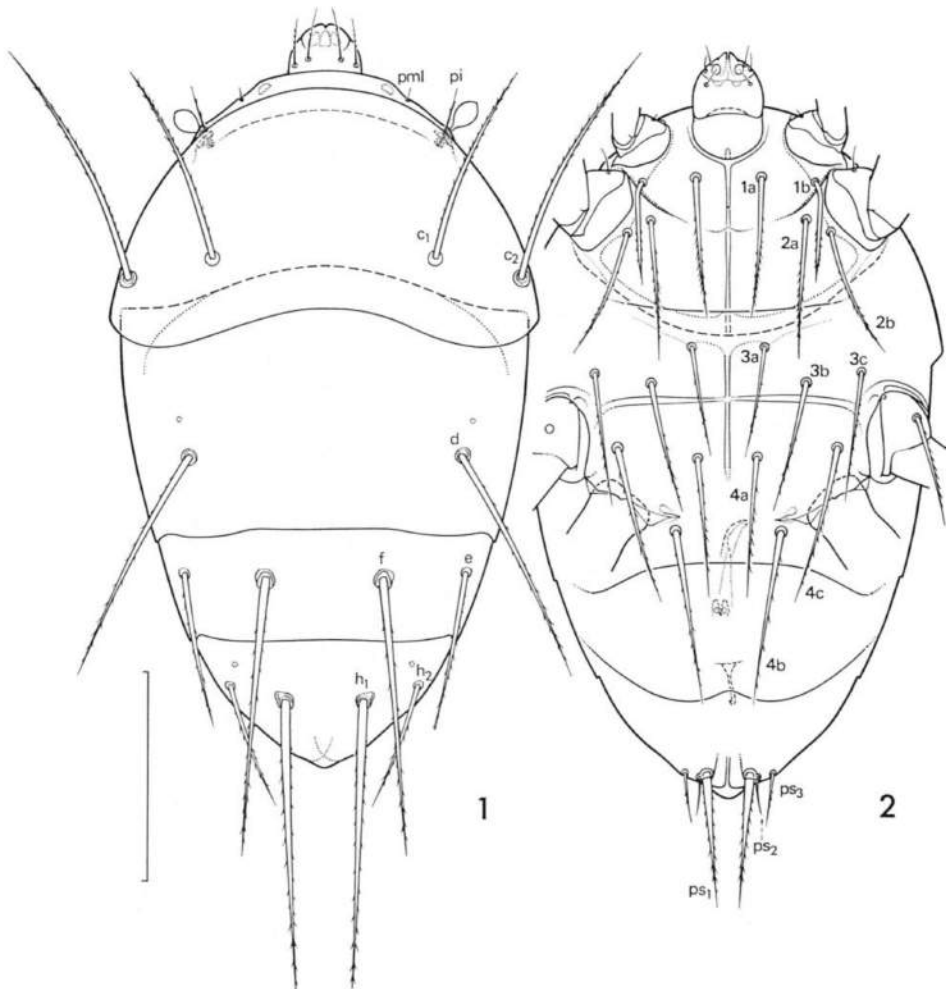
I wish to express my sincere gratitude to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for valuable advice in the preparation of the manuscript, and to Dr. Yoshihiko KUROSAWA of the same museum for his interest and encouragement for my study. Thanks are also due to Mr. Naomi GYÔTOKU (Fukuoka Pref.) for gift of material and to Mr. Jun OKUMA (Sasebo) for technical assistance.

*Petalomium kurosawai* sp. nov.

(Figs. 1-4)

*Female.* Length of body (length of idiosoma), 292–332  $\mu\text{m}$ ; width of body, 188–208  $\mu\text{m}$ ; mutual distance of anterior coxal condyles of leg III, 138–153  $\mu\text{m}$ .

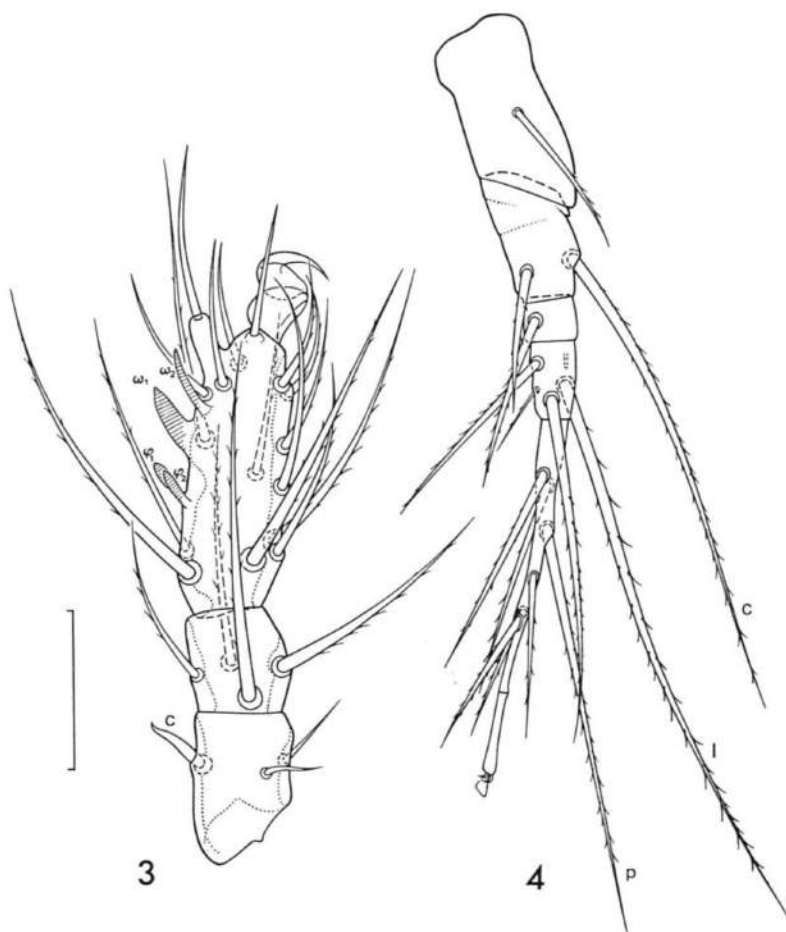
*Dorsum* (Fig. 1). Prodorsum almost wholly covered by first hysterosomal tergite, with anterior margin broadly rounded; sensillus small, club rounded, sometimes with a minute spine at apex; stigmata small, situated near anterolateral angle; seta *pml* minute, located well anterior to sensillus; seta *pi* (22–22  $\mu\text{m}$ ) a little shorter than sensillus (27–31  $\mu\text{m}$ ), situated a little anterior to and somewhat



Figs. 1-2. *Petalomium kurosawai* sp. nov., female. — 1. Dorsum. 2. Venter. Scale: 100  $\mu\text{m}$ .

laterad of the latter. Hysterosomal dorsum oval in outline; dorsal setae fairly long, with weak barbs;  $h_1$  usually the longest, 1.01–1.06 times as long as  $f$ , 2.1–2.4 times as long as  $h_2$ ;  $f$  1.7–1.9 times as long as  $e$ ;  $d$  shorter than  $f$  and  $h_1$ ;  $c_1$  slightly anterior to  $c_2$ . Caudal setae  $ps_1$  20–22  $\mu\text{m}$  apart from each other, fairly long and stout, thicker than coxal seta  $4b$ ;  $ps_2$  adjoining  $ps_1$  at base, about  $1/3$  as long as  $ps_1$ ;  $ps_3$  41–43  $\mu\text{m}$  apart from each other, longer than  $ps_2$ , but shorter than half the length of  $ps_1$ . The order in length of dorsal and caudal setae of hysterosoma as follows:  $h_1 \geq f \geq c_2 \geq d > c_1 > e > ps_1 \geq h_2 > ps_3 > ps_2$ .

Venter (Fig. 2). Apodeme II weak, almost obliterated in mesal half; apodeme III indistinct; apodeme IV horizontal though slightly postcurved laterad, somewhat incomplete medially, nearly reaching ventral margins of coxal foramina



Figs. 3–4. *Petalomium kurosawai* sp. nov., female. — 3. Leg I, dorsal view. 4. Leg IV, ventral view. Scale: 25  $\mu\text{m}$  for Fig. 3, 50  $\mu\text{m}$  for Fig. 4.

III. Coxal setae weakly barbed; *4b* the longest, a little longer than *4c*; *1b* much shorter than *1a*, not forked but somewhat lanceolate, seemingly hollowed; remaining setae not much different in length; *1a* moderately apart from camerostome; *2a* a little apart from and slightly anterior to *2b*; *3b* a little anterior to apodeme IV, slightly posterior to *3c*; *4a* much anterior to *4b*; mutual distance *2a-2a* subequal to *3b-3b*; ratio of *3c-3c/4c-4c* 1.22–1.24.

Legs. Leg I (Fig. 3) much shorter and thinner than legs II and III; tibiotarsus about three times as long as wide, nearly as wide as genu, with pinnaculum well developed; solenidia  $\omega_1$  and  $\omega_2$  subequal in length (ca. 11–12  $\mu\text{m}$ );  $\omega_1$  much thicker than  $\omega_2$ , with apex sharply acuminate;  $\varphi_1$  and  $\varphi_2$  nearly on the same level, shorter than  $\omega_1$  and  $\omega_2$ ; claw and opposable thumb-like process moderate in size; seta *c* of femur reflexed apically. Leg II: solenidion  $\omega$  arising from apex of tibia, moderate in size (ca. 10  $\mu\text{m}$  long), with apex acuminate. Leg IV (Fig. 4) long and slender; pretarsus about 1/4 as long as tarsus; tarsus including pretarsus a little shorter than the four remaining segments combined; claws reduced; tibial solenidion  $\varphi$  short, not reaching insertion for seta *l*; setae *c*, *l* and *p* very long, *c* reaching base of pretarsus, *p* extending well beyond claws IV.

Measurements of holotype (in  $\mu\text{m}$ ). Length of body (length of idiosoma) 292, width of body 188; mutual distance of anterior coxal condyles of leg III, 138. Gnathosoma 29 long, 31 broad. Sensillus 28 & 31 long, 103 apart; centre of stigmata 55 apart. Length and mutual distance of body setae: *pml* ca. 7 & 72; *pi* 20 & 111; *c*<sub>1</sub> 98 & 100; *c*<sub>2</sub> 122 & 174; *d* 108 & 118; *e* 73 & 120; *f* 130 & 52; *h*<sub>1</sub> 133 & 32; *h*<sub>2</sub> 60 & 78; *ps*<sub>1</sub> 64 & 20; *ps*<sub>2</sub> ca. 19 & 26; *ps*<sub>3</sub> 24 & 41; *1a* 64 & 31; *1b* 46 & 84; *2a* 64 & 71; *2b* 64 & 95; *3a* 52 & 36; *3b* 67 & 72; *3c* 59 & 122; *4a* 62 & 24; *4b* 79 & 45; *4c* 74 & 99. Length of legs (along longitudinal axis from basalmost point of femur (legs I to III) or trochanter (leg IV) to the base of claw(s)): leg I 88 (tibiotarsus 45), leg II 137, leg III 146, leg IV 227 (tarsus 84, pretarsus 22; seta *c* 146, seta *l* 172, seta *p* 122).

*Male and immature stages.* Unknown.

*Type series.* Holotype: ♀, Masumizu-hara, Mt. Hôki-daisen, Tottori Pref., 29-IX-1969, K. KUROSA, ex *Formica (Serviformica) japonica* MOTSCHULSKY. Paratypes: 1 ♀, same data as the holotype; 1 ♀, Sugitate, Matsuyama, Ehime Pref., 23-X-1972, K. KUROSA, ex *Formica japonica*.

*Distribution.* Japan (Honshu, Shikoku).

*Remarks.* This new species is dedicated to Dr. Yoshihiko KUROSAWA, who has greatly contributed to the progress of entomology in Japan.

A discussion on the relationship of this species will follow the description of *P. aculeatum japonicum* subsp. nov.

*Petalomium aculeatum japonicum* subsp. nov.

(Fig. 5)

*Petalomium aculeatum*: KUROSA, 1980, p. 220, fig. 98-C (nec MAHUNKA, 1975).

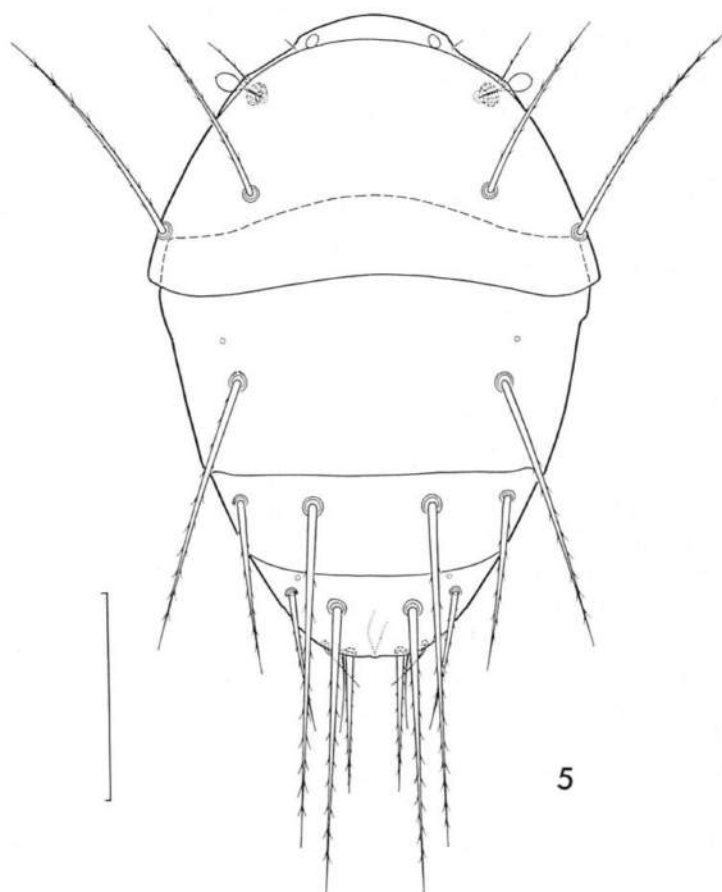


Fig. 5. *Petalomium aculeatum japonicum* subsp. nov., female, dorsum. Scale: 100  $\mu$ m.

*Female.* Length of body (length of idiosoma), 308–317  $\mu$ m; width of body, 203–208  $\mu$ m; mutual distance of anterior coxal condyles of leg III, 148–164  $\mu$ m. Well agreeing with the description of the female of *P. kurosawai* sp. nov. excepting the features given below.

*Dorsum* (Fig. 5). Club of sensillus with a minute spine at apex (in one specimen, the club of the left sensillus has an apical spine which is somewhat long and distinct though much smaller than that ("ein starkes Dorn") of *P. a. aculeatum*); prodorsal seta *pi* (25–28  $\mu$ m) nearly as long as sensillus (27–30  $\mu$ m). Hysterosomal setae: *f* the longest, 1.14–1.24 times as long as *h*<sub>1</sub>, 1.9–2.2 times as long as *e*; *h*<sub>1</sub> 2.0–2.4 times as long as *h*<sub>2</sub>; *d* slightly shorter than or nearly as long as *h*<sub>1</sub>. Caudal setae: *ps*<sub>1</sub> 23–25  $\mu$ m apart from each other; *ps*<sub>2</sub> about 1/2 as long as *ps*<sub>1</sub> or slightly longer; *ps*<sub>3</sub> 45–48  $\mu$ m apart from each other, shorter than or nearly as long as *ps*<sub>2</sub>. The order in length of dorsal and caudal setae of hysterosoma as follows:  $f > h_1 \geq$



$d > c_2 > c_1 > e > ps_1 \geq h_2 > ps_2 \geq ps_3$ .

Venter. Apodeme IV weakly postcurved. Coxal setae: ratio of mutual distance  $3c-3c/4c-4c$  1.35–1.36.

Legs. Leg I:  $\omega_2$  the longest (ca. 12–14  $\mu\text{m}$ ) of four solenidia;  $\omega_1$  slightly shorter than  $\omega_2$ ; claw somewhat larger than in *P. kurosawai*. Leg II: solenidion  $\omega$  ca. 11  $\mu\text{m}$  long.

Measurements of holotype (in  $\mu\text{m}$ ). Length of body (length of idiosoma) 308, width of body 218; mutual distance of anterior coxal condyles of leg III, 164. Gnathosoma 31 long, 34 broad. Sensillus 27 & 29 long, 111 apart; centre of stigmata 60 apart. Length and mutual distance of body setae: *pml* ca. 6 & 79; *pi* 27 (26 & 28) & 121;  $c_1$  93 & 114;  $c_2$  119 & 199;  $d$  132 & 128;  $e$  84 & 125;  $f$  162 & 57;  $h_1$  139 & 36;  $h_2$  67 & 78;  $ps_1$  66 & 25;  $ps_2$  38 & 31;  $ps_3$  26 & 46;  $1a$  78 & 30;  $1b$  54 & 91;  $2a$  77 & 78;  $2b$  75 & 111;  $3a$  62 & 42;  $3b$  70 & 81;  $3c$  70 & 145;  $4a$  60 & 22;  $4b$  86 & 51;  $4c$  78 & 106. Length of legs (along longitudinal axis from basalmost point of femur (legs I to III) or trochanter (leg IV) to the base of claw(s)): leg I 102 (tibiotalar 55), leg II 160, leg III 172, leg IV 261 (tarsus 97, pretarsus 23; seta  $c$  158, seta  $l$  187, seta  $p$  130).

Male and immature stages. Unknown.

Type series. Holotype: ♀, Kurazome-no-taki, Mt. Kujû-zan, Ôita Pref., 9–III–1969, N. GYÔTOKU, ex *Camponotus* (*Camponotus*) *obscuripes hemichlaena* YASUMATSU et BROWN. Paratypes: 2♀, same data as the holotype.

Distribution. Japan (Kyushu).

Remarks. This new subspecies is most closely related to the nominotypical race of *Petalomium aculeatum* MAHUNKA, 1975, from India, and is also closely allied to *P. kurosawai* sp. nov. These three forms can be distinguished from one another by the following features: 1) apical spine on club of sensillus minute or absent in *P. kurosawai*, minute to rather long in *P. a. japonicum*, unusually strong in *P. a. aculeatum*; 2) prodorsal seta *pi* a little shorter than sensillus in *P. kurosawai*, nearly as long as sensillus in *P. a. japonicum*, much longer than sensillus in *P. a. aculeatum*; 3) ratio in length of body setae  $f/e$  1.7–1.9 in *P. kurosawai*, 1.9–2.2 in *P. a. japonicum*, about 2.3 in *P. a. aculeatum*; 4) ratio in length of body setae  $h_1/f$  1.01–1.06 in *P. kurosawai*, 0.81–0.90 in *P. a. japonicum*, about 0.81 in *P. a. aculeatum*; 5) caudal seta  $ps_2$  about 1/3 as long as  $ps_1$  and a little shorter than  $ps_3$  in *P. kurosawai*,  $ps_2$  about 1/2 as long as  $ps_1$  or a little shorter, and longer than or nearly as long as  $ps_3$  in *P. a. japonicum*,  $ps_2$  and  $ps_3$  about 1/3 as long as  $ps_1$  in *P. a. aculeatum*; 6) ratio of mutual distance of coxal setae  $3c-3c$  to that of  $4c-4c$  1.22–1.24 in *P. kurosawai*, 1.35–1.36 in *P. a. japonicum*, about 1.34 in *P. a. aculeatum* (calculated from the illustration given by MAHUNKA).

## References

- CROSS, E. A., 1965. The generic relationships of the family Pyemotidae (Acarina, Trombidiformes). *Univ. Kansas Sci. Bull.*, **45**: 29–275.

- KUROSA, K., 1979. Three new species of *Unguispus* (Acari, Heterostigmata, Microdispidae) from Japan. *Annot. zool. japon.*, **52**: 63-71.
- 1980. Pygmephoridae. In EHARA, S. (ed.), Illustrations of the Mites and Ticks of Japan, 214-227. Zenkoku Nôson Kyôiku Kyôkai, Tokyo. (In Japanese.)
- MAHUNKA, S., 1971. Tarsonemina species (Acari) from Korea. Zoological collectings of the Hungarian Natural History Museum in Korea (Nr. 3). *Acta zool. hung.*, **17**: 271-294.
- 1975. Neue und interessante Milben aus dem Genfer Museum XV. Beiträge zur Tarsone-  
miden-Fauna von Südindien (Acari). *Revue suisse Zool.*, **82**: 495-506.
- 1977. Ditto XIX. Einige Angaben zur Kenntnis der Milbenfauna der Ameisen-Nester  
(Acari: Acarida, Tarsonemida). *Arch. Sci. Genève*, **30**: 91-106.
- SEVASTIANOV, V. D., 1969. Ticks of the genus *Pygmephorus* (Pyemotidae, Trombidiformes) of the  
USSR fauna. *Zool. Zhur.*, **46**: 351-364. (In Russian with English summary.)

## A New Oribatid Mite of the Family Cepheidae (Acari) from Yonezawa in Northern Japan

by

**Jun-ichi AOKI**

Institute of Environmental Science and Technology, Yokohama  
National University, Yokohama, Kanagawa 240, Japan

**Abstract** A new species of soil-living oribatid mite, *Cepheus kurosawai*, is described from Yonezawa of Yamagata Prefecture in northern Japan. The new species is distinguishable from any other congener by the shape of lamellar cusps and the location of interlamellar setae.

The mites of the genus *Cepheus* are similar in shape to some beetles, having hard and dark-colored circular body with complicated surface sculpture. Two European species of the genus have been known from Japan. The third unknown species collected from litter and soil on the slope of Mt. Nishi-Azuma is described below as a new species.

### *Cepheus kurosawai* sp. nov.

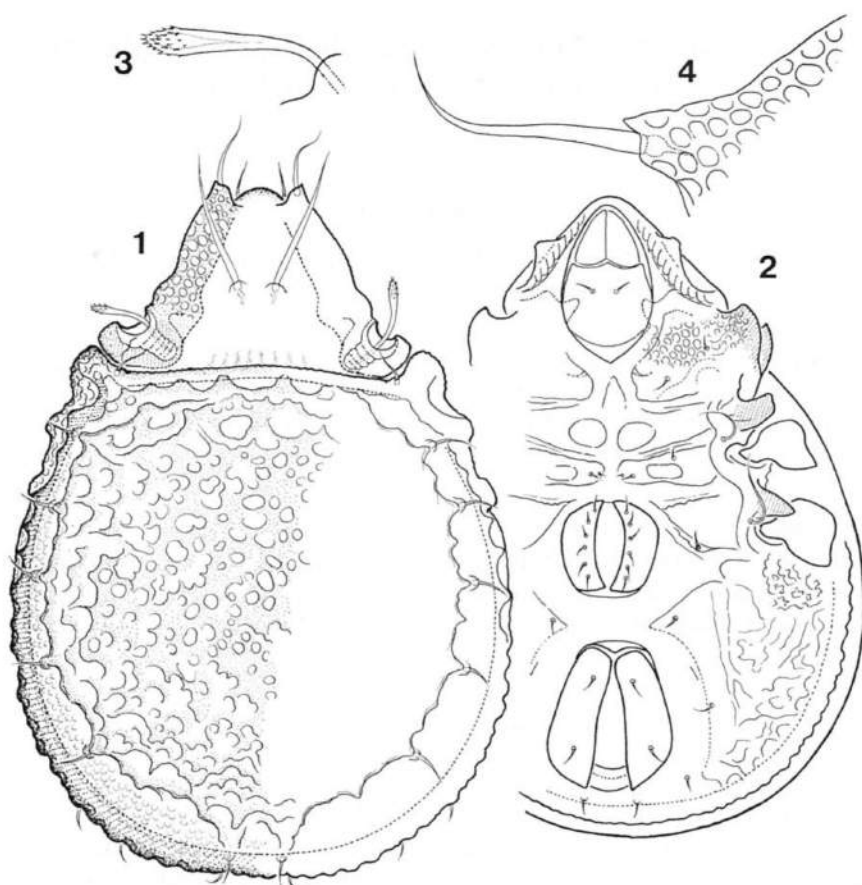
(Figs. 1-4)

**Measurement.** Body length 730 (774) 805  $\mu\text{m}$ ; width 530 (575) 603  $\mu\text{m}$ .

**Prodorsum.** Rostrum well visible between widely separated lamellar cusps. Rostral setae fine and smooth. Lamellar cusp not broadly rounded, but narrowed with a short outer tooth (Fig. 4). Lamellar setae weakly sigmoid, a little longer than their mutual distance. Interlamellar setae long, thick, very slightly roughened, each being inserted on a low apophysis; the setae situated close to each other, so that they are almost three times as long as their mutual distance. Sensillus bearing a weakly swollen head provided with minute spines (Fig. 3).

**Notogaster.** Almost as long as wide. Humeral projection well developed, being accompanied posteriorly by two outer protrusions. Ten pairs of notogastral setae short, simple and weakly curved; excepting humeral and posteromarginal setae (p-series), they are situated on apophyses arranged along irregular edge of circular middle field of notogaster. Foveolae of irregular shapes and sizes covering most part of notogaster.

**Ventral side.** Genital opening slightly longer than wide, being somewhat wider anteriorly than posteriorly. Genital plate with 6 setae arranged in a straight line along the median margin. Adanal seta  $ad_3$  situated on a level mid-distant between  $an_1$  and  $an_2$ . Lyrifissure  $iad$  on a level with  $an_2$ . Pedotectum II nearly



Figs. 1-4. *Cepheus kurosawai* sp. nov. — 1, Dorsal; 2, ventral; 3, sensillus (left side); 4, lamellar cusp and lamellar seta (right side).

rectangular; discidium found as a sharp triangular projection; each of them with a long seta near the base.

**Legs.** Monodactyle. Chaetotaxy of trochanter-femur-genu-tibia-tarsus (excluding solenidia and famulus): I (1-4-3-4-19), II (0-4-2-4-15), III (2-3-2-3-15), IV (1-2-3-4-12). Solenidiotaxy of genu-tibia-tarsus: I (1-2-2), II (1-1-2), III (0-1-0), IV (0-0-0). Relative lengths of leg joints:  $TaIV > TaIII > TaI \doteq TaII$ .  $TiIV > TiIII > TiII \doteq TiI$ .  $GeI > GeII > GeIV \doteq GeIII$ .  $FeII \doteq FeI > FeIV > FeIII$ . Femora I and II the longest joints and slightly longer than tarsus IV.

**Type series.** Holotype (NSMT-Ac 9724): Azuma Kokusai Skiing Ground on the slope of Mt. Nishi-Azuma in Yonezawa City. 10-IX-1982. H. HARADA. From litter and soil under a shrub of *Clethra barbinervis* and *Sasa kurilensis*. — 8 paratopotypes (in spirit): the same data as holotype. — 2 paratypes: the same

place and data, but from under forest of *Tsuga diversifolia*.

In having narrow and pointed lamellar cusps as well as interlamellar setae situated close together, *Cepheus kurosawai* differs from the two well known species, *C. cepheiformis* (NICOLET, 1855) and *C. latus* (C. L. KOCH, 1836). The Italian species, *C. verrucosus* BERNINI, 1971, has narrow lamellar cusps, but the lamellar setae are barbed and the interlamellar setae are far shorter than those of the new species.

The new species is named after Dr. Yoshihiko KUROSAWA, a distinguished entomologist of Japan (Japanese name: Kurosawa Manjudani). The specimens of the type series were collected in Yonezawa, where he spent his boyhood with insects and nature.

### References

- BERNINI, F., 1971. Notulae oribatologicae IV. Contributo alla conoscenza degli Oribatei (Acarida) dei M. Ti Reatini (Lazio). *Lav. Soc. ital. Biogeogr.*, (n.s.), 2: 377-400, pls. 1-6.  
KOCH, C. L., 1836-'44. Deutschlands Crustaceen, Myriapoden und Arachniden, H. 1-40, Regensburg. (Not seen.)  
NICOLET, 1855. Histoire naturelle des Acariens qui se trouvent aux environs de Paris. *Arch. Mus. Hist. nat. Paris*, 7: 381-482, pls. 24-32.

*Yinentulus*, A New Genus of Acerentomidae  
(Protura) from Japan

by

Gentaro IMADATÉ

Biological Laboratory, Konodai College,  
Tokyo Medical and Dental University, Ichikawa, Chiba 272, Japan

**Abstract** A new genus and species of acerentomid proturan is described from Japan under the name of *Yinentulus kurosawai*. It is related to *Tuxenentulus* IMADATÉ, but is readily recognized on the peculiarities of foretarsal sensilla and maxillary gland canal.

In October 1966, an interesting acerentomid was found on Mt. Ontake lying in the central part of Honshu and on the Inunaki-tohge, northern Kyushu. It is very similar to *Tuxenentulus* in many respects, but differs in the shape of foretarsal sensilla *t-1* and in the chaetotaxy (cf. IMADATÉ, 1974, p. 175). To clarify its taxonomic position, it was hoped to obtain some more specimens. During these twenty years, many soil zoologists have carried on careful surveys in various places of the Japanese Islands, but have failed in taking any except for a single example from the alpine plant community on Mt. Motoshirane-san at the central part of Honshu, which was collected by Mr. Hiroshi HARADA in August 1983. This addition proved that the fundamental characters of the interesting acerentomid warranted recognition of a new genus as given in the following lines.

The holotype of the present new form is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and the allotype in the Biological Laboratory of Konodai College, Tokyo Medical and Dental University, Ichikawa.

I wish to express my hearty thanks to Professor J. AOKI, Mr. H. HARADA and Dr. S. KAMATA for the privilege of studying the interesting materials, and to Dr. Shun-Ichi UENO for kindly reading the original manuscript and for giving valuable advice.

Genus *Yinentulus* IMADATÉ, nov.

Type species: *Yinentulus kurosawai* IMADATÉ, sp. nov.

**Diagnosis.** Typical acerentomid. Labial palpus ornamented with a tuft of setae at apex. Canal of maxillary gland simple, without racemose appendix, calyx not globular. Foretarsus with all sensillae; dorsal sensilla *t-1* filiform; *t-3* slender and rounded apically; exterior sensilla *c* situated at about the same row as *b*; *d* close to *c* and a little proximal to *t-2*; interior sensilla *a'* slightly distal to *t-1*; *b'* at

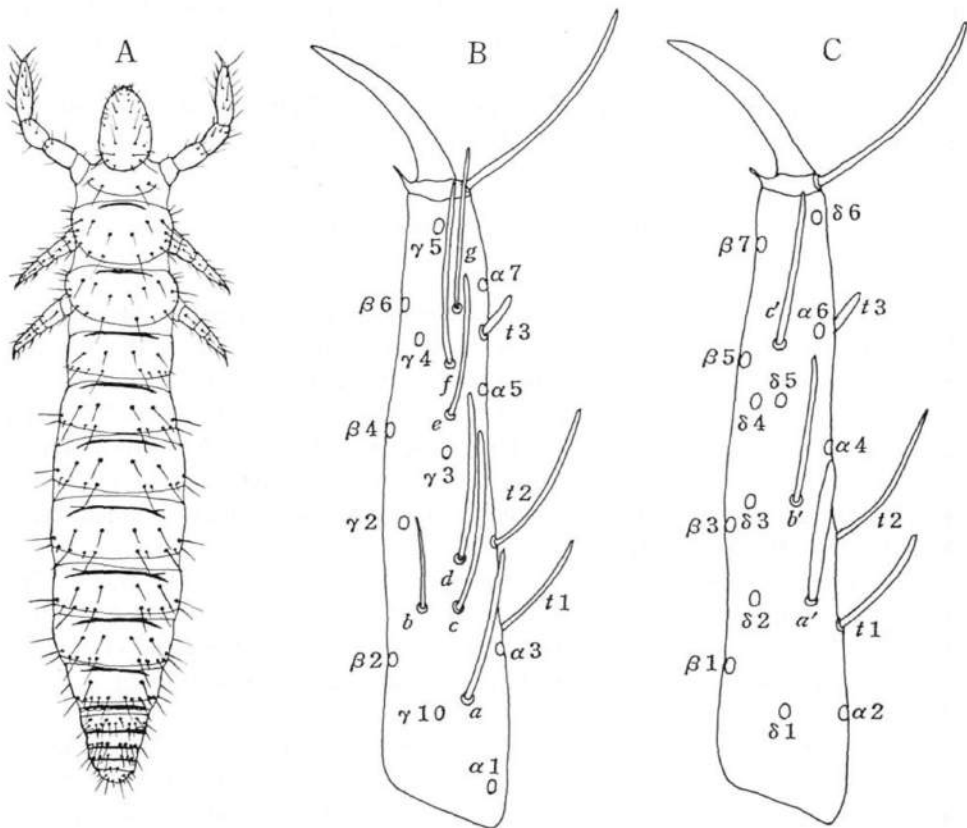


Fig. 1. *Yinentulus kurosawai* gen. et sp. nov. — A, Dorsal view; B, foretarsus, exterior view; C, the same, interior view.

about the same row as  $\delta 3$ . Thoraces II–III each with two pairs of dorsal anterior setae, A2 and 4. On abdominal tergites II–VI, posterior principal setae P 3 situated a little anterior to the other posterior setae, all such accessory setae as P 1a, 2a and 4a being very short, sensilla-like. On abd. VIII, striate band reduced and without hook-shaped design; comb not protruding posteriorly. Abdominal sternites I–VII with three anterior setae, Ac and 2; stern. VIII with double rows of setae, four middle and two posterior. Abdominal appendages II–III each with two setae, the lateral apical one strong and longer than a half the subapical in length.

*Notes.* Though readily recognized on the filiform *t-1* on foretarsus and the simple structure of the canal of maxillary gland, the present new genus is doubtless close to *Tuxenentulus* IMADATÉ known from northern Japan, northeastern China and North America. It shares with *Tuxenentulus* many fundamental characters such as the body chaetotaxy, the constitution of labial palpus and the basic structure of striate band and comb on abd. VIII. These two genera must have been

derived from a common ancestral stock, and this relationship is closely similar to that between *Sugaentulus* IMADATÉ from Japan and *Huashanentulus* YIN from China.

The generic name is dedicated to Professor YIN Wen-ying of the Academia Sinica, Shanghai, the most excellent colleague in my proturan study.

*Yinentulus kurosawai* IMADATÉ, sp. nov.

(Figs. 1-2)

*Specimens examined.* 2♂, 1♀, 1 matus junior, Nigorigô on Mt. Ontake (evergreen coniferous forest (*Abies mariesii* & *A. veitchii*), 1,700 m alt., warmth index: 44 month/degrees), Osaka Cho, Mashita Gun, Gifu Pref., 16-X-1966, G. IMADATÉ leg.; 1♀, Mt. Ontake (scrub (*Pinus pumila*), 2,650 m alt., WI: 17), Osaka Cho, Mashita Gun, Gifu Pref., 16-X-1966, S. KAMATA leg.; 1♂, Mt. Motoshirane-san (alpine plant community (*Empetrum nigrum* var. *japonicum* & *Vaccinium uliginosum*), 2,130 m alt., WI: 26), Kusatsu Cho, Agatsuma Gun, Gunma Pref., 30-VIII-1983, H. HARADA leg.

Body length 1,300-1,450 µm in expanded adults. Head oval; pseudoculus (Fig. 2C) small, PR=16-17; mouthparts similar to those of *Tuxenentulus*; labial palpus with a tuft of setae at apex, sensilla upon labial palpus slender (Fig. 2A); canal of maxillary gland simple, without racemose appendix, calyx not globular (Fig. 2B).

Foretarsus 106-109 µm in length; claw 32-34 µm, TR=3.2-3.3; empodium very short, EU=0.09; S-shaped seta a little longer than claw (Fig. 1B-C). Dorsal sensilla *t-1* filiform, BS=0.49-0.56; *t-2* thin and relatively long; *t-3* slender and rounded apically; exterior sensilla *b* thin and very short, the apex not surpassing the base of *γ 2*; *c* at the same row as *b*; *d* close to *c*, a little proximal to *t-2*; *f* at about halfway between *e* and *g*; *g* fairly surpassing tarsus; interior sensilla *a'* distinctly broad, a little distal to *t-1*; *b'* thin, at the same row as *δ 3*; *c'* subequal to *b'* in length.

Abdominal appendages II-III each with two setae (Fig. 2D), the lateral apical one strong and longer than a half the subapical in length. On abdomen VIII, striate band reduced, without hook-shaped design; comb consisting of about ten teeth of equal size, with posterior margin almost straight, not protruding posteriorly (Fig. 2G). Weak rotary wheel present on the anterolateral margin of abd. tergites III-VII (Fig. 2E & H). Male squama genitalis normal; female one with a stout, pointed acrostylus (Fig. 2F).

Chaetotaxy (Table 1, Fig. 1A & 2H) similar to that of *Tuxenentulus*. Thoraces II-III each with two pairs of dorsal anterior setae, A 2 and 4; abdominal tergites I-V each with A 1, 2 and 5; terg. VI with A 1, 2, 4 and 5; terg. VII with A 2, 4 and 5; on terg. II-VI posterior principal setae P 3 situated a little anterior to the other posterior setae; sternites I-VII each with three anterior setae, A c and 2; stern.



Table 1. Chaetotaxy of *Yinentulus kurosawai* gen. et sp. nov.

		Maturus junior		Imago	
		Formula	Composition of setae	Formula	Complementary setae
(Dorsal)					
Thorax	I	4	1, 2	4	
		6	A 2, 4, M	6	
	II-III	16	P 1, 1a, 2, 2a, 3, 4, 5, 5a,	16	
Abdomen	I	6	A 1, 2, 5	6	P 1a
		10	P 1, 2, 2a, 3, 5	12	
	II-V	6	A 1, 2, 5	6	P 1a
		14	P 1, 2, 2a, 3, 4, 4a, 5	16	
	VI	6	A 1, 2, 5	8	A 4
		14	P 1, 2, 2a, 3, 4, 4a, 5	16	P 1a
	VII	6	A 2, 4, 5	6	
		16	P 1, 1a, 2, 2a, 3, 4, 4a, 5	16	
	VIII	6-7	A 1, 3, 5, M c, 2, 3, 4	6-8 (7)	M 1 (-M c)
		8	P 2, 3, 4, 5	8	
	IX	12	1, 2, 3, 3a, 4, 5	14	4a
	X	8	1, 3, 4, 5	12	2, 3a
	XI	6		6	
	XII	9		9	
(Ventral)					
Thorax	I	4-4	A 1, 2, M 1, 2	4-4	
		6	P 1, 2, 3	6	
	II-III	7-2	A c, 2, 3, 4, M	7-2	
		4	P 1, 2	4	
Abdomen	I	3	A c, 2	3	P 2
		2	P 1	4	
	II-III	3	A c, 2	3	
		5	P c, 2, 3	5	
	IV-VI	3	A c, 2	3	
		8	P 1, 1a, 2, 3	8	
	VII	3	A c, 2	3	P c
		8	P 1, 1a, 2, 3	9 (8)	
	VIII	4	1, 2	4	
		2	P	2	
	IX-X	4	1, 2	4	
	XI	2	2	6	1, 3
	XII	6		6	

VIII with double rows of setae, four middle and two posterior. Dorsal P 1a, 2a on thoraces II-III, P 1a and 2a on abd. terg. I, P 1a, 2a and 4a on terg. II-VII very short, sensilla-like.

Holotype: ♂, allotype: ♀, Nigorigô on Mt. Ontake, Osaka Cho, Mashita Gun, Gifu Pref., 16-X-1966, G. IMADATÉ leg.

*Maturus junior*. Length of body 810  $\mu$ m. Integument well sclerotized. Foretarsus 88  $\mu$ m, claw 27  $\mu$ m, TR=3.2. With the exception of the absence of

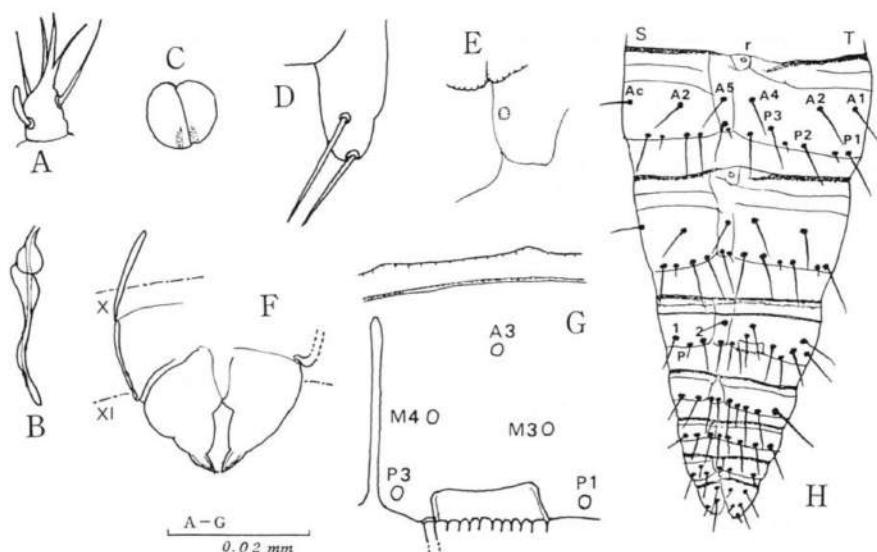


Fig. 2. *Yinentulus kurosawai* gen. et sp. nov. — A, Labial palpus; B, canal of maxillary gland; C, pseudoculus; D, abdominal appendage III; E, rotary wheel on abd. V; F, female squama genitalis, x – sternite X, xi – stern. XI; G, striate band and comb on abd. VIII; H, abd. VI – XII, lateral view, r – rotary wheel, s – sternite, t – tergite.

genitalic organ, most of the specific features are similar to those of the adults. The following setae are absent: P 1a on abdominal tergites I–VI, A 4 on terg. VI, M 1 on terg. VIII, 4a on terg. IX, 2 and 3a on terg. X, P 2 on stern. I, P c on stern. VII, 1 and 3 on stern. XI. Terg. VIII has M c instead of M 1.

*Notes.* The present new species is named in honour of Dr. Yoshihiko KUROSAWA, who has kindly given me his sincere encouragement for these twenty-five years through my proturan study.

Abnormalities in chaetotaxy are not rare in *Y. kurosawai*. Of the five adults examined, one male from Mt. Motoshirane-san has A 1 on abdominal tergite VII, one male and two females from Mt. Ontake lack P c on stern. VII. On terg. VIII, instead of M 1, M c is present in one male and one female from Mt. Ontake as in the maturus junior.

Three proturan species were collected from the soil samples in which the present new species was found. They are: on Mt. Ontake, *Baculentulus morikawai*, *Filientomon takanawanum* and *Nipponentomon uenoi paucisetosum* in the evergreen coniferous forest, *N. uenoi paucisetosum* in the scrub, and on Mt. Motoshirane-san *B. morikawai* in the alpine plant community.

The female specimen from the Inunaki-tohge, northern Kyushu (cf. IMADATÉ, 1974, p. 175), is almost identical with the Honshu specimens in all the fundamental characters, but slight discrepancies are found in certain features, e.g., the shape of

comb on abdomen VIII and the chaetotaxy. For the time being, I prefer to leave the decision unsettled if these differences are infraspecific or not.

### Erratum

In a previous paper of mine (IMADATÉ, 1978), I failed to describe the BS ratio of *Sugaentulus masumii*. It is as follows: BS=0.59–0.65.

### References

- IMADATÉ, G., 1974. Protura. *Fauna Japonica*. 351 pp. Tokyo, Keigaku Publ. Co.
- 1978. A new genus of Acerentomidae (Protura) from North Japan. *Bull. natn. Sci. Mus., Tokyo*, (A), 4: 39–43.
- TUXEN, S. L., 1984. *Brasilidia* and a new genus and species of Protura (Insecta) from Argentina. Together with an improved generic key to Acerentomidae. *Rev. Écol. Biol. Sol*, 21: 283–295.
- YIN, Wen-ying, 1980. Studies on Chinese Protura: Description of new species and new genera of the family Acerentomidae with discussion on their phylogenetic significance. *Contr. Shanghai Inst. Ent.*, 1: 135–156. (In Chinese, with English résumé.)
- 1983. Grouping the known genera of Protura under eight families with keys for determination. *Ibid.*, 3: 151–163. (In Chinese, with English résumé.)

## Variation of Abdominal Protuberances in the Japanese *Mnais* Damselflies (Odonata, Calopterygidae)\*

by

Kunio SUZUKI

Department of Biology, College of Liberal Arts, Toyama University,  
3190 Gofuku, Toyama-shi 930, Japan

**Abstract** Intraspecific and interspecific variability of abdominal protuberances, which occasionally develop on the mesial dorsal ends of the distal margins of the first and second abdominal segments, are reported using a total of 595 individuals belonging to 18 local populations of four *Mnais* species, *M. costalis* SELYS, *M. sp.* ("Setouchi group" of *M. pruinosa* SELYS), *M. pruinosa* SELYS (so-called "Nankai group" and "Saikai group" of *M. pruinosa*), and *M. nawai* YAMAMOTO. The shape and size of the protuberances and the occurrence frequency of each of the four types are very variable even within one population in all the four species. The protuberances develop in *M. costalis*, *M. sp.* and *M. pruinosa* better than in *M. nawai*.

### Introduction

Many odonatologists have recognized three taxa for the Japanese *Mnais* damselflies (cf. ASAHINA, 1975, 1976; SUZUKI *et al.*, 1980). However, their taxonomic status has long been confused because of complicated polymorphism including wing polychromatism and geographical distribution. Many of them have been known from various districts of the Japanese Islands, and besides, they show remarkable intraspecific and interspecific variability in their morphological and ethological features. Recently, the present author proposed a hypothesis that the Japanese *Mnais* damselflies consist of four independent or good species (SUZUKI, 1984 a, b, 1985 a) based on many facts which have been accumulated by himself, his co-workers and by many Japanese odonatologists from the viewpoints of taxonomy, morphology, ethology, and so on. Many problems still remain to be solved, and attempts with different approaches should be made to clarify the true status of this evolutionarily significant insect group.

The distal margin of each abdominal segment in the Japanese *Mnais* damselflies occasionally develops in varying degrees and forms a remarkable ring-like carina. There is a tendency that the distal margins of the first and second (and very rarely also the third) abdominal segments form conspicuous protuberances on the mesial dorsal ends. Recently, TSUDA (1983) noted the presence of the

\* Contribution No. 112 from the Department of Biology, College of Liberal Arts, Toyama University.

protuberances for the first time. According to him, it may serve to some extent as one of the diagnostic characters for classifying the Japanese *Mnais* taxa.

In this paper, the author is going to deal with the infraspecific and interspecific variability of this newly discovered taxonomic character. The main purpose of this study is to confirm the usefulness of the character for the classification of the Japanese *Mnais* damselflies.

With gratitude, the author dedicates this short paper to Dr. Yoshihiko KUROSAWA on the occasion of his retirement.

### Materials and Methods

A total of 595 specimens belonging to 18 local populations of four *Mnais* species, *M. costalis* SELYS (Populations 1 and 2), *M. sp.* (Populations 3 to 7), *M. pruinosa* SELYS (Populations 8 and 9), and *M. nawai* YAMAMOTO (Populations 10 to 18), were examined (Table 1). They were collected from various parts of the Japanese Islands (Fig. 1). Each population was sampled from a topographically isolated area (from one stream or creek) and therefore, each of them could be regarded as a single reproductive community (i.e., deme) without exception. The population numbers correspond to the materials used in the morphometrical study of the variability in crossvein number made by SUZUKI and METOKI (1983). The so-called "Setouchi group" of *M. pruinosa* was treated as the group [A] in the previous paper. In the present paper, however, the author regards it as an independent species, as it should be regarded as a new species according to his recent hypothesis on the evolution of the Japanese *Mnais* (SUZUKI, 1984 a, b, 1985 a, b; SUZUKI & YAMAMOTO, 1985). Regrettably, no scientific name has yet been given, and the author would like to call it *M. sp.* "*Mnais pruinosa*" in the present paper refers to a complex of the so-called "Nankai group" and "Saikai group" of *M. pruinosa* (auct.) in the present paper.

As a rule, 15 specimens were examined for each population of one intraspecific form. All the specimens were observed under a stereoscopic microscope as regards the presence of protuberances on the first and second abdominal segments, which the author would like to call P1 and P2 respectively. Though recognition of the presence of the protuberances is not necessarily easy because of remarkable variability of their shape and size, decision was made according to the presence or absence of a distinct protuberance on the mesial dorsal end of each of the first and/or second abdominal segments. Therefore, the outline of the first and second abdominal segments in each individual shown in Figs. 2 and 3 does not necessarily correspond to the decision of the presence of the protuberances.

### Results and Discussion

Table 2 shows the results of examination in the present study. The followings may be induced from them.

Table 1. Materials used in the present study.

---

<i>Mnais costalis</i> SELYS	
Sapporo population [Pop. 1]	
♂-f. <i>ogumai</i> [a] 15 exs.; ♂-f. <i>costalis</i> [b] 15 exs.; ♀-f. <i>asahinai</i> * [c] 15 exs.; Hattaru-betsu, Sapporo-shi, Hokkaido, 25. VI.-22. VII. 1978, H. UBUKATA leg.	
Jōetsu population [Pop. 2]	
♂-f. <i>ogumai</i> [a] 15 exs.; ♂-f. <i>costalis</i> [b] 15 exs.; ♀-f. <i>asahinai</i> [c] 15 exs.; Ōnuki-Ōike-dani, Jōetsu-shi, Niigata Pref., Honshu, 5. VI. 1981, K. SUZUKI leg.	
<i>Mnais</i> sp. (= "Setouchi group" of <i>M. pruinosa</i> )	
Sakai population [Pop. 3]	
♂ (hyaline-winged) [a] 15 exs.; ♀ (hyaline-winged) [b] 15 exs.; Sakai, Asahi-machi, Shimo-Niikawa-gun, Toyama Pref., Honshu, 7. VI. 1979, K. SUZUKI leg.	
Nishigishi population [Pop. 4]	
♂ (hyaline-winged) [a] 15 exs.; ♀ (hyaline-winged) [b] 14 exs.; Nishigishi, Nakajima-chō, Kashima-gun, Ishikawa Pref., Honshu, 5. VI. 1980, K. SUZUKI leg.	
Mita population [Pop. 5]	
♂ (hyaline-winged) [a] 15 exs.; ♀ (hyaline-winged) [b] 15 exs.; Mita, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu, 11-20. VI. 1979, K. SUZUKI leg.	
Bessō-gawa population [Pop. 6]	
♂ (hyaline-winged) [a] 15 exs.; ♀ (hyaline-winged) [b] 15 exs.; Bessō-gawa, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu, 28. V.-23. VI. 1976, K. SUZUKI leg.	
Kawachi-Nagano population [Pop. 7]	
♂ (hyaline-winged) [a] 15 exs.; ♀ (hyaline-winged) [b] 14 exs.; Amami, Kawachi-Nagano-shi, Osaka Pref., Honshu, 7. VI. 1981, K. INOUE leg.	
<i>Mnais pruinosa</i> SELYS (= "Nankai group")	
Shingū population [Pop. 8]	
♂-f. <i>strigata</i> [a] 15 exs.; ♂-f. <i>esakii</i> [b] 13 exs.; ♀-f. <i>sieboldi</i> * [c] 15 exs.; Hizue, Shingū-shi, Wakayama Pref., Honshu, 15. IV.-10. VI. 1979, A. TAMAISHI leg.	
Okayama population [Pop. 9]	
♂-f. <i>strigata</i> [a] 15 exs.; ♂-f. <i>esakii</i> [b] 14 exs.; ♀-f. <i>sieboldi</i> [c] 15 exs.; Musa, Okayama-shi, Okayama Pref., Honshu, 10-12. V. 1981, M. ANDO leg.	
<i>Mnais nawai</i> YAMAMOTO	
Jōyama population [Pop. 10]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b]* 15 exs.; Jōyama, Toyama-shi, Toyama Pref., Honshu, 30. V. 1981, K. SUZUKI leg.	
Miyama population [Pop. 11]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Kamikubo, Miyama-chō, Kita-Kuwata-gun, Kyoto Pref., Honshu, 3. VI. 1978, K. SAKURAI leg.	
Murashita-gawa population [Pop. 12]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Tōfukuji-Kurokawa, Namerikawa-shi, Toyama Pref., Honshu, 24. V. 1980, K. SUZUKI leg.	
Mita population [Pop. 13]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Mita, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu, 11-20. VI. 1979 (10♂♂ & 9♀♀) & 28. V. 1980 (5♂♂ & 6♀♀), K. SUZUKI leg.	
Kawakaminaka population [Pop. 14]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Kawakaminaka, Inokuchi-mura, Higashi-Tonami-gun, Toyama Pref., Honshu, 6. VI. 1980, K. SUZUKI leg.	
Bessō-gawa population [Pop. 15]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Bessō-gawa, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu, 28-29. V. 1976, K. SUZUKI leg.	
Myōgahara-gawa population [Pop. 16]	
♂-f. <i>nawai</i> [a] 15 exs.; ♀ [b] 15 exs.; Myōgahara-gawa, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu, 17. V. 1977 (6♂♂ & 2♀♀), 27. V.-3. VI. 1978 (9♂♂ & 13♀♀), K. SUZUKI leg.	

---

\* Recently SUZUKI (1984 a) newly named the homoeochromatic hyaline-winged female form of *M. costalis* and that of *M. pruinosa* ("Nankai group" + "Saikai group") ♀-f. *asahinai* and ♀-f. *sieboldi*. Two infraspecific forms of *M. nawai*, *nawai* (with pale-orange wing veins) and *taketoi* (with black wing veins), have been well known since ASAHINA (1975) defined them. Although typical *nawai* and typical *taketoi* can be clearly distinguished, there are intermediate forms of varying degrees between them. SUZUKI (1980) revealed that the relative occurrence frequency of these two forms was different from population to population in the Hokuriku District. In the present paper, the author did not distinguish these two female forms.

Table 1. (Continued)

---

Kurosaki population [Pop. 17]

♂-f. *nawai* [a] 15 exs.; ♀ [b] 15 exs.; Kurosaki, Nanao-shi, Ishikawa Pref., Honshu, 25. V. 1979, K. SUZUKI leg.

Kawachi-Nagano population [Pop. 18]

♂-f. *nawai* [a] 15 exs.; ♀ [b] 15 exs.; Amami, Kawachi-Nagano-shi, Osaka Pref., Honshu, 7. VI. 1981, K. INOUE leg.

---



Fig. 1. Map showing the localities of the populations sampled. For details of each locality, see Table 1.

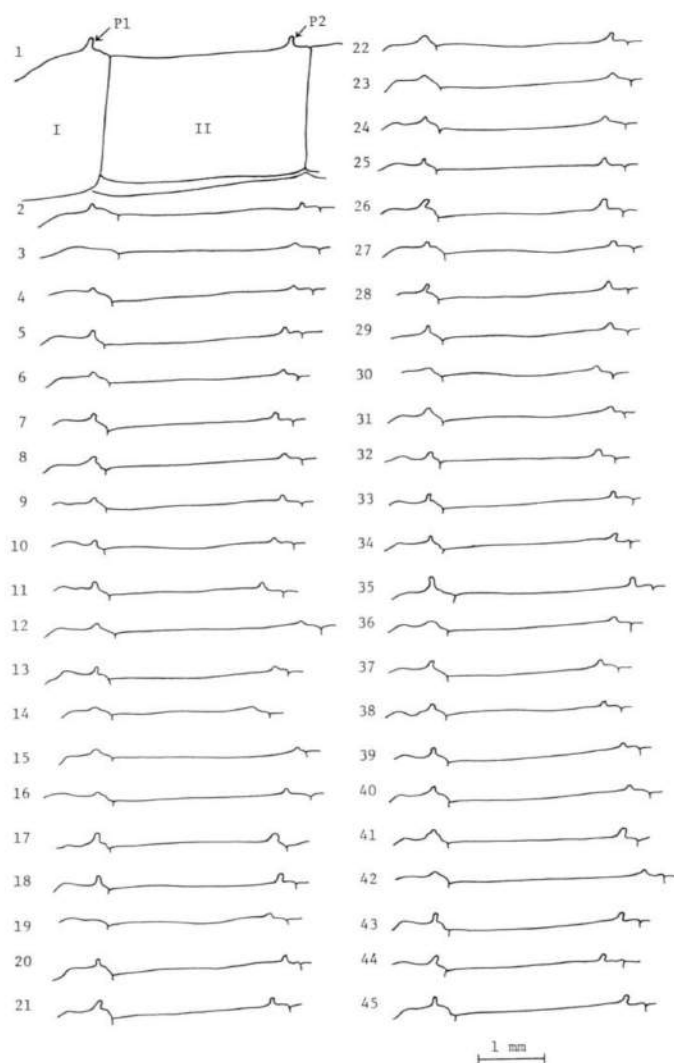


Fig. 2. Intrapopulation variation of abdominal protuberances (side view) in *Mnais costalis* SELYS (from Hattarubetsu, Sapporo-shi, Hokkaido). I: First abdominal segment; II: second abdominal segment; P1: protuberance on the first abdominal segment; P2: protuberance on the second abdominal segment. 2-16: ♂-f. *ogumai*; 17-31: ♂-f. *costalis*; 1 and 32-45: ♀-f. *asahinai*.

1. *M. costalis* (Fig. 2): In the Sapporo population, most individuals have both P1 and P2, whereas in the Jōetsu population, only a few individuals have P1 only. It is a future problem to confirm if such a tendency generally exists between the Hokkaido and the Honshu populations.

2. *M. sp.* (Fig. 3): There is a general tendency of the presence of both P1



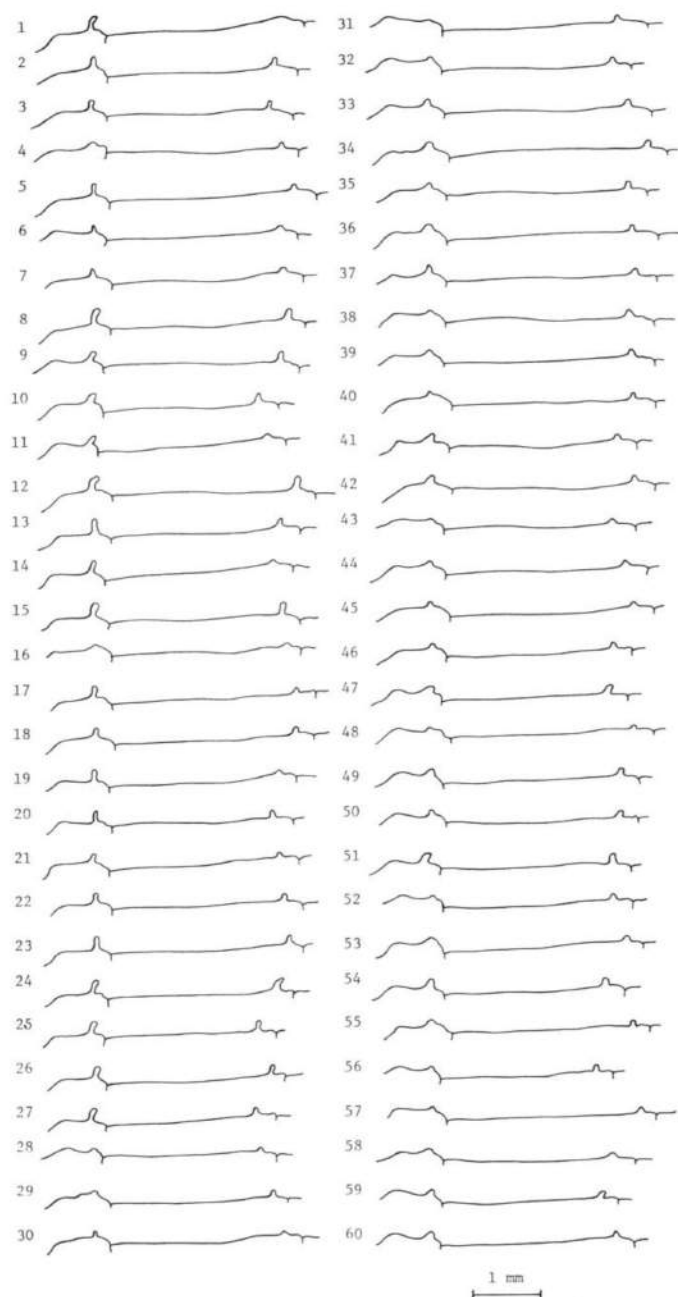


Fig. 3. Intrapopulational variation of abdominal protuberances (side view) in *Mnais* sp. (from Mita, Yatsuo-machi, Nei-gun, Toyama Pref., Honshu) and *M. nawai* YAMAMOTO from Tōfukuji-Kurokawa, Namerikawa-shi, Toyama Pref., Honshu). 1–30: *M. sp.* —1–15: ♂ (hyaline-winged); 16–30: ♀ (hyaline-winged); 31–60: *M. nawai* —31–45: ♂-f. *nawai*; 46–60: ♀.

and P2 or only P1 in most individuals. Those without such abdominal protuberances were occasionally observed. Occurrence of each of the four types (A–D) varied from population to population.

3. *M. pruinosa*: General tendency is nearly the same as in *M. sp.*, but no individual without protuberance was observed.

4. *M. nawai* (Fig. 3): In the most populations examined, a majority of individuals have no abdominal protuberance. A few individuals have P1 only. In some populations (Populations 10, 11, 12, and 14), there is rather a distinct tendency of a better development of abdominal protuberances in females than in males.

5. Generally, the existence of the protuberances is not related to sexes.

6. The shape and size of the protuberances and the occurrence frequency of each of the four types (A–D) are considerably variable even within one population in all of the four species (Figs. 2 and 3).

7. There is a clear tendency that the protuberances develop in *M. costalis*, *M. sp.* and *M. pruinosa* better than in *M. nawai* as pointed out by TSUDA (1983).

8. The above facts strongly suggest that the degree of development of the abdominal protuberances may be determined non-genetically and be conditioned as the end product of material compensational regulation in ontogenetic processes of each individual.

Though he did not refer to the protuberance on the second abdominal segment (P2 in the present study), TSUDA (1983) revealed the following facts: 1) both *M. costalis* and *M. pruinosa* (*M. sp.* + *M. pruinosa* in the present paper) usually have the P1, that is, 255 (87.9%) out of 290 individuals examined for the former species and 101 (93.5%) out of 107 individuals examined for the latter have the P1; 2) most individuals of *M. nawai* (110 out of 128 individuals; 85.9%) have no P1. The shape and size of the P1 in the remaining individuals seemed different in quality from those of the other two (=three) taxa. TSUDA (1983) has suggested that *M. nawai* should be regarded as a good species independent from the other two (=three) taxa so far as the presence of the protuberances is concerned, though he treated all the three (=four) as 'subspecies' of '*M. pruinosa*.'

The present study seems to have confirmed TSUDA's opinion (1983). It is, however, difficult to discriminate all the Japanese *Mnais* taxa only by the presence or absence of abdominal protuberances.

Almost all the quantitative morphological characters possessed by the Japanese *Mnais* damselflies largely overlap each other. In order to classify the members of such a taxonomically difficult group, morphometrical analysis seems to be one of the effective approaches. Recently, SUZUKI and METOKI (1983) made a morphometrical analysis of the variability in the crossvein number of the three (=four) *Mnais* taxa using the same materials as in the present study. According to them, the crossvein number in several areas settled on both the fore and hind wings showed considerably stable intrapopulational and interpopulational variability. General

Table 2. Occurrence frequency of individuals belonging to each of the four types (A-D).

Species	Population	N	A	B	C	D
<i>M. costalis</i>	1a	15	9	1	0	5
	b	15	3	6	0	6
	c	15	12	0	1	2
	2a	15	3	1	0	11
	b	15	1	0	0	14
	c	15	2	0	0	13
<i>M. sp.</i>	3a	15	11	4	0	0
	b	15	14	0	1	2
	4a	15	9	6	0	0
	b	14	10	4	0	0
	5a	15	7	7	0	1
	b	15	6	6	1	2
	6a	15	12	3	0	0
	b	15	13	2	0	0
	7a	15	7	7	0	1
	b	14	5	8	0	1
	8a	15	3	12	0	0
	b	13	3	10	0	0
<i>M. pruinosa</i>	c	15	7	8	0	0
	9a	15	14	1	0	0
	b	14	11	3	0	0
	c	15	14	1	0	0
	10a	15	0	2	0	13
<i>M. nawai</i>	b	15	4	3	0	8
	11a	15	0	0	0	15
	b	15	8	0	1	6
	12a	15	1	2	0	12
	b	15	11	0	0	4
	13a	15	0	1	0	14
	b	15	1	0	1	13
	14a	15	0	0	0	15
	b	15	2	2	0	11
	15a	15	1	1	1	12
	b	15	2	2	1	10
	16a	15	0	2	0	13
	b	15	2	0	0	13
	17a	15	0	0	0	15
	b	15	1	0	0	14
	18a	15	1	3	0	11
	b	15	1	3	0	11

N: No. of individuals examined; A: no. of individuals with P1 and P2; B: no. of individuals with P1; C: no. of individuals with P2; D: no. of individuals without any protuberance.

pattern of the variability in the crossvein number was also different from one another. SUZUKI and METOKI (1983) emphasized the necessity of such a morphometrical or population morphological approach to the so-called 'Mnais problems.' As the materials examined in the present study are limited, further examination should be made for the populations especially in the Tōhoku, Chūgoku, Shikoku, and Kyushu Districts.

### Acknowledgements

The author wishes to express his hearty thanks to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for his valuable suggestions and reading through and improving the manuscript. He is much obliged to the following persons who offered him valuable specimens: Mr. Mizuo ANDO (Okayama-shi), Mr. Kiyoshi INOUE (Osaka-shi), Mr. Kazuhiko SAKURAI (Kyoto University), Mr. Akihisa TAMAISHI (Nachi-Katsuura-chō, Wakayama), and Dr. Hidenori UBUKATA (Kushiro College, Hokkaido University of Education).

### References

- ASAHINA, S., 1975. A revisional study of the genus *Mnais* (Odonata, Calopterygidae). VII. A comparative redescription of three Japanese taxa. *Tombo, Tokyo*, **18**: 27–41.
- 1976. A revisional study of the genus *Mnais* (Odonata, Calopterygidae). VIII. A proposed taxonomy of Japanese *Mnais*. *Ibid.*, **19**: 2–16.
- SUZUKI, K., 1980. Intraspecific forms and their geographical distribution of the *Mnais*-damselflies (Odonata, Calopterygidae) inhabiting the Hokuriku District, central Honshu, Japan. II. *J. Coll. Lib. Arts, Toyama Univ.*, (Nat. Sci.), **13**(2): 21–30.
- 1984 a. Character displacement and evolution of the Japanese *Mnais* damselflies (Zygoptera, Calopterygidae). *Odonatologica*, **13**: 287–300.
- 1984 b. Intraspecific forms and their geographical distribution of the *Mnais*-damselflies (Odonata, Calopterygidae) inhabiting the Hokuriku District, central Honshu, Japan. III. Occurrence of aberrant males. *J. Coll. Lib. Arts, Toyama Univ.*, (Nat. Sci.), **17**: 13–31, 1 pl.
- 1985 a. Classification and evolution of the Japanese *Mnais* damselflies (Zygoptera: Calopterygidae). *Seibutsu Kagaku (Biological Science), Tokyo* **37**: 1–13. (In Japanese.)
- 1985 b. Recent advances in the classification and evolution of the Japanese *Mnais* damselflies (Odonata, Calopterygidae)—a reply to Dr. S. OBANA—. *Gracile. Nara*, (35): 4–15. (In Japanese.)
- & N. METOKI, 1983. Morphometrical analysis of three closely related *Mnais* species in Japan (Odonata, Calopterygidae). I. Variation of crossvein number. *J. Coll. Lib. Arts, Toyama Univ.*, (Nat. Sci.), **16**: 113–171.
- , H. UBUKATA & M. EGUCHI, 1980. Intraspecific forms, habitat segregation and reproductive isolation among *Mnais*-damselflies (Odonata, Calopterygidae) at the Hokuriku and Hokkaido Districts, Japan, with a historical review on the classification of the species. *Kontyū, Tokyo*, **48**: 169–192.
- & Y. YAMAMOTO, 1985. Geographical distribution of *Mnais* damselflies (Odonata, Calopterygidae) in the Island of Shikoku, Southwest Japan. *J. Coll. Lib. Arts, Toyama Univ.*, (Nat. Sci.), **18**: 1–26, 2 pls.
- TSUDA, S., 1983. On the spine located on the first abdominal segment of *Mnais pruinosa* species. *Tombo, Tokyo*, **26**: 20–22.

Two New Species of Small Meconematine Tettigoniids  
(Orthoptera, Tettigoniidae, Meconematinae)  
from Central Honshu, Japan

by

**Tsukané YAMASAKI**

Department of Natural History, Faculty of Science,  
Tokyo Metropolitan University, Setagaya-ku, Tokyo 158, Japan

**Abstract:** Two new species of the small tettigoniid genus *Tettigoniopsis* are described from the Kinki District in Honshu under the names of *T. kinkimontana* and *T. kurosawai*. They are closely related to each other, but differ in the presence or absence of styli, the form of supra-anal plate and the shape of cerci. The former species is also closely related to *T. monticola* from Mt. Daisen, San-in Province, western Honshu.

Up to the present, twelve species of tettigoniids belonging to the Meconematinae have been known from Honshu, the main island of Japan (YAMASAKI, 1982, 1983 a, b, 1985). Recently, two more meconematine species were collected from the Kinki District, central Honshu, one from Mt. Gozaisho-dake, Mie Prefecture, and the other from Mt. Ooeyama, Kyoto Prefecture. They are so closely related to each other that they will be described together in this paper.

The present paper is the sixth report dealing with the Japanese Meconematinae. All the type specimens here designated are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

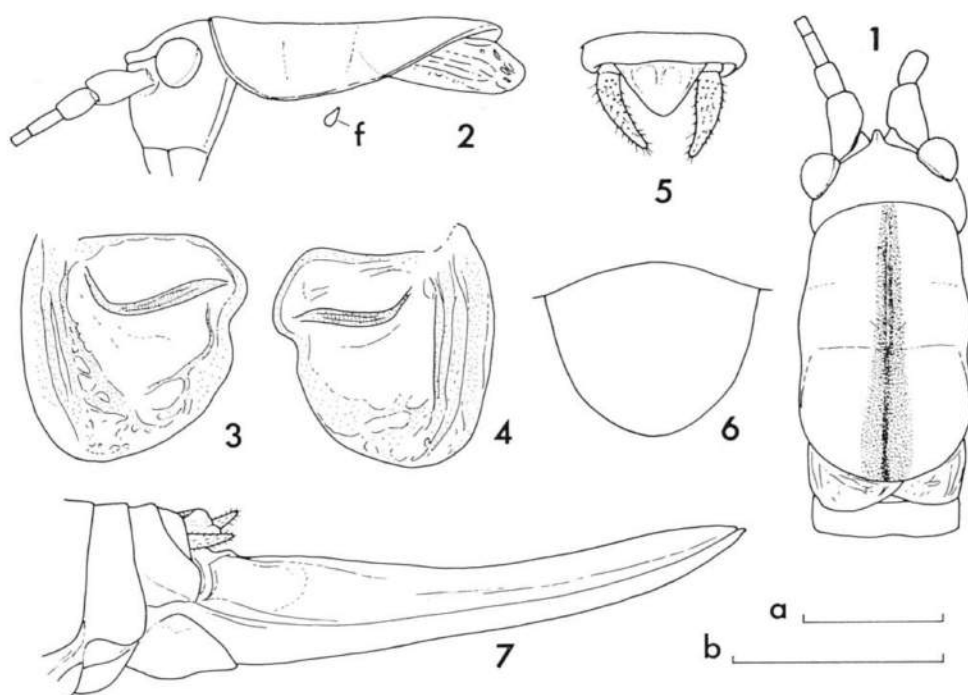
I am indebted to Mr. Masaaki TOMOKUNI, National Science Museum, for his assistance in the field survey. I also wish to express my sincere gratitude to Dr. Shun-Ichi UÉNO for kindly reading the original manuscript.

*Tettigoniopsis kinkimontana* YAMASAKI, sp. nov.

(Figs. 1-14)

Bright grass-green, dorsally with a pale brown, mesal and longitudinal stripe on pronotum. Male supra-anal plate deep and widely concave on dorsum. Male cerci with a low and wide triangular lobe at the centre of lower inside. Male subgenital plate without styli. Female subgenital plate wide and not incurved.

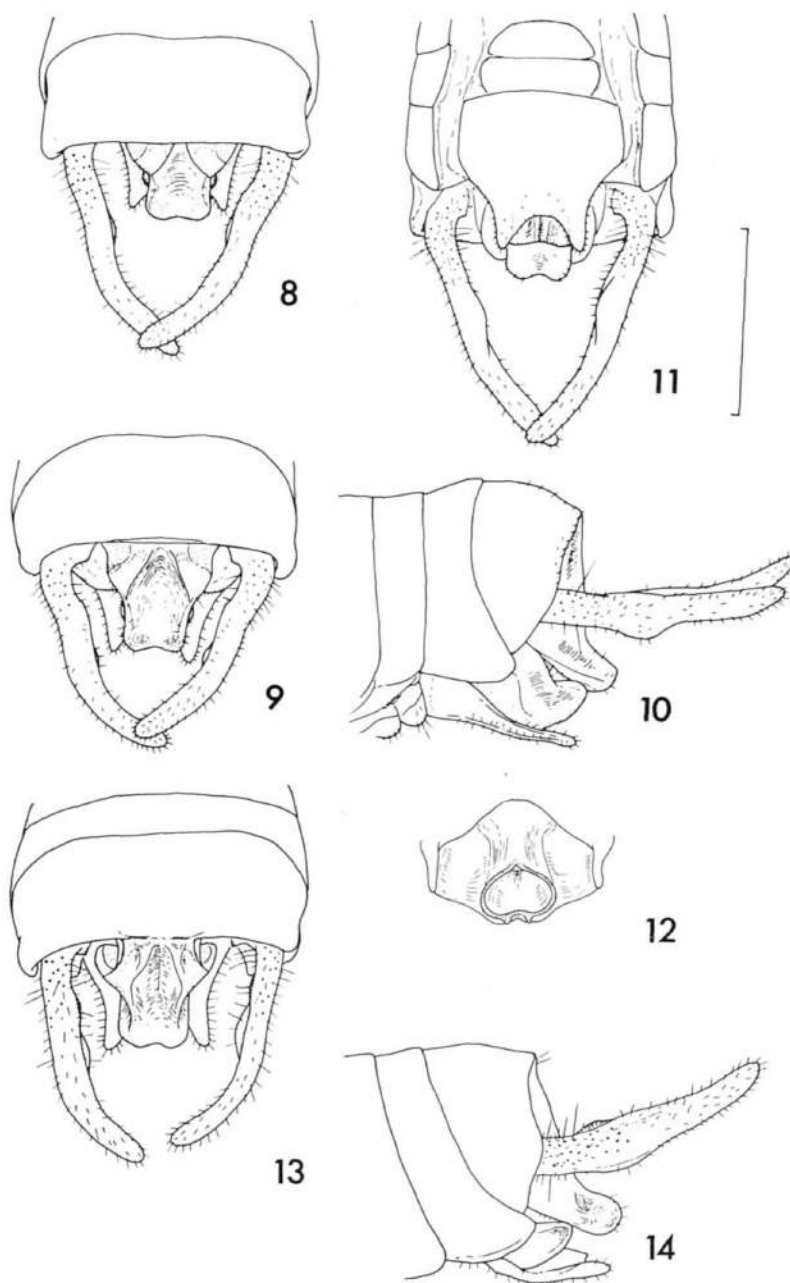
*Male.* Head moderate; fastigial cone moderately protruded with a weak sulcus. Eyes subglobular. Pronotum slender as in Figs. 1 and 2; anterior margin slightly roundish and posterior margin round; disc with a faintly perceptible V-shaped sulcus at the centre; metazona weakly convex. Lateral foramina (auditory



Figs. 1-7. *Tettigoniopsis kinkimontana* YAMASAKI, sp. nov. — 1-2. Male head, pronotum and fore wing, dorsal (1) and lateral (2) views. f: Lateral foramen of thorax. 3-4. Male left (3) and right (4) fore wings. 5. Female abdominal end, dorsal view. 6. Apical half of female subgenital plate, ventral view. 7. Female abdominal end and ovipositor, lateral view. Scales, 2 mm. Scale a is for Figs. 1, 2 and 7, and scale b for Figs. 3-6.

thoracic spiracles) clearly visible from lateral sides. Fore wings as in Figs. 3 and 4, with degenerated veins; stridulatory teeth on stridulatory vein about 54-58 in number. Hind wings absent. Fore legs with unarmed femora; fore tibiae ventrally with 3 pair of long spines between the auditory structure and the apical third, of which the interno-basal spine is the longest, also subbasally with an unpaired small spine on ventro-internal margin, and each ventro-marginal apex with one small spine; auditory structure of fore tibiae elliptical. Middle legs with unarmed femora; middle tibiae with 3 pair of long spines, each ventro-marginal apex with a small spine. Hind legs with unarmed femora; hind tibiae with 17-23 (17 and 23 in holotype) external and 18-19 (18 and 19 in holotype) internal teeth on dorsal margins, a pair of small spines on the subapical ventral margins, and 4 spurs at each apex.

Abdominal end as in Figs. 8-14 (Figs. 8-12 showing that of one of the paratypes and Figs. 13-14 that of the holotype). Tenth tergite wide, almost straight on the posterior margin. Supra-anal plate as shown in Figs. 8-10 and 12-13, short and deep, covering caudal area between cerci, steeply sloping in lateral view as shown in Fig. 10, basal part wide and its sides membranous; dorsal surface scler-



Figs. 8-14. Male abdominal end of *Tettigoniopsis kinkimontana* YAMASAKI, sp. nov. — 8. Dorsal view. 9. Oblique caudal view. 10. Lateral view. 11. Ventral view. 12. Phallus, dorsal view. 13. Dorsal view. 14. Lateral view. — 8-12, Paratype; 13-14, holotype. Scale, 2 mm.

rotized; latero-basal part of sclerotized one forming wide ridges, channelled in a V-shape between them, continuing to a little wider U-shaped shallow emargination in distal half; posterior part thick; posterior margin, in dorsal view, slightly incurved with rounded sides. Phallus as in Figs. 10–12, basal half wide and deep, apical half shaped like a closet stool, of which the margins of upper part are flat and round, hollow inside and with narrowly sulcate lower surface. Cerci as shown in Figs. 8–14, long, curving gently inwards; base wide, and then becoming slenderer, dorso-internally with slightly recognizable ridge in basal half and ventro-internally with wide and low triangular lobe, roundish at the top in the centre; apex blunt. Subgenital plate as in Fig. 11; lateral margins becoming narrower in apical half and widely and roundly cut at the apex, both ends of apex being triangular though blunt at the extremities; stylus absent.

*Female.* Fore wings mostly concealed under the pronotum. Abdominal end as in Figs. 5 and 7. Supra-anal plate short, triangular as in Fig. 5. Cerci normal. Subgenital plate slightly modified in basal half; apical half as in Fig. 6, shield-shaped, round on the posterior margin. Ovipositor as in Fig. 7, slightly recurved in apical half; dorsal valves either a little shorter or a little longer than ventral ones which are slightly reclinate at the apices.

*Coloration.* Bright grass-green. Eyes dark reddish brown to blackish brown. Antennae pale brown with dark-tipped segments at intervals. Pronotum shiny with a pale brown, mesal and longitudinal stripe on the disc which sometimes has a dark brown narrow stripe mesally as in Fig. 1; prozona with a fine whitish medio-longitudinal line on the stripe. Apices of lower lobes of all femora black, apical halves of teeth on the dorsal margins of hind tibiae dark, and all tarsi pale brown but the third tarsal segment is blackish at the apex. Apical margins of ovipositor pale brown.

*Measurements* (mm). Body length to the apices of cerci, ♂ 11.5–13.1 (11.5 in holotype); body length to the apex of supra-anal plate, ♂ 10.0–12.6 (10.9 in holotype); body length to the bases of cerci, ♂ 9.5–10.8 (10.0 in holotype); body length to the apex of ovipositor, ♀ 16.0–18.5; body length to the base of ovipositor, ♀ 9.8–11.2; head width (extraocular distance), ♂ 2.15–2.3 (2.2 in holotype), ♀ 2.2–2.32; pronotal length, ♂ 4.0–4.2 (4.2 in holotype), ♀ 4.0–4.2; fore wing length, ♂ 2.1–2.2 (2.2 in holotype) ♀ 1.1–1.5; hind femoral length, ♂ 8.1–9.0 (8.8 in holotype), ♀ 8.9–9.9; hind tibial length, ♂ 9.1–9.6 (9.6 in holotype), ♀ 9.0–10.3; cercal length, ♂ 2.4–2.6 (2.4 in holotype); ovipositor length, 7.0–7.8.

*Type series.* Holotype: ♂, southern area at an altitude of 1,000 m near the summit of Mt. Gozaisho-dake, Mie Pref., 1. ix. 1985 (T. YAMASAKI). Paratypes: 2♂ (one in alcohol) 11♀ (one in alcohol) (of these, one female is designated as the allotype), same data as the holotype.

*Type locality.* Mt. Gozaisho-dake, Mie Pref., Honshu, Japan.

*Distribution.* Known so far only from the type locality, but possibly occurs in the mountainous areas of the Kinki District.



*Notes.* The present new species seems to be closely related to *Tettigoniopsis monticola* from Mt. Daisen, Tottori Prefecture, in having the peculiar male supra-anal plate with dorsal concavity and the subgenital plate without styli. It was often found on the leaves of *Quercus* trees at the collecting sites in the areas near the summit of Mt. Gozaisho-dake.

*Tettigoniopsis kurosawai* YAMASAKI, sp. nov.

(Figs. 15–23)

Small species. Bright grass-green, with a chestnut brown, mesal and longitudinal stripe on the dorsal surface of pronotum. Male supra-anal plate moderate-sized, deep; apex with a narrow U-shaped notch. Male cerci long and simple. Male subgenital plate with rudimentary styli. Female subgenital plate wide, roundish, and slightly incurved on the posterior margin.

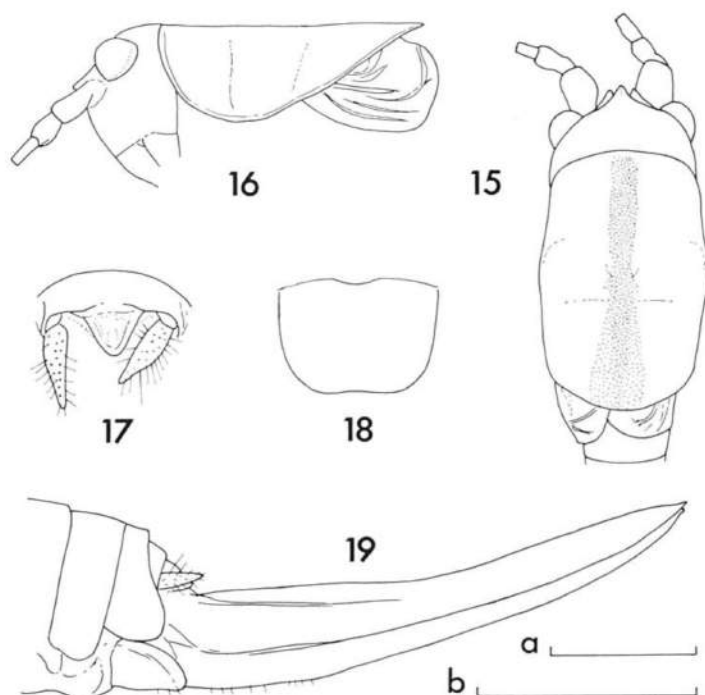
*Male.* Head moderate as shown in Figs. 15 and 16; fastigial cone moderately protruded, with a weak sulcus. Pronotum short for a member of the genus as in Fig. 15; anterior margin slightly roundish and posterior margin round; disc with a faintly perceptible V-shaped sulcus at the centre; metazona weakly convex. Lateral foramina (auditory thoracic spiracles) visible from lateral sides. Fore wings degenerated, their apical third exposed from pronotum as in Fig. 15. Fore legs with unarmed femora; fore tibiae with 3 pairs of long spines between the auditory structure and apical third, and a small ventral spine at the external and internal corners of the apex; auditory structure of fore tibiae elliptical. Middle legs with unarmed femora; middle tibiae with 3 pairs of long spines and two ventro-apical spines. Hind legs with unarmed femora; hind tibiae with 23 external and 22–23 internal teeth on dorsal margins, a pair of small spines on the subapical ventral margins and 4 spurs at the apex.

Abdominal end as in Figs. 20–23. Tenth tergite wide, slightly incurved on the posterior margin. Supra-anal plate moderate-sized as shown in Fig. 20, steeply sloping in dorsal view as in Fig. 22, narrowly concave on dorsum, apex clearly incised in a narrow U-shape. Cerci as shown in Figs. 20–23, long and simple, slightly curving inwards; apices blunt. Phallus short, but deep. Subgenital plate as in Figs. 21–23; lateral margins roundly but shallowly cut; apex incurved roundly; both ends of apex round at the tips; styli present, though very small.

*Female.* Body small. Fore wings very short, completely concealed under the pronotum. Abdominal end as in Figs. 17 and 19. Supra-anal plate short, triangular as in Fig. 17. Cerci normal. Subgenital plate as in Fig. 18, transversely wide, roundish, but slightly recurved at the centre; dorsal valves either a little longer or a little shorter than the ventral ones which are slightly reclinate at the apices.

*Coloration.* Almost same as in the preceding species. In the holotype male, abdomen dorsally with a dark brown, mesal and longitudinal stripe.

*Measurements* (mm). Body length to the apices of cerci, ♂ 10.1; body length



Figs. 15–19. *Tettigoniopsis kurosawai* YAMASAKI, sp. nov. — 15–16. Male head, pronotum and fore wing, dorsal (15) and lateral (16) views. 17. Female abdominal end, dorsal view. 18. Female subgenital plate, ventral view. 19. Female abdominal end and ovipositor, lateral view. Scale, 2 mm. Scale a is for Figs. 15, 16 and 19, and scale b for Figs. 17 and 18.

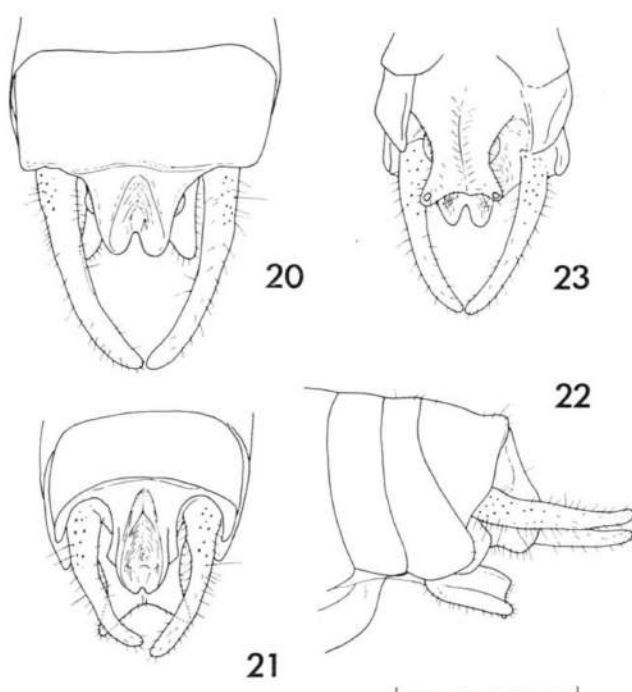
to the apex of supra-anal plate, ♂ 8.4; body length to the bases of cerci, ♂ 8.4; body length to the apex of ovipositor, ♀ 15.3–17.9; body length to the base of ovipositor, ♀ 8.9–10.0; head width (extraocular distance), ♂ 1.95, ♀ 2.0–2.2; pronotal length, ♂ 3.6, ♀ 3.8–4.0; fore wing length, ♂ 1.8, ♀ 1.1; hind femoral length, ♂ 8.2, ♀ 8.7–9.8; hind tibial length, ♂ 8.3, ♀ 9.2–10.3; cercal length, ♂ 1.9; ovipositor, 7.0–7.9.

*Type series.* Holotype: ♂, mountain ridge, 800 m alt., near the top of Mt. Senjō-ga-dake on Mt. Ooeyama, 17. ix. 1984 (T. YAMASAKI). Paratypes: 3♀, same data as the holotype (T. YAMASAKI) (one of them is designated as the allotype); 2♀, same data as the holotype (M. TOMOKUNI).

*Type locality.* Mt. Ooeyama, Kyoto Pref., Honshu, Japan.

*Distribution.* Known so far only from the type locality, but possibly occurs on the adjacent mountains.

*Notes.* This species is closely related to the preceding species, but is different in the presence of styli, though rudimentary, and the shape of supra-anal plate and



Figs. 20–23. Male abdominal end of *Tettigoniopsis kurosawai* YAMASAKI, sp. nov., holotype.  
 — 20. Dorsal view. 21. Oblique caudal view. 22. Lateral view. 23. Ventral view.  
 Scale, 2 mm.

cerci.

The specific name is dedicated to Dr. Yoshihiko KUROSAWA in the commemoration of his retirement from the National Science Museum (Nat. Hist.), Tokyo, in March 1986.

### References

- YAMASAKI, T., 1982. Some new or little known species of the Meconematinae (Orthoptera, Tettigoniidae) from Japan. *Bull. natn. Sci. Mus., Tokyo*, (A), **8**: 119–130.  
 — 1983 a. *Nipponomeconema*, a new genus of the Japanese Meconematinae (Orthoptera, Tettigoniidae), with the description of four new species. *Annot. zool. japon.*, **56**: 59–67.  
 — 1983 b. The Meconematinae (Orthoptera, Tettigoniidae) of northern Honshu, Japan, with descriptions of new taxa. *Mem. natn. Sci. Mus., Tokyo*, (16): 137–144.  
 — 1985. The Meconematinae (Orthoptera, Tettigoniidae) of the San-in District of western Honshu, Japan, with descriptions of two new species. *Ibid.*, (18): 145–152.

## Three Remarkable New Species of the Subfamily Idolothripinae (Thysanoptera, Phlaeothripidae) from Southeast Asia

by

**Shūji OKAJIMA**

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** Three new species of the subfamily Idolothripinae, *Diaphorothrips pugnator* sp. nov. from Borneo, *Dichaetothrips senohi* sp. nov. from Java and *Meiothrips kurosawai* sp. nov. from Borneo, are described and illustrated.

The generic and tribal classification of the subfamily Idolothripinae was clarified recently (MOUND & PALMER, 1983). According to this excellent work, there are about 600 described species in about 80 genera of this subfamily in the world. Most of them are distributed in the tropics and subtropics of the world. However, the study of thysanopterous fauna from the pan-tropical area has been insufficient; this suggests that many more species remain to be found in the tropics and subtropics.

In the present paper, the author will describe three remarkable new species of the subfamily Idolothripinae from Southeast Asia (Borneo and Java).

Tribe Pygothripini

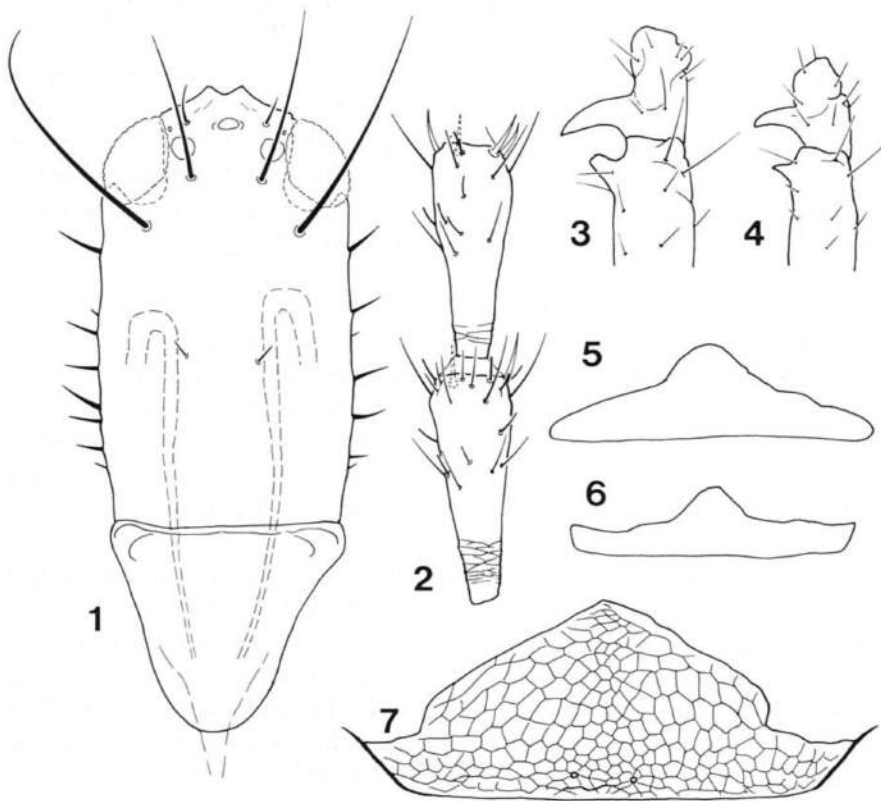
Subtribe Macrothripina

*Diaphorothrips pugnator* sp. nov.

(Figs. 1-7)

*Female (macroptera)*. Colour dark brown; tube darkest, blackish brown; extreme base of antennal segment III yellowish; wings shaded with pale brown, each with a longitudinal brown stripe in basal two-thirds; major setae yellowish, but cheek setae are somewhat darker, yellowish brown.

Head elongate, rectangular, 1.55-1.65 times as long as broad, dorsal surface weakly sculptured with transverse rows of fine reticulation or striae on basal half, though the extreme base is smooth, widest across cheeks; cheeks almost parallel, but very weakly rounded, each with 6-8 stout setae; postocellar setae well developed, longer than 3.0 times of anteoocellar setae; postocular setae a little longer than half the length of head. Eyes 0.20-0.23 times as long as head. Ocelli 30-35  $\mu$ m in diameter, posterior pair in contact with eyes. Antennae slender, 1.90-1.92 times as long as head, segment III 2.77-3.40 times as long as maximum width; segment



Figs. 1-7. *Diaphorothrips pugnator* sp. nov. — 1, Head, large female; 2, antennal segments III and IV, small female; 3, foretibia and tarsus, large female; 4, ditto, small female; 5, mesopraesternum, large female; 6, ditto, small female; 7, pelta, small female.

III with two sense cones, IV with four (excluding dorsal reduced one), outer sense cone on segment VI reduced. Mouth cone more or less pointed, maxillary stylets retracted into head capsule, but not reaching base of postocular setae.

Pronotum 0.45–0.56 times as long as head, with a median line; major setae blunt at apex, epimerals the longest and somewhat pointed, anteromarginals reduced. Mesopraesternum variable in shape, nearly boat-shaped in small female, anterolateral angle obtuse in large female. Subapical foretibial tubercles well developed in large female; foretarsal tooth weakly curved backwards, falciform. Metanotum sculptured with polygonal reticulation, with a pair of micro-pores; a pair of middorsal setae short (60–72  $\mu$ m), blunt at apex. Forewings each with 42–63 duplicated cilia; subbasal wing setae  $B_1$  reduced,  $B_2$  and  $B_3$  moderately long and blunt at apex.

Pelta large, sculptured with polygonal reticulation, usually with a pair of micro-pores, rarely with two pairs. Tube slender, 1.35–1.38 times as long as head,

3.77–4.15 times as long as wide at base. Anal setae shorter than half the length of tube.

*Measurements of large (small) females in  $\mu\text{m}$ .* Total body length 7350 (5300) (distended). Head length 700 (525), width across cheeks 423 (338); eye length 154 (121–123). Pronotum length 388 (229), width 744 (505); forewing length 2950 (2088). Pelta median length 234 (168), width 652 (428). Tube length 964 (700), basal width 229 (189), apical width 86 (66). Antennal segments I to VIII length/width as follows: ? (115)/86 (66); ? (86)/69 (54); 250 (184)/76.5 (62); 245 (165)/69 (61); 224 (153)/61 (51); 163 (118)/47 (41); 117 (88)/40 (33); 112 (94)/29 (24.5).

Length of setae: Antecellars 69–80 (about 60), postocellars 310–320 (210–220), postoculars 400–420 (310–330). Prothoracic anteroangulars 120–125 (70–85), anteromarginals 35–45 (about 30), midlaterals 155–170 (60–80), posteroangulars 200–230 (92–100), epimerals about 350 (190–200). Forewing subbasals  $B_2$  112–114 (81–83),  $B_3$  170–182 (135–140).  $B_1$  setae on tergite IX 800–850 (about 600),  $B_2$  on IX about 750 (560–565). Anals about 320 (300–310).

*Male.* Unknown.

Holotype ♀. Borneo: Sabah, nr. Madai Cave, on dried twigs, 12–VIII–1979 (Y. YOSHIKAWA). Paratypes. Borneo: 3 ♀♀, collected with holotype.

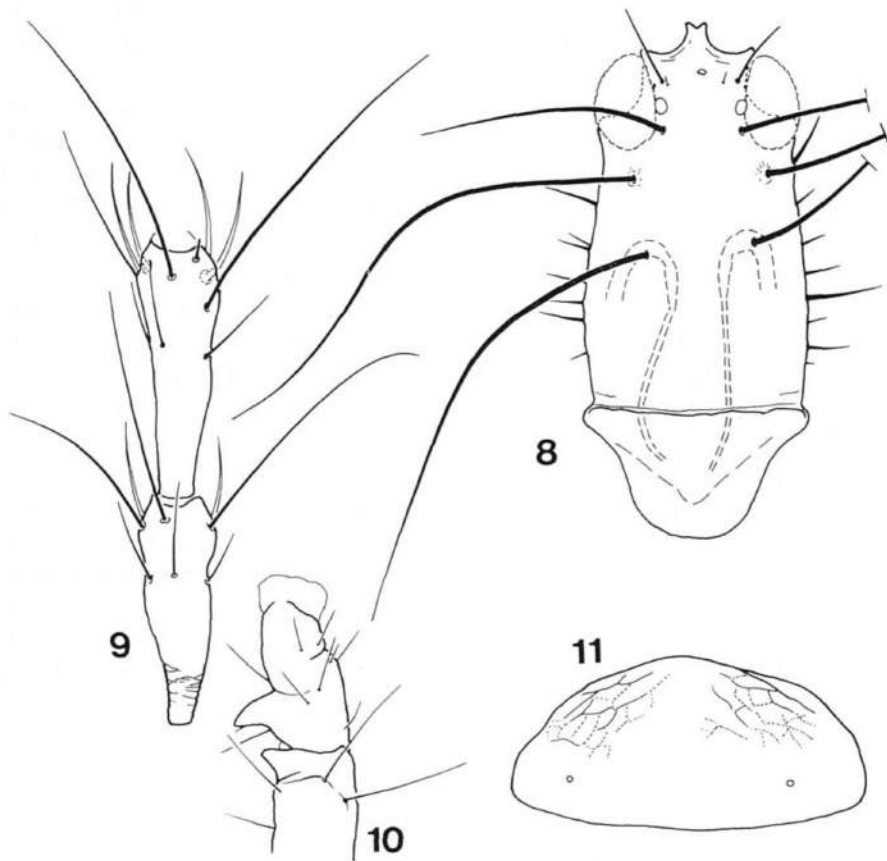
*Comments.* This species is somewhat similar to *D. kraussi* SAKIMURA from Fiji Is. and *D. unguipes* KARNY from Sri Lanka and India in the coloration and the length of ocellar setae. However, it differs from the latter two species in the long head (more than 1.5 times as long as broad) and the short outer sense cone on the sixth antennal segment. Moreover, this is the largest species in the genus.

### *Dichaetothrips senohi* sp. nov.

(Figs. 8–11)

*Male (hemimacroptera).* Colour dark brown; abdomen gradually darkened posteriorly, tube blackish brown; all tibiae and tarsi paler, brownish yellow; antennal segments I and II dark brown, partly yellowish, pedicels of segments III to VI yellow with distal parts brown to dark brown, extreme bases of segments V and VI brownish, segments VII and VIII dark brown; wings shaded with pale brown, forewings each with a median longitudinal brown stripe in basal two-thirds; major setae brownish, but the anal setae are yellowish.

Head elongate, about 1.6 times as long as broad, broadest across cheeks near base; dorsal surface without distinct sculpture, with three pairs of unusually long setae, postocellars somewhat shorter than head, postoculars and mid-dorsals much longer than head; cheeks weakly rounded, but distinctly constricted just behind eyes, each with 7–9 stout setae (longest one 125  $\mu\text{m}$ ). Ocelli small, 20–25  $\mu\text{m}$  in diameter, posterior pair in contact with eyes, 112  $\mu\text{m}$  apart from each other, 61–62  $\mu\text{m}$  apart from anterior one. Eyes 0.25–0.26 times as long as head. Antennae



Figs. 8–11. *Dichaetothrips senohi* sp. nov., holotype hemimacropterous male. — 8, Head; 9, antennal segments III and IV; 10, foretibia and tarsus; 11, pelta.

about twice as long as head; segments III and IV each with three long apical setae ( $160\text{--}275\text{ }\mu\text{m}$ ), segment V with one long setae ( $260\text{ }\mu\text{m}$ ); segment VIII slender, a little longer than VII. Maxillary stylets reaching base of mid-dorsal setae.

Pronotum 0.55 times as long as head, 1.9 times as broad as long, with strong median line; major setae acute, anteroangulars and anteromarginals short, mid-laterals, posteroangulars and epimerals unusually long. Forefemora moderately enlarged, with five long setae; foretibia with a small apical tubercle; foretarsal tooth short but stout and curved. Metanotal median pair of setae short ( $76\text{--}80\text{ }\mu\text{m}$ ). Fringe cilia of wings irregularly spaced; forewings each with 6–8 duplicated cilia; subbasal wing setae pointed at apex,  $B_1$  reduced.

Pelta semicircular, weakly sculptured anterolaterally, with a pair of micro-pores. Sculptured areas present on sternites III to VI; tergites II to VI each with a pair of long and straight wing retaining setae; all  $B_1$  and  $B_2$  setae on tergites II

to IX very long. Tube slender, almost straight-sided, more or less thickened basally, distinctly constricted apically, 1.05 times as long as head, 3.38 times as long as wide at base. Anal setae much shorter than tube.

*Measurements of holotype male in  $\mu\text{m}$ .* Total body length 5830 (distended). Head length 561, width across eyes 316, width across cheeks 347; eye length 143–147, width 83–91. Pronotum median length 306, width 582; forewing length 1929. Pelta median length 178, width 364. Tube length 586, basal width 173, apical width 75. Antennal segments I to VIII length (width) as follows: 133 (77); 102 (56); 172 (58); 204 (64); 209 (56); 152 (42); 107 (38); 116 (31).

Length of setae: Antecellars 105–115, postocellars 400–500, postoculars 790–800, mid-dorsals 770–800. Prothoracic anteroangulars 80–120, anteromarginals 50–65, midlaterals about 740, posteroangulars 445–450, epimerals 630–640, coxals 215–220. Forewing subbasals  $B_1$  35–55,  $B_2$  140–148,  $B_3$  143–195.  $B_1$  on tergite IX 730–765,  $B_2$  on IX 775–780. Anals 330–340.

*Female.* Unknown.

Holotype ♂. Java: Mt. Tengger, on dead leaves, 14–IV–1981 (T. SENOH).

*Comments.* This species was described based on the unique holotype hemimacropterous male. However, it is remarkable in having exceptionally long body setae. By the presence of the foretibial apical tubercles, this species may be related to *D. okajimai* MOUND et PALMER from Singapore and *D. secutor* MOUND et PALMER from East Asia (Thailand, West Malaysia, Laos, Japan). Moreover, in the shape of head and tube, it is most similar to *D. okajimai*.

### Tribe Idolothripini

#### Subtribe Idolothripina

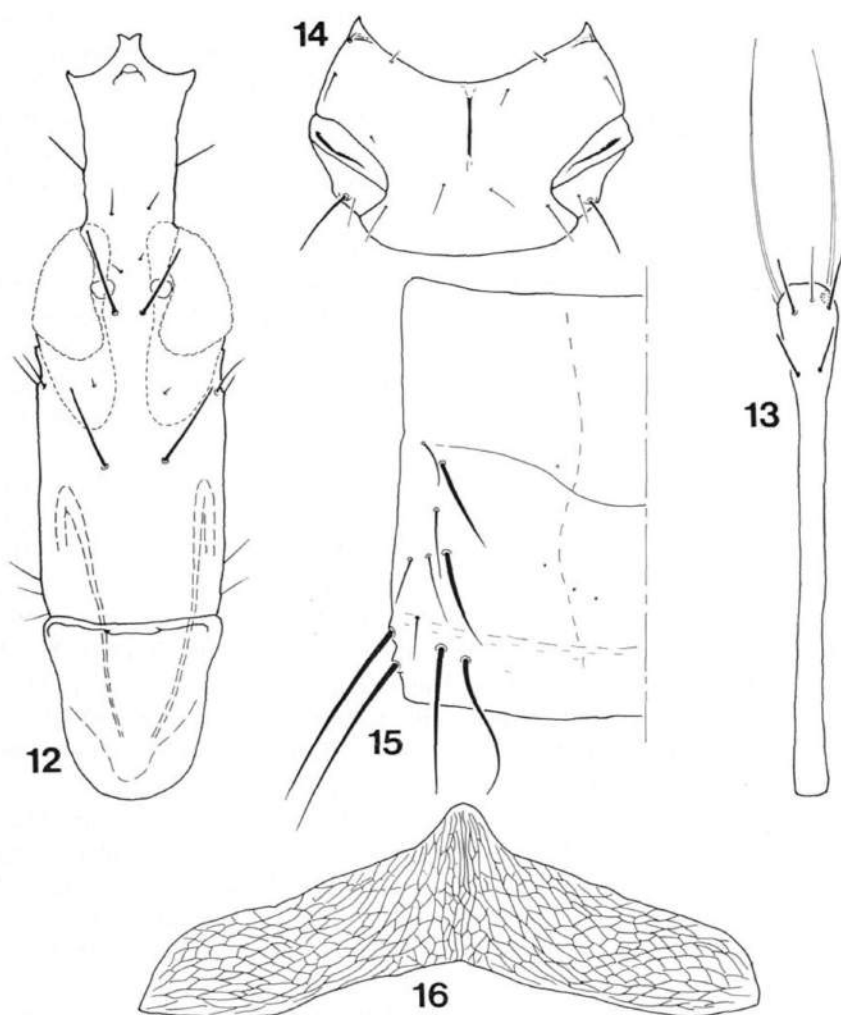
#### *Meiothrips kurosawai* sp. nov.

(Figs. 12–16)

*Female (macroptera).* Colour dark brown; midfemora each with a whitish yellow band near base, which is 0.25 times as long as femoral length, hind femora each with same whitish yellow band which is about half the length of this femora; tibiae a little paler than femora, with apical one-fifth whitish yellow, all tarsi whitish yellow to yellow, with dark brown markings; antennal segments I and II dark brown, concolorous with head, segment III largely yellow, shaded with pale brown apically, segments IV to VI largely pale brown, extreme bases of pedicels yellowish, segments VII and VIII pale brown; wings pale, each with a longitudinal brown stripe in basal two-thirds; setae on prothorax and abdomen hyaline, other major setae hyaline or somewhat brownish.

Head elongate, with a long preocular projection, 2.06 times as long as broad (excluding preocular projection), broadest across eyes; dorsal surface without distinct sculpture; preocular projection much longer than broad, lateral margins with a pair of blunt setae (=interocellars or antecellars); postocellar setae well





Figs. 12–16. *Meiothrips kurosawai* sp. nov., holotype macropterous female. — 12, Head; 13, antennal segment III; 14, prothorax; 15, left half of abdominal tergite IV; 16, pelta.

developed, blunt or weakly expanded at apex; postocular setae well separated from eyes ( $160\text{--}170\text{ }\mu\text{m}$  apart from eyes), blunt at apex; cheeks almost straight, subparallel, distal ends angulate, weakly constricted just behind eyes, with four pairs of setae. Posterior ocelli in contact with eyes,  $32\text{--}36\text{ }\mu\text{m}$  in diameter,  $52\text{ }\mu\text{m}$  apart from each other; anterior ocellus directed forwards,  $26\text{ }\mu\text{m}$  in diameter,  $326\text{ }\mu\text{m}$  apart from posterior pair. Eyes well developed, prolonged ventrally, ventral length 1.48 times as long as dorsal length. Antennae 3.78–3.79 times as long as head (excluding preocular projection); sense cones long and slender, setiform.

Pronotum 1.76 times as broad as long, without distinct sculpture, with stout median line; epimeral sutures complete; anteroangular and anteromarginal setae reduced, midlaterals and posteroangulars short and slender, pointed at apex, epimerals short but stout, blunt at apex, the longest. Mesonotal lateral setae short (about 50  $\mu$ m), metanotal median setae stout but much shorter than metepimeral setae, blunt at apex. Forewings each with more than 50 duplicated cilia; subbasal wing setae blunt at apex, B<sub>2</sub> the shortest.

Pelta broad, anterior margin pointed medially, posterior margin shallowly emarginate, with distinct sculpture. Abdominal tergite II with only a pair of sigmoid posterior wing retaining setae; tergites III to VI each with a pair of pale and sigmoid posterior wing retaining setae and three to five pairs of dark and straight wing retaining setae, of which two pairs are long and stout. Tube very slender, about 3.4 times as long as head (excluding preocular projection), 13.8 times as long as wide at base, with numerous brown erect setae.

*Measurements of holotype female in  $\mu$ m.* Total body length 9750 (distended). Head length from frontal margin of eye to base 642, width across eyes 312, width across cheeks 288; preocular projection length from base of antenna to frontal margin of eye 229, width across base anterior to eyes 138, maximum width across near base of antennae 209; eye dorsal length 213–214, ventral length 316–317. Pronotum median length 275, width 484; forewing length about 3500. Pelta median length 164, width 637. Tube length 2183, basal width 158, apical width 106. Antennal segments I to VIII length (width) as follows: 158 (92); 112 (72); 541 (62); 520 (60); 459 (51); 372 (40); 200 (33); 153 (21). Longest sense cones on antennal segments III to VII as follows: 280; 275; 255; 163; 148.

Length of setae: Interocellars (? anteocellars) 71–72, postocellars 112–128, postoculars 132–138. Prothoracic anteroangulars less than 30, anteromarginals less than 30, midlaterals 66–70, posteroangulars 56–77, epimerals 86–105. Metanotal medians 107–117, metepimerals 178–184. Forewing subbasals B<sub>1</sub> 71–78, B<sub>2</sub> 66, B<sub>3</sub> 158–163. B<sub>1</sub> on tergite IX 275, B<sub>2</sub> on IX 250–260. Anals 326–330.

*Male.* Unknown.

Holotype ♀. Borneo: Sabah, 10 mls NW of Keningau, alt. 900 m, 10–IV–1981 (S. NAGAI)

*Comments.* This species is remarkable and well separated from the other three known species of the genus by the following features: head with long preocular projection; eyes distinctly prolonged ventrally; sense cones long; epimeral sutures complete; mesonotal lateral setae short; tube very long.

The specific name is dedicated to Dr. Yoshihiko KUROSAWA in commemoration of his retirement from the governmental service.

#### Acknowledgement

The present author wishes to express his hearty thanks to Dr. L. A. MOUND,

Keeper of Entomology, British Museum (Natural History), London, for his suggestions. Thanks are also due to Professors H. SAWADA and Y. WATANABE, Laboratory of Entomology, Tokyo University of Agriculture, for their constant guidance, and to the following persons for the gift of the specimens used in this work: Mr. Shinji NAGAI, Dr. Toshio SENOH and Mr. Yoji YOSHIKAWA.

His special thanks are also due to Dr. Yoshihiko KUROSAWA for his habitual discussions.

### Main Literature

- KARNY, H., 1920. Die exotischen Tubuliferen (Thysanoptera) des Deutschen Entomologischen Museums (Berlin-Dahlem). *Ent. Mitt.*, **9**: 88-94, 104-111, 186-191.
- MOUND, L. A., & J. M. PALMER, 1983. The generic and tribal classification of spore-feeding Thysanoptera (Phlaeothripidae: Idolothripinae). *Bull. Br. Mus. nat. Hist., (Ent.)*, **46**: 1-174.
- PALMER, J. M., & L. A. MOUND, 1978. Nine genera of fungus-feeding Phlaeothripidae (Thysanoptera) from the Oriental Region. *Bull. Br. Mus. nat. Hist., (Ent.)*, **37**: 153-215.
- SAKIMURA, K., 1979. Notes on some cryptothripine species from Polynesia, with description of a new species (Phlaeothripidae: Thysanoptera). *Pacif. Ins.*, **20**: 313-317.

## Occurrence of an American Tingid, *Corythucha cydoniae* (FITCH) (Hemiptera, Tingidae), on Ishigaki Island, the Ryukyus, Japan

by

Masaaki TOMOKUNI

Department of Zoology, National Science Museum (Nat. Hist.),  
Shinjuku, Tokyo 160, Japan

**Abstract** One of the American tingids, *Corythucha cydoniae* (FITCH), was newly recorded from Ishigaki Island, the Ryukyus, Japan. It is undeniable that this species was artificially introduced from its native land into the Ryukyuan island.

Some years ago, I came across a strange tingid specimen in the collection of our museum. It was collected on Ishigaki Island of the Ryukyu Archipelago, and seemed to belong to an unknown species in the tingid fauna of Japan. Recently, I was able to identify it as mentioned below.

Before going further, I wish to express my hearty thanks to Dr. Y. KUROSAWA who collected this interesting tingid, and also to Dr. S.-I. UENO who read the manuscript of this paper.

### *Corythucha cydoniae* (FITCH)

[Japanese name: Kurosawa-gunbai]

(Fig. 1)

*Tingis cydoniae* FITCH, 1861, Country Gentleman, 17(7): 114 (not seen).

*Corythucha arcuata*: COMSTOCK, 1880, U.S. Dept. Agr., Rept. Entomologist, 1879: 221 (nec SAY, 1832).

*Corythucha arcuata* var. *crataegi* MORRILL, 1903, Psyche, 10: 132.

*Corythucha cydoniae*: BANKS, 1910, Catalogue of the Nearctic Hemiptera-Heteroptera, p. 56.

*Corythucha crataegi*: OSBORN & DRAKE, 1916, Bull. Ohio biol. Surv., (8), 2: 229.

*Corythucha cydoniae*: GIBSON, 1918, Trans. Amer. ent. Soc., 44: 87.

*Corythucha occidentalis* DRAKE, 1918, in GIBSON, Trans. Amer. ent. Soc., 44: 91.

**Female.** Body subquadrangular. Hood very large, nearly three times as high as median carina, distinctly longer than median carina, abruptly constricted at about middle, and globosely inflated behind; areolae of the anterior portion much smaller than those of the posterior ones. Paranotum broad, reniform, bullate and 5-seriate at about middle. Elytron with the outer margin slightly concavely sinuate; tumid elevation developed; costal area triseriate at the widest part, quadriseriate at the anterior fuscous marking, with the humeral area vertically reflexed; subcostal area with inner two rows of large areolae and outer two rows



Fig. 1. *Corythucha cydoniae* (FITCH), ♀, from Ishigaki Island of the Ryukyus.

of very small cells at the skirts of tumid elevation; discoidal area 4- or 5-seriate at the widest part; sutural area irregularly quadriseriate. Marginal spines on paranota, elytra and apical portion of hood short. Length 3.2 mm, width 1.8 mm.

General color brown. Hood hyaline with a large indistinct fuscous spot on each side of the anterior portion; veinlets and margins of areolae of the posterior portion more or less tinged with dark brown. Paranota hyaline, with a large fuscous spot on each outer side. Elytra hyaline; two transverse bands on basal and subapical parts fuscous, with the posterior margin of the latter straight; three or four areolae in the posterior band widely hyaline at each central part; basal parts of the discoidal areas, and posterior halves of the tumid elevations tinged with fuscous. Body beneath black except for the lateral parts of all sterna and the two terminal segments of abdomen which are brown. Antennae and legs light brown.

*Male.* Unknown.

*Specimen examined.* 1 ♀, Arakawa-Yonehara, Ishigaki Island, the Ryukyus, 4. VI. 1973, Y. KUROSAWA leg. (NSMT).

*Remarks.* Since the genus *Corythucha* contains more than 70 known species, the identification of its constituents is not always easy. Fortunately, I was able to identify the specimen in question from Ishigaki Island with *C. cydoniae* in view of the combination of morphological characteristics mentioned above.

This species is widely distributed nearly throughout the United States, and a part of Canada and Mexico. Not only this but all the other species of the genus *Corythucha* are restricted to the Western Hemisphere. Besides, so far as known to me, it is the only specimen of this tingid collected from outside the New World.

Under these circumstances, it is unquestionable that this example was not native to the Ryukyuan island but was introduced from the American Continent.

Such garden trees belonging to the family Rosaceae, as juneberries, flowering quinces, hawthorns, pyracanthas, chokeberries and so on, were reported for the host plants of this tingid. The specimen under consideration was probably transported by accident from the home country to the Ryukyus being accompanied with one of saplings of these plants.

I have a pleasure to dedicate the new Japanese name of this tingid to Dr. Y. KUROSAWA in commemoration of his retirement.

### References

- BAILEY, N. S., 1951. The Tingoidea of New England and their biology. *Ent. amer.*, **31**: 1-140.
- BLATCHLEY, W. S., 1926. Heteroptera or True Bugs of Eastern North America with Especial Reference to the Faunas of Indiana and Florida. 1,116 pp. Nature Publ. Co., Indianapolis.
- DRAKE, C. J., & F. A. RUHOFF, 1965. Lacebugs of the world: a catalog (Hemiptera: Tingidae). *Bull. U.S. natn. Mus.*, (243): i-viii+1-634.
- GIBSON, E. H., 1918. The genus *Corythucha* STÅL (Tingidae; Heteroptera). *Trans. Amer. ent. Soc.*, **44**: 69-104.
- OSBORN, H., & C. J. DRAKE, 1916. The Tingitoidea or "lace bugs" of Ohio. *Bull. Ohio biol. Surv.*, (8), **2**: 217-251.

## Treehoppers of the Genus *Emphusis* (Homoptera, Membracidae) from the Philippines

by

**Masami HAYASHI**

Department of Biology, Faculty of Education,  
Saitama University, Urawa 338, Japan

and

**Toshitsugu ENDO**

4-2-5-510, Nishi-Kasai, Edogawa, Tokyo 134, Japan

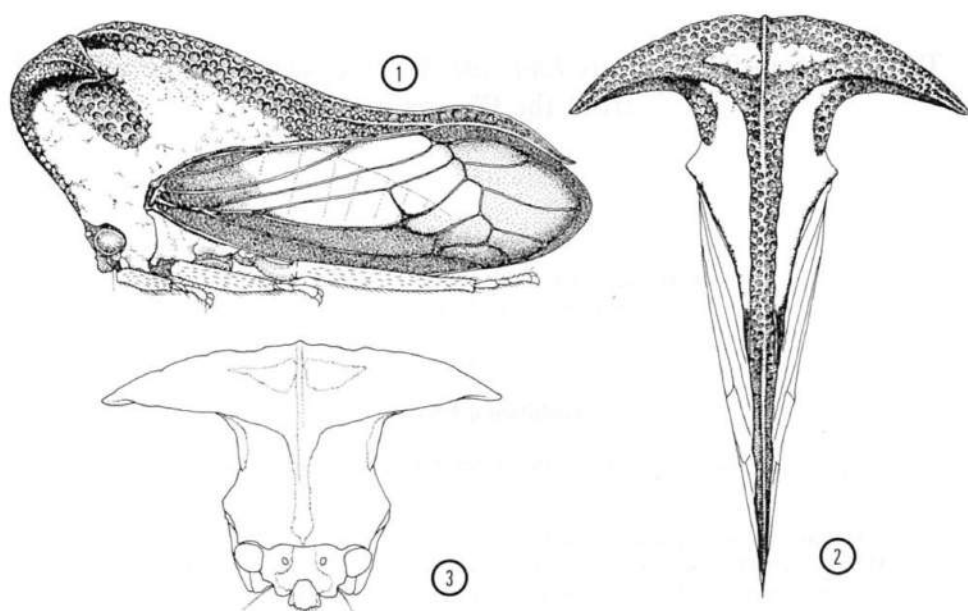
**Abstract** A new species of the genus *Emphusis*, *E. kurosawai*, is described from Mindanao, the Philippines. It is easily discriminated from *E. bakeri* by the narrowed pronotal elevation below suprahumeral horns. A redescription of *E. bakeri* is also given.

Treehoppers of the genus *Emphusis* BUCKTON are characterized by the exceedingly raised pronotum with rather horizontal horns and the recurved posterior process touching the scutellum and inferior margin of forewing. GODING (1931) gave a generic key of the tribe Leptocentrini, in which he included the genus *Emphusis*, and a key to the species belonging to the genus, probably based solely upon literature (GODING, 1949 a, b).

The distributional range of *Emphusis* is relatively restricted, mainly in tropical and subtropical Asia and partly extending eastwards to Australia and New Guinea. From the Philippines have been known 3 endemic species, *bakeri*, *globosa* and *rugosa*, all of which were described only from their external characters, especially from suprahumeral horns.

Fortunately, we had an opportunity to examine several specimens of this genus from Mindanao, which were collected mainly through the field works by ENDO. So far as our investigation goes, these treehoppers, currently identified with *Emphusis bakeri*, consist of 2 different species; one of them is *bakeri* and the other is new to science.

In this paper, we are going to describe this species and also to give a redescription of *bakeri*. To commemorate the retirement of Dr. Yoshihiko KUROSAWA from the National Science Museum (Nat. Hist.), Tokyo, we would like to dedicate this paper and leave his name for the remarkable new species. His taxonomic and zoogeographic ideas have given considerable effect and contribution to our systematic studies on some Homoptera-Auchenorrhyncha.



Figs. 1-3. *Emphusis bakeri*, in lateral (1), dorsal (2) and frontl (3) views.

Before going further, we wish to express our deep gratitude to Dr. Y. KUROSAWA for his continuous help towards our study. We are also much indebted to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for critically reading the manuscript.

#### Genus *Emphusis* BUCKTON, 1903

*Emphusis* BUCKTON, 1903, Monogr. Membrac., p. 256.

Type species: *Emphusis tumescens* BUCKTON, 1903 (Java).

Frontoclypeus tri-lobed; pronotum much elevated dorsally, globose or semi-triangular in lateral view; suprahumeral horns horizontal, sometimes arched, situated near the summit of the elevation; posterior process of pronotum long, almost reaching the tip of forewing, not apart from scutellum or forewing; hindwing with 4 apical cells.

Eleven species have been known in the genus; three of them are endemic to the Philippines.

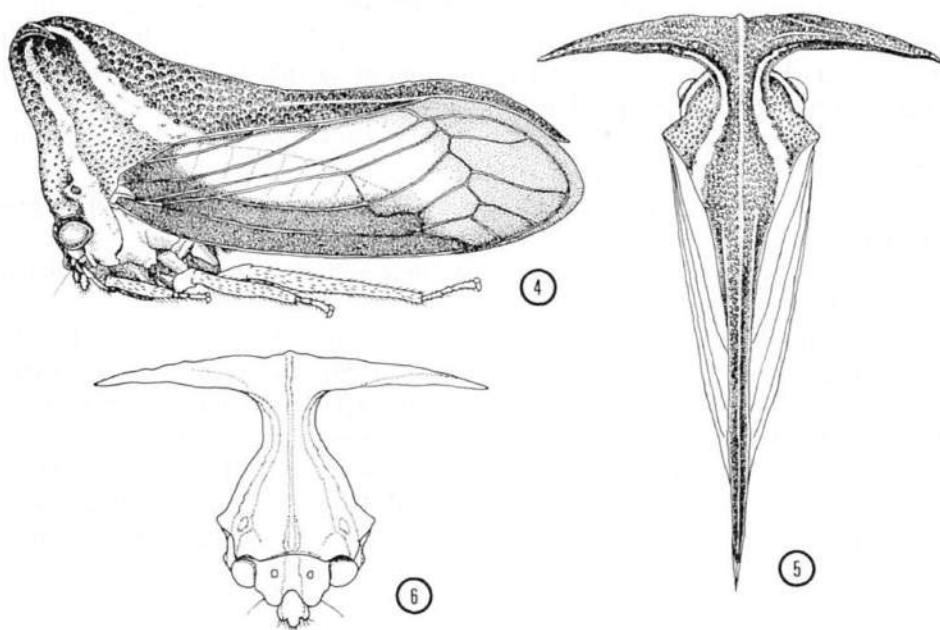
#### *Emphusis bakeri* FUNKHOUSER, 1915

(Figs. 1-3, 7, 9-12, 17-19)

*Emphusis bakeri* FUNKHOUSER, 1915, Philip. J. Sci., 10: 381. — GODING, 1949, J. N.Y. ent. Soc., 57: 192.

*Specimens examined.* 2♀♀, Ilomavis, Mt. Apo, Mindanao Is., 7. III. 1977,





Figs. 4-6. *Emphusis kurosawai* sp. nov., in lateral (4), dorsal (5) and frontal (6) views.

T. ENDO leg.; 4♂♂ 7♀♀, Sumpitan near Davao, Mindanao Is., 13. III. 1977, T. ENDO leg.

Detailed description of the coloration and external character was already given by FUNKHOUSER (1915, pp. 381-382) (cf. Figs. 1-3).

Further morphological characters are as follows: frontoclypeus, widened towards apex, as wide as or slightly narrower than  $1/3$  the width between eyes (Fig. 7); central carina on vertex distinct; pronotum coarsely and rather irregularly punctate, scarcely constricted below suprahumeral horns, which are thick, more or less arched downwards and backwards, with a narrowly triangular white-pile spot on the top surface at middle; posterior process extending, at least, to near the tip of forewing folded; ratio of tibial length of fore: mid: hind legs, about 1: 1.3: 1.9 in ♂♂, 1: 1.4: 2.0 in ♀♀; dorsum of abdomen greyishly pollinose with central part black and with lateral margin fuscous brown.

Male genitalia (Figs. 9-12):— Pygofer (tergum IX) oval in ventral view and pubescent dorsally; caudolateral plate of pygofer (IX) tuberculate at apex, with dense hairs; subgenital plate (IX) very long, ca.  $2.7\times$  as long as wide and bilobed at caudal  $4/5$ , with the tip widened; paramere long and recurved, extending towards the apex of subgenital plate, with narrow apodeme and with flattened sagittate apex, directing downwards; aedeagus strongly curved basally with inferior margin minutely dentate at apical  $1/3$ .

Female terminalia (Figs. 17-19):— Seventh sternum wide, ca.  $2.0\times$  as wide

as long, triangularly incised at middle; 9th tergum caudate with truncate apex; valvula 1 long with basal margin sinuate and with tip flattened laterally; valvifer 1 striated, attached to the middle of basal margin of valvula 1; valvula 3 relatively long, with the tip slightly beyond 9th segment.

Body length: 5.4–6.8 mm. Total length: 8.4–9.4 mm. Length of forewing: 7.4–8.6 mm. Width across suprahumeral horns: 6.1–7.2 mm.

*Distribution.* Mindanao, the Philippines. Originally described from Illigan, Mindanao.

It can be assured that the bulk of suprahumeral horns is not always correlative to the body-size.

FUNKHOUSER (1915) gave certain comments on the male of this species. Judging from his description, however, these males are probably referable to the next species.

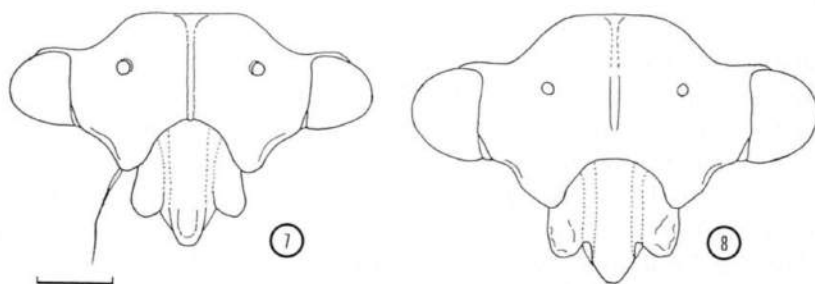
This species is found in hilly or montane areas (200–1,400 m in altitude) around Mt. Apo, Mindanao. It inhabits the canopy at the peripheries of jungles or forests, often sitting on the central surface of large leaves (1.5–3 m above the ground) of such trees as *Mallotus* sp. (Euphorbiaceae) and *Hibiscus* sp. (or its ally; mallow trees, Malvaceae). When the sun is shining, adults are so agile as to be vigorously flying about.

*Emphusis kurosawai* M. HAYASHI et ENDO, sp. nov.

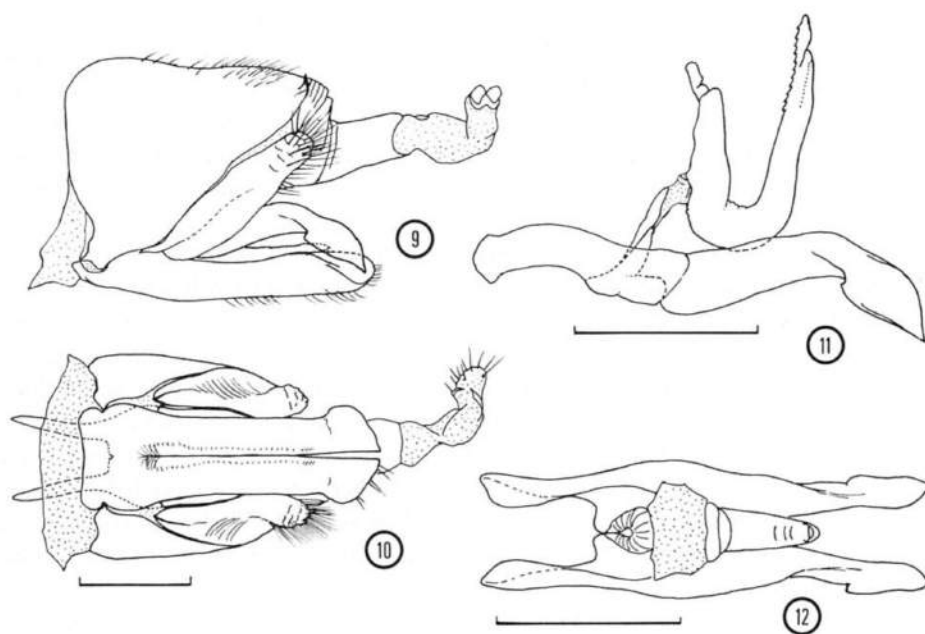
(Figs. 4–6, 8, 13–16, 20–22)

Holotype: ♂, Ilomavis, Mt. Apo, Mindanao Is., 7. III. 1977, T. ENDO leg. Allotype: ♀, Sumpitan near Davao, Mindanao Is., 13. III. 1977, T. ENDO leg. Paratypes: 2♀♀, Sumpitan near Davao, Mindanao Is., 13. III. 1977, T. ENDO leg.; 7♀♀, same locality, 7. I. 1980; 2♀♀, Mt. Apo, Mindanao Is., 8. I. 1979, T. ENDO leg.; 1♂, Ilomavis~Agko, Mindanao Is., 7. II. 1979, Y. KOMIYA leg.; 1♂, same locality, 10. II. 1979; 2♀♀, Agko, Mt. Apo, Mindanao Is., 9. II. 1979, Y. KOMIYA leg.

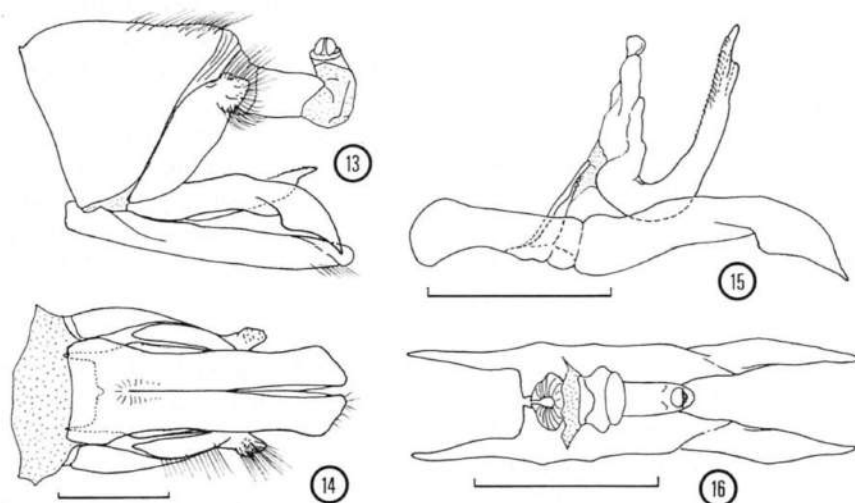
*Type depository.* National Institute of Agro-environmental Sciences, Tsukuba. Body slender; head and pronotum black, regularly punctate, with a central



Figs. 7–8. Head in full view. — 7, *Emphusis bakeri*; 8, *E. kurosawai*. Scale, 0.5 mm.



Figs. 9–12. Male genitalia of *Emphusis bakeri*. — 9, Lateral view; 10, ventral view; 11, paramere and aedeagus in lateral view; 12, parameres in dorsal view. Scales, 0.5 mm.



Figs. 13–16. Male genitalia of *Emphusis kurosawai*. — 13, Lateral view; 14, ventral view; 15, paramere and aedeagus in lateral view; 16, parameres in dorsal view. Scales, 0.5 mm.

longitudinal band on vertex, continuing to frontoclypeus, and 2 narrow fasciae on each lateral surface of pronotum, the anterior one extending to pronotal paranotum, of snowy-white pollinosity; abdomen greyish with fuscous brown central part, forming a central longitudinal fuscous band; forewing black and punctate at base and costal margin, with central part hyaline (sometimes tinged with brown) and with apical margin of reddish brown tinge; legs light ochreous to fuscous brown, usually infuscated at basal part (femur, trochanter and coxa).

Frontoclypeus tri-lobed, parallel-sided, slightly wider than  $1/3$  the width between eyes (Fig. 8); central carina on vertex obscure both anteriorly and posteriorly; pronotum strongly rising, semi-triangular in lateral view, narrowed below suprahumeral; suprahumeral horn narrow and crescent-shaped with the tip acute, slightly curved backwards and downwards; central carina on pronotum well defined, extending onto the tip of posterior process, which is long and percurrent, tri-carinate basally and roof-like apically; ratio of tibial length of fore: mid: hind legs, about 1: 1.4: 1.9 in ♂♂, 1: 1.3: 1.8 in ♀♀; forewing rather long with rounded apex and with vein 2A straight and long, longer than  $1/2$  of vein 1A; hindwing with 4 apical cells; a pair of small spines on 3rd–7th abdominal terga, forming two central rows of spines on terga.

Male genitalia (Figs. 13–16):— Pygofer (tergum IX) ovate in ventral view, pubescent dorsally at caudal  $1/2$ ; apical part of caudolateral plate (IX) tuberculose, swollen outwards, with dense long hairs; subgenital plate long, ca.  $2.5\times$  as long as wide, bilobed at caudal  $4/5$ , with lateral margin sinuate and with apex oblique; paramere thick and long in proportion to pygoforal size, flattened basally and apically, with apodeme straight and roundly widened at base; apical part of paramere rather sagittate with cuspidate tip, evenly curved downwards; aedeagus turned upwards near base and almost straight in the other part, with inferior margin minutely dentate at apical  $1/2$ .

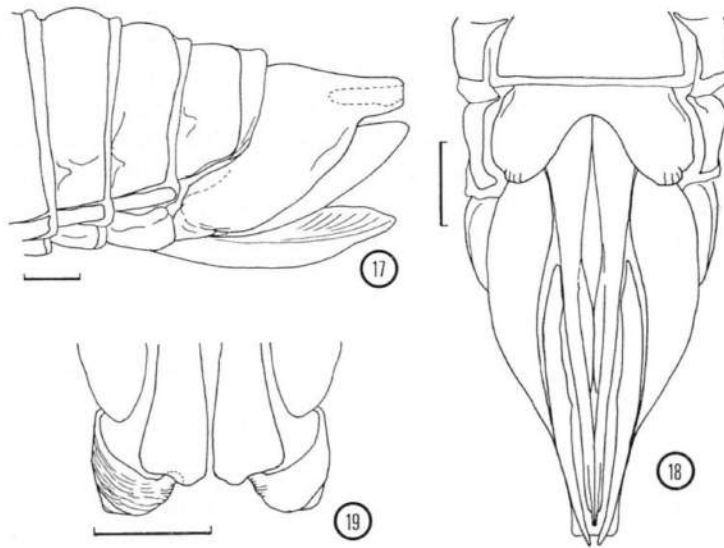
Female terminalia (Figs. 20–22):— Seventh sternum rather narrow, ca.  $1.7\times$  as wide as long, caudal margin deeply and triangularly emarginate at middle; 9th tergum slightly caudate; valvulae not so long, extending slightly beyond 9th segment; basal margin of valvula 1 nearly straight; surface of valvifer 1 not striated.

Body length: 5.1–6.7 mm. Total length: 7.8–9.7 mm. Length of forewing: 7.0–8.5 mm. Width across suprahumeral horns: 6.0–7.7 mm.

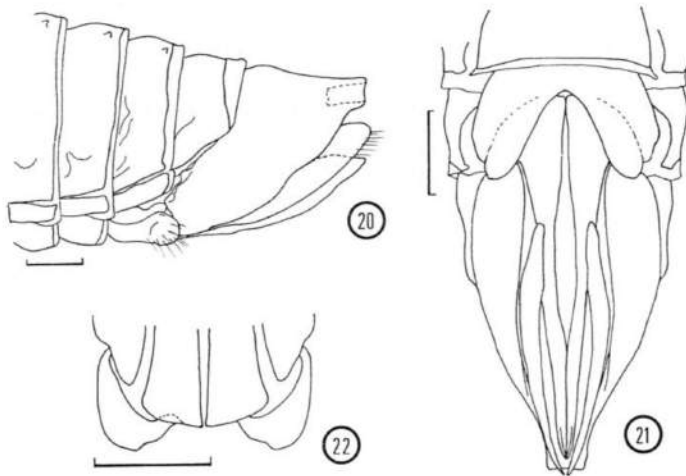
*Distribution.* Mindanao, the Philippines.

This species is similar, and probably allied, to *E. rugosa* FUNKHOUSER, 1927, from Sibuyan Island, the Philippines. As mentioned above, it is most probable that FUNKHOUSER (1915) erroneously identified this species with *bakeri* (♂) and regarded the male of *kurosawai* as that of *bakeri*.

The habitat and habits of *E. kurosawai* are very similar to those of *bakeri*; both the species often occur at the same place.



Figs. 17-19. Female terminalia of *Emphusis bakeri*. — 17, Lateral view, 18, ventral view; 19, base of valvula 1 (ovipositor). Scales, 0.5 mm.



Figs. 20-22. Female terminalia of *Emphusis kurosawai*. — 20, Lateral view; 21, ventral view; 22, base of valvula 1. Scales, 0.5 mm.

### Taxonomic Notes

According to GODING (1931), the genus *Emphusis* is included in the tribe Leptocentrini, together with *Leptocentrus*, *Indicopleustes*, *Periaman*, *Centrotypus*, etc. This group is primarily characterized by having 4 apical cells in the hindwing.

The pronotal posterior process is, however, variable in the mode of extension; it is far apart from the scutellum and forewing (*e.g.*, *Leptocentrus*, etc.), slightly and/or partly apart from them (*e.g.*, *Periaman*, *Indicopleustes*, etc.) and touching the scutellum and inferior (anal) margin of forewing (*e.g.*, *Emphusis*, *Centrotypus*, etc.).

Comparing the male genitalia of *Emphusis* with those of *Leptocentrus*, we can find that both the genera have such common characters as the sagittate or arrow-like apex of paramere (hook-like in the allied tribe Centrotini), the unsegmented subgenital plate (2-segmented in Centrotini), and so on.

### References

- BUCKTON, G. B., 1903. A Monograph of the Membracidae. 296 pp., 60 pls. Lovell Reeve, London.
- FUNKHOUSER, W. D., 1915. Review of the Philippine Membracidae. *Philip. J. Sci.*, **10**: 365–404, pls. 1–2.
- 1921. New genera and species of Philippine Membracidae. *Ibid.*, **18**: 679–689, pl. 1.
- 1927. New Philippine Membracidae (Homoptera). *Ibid.*, **33**: 109–125, pls. 1–4.
- 1939. A new *Emphusis* (Membracidae) from Malaya. *J. fed. Malay Stat. Mus.*, **18**: 377–378.
- 1950. Homoptera, Fam. Membracidae. In WYTSMAN, P. (ed.), *Genera Insectorum*, (208): 1–375, pls. 1–14.
- GODING, F. W., 1931. Classification of the Old World Membracidae. *J. N.Y. ent. Soc.*, **39**: 299–313.
- 1949 a. The Old World Membracidae. *Ibid.*, **57**: 183–192.
- 1949 b. Ditto. *Ibid.*, **57**: 267–272.
- METCALF, Z. P., & V. WADE, 1965. Membracoidea, Section I. *General Catalogue of the Homoptera*, Fasc. 1 (Suppl.): 1–743.
- STRÜMPER, H., 1972. Beitrag zur Phylogenie der Membracidae RAFINESQUE. *Zool. Jb. Syst.*, **99**: 313–407.

## Notes on the Tortricidae (Lepidoptera) from Taiwan, 2

by

Atsushi KAWABE

5-18-4, Ôtsugaoka 4, Shonan-machi, Chiba 277, Japan

**Abstract** Six new species, *Phaecasiophora amoena*, *Zeiraphera taiwana*, *Z. hohuanshana*, *Notocelia kurosawai*, *Epiblema alishana* and *Dichrorampha tayulingensis*, are described and added to the fauna of Taiwan. Four genera, *Zeiraphera* TREITSCHKE, *Notocelia* HÜBNER, *Epiblema* HÜBNER and *Dichrorampha* GUENÉE are new to Taiwan.

This is the second paper of a series in which I plan to revise species and genera of the family Tortricidae found in Taiwan. All the type series including the holotypes of the new species to be described below are preserved in my private collection.

I wish herewith to express my cordial thanks to Dr. Hiroshi INOUE, Ôtsuma Women's University, Tokyo, for his kindness extended to me in various ways, and to Mr. Yasutoshi SHIBATA for his valuable advice and donation of many specimens. My thanks are also due to Mr. Y. KISHIDA for his kind gift of valuable specimens.

### *Phaecasiophora amoena* sp. n.

(Fig. 1)

Length of forewing 8.5 mm. Head, face and antenna dark brown, mixed with light ochreous. Labial palpus slender, curved and ascending; median segment not dilated; terminal segment subacute, short exposed. Thorax brown, mixed with dark brown and light ochreous scales, with a dark brown, short crest. Posterior tibia densely scaled with smoothly appressed, shining white long scales on the inside, above and beneath.

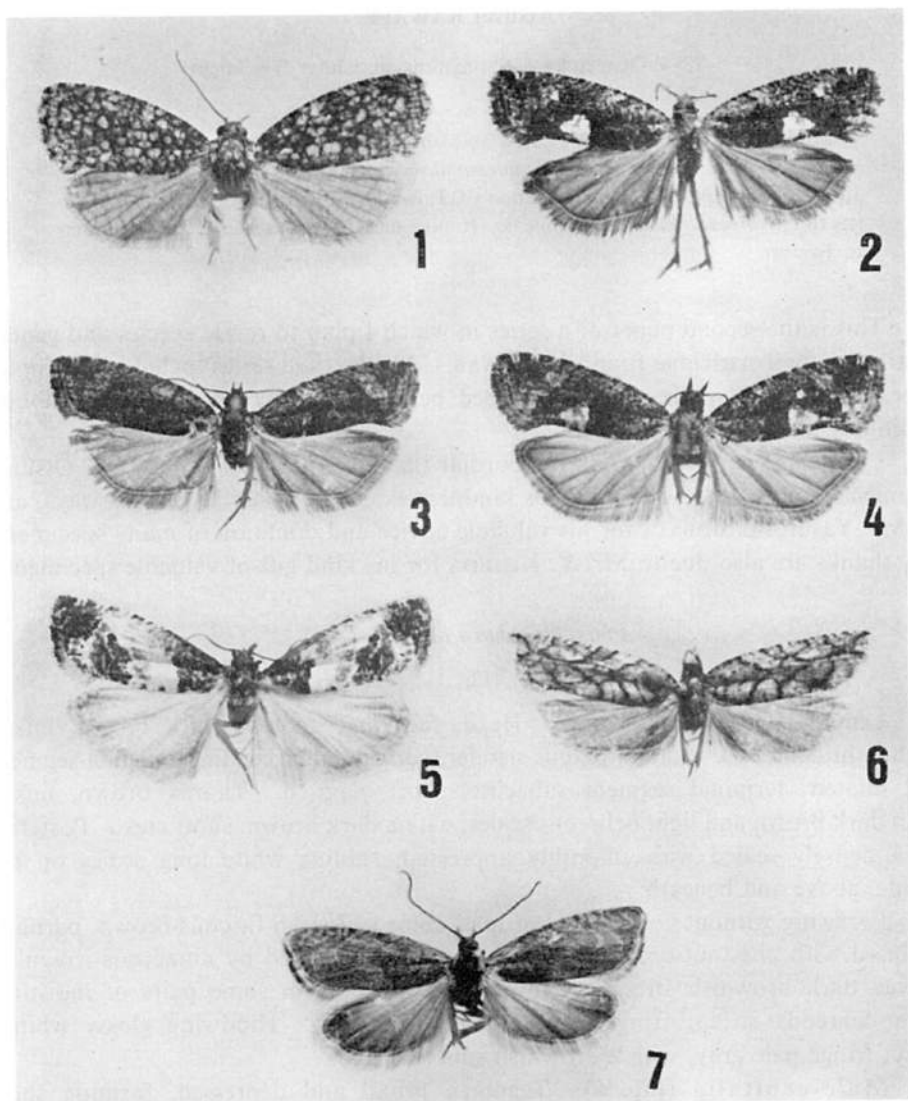
Forewing without costal fold; ground color yellowish fuscous-brown, partially suffused with chestnut-brown and dark brown, reticulated by numerous irregular, waved dark brownish streaks all over wing; costa with some pairs of indistinct pale ochreous striae; fringe concolorous with wing. Hindwing glossy whitish gray; fringe pale gray, with a brownish subbasal line.

Male genitalia (Fig. 8). Tegumen broad and depressed, forming short lateral prominences; socius a strong arm, short haired at the outside of apical portion; valva slender and narrow, thinly haired along the lower edge of it, the hairs especially long and dense basally; aedeagus short and thick, hardly narrowed towards top; cornuti a sheaf of some spines.

Female unknown.

Holotype: ♂, Hungyeh Spa (200 m), Hualien Hsien, Taiwan, 29–30. III. 1984 (A. KAWABE).

*Distribution.* Taiwan (Hungyeh Spa).



Figs. 1–7. — 1. *Phaecasiophora amoena* KAWABE; ♂, holotype. — 2. *Zeiraphera taiwana* KAWABE; ♀, paratype. — 3–4. *Zeiraphera hohuanshana* KAWABE; 3, ♂, paratype; 4, ♀, paratype. — 5. *Notocelia kurosawai* KAWABE; ♂, holotype. — 6. *Epiblema alishana* KAWABE; ♂, holotype. — 7. *Dichrorampha tayulingensis* KAWABE; ♂, holotype.



*Zeiraphera taiwana* sp. n.

(Fig. 2)

Length of forewing 8.5–9 mm. Head yellowish brown, mixed with ochreous or brown; face dark brown. Antenna dark brown, mixed with pale ochreous basally. Labial palpus dark brown, mixed with pale ochreous; second segment expanded towards apex; terminal segment rather long, protruding and dropping.

Forewing ground color white, suffused with yellowish brown and green; costa with blackish dots and streaks of diverse size, and with some pairs of geminated indistinct pale ochreous strigulae; markings obscure, blackish brown; basal patch sometimes diffused and only remaining at its outer edge, which is strongly angulate at middle and distinctly runs to 1/3 of dorsum; median fascia inconspicuous, oblique and confluent with indistinct pre-tornal marking; a large subtriangular blotch of light ground color on dorsum between basal patch and median fascia; fringe concolorous with wing. Hindwing light fuscous, darker apically; fringe paler, with a narrow pale yellowish basal line.

Male genitalia (Fig. 9). Tegumen strongly sclerotized and pigmented, a minute projection at middle, which indicates uncus, with long hairs on its reverse side; socius large, dropping; valva rather narrow, with short and round cucullus; aedeagus moderate, tapering towards apex; cornutus not found.

Female genitalia (Figs. 20–22). Papilla analis very narrow, roundly dilated at caudal apex; sterigma elongate, deeply concave at middle edge of caudal portion; ductus bursae rather short, provided with post median sclerite; corpus bursae minutely aciculate, with two signa of unequal size.

Holotype: ♂, Alishan (2,200 m), Chiai Hsien, Taiwan, 12. VIII. 1974 (Y. KISHIDA). Paratype: ♀, same place as holotype, 9–11. VII. 1964 (H. INOUE).

*Distribution.* Taiwan (Alishan).

*Notes.* At first sight this species looks closely similar to *Zeiraphera isertana* (FABRICIUS) in the marking and the coloration, but is easily distinguished from it by the above mentioned genital structure.

*Zeiraphera hohuanshana* sp. n.

(Figs. 3–4)

This species is closely similar to the preceding one, but in the external characters distinguished from it by the following points: somewhat larger in size, more strongly tinged with green or olive in the ground color of forewing; whitish dorsal blotch larger (in some specimens obsolescent). In the genital structure, it is easily distinguished from it by the following points (Figs. 10, 16–19): uncus roundly projected; socius shorter and broader; valva broader, with large and round cucullus; papilla analis narrower; signa two, one small and pointed, and the other large, blunt.

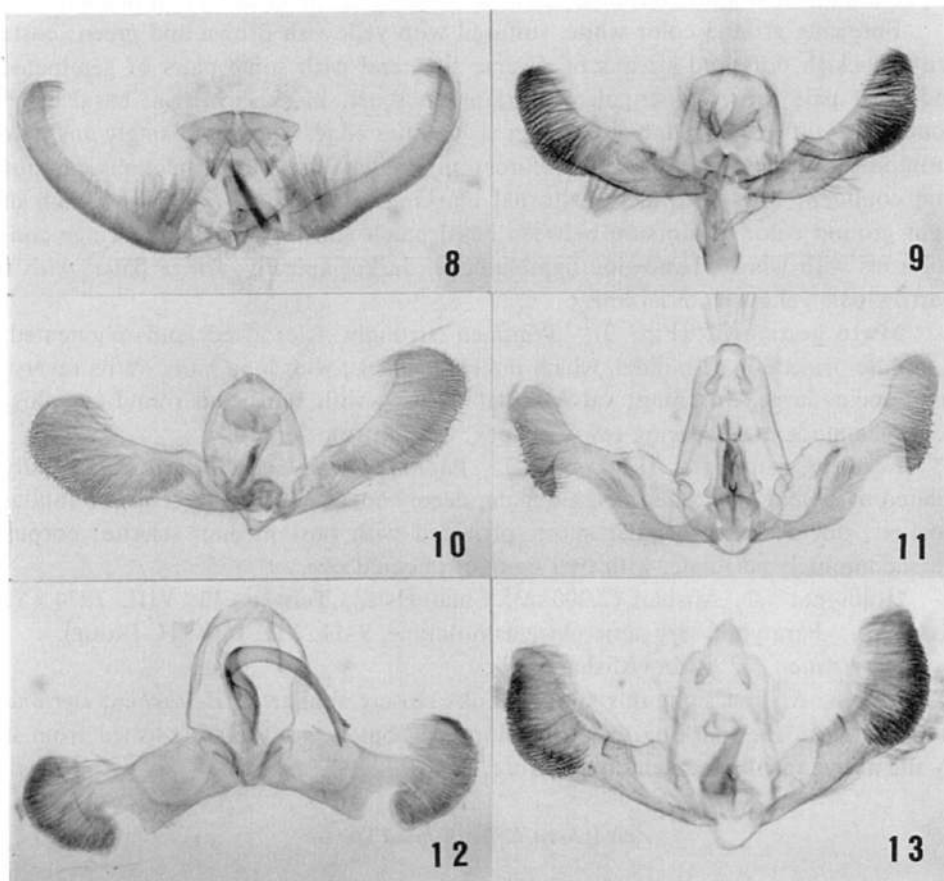
Holotype: ♂, Hohuanshan (3,100 m), Hualien Hsien, Taiwan, 30. VII–1. VIII. 1983 (A. KAWABE). Paratypes: 2♂, 3♀, same data as holotype.

*Distribution.* Taiwan (Hohuanshan).

*Notocelia kurosawai* sp. n.

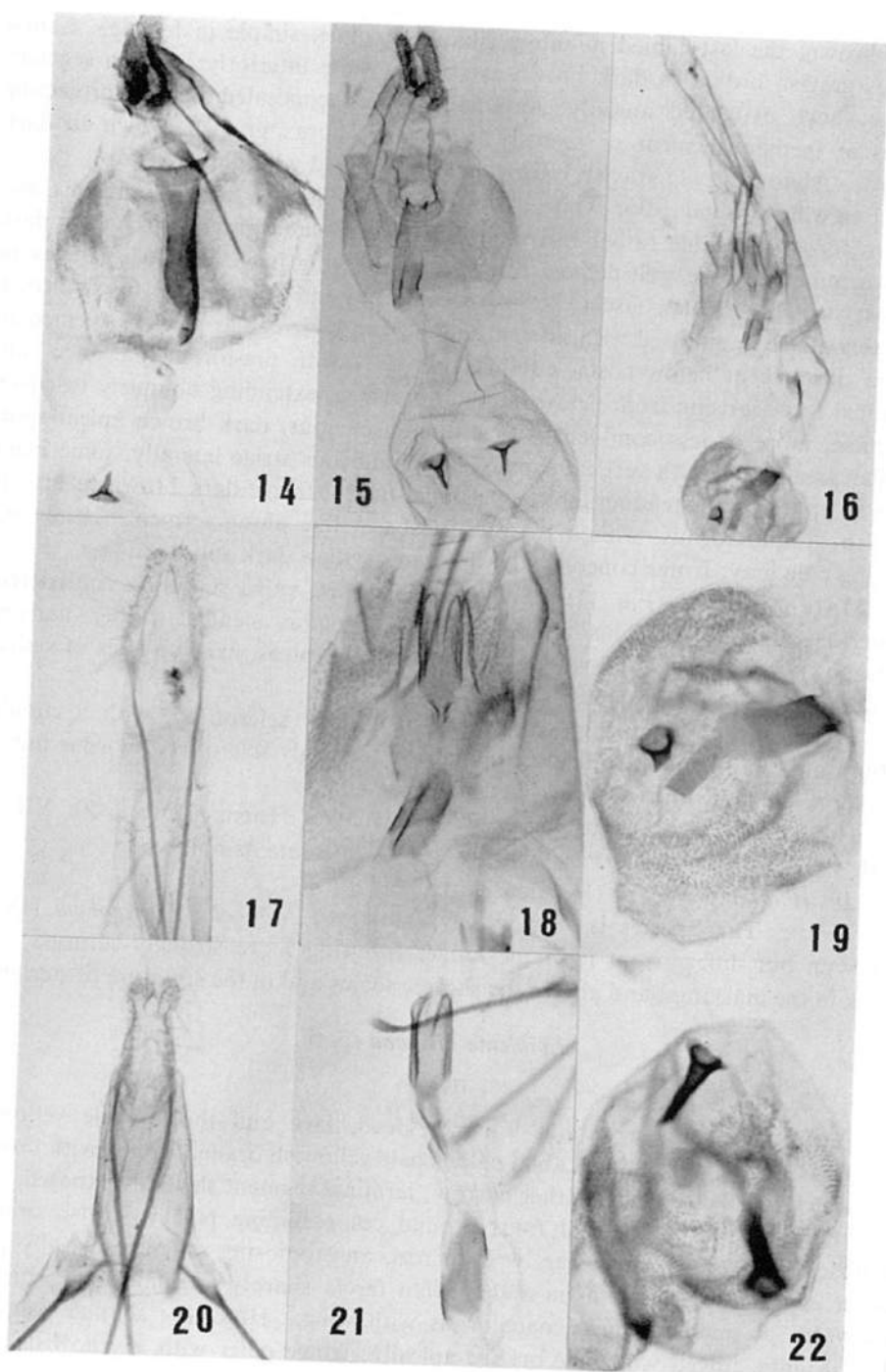
(Fig. 5)

Length of forewing about 10 mm. Head, face and antenna grayish brown to



Figs. 8–13. Male genitalia. — 8. *Phaecasiophora amoena* KAWABE, holotype, genitalia slide 4518. — 9. *Zeiraphera taiwana* KAWABE, holotype, genitalia slide 4558. — 10. *Zeiraphera hohuanshana* KAWABE, holotype, genitalia slide 4561. — 11. *Notocelia kurosawai* KAWABE, holotype, genitalia slide 4556. — 12. *Dichrorampha tayulingensis* KAWABE, holotype, genitalia slide 4577. — 13. *Epiblema alishana* KAWABE, holotype, genitalia slide 4567.

Figs. 14–22. Female genitalia. — 14. *Dichrorampha tayulingensis* KAWABE, paratype, genitalia slide 4580. — 15. *Notocelia kurosawai* KAWABE, paratype, genitalia slide 4557. — 16–19. *Zeiraphera hohuanshana* KAWABE, paratype, genitalia slide 4560; 17, detail of papilla analis; 18, detail of sterigma; 19, detail of signa. — 20–22. *Zeiraphera taiwana* KAWABE, paratype, genitalia slide 4559; 20, detail of papilla analis; 21, detail of sterigma; 22, detail of signa.



dark brown, the last-named minutely ciliated in male, simple in female. Labial palpus grayish brown to dark brown exteriorly, white interiorly; median segment rather short, expanded apically; terminal segment concealed behind projecting scales of median segment or scarcely exposed. Thorax grayish brown to dark brown. Abdomen pale grayish brown; anal tuft tinged with glossy yellow.

Forewing ground color white, suffused and strigulated with plumbeous and brown; costal strigulae rather inconspicuous; basal patch grayish brown or dark brown, its outer edge well defined below costa, varying from shallowly convex to almost straight; median fascia, pre-tornal marking and subterminal fascia brown variably mixed or suffused with fuscous and marked by irregular black dots; median fascia obsolescent below costa, confluent dorsally with pre-tornal marking; sub-terminal fascia arising from below middle of termen, extending obliquely to costal strigulae, more or less confluent with an inconspicuous, dark brown apical spot; ocellar area white, with vertical submetallic plumbeous striae laterally, some black dots in upper part extending into subterminal fascia; fringe dark brown to brown, whitish around tornus, with a fuscous sub-basal line along termen. Hindwing shining pale gray; fringe concolorous with wing, with a dark sub-basal line.

Male genitalia (Fig. 11). Socius rather short; valva shallowly constricted; posterior angle of sacculus almost smooth; cucullus slender, rather narrow; aedeagus rather short, with two non-deciduous short spines, fixed on apex of vesica; cornuti a sheaf of many spines.

Female genitalia (Fig. 15). Sterigma weakly sclerotized, with a circular ostium on anterior part; colliculum cylindrical, strongly sclerotized; corpus bursae weakly aciculate, with two equal-sized signa.

Holotype: ♂, Hohuanshan (3,100 m), Hualien Hsien, Taiwan, 30. VII.-1. VIII. 1983 (A. KAWABE). Paratypes: 6♂, 3♀, same data as holotype.

*Distribution.* Taiwan (Hohuanshan).

*Notes.* This species is very closely similar to *Notocelia rosaecolana* (DOUBLEDAY), but differs from it in the longer forewing more strongly suffused with black in the markings, and also in the shorter socius and in the structure of sterigma.

### *Epiblema alishana* sp. n.

(Fig. 6)

Length of forewing about 9 mm. Head, face and thorax pale yellowish orange. Antenna brown. Labial palpus pale yellowish orange, tinged with brownish scales; median segment rather narrow; terminal segment slenderly exposed.

Forewing without costal fold; ground color shining pale yellowish orange, suffused with brown, irregular, well-defined, anastomosing striae; especially each outer edge of sub-basal fascia and median fascia sharply angulate and projected outwards at middle; fringe concolorous with wing. Hindwing shining pale yellowish gray, tinged with pale orange apically; fringe paler with a yellowish basal line and a dark sub-basal line.

Male genitalia (Fig. 13). Uncus broad and short, tapering towards its top; socius shortly developed; valva rather narrow, cucullus rounded; aedeagus simple, cornutus not found.

Female unknown.

Holotype: ♂, Alishan (2,300 m), Chiai Hsien, Taiwan, 7. VIII. 1971 (Y. SHIBATA). Paratype: 1♂, same place as holotype, 8. VIII. 1974 (Y. SHIBATA).

*Distribution.* Taiwan (Alishan).

*Dichrorampha tayulingensis* sp. n.

(Fig. 7)

Length of forewing 6–8 mm. Head, face and antenna grayish brown. Labial palpus grayish brown, paler at base and middle of median segment and interiorly; median segment triangular, dilated towards apex; terminal segment concealed in behind projecting scales of median segment or scarcely exposed. Thorax dark grayish brown, mixed with yellowish scales. Abdomen grayish brown; anal tuft pale yellowish brown.

Forewing with a narrow costal fold from base to 1/4 of costa; ground color grayish brown, suffused with many scales of pale yellowish ochreous to ochreous tips under magnification, especially on outer half; costa from middle to apex with five, usually paired pale ochreous oblique strigulae, each paired strigula emitting outwards leaden gray oblique line; basal patch yellowish brown, darker distally and angulate above middle; dorsal patch pale grayish ochreous, usually divided by some irregular grayish lines, edged anteriorly and posteriorly by dark brown suffusion, well defined on the outside of basal patch, this patch becoming inconspicuous in some specimens, almost blending with ground color; ocelloid patch unmarked, usually three black spots along termen; fringe glossy yellowish brown, with a pale ochreous sub-basal line and a dark yellowish brown basal line. Hindwing pale grayish brown, tinged with yellowish brown apically; fringe pale yellowish brown, with a dark brownish sub-basal line and a yellowish basal line.

Male genitalia (Fig. 12). Valva with short neck; cucullus rather narrow, crescent-shaped; aedeagus long and narrow, curved, with some teeth on its apical portion.

Female genitalia (Fig. 14). Ostium rounded, its lower lip distinctly sclerotized; colliculum darkly sclerotized, but its left wall is not sclerotized; corpus bursae with a horn-shaped signum.

Holotype: ♂, Tayuling (2,560 m), Hualien Hsien, Taiwan, 2–3. VIII. 1983 (A. KAWABE). Paratypes: 10♂, 1♀, same data as holotype.

*Distribution.* Taiwan (Tayuling).

*Notes.* At first sight this species is similar to *Dichrorampha cancellatana* KENNEL from Japan and the Soviet Far East, but is easily distinguished from it by the forewing more shaded with grayish suffusion, and also by the structure of valva, aedeagus and colliculum.

## References

- BRADLEY, J. D., W. G. TREMEWAN & A. SMITH, 1979. British Tortricoid Moths. Tortricidae: Olethreutinae. 320 pp., 43 pls. London.
- CLARKE, J. F. G., 1958. Catalogue of the Type Specimens of Microlepidoptera in the British Museum described by Edward MEYRICK, 3: 1-600, pls. 1-298.
- 1976. Microlepidoptera: Tortricoidea. *Insects of Micronesia*, 9(1): 1-144.
- DANILEVSKY, A. S., & V. I. KUZNETSOV, 1968. Tortricidae, Tribe Laspeyresiini. *Fauna SSSR*, (Insecta-Lepidoptera), 5(1): 1-633.
- DIAKONOFF, A., 1967. Microlepidoptera of the Philippine Islands. *Bull. U.S. natn. Mus.*, (257): 1-484.
- 1973. The South Asiatic Olethreutini (Lepidoptera, Tortricidae). *Zool. Monogr. Rijksmus. nat. Hist.*, (1): 1-700, pls. 1-15.
- 1976. Tortricoidea from Nepal 2. *Zool. Verh. Leiden*, (144): 1-145, pls. 1-14.
- 1982. On a collection of some families of Microlepidoptera from Sri Lanka (Ceylon). *Ibid.*, (193): 1-124, pls. 1-18.
- HANNEMANN, H. J., 1961. Kleinschmetterlinge oder Microlepidoptera I. Die Wickler (Tortricidae). *Tierwelt Deutschlands*, (48): 1-233, pls. 1-22.
- KAWABE, A., 1982. Tortricidae. In INOUE, H., et al. (eds.), *Moths of Japan*, 1: 62-151, 2: 158-181, pls. 14-30, 227, 379-292, 293. Kodansha, Tokyo. (In Japanese, with English synopsis.)
- KOMAI, F., 1979. Studies on the Japanese species of *Dichrorampha* (Lepidoptera: Tortricidae). *Tinea, Tokyo*, 10: 225-243.
- NASU, Y., 1980. The Japanese species of the genus *Notocelia* HÜBNER (Lepidoptera: Tortricidae). *Tinea, Tokyo*, 11: 33-43.

## Butterflies of the Subgroup of *Mycalesis ita* (Lepidoptera, Satyridae) from the Philippines

by

Nobuo KASHIWAI

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuraoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** The Philippine satyrid butterflies belonging to the subgroup of *Mycalesis ita* are dealt with. The subgroup is classified into three species-complexes, one of which, called the *georgi* complex, is thoroughly revised. A new species and two new subspecies of *M. teatus* are described under the names *M. kurosawai*, *M. t. ardens* and *M. t. romblonana*; *M. georgi canlaon* is synonymized with the nominotypical race of the species.

The red Philippine butterflies belonging to the satyrid genus *Mycalesis* have long been regarded as representing only one species, *M. ita* FELDER, since FRUHSTORFER (1911) synonymized *M. felderi* BUTLER with *M. ita*. Recently, AOKI, YAMAGUCHI and UÉMURA (1982) reclassified *M. ita* and its allied species, recognized the specific independency of *M. felderi*, described two new species *kashiwaii* and *georgi*, and placed these four and *M. treadawayi* in the species-group of *Mycalesis anapita*. Taxonomic problem posed by the Philippine species of this satyrid group was clarified to a considerable extent by their study, but there still remain certain matters to be investigated.

In this paper, the seven Philippine species of the genus *Mycalesis*, *ita*, *kashiwaii*, *felderi*, *kurosawai* (new species), *georgi*, *teatus* and *treadawayi*, are considered to form the *ita* subgroup within the group of *M. fusca*. It is classified into three species-complexes as will be shown in a key, each comprising the following species:

- 1) Species-complex of *M. ita*  
*M. ita* FELDER, 1863; *M. kashiwaii* AOKI et UÉMURA, 1982
- 2) Species-complex of *M. georgi*  
*M. felderi* BUTLER, 1868; *M. kurosawai* KASHIWAI, sp. nov.; *M. georgi* AOKI et UÉMURA, 1982; *M. teatus* FRUHSTORFER, 1911
- 3) Species-complex of *M. treadawayi*  
*M. treadawayi* SCHRÖDER, 1976

Of these, the second complex poses complicated problems. It contains a new species from Sibuyan to be named *M. kurosawai*, and also *M. teatus*, which is removed from the *ita* complex and regarded as a good species. Two new subspecies of the latter are described from Tablas and Romblon, under the names *M. t. ardens* and *M. t. romblonana*, respectively. On the other hand, *M. georgi canlaon*, which was



regarded by AOKI and UÉMURA (1982) as a subspecies endemic to Negros, is suppressed as a junior synonym of the nominotypical race of the species originally described from southern Luzon.

Before going into further details, I wish to express my cordial thanks to Dr. Yoshihiko KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, Professors Hiromasa SAWADA and Yasuaki WATANABE of Tokyo University of Agriculture, and Professor Emeritus Takashi SHIRÔZU of Kyushu University, Fukuoka, for their continuous supervision and guidance. I am deeply indebted to Dr. Shun-ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, and Dr. Hiroshi SHIMA of Kyushu University, Fukuoka, for kindly reading the original manuscript of this paper. I have also to express my indebtedness to the following gentlemen who gave me either opportunities to examine invaluable material or useful information: Messrs. Richard I. VANE-WRIGHT and Philip R. ACKERY of the British Museum (Nat. Hist.), London, Toshiaki AOKI, Shuhei YAMAGUCHI and Yoshinobu UÉMURA of the Research Institute of Evolutionary Biology, Tokyo, Yasusuke NISHIYAMA of Tokyo and Prof. Tomoo FUJIOKA of Keio University, Tokyo.

#### Subgroup of *Mycalesis ita*

Genus *Mydosama* MOORE, 1880, Trans. ent. Soc. London, 1880: 170.

Group III $\alpha$  of the genus *Mycalesis*, sensu FRUHSTORFER, 1911, Gross-schmett. Erde, 9: 333.

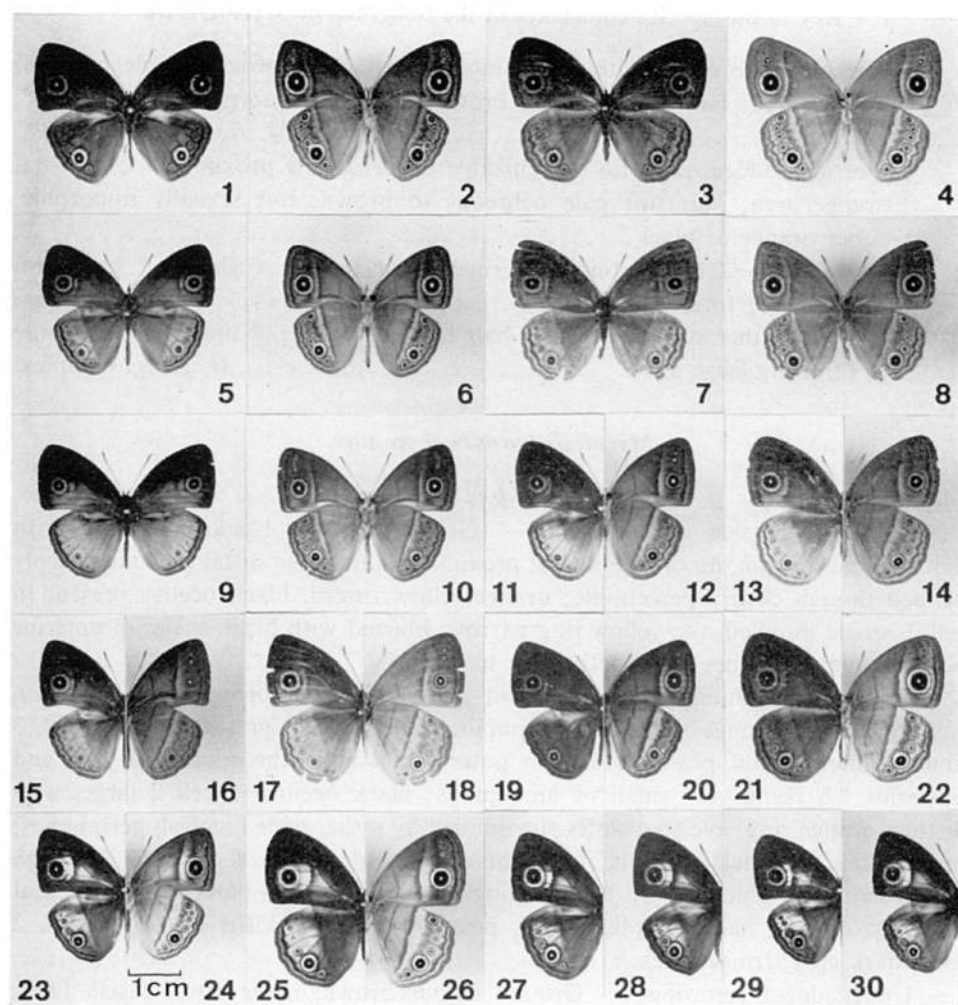
Group of *M. anapita*, sensu AOKI, YAMAGUCHI & UÉMURA, 1982, Butterfl. SE Asian Isls., 3: 269, 270.

The red Philippine species of *Mycalesis* are so closely similar in appearance to the members of the *fusca* group from Sundaland and Sulawesi, that they are often included in the same species-group. By the reasons given below, however, the Philippine species can be regarded as being distinct from those of the other areas, at least as a subgroup of their own.

Yellow ring in cell 2 on upperside of forewing usually clear; longitudinal discal fasciae on underside more distinct than in the members of the *anapita* subgroup and perpendicular to the posterior border; small ocelli present in cells 4, 5 and 6 on underside of forewing; oval brand present in sexual patch on underside of forewing; lower discocellular in forewing not strongly concave; upper discocellular in hindwing arising from the middle of swollen portion of vein 7; vein 3 in hindwing branching off just or slightly before the apex of lower discoidal cell. In male genitalia, uncus weakly sinuate; appendix angularis large, robust and fused with tegmen; posterior portion of valva knife-like in shape, with pointed apex; sacculus relatively short.

A remarkable character, the oval brand on the underside of forewing, easily distinguishes the members of this subgroup from the other species of the *fusca* group.





Figs. 1-30. Philippine butterflies of the subgroup of *Mycalesis ita*. — 1, *M. kurosawai* sp. nov., holotype male, from Sibuyan; 2, same, underside; 3, same species, paratype female; 4, same, underside; 5, *M. teatus romblonana* subsp. nov., holotype male, from Romblon; 6, same, underside; 7, same subspecies, paratype female; 8, same, underside; 9, *M. teatus ardens* subsp. nov., holotype male, from Tablas; 10, same, underside; 11, *M. teatus teatus* FRUHSTORFER, male, from Masbate; 12, same, underside; 13, same subspecies, female; 14, same, underside; 15, *M. teatus teatus* FRUHSTORFER, male, from Panay; 16, same, underside; 17, same subspecies, female; 18, same, underside; 19, *M. felderi felderi* BUTLER, male, from Samar; 20, same, underside; 21, same subspecies, female; 22, same, underside; 23, *M. georgi georgi* AOKI et UÉMURA, male, from S Luzon; 24, same, underside; 25, same subspecies, female; 26, same underside; 27-30, variation of *M. georgi georgi* AOKI et UÉMURA, male, from S Luzon.

### Key to the Species-complexes of the Subgroup of *Mycalesis ita*

1. Upperside of forewing without distinct border at the proximal side of distal orange area; hair tuft blackish brown; sexually dimorphic, orange in ♂, white in ♀.....*M. treadawayi* complex.
- Upperside of forewing with recognizable border at the proximal side of distal orange area; hair tuft pale ochreous to brown; not sexually dimorphic, either orange or black..... 2.
2. Wings with moderately rounded termen; hair tuft in ♂ short; ♂ brand on underside of forewing small.....*M. ita* complex.
- Wing with rather straight termen; hair tuft in ♂ long; ♂ brand on underside of forewing large.....*M. georgi* complex.

### *Mycalesis kurosawai* sp. nov.

(Figs. 1-4, 31-32, 33)

*Male*. Upperside of forewing:— Ground colour blackish brown with lighter basal portion, no orange scales; proximal boundary of distal area not sharply defined though clearly perceptible; orange-yellow ringed, black ocellus present in cell 2, single pupilled, the yellow ring narrow, blurred with black scales in anterior portion; marginal lines indistinct; fringe black.

Upperside of hindwing:— Ground colour blackish brown, distal portion weakly orange; orange ringed, single pupilled, black ocelli present in cells 5, 4, 3 and 2, anterior and posterior 1 b on outer discal area, the spots in cell 5 and posterior 1 b being very small or ambiguous; black ocellus in cell 2 large, with distinct orange ring; eye spot series surrounded by rather wide blackish peripheries; outer black marginal line thin, inner one rather wide; base of discoidal cell with a long hair tuft, which is light brown mingled with ochreous hairs; anterior basal area surrounding hair tuft plumbeous, posterior area blackish; brand on vein 2 long, dark gray; fringe black.

Underside of forewing:— Ground colour brown, inner discal fascia faint, outer discal fascia rather narrow, red brown; ochreous outer discal fascia narrow; black large ocellus present in cell 2, orange-yellow ringed, single pupilled, and thinly shaded with black; small black spots in cells 6, 5 and 4 with narrow yellow rings which merge one another; narrow inner marginal line faded, thin outer marginal line distinct; posterior basal area in cells 1b and 1a plumbeous gray; brand on vein 2 long, dark gray; fringe black.

Underside of hindwing:— Ground colour brownish ochreous with lighter marginal area; orange brown inner discal fascia narrow and weak, outer discal fascia rather narrow; ochreous outer discal fascia rather wide, especially widened in cells 5, 4 and 3; dark brown wavy distal marking present in cells 5, 4, 3 and 2; single pupilled, black ocelli present in cells 6, 5, 4, 3, 2, anterior and posterior 1 b, all orange-yellow ringed and thinly shaded with black; eye spot in cell 2 large, that

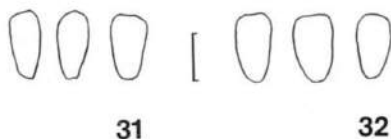
in cell 6 fairly large, and that in posterior 1 b small; black, irregularly wavy, inner marginal fascia wider than the outer one; outer marginal fascia thin; fringe dark brown.

Head covered with dark brown hairs, vertex about  $2/7 \times$  as wide as head. Antenna black on upperside; a pair of yellow spots present on each segment of basal  $2/5$ , forming two broken lines, which merge into one at the distal portion; apical  $2/7$  a little thickened; apical 4 segments nude. Labial palpus covered with long yellow scales, bearing black ones on each lateral side of segments 2 and 3.

Forewing with the posterior portion of termen nearly straight; upper discoidal cell very short. Hindwing with anterior and posterior corners rather angulate; termen weakly curved and slightly sinuate; vein 3 arising slightly before the lower apex of discoidal cell. Forewing length: 19.5–22.0 mm ( $n=10$ , av. 21.0 mm).

Foreleg:— Coxa  $6/7$  as long as femur, slightly longer than tibia; trochanter  $1/7$  as long as femur; tibia  $5/6$  as long as femur; tarsus slightly longer than tibia, with very small 2nd tarsomere.

Androconia:— Androconial patch in vein 1 b on underside of forewing rather long, pale gray; androconial scales rather large, each obovate with subtruncate apex (Fig. 31); androconial scales on sexual pouch in vein 7 on upperside of hindwing similar to those on underside of forewing (Fig. 32).



Figs. 31–32. Androconial scales of *M. kurosawai* sp. nov. — 31, Forewing, underside; 32, hindwing, upperside. Scale 0.1 mm.

Genitalia:— Tegmen square in dorsal view, with emarginate anterior margin, higher than long in lateral view, with the anteroventral margin roundly produced. Vinculum as high as tegmen, distinctly curved above the middle, with rather wide ventral portion. Uncus long; in lateral view, rather slender and gently curved ventrad, with the apex blunt and somewhat reflexed. Fenestrula rather narrow at the base of brachium, narrowed towards the middle, and becoming obsolete at the dorsal portion. Appendix angularis relatively large, with narrowly rounded posteroventral corner. Brachium long and slender, extending a little beyond the middle of uncus with pointed apex. Central plate in diaphragma weakly sclerotized. Saccus long, more than half the length of ring; in lateral view, somewhat thickened in anterior portion, and flat on the ventral side. Aedeagus long and slender, subzonal sheath rather short,  $3/10$  as long as aedeagus, weakly curved dorsad in lateral view; suprazonal sheath also arcuate dorsally, with the apical  $1/10$  obliquely membranous. Valva in lateral view broad at base, narrowed towards apex, dorsally curved in apical portion, with knife-like ampulla+harpe about  $3/7$  the length of valva and abruptly pointed at the apex; costa fairly small; anellifer  $4/7$  the dorsoproximal

length of valva, concave, narrowed posteriorly, and roundly terminating; sacculus rather broad, weakly broadened at middle, continuing to knife-like ampulla+harpe. Juxta subtrapezoidal in dorsal view, with rounded apical margin, bearing moderately developed membraneous appendage.

*Female.* Similar in markings to male. Upperside:— Ground colour paler. Upperside of forewing:— Distal area weakly orange, eye spot in cell 2 somewhat larger and paler. Underside of hindwing:— Ochreous outer discal fascia in cells 6, 5, 4, 3 and 2 wider. Forewing more rounded than in male. Hindwing with more obtuse corners. Forewing length: 23.0–24.2 mm ( $n=2$ , av. 23.6 mm).

Holotype: ♂, a hill (400–600 m alt.) near Kantingas, San Fernand, Sibuyan Is., Romblon Prov., Philippines, 21. viii. 1981, N. KASHIWAI leg. Paratypes: 4♂, same data as holotype; 5♂ 1♀, same locality and collector as holotype, 23. viii. 1981; 1♀, Saoyang, España, Sibuyan, 20. viii. 1981, N. KASHIWAI leg.

The holotype and a pair of the paratypes are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The other paratypes are deposited in the following collections: 1 male each in the Biological Laboratory, College of General Education, Kyushu University, Fukuoka, Entomological Laboratory, University of the Philippines, Los Baños, British Museum (Nat. Hist.), London, Kitakyushu Museum of Natural History, Kitakyushu; 4 males and 1 female in my private collection (Tokyo).

*Distribution.* Sibuyan Is., Romblon Province, Philippines.

*Remarks.* This new species seems to be the endemic representative of the *georgi* complex on Sibuyan Island. It looks like *M. felderi* in the black ground colour of the upperside, and *M. teatus* in the orange tone of the underside. It is, however, distinctive in having weak orange-yellow ring on the upperside of forewing, large eye spot in the cell 2 on the upperside of hindwing, and weak inner discal fascia on the underside of forewing.

This new species is dedicated to Dr. Yoshihiko KUROSAWA in commemorating his retirement from the National Science Museum (Nat. Hist.), Tokyo.

*Habit.* *Mycalesis kurosawai* is an inhabitant of primeval forests. Its males appear to make a small territory under the shade of trees beside trails. When other males approach, they quickly take on wing, drive the intruders away, and return to rest on tree leaves 0.5–1.5 m above the ground avoiding direct sunbeams. The two females obtained were found leisurely flying through clearings in the forest.

*Mycalesis teatus* FRUHSTORFER, 1911, stat. nov.

(Figs. 15–18, 36)

*Mycalesis ita teatus* FRUHSTORFER, 1911, Gross-schmett. Erde, 9: 334. — AOKI, YAMAGUCHI & UÉMURA, 1982, Butterfl. SE Asian Isls., 3: 279, pl. 43, figs. 28–32.

*Mycalesis teatus* was originally described by FRUHSTORFER, as a subspecies of *M. ita*, from Guimaras, a small island adjacent to Panay, the western central Philip-

pines. He pointed out that the "subspecies" was remote from the other "subspecies" of his; this opinion had already been expressed by SEMPER (1886) under the heading of *Mydosama ita*. AOKI, YAMAGUCHI and UÉMURA (1982) followed FRUHSTORFER's view without comment.

In my opinion, *M. teatus* is not only a good species but belongs to the *georgi* complex. It shares with the members of the latter complex several diagnostic characters, such as the characteristic shape of wings, the presence of a long hair tuft, and the large brand on the underside of forewing. Within the species-complex, *M. teatus* is peculiar in having bright orange-yellow markings on the upperside of wings and orange tone on the underside of them.

The Masbate population of this species seems referable to the nominotypical subspecies, though its specimens (Figs. 11–14) are somewhat different from those of the other populations. Light tinge on forewing is reduced; the inner marginal fascia is wide on both the sides of hindwing; the ground colour is dark on the underside in male; and the eye spots are large on the underside of both the wings. On Masbate Island, the butterfly is not rare on Mt. Irong-Irong near Mobo. Specimens examined: 3 ♂♂ 1 ♀, Mt. Irong-Irong, Lamon, Masbate, 9. viii. 1981, N. KASHIWAI leg.

On the other hand, the populations of *M. teatus* from Tablas and Romblon of the northwestern Visayas can be regarded as representing new subspecies. Their descriptions will be given in the following lines.

*Mycalesis teatus ardens* subsp. nov.

(Figs. 9–10, 34)

Very similar to subsp. *teatus* from Guimaras, Panay, Negros and Masbate, but distinguished from that and the Romblon subspecies by the following combination of characters.

*Male*. Upperside:— Orange-yellow markings light, its orange tone being darker than in *teatus teatus*. Upperside of forewing:— Orange-yellow marking partially surrounding yellow ring wide at the proximal side, more than 1 mm in width. Upperside of hindwing:— Thin black rings surrounding eye spots degenerated, so as to make yellow rings merge into marginal orange area, especially at the proximal side; inner marginal fascia wider than in *teatus teatus*.

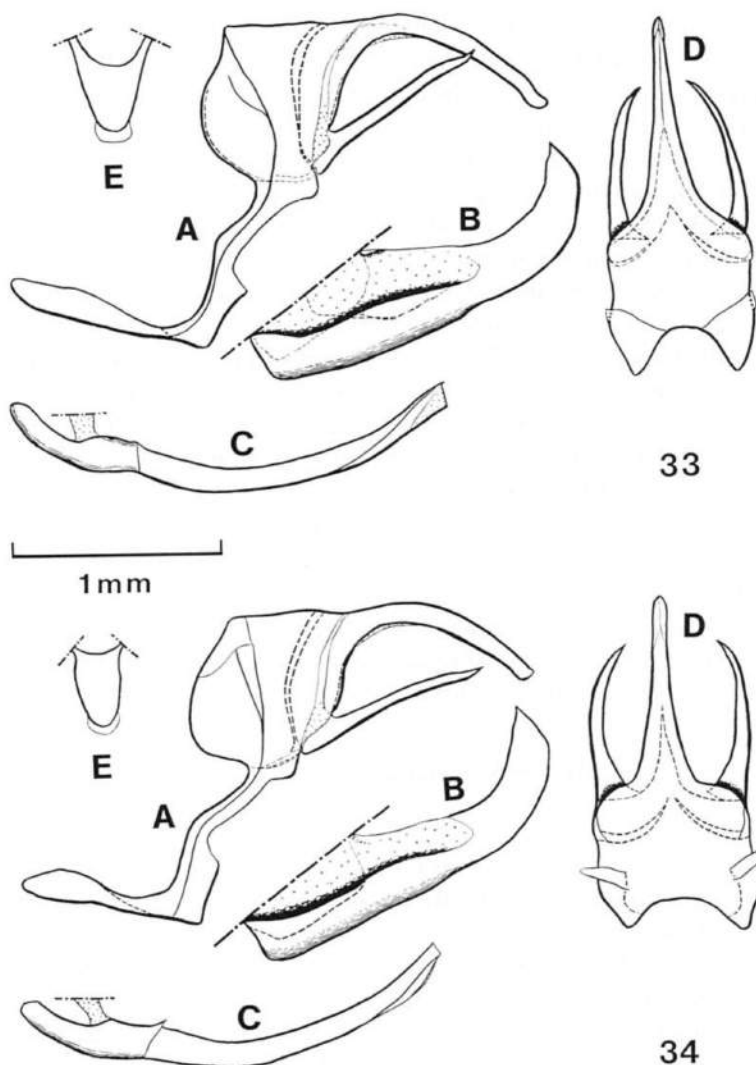
Underside:— Ground colour and red brown markings dark; outer discal yellow fascia narrow. Underside of hindwing:— Red brown distal discal marking in cells 6, 5, 4, 3 and 2 wide, extending to cell 1 b; inner marginal fascia very weakly diffused inwards, wider than in *teatus teatus*.

Genitalia as in *teatus teatus*.

Forewing length: 20.7 mm (n=1).

*Female*. Unknown.

Holotype: ♂, Marigondon Reforest Station, Marigondon Sur, San Andores,



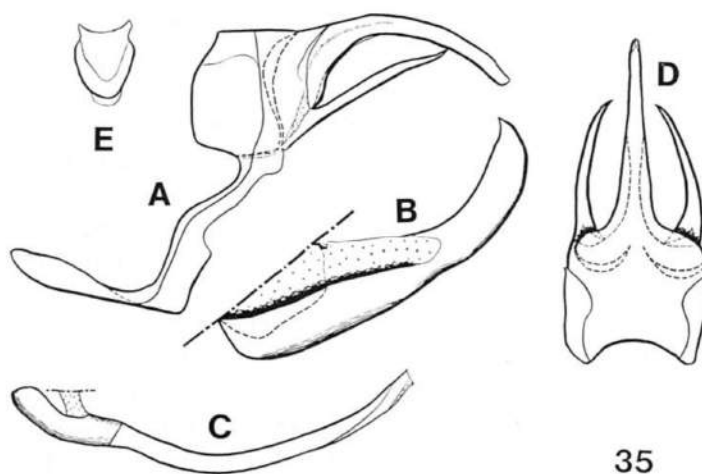
Figs. 33–34. Male genitalia of the Philippine butterflies belonging to the *georgi* complex of *Mycalesis*. — 33, *M. kurosawai* sp. nov.; 34, *M. teatus ardens* subsp. nov. A, Ring, lateral view; B, right valva, inner side; C, aedeagus, lateral view; D, dorsum, dorsal view; E, juxta, dorsal view.

Tablas Is., Romblon Province, Philippines, 26. viii. 1981, N. KASHIWAI leg.

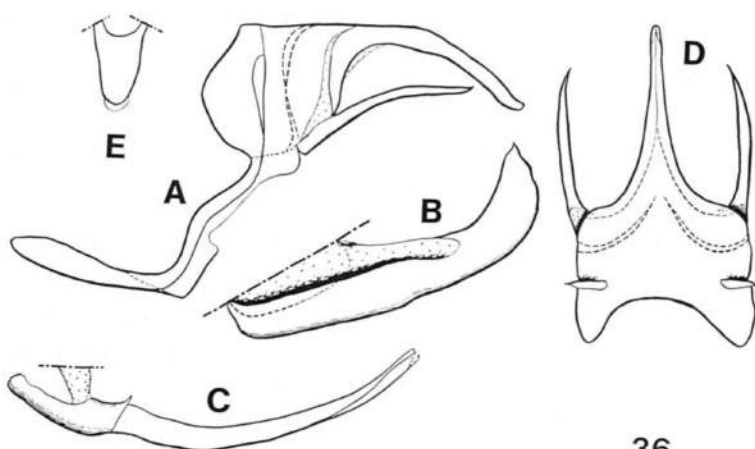
The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

*Distribution.* Tablas Is., Romblon Province, the Philippines.

*Remarks.* This new subspecies is closely similar to subsp. *teatus* in the markings and the male genitalia. However, *M. teatus ardens* is well characterized by



35



36

Figs. 35–36. Male genitalia of the Philippine butterflies belonging to the *georgi* complex of *Mycalesis*. — 35, *M. teatus romblonana* subsp. nov.; 36, *M. teatus teatus* FRUHSTORFER. A–E as in Figs. 33–34.

the features given above.

*Habit.* Inhabiting the periphery of a dense forest. The type specimen was collected on the sunny side of a trail passing through the forest.

*Mycalesis teatus romblonana* subsp. nov.

(Figs. 5–8, 35)

This new subspecies is readily recognized on the roundish wing and the rela-



tively dark upperside of wings with splashed orange scales.

*Male.* Upperside:— Arcuate orange marking at the proximal side of eye spot narrow. Upperside of hindwing:— Submarginal eye spots clear, black rings surrounding eye spots distinct; inner black marginal fascia wide. Underside of hindwing:— Distal discal marking in cells 6, 5, 4, 3 and 2 dark brown; inner marginal fascia wider than in *teatus teatus*.

Genitalia:— Nearly the same as in *teatus teatus*. Tegmen rather narrow in dorsal view. Valva wide at base in lateral view; knife-like ampulla+harpe  $3/8$  the length of valva.

Forewing length: 19.5–20.1 mm (av. 19.9 mm,  $n=3$ ).

*Female.* Upperside:— Orange markings pale, basal dark brown area and distal orange area clearly separated by outer discal fascia; inner marginal fascia wide. Underside:— Orange markings darker than in *teatus teatus*; reddish tone reduced; inner discal fascia weak. Underside of hindwing:— Eye spots larger than in male, inner marginal fascia wider than in *teatus teatus*.

Forewing length: 22.0 mm ( $n=1$ ).

Holotype: ♂, Casayogan, Romblon, Romblon Is., Romblon Province, Philippines, 24. viii. 1981, N. KASHIWAI leg. Paratypes: 2♂♂ 1♀, same data as holotype.

The holotype and a female paratype are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The other paratypes are deposited in the following collections: 1 male each in the Entomological Laboratory, University of the Philippines, Los Baños, and my private collection (Tokyo).

*Distribution.* Romblon Is., Romblon Province, the Philippines.

*Remarks.* At first sight, this subspecies looks similar to *M. ita* than to *M. teatus* in having dark roundish wings with splashed orange sclaes. It is, however, assignable to *M. teatus* by the following reasons: orange-yellow surroundings of yellow ring narrow on upperside of forewing; subapical small ocellus usually effaced on upperside of forewing; ground colour of underside orange yellow; outer discal fasciae approaching to submarginal eye spot series on hindwing; brand on underside of forewing rather long; hair tuft long.

Contrary to the peculiarities of the wing markings, the male genitalia of this subspecies show certain similarity to those of *M. kurosawai* in having rather narrow tegmen and relatively long ampulla+harpe. This may have resulted from the geographical situation of Romblon Island, which is very near to Sibuyan. Interspecific hybridization may have taken place between *M. teatus* and *M. kurosawai* on Romblon Island in the remote past.

*Habit.* This subspecies is not rare at Casayogan in Romblon, where it occurs in a thin secondary forest. It flies fast for a short distance, and comes to rest on leaves of grasses or of low trees.



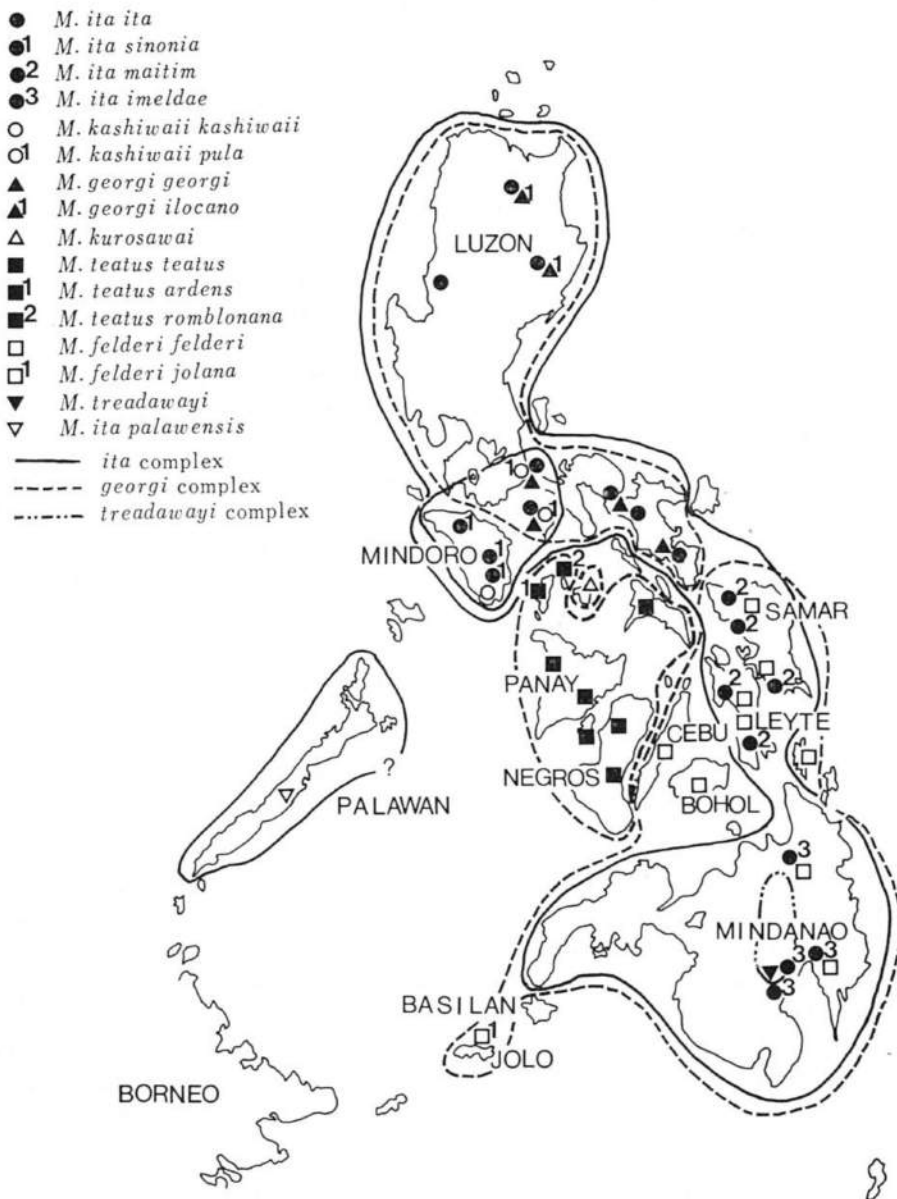


Fig. 37. Map showing the distribution of the Philippine butterflies belonging to the subgroup of *Mycalesis ita*.

*Mycalesis georgi* AOKI et UÉMURA, 1982

(Figs. 23–30)

*Mycalesis georgi* AOKI et UÉMURA, Mem. Tsukada Collect., Tokyo, (4): 7, pl. 3, figs. 5–6, pl. 4, figs. 5–6; type locality: Bicol National Park in Luzon. — AOKI, YAMAGUCHI & UÉMURA, 1982, Butterfl. SE Asian Isls., Tokyo, 3: 281, pl. 44, figs. 17–20.

*Mycalesis georgi canlaon* AOKI et UÉMURA, 1982, Mem. Tsukada Collect., Tokyo, (4): 8, pl. 3, fig. 8, pl. 4, fig. 8; type locality: Mt. Canlaon in Negros. — AOKI, YAMAGUCHI & UÉMURA 1982, Butterfl. SE Asian Isls., Tokyo, 3: 281, pl. 44, figs. 10, 15. (*Syn. nov.*)

*Mycalesis georgi canlaon* was described from Negros on the basis of a single male specimen bearing the label inscribed: Negros, Mt. Canlaon, 6–17. iii. 1981. The type is deposited in Etsuzo TSUKADA's collection.

In my opinion, however, it cannot be distinguished from the nominotypical subspecies of *M. georgi* from southern Luzon. It agrees perfectly with light-coloured individuals of *M. georgi georgi*, of which dark to light-coloured forms occur in single populations. Besides, no additional specimens of this "subspecies" have been obtained at the type locality in spite of repeated collectings. Since the name of the collector is not inscribed on the label attached to the type specimen, it is highly probable that the butterfly was wrongly labelled and that it had actually come from southern Luzon.

## Miscellaneous Notes

The known localities of the Philippine butterflies belonging to the subgroup of *Mycalesis ita* are shown on a sketch map (Fig. 37). New records are based on the following data. Two unreliable records previously published are noted.

1) *Mycalesis felderi felderi* BUTLER, 1868

*Specimens examined.* Cebu: 1♂, Camp Seven, 12. v. 1980, N. KASHIWAI leg. (this specimen is darker than the specimens of other populations). Samar: 2♂♂ 1♀, Asog, 32 km from Macarato-Marabut, Western Samar, 4. v. 1979, N. KASHIWAI leg. Bohol: 1♂, Logarita, Bilar, 4. v. 1980, N. KASHIWAI leg. Dinagat: 1♀, Dinagat Is., 14. iv. 1978, in Y. NISHIYAMA's collection.

FRUHSTORFER (1911) recorded *M. ita felderi* from Basilan. This is not included in the present paper, since the author did not distinguish *M. ita imeldae* AOKI et UÉMURA from *M. felderi felderi* BUTLER, both of which may occur on Basilan.

2) *Mycalesis ita maitim* AOKI et UÉMURA, 1982

*Specimens examined.* Samar: 1♂, Macarato-Marabut, Western Samar, 3. v. 1979, N. KASHIWAI leg.

3) *Mycalesis ita palawensis* FRUHSTORFER, 1909

This subspecies has not been collected since originally described, and the type may have been mislabelled. It is possible that the specimen may have come from Mindanao.

## References

- AOKI, T., & Y. UÉMURA, 1982. Descriptions of new species and new subspecies of South-east Asian diurnal Lepidoptera belonging to the family Satyridae, with some taxonomic notes. *Mem. Tsukada Collection*, (4): 1-16, pls. 1-4. Plapac, Tokyo. (In Japanese and English.)
- , S. YAMAGUCHI & Y. UÉMURA, 1982. Satyridae-Libytheidae. In TSUKADA, E. (ed.), *Butterflies of the South East Asian Islands*, 3: 1-500. Plapac, Tokyo. (In Japanese.)
- FRUHSTORFER, H., 1911. Familie: Satyridae, in Die indo-australischen Tagfalter. In SEITZ, A. (ed.), *Die Gross-schmetterlinge der Erde*, 9: 285-401, pls. 87-99. Alfred Kernen, Stuttgart. [English title: The Indo-australian Rhopalocera, in "The Macrolepidoptera of the World."]
- GAEDE, M., 1931. Satyridae I-II. In STRAND, E. (ed.), *Lepidopterorum Catalogus*, pars 43 (pp. 1-320), pars 46 (pp. 321-544). W. Junk, Berlin.
- SEMPER, G., 1887. Die Schmetterlinge der philippinischen Inseln. Beitrag zur indo-malayischen Lepidopterenfauna. Erste Abtheilung. Die Tagfalter—Rhopalocera—. In SEMPER, C. (ed.), *Reisen im Archipel der Philippinen*, (2), 5(1): 1-380, pls. 1-49. C. W. Kreidal, Wiesbaden.

## The Noctuidae of Taiwan 2

Genus *Orthosia* OCHSENHEIMER (Lepidoptera)

by

Shigero SUGI

41-3, Akadutumi 5, Setagaya, Tokyo 156, Japan

**Abstract** Five new species of *Orthosia* OCHSENHEIMER, *perfusca*, *alishana*, *lushana*, *castanea* and *kurosawai*, are described from Taiwan and four known species of the genus are added to the fauna of this island.

*Orthosia* OCHSENHEIMER is a Holarctic genus primarily associated with deciduous forests of the temperate zone. In Northeast Asia the genus contains more than twenty species, mostly occurring in the areas from Amur region to Japan. Little has been known of the genus from the mainland of China. DRAUDT (1950) listed only two known species from eastern provinces of China, but described a new species *Leucania monimalis* DRAUDT from high altitude of Sikang Province, which was later suggested to be an *Orthosia* by BOURSIN (1952). In a recent publication, CHEN (1982) illustrated seven Chinese species, of which two are first recorded from Asia. The apparent paucity of *Orthosia* in China is perhaps due to under-collecting in that region particularly in earlier season of a year, when the moths of *Orthosia* fly. Many more species are to be expected when extensive survey is made in southwestern provinces. For the present there are nine species known from Taiwan, including five new as described below.

BERIO (1980) tried to divide the genus into many subgenera, only basing on the European species, but because the definition of each subgenus is not so sufficient as to readily introduce his division to the fauna out of Europe, I do not take it into consideration at present.

The materials used in this study are mostly those in the collection of the National Science Museum (Nat. Hist.), Tokyo, all collected by Dr. M. OWADA in 1972 and Mr. T. TANABE in 1978 and 1980. Some specimens were added from some other private collections including my own.

Wing expanse is indicated in this paper by the distance between tips of forewing in appropriately mounted specimen.

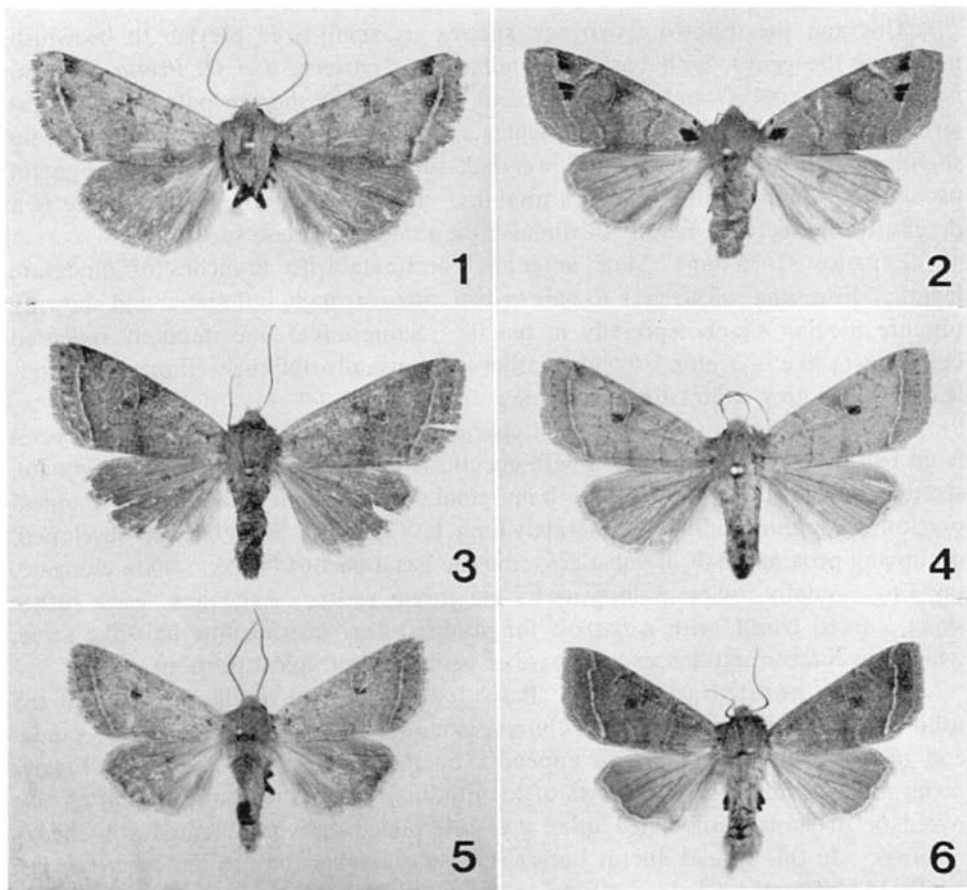
In preparing this paper I must express my best thanks to Dr. Y. KUROSAWA, who in connection with Dr. M. OWADA, kindly permitted me free use of the museum collection under their curation.

*Orthosia perfusca* sp. n.

(Fig. 1)

Expanse 38 mm. Closely allied to *O. evanida* BUTLER, but much smaller in expanse, and the thorax and forewing are strongly suffused with dark grey, avoiding bold yellow subterminal line, which is defined anteriorly with dark brown shade below costa, at discal and tornal areas; median lines and stigmata obscure. Hindwing entirely dark grey fuscous, cilia concolorous.

Male genitalia (Fig. 11). Uncus spatulate as in *evanida*, but slightly narrower. Valva moderately peaked to apex, with marginal corona of fine setae, not bent ventrally to produce to a point as in *evanida*. Ampulla shorter than in *evanida*,



Figs. 1-6. *Orthosia* spp. from Taiwan. — 1. *O. perfusca* sp. n., ♂, holotype. — 2. *O. kurosawai* sp. n., ♀, holotype. — 3. *O. alishana* sp. n., ♂, holotype. — 4. *O. alishana* sp. n., ♀, paratype. — 5. *O. lushana* sp. n., ♂, holotype. — 6. *O. castanea* sp. n., ♂, paratype.

moderately curved. Aedeagus as in *evanida*, having a long process directing caudally at distal end; cornutus wanting.

Female unknown.

Holotype ♂, Taiwan, Hualien Hsien, Tayuling, 9–10. iii. 1980 (T. TANABE). Paratypes:— Taiwan. Type locality, 1♂, same data as holotype; 1♂, 8–9. iii. 1978 (T. TANABE).

The present new species comes to a subsection of the genus including the type species *O. incerta* (HUFNAGEL), *evanida* BUTLER and *aoyamensis* (MATSUMURA).

*Orthosia alishana* sp. n.

(Figs. 3–4)

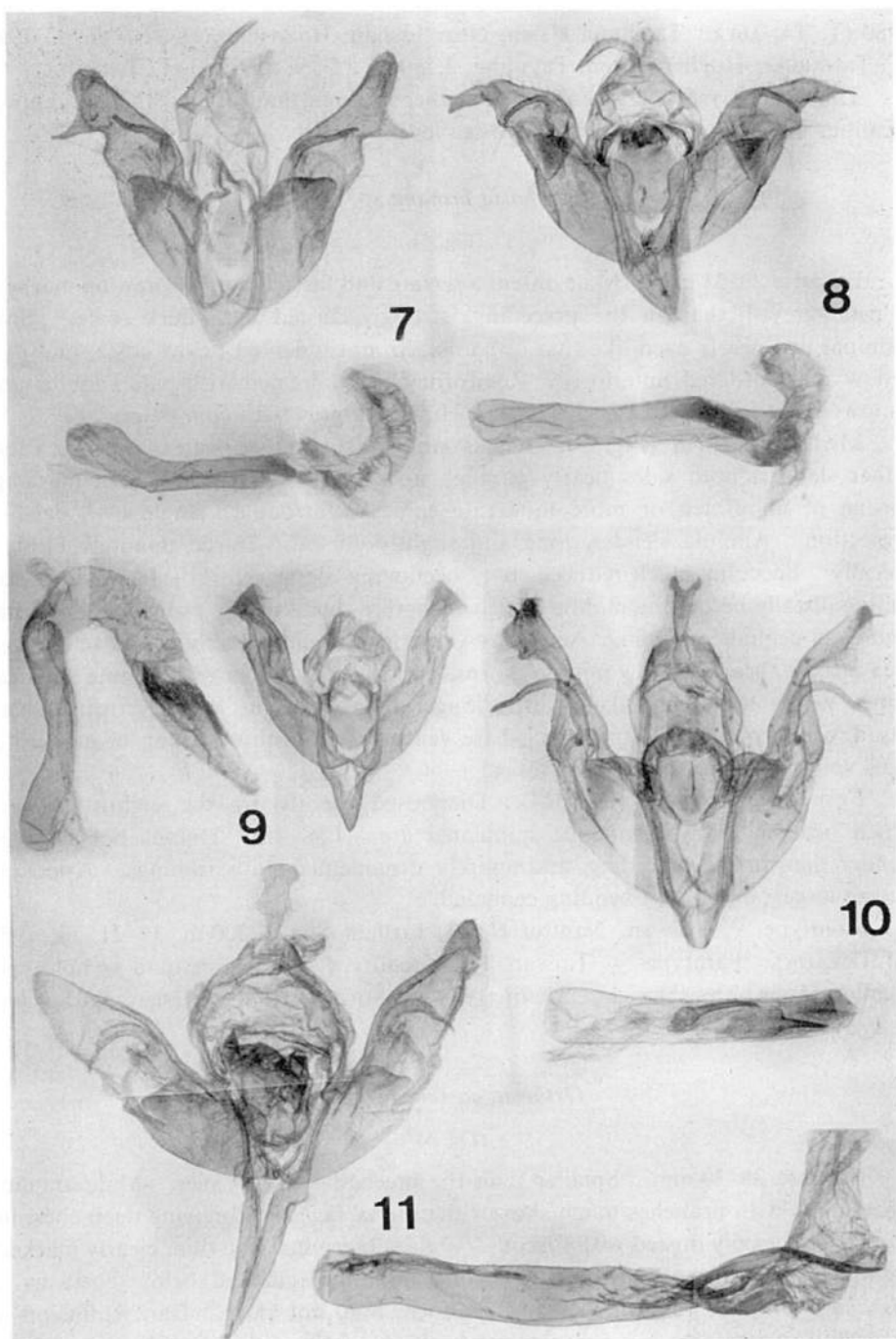
This and the following two new species are small-sized greyish to brownish moths of the genus, with basically similar wing pattern, like *O. lizetta* BUTLER, *paromoea* (HAMPSON) and *yoshizakii* SUGI et OHTSUKA, sharing pale straight subterminal line, round or elliptical orbicular and large reniform with its outer margin slightly indented inwards and its lower half suffused with dark, both the stigmata usually well defined with pale thin annulus. In the male, antennal structure is a diagnostic character to readily distinguish the three Taiwanese species.

Expanse 32–33 mm. Male antenna bipectinate with branches of moderate length. Forewing rufous grey to pale brown, often strongly infuscated and showing obscure median shade especially in female. Subterminal line minutely indented below costa like in *lizetta*, orbicular rather large, usually obliquely elliptical. Hindwing fuscous grey contrasting with pale rufous cilia.

Male genitalia (Fig. 7). Well characterized to distinguish this new species from two other relatives. Valva with cucullus well separated and nearly trigonate, strongly produced ventrally and with marginal corona of fine setae limited to apical portion. Ampulla rod-like, moderately long, less curved. Sacculus well developed, occupying proximal half of valva covering the basal part of harpe. Juxta elongate, tapering caudally, twice as long as its maximum width. Aedeagus vesica rather short, curved basad, with a narrow longitudinal area bearing fine hair-like setae, which are coarser and denser near base of vesica and at apical portion.

Female genitalia (Fig. 12). Basic structures are similar in this and the following two species in that ductus bursae is moderately long connecting the caudal end of bursa copulatrix, where appendix bursae is arising caudally, the former being nearly ovoid with four rows of longitudinal scobinations and the latter also ovoid or of short, half coiled tube, well sclerotized and ornamented with heavy ribbings. In this species ductus bursae markedly thicker than in the other species, but hardly sclerotized before ostium and not ribbed. Appendix bursae moderate, apically bent cephalad. Bursa copulatrix large ovoid, with four longitudinal signa.

Holotype ♂, Taiwan, Chiai Hsien, Alishan, 2,200 m, 3–6. iii. 1972 (M. OWADA). Paratypes:— Taiwan. Type locality, 1♂ 2♀, same data as holotype; 2♀, 24–25. ii.



Figs. 7-11. Male genitalia of *Orthosia* spp. — 7. *O. alishana* sp. n. — 8. *O. castanea* sp. n. — 9. *O. lushana* sp. n. — 10. *O. kurosawai* sp. n. — 11. *O. perfusca* sp. n.

1980 (T. TANABE). Taichung Hsien, Near Lishan, Huanshan, 1♀, 10–12. iii. 1980 (T. TANABE). Hualien Hsien, Tayuling, 2,560 m, 1♀, 9. iii. 1980 (T. TANABE).

This species may be a resident of higher altitude than others, the two known localities being beyond 2,000 m above sea level.

*Orthosia lushana* sp. n.

(Fig. 5)

Expanse 29–31 mm. Male antenna serrate and fasciculate. Forewing markedly paler greyish than in the preceding, strongly dusted with dark scales. Subterminal line nearly even like that of *paromoea*, not indented below costa, and pale yellow not bordered anteriorly. Reniform clearly defined with pale annulus and its lower part fully suffused with dark. Hindwing grey with cilia paler.

Male genitalia (Fig. 9). Uncus simple, slightly curved to apex. Valva rather slender, both sides nearly parallel, apex obliquely truncate with marginal corona of about ten or more moderate spines, ventroapical angle with ear-like projection. Ampula slender, long and slightly curved. Harpe minutely bilobed apically. Sacculus much reduced, only occupying along ventral side of valva and ending distally before the middle of valva length. Juxta nearly as long as its width, round at cephalic margin. Aedeagus vesica with ventral ribbon-like sclerotized area at base, bearing a few minute thorns, opposite basal area with minute scobination. Vesica itself tube-like, a little longer than aedeagus length, strongly bent basad, with a small accessory sac at base ventrally. Cornuti a group of moderate-sized spines set near the apex of vesica.

Female genitalia (Fig. 14). Diagnosed readily by the eighth segment which bears laterally distinctive spinulated area (Fig. 15). Ductus bursae more slender than in the preceding, and entirely ornamented with ribbings. Appendix bursae larger, ovoid, not bending cephalad.

Holotype ♂, Taiwan, Nantou Hsien, Lushan Spa, 1,200 m, 19–21. iii. 1972 (M. OWADA). Paratypes:— Taiwan. Type locality, 1♂ 1♀, same data as holotype. Hualien Hsien, Tienshan, 1♀, 31. iii. 1984 (S. SUGI). Hualien Hsien, Losao, 6♀, 2. iv. 1984 (S. SUGI).

*Orthosia castanea* sp. n.

(Fig. 6)

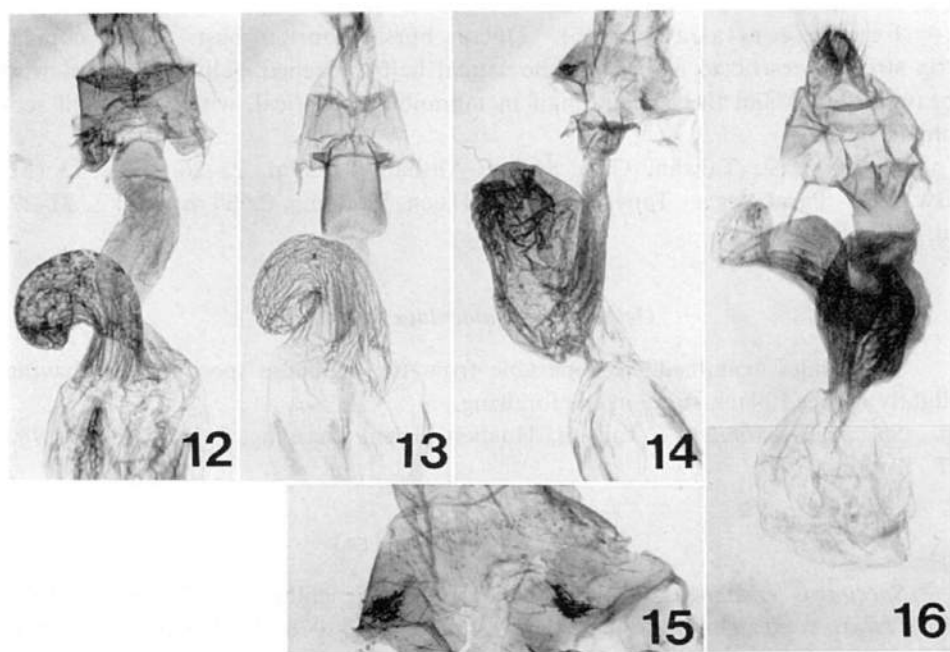
Expanse 28–30 mm. Smaller than the preceding two species. Male antenna bipectinate, with branches much shorter than in *alishana*. Forewing deep chestnut brown, less heavily dusted with fuscous. Pale subterminal line thin, clearly marked, slightly edged anteriorly with rufous, and minutely indented below costa as in *alishana*. Annulus to orbicular and reniform fine, not clear. Dark suffusion in lower half of reniform less conspicuous to the ground. Cilia concolorous. Hindwing grey with cilia rufous, nearly as in *alishana*.



Male genitalia (Fig. 8). Valva costa arched at middle, slightly swollen before apex, which is narrowed, beak-like, bent ventrally, ending in a blunt point (in one specimen minutely forked at one side). Ampulla stout, moderately long and curved. Sacculus well developed dorsally to far beyond costa at basal half of valva. Juxta broad, 1.5 times as high as its width. Aedeagus vesica rather short, bent rectangularly ventrad, dorsally bearing a small additional sac at base and less extensive spined area near it.

Female genitalia (Fig. 13). Closely similar to those of *alishana*, but well characterized in caudal part of ductus bursae abruptly dilated and fully sclerotized to form somewhat quadrate ostial cup.

Holotype ♂, Taiwan, Chiai Hsien, Alishan, 2,200 m, 23–26. iii. 1972 (M. OWADA). Paratypes:— Taiwan. Type locality, 2♂, same data as holotype. Taichung Hsien, Lishan, 1♀, 1. v. 1970 (S. SAKURAI). Taichung Hsien, Near Lishan, Huanshan, 1♂ 2♀, 10–12. iii. 1978 (T. TANABE). Nantou Hsien, Lushan Spa, 2♀, 3–6. iv. 1972 (M. OWADA). Hualien Hsien, Tayuling, 7♂ 3♀, 8–10. iii. 1978 (T. TANABE); 1♂, 24–25. iii. 1980 (T. SHIMOYAMA).



Figs. 12–16. Female genitalia of *Orthosia* spp. — 12. *O. alishana* sp. n. — 13. *O. castanea* sp. n. — 14. *O. lushana* sp. n. — 15. The same, showing spinulated area on eighth segment. — 16. *O. kurosawai* sp. n.

*Orthosia kurosawai* sp. n.

(Fig. 2)

Expanse 33–35 mm. Male antenna bipectinate. Thorax above and forewing reddish purple, dusted with cinereous. Forewing with a distinctive black subbasal spot below median nervure and a small black stria just above it at costa. Antemedian line purplish brown finely defined anteriorly with grey. Orbicular large, obliquely elliptical, reniform, edged anteriorly by a thin pale line and the space between them suffused with red brown in cell. Postmedian line clearly defined with greyish oblique stria below costa. Distinctive black patches before subterminal line on vein  $R_2$  and  $M_2$ . Cilia rufous.

Male genitalia (Fig. 10). Very similar to those of *O. odiosa* (BUTLER), to which this new species is most closely allied. Uncus forked apically, a character shared with *odiosa*, though it is more deeply cleft in that species. Valva markedly restricted beyond middle, ventral margin of apical portion irregularly bilobate, with a moderate spine at apical margin. Ampulla rather stout, strongly bent ventrally, but not so strikingly as in *odiosa*. Aedeagus containing two stout cornuti with bulbous base, instead of three seen in *odiosa*, in which the largest one is strongly curved and the smallest comb-like, bearing three spines.

Female genitalia (Fig. 16). Ductus bursae short, robust. Bursa copulatrix strongly restricted at middle, the caudal half thickened, fully sclerotized with heavy ribbings and the cephalic half membranous, spherical, with four small scobinate signa.

Holotype ♀, Taiwan, Chiai Hsien, Alishan, 2,200 m, 23–26. iii. 1972 (M. OWADA). Paratypes:—Taiwan, Hualien Hsien, Tayuling, 2,560 m, 1♂ 1♀, 27–29. iii. 1981 (K. KUDO).

*Orthosia nigromaculata* (HÖNE)

Two males examined are separable from the Japanese specimens by having slightly reduced black striae in the forewing.

*Specimens examined.* Taiwan, Hualien Hsien, Tayuling, 2♂, 9–10. iii. 1980 (T. TANABE).

*Orthosia limbata* (BUTLER)

*Specimens examined.* Taiwan, Chiai Hsien, Fenchihu, 1♂, 27–28. iii. 1972 (M. OWADA). Taichung Hsien, Lishan, 1♂, 7. iii. 1978 (T. TANABE). Hualien Hsien, Tayuling, 1♂, 9–10. iii. 1980 (T. TANABE).

*Orthosia munda* (DENIS et SCHIFFERMÜLLER)

The Taiwanese specimens are remarkably darker than the Japanese. This

agrees with what was stated by DRAUDT (1950) for the specimens taken in central provinces of China.

*Specimens examined.* Taiwan, Chiai Hsien, Alishan, 1♀, 23–26. iii. 1972 (M. OWADA); 1♂ 4♀, 25. ii. 1980 (T. TANABE); 3♂, 9. iii. 1980 (T. TANABE). Hualien Hsien, Tayuling, 5♂ 1♀, 8–9. iii. 1978 (T. TANABE).

### *Orthosia carnipennis* (BUTLER)

The Taiwanese specimens are markedly smaller than the Japanese ones, otherwise being almost identical.

*Specimens examined.* Taiwan, Nantou Hsien, Lushan Spa, 1♀, 19–21. iii. 1972 (M. OWADA); 2♀, 14–16. iii. 1978 (T. TANABE). Taichung Hsien, Lishan, 1♂, 7. iii. 1978 (T. TANABE). Taichung Hsien, Near Lishan, Huanshan, 1♂ 1♀, 10–12. iii. 1978 (T. TANABE).

### References

- BERIO, E., 1980. Modificazioni al sistema delle Hadeninae e Cuculliinae italiane attualmente seguito (Lepidoptera–Noctuidae). *Ann. Mus. civ. Stor. nat. Genova*, **83**: 1–19.
- BOURSIN, C., 1952. Literaturreferat: 'Prof. M. DRAUDT, Beiträge zur Kenntnis der Agrotiden Chinas. . . .' *Z. wien. ent. Ges.*, **37**: 134–136.
- CHEN, X., 1980. Noctuidae, Agaristidae. In CHU, H.-F. (ed.), *Iconographia Heterocerorum Sinicorum*, **3**: 237–390, pls. 76–118.
- DRAUDT, M., 1950. Beiträge zur Kenntnis der Agrotiden-Chinas. *Mitt. münch. ent. Ges.*, **40**: 1–174, pls. 1–18.
- SUGI, S., 1955. A revision of the Japanese *Orthosia* (Lepidoptera, Noctuidae, Hadeninae). *Tinea, Tokyo*, **2**: 90–104, pl. 10.
- 1982. Noctuidae. In INOUE, H., et al. (eds.), *Moths of Japan*, **1**: 669–913, **2**: 344–405, pls. 164–226, etc.
- & I. OHTSUKA, 1984. A new species of *Orthosia* from Japan (Lepidoptera: Noctuidae). *Tyô to Ga, Osaka*, **35**: 77–79.

## Two New Geographic Forms of the Snow Underwing (Lepidoptera, Noctuidae)<sup>1)</sup>

by

Mamoru OWADA

Department of Zoology, National Science Museum (Nat. Hist.),  
3-23-1 Hyakunin-chô, Shinjuku-ku, Tokyo 160, Japan

**Abstract** Two new subspecies of *Catocala nivea* BUTLER, 1877, are described. *C. nivea kurosawai* OWADA, subsp. nov., from Sikkim, is characterized by the smaller size, dark forewing and whitish hindwing on the upperside, and markedly dark underside. *C. nivea asahinaorum* OWADA, subsp. nov., from Taiwan, can be distinguished from the other subspecies by the reduced black bands in hindwing.

The Snow Underwing, *Catocala nivea* BUTLER, 1877, is one of the largest species of the genus *Catocala*, and is a remarkably beautiful moth having lichen-mimetic forewings and snow-white hindwings. This species was described from Japan, and known to be widely distributed in Ussuri, Korea, Taiwan, central and western China, and Punjab. Although some geographic variations were pointed out (HAMPSON, 1913; MELL, 1933, 1936), no subspecies have hitherto been described.

In 1983, I participated in a Himalayan zoogeographic expedition made by the National Science Museum, Tokyo, and was fortunate to collect a specimen of this species which was distinguished from the nominotypical form from Japan at the first glance. In addition to this, I was able to examine a series of Taiwanese specimens which were collected by Drs. Eizo and Syoziro ASAHINA about fifty years ago. These specimens also represent another subspecies. I will describe these two subspecies at this opportunity.

Before going further, I wish to express my cordial thanks to Dr. Yoshihiko KUROSAWA, National Science Museum (Nat. Hist.), Tokyo, who gave me invaluable advice and constant encouragement since I was with the museum, and to Dr. Shun-ichi UENO of the same museum for reading and criticizing the manuscript. I also acknowledge my indebtedness to Dr. Syoziro ASAHINA and Mr. Shigero SUGI, Tokyo, for the use of their collections.

### *Catocala nivea kurosawai* subsp. nov.

(Figs. 1 & 4)

*Male.* Small-sized form, with dark forewing. Wing maculation similar to

1) This study is supported in part by the Grant-in-aid for Overseas Scientific Research No. 58041061 from the Ministry of Education, Science and Culture, Japan.

that of the nominotypical subspecies from Japan, but distinguished from it by the following points:

Forewing length 43 mm (45–52 mm in subsp. *nivea*). On the upperside of forewing, ground colour darker, tinged slightly with reddish brown; lichenous pale scales not so much developed as in the nominotypical race. On the upperside of hindwing, ground colour pure white instead of creamy yellowish white; medial black band not extending beyond  $M_1$ , while it reaches Rs in the nominotypical subspecies. On the underside, ground colour markedly darker and black bands broader.

*Female.* Unknown.

*Type series.* Holotype, ♂, labeled "India, West Sikkim, Bakkhim 2,670 m, 12. IX. 1983, M. OWADA leg.," preserved in the National Science Museum (Nat. Hist.), Tokyo.

*Distribution.* Sikkim, northeastern India.

*Notes.* In Japan, the Snow Underwing is considered to be an inhabitant of deciduous broadleaved forests and secondary forests, and its larval food-plant is *Prunus grayana* MAXIM. (not a general feeder of *Prunus*) (SUGI, 1972). However, the collecting site of this subspecies is covered deeply with evergreen forest consisting of rhododendrons and oaks. The dark upperside of forewing and underside of both wings may be an adaptive character for dark moss-forests.

On a male specimen from Punjab, HAMPSON (1913) described as "hindwing and underside whiter", while MELL (1936) made a different description as "... in einer im Vorderflügel etwas verdunkelten, im Hinterflügel mehr weisslichen Form von Nordindien." The latter description accords well with the characters of this subspecies.

*Catocala nivea asahinaorum* subsp. nov.

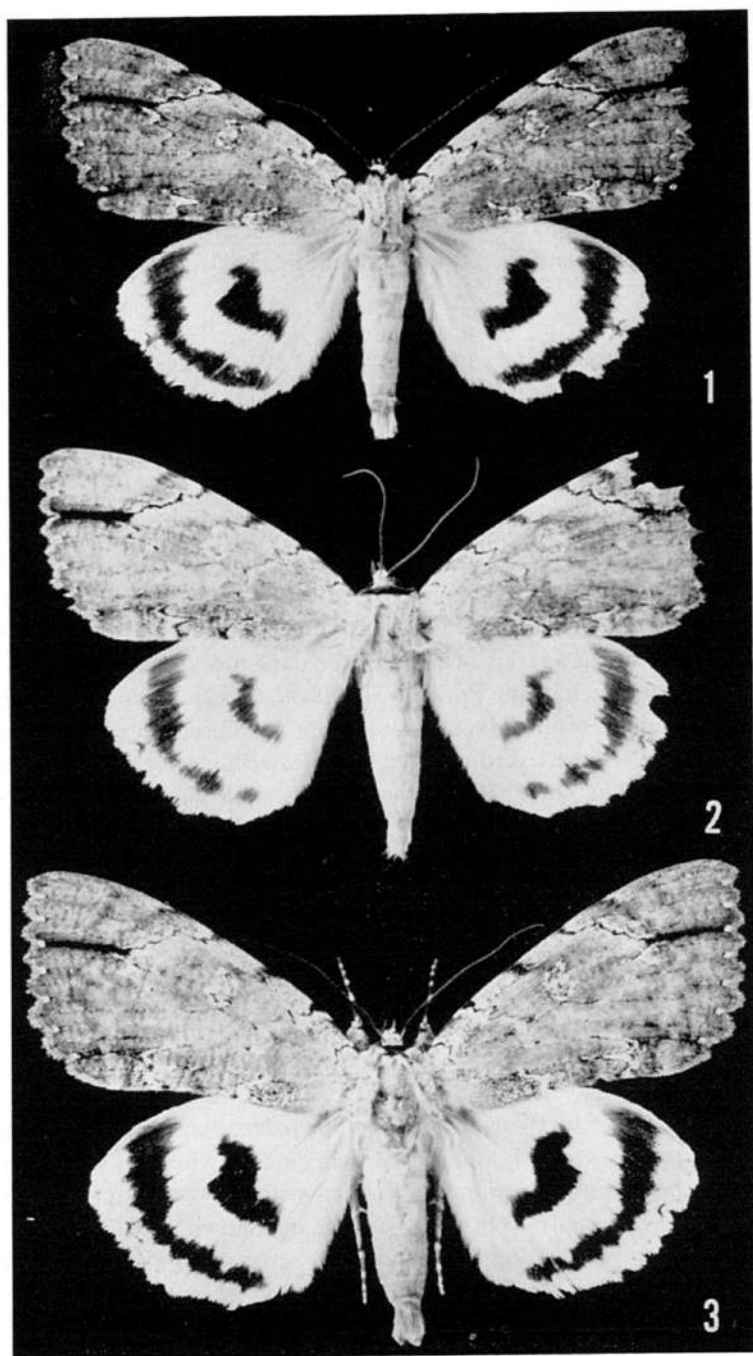
(Figs. 2 & 5)

*Catocala nivea*: SUGI, 1965, *Tinea*, 7: 90; 1982, *Tyo to Ga*, 32: 149, fig. 2.

*Male.* Rather pale form, with narrow black bands in hindwing. Similar to the Japanese and Sikkimese forms in wing pattern, but distinguished from them by the following points:

On the upperside of forewing, ground colour paler; black transverse lines rather broad; black streak between  $M_1$  and  $M_2$  markedly broad, while it is slender in subsp. *nivea* and *kurosawai* (one exceptional specimen with a broad streak was collected in Okutama, Tokyo, Japan). On the upperside of hindwing, black bands markedly narrowed, anal portion of submarginal band separated, while it is continuous in the other subspecies; terminal series of black dots absent, while they are prom-

Figs. 1–6 (on pp. 108–109). *Catocala nivea* BUTLER; subsp. *kurosawai* nov. from Sikkim (1 & 4); subsp. *asahinaorum* nov. from Taiwan (2 & 5); subsp. *nivea* from Japan (3 & 6). 1–3: Upperside. 4–6: Underside.





inent or traceable in the others. On the underside of wings, ground colour paler, especially in basal portion; black bands slenderer.

*Female.* Unknown.

*Type series.* Holotype, ♂, labeled "10. VIII. 1936, Taiheizan, Taiwan, Leg. E. & S. ASAHINA/Taiwan, Ilan Hsien, Mt. Taipinshan 1,900 m", preserved in the National Science Museum (Nat. Hist.), Tokyo. Paratypes: 1♂, same data as holotype; 2♂, Kirettoi 2,100 m, Mt. Nanhutashan, Ilan Hsien, Taiwan, 15. VIII. 1936, E. & S. ASAHINA; 1♂, Mt. Lalashan, Taoyuan Hsien, Taiwan, VII. 1969.

*Distribution.* Taiwan (northern mountains).

*Notes.* This subspecies is characterized by the markedly reduced black bands in hindwing. It is interesting to note that some other Taiwanese populations of *Catocala* have the same tendency (reduction of black bands) in hindwing maculation, that is, *C. intacta taiwana* SUGI, 1965, *C. armandi shirozui* SUGI, 1982 (KISHIDA, 1984), and *C. wushensis* OKANO, 1964 (SUGI, 1982).

According to Dr. S. ASAHINA, the collecting sites of this form were in deciduous broadleaved forests just above evergreen ones.

### References

- BUTLER, A. G., 1877. On new species of *Catocala* and *Sypna* from Japan. *Cistula ent.*, 2: 241–246.
- HAMPSON, G. F., 1913. Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. 12. xiii+626 pp., pls. 192–221.
- KISHIDA, Y., 1984. Notes on some moths from Taiwan IV. *Japan Heterocer. J.*, (127): 23–27. (In Japanese with English summary.)
- MELL, R., 1933. Über *Catocalinen* von Chekiang (und Deutung eines Vorkommens von 2 Farbformen einer Art in gleichen Gebiet). (Lep.). *Mitt. dtsh. ent. Ges.*, 4: 58–64.
- 1936. Beiträge zur Fauna sinica. XI. Zur Biologie und Systematik der chinesischen *Catocala* (Lep. Heter.). *Dtsch. ent. Z. Iris*, 50: 49–90, pl. 3.
- OKANO, M., 1964. New or little known moths from Formosa (5). *Tohoku Konchu Kenkyu*, 1: 41–44, pl. 4.
- SUGI, S., 1965. New and unrecorded species of *Catocala* OCHS. from Japan and Formosa (Lepidoptera, Noctuidae). *Tinea*, 7: 84–93, pl. 17.
- 1972. *Catocala* of Japan—a review of their natural history. *Gekkan Mushi*, Tokyo, (12): 2–11. (In Japanese.)
- 1982. Illustrations of the Taiwanese *Catocala*, with descriptions of two new species. Noctuidae of Taiwan I (Lepidoptera). *Tyô to Ga, Osaka*, 32: 147–159.



## A New Species of the Genus *Tenomerga* (Coleoptera, Cupedidae) from Yakushima Island, Southwest Japan

(Notes on the Genus *Tenomerga* of Japan, II)

by

Mutsuo MIYATAKE

Entomological Laboratory, College of Agriculture,  
Ehime University, Matsuyama, Ehime 790, Japan

**Abstract** A new species of the cupedid genus *Tenomerga* is described from Yakushima Island, Southwest Japan. It is related to *T. trabecula* NEBOISS and *T. japonica* (TAMANUKI), but differs from them in the shape of pronotum and of the male genitalia.

According to NEBOISS (1984), *Cupes clathratus* SOLSKY, 1871, from East Siberia, and *C. ocularis* PASCOE, 1872, from Japan, are both identical with *Tenomerga mucida* (CHEVROLAT, 1829), which was originally described from the Philippines. Judging from the fact that this species is frequently collected in various localities of Japan and East Siberia, it is considered to be one of the continental elements in the Japanese fauna. In my previous paper (1985 a), I recorded *T. mucida* from Yakushima Island for the first time, based upon a single male specimen collected by Dr. Y. KUROSAWA. So far as known up to the present, this island is the southern limit of distribution of this species in Japan.

On the other hand, through the courtesy of Dr. Y. KUROSAWA and Mr. T. SHIBATA, I was able to examine a pair of specimens of another species collected on Yakushima Island. This second species is obviously related to *T. japonica* (TAMANUKI, 1928) known from Honshu and Shikoku of Japan and *T. trabecula* NEBOISS, 1984, from Taiwan and East China, in having the 10th row of punctures on the elytra and similar colour pattern of elytral scales. After a careful examination, I have come to the conclusion that it is new to science and endemic to Yakushima Island. In the present paper, I am going to describe this remarkable new species and name it in honour of Dr. Y. KUROSAWA.

I wish to express my sincere gratitude to Dr. S.-I. UENO of the National Science Museum (Nat. Hist.), Tokyo, for his kind advice to this paper.

### *Tenomerga kurosawai* sp. nov.

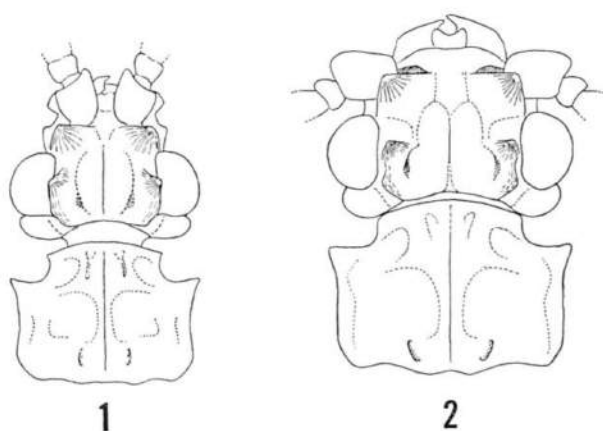
[Japanese name: Yakushima-nagahiratamushi]

(Figs. 1-11)

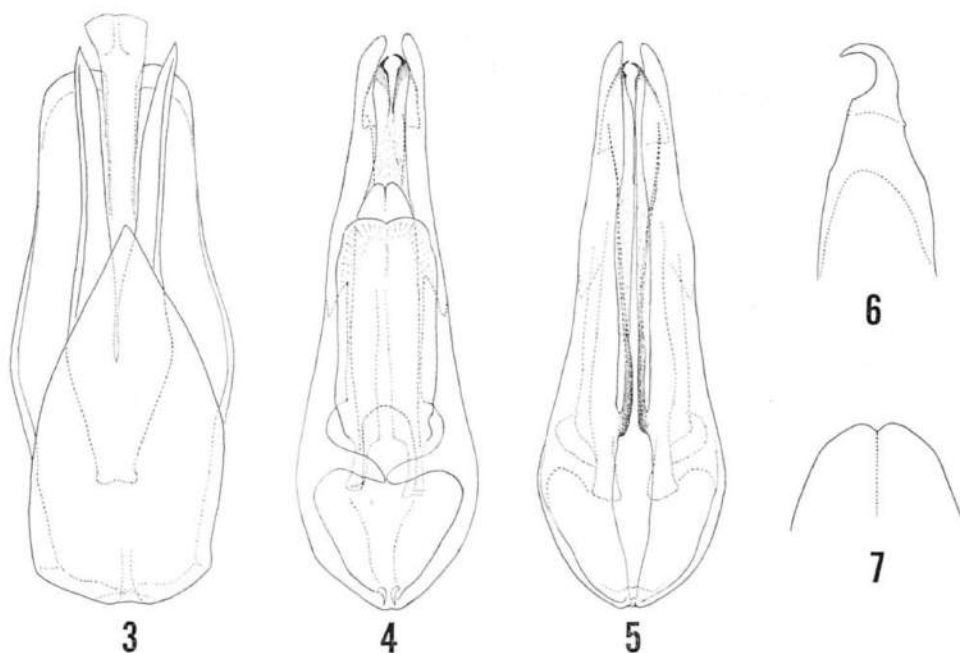
*Male* (holotype). Length 12.5 mm; width 3.2 mm. Body deep yellowish

brown with elytral colour pattern of scales very similar to that in *T. japonica* and *T. trabecula*.

Head broader than long (about 4:3), with two pairs of conical tubercles, anterior one above antennal insertions moderately large, slightly depressed on the

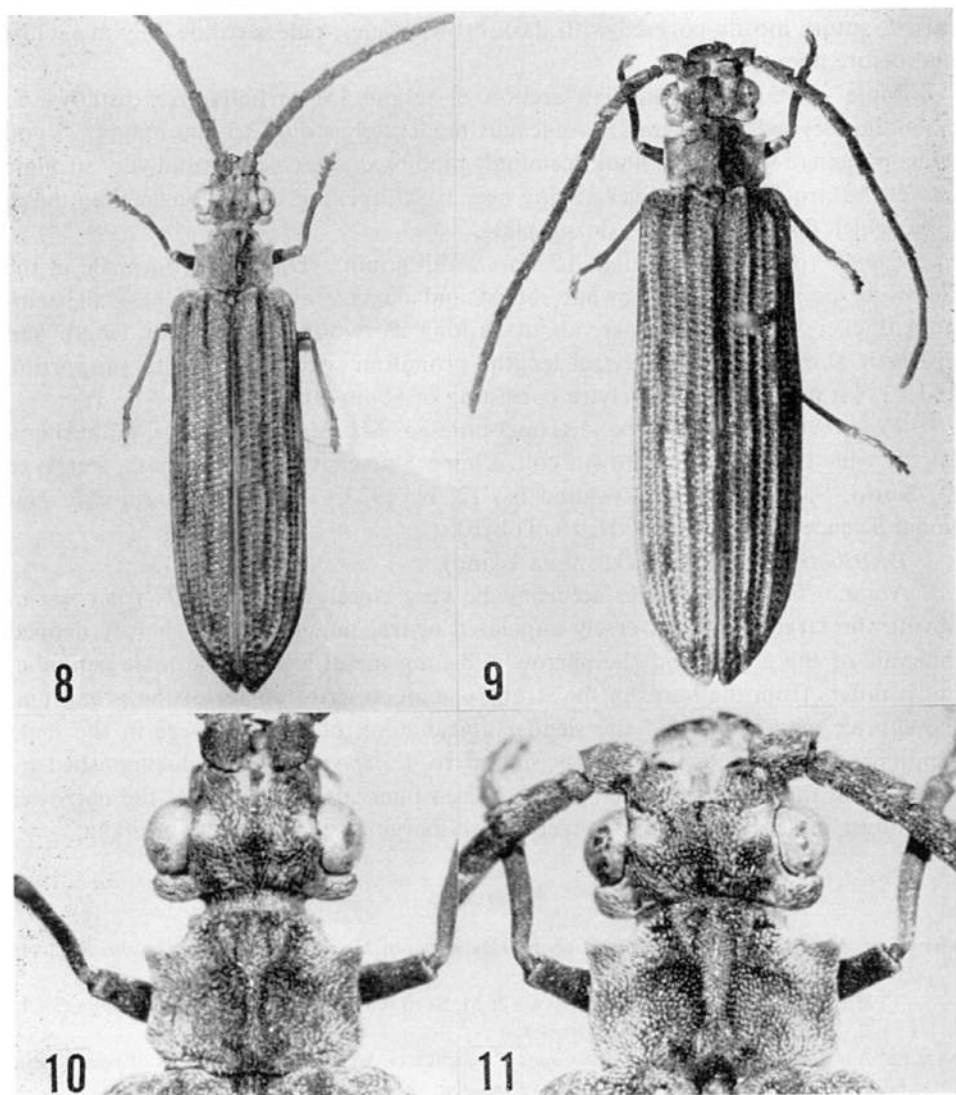


Figs. 1-2. Head and pronotum of *T. kurosawai* sp. nov.; 1, male; 2, female.



Figs. 3-7. Male genitalia of *T. kurosawai* sp. nov.; 3, IXth abdominal segment, ventral view; 4, aedeagus, dorsal view; 5, same, ventral view; 6, apical hook of paramere; 7, apex of mesal lobe.

inner side, posterior one above eyes somewhat smaller than those of *T. japonica*, so as to make the postocular concavity more widely open above, section between the tubercles slightly raised but well defined from tubercles by deep grooves and divided by a distinct furrow, area before antennal bases and concavities between tubercles mostly covered with whitish scales. Eyes rather large, produced from tempora. Antennae filiform, moderately long, about three-fourths the body length and just as long as the elytral length, laterally compressed.



Figs. 8-11. Dorsal view of *T. kurosawai* sp. nov.; 8, holotype, male; 9, paratype, female; 10, close-up of fore body, male; 11, same, female.

Pronotum as wide as head, with length/width proportion 1: 1.4; lateral margin slightly constricted at middle, anterior angle remarkably acute, mesal ridge narrow and distinctly defined from excavated lateral sides, covered with dark brownish scales. Scutellum covered with dark brownish scales on sides and whitish grey scales in middle. Elytral punctures on disc large, deep, transversely angulate, and very close, intervals thin but sharply defined; 1st puncture row consisting of 55 punctures, 10th row present up to basal two-fifths; 1st (=sutural), 3rd, 5th and 7th intervals strongly raised, 3rd somewhat less so than the other three, 8th slightly raised; suture mostly covered with dark brown scales, pale sections only at middle and before apex.

Male genitalia with median section of tergite IX partially free distally and extending beyond the laterals. Aedeagus moderately stout, 2.3 mm long, 0.75 mm wide, paramere with apical hook seemingly bipointed, apex slender and very strongly curved, ventro-marginal spines arising near basal opening, much longer than mesal lobe, which distinctly exceeds dorsal plate.

*Female* (paratype). Length 15 mm; width 4 mm. Differing from male in the following points: body somewhat robust and darker; eyes relatively small; tempora thicker; antennae shorter, about as long as two-thirds the body length and distinctly shorter than the elytral length; pronotum with length/width proportion 1: 1.43; 1st puncture row of elytra consisting of about 60 punctures.

*Type material.* Holotype ♂, Hana-no-e-go, Mt. Miyanouradake, Yakushima Is., 14. viii. 1965, H. KONISHI (in coll. Ehime University, Matsuyama). Paratype ♀, Kurio, South Coast, Yakushima Is., 12. ix. 1972, T. WATANABE (in coll. National Science Museum (Nat. Hist.), Tokyo).

*Distribution.* Japan (Yakushima Island).

*Notes.* This new species seems to be very closely related to *T. trabecula* in having the large and transversely angulated elytral punctures, the sharply defined intervals of the elytra, and the narrow and long mesal lobe of the male genitalia, but it differs from the latter in the strongly acute anterior angles of the pronotum, the shorter mesal lobe and the slender apical hook of the paramere in the male genitalia. This species is also very similar to *T. japonica*, but is distinguished by the form of the pronotum, the strongly raised intervals of the elytra, the narrower and longer mesal lobe and the longer ventro-marginal spine of male genitalia.

### References

- MIYATAKE, M., 1985 a. Notes on the genus *Tenomerga* of Japan. *Trans. Shikoku ent. Soc.*, 17: 21–26.  
——— 1985 b. In UENO, S.-I., Y. KUROSAWA & M. SATO (eds.), *The Coleoptera of Japan in Color*, 2: 1–2. Hoikusha, Osaka. (In Japanese.)  
NEBOISS, A., 1984. Reclassification of *Cupes* FABRICIUS (s. lat.), with descriptions of new genera and species (Cupedidae: Coleoptera). *Syst. Ent.*, 9: 443–477.  
TAMANUKI, K., 1928. Taxonomic study on the Japanese Cupedidae. *Zool. Mag., Tokyo*, 40: 242–254. (In Japanese.)

## Phylogeny and Subgeneric Classification of the Genus *Damaster* KOLLAR (Coleoptera, Carabidae)

by

Ryôsuke ISHIKAWA

Department of Natural History, Faculty of Science,  
Tokyo Metropolitan University, Fukazawa,  
Setagaya, Tokyo 158, Japan

**Abstract:** The genus *Damaster* is defined and the phylogenetic relationship of its component subgenera is reconstructed by cladistic method on the basis of analyzed characters. Classification of the subgenera based on the cladogram is proposed.

*Damaster* was erected by V. KOLLAR in 1836 as a genus belonging to the "subtribe Cychrodea KOLLAR" for a single species *blaptoides* described simultaneously. In 1857, CHAUDOIR recognized that *Damaster* is not related to *Cychrus* but is nearest to *Carabus*. Although he noted in the same paper that the spoon-shaped apical segment of the galea, which was already described for *Damaster* by KOLLAR, is characteristic of *Coptolabrus*, it was not until 1861 that he grouped them as two related genera of the "Carabini" by the share of this character. HAUSER (1921) defined "*Damaster-Coptolabrus-Gruppe der Gattung Carabus*" by this character and recognized *Damaster*, *Acoptolabrus* and *Coptolabrus* as subgenera of the genus *Carabus*, s. l. BREUNING, in his "Monographie der Gattung *Carabus* L. (1932-1937)", set up the subgenus *Coptolabrus* comprising *Chrysocarabus*, *Aristocarabus*, *Acoptolabrus*, *Damaster* and *Coptolabrus*. These five sectiones, however, do not share any derived characters and therefore cannot be regarded as monophyletic. It is absolutely impossible that *Chrysocarabus* of western Europe is one of direct derivatives from the common ancestor of the rest of the subgenus *Coptolabrus* sensu BREUNING, of which the ranges are restricted to eastern Asia. *Aristocarabus* is possibly related to *Acoptolabrus*, but the apical segment of the galea of it is not spoon-shaped, and our knowledge on this taxon is yet too poor to discuss its taxonomic position.

In the present paper, I have acknowledged HAUSER's "*Damaster-Coptolabrus-Gruppe*" as a taxon definitely supported by autapomorphy, and treat it as the genus *Damaster* belonging to the Multistriati sensu ISHIKAWA, 1978.

This paper is the fourth part of my revisional studies on the higher taxa of the subtribe Carabina in which I intend to clarify the phylogenetic relationships of the subgenera.

In the present study, the same method as I have adopted in my previous paper

(ISHIKAWA, 1984) is used to reconstruct a cladogram and a subgeneric classification has been proposed on it.

### In-group Species and their Geographical Races Examined

Examined taxa are listed under each of recognized subgenera; subspecific taxa are in the parentheses. In the text, species names are combined with the abbreviated subgeneric names where it is necessary.

*Acotolabrus*: *schrencki* MOTSCHULSKY, 1860; *lopatini* MORAWITZ, 1886; *gehinii* FAIRMAIRE, 1876 (*gehinii* FAIRMAIRE; *aereicollis* HAUSER; *konsenensis* ISHIKAWA; *sapporensis* UCHIDA et TAMANUKI; *radiatocostatus* ISHIKAWA); *munakatai* ISHIKAWA, 1968; *constricticollis* KRAATZ, 1886; *leechi* BATES, 1888; *mirabilissimus* ISHIKAWA et DEUVE, 1982; *changeonleei* ISHIKAWA et KIM, 1983.

*Damaster* s. str.: *blaptoides* KOLLAR, 1836 (*rugipennis* MOTSCHULSKY; *viridipennis* LEWIS; *fortunei* ADAMS; *babaianus* ISHIKAWA; *capito* LEWIS; *cyanostola* LEWIS; *oxuroides* SCHAUM; *paraoxuroides* BABA; *blaptoides* KOLLAR).

*Coptolabrus*: *fruhstorferi* ROESCHKE, 1900; *jankowskii* KRAATZ, 1885 (*jankowskii* KRAATZ; *taebeagsanensis* ISHIKAWA et KIM; *fusanus* BORN; *kojensis* KUROSAWA et KUDO; *obtusipennis* ISHIKAWA et KIM; *quelpartianus* BREUNING); *smaragdinus* FISCHER, 1823 (*smaragdinus* FISCHER; *mandschuricus* SEMENOW; *longipennis* CHAUDOIR; *monilifer* TATUM; *fulminifer* HAUSER; *branicki* TACZANOWSKI; *euiridis* ISHIKAWA et KIM; *shantungensis* BORN); *formosus* SEMENOW, 1887 (*formosus* SEMENOW); *elysii* THOMSON, 1856 (*elysii* THOMSON; *rotschildi* BORN; *connectens* HAUSER; *lopinensis* HAUSER); *lafossei* FEISTHAMEL, 1845 (*lafossei* FEISTHAMEL; *coelestis* STEWART; *montigradus* HAUSER; *buchi* HAUSER; *saturatus* HAUSER; *scialdonei* HAUSER); *nankotaizanus* KANO, 1932 (*nankotaizanus* KANO; *miwai* KUROSAWA); *principalis* BATES, 1889; *augustus* BATES, 1888 (*augustus* BATES; *ignigena* HAUSER); *ignimetalla* BATES, 1888 (*ignimetalla* BATES; *angulicollis* HAUSER; *antaeus* HAUSER); *pustulifer* LUCAS, 1869 (*pustulifer* LUCAS; *pratti* BORN; *mirificus* KRAATZ); *gemmifer* FAIRMAIRE, 1887.

### Evaluation of Taxonomic Characters

Eighteen characters are analyzed in this section to designate primitive or derived states. About half of them are used for the first time in the taxonomy of the present genus.

#### (Head)

1. *Apical segment of the galea.* This segment is, in most species of the Carabina, weakly arched and more or less flattened above, but does not fit with the apical hook of the lacinia which is more strongly bent inwards than the curvature of it. That is, the galea and the lacinia function independently. This condition is as-

sumed to be plesiomorphic. In the genus *Damaster* in the present sense, it is distinctly concave above like a spoon; its sharply edged outer margin is emarginated at the apical half so as to fit with the less arched apical hook of the lacinia from below. Thus, they seem to work as a unit. This structure is apparently a part of highly specialized mouth parts which are adapted for eating snails in their shells. This condition of the galea is unique and also outstanding autapomorphy of the genus *Damaster*. In *Goniocarabus* and *Cychrostomus*, it is concave above, more conspicuous in the latter, but this condition is considered to be homoplasy by convergence correlating the level of specialization in the mouth parts which are characteristically cychrized in these taxa. *Macrothorax* and *Plesius* may be compared with *Damaster* as to this character, but the segment in these taxa is not so deeply concave nor the outer edge is emarginated distally as in this genus, and the apical hook of the lacinia does not fit with it. In *Macrothorax*, development of this character state is correlated to that of cychrization, showing the utmost development in *M. aumonti* (LUCAS). *Plesius* is possibly more closely related to *Damaster* than to *Macrothorax*, but the segment is shorter and barely concave above. Thus, the share of this character state in the species belonging to these outgroups is, if any, homoplasious by convergence, and not by synapomorphy.

2. *Retinaculum of the right mandible*. In the plesiomorphic state of the Carabina, the retinaculum of the right mandible is bidentate, with the anterior tooth as large as or smaller than the posterior tooth. This character state is reserved in all the species belonging to *Damaster* s. str. and *Coptolabrus*; however, the anterior tooth is much larger than the posterior tooth in *Acoptolabrus*. The latter condition is considered to be apomorphic. In macrocephalic *A. mirabilissimus* and *A. changeonleei*, the anterior tooth is still larger with its apex truncate and the posterior one is almost obsolescent; moreover, the retinaculum of the left mandible is fused with the incisor margin. This condition is apparently an adaptively derived state to fit a new mode of feeding habit. In *Procrustes* s. str. in the outgroup, the anterior tooth of right retinaculum is developed and the posterior tooth is, if any, almost rudimentary.

3. *Neck*. Elongation of neck is apparently adaptational to the mode of feeding snails in their shells and this condition is called cychrization. It has been regarded as one of important characters of this genus by authors, but the neck differs in length, thickness and shape according to species or subspecies, or even between sexes and is not always so elongate as to be diagnostic of the genus. It is most elongated in *Damaster* s. str., in which the length of the exposed part of the neck behind eyes is at least  $1.7\times$  as long as the diameter of an eye in the shortest necked subspecies of *D. blaptoides* such as *capito* or *rugipennis*. This is assumed to be the plesiomorphic state of this species. It is more varied in *Acoptolabrus* and *Coptolabrus* but never so elongated as in *Damaster* s. str. and is in some species not at all longer than "usual". This condition is assumed to be the most plesiomorphic of the genus. Thus, the elongate neck is considered to be homoplasious,



showing parallel development among the subgenera, and only *Damaster* s. str. has an elongate neck in its plesiomorphic condition.

(Pronotum)

4. *Median longitudinal line.* The median longitudinal line of the pronotum is finely impressed between the anterior rim and the posterior margin across centre in the most species of the Carabina and this condition is assumed to be plesiomorphic. In *Acoptolabrus*, this line is raised to form a short flattopped ridge posteriorly. This condition is presumed to be apomorphic. The loss of this ridge in *A. mirabilissimus* and *A. changeonleei* is considered to be secondary, due to strong modification of the posterior part of the pronotum.

5. *Basal foveae.* In most species of the Carabina, the pronotum has a shallow, not sharply outlined depression on either side of the posterior part called the basal foveae, and this condition is assumed to be plesiomorphic. In *Acoptolabrus*, these foveae are very deep except in *A. constricticollis* and its allied species in which they are not well outlined owing to their fusion with the basal constriction. Presence of such deep foveae as in most species of *Acoptolabrus* is presumed to be apomorphic. The fusion of them with marginal emarginations in above mentioned species is the secondary modification. On the other hand, they are shallow or completely lost in *Coptolabrus* and *Damaster* s. str. These conditions are regarded also as apomorphic.

6. *Shape of pronotum.* The plesiomorphic condition of the shape of the pronotum in the Carabina is assumed to be distinctly broader than long, widest about at the middle, with sides evenly roundly convex, not sinuous posteriorly in cordiform, with posterolateral corners rounded and not produced backwards, and with the dorsum gently convex. In the genus *Damaster*, the pronotum is considerably varied in shape, from nearly equal to the assumed plesiomorphic condition to extremely elongated and subcylindrical as in *D. blaptoides blaptoides* or to such a modified condition as with a conspicuously ridged anterior margin and with a deep triangular emargination on either side near postero-lateral corners as in *A. constricticollis* and its allied species. The elongation of the pronotum is largely due to the extension of its anterior part, and is correlated to some extent to the elongation of the neck. *Damaster* s. str. shows the utmost development in this part. Even the robustest *D. blaptoides capito* has more elongate pronotum than in any other species of *Acoptolabrus* and *Coptolabrus*. In *Coptolabrus*, it is varied, but not so elongated in any species as in *Damaster* s. str. and the disc is flatter. In *Acoptolabrus*, it is more varied. In *A. lopatini*, it is broad with sides strongly roundly convex, barely sinuous posteriorly and the postero-lateral corners are rounded but not produced backwards. *A. schrencki* differs from *A. lopatini* in that the sides are distinctly concave or rarely deeply emarginate posteriorly, and the anterior margin is distinctly raised, defined by a shallow transverse depression. These features are remarkably developed in four Korean species for which *Korea-*



*coptolabrus* was erected, but they are thus not unique to these species.

Pronotum of *A. gehinii* and *A. munakatai* is more or less elongated with sides cordately sinuous, but never "constricted" posteriorly, with the postero-lateral corners angulate, and the anterior margin is not so raised as in any of *A. schrencki* or *Koreacoptolabrus*. The condition of *A. lopatini* is presumably most plesiomorphic, since it is nearest to the assumed plesiomorph of the Carabina, and the condition of *A. gehinii* and *A. munakatai* is presumed to have been derived from it. It is conspicuously modified in the species belonging to *Koreacoptolabrus* but all the prothoracic features characteristic of it are apparently derived from those of *A. schrencki*.

7. *Marginal setae*. There are two marginal setae on either side of pronotum, one medial and the other terminal (at or near the postero-lateral corner) in most species of the Carabina and this condition is assumed to be plesiomorphic. *Acoptolabrus* reserves this condition except for the species which have lost the posterior one, apparently due to modification of the posterior part of the pronotum. In *Coptolabrus*, these setae are preserved in most species, but are lost partly or totally in a few species or subspecies. In *Damaster* s. str., they are completely lost in all the subspecies of *blaptoides*.

8. *Sculpture of pronotum*. The disc of the pronotum is rather evenly and densely punctate all over in most species of the Carabini and this condition is assumed to be plesiomorphic. In this genus, there is a wide range of variation from almost evenly punctate to transversely striate, and development of the striation seems to be correlated to the elongation of the pronotum. The striated condition is regarded as apomorphic. In *Damaster* s. str., it is varied from transversely striato-punctate to densely striate. *Coptolabrus* is more varied but never so completely and densely striated as in *Damaster* s. str. In *Acoptolabrus*, it is punctate or rugose-punctate in *lopatini* and *schrencki*, but in other species, striation is well developed though not so densely as in *Damaster* s. str.

#### (Elytra)

9. *Striae*. In the plesiomorphic condition of the Carabina, intervals are triploid homodynamic and sharply defined by evenly grooved striae. In this genus, the striae are completely lost in *Acoptolabrus* and *Coptolabrus*, but are reserved in *Damaster* s. str. as single rows of punctures between intervals. The latter condition is assumed to be plesiomorphic.

10. *Tertiary intervals*. In the plesiomorphic condition of the triploid sculpture, tertiaries and secondaries are equally raised or costate, but in this genus the tertiaries are always weaker than the secondaries. In *Damaster* s. str., they vary from rather well reserved as granules to almost unrecognizable. More reduced in *Coptolabrus* in which they are usually indiscernible. Reduced condition is apomorphic. In *Acoptolabrus*, they are also reduced but fused with nearby primaries, making a peculiar feature characteristic of this subgenus. They are reserved

even in the most reduced condition as rudimentary peripheral transverse ridges of primary costae or as longitudinal ridges outlining the primary foveae on either side. This condition of tertiaries is a unique autapomorphy of *Acoptolabrus*.

11. *Primary and secondary intervals.* In *Damaster* s. str., primary and secondary intervals vary from raised broken lines to rows of granules and show a tendency of regression. The former condition as represented by *blaptoides rugipennis* or *bl. viridipennis* is assumed to be most plesiomorphic. In *D. bl. blaptoides*, only primaries are recognized as fine rows of granules and other intervals are usually barely differentiated by granules or lines. This condition is considered to be apomorphic in this subgenus. In *Coptolabrus*, they are always more developed than in *Damaster* s. str., at least as fine, evenly raised and long segmented broken lines as in *jankowskii* or rows of larger, elliptical granules as in *fruhstorferi* with remarkable differentiation between primaries and secondaries. I hesitate to designate which condition is more plesiomorphic between these two species, but it is probable that that of *C. fruhstorferi* is less derived because the tertiaries are usually well reserved in this species though they are almost unrecognizable in *C. jankowskii*. In this respect, they are more derived in *Coptolabrus* than in *Damaster* s. str. according to the comparison between them at their least derived conditions. In *Acoptolabrus*, the primaries form single rows of broad, subquadrate callosities by fusion with tertiaries, interrupted by foveae. This condition is assumed to be plesiomorphic of the subgenus. They are either to be narrowed into carinae or reduced to rows of smaller tubercles or widened by fusion with tertiaries in derived condition. The secondaries are always weaker than the primaries and never costate. The condition in *Acoptolabrus* is assumed to be apomorphic but apparently shows a unique trend of specialization.

12. *Apices of elytra (mucrones).* The apices of elytra are not projecting beyond the apex of the abdomen in plesiomorphic condition of the Carabina. In *Acoptolabrus*, the apex of each elytron is rounded without a definite horizontal part that extends beyond the posterior margin of the distal abdominal sternite. This condition is regarded as plesiomorphic of the genus. In *Damaster* s. str., they are pointed, separated from each other, and extend posteriorly beyond the abdominal apex, forming mucrones even in the most plesiomorphic condition as shown in *blaptoides capito*. They show an utmost development in *blaptoides blaptoides* in which they look like a swallowtail. This condition is considered to be apomorphic. In *Coptolabrus*, they are varied; the most plesiomorphic condition is reserved in *jankowskii quelpartianus* and *j. obtusipennis* in which they are not pointed nor separated from each other though produced slightly horizontally. This condition seems to be more plesiomorphic than that of *D. blaptoides capito*.

#### (Meso- and Metathorax and Abdomen)

13. *Pleural punctation.* Presence of pleural punctation is assumed to be plesiomorphic condition and the loss of it is regarded as apomorphic. In *Acopto-*

*labrus*, it is completely lost in all the species. In *Damaster* s. str., it is present rudimentarily in some specimens of less evolved subspecies of *blaptoides*, such as *capito*, *rugipennis* and *viridipennis*. Most species of *Coptolabrus* have dense strong punctation, but is weaker or even rudimentary in some species and subspecies, showing homoplasious regression.

14. *Setae of metacoxa*. The metacoxa with three setae is assumed to be plesiomorphic of the Carabina. In *Acoptolabrus*, this condition is reserved, whereas the anterior seta is lost in *Damaster* s. str. and *Coptolabrus*. The latter condition is considered to be apomorphic. This seta is not seldom lost in the extralimital groups homoplasiously (ISHIKAWA, 1972). In *Acoptolabrus*, however, *gehinii* and *munakatai* have lost the proximal seta, though the anterior seta is reserved. This character state shows that these species are direct derivatives from the plesiomorphic trisetose ancestor. KWON and LEE (1984) erroneously state that the metacoxa of *Acoptolabrus* is bisetose. They must have seen only *A. gehinii*, *A. munakatai*, and very few aberrant individuals of *A. schrencki*.

15. *Sternal sulci*. Most authors (MORAWITZ, 1886; HAUSER, 1921; BREUNING, 1932; etc.) used the absence of these sulci to discriminate *Acoptolabrus* from *Damaster* s. str. and *Coptolabrus*. In the plesiomorphic condition of the Carabina, however, each of three apical abdominal sternites has a transverse impressed line across centre. This condition is shared by *Damaster* s. str. and *Coptolabrus* but not by *Acoptolabrus* as stated above. The latter condition is assumed to be apomorphic.

16. *Aggonopori*. The aggonopori is not much developed in this genus. In *Acoptolabrus* and *Damaster* s. str., it is short and barely projecting. This condition is assumed to be plesiomorphic. In *Coptolabrus*, though I have been able to examine only a few species, it is distinctly projecting though not sclerotized. This condition is considered to be apomorphic.

17. *Ostium lobe*. The ostium lobe is always present and is unilobate in all the species excepting those belonging to *Koreacoptolabrus* in which it is bilobate though not separated. The unilobate condition is plesiomorphic.

#### (Larval Characters)

18. *Instars*. Most Carabini are known to have three moults in their larval stage, and this condition is considered to be plesiomorphic. *Damaster* s. str. and *Coptolabrus fruhstorferi* have only two instars, while *Acoptolabrus gehinii* and *A. munakatai* have three (according to Y. KARASAWA, personal communication). Although only four species are known of their larval stages, I assume that these conditions are common to all the species of each subgenus. Having but two instars is assumed to be apomorphic condition.

#### Synapomorphies

On the basis of the discussion in the foregoing section, synapomorphies are

postulated and their distribution is shown diagrammatically in Fig. 1. All three subgenera are supported by autapomorphies.

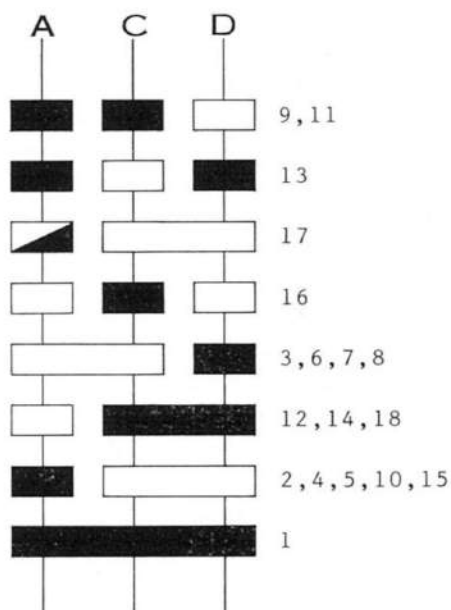


Fig. 1. Diagram showing distribution of synapomorphies. Black rectangles represent apomorphic condition; open rectangles represent plesiomorphic state; a half black rectangle represents that only some members of the taxon are in apomorphic state. A=*Acoptolabrus*; C=*Coptolabrus*; D=*Damaster* s. str. Numerals refer to the character numbers of the text.

### Ground Plan States

In this section are given ground plan states for the genus *Damaster* as here defined and its subordinate taxa which are indicated by the terminals and internodes of the cladogram (Fig. 2). Plesiomorphic states of the characters are listed in nested sets for each of the monophyletic taxa. The ground plan states of the genus are given for all the characters considered, but the subordinate taxa are defined by the synapomorphies.

### Genus *Damaster*

Apical segment of galea spoon-like, deeply concave above, with its outer margin emarginate at its anterior half to fit with the apical hook of the lacinia. Anterior tooth of the right retinaculum subequal to or smaller than the posterior tooth. Neck not particularly long. Pronotum distinctly wider than long, its sides arcuately convex, not or barely sinuous posteriorly, with postero-lateral corners rounded,

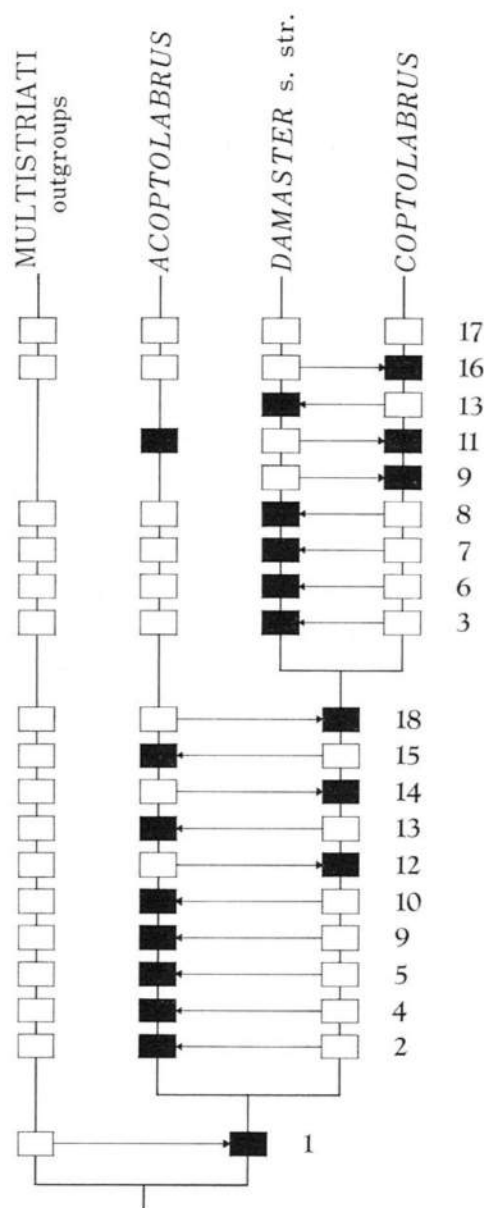


Fig. 2. Cladogram showing phylogenetic relationships of the subgenera of the genus *Damaster* and multistriati outgroups. Black rectangles represent apomorphic condition; open rectangles represent plesiomorphic state. Numerals refer to the character numbers of the text and Fig. 1.

not produced backwards; disc evenly and densely punctate, its median line evenly impressed across centre from the anterior rim to the posterior margin; basal foveae distinctly concave; two marginal setae on either side. Thoracic pleura and sides of abdominal sterna densely and strongly punctate. Metacoxa with three normal setae. Elytral sculpture triploid heterodynamic; primaries are stronger than secondaries and the secondaries are stronger than tertiaries which are not fused with the primaries. Elytral apices not projecting backwards horizontally beyond the apex of the abdomen. Sternal sulci distinctly impressed across centre. Ostium lobe unilobate. Three instars in the larval stage.

#### *Acoptolabrus*

Anterior tooth of right retinaculum larger than the posterior tooth. Pronotum with the median line ridged posteriorly; basal foveae deep. Pleura and abdominal sterna impunctate. Tertiaries fused with primaries. Sternal sulci lost.

#### *Damaster* s. str. + *Coptolabrus*

Pronotum with sides sinuous posteriorly, with posterolateral corners produced backwards. Basal foveae shallow. Metacoxa without anterior seta. Elytral apices produced horizontally beyond the apex of abdomen. Only two larval instars.

#### *Damaster* s. str.

Neck elongate, exposed part back of eye more than  $1.7\times$  as long as the diameter of eye. Pronotum elongate, as long as broad; transversely rugulose; marginal setae lost. Pleura and sides of abdominal sterna vaguely punctate. Elytral sculpture with primaries, secondaries and tertiaries reserved as regular rows of short lines or granules.

#### *Coptolabrus*

Elytral sculpture with primaries and secondaries developed; tertiaries rudimentary or lost. Aggonoporus triangularly projected.

### Discussion

The cladogram (Fig. 2) represents the relationships among three subgenera of the genus *Damaster* which is defined by having spoon-shaped apical segment of galea as a unique autapomorphy.

*Acoptolabrus* is the sister group of *Damaster* s. str. + *Coptolabrus*. Although *Acoptolabrus* has been discriminated from the latter two subgenera by the absence of sternal sulci alone by authors, it differs from them at least in nine additional

characters. It is supported by seven apomorphic characters, of which three are unique autapomorphies. The most noticeable one is the fusion of tertiaries with primaries that gives the elytral sculpture a peculiar feature characteristic of this subgenus. The enlarged anterior tooth of the right retinaculum is one of diagnostic characters and is further developed with the hypertrophy of the head. The posteriorly ridged median line of pronotum is also a noticeable character, though it may be lost secondarily with the modification of the posterior part of the pronotum. Of the four remaining apomorphic characters, deep basal foveae are also unique though difficult to qualify. Loss of pleural punctures and of sternal sulci is homoplasious.

This taxon shows a noticeable differentiation particularly in the shape of pronotum, and may be subdivided into three species-groups. The first group comprising *A. schrencki* and *A. lopatini* is characterized by broader pronotum with strongly convex sides of which postero-lateral corners are rounded and not produced backwards; its disc is densely punctate but not or barely striated transversely. These characters are, however, all plesiomorphic and the two species do not share any apomorphic characters of their own. This group, therefore, cannot be regarded as monophyletic.

The second group comprises *A. gehinii* and *A. munakatai* of Hokkaido. In these species, sides of pronotum are distinctly cordate with the postero-lateral corners angulate, and the disc is transversely punctato-striated. In addition to them, these species have no proximal seta of metacoxa.

The third group which KWON and LEE (1984) named *Koreacoptolabrus* comprises *A. constricticollis*, *A. leechi*, *A. mirabilissimus* and *A. changeonleei*. It is the most specialized group of all the three, characterized by peculiar features of pronotum, such as the strongly raised anterior margin and a conspicuous emargination on either side just before postero-lateral corners, and bilobate ostium lobe which are shared by all the four known species; however, all these prothoracic features that characterize *Koreacoptolabrus* are apparently shared by *A. schrencki* though not so conspicuous. Therefore, so far as these characters are concerned, *A. schrencki* should also belong to the same taxon phylogenetically. Then, *Koreacoptolabrus* is a junior synonym of *Acoptolabrus* of which the type species is *A. schrencki*. But for the prothoracic characters, *Koreacoptolabrus* is defined by the bilobate ostium lobe alone. Although the outline of the pronotum in the second group seems to be intermediate between two other groups, *Koreacoptolabrus* cannot be a direct derivative from the second, because all the species belonging to *Koreacoptolabrus* have normally trisetose metacoxa as in the first group. Another noticeable nature of *Koreacoptolabrus* is a distinct differentiation in the shape of the apex of aedeagus at the species level which is exceptional in this genus (ISHIKAWA & KIM, 1983). It is shorter and broader in *A. constricticollis* and *A. mirabilissimus* but more elongate in *A. leechi* and *A. changeonleei*. The former condition is considered to be plesiomorphic, showing affinity with *A. schrencki* and *A. lopatini*.



Although the second and the third groups are monophyletic, showing speciation within each group, it is unnecessary and insignificant to name them, because it is not only multiplying surplus supraspecific names but it also admits paraphyletic subgenus *Acoptolabrus* for *lopatini* and *schrencki*.

*Damaster* s. str. + *Coptolabrus* is defined by three synapomorphies, but only one of them, the presence of mucrones, is a unique autapomorphy. Such characters as having but two instars in the larval stage and the loss of the anterior seta on the metacoxa are apomorphic but homoplasious. Of seven characters in plesiomorphic condition, the tertiary intervals, which are not fused with the primaries, show a tendency of regression. Presence of sternal sulci is a classical character for separating this group from *Acoptolabrus*, but it is a plesiomorphy of the Carabina and is therefore not available for defining higher taxa. Pleural punctures are also plesiomorphic, but are in *Damaster* s. str. completely lost or only rudimentarily reserved in some subspecies of *blaptoides*. Basal foveae show a tendency of regression in this group, but it is difficult to assume their most plesiomorphic condition for the group.

*Damaster* s. str., which is represented by only one but highly polytypic species, *blaptoides*, is supported by a few apomorphic characters but most of them are adaptive features due to elongation of forebody called cychrization, which is correlated with elongation of mucrones. These features show a transformation series from most plesiotypical *blaptoides rugipennis*, *bl. viridipennis* and *bl. capito* to fully apotypical *bl. blaptoides* in which cychrization as well as mucronation is extremely developed. Even in the former subspecies, cychrization is more conspicuous than in any species of *Coptolabrus* though mucronation shows the similar level of development. On the other hand, the elytral sculpture of this subgenus is least differentiated in the genus, showing a tendency of regression but is unique in having vestiges of striae as rows of punctures. The sculpture with rows of punctures is assumed to be the least derived condition. Thoracic pleura are almost smooth, but *blaptoides capito*, *bl. rugipennis*, etc. rarely have vestigial punctures suggesting the plesiomorphic condition of the subgenus. These subspecies share, in addition to all these plesiomorphic features, dilated foretarsi with hair pads on the underside in the male, also a plesiomorphic character, so they are assumed to be plesiotypical forms of *Damaster* s. str.

*Damaster* KOLLAR, 1836, was erected for *blaptoides* of which the foretarsi of the male are attenuated without hair pads on the underside as in the female. REITTER (1896) proposed *Adamaster* for the reception of *rugipennis* and *fortunei* for their dilated male foretarsi. This character is, however, one of plesiomorphies of the male of the Carabidae, and is not available for defining higher taxa which should be monophyletic.

*Coptolabrus* differs from *Damaster* s. str. in ten characters, but only three of them, namely, loss of elytral striae, development of the primaries and secondaries and distinctly projecting aggonopori, are apomorphic characters. Resemblance



in other characters between these two subgenera is considered to be due to homoplasy by convergence towards malacophagy or parallelism. *C. fruhstorferi* stands nearest to *Damaster* s. str. so far as the position of branching is concerned.

After the publication of *Coptolabrus* by SOLIER in 1848, *Coptolabrinus* REITTER, 1897, *Eucoptolabrus* SEMENOW, 1898, *Eocarabus* SEMENOW, 1898, and *Nesocoptolabrus* LAPOUGE, 1930 were proposed for species which are considered to belong to *Coptolabrus*. *Coptolabrinus* and *Eucoptolabrus* were erected for *pustulifer*, and *pustulifer* and *gemmifer* respectively, for their attenuated male foretarsi, which are the character state for *Damaster* s. str. sensu REITTER versus *Adamaster*. Although apomorphic, it is absolutely insignificant to set up any higher taxon for a single species on such a homoplasious character alone, admitting the rest of *Coptolabrus* to be a paraphyletic group. *Eocarabus* was erected for *jankowskii* for enlarged head and less widened apical segment of maxillary palpus. The macrocephalic condition of this species is not always so conspicuous though may be apomorphic, and the character state of the maxillary palpus is nothing but one of plesiomorphies. *Nesocoptolabrus* was proposed for *fruhstorferi* to discriminate it from other species of *Coptolabrus* (sensu LAPOUGE) for having lateral setae of pronotum. This must be due to his misunderstanding, since most species of *Coptolabrus* have in fact these setae; moreover, this character state is plesiomorphic. Thus, *Eocarabus* and *Nesocoptolabrus* cannot be recognized as higher taxa on the basis of these characters.

### Classification

I propose to treat each of three terminal taxa in the cladogram as subgenera. They are supported by synapomorphies. If sister groups are given the same rank, *Acoptolabrus* and *Damaster* are ranked as subgenera, and *Coptolabrus* is treated as one of the two sectiones in the subgenus *Damaster*.

#### Genus *Damaster* KOLLAR, 1836

##### Subgenus *Acoptolabrus* MORAWITZ, 1886

Mém. Ac. imp. Sci. St.-Petersb., (7), **34**(9): 17.

Type species: *Carabus Schrencki* MOTSCHULSKY, 1860; original designation.

*Koreacoptolabrus* KWON et LEE, 1984, Ins. Koreana, **7**: 109–110. Type species:

*Coptolabrus constricticollis* (KRAATZ) (= *Carabus constricticollis* KRAATZ, 1886); original designation.

##### Subgenus *Damaster* KOLLAR, 1836

Ann. Wien. Mus., **2**: 333–334, pl. 31.

Type species: *Damaster blaptoides* KOLLAR, 1836; monotypy.

*Adamaster* REITTER, 1896, Verh. naturf. Ver. Brünn, **34**: 56. Type species:

*Adamaster rugipennis* (MOTSCHULSKY) (= *Damaster rugipennis* MOTSCHULSKY, 1861); present designation.

**Subgenus *Coptolabrus* SOLIER, 1848**

In BAUDI & TRUQUI, Stud. ent., 1: 59.

Type species: *Carabus smaragdinus* FISCHER, 1823; original designation.

*Coptolabrinus* REITTER, 1897, Wien. ent. Ztg., 1897: 203. Type species: *Carabus pustulifer* LUCAS, 1896; monotypy.

*Eucoptolabrus* SEMENOW, 1898, Horae Soc. ent. ross., 31: 336. Type species: *Carabus pustulifer* LUCAS, 1896; present designation.

*Eocarabus* SEMENOW, 1898, ibid., 31: 402-406. Type species: *Carabus jankowskii* KRAATZ, 1885; original designation.

*Nesocoptolabrus* LAPOUGE, 1930, Gen. ins., fasc. 192, p. 212. Type species: *Carabus fruhstorferi* ROESCHKE, 1900; monotypy.

**Distribution**

The genus *Damaster* is distributed in eastern Asia, including Japan, Sakhalin and Taiwan, but the ranges of the three subgenera are only partly overlapped; nowhere the three subgenera occur together.

The greater part of the range of the genus in the Asiatic Continent is occupied by the subgenus *Coptolabrus*. It is distributed also to such coastal islands as Taiwan, the Chusans, Chejudo, Kojedo, Tsushima, etc., where it is represented by endemic species or subspecies. *Damaster* s. str. is represented by only one but highly polytypic species which is endemic to Japan, not including the Ryukyus, though there is a record of a male specimen from Taiwan (CHU, 1967). *Acoptolabrus* is distributed in the most northeastern part of the range of the genus in the continent, Sakhalin and Hokkaido. It is most diversified in Korea (ISHIKAWA & KIM, 1983).

Sympatry is known of *Acoptolabrus* and *Coptolabrus* in the continent, of *Acoptolabrus* and *Damaster* s. str. in Hokkaido, but *Damaster* s. str. and *Coptolabrus* are nowhere known to be sympatric. This fact will corroborate that *Acoptolabrus* is the remotest group of the three subgenera, as represented as the sister group of *Damaster* s. str. + *Coptolabrus* in the cladogram.

Analyses of characters made it apparent that *A. lopatini* of Sakhalin and *A. schrencki* of the continent are least derived species of *Acoptolabrus* and all other species of the subgenus are presumed to share their ancestors with either of these two species. I have been unable to find any autapomorphous character in *A. lopatini* and presume that it is the most plesiotypical species of the subgenus. Its distribution in Sakhalin where there is no other congeneric species suggests its possibility of being a direct derivative from the common ancestor of the subgenus. *A. schrencki* is more specialized in pronotal characters which it shares with other Korean species, suggesting their closer phylogenetic relationships. *A. gehinii* and *A. munakatai* of Hokkaido have most possibly been derived from the same ancestor as *A. lopatini* as is suggested by their distribution, because Hokkaido had been

connected with Sakhalin after it was separated from Honshu. *A. munakatai* may be a plesiotypical subspecies of polytypical *A. gehinii*; both species have lost the proximal seta of the metacoxa. There is no positive evidence in morphological features that these two species are more related to *A. schrencki* than to *A. lopatini*, and assumption that *A. munakatai* and *A. gehinii* have been derived from *A. lopatini* is more probable than that they are from *A. schrencki*.

*Damaster* s. str. is very closely related to *Coptolabrus*; its characteristic features are either plesiomorphies in the elytral sculpture or apomorphies correlated with the elongation of the forebody. The unique pattern of subspeciation in *D. blaptoides* is that the less derived subspecies, which are characterized by having hair pads or a trace of them in the male foretarsi, are restricted to the north of the Kantô District. The most plesiotypical subspecies, *D. b. rugipennis* is endemic to Hokkaido, where it is sympatric everywhere with *Acoptolabrus*. Other plesiotypical subspecies are distributed para- or allopatrically. The most apotypical subspecies, *D. b. blaptoides*, ranges the Kinki and Chûgoku Districts in Honshu, and Shikoku, Kyushu and such islands as Oki, Iki, Gotô, Koshikijima, Yakushima and Tanegashima, where it shows little geographical variation except for the size of body.

The plesiotypical subspecies, of which *D. b. babaianus* ranges the southernmost part, intergrades to *D. b. blaptoides* through the Kantô and Chûbu Districts in Honshu by transitional populations which are called collectively *D. b. oxuroides*. The only diagnostic character which distinguishes this subspecies of the northernmost localities from *D. b. babaianus* is the loss of hair pads in the male foretarsi. The transitional individuals are called *cyanostola*. The westernmost *D. b. oxuroides* near *D. b. blaptoides* is called *paraoxuroides*.

This pattern of distribution suggests that *D. blaptoides* had been separated geographically at least into two parts in Japan before the present ranges of subspecies were established. *D. b. rugipennis* or its direct ancestor presumably established in Hokkaido before *Acoptolabrus* entered there.

*Coptolabrus* is widely distributed in China including the Chusans and Taiwan, Korea including Chejudo and Kojedo, the southeastern part of Siberia, and Tsushima, where it is very diversified. It is not possible to discuss here the distribution of this subgenus to the species level, but mention must be made of the importance of *C. jankowskii* and *C. fruhstorferi* from the phylogenetic point of view. *C. jankowskii* has most of the plesiomorphies of this subgenus and is distributed in Korea where it is sympatric with *C. smaragdinus* throughout its range. *C. fruhstorferi* is endemic to Tsushima, an island group situated between Korea and Kyushu, but is very close to *C. jankowskii*. There is little doubt that these two species are closely related to *Damaster* s. str. of Japan.

It is most probable that the primary speciation into the three subgenera occurred in the areas by the eastern coast of Asia between the basin of the River Amur down south to the Korean Peninsula and Japan.

## References

- BREUNING, S., 1932-1936. Monographie der Gattung *Carabus* L. *Best.-Tab. eur. Coleopt.*, (104-110), 1610 pp., 41 pls. Troppau.
- CHAUDOIR, M., 1857. Einige Bemerkungen zur "Naturgeschichte der Insecten Deutschlands". *Stett. ent. Ztg.*, **18**: 75-82.
- CHU, Y., 1967. The discovery of a new *Damaster* from Formosa (Coleoptera, Carabidae). *Mushi, Fukuoka*, **41**: 59-62.
- HAUSER, G., 1921. Die *Damaster-Coptolabrus*-Gruppe der Gattung *Carabus*. *Zool. Jahrb., Syst.*, **45**: 1-394, 11 pls.
- ISHIKAWA, R., 1972. Studies on *Leptocarabus* and its related subgenera of the genus *Carabus* L. (Coleoptera, Carabidae). *Bull. natn. Sci. Mus., Tokyo*, **15**: 19-27.
- 1978. A revision of the higher taxa of the subtribe Carabina. *Ibid.*, (A), **4**: 45-68.
- 1984. Phylogeny and subgeneric classification of the genus *Chaetocarabus* THOMSON (Coleoptera, Carabidae). *Kontyû, Tokyo*, **52**: 94-109.
- & J. L. KIM, 1983. New or little known Carabina of Korea (Coleoptera, Carabidae). *Nature and Life, Taegu*, **13**: 69-82.
- KOLLAR, V., 1836. Species Insectorum Coleopterorum novae. *Ann. Wien. Mus.*, **2**: 327-336, 1 pl.
- KWON, Y. J., & S. M. LEE, 1984. Classification of the subfamily Carabinae from Korea (Coleoptera, Carabidae). *Insecta Koreana*, (4), 343 pp. (incl. 107 pls.).
- LAPOUGE, G. V. DE, 1929-1932. Coleoptera Adephaga, Fam. Carabidae, Subfam. Carabinae. In WYTSMAN, P. (ed.), *Gen. ins.*, (192), 747 pp. Wytsman, Bruxelles.
- MORAWITZ, A., 1886. Zur Kenntniss der adephagen Coleopteren. *Mém. Acad. imp. Sci. St.-Petersb.*, (7), **34**, (9): 1-88.
- REITTER, Edm., 1896. Bestimmungs-Tabelle der europäischen Coleopteren, Carabidae, Carabini. *Verh. naturf. Ver. Brünn*, **34**: 38-198.
- 1897. Zehnter Beitrag zur Coleopteren-Fauna von Europa und den angrenzenden Ländern. *Wien. ent. Ztg.*, **1897**: 203.
- SEMENOW, A., 1898. Symbolae ad cognitionem generis *Carabus* (L.). *Horae Soc. ent. ross.*, **31**: 315-541.
- SOLIER, M., 1848. Observations sur les genres *Procrustes*, *Procerus*, *Carabus* et *Calosoma* formant la famille des Carabiens de M. BRULLÉ. In BAUDI, F., & E. TRUQUI (eds.), *Stud. Ent.*, **1**: 1-58.

## New Oculate *Trechiana* (Coleoptera, Trechinae) from the Province of Aizu in Central Japan<sup>1)</sup>

by

Shun-Ichi UENO

Department of Zoology, National Science Museum (Nat. Hist.),  
Shinjuku, Tokyo 160, Japan

**Abstract** Three new species of oculate trechine beetles are described from the Province of Aizu and its immediate vicinities in Central Japan, under the names *Trechiana nivalis*, *T. akinobui* and *T. kurosawai*. All belong to the group of *T. oreas*, but form a distinctive complex within the species-group. The subgroup is called the *nivalis* complex, and is discriminated from the *oreas* complex mainly by the absence of the posterior dorsal pore on the fifth elytral stria.

To commemorate the retirement of Dr. Yoshihiko KUROSAWA from the directorship at the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo, I feel it most appropriate to deal with something endemic to the Province of Aizu, where he resided before occupying the curatorial position at the Museum. Of the carabid subfamily Trechinae, three different lineages of apterous species occur in this province, i.e. *Trechiana*, *Epaphius* and *Kurasawatrechus*. I will take up the first on this occasion, since it is the most interesting of the three in showing the zoogeographic situation of the Province of Aizu.

Strictly speaking, only two species of *Trechiana* have been known within the Aizu territory, but a third species occurs on the mountains bordering on the north-western corner of the province. Since this must also extend its range onto the Aizu side of the mountains, I have included it in the present paper. All the three species belong to the group of *Trechiana oreas* widely distributed in the Tôhoku District of Northeast Japan, but form a distinctive lineage within the species-group mainly because of the absence of the posterior dorsal pore on the fifth elytral stria. Besides the new species to be described in the following lines, this subgroup, called the *nivalis* complex, still contains several undescribed species, whose accounts will be given in a separate paper when the whole group of *T. oreas* can be dealt with.

The abbreviations employed in this article are the same as those explained in other papers of mine.

Before going into further details, I wish to express my hearty thanks to the following friends of mine, who either supplied with the material used for this study or helped my investigations in the field: Dr. Kintaro BABA, Dr. Akinobu HABU,

1) This study is supported in part by the Grant-in-aid for Scientific Research No. 60304013 from the Ministry of Education, Science and Culture, Japan.

Messrs. Sumao KASAHARA, Kôichi KUSAKARI, Keisuke NEMOTO, Masataka SATÔ, Yasutoshi SHIBATA, Kyoji TAZOE and YASUAKI WATANABE, and Miss Noriko HANAKI.

*Trechiana* (s. str.) *nivalis* S. UÉNO, sp. nov.

[Japanese name: Iidé-naga-chibigomimushi]

(Figs. 1-4)

Length: 4.75-5.70 mm (from apical margin of clypeus to apices of elytra).

Belonging to the group of *T. oreas*, but to a lineage different from that of *T. oreas* (H. W. BATES) (1883, p. 266; JEANNEL, 1954, pp. 12, 13, fig. 2; UÉNO, 1985, p. 68, pl. 13, fig. 19) and its direct relatives. Distinguished at first sight from *T. oreas* by the smaller size, the absence of the posterior dorsal pore on the fifth elytral stria, and the tubular aedeagus with very short apical lobe and differently shaped inner armature.

Rather depressed species with fairly large fore body and slender appendages; apterous. Colour variable according to individuals, reddish brown to dark brown, or even blackish, shiny, faintly iridescent on elytra especially in dark individuals; palpi yellowish brown; antennae (becoming paler towards apices) and legs yellowish brown or reddish brown; ventral surface always reddish brown.

Head rather small, transverse, and depressed above, with deep entire frontal furrows moderately divergent in front and curved round behind towards distinctly marked neck constriction; frons and supraorbital areas feebly convex, the latter bearing two pair of supraorbital setae on lines convergent posteriorly; microsculpture distinct though fine, mostly consisting of very transverse meshes; eyes variable in size though always small and flat; genae usually three-fourths as long as eyes (ranging from three-fifths to five-sixths), slightly convex, obviously convergent posteriorly, and perfectly glabrous; neck fairly wide; labrum transverse, rather deeply emarginate at apex; mandibles fairly slender, sharply hooked at apices; mentum tooth either truncated or slightly emarginate at the tip in most specimens examined, but sometimes distinctly emarginate at apex or even bifid; palpi slender; antennae longer in ♂ than in ♀, usually reaching or extending beyond basal three-sevenths of elytra in ♂, usually reaching basal third of elytra in ♀, with segment 2 about two-thirds as long as segment 3 or 4, segments 8-9 each fully three times as long as wide, terminal segment the longest though evidently narrower than scape.

Pronotum subcordate, much wider than head, a little wider than long, widest at a level between four-sevenths and two-thirds from base (usually at about five-eighths from base), and more strongly contracted towards apex than towards base; PW/HW 1.37-1.46 (M 1.42), PW/PL 1.14-1.21 (M 1.17), PW/PA 1.49-1.61 (M 1.55), PW/PB 1.33-1.44 (M 1.40); sides moderately reflexed throughout, the borders becoming narrower towards front angles, strongly and widely rounded in front, distinctly and rather abruptly sinuate just before hind angles, and more or less

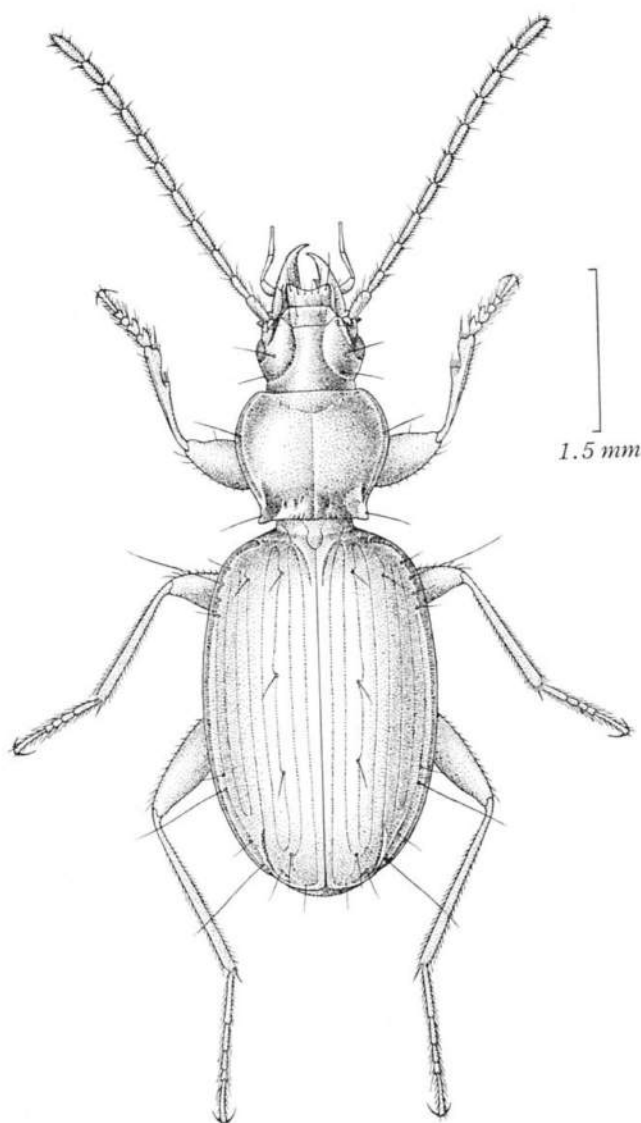


Fig. 1. *Trechiana* (s. str.) *nivalis* S. UÉNO, sp. nov., ♂, from Mt. Futatsu-miné of the Iidé Mountains.

divergent behind the sinuation; apex more or less narrower than base, PB/PA 1.05–1.16 (M 1.11), very slightly emarginate or bisinuate, with front angles obtuse and hardly porrect; base either straight or slightly bisinuate, hind angles either sharp or rectangular, usually produced outwards; surface moderately convex, with vague transverse striations; median line sharply impressed; apical area frequently with



longitudinal striations; basal transverse impression shallow, foveolate on each side of median line, and laterally merging into large basal foveae which are deep and extend anteriorly along side borders; postangular carinae usually obtuse but sometimes prominent; basal area fairly wide at middle, more or less uneven; microsculpture composed of fine transverse lines though more or less obliterated on the disc.

Elytra oblong ovate, much wider than pronotum, widest a little before the middle, and more pointed at apices than at bases; EW/PW 1.46–1.55 (M 1.50), EL/EW 1.52–1.59 (M 1.55); surface moderately convex at the sides and near the apices, but widely depressed on the disc; microsculpture formed by fine transverse lines, though more or less degenerated; shoulders widely rounded, with prehumeral borders more or less oblique at the innermost portions; sides narrowly reflexed, feebly arcuate from shoulders to the level of the seventh pore of the marginal umbilicate series, then rather abruptly convergent through slight preapical emargination, forming a small obtuse re-entrant angle at suture; striae entire, sharply impressed throughout, faintly crenulate at least on the disc in most individuals but rarely smooth; scutellar striole long; apical striole short but deep, feebly curved, joining stria 5; intervals slightly convex, especially behind middle; stria 3 normally with three setiferous dorsal pores at 1/12–1/8, 1/3–1/2 and 4/7–5/7 from base respectively, stria 5 normally with a single setiferous dorsal pore at 1/12–1/8 from base; preapical pore situated at the apical anastomosis of striae 2 and 3, behind the level of the terminus of apical striole, and more distant from apex than from suture; marginal umbilicate pores regular.

Ventral surface smooth. Anal sternite normally with a pair of sexual setae in ♂, two pair of them in ♀; two of the paratypes (♀♀) bear three setae on one side, and one (♀) with three setae on each side. Legs long and fairly slender; protibiae straight, moderately dilated towards apices, longitudinally grooved on the external face, and glabrous on the anterior face even at the apical portion; in ♂, two proximal segments of each protarsus widely dilated and stoutly produced inwards at apices.

Male genital organ greatly different from that of *T. oreas*, very small though moderately sclerotized. Aedeagus a little more than one-third as long as elytra, rather short, tubular, lightly compressed, and hardly arcuate at middle, nearly parallel-sided in dorsal view, rounded at the dorsal side and gradually attenuate towards apex in lateral view, with extremely short apical lobe and moderately bent basal part; apical orifice small; viewed laterally, apical part abruptly narrowed to pointed apex, which is more or less curved ventrad; viewed dorsally, apical part subtriangular and obtuse at the extremity; basal part elongate, with small basal orifice, whose sides are hardly or only slightly emarginate; sagittal aileron fairly large but narrow; ventral margin either straight or slightly convex behind middle. Inner sac armed with a large copulatory piece and a large dorsal patch of large teeth; copulatory piece about two-fifths as long as aedeagus, triangular and some-



what spatulate, lying in the sac with the dorsal margin leaning against the right wall, with a longitudinal carina on the left face; teeth-patch about as long as copulatory piece, longitudinally extending above the latter. Styles relatively wide, left style obviously larger than the right, each bearing four or five short setae at apex; a sixth shorter seta sometimes present on one style.

*Variation in elytral chaetotaxy.* Of the total 79 specimens examined, 11 (8♂♂, 3♀♀), or 13.9%, are more or less aberrant in the number of setiferous dorsal pores on elytra. Seven of them are lacking in one of the dorsal pores on the third stria: one male and one female in the second pore on the right elytron, one male in the second pore on the left elytron, two males in the third pore on the right elytron, and two males in the third pore on the left elytron. Another male has lost the second pore on the right elytron and the third pore on the left elytron, and finally, the third pore is equally absent on both the elytra in one female.

On the other hand, aberrancy is seldom found in the number and position of dorsal pores on the fifth elytral stria. Only two individuals, or 2.5% of the total specimens examined, are exceptional in this respect, i.e., dorsal pores are wholly absent on the fifth stria of the right elytron in a small male, and a second dorsal pore is present on the fifth stria of the left elytron at four-ninths from base in one female. The latter is of particular interest, since it may be a reversion of chaetotaxy, suggesting that *T. nivalis* was derived from an ancestor which had more than two dorsal pores on the fifth elytral stria.

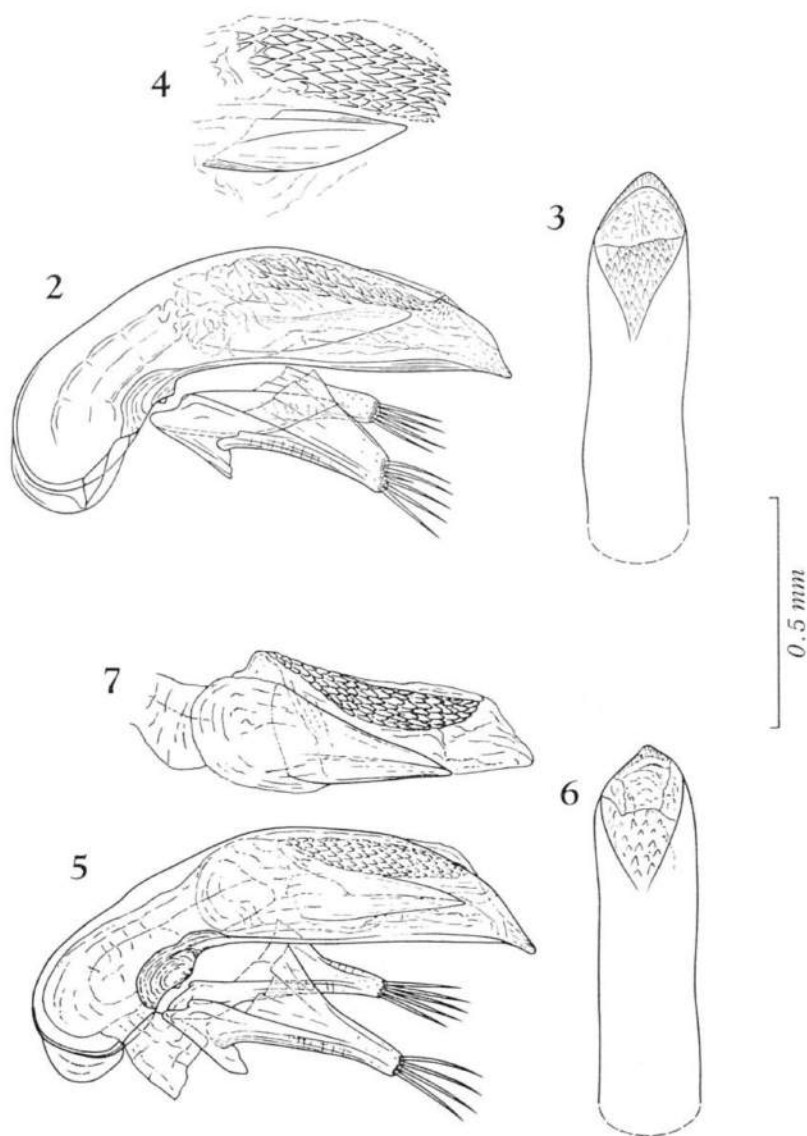
*Type series.* Holotype: ♂, allotype: ♀, Futatsu-miné, 14-VIII-1960, S. UÉNO leg. Paratypes: 41♂♂, 21♀♀, Futatsu-miné, 14-VIII-1960, S. UÉNO & K. BABA leg.; 2♂♂, Eboshi-daké, 15-VIII-1960, K. BABA leg.; 3♂♂, 2♀♀, Ishikorobi-zawa, 27-VII-1964, Y. WATANABE leg.; 1♂, Mitarashi-no-iké, 15-VIII-1960, S. UÉNO leg.; 3♂♂, 1♀, Tengu-no-niwa, 15-VIII-1960, S. UÉNO & K. BABA leg.; 2♂♂, 1♀, Onishi-daké, 15-VIII-1960, S. UÉNO & K. BABA leg.

The holotype and allotype are preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are now preserved in the above collection and the private collection of K. BABA. Both the holo- and allotypes were selected from among large light-coloured individuals.

*Localities.* Mt. Futatsu-miné (type locality!), Mt. Eboshi-daké, Ishikorobi-zawa, Mitarashi-no-iké and Tengu-no-niwa between Mt. Eboshi-daké and Mt. Onishi-daké, and Mt. Onishi-daké; all on the Iidé Mountains of the Echigo Range, on the borders between Niigata, Yamagata and Fukushima Prefectures in north-eastern Honshu, Central Japan.

*Notes.* This new species is considerably variable in size, coloration and some other details. If large light-coloured individuals were compared solely with small dark ones, they might be regarded as two separate species. However, every intermediary occurs between the two extremes, and besides, they are identical in the structure of male genitalia. Accordingly, all the specimens from the Iidé Mountains are considered to belong to the same species.

The Iidé Mountains lie at the northeastern part of the Echigo Mountain Range and consist of a cluster of peaks about 2,000 m in height. Its highest point is marked by Dainichi-daké at the southern end, which attains to a height of 2,128 m.



Figs. 2-7. Male genitalia of *Trechiana* spp.; left lateral view (2, 5), apical part of aedeagus, dorsal view (3, 6), and extracted and extended inner sac showing copulatory piece, left lateral view (4, 7). — 2-4. *T. (s. str.) nivalis* S. UÉNO, sp. nov., from Mt. Futatsuminé of the Iidé Mountains. — 5-7. *T. (s. str.) akinobui* S. UÉNO, sp. nov., from the Fujimi-tôgê in the Ozé area.

Since the Idés are situated on the Japan Sea side of northeastern Honshu, snow valleys are developed in full extent at the high altitude, and there are vast alpine meadows around them. *Trechiana nivalis* inhabits various places in the alpine zone, but seems to colonize especially near the uppermost parts of snow valleys. It is sometimes found in such spots as are exposed to the sun, but more frequently occurs in shaded moist places, under large stones embedded in the soil.

Mt. Futatsu-miné, on which most of the type material were collected, lies on a northwestern branch of the mountains. They were taken on both sides (western and eastern) of the peak at 1,400–1,550 m in altitude. At a spot on the western col of the peak, at an elevation of about 1,500 m, they were found in numbers at the bottoms of deep hollows of the ground near the lower edge of a snow patch.

On Mt. Eboshi-daké, which is about 4.5 km distant to the east-southeast from Futatsu-miné, two specimens of *T. nivalis* were taken at the upper edge of a snow valley. Other five specimens were obtained in the Ishikorobi-zawa on the northern slope of the peak at 900–1,000 m in altitude. On Mt. Onishi-daké, about 3 km southeast of Eboshi-daké, three specimens of the trechine were found from beneath stones lying at the edge of a snow patch at an elevation of about 1,900 m. At the remaining two localities (Mitarashi-no-iké and Tengu-no-niwa), the trechine beetle was met from beneath large embedded stones in low shrubs at about 1,830 m in altitude, though it seemed rare in such an environment.

*Trechiana* (s. str.) *akinobui* S. UÉNO, sp. nov.

[Japanese name: Ozé-naga-chibigomimushi]

(Figs. 5–7)

Length: 4.60–5.30 mm (from apical margin of clypeus to apices of elytra).

Very closely allied to *T. nivalis*, and barely distinguishable from it by the following points: size a little smaller on an average; pronotum more strongly rounded at the sides, and usually with longer basal part; elytra more regularly oval, usually with more effaced shoulders and more oblique prehumeral borders; aedeagus a little more elongate, with the dorsum obviously less convex at middle and less declivous towards apical orifice; aedeagal apical lobe more strongly curved ventrad and obtusely tuberculate at the extremity.

Colour variable as in *T. nivalis*, though dark individuals are relatively frequent. Head usually a little less transverse than in *T. nivalis*, with frons and supraorbital areas slightly more convex; eyes small though usually less flat than in *T. nivalis*; genae two-thirds to five-sixths as long as eyes. Pronotum more regularly cordate than in *T. nivalis*, with the sides more strongly rounded in front, deeply sinuate at about basal seventh or a little behind that level, and then usually divergent towards sharp hind angles, though sometimes subparallel to each other; basal part usually a little longer than in *T. nivalis*; surface more strongly convex than in *T.*

*nivalis*, especially in anterior half; PW/HW 1.33–1.44 (M 1.39), PW/PL 1.15–1.24 (M 1.20), PW/PA 1.48–1.62 (M 1.54), PW/PB 1.36–1.47 (M 1.42), PB/PA 1.06–1.14 (M 1.09). Elytra more regularly oval than in *T. nivalis*, with the sides more widely reflexed and more distinctly arcuate; shoulders usually more effaced, with pre-humeral borders more oblique at the inner portions; EW/PW 1.44–1.55 (M 1.49), EL/EW 1.46–1.60 (M 1.53). Chaetotaxy as in *T. nivalis*.

Male genital organ basically similar to that of *T. nivalis*, though somewhat larger and more heavily sclerotized. Aedeagus a little more elongate and more evenly tubular than in *T. nivalis*, about three-eighths as long as elytra, with elongate basal part lightly bent towards the ventral side; viewed laterally, dorsal margin weakly arcuate to apical orifice, at the sides of which the aedeagal walls are relatively high; viewed dorsally, apical part rather abruptly narrowed towards the tip, which is obtusely tuberculate; apical lobe more strongly curved ventrad than in *T. nivalis*. Inner armature as in *T. nivalis*. Each style provided with four or five apical setae.

*Variation in elytral chaetotaxy.* Of the 32 specimens of the type series, 4, or 12.5%, are aberrant in the number of setiferous dorsal pores on the third elytral stria, and 2, or 6.25%, in that on the fifth. In the former case, one of the dorsal pores is lacking: the first pore on the left elytron in one male, the third pore on the left elytron in one male and one female, and the first pore on the right elytron and the third pore on the left in one male. In the latter case, a second pore exists at a level between the middle and apical two-fifths: one male has the pore on the right elytron, and one female has it on both the elytra. This last specimen, obtained in the Akanaguré-zawa on the southwestern slope of Mt. Hiuchi-ga-také, is of great importance, since it possesses symmetrically three setiferous dorsal pores on the third elytral stria and two on the fifth, a setal arrangement that is characteristic of most species belonging to the *oreas* complex. Its occurrence is an infallible indication that *T. akinobui* is descended from an ancestor chaetotaxially similar to *T. oreas* of the present day.

*Type series.* Holotype: ♂, Fujimi-tôgê, 1,840–1,860 m alt. on SW slope, 30–VIII–1978, S. UENO leg. Allotype: ♀, Fujimi-tôgê, 1,700–1,840 m alt. on NNE slope, 30–VIII–1978, S. UENO & N. HANAKI leg. Paratypes: 3♂♂, Fujimi-tôgê, 1,840–1,860 m alt. on SW slope, 24–VII–1954, A. HABU leg.; 3♀♀ (incl. 1 teneral ex.), Fujimi-tôgê, 1,840–1,860 m alt. on SW slope, 30–VIII–1978, S. UENO leg.; 1♂, 1♀ (teneral), Fujimi-tôgê, 1,700–1,840 m alt. on NNE slope, 30–VIII–1978, S. UENO & N. HANAKI leg.; 2♂♂ (teneral), Hatomachi-zawa, 1,540 m alt., 28–VIII–1978, S. UENO & M. SATÔ leg.; 2♀♀, Yosé-zawa, 1,480–1,490 m alt., 28–29–VIII–1978, S. UENO leg.; 1♂, Warusawa-daké, 1,850 m alt., 29–VIII–1978, S. UENO leg.; 1♂, 1♀, Yamanohana, 1,440 m alt., 31–VIII–1978, M. SATÔ leg.; 1♂, 2♀♀ (teneral), Yamanohana, 1,440 m alt., 21–VIII–1979, M. SATÔ leg.; 3♂♂, 2♀♀, Hiuchi-ga-také, 2,050–2,150 m alt. on NNE slope, 27–VIII–1966, Y. WATANABE leg.; 1♂, 4♀♀ (incl. teneral 1♂, 2♀♀), Hiuchi-ga-také, 1,900–2,100 m alt. in Aka-

naguré-zawa, 31-VIII-1978, S. UÉNO & N. HANAKI leg.; 1♂, 1♀, Hiuchi-ga-také, 2,000 m alt. on W slope, 31-VIII-1978, S. UÉNO & N. HANAKI leg.

Two male paratypes from the Fujimi-tôgé are deposited in the collection of the Division of Entomology, National Institute of Agro-environmental Sciences, Tsukuba. All the others including the holo- and allotypes are preserved in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Localities.* Fujimi-tôgé (type locality!), Hatomachi-zawa and Yosé-zawa on the northern slope of the Hatomachi-tôgé, Warusawa-daké, Yamanohana, and Mt. Hiuchi-ga-také, all in the Ozé area on the borders between Fukushima and Gunma Prefectures, in central Honshu, Central Japan.

*Further specimens examined.* 1♂, Mt. Hotaka-yama, 1,350 m alt. in Kusakura-zawa, Katashina-mura, Gunma Pref., 14-VIII-1980, Y. SHIBATA leg. (NSMT); 3♂♂, 1♀, Mt. Hotaka-yama, 2,130 m alt. on E ridge, Kawaba-mura, Gunma Pref., 14-VIII-1980, Y. WATANABE leg. (NSMT); 1♂ (somewhat teneral), Mt. Aizukoma-ga-také, 2,000 m alt. on W slope, Hinoemata-mura, Fukushima Pref., 2-IX-1984, K. NEMOTO leg. (NSMT).

*Notes.* Though closely similar to *T. nivalis* in both the external and genitalic features, *T. akinobui* is regarded as a full species, not as a subspecies of the latter. As will be shown in a forthcoming paper, allopatric speciation has advanced considerably in the *nivalis* complex of the group of *T. oreas*, almost all the species hitherto found being restricted to certain small groups of high mountains. The distributional range of *T. akinobui* is separated from that of *T. nivalis* not only by a distance of 100 km in a bee-line but also by the Agano-gawa Valley and the low hills along its course. Reproductive isolation seems complete between them to such an extent as to result in their differentiation at the species level, even though the phenetic gap is not large.

This new species is distributed on the high mountains at the southwestern part of the Taishaku Range and is usually found in cold-temperate mixed forests above 1,400 m in altitude. The localities of the type series are the mountains bordering on the southern and eastern sides of the Ozegahara Moor, which lies at an elevation of about 1,400 m. The Fujimi-tôgé, the type locality, is a pass at the centre of them, and is about 110 km distant to the south-southwest from Mt. Futatsu-miné of the Iidé Mountains, the type locality of *T. nivalis*. The Hatomachi-tôgé, Yamanohana and Warusawa-daké are on the western extension of the same ridge as the Fujimi-tôgé and are 5-7 km distant from the pass, while Mt. Hiuchi-ga-také lies about 6.5 km to the north-northeast of the same pass. At each locality, the trechine beetle was found from beneath stones lying in moist places at the sides of shaded gullies.

*Trechiana akinobui* extends its range towards the southwest onto Mt. Hotaka-yama, which is about 11 km distant to the southwest by south from the Hatomachi-tôgé. The five specimens obtained at two spots of different altitude on

this mountain accord with the type series in every detail, including the following standard ratios of body parts: PW/HW 1.39–1.44 (M 1.42), PW/PL 1.18–1.24 (M 1.21), PW/PA 1.50–1.55 (M 1.53), PW/PB 1.36–1.46 (M 1.41), PB/PA 1.06–1.14 (M 1.08), EW/PW 1.43–1.47 (M 1.46), EL/EW 1.53–1.56 (M 1.55).

A single male specimen known from Mt. Aizu-koma-ga-také, which is about 12 km distant to the north-northeast from Mt. Hiuchi-ga-také, is a large individual (5.35 mm in the length of body), with relatively elongate elytra. Its genitalia are somewhat deformed due to immaturity, but look identical with those of the Hiuchi-ga-také specimens. The standard ratios of its body parts are as follows: PW/HW 1.45, PW/PL 1.21, PW/PA 1.56, PW/PB 1.47, PB/PA 1.07, EW/PW 1.42, EL/EW 1.59.

The present species is named in honour of Dr. Akinobu HABU, the best Japanese taxonomist of Carabidae we have ever had, who quitted his studies in June 1981, when he retired from the National Institute of Agro-environmental Sciences, Tsukuba.

*Trechiana* (s. str.) *kurosawai* S. UENO, sp. nov.

[Japanese name: Kurosawa-naga-chibigomimushi]

(Figs. 8–10)

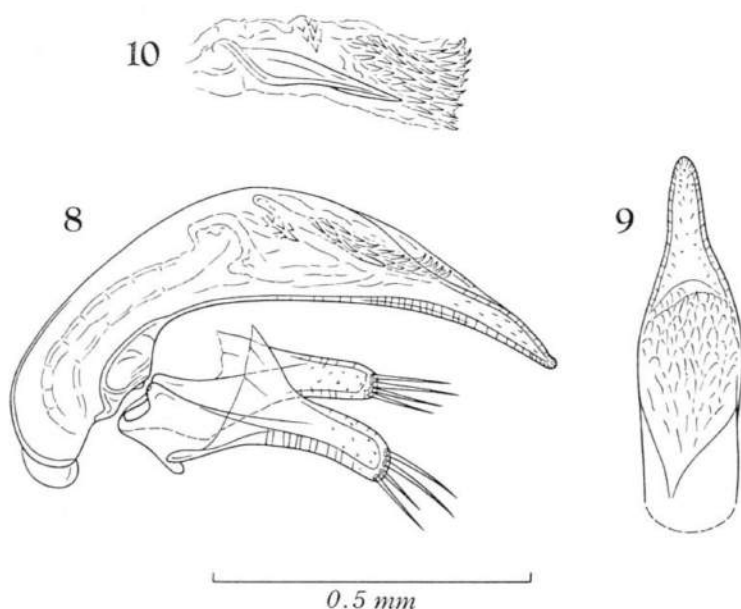
Length: 4.80–5.40 mm (from apical margin of clypeus to apices of elytra).

Very closely similar to *T. nivalis* in external features, but strikingly differing from the latter in the conformation of male genitalia.

Colour as in the light-coloured individuals of *T. nivalis*. Head usually more thickset than in *T. nivalis* mainly due to broader neck, with relatively short antennae, which barely reach basal three-eighths of elytra even in ♂. Pronotum usually a little more transverse, with the sides less strongly arcuate in front. Elytra as in *T. nivalis* though the apices are usually a little more pointed. Legs somewhat shorter and stouter than in *T. nivalis*. Standard ratios are: PW/HW 1.37–1.47 (M 1.42), PW/PL 1.16–1.27 (M 1.21), PW/PA 1.48–1.61 (M 1.53), PW/PB 1.36–1.46 (M 1.41), PB/PA 1.05–1.15 (M 1.08), EW/PW 1.42–1.53 (M 1.48), EL/EW 1.48–1.57 (M 1.52).

Male genitalia similar in basic structure to those of the two preceding species, but obviously smaller and greatly different in the shape of aedeagus, especially of its apical lobe. Aedeagus only one-fourth as long as elytra, slender, arcuate and gently compressed, with the dorsum strongly convex at middle; basal part elongate, strongly curved ventrad, and shallowly emarginate at the sides of basal orifice; sagittal aileron small but distinct; apical orifice large; apical lobe long and slender, narrow in distal half and blunt at the tip in dorsal view, gradually tapered towards apex, slightly curved ventrad and very slightly reflexed at the extremity in lateral view; ventral margin slightly but widely emarginate at middle in profile. Inner sac armed with a slender copulatory piece and a dorsal patch of sclerotized teeth; copulatory piece narrow, sharply pointed at the apex, attached to the ventral side





Figs. 8–10. Male genitalia of *Trechiana* (s. str.) *kurosawai* S. UÉNO, sp. nov., from Higashi-azuma-yama of the Azuma Mountains; left lateral view (8), apical part of aedeagus, dorso-apical view (9), and extracted and extended inner sac showing copulatory piece, left lateral view (10).

of teeth-patch with the apex at the middle of the latter, and becoming membraneous at the proximal part; dorsal teeth-patch composed of arcuate spines and horizontally lying just inside apical orifice; a small cluster of moderately sclerotized teeth present at the left side of the proximal part of copulatory piece. Styles broad, left style evidently larger than the right, each bearing four or five apical setae.

*Variation in elytral chaetotaxy.* Of the 23 specimens of the type series, 5 (4♂♂, 1♀), or 21.7%, are aberrant in the number and position of setiferous dorsal pores on elytra. Three of them (2♂♂, 1♀) are lacking in the third pore of the third stria on the right elytron, and one (♂) in that pore on the left elytron. In the remaining one (♂), the second pore on the right elytron and the third pore on the left are wanting on the third stria, while the fifth stria of the right elytron has a second dorsal pore at apical three-eighths.

*Type series.* Holotype: ♂, allotype: ♀, Higashi-azuma-yama, 1,780 m alt., 24–VI–1964, S. UÉNO leg. Paratypes: 14♂♂, 5♀♀ (incl. teneral 1♂, 1♀), same collecting data as the holotype; 2♂♂, Hôrai-zan, 1,650 m alt., 24–VI–1964, S. UÉNO leg. All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

*Localities.* Higashi-azuma-yama (type locality!) and Hôrai-zan, on the Azuma Mountains at the southern end of the Ôu Range, on the borders between Fuku-

shima and Yamagata Prefectures in northeastern Honshu, Central Japan.

*Further specimen examined.* 1♂, Mt. Nishi-azuma-yama, 1,700 m alt. on N slope, Yonezawa-shi, Yamagata Pref., 24-VIII-1978, K. KUSAKARI leg. (NSMT).

*Notes.* Though remarkably differing in the shape of male genitalia, this new species is doubtless very closely related to *T. nivalis* of the Iidé Mountains. It is almost identical with the latter in external morphology, and is also homologous to it in the construction of aedeagal inner armature. The two species must have been derived from a common ancestor that colonized the range of mountains bordering on the northern side of the Province of Aizu. It is difficult to explain when and how the allopatric speciation took place between them, since the two groups of high mountains, the Azumas and the Iidés, are connected by a ridge mostly exceeding 1,000 m in height. Further investigations on the intervening mountains are needed for clarifying the accurate distributional ranges of the respective species.

In the present species, it is rather difficult to detect the presence of the copulatory piece by transparency, as the sclerite is thin and concealed by the dorsal teeth-patch. It can be clearly observed only when the inner sac is extracted and carefully extended.

Most specimens of the type series of *T. kurosawai* were obtained on the north-western slope of Higashi-azuma-yama, lying at the eastern part of the Azuma Mountains and about 50 km distant to the east-southeast by east from Mt. Onishidake of the Iidés. They were found from beneath stones in wet gullies shaded by subalpine scrubs. The second locality, Hôrai-zan, is to the east of the type habitat and not far from it.

The single male known from Mt. Nishi-azuma-yama, which lies on the same ridge as the type locality but is about 8.5 km distant to the west-northwest from the latter, is perfectly identical with the type specimens in external morphology. Its aedeagus is more gradually attenuate from behind middle in lateral view, with the apical lobe less obviously curved ventrad, but otherwise identical with those of the Higashi-azuma-yama specimens.

This interesting species is dedicated to Dr. Yoshihiko KUROSAWA, who has always been a good friend of mine for nearly forty years and has continuously encouraged my studies on ground-beetles.

### References

- BATES, H. W., 1883. Supplement to the geodephagous Coleoptera of Japan, chiefly from the collection of Mr. George LEWIS, made during his second visit, from February, 1880, to September, 1881. *Trans. ent. Soc. London*, 1883: 205-290, pl. 13, 1 folder.
- CASALE, A., & R. LANEYRIE, 1982. Trechodinae et Trechinae du monde. Tableau des sous-familles, tribus, séries phylétiques, genres, et catalogue général des espèces. *Mém. Biospéol.*, 9: i+1-226.
- JEANNEL, R., 1954. Trois Tréchites orientaux nouveaux. *Rev. fr. Ent.*, 21: 10-14.
- 1962. Les Trechini de l'Extrême-Orient. *Ibid.*, 29: 171-207.
- UÉNO, S.-I., 1980. The anophthalmic trechine beetles of the group of *Trechiana ohshimai*. *Bull. natn. Sci. Mus., Tokyo*, (A), 6: 195-274.
- 1985. Carabidae (Nebriinae, Elaphrinae, Loricarinae, Scaritinae, Broscinae, Trechinae). In UÉNO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, 2: 54-88. Hoikusha, Osaka. (In Japanese.)



## A New *Apatrobus* (Coleoptera, Carabidae) from Mt. Tara-dake in Kyushu, West Japan

by

Seiji MORITA

Motoazabu 1-3-28-305, Minato-ku, Tokyo 106, Japan

**Abstract** A new patrobine carabid beetle is described from Mt. Tara-dake in Kyushu, West Japan, under the name of *Apatrobus kurosawai*. It is related to *A. hikosanus* (HABU), but differs from it mainly in the conformation of male genitalia.

In 1953, HABU described a patrobine carabid from Mt. Hiko-san in Fukuoka Prefecture, northern Kyushu, under the name of *Penetretus hikosanus*. Later in 1955, he transferred it to the genus *Patrobus*, and in 1960, he erected the subgenus *Apatrobus* for this species.

In the same year, KURNAKOV described *Apenetretus* on the basis of *Penetretus ambiguus* BATES from Mt. Ontake in central Honshu and placed in the same genus three other species, *P. dilatatus*, *quadraticollis* and *hikosanus*. However, I cannot agree with him in regarding *P. hikosanus* as a member of *Apenetretus*, since its aedeagus does not close on the dorsal side though the side walls approach each other.

*Apatrobus* is no doubt closely allied to the genus *Patrobus* in the structure of male genital organ, but is distinguished from it by the presence of two or three setae on either side of the ventrolateral margin of the fifth tarsal segment. Therefore, I prefer to regard *Apatrobus* as a full genus.

In the spring of 1977, I obtained two examples of a carabid beetle belonging to the genus *Apatrobus* on Mt. Tara-dake in northwestern Kyushu. Unfortunately, both of them were females and immature. Four years later, I revisited the mountain in the autumn and was able to obtain many additional specimens of the same species. It proved to be a new species related to *A. hikosanus* (HABU). It will be described in this paper in commemorating the retirement of Dr. Yoshihiko KUROSAWA from the National Science Museum (Nat. Hist.), Tokyo.

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

I am deeply indebted to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for not only giving advice but also reading the original manuscript. My thanks are also due to Mr. Sumao KASAHARA for his kind help.

*Apatrobus kurosawai* MORITA, sp. nov.

[Japanese name: Tara-nurechi-gomimushi]

*Patrobus (Apatrobus)* sp.: MORITA, 1981 Kita-Kyūshū no Konchū, (28), p. 84.

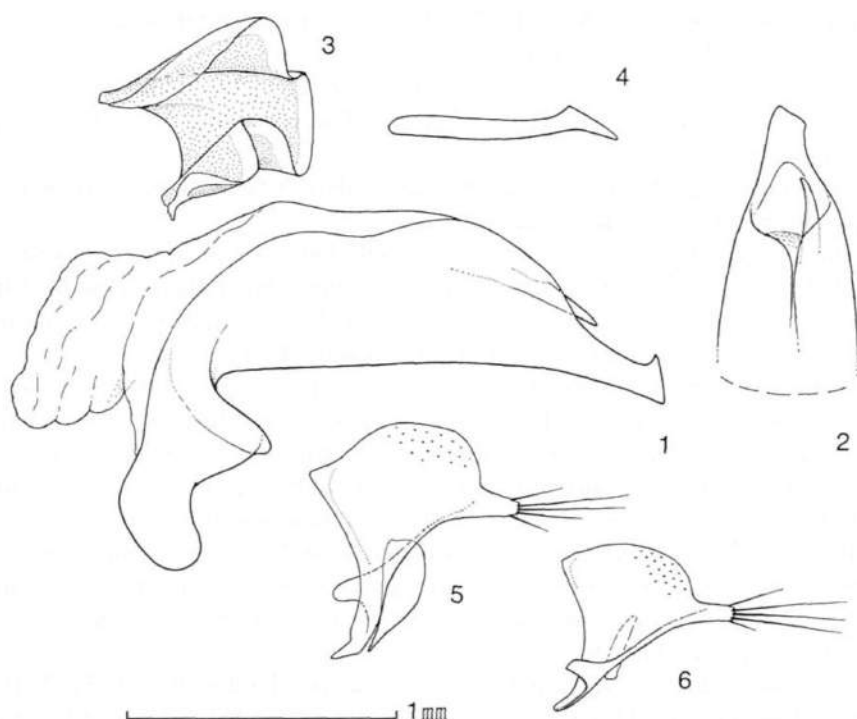
Length: 9.2–11.1 mm (from apical margin of clypeus to apices of elytra).

Body elongate and convex. Color as in *A. hikosanus*.

Head large, wide and convex; frontal furrows moderately deep and wide, diverging behind and often arcuate inwards at the posterior parts, with fine punctures; lateral groove deep and straight; interval between the furrow and groove somewhat convex; microsculpture absent; eyes a little larger and more convex than in *A. hikosanus*; genae tumid, three-fifths as long as eyes and wrinkled beneath them; anterior supraorbital seta located on the mid-eye level and close to each eye, posterior one apart from the posterior margin of eye and close to neck constriction, which is deep and bears punctures behind vertex; mandibles short and stout; antennae rather long, reaching basal third of elytra, segment 2 with five or six setae (sometimes four, rarely three); relative lengths of antennal segments as follows:—1: 2: 3: 4: 5: 8: 9=1: 0.56: 1.47: 0.92: 0.96: 0.85: 0.81.

Pronotum subcordate, moderately convex, widest at about three-fifths from base, usually without small depression between anterior marginal seta and median line; PW/HW 1.32–1.39 (M 1.36) in 23♂♂, 1.34–1.38 (M 1.36) in 8♀♀, PW/PL 1.25–1.33 (M 1.29) in 23♂♂, 1.19–1.30 (M 1.25) in 8♀♀, PW/PA 1.38–1.45 (M 1.41) in 23♂♂, 1.33–1.41 (M 1.37) in 8♀♀, PW/PB 1.37–1.49 (M 1.44) in 23♂♂, 1.36–1.44 (M 1.40) in 8♀♀; apex straight, usually a little wider than base, PA/PB 0.97–1.07 (M 1.02) in 23♂♂, 1.00–1.05 (M 1.02) in 8♀♀; sides moderately arcuate in front though less strongly and less evenly so than in *A. hikosanus*, rather deeply sinuate behind and parallel before hind angles; reflexed lateral borders gradually becoming wider from the level of anterior marginal setae to apical angles; apical angles produced and widely rounded; hind angles rectangular or a little sharp, without carina; posterior marginal seta situated a little before and inside hind angle; anterior transverse impression shallow, with fine punctures; median line deep, not reaching apex nor base; basal foveae rather deep, diverging anteriorly, densely punctate; basal area between basal foveae and median line with coarse punctures and often wrinkled.

Elytra ovate, lightly convex, widest at about middle; EW/PW 1.31–1.40 (M 1.35) in 23♂♂, 1.34–1.46 (M 1.40) in 8♀♀, EL/EW 1.49–1.59 (M 1.54) in 23♂♂, 1.51–1.62 (M 1.59) in 8♀♀; shoulders rounded, less oblique than in *A. hikosanus* and not angulate; sides gently arcuate, slightly sinuate before apices; intervals slightly convex or rather flat, with microscopic punctures; microsculpture distinct, forming transverse meshes; interval 3 with three pores at about basal fifth, a little before middle and about three-tenths from apex; scutellar striole short and shallow, with punctures; striae rather deep, distinctly though not coarsely punctate, becoming shallower near apices; marginal series composed of nine to thirteen pores.



Figs. 1-6. Male genitalia of *Apatrobus kurosawai* MORITA, sp. nov., of Mt. Tara-dake. —

1. Aedeagus, left lateral view. 2. Apical part of aedeagus, dorsal view. 3. Separated basal copulatory piece, oblique lateral view. 4. Separated apical copulatory piece, oblique lateral view. 5. Separated left style, left lateral view. 6. Separated right style, left lateral view.

In ♀, anal sterite with two pair of setae which are almost alined or on a shallow arc open posteriorly.

Male genital organ relatively large; aedeagus about one-third as long as elytra, rather stout and almost straight with fully bent basal part; basal part distinctly emarginate on ventral side; viewed dorsally, apical part hardly turned to the right; apical lobe flat and twisted, with obtusely angulate and ventro-apically produced right corner, and triangularly denticulate and dorso-proximally produced left corner; inner sac armed with two copulatory pieces and a teeth-patch; apical copulatory piece elongate, lying at the dorsal position, with the apex pointed; proximal copulatory piece saddle-like though asymmetrical, with the sides rolled; teeth-patch lies at the middle of inner sac; styles wide with strongly arcuate dorsal margin, tapering towards apices which are briefly prolonged; left style wider than the right; left style with two or three long apical setae and two or three short subapical setae; right style with three or four long setae at apex and two short setae before them.

*Type series.* Holotype: ♂, allotype: ♀, paratypes: 22♂♂, 6♀♀, 14-IX-1981,

S. MORITA leg. (N slope, Saga Prefecture); 2♀ (both teneral), 20-V-1977, S. MORITA leg. (W slope, Nagasaki Prefecture).

The holo-, allo- and three paratypes are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo. The remaining paratypes are preserved in my collection.

*Type locality.* Mt. Tara-dake, on the borders between Saga and Nagasaki Prefectures, northwestern Kyushu, West Japan.

The type locality of *A. kurosawai* is about 93 km distant to the southwest from that of *A. hikosanus*, which is the only species of the genus hitherto described from the Island of Kyushu. Its type material was found from under stones by a mountain stream together with *Pterostichus macrocephalus* HABU.

Of the eight species belonging to the genus *Apatrobus*, this new species is most closely allied to *A. hikosanus*. It is, however, distinguished from it by the following points: 1) body smaller; 2) antennal segment 2 with five or six setae instead of three or four; 3) pronotum less strongly and less evenly arcuate at the sides, with much widely reflexed apical angles; 4) elytra with less oblique shoulders.

In aedeagal structure, it is distinctly different from *A. hikosanus*: in *A. hikosanus*, aedeagus strongly turned to the right with apical portion dentate at middle; apical copulatory piece uncinat; proximal copulatory piece spatulate; teeth-patch large and lying on the ventral side.

This new species is dedicated to Dr. Yoshihiko KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, who has given me helpful advice for a long time.

## References

- HABU, A., 1953. On new or unrecorded species of the Carabidae from Japan (Coleoptera) (The Carabidae-fauna of Mt. Hiko, I). *Mushi, Fukuoka*, **25**: 47-51, pls. 3-4.
- 1955. Über die *Pterostichus*-Arten vom Berg Hiko (Die Carabiden-fauna vom Berg Hiko, VII). *Bull. natn. Inst. agr. Sci., Tokyo*, (C), (5): 143-156.
- 1976. Three new species of *Apatrobus*, a subgenus of *Patrobus*, from Shikoku, Japan (Coleoptera: Carabidae). *Trans. Shikoku ent. Soc.*, **13**: 9-17.
- 1977. Two new species of ground beetles from Honshu, Japan (Coleoptera, Carabidae). *Ent. Rev. Japan, Osaka*, **30**: 35-40.
- & K. BABA, 1960. A new species of *Patrobus* from Mts. Iide, with the key to the *Patrobus*-species of Japan (Coleoptera, Carabidae). *Akitu, Kyoto*, **9**: 1-10.
- KURNAKOV, V. N., 1960. Contribution à la faune des Carabiques du Caucase. II, Description de nouveaux *Deltomerus* du Caucase et note préliminaire sur la systématique des Deltomerini. *Rev. fr. Ent.*, **27**: 267-277.
- MORITA, S., 1981. Carabid beetles from Mt. Tara-dake. *Kita-Kyûshû no Konchû*, (28): 84. (In Japanese.)
- 1985. Carabidae (Bembidiinae, Patrobinae). In UENO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**: 89-103. Hoikusha, Osaka. (In Japanese.)

## A New Callistine Carabid (Coleoptera) from Central Japan

by

Sumao KASAHARA

Nishifuna 4-9-13, Funabashi City, Chiba 273, Japan

**Abstract** A new callistine carabid beetle is described from Central Japan under the name of *Chlaenius kurosawai*. It has hitherto been considered to be an intermediate race between *C. sericimicans* CHAUDOIR and *C. variicornis* MORAWITZ.

The two related callistine carabids, *Chlaenius sericimicans* CHAUDOIR (1876, pp. 23, 235) and *C. variicornis* MORAWITZ (1863, p. 35), are rather commonly found in grass fields and well known in Japan. They can be easily recognized on their facies, especially on the shape of prothorax. There is another related species, which has been known mainly from the Kantô District of eastern Honshu, and is intermediate between the above two. It is usually found in coexistence with the others and has often been confused with them.

For some time, I have endeavoured to determine the taxonomic relationship of these forms based upon long series of specimens, and have come to the conclusion that the unnamed form in question is clearly separable from the other two by the peculiarities of the male genital organ, though closer to *C. variicornis* than to *C. sericimicans*.

In the present paper, I will describe it under the new name of *C. kurosawai* in commemorating Dr. Yoshihiko KUROSAWA's retirement from the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Dr. KUROSAWA has long been aware of the existence of this new species, though he did not dare to name it.

The abbreviations used herein are as follows: HW—greatest width of head including eyes; PW—greatest width of pronotum; PAW—apical width of pronotum; PBW—basal width of pronotum; PL—length of pronotum, measured along the mid-line; EW—greatest width of elytra.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for giving me advice during the course of this study and for reading the manuscript of this paper. Thanks are also due to Messrs. Terutsune ABE, Nobuyuki KOBAYASHI, Seiji MORITA and Minoru TAO for their kindness in offering material.

*Chlaenius* (*Chlaenius*?) *kurosawai* KASAHARA, sp. nov.

[Japanese name: Nise-kogashira-aogomimushi]

(Figs. 1, 3, 6, 9, 11)

*Description.* Length 12.8–14.2 mm. Width 4.8–5.8 mm.

Head and pronotum metallic green in general; elytra black, with weakly greenish tinge; labrum and mandibles dark reddish brown; palpi and antennal segments 1-3 light reddish brown, segments 4-6 or 7 fuscous, the remaining segments tending to become paler towards the terminal one; legs yellowish brown; ventral surface black, gula and prepisterna tinged with metallic green. Pronotum and elytra wholly covered with golden pubescence.

Head shiny, moderately convex, rather densely covered with irregular punc-

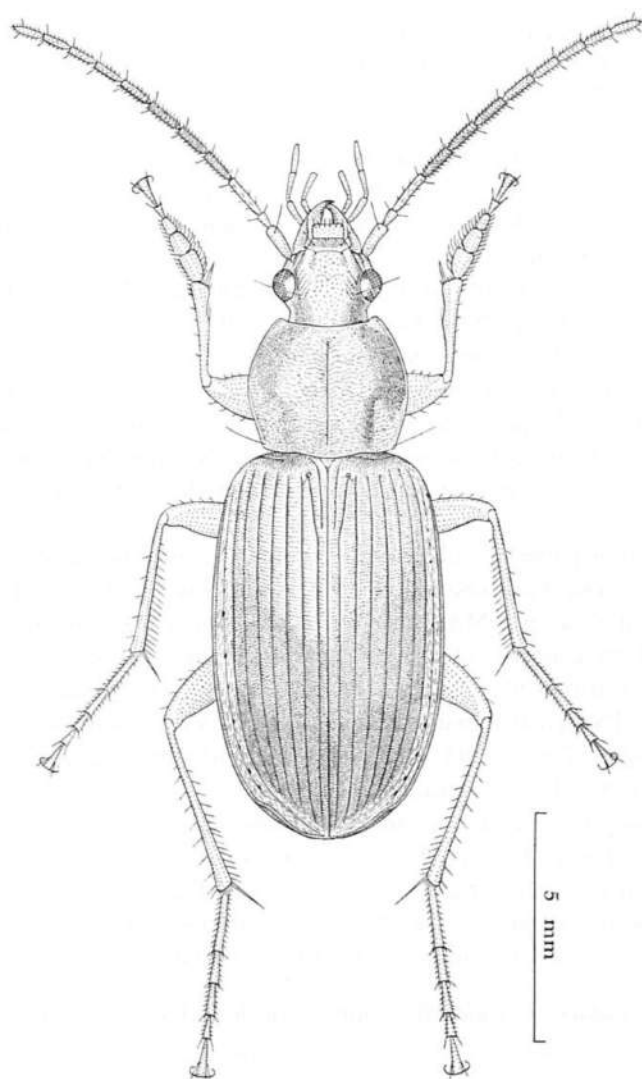
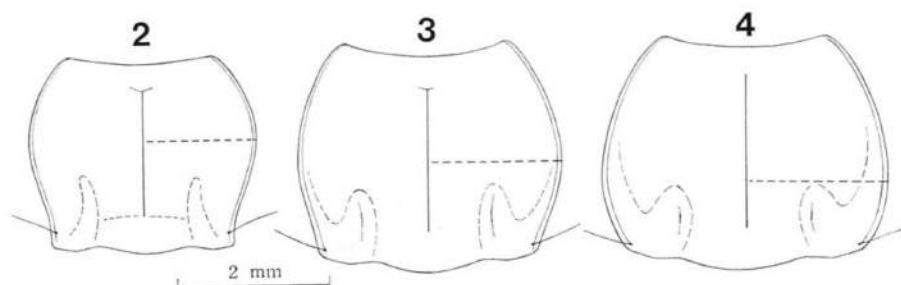


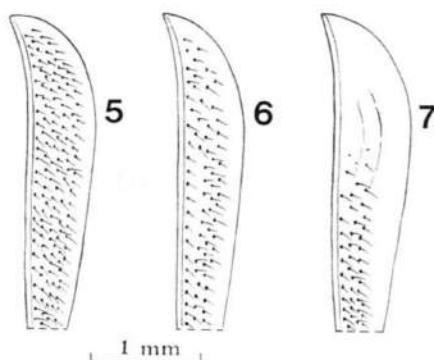
Fig. 1. *Chlaenius kurosawai* KASAHARA, sp. nov., ♂, from the Watarase Marsh, Fujioka, Tochigi Pref.

tures mixed with transverse wrinkles; supraorbital areas with distinctly impressed longitudinal wrinkles; microsculpture degenerated; eyes well convex, tempora strongly contracted behind; frontal furrows shallow, punctate; labrum either straight or lightly emarginate at apex; both maxillary and labial palpi slender, with apical segments almost cylindrical, slightly tumid at the middle; antennal segment 3 the longest, sparsely ciliated, a little longer than segment 4 and about 3 times as long as segment 2.

Pronotum less shiny, somewhat wider than that of *C. variicornis*, narrower than in *C. sericimicans* in general, moderately convex, widest at about or a little behind middle, 1.4 times as wide as head (PW/HW 1.36–1.50, mean 1.44 in 38♂♂, 26♀♀), 1.2 times as wide as long (PW/PL 1.16–1.28, mean 1.21, in 38♂♂, 26♀♀), base 1.3 times as wide as apex (PBW/PAW 1.14–1.38, mean 1.27, in 38♂♂, 26♀♀); lateral margins gently rounded, more strongly contracted towards apex than towards base, almost straight or very slightly sinuate before basal angles, which are obtuse and rounded at the tips; sides of basal part more widely reflexed than in *C.*

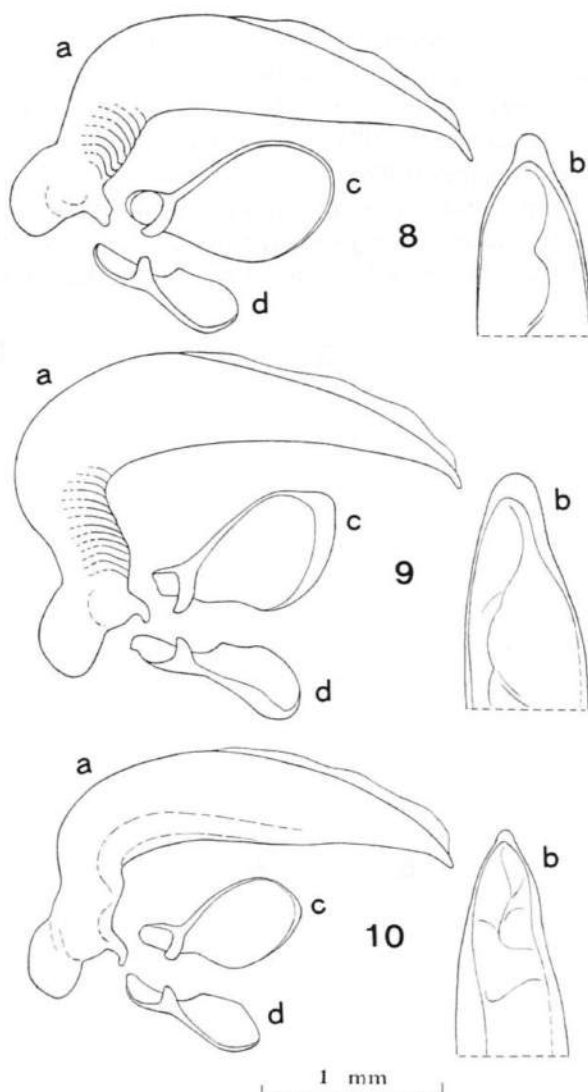


Figs. 2–4. Pronotum of *Chlaenius* spp.; horizontal broken lines show the widest level. — 2, *C. variicornis* MORAWITZ; 3, *C. kurosawai* KASAHARA, sp. nov.; 4, *C. sericimicans* CHAUDOIR.



Figs. 5–7. Left epipleura of *Chlaenius* spp., basal halves. — 5, *C. variicornis* MORAWITZ; 6, *C. kurosawai* KASAHARA, sp. nov.; 7, *C. sericimicans* CHAUDOIR.

*variicornis*; apical margin more deeply emarginate than in *C. variicornis*, apical angles a little produced, narrowly rounded at the tips; basal margin gently arcuate at the median part, sinuate on each side; surface densely punctate, the punctures mostly connected with one another forming transverse wrinkles; microsculpture indistinct; median line fine; basal foveae shallow.



Figs. 8-10. Male genitalia of *Chlaenius* spp. — 8, *C. variicornis* MORAWITZ; 9, *C. kurosawai* KASAHARA, sp. nov.; 10, *C. sericimicans* CHAUDOIR. a, Aedeagus in left lateral view; b, apical third of aedeagus in dorsal view; c, left paramere; d, right paramere.



Elytra mat, oblong-ovate, moderately convex, widest at about middle, a half as wide again as pronotum (EW/PW 1.36–1.58, mean 1.48, in 38♂♂, 26♀♀); basal border complete, distinctly emarginate opposite to the base of stria 4; shoulders rounded; preapical emarginations shallow; striae entire, moderately impressed, punctate, all the punctures connected with one another and densely forming transverse wrinkles; microsculpture visible, isodiametric; elytral epipleura sparsely punctate and pubescent at the humeral part. Wings full.

Ventral surface wholly covered with pubescent punctures.

Aedeagus strongly curved at nearly 90 degrees at the basal third, thence gently arcuate towards apex, which is briefly curved downwards in lateral view; basal part with conspicuous transverse wrinkles at the ventral side; apical lamella wider than long, widely rounded at the tip in dorsal view. Left paramere wide, more or less pointed at apex, though narrowly rounded, outer sclerotized border extending inwards at the apex.

*Type series.* Holotype: ♂, allotype: ♀, paratypes: 22♂♂, 12♀♀, Watarase Marsh, Fujioka, Tochigi Pref., 17–III–1981, S. KASAHARA leg.; 1♀, Tajimagahara, Saitama Pref., 20–III–1955, Y. KUROSAWA leg.; 4♂♂, 5♀♀, Tajimagahara, Saitama Pref., 20–III–1956, Y. KUROSAWA leg.; 2♂♂, Urawa, Saitama Pref., 14–III–1971, T. ABE leg.; 2♀♀, Riv. Tone-gawa, Toride, Ibaragi Pref., 24–VIII–1981, S. KASAHARA leg.; 1♂, 1♀, Riv. Tama-gawa, Fuchû, Tokyo M. D., 4–IV–1981, S. KASAHARA leg.; 2♂♂, 1♀, Yamakura, Chiba Pref., 17–XI–1976, S. KASAHARA leg.; 1♂, 1♀, Sunosaki, Tateyama, Chiba Pref., 15–I–1976, S. KASAHARA leg.; 1♂, Miho, Yokohama, Kanagawa Pref., 3–XI–1982, N. KOBAYASHI leg.; 1♀, Mt. Ogasa-yama, Shizuoka Pref., 2–IV–1975, S. KASAHARA leg.; 1♂, Mt. Ibuki-san, Shiga Pref., 5–I–1971, T. ABE leg.; 1♀, Inagawa, Shimogawara, Hyôgo Pref., 3–III–1947, S. UENO leg.

The holo- and allotypes are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. The paratypes are separately deposited in the above collection and those of the collectors.

*Notes.* The present new species may be more frequently confused with *C. variicornis* than with *C. sericimicans*, but can be distinguished by the following key.

- 1 (4) Pronotum widest at about middle or before that level, with lateral margins almost straightly or sinuately contracted towards base; elytral epipleura punctate and pubescent at the humeral part; aedeagus with transverse wrinkles at the basal part, with relatively broad large apical lamella.
- 2 (3) Pronotum widest a little before the middle, with lateral margins sinuate before basal angles; elytral epipleura densely punctate and pubescent at the humeral part; aedeagus curved at an obtuse angle at basal third, with apical lamella narrowly protrudent; left paramere evenly rounded at the apex.....*C. variicornis* MORAWITZ.
- 3 (2) Pronotum widest at about or a little behind middle, with lateral margins hardly sinuate before basal angles; elytral epipleura sparsely punctate and

- pubescent at the humeral part; aedeagus strongly curved at basal third at nearly 90 degrees, with simply rounded apical lamella; left paramere more or less pointed at the apex..... *C. kurosawai* KASAHARA, sp. nov.
- 4 (1) Pronotum widest at basal two-fifths, with lateral margins roundly contracted towards base; elytral epipleura glabrous at the humeral part; aedeagus without transverse wrinkles at the basal part, with small apical lamella..... *C. sericimicans* CHAUDOIR.

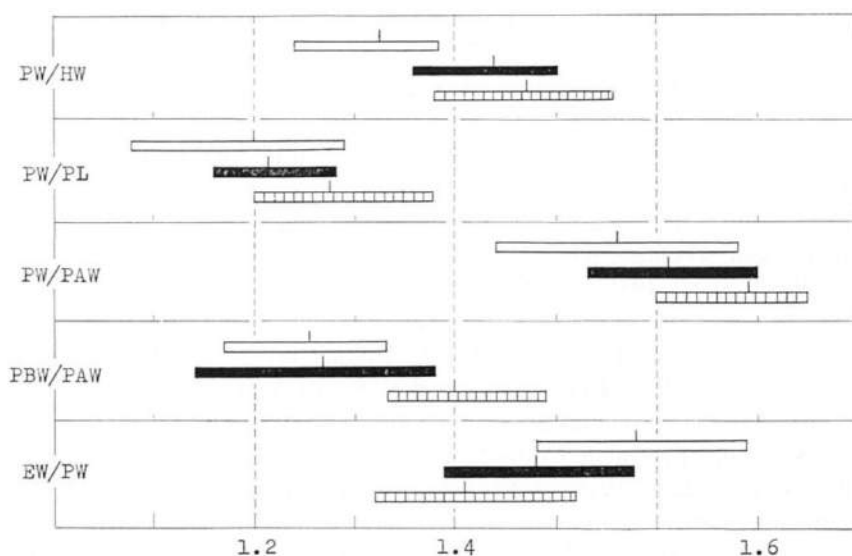


Fig. 11. Diagram showing the range of variation of *Chlaenius* spp.; white bars, *C. varicornis* MORAWITZ in 35 exs.; black bars, *C. kurosawai* KASAHARA, sp. nov., in 64 exs.; blocked bars, *C. sericimicans* CHAUDOIR in 38 exs.

### References

- CHAUDOIR, M. DE, 1876. Monographie des Chlénien. *Ann. Mus. civ. Stor. nat. Genova*, **8**: 1-315.
- MORAWITZ, A., 1863. Beitrag zur Käferfauna der Insel Jesso. Erste Lieferung. Cicindelidae et Carabici. *Mém. Acad. imp. Sci. St.-Petersb.*, (VII), **6** (3): i-iii+1-84.

## New Silphid Beetles of the Subgenus *Calosilpha* (Coleoptera, Silphidae)

by

Masaaki NISHIKAWA

3014-11 (202), Iriya 4, Zama, Kanagawa 228, Japan

**Abstract** A new species and a new subspecies of the silphid subgenus *Calosilpha* are described from Amami-Oshima Is. of the Ryukyus and western Kyushu, respectively. A brief note is also made on the Korean specimens of *Eusilpha* (*Calosilpha*) *bicolor*.

In this paper, I am going to describe a new species and a new subspecies of silphid beetles belonging to the subgenus *Calosilpha* PORTEVIN. Besides, a brief note will be made on the Korean specimens of *Eusilpha* (*Calosilpha*) *bicolor* for comparison with the new subspecies.

Before going further, I wish to express my heartfelt thanks to Dr. Yoshihiko KUROSAWA for allowing me to examine the collection of Silphidae at the National Science Museum (Nat. Hist.), Tokyo (=NSMT), and to Dr. Shun-Ichi UENO for kindly reading the manuscript of this paper. Thanks are also due to Messrs. Syoichi IMASAKA and Sumao KASAHARA for their kindness in offering valuable material and help.

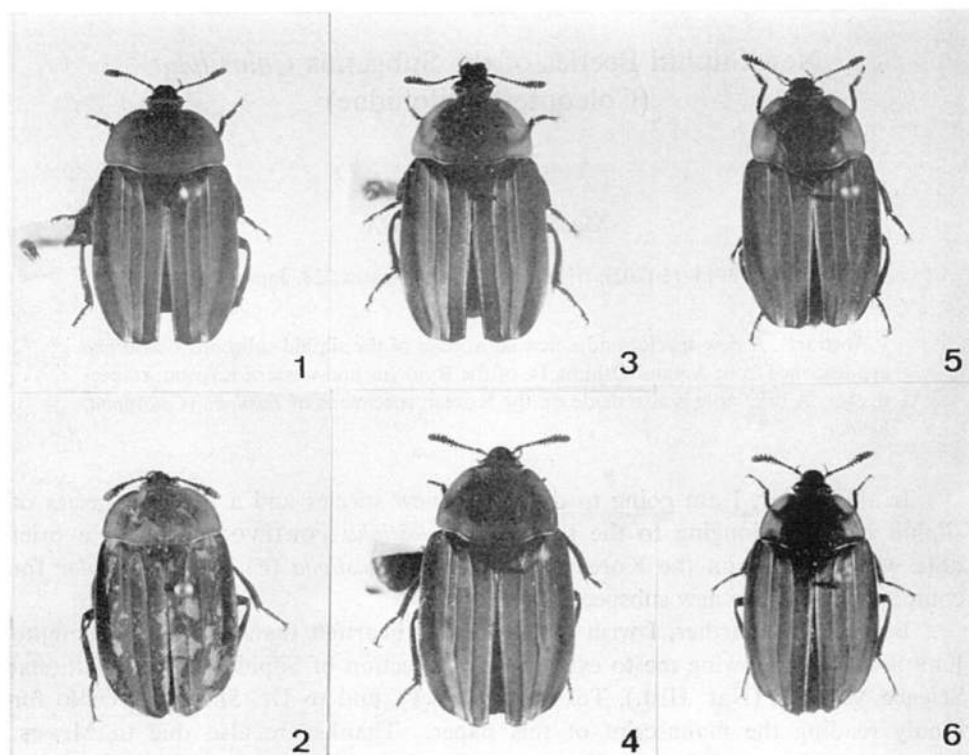
### *Eusilpha* (*Calosilpha*) *bicolor bicolor* (FAIRMAIRE, 1899)

(Figs. 1, 2, 7, 8, 13, 16, 19, 23)

*Silpha bicolor* FAIRMAIRE, 1899, Ann. Soc. ent. Fr., 68: 616 (Koua-Toum, Szechuan).

**Male.** Length 21.1-22.0 mm, breadth 10.7-11.4 mm. Epipleuron metallic reddish violet. Pronotum transverse, about 1.6 times as wide as long, with sides arcuate (Fig. 7). Antennae short, dilated from 6th segment (Fig. 13); 3rd and 4th segments nearly equal in width, though the former is longer than the latter; 4th and 5th similar in length; 5th about 1.4 times as wide as long; 6th about 1.7 times as wide as long. Elytra as shown in Fig. 19. Male genitalia as shown in Fig. 23.

**Female.** Length 20.4 mm, breadth 10.6 mm. Pronotum transverse, 1.6 times as wide as long (Fig. 8). Antennae short and thick, dilated from 4th segment (Fig. 16); 4th and 5th segments nearly equal in length, but slightly shorter than 3rd; 4th 1.8 times as wide as long; 5th 2.6 times as wide as long; 6th 2.7 times as wide as long; 3rd normal. Elytra as shown in Fig. 21. Female genitalia not examined.



Figs. 1-6. *Eusilpha* (*Calosilpha*) spp. — 1. *E. (C.) bicolor bicolor* (FAIRMAIRE), ♂, from Soyo-san, Korea. 2. Same, ♀, from Seoul, Korea. — 3-4. *E. (C.) bicolor imasakai* M. NISHIKAWA, subsp. nov., from Senbuki; 3, ♂ holotype; 4, ♀. — 5-6. *E. (C.) kurosawai* M. NISHIKAWA, sp. nov., from Mt. Yuwandake on Is. Amami-Oshima; 5, ♂ holotype; 6, ♀.

*Specimens examined.* 1♂, Syôyôzan, Keiki (=Soyo-san, Gyeonggi-do), Korea, 4. VIII. 1943, student of Keijo Mid. School leg. (NSMT); 1♀, Keijo-fu (=Seoul), 13. 8. 1940, TANI Collection (NSMT); 1♂, Seoul, C. Korea (NSMT).

*Distribution.* Korea, China (incl. Tibet).

***Eusilpha* (*Calosilpha*) *bicolor imasakai* M. NISHIKAWA, subsp. nov.**

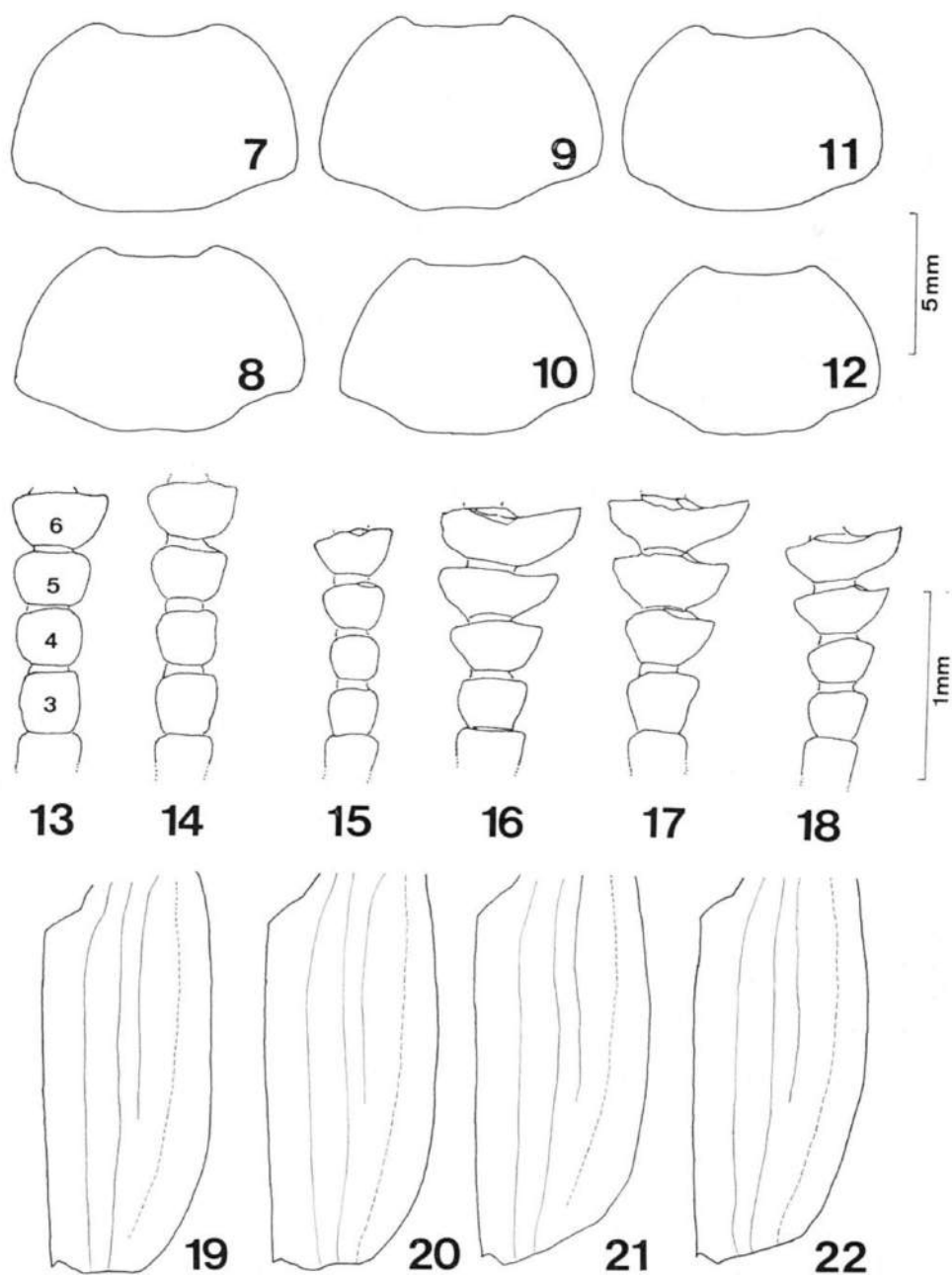
(Figs. 3, 4, 9, 10, 14, 17, 20, 22)

*Calosilpha brunneicollis*: T. SHIBATA, 1968, Ent. Rev. Japan, 22: 53 (Tsushima Is.). (Nec KRAATZ, 1877.)

*Silpha brunneicollis*: S. IMASAKA, 1980, Trans. Nagasaki biol. Soc., (19): 23, fig. 8 (Shimabara Peninsula, Kyusyu). (Nec KRAATZ, 1877.)

*Eusilpha* (*Calosilpha*) *bicolor*: Y. KUROSAWA, 1985, Coleopt. Japan Col., Osaka, 2: 250, pl. 44, fig. 24 (partim). (Nec FAIRMAIRE, 1899.)

This new subspecies differs from the nominotypical form in the following



Figs. 7-22. Pronotum (7-12), 3rd to 6th antennal segments (13-18), and right elytron (19-22) of *Eusilpha* (*Calosilpha*) spp. — 7-8, 13, 16, 19 and 21. *E. (C.) bicolor bicolor* (FAIRMAIRE), from Soyo-san (♂) and Seoul (♀), Korea; 7, 13, 19, ♂; 8, 16, 21, ♀. — 9-10, 14, 17, 20 and 22. *E. (C.) bicolor imasakai* M. NISHIKAWA, subsp. nov., from Senbuki; 9, 14, 20, ♂; 10, 17, 22, ♀. — 11-12, 15 and 18. *E. (C.) kurosawai* M. NISHIKAWA, sp. nov., from Mt. Yuwandake on Is. Amami-Oshima; 11, 15, ♂; 12, 18, ♀.

points:

*Male.* Length 21.0 mm, breadth 11.0–11.3 mm. Pronotum transverse, about 1.5 times as wide as long, very strongly narrowed towards apex (Fig. 9). Antennae with 6th segment about 1.8 times as wide as long (Fig. 14). Elytra as shown in Fig. 20.

*Female.* Length 20.9–22.0 mm, breadth 11.0–11.3 mm. Pronotum trapezoidal, about 1.5 times as wide as long; very strongly narrowed towards apex (Fig. 10). Antennae with 3rd to 5th segments nearly equal in length; 3rd slightly dilated; 4th about 1.6 times as wide as long; 5th about 2.2 times as wide as long; 6th 2.6–2.8 times as wide as long (Fig. 17). Elytra as shown in Fig. 22.

Holotype: ♂, Senbuki, Shimabara City, Kyushu, 18. VI. 1978, S. IMASAKA leg. (in coll. NSMT). Paratypes: 1♂ 5♀♀, same data as holotype (in my coll.).

*Eusilpha (Calosilpha) kurosawai* M. NISHIKAWA, sp. nov.

(Figs. 5, 6, 11, 12, 15, 18, 24–26)

*Calosilpha brunneicollis*: T. SHIBATA, 1968, Ent. Rev. Japan, 21: 53 (Amami-Oshima Is.). (Nec KRAATZ, 1877.)

*Silpha brunneicollis*: S. IMASAKA, 1981, Gekkan Mushi, Tokyo, (141): 31, fig. (Amami-Oshima Is.). (Nec KRAATZ, 1877.)

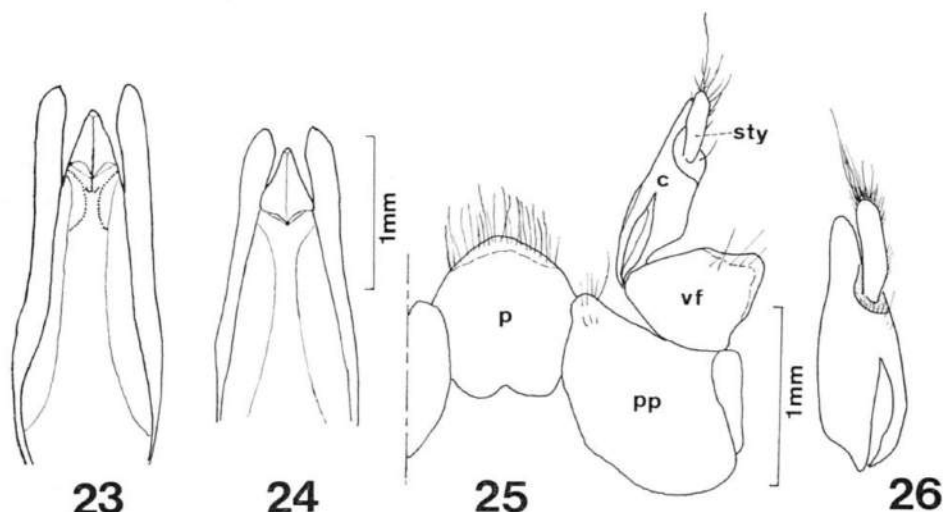
*Male.* Length 15.5–19.7 mm, breadth 8.7–10.8 mm. Head and labrum shiny black; antennae reddish black, with 9th to 11th segments spongy; palpi reddish brown, with apical half of last segment more or less paler; pronotum orange, median area blackish brown; elytra and scutellum blackish brown; epipleuron, legs and under surface metallic bluish black.

Body short. Head rectangular, slightly longer than wide, frontal carina between eyes distinct; labrum emarginate at apex. Eyes large and prominent, with long stout setae behind them. Antennae short, strongly dilated from 6th segment; 3rd and 4th nearly equal in width, though the former is slightly longer than the latter; 5th about 1.5 times as wide as long; 6th about 1.8 times as wide as long; 3rd and 4th normal, 5th slightly dilated.

Pronotum transverse, 1.4 times as wide as long, widest behind middle, with arcuate sides; surface strongly punctate, punctures dense and sharply impressed in marginal areas but fine and sparse on the disc. Elytra with truncate apices; entire surface uniformly punctate; each elytron with three costae, the external one extending slightly beyond the middle, the two internal costae almost reaching the apex. Scutellum large, shield-shaped.

Legs normal; front tarsi dilated; trochanters with a tuft of long setae at each base. Abdomen sparsely and finely punctate, sparsely clothed with long brown hairs.

Male genitalia. Median lobe short and thick, triangular, with blunt apex. Parameres inwardly dilated towards apices, each with a tubercle at the tip.



Figs. 23–26. Genitalia of *Eusilpha* (*Calosilpha*) spp. — 23. *E. (C.) bicolor bicolor* (FAIRMAIRE), from Soyo-san, Korea; male genitalia in dorsal view. — 24–26. *E. (C.) kurosawai* M. NISHIKAWA, sp. nov., from Mt. Yuwandake on Is. Amami-Oshima; 24, male genitalia in dorsal view; 25, female genitalia (p=proctiger, pp=paraprocts, vf=valvifer, c=coxite, sty=stylus); 26, coxite and stylus of female genitalia.

**Female.** Length 16.2–19.1 mm, breadth 9.2–10.5 mm. Antennae with 2nd segment about twice as long as 3rd; 3rd to 5th similar in length; 3rd and 4th slightly dilated, though strongly dilated from 5th; 4th as long as wide; 5th about 2.2 times as wide as long; 6th weakly reflexed, 2.5–3.0 times as wide as long. Pronotum trapezoidal, about 1.5 times as wide as median length. Elytra rather pointed at apices, with slight sinuation of margins before them. Front tarsi not dilated. Pygidium slightly longer than wide, with apex gently arched.

**Female genitalia.** Proctiger nearly pentagonal, with arcuate apex and emarginate base; apical margin of proctiger with a row of moderately long setae. Paraprocts securiform, with a patch of long setae at the inner apical corner adjoining proctiger; a sclerite present at the outer side of each paraproct. Valvifer without proctiger; with setae on apical margin. Coxit relatively stout, with a sulcus from base to the middle; inner ridge of the sulcus straight near the base. Stylus stout, extending beyond the tip of coxite, broad in apical half.

**Holotype:** ♂, Mt. Yuwandake, Amami-Oshima Is., Ryukyus, 17. VII. 1963, Y. KUROSAWA leg. (in coll. NSMT). **Paratypes:** 4♂♂ 3♀♀, same data as holotype (in coll. NSMT); 1♀, Nishinakama, Amami-Oshima Is., 5. IV. 1972, M. NISHIKAWA leg.; 2♂♂ 1♀, Mt. Yuwandake, Amami-Oshima Is., 22. VI. 1980 (traps), S. IMASAKA leg. (in my coll.).

In general appearance, this new species is similar to *E. bicolor* (FAIRMAIRE, 1899) from Japan, Korea and China, *E. brunneicollis* (KRAATZ, 1877) from Japan

and Taiwan(?), and *E. cyaneocephala* PORTEVIN, 1915 from Taiwan, but can be distinguished from them by the following points: body short, antennae in male with 3rd and 4th segments nearly equal in width though the former is slightly longer than the latter, 3rd and 4th segments normal, 5th slightly dilated, 6th strongly dilated (Fig. 15); in female, 3rd and 4th antennal segments slightly dilated, though strongly dilated from 5th, 4th as wide as long, 6th weakly reflexed (Fig. 18); pronotum orange, with blackish brown median area, 1.4 times (male) or 1.5 times (female) as wide as long (Fig. 11–12); median lobe short and thick (Fig. 24); coxite of female genitalia with a sulcus from base to the middle, its inner ridge being straight near the base (Fig. 26).

### References

- ARNETT, R. H., JR., 1944. A revision of the Nearctic Silphini and Nicrophorini based upon the female genitalia (Coleoptera, Silphidae). *J. N.Y. ent. Soc.*, **52**: 1–16, pls. 1–4.
- FAIRMAIRE, L., 1899. Descriptions de Coléoptères nouveaux, recueillis en Chine par M. DE LATOUCHE. *Ann. Soc. ent. Fr.*, **68**: 616–643.
- HATCH, M. H., 1928. Silphidae II. In JUNK, W., & S. SCHENKLING (eds.), *Coleopterorum Catalogus*, (95): 1–244. W. Junk, Berlin.
- IMASAKA, S., 1980. Notes on beetles from the Shimabara Peninsula (1). *Trans. Nagasaki biol. Soc.*, (19): 21–24, figs. 1–9. (In Japanese.)
- 1981. Three silphid beetles from Amami-Oshima Is. *Gekkan Mushi, Tokyo*, (141): 31–32. (In Japanese.)
- KUROSAWA, Y., 1985. Silphidae. In UENO, S.-I., Y. KUROSAWA & M. SATÔ (eds.), *The Coleoptera of Japan in Color*, **2**: 247–252. Hoikusha, Osaka. (In Japanese.)
- PORTEVIN, G., 1926. Les Grands Nécrophages du globe. Silphini–Nicrodini–Nicrophorini. *Encycl. ent., Paris*, (A), **6**: 1–270.
- SHIBATA, T., 1969. Some reports on the burying beetles from Japan, I (Col., Silphidae). *Ent. Rev. Japan*, **21**: 47–54, pls. 5–6.



## A Revisional Study of the Japanese Species of the Genus *Megalopaederus* (Coleoptera, Staphylinidae)

by

Yasuaki WATANABE

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** The Japanese species of the genus *Megalopaederus* SCHEERPELTZ are revised. A new species is described under the name of *M. kurosawai*, and the male genitalia of all the known Japanese species are shown. The new species was obtained at various localities in the northern and eastern areas of the Tôkai District, Central Japan.

Three Japanese staphylinids have hitherto been known to belong to the genus *Megalopaederus* SCHEERPELTZ. They are so closely similar to one another in general appearance that their identification has been confused up to the present time.

Based on many examples obtained at various localities, the author made a revisional study of the Japanese species of this genus. He has found a fourth species which seems to be new to science. In this paper, the author will describe or redescribe all the four species.

Before going further, the author wishes to express his hearty thanks to Professor Hiromasa SAWADA of the Tokyo University of Agriculture for his constant guidance and encouragement, and to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for his valuable advice on the present study. Deep gratitude is also due to Dr. Yoshihiko KUROSAWA and many gentlemen for their kindness in giving the author the examples used in this study.

### Genus *Megalopaederus* SCHEERPELTZ

*Megalopaederus* SCHEERPELTZ, 1957, Mem. Mus. Stor. nat. Venez. trident., Trento, 11 (for 1956-'57), p. 470.

*Megalopaederus*: SHIBATA, 1977, Annl. Bull. Nichidai Sanko, (20), p. 28.

Type species: *Paederus poweri* SHARP, 1874.

The genus *Megalopaederus* is a peculiar group in the subfamily Paederinae and has been mainly reported from Asia. It is characterized by the following combination of characters: body large in size (10.0-15.0 mm); head suborbicular and somewhat transverse, all the segments of antennae evidently longer than broad; pronotum strongly convex above, oval, and slightly longer than broad; elytra

trapezoidal, distinctly shorter than pronotum and conspicuously narrowed anteriorly, hind margin forming a re-entrant angle; hind wings degenerated to a minute lobe.

The members of this genus are found on shrub or bamboo in mountainous areas.

#### Key to the Japanese Species of *Megalopaederus*

1. Postocular region relatively long, more than 1.5 times as long as longitudinal diameter of eye; elytra slightly broader than pronotum; parameres of male genital organ conspicuously asymmetrical, right paramere, viewed ventrally, slender and forming a sickle-shape in apical half. . . . . *M. lewisi* (CAMERON).
- Postocular region relatively short, less than 1.5 times as long as longitudinal diameter of eye; elytra narrow, as broad as or slightly narrower than pronotum. . . . . 2
2. Pronotum as long as or hardly longer than broad; parameres of male genital organ narrow, left paramere, viewed dorsally, gradually narrowed towards apex, which is simply pointed. . . . . *M. poweri* (SHARP).
- Pronotum distinctly longer than broad; left paramere of male genital organ, viewed dorsally, abruptly constricted before apex, which is curved outwardly. . . . . 3.
3. Postocular region relatively short, less than 1.3 times as long as longitudinal diameter of eye; elytra slightly narrower than pronotum; left paramere of male genital organ not widened behind median part in profile. . . . . *M. wadai* SCHEERPELTZ.
- Postocular region more than 1.3 times as long as longitudinal diameter of eye; elytra relatively broad, almost as broad as pronotum; left paramere strongly widened behind median part in profile. . . . . *M. kurosawai* Y. WATANABE, sp. nov.

#### *Megalopaederus poweri* (SHARP)

(Figs. 1, 5–7)

*Paederus poweri* SHARP, 1874, Trans. ent. Soc. London, 1874, p. 74.

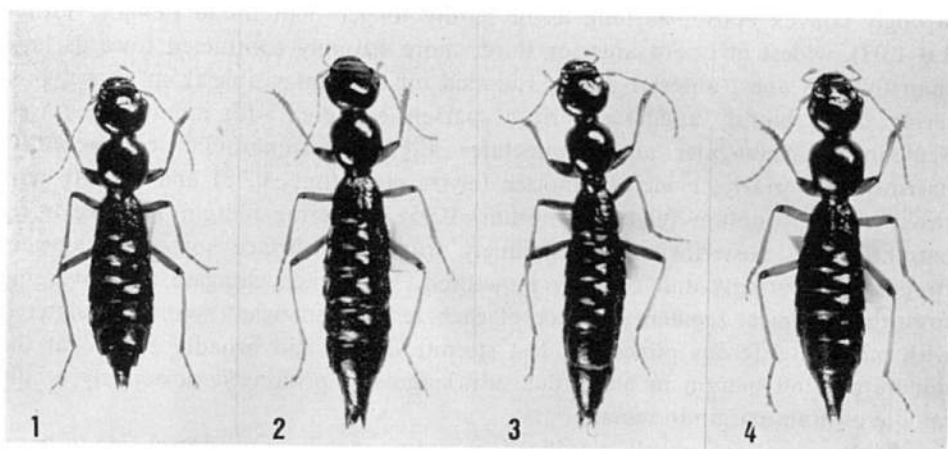
*Megalopaederus poweri*: SCHEERPELTZ, 1957, Mem Mus. Stor. nat. Venez. trident., Trento, 11 (for 1956–57), p. 471.

Other references are omitted.

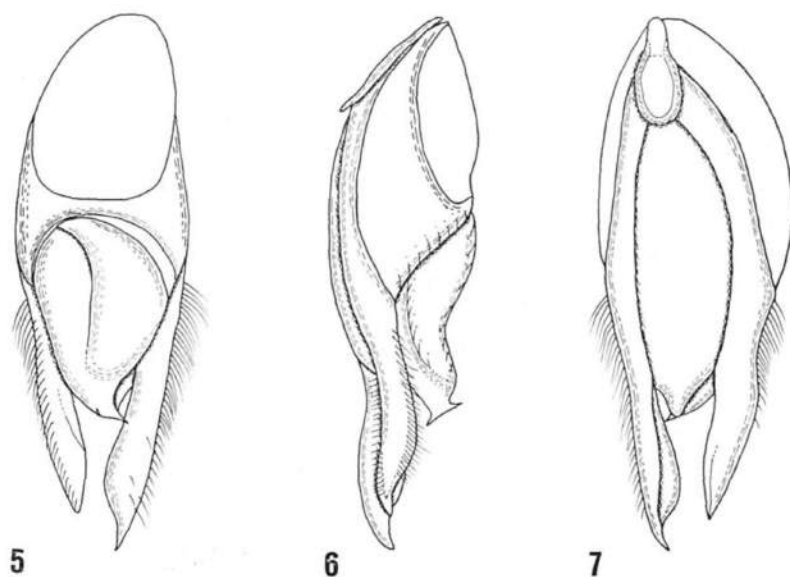
Body length: 10.5–12.9 mm (from front margin of head to anal end).

Body elongate and a little widened posteriorly, Colour shining black, with palpi, antennae and legs excepting blackish knees, reddish yellow, and elytra dark bluish.

Head gently convex above at vertexal region and a little broader than long (width/length=1.22), postocular region relatively short, less than 1.5 times as long as the longitudinal diameter of eye, which is somewhat prominent laterally; surface



Figs. 1-4. *Megalopaederus* spp. — 1, *M. poweri* (SHARP), ♂, from Mt. Kongô-san, Osaka Pref.; 2, *M. lewisi* (CAMERON), ♂, from Jigoku-zawa in Oku-Nikkô, Tochigi Pref.; 3, *M. wadai* SCHEERPELTZ, ♂, from Mt. Daihi in Kyoto Pref.; 4, *M. kurosawai* Y. WATANABE, sp. nov., ♂, from Mt. Daibosatsu in Yamanashi Pref.



Figs. 5-7. Male genital organ of *Megalopaederus poweri* (SHARP), from Mt. Kongô-san in Osaka Pref. — 5, Dorsal view; 6, lateral view; 7, ventral view. Scale: 1.0 mm.

sparingly scattered with coarse setiferous punctures, except for clypeo-frontal region and central area which are impunctate. Antennae elongate, reaching posterior margin of pronotum, all the segments longer than broad. Pronotum oval,

strongly convex above, as long as or hardly longer than broad (length/width=1.0–1.03), widest at about anterior third, more strongly contracted towards base than towards apex, anterior angles rounded off and not visible from above, posterior angles bluntly angulate, surface sparsely scattered with minute punctures. Scutellum subtriangular and impunctate. Elytra subtrapezoidal, conspicuously narrowed anteriorly, evidently shorter (elytra/pronotum=0.73) and slightly narrower than pronotum (elytra/pronotum=0.95), posterior margin forming a re-entrant angle, posterior angles obliquely truncated, surface somewhat uneven, irregularly, sparingly and coarsely punctured. Abdomen elongate and diverging towards pre-apical segment, surface of each tergite somewhat sparingly scattered with minute setiferous punctures, last sternite deeply and broadly excised at the middle of hind margin in male, but subtriangularly prolonged posteriorly at the middle of hind margin in female.

Male genital organ well sclerotized, excepting membranous dorsal side of basal part which is large and globular; median lobe remarkably shorter than parameres and abruptly constricted before narrowly rounded apex as seen from ventral side; parameres asymmetrical, viewed dorsally, right paramere a little longer than the left and clearly emarginate on the inner side near apex.

*Specimens examined.* Nara Pref.: 2♂♂, 3♀♀, Mt. Kôya-san, 11. XI. 1971, Y. WATANABE leg. Osaka Pref.: 8♂♂, 5♀♀, Mt. Kongô-san, 23. VI. 1974, T. OKUMURA leg.; 1♂, Mt. Iwawaki, 5. VI. 1960, T. Itô leg. Wakayama Pref.: 1♂, 1♀, Mt. Kôjin, 19. VI. 1966, T. KAMAKARI leg.; 1♂, 3♀♀, Mt. Daitô-zan, 20. II. 1972, M. YOSHIDA leg.

*Distribution.* Japan (Honshu: Kii Peninsula).

*Remarks.* For a long time, this species has been confused with the following. Because of this confusion, many previous records of "*M. poweri*" are not reliable. Actually, this species is distributed in the Kii Peninsula.

### *Megalopaederus lewisi* (CAMERON)

(Figs. 2, 8–10)

*Paederus lewisi* CAMERON, 1930, Ent. month. Mag., **66**, p. 206.

*Megalopaederus lewisi*: SCHEERPELTZ, 1957, Mem Mus. Stor. nat. Venez. trident, Trento, 11 (for 1956–57), p. 471.

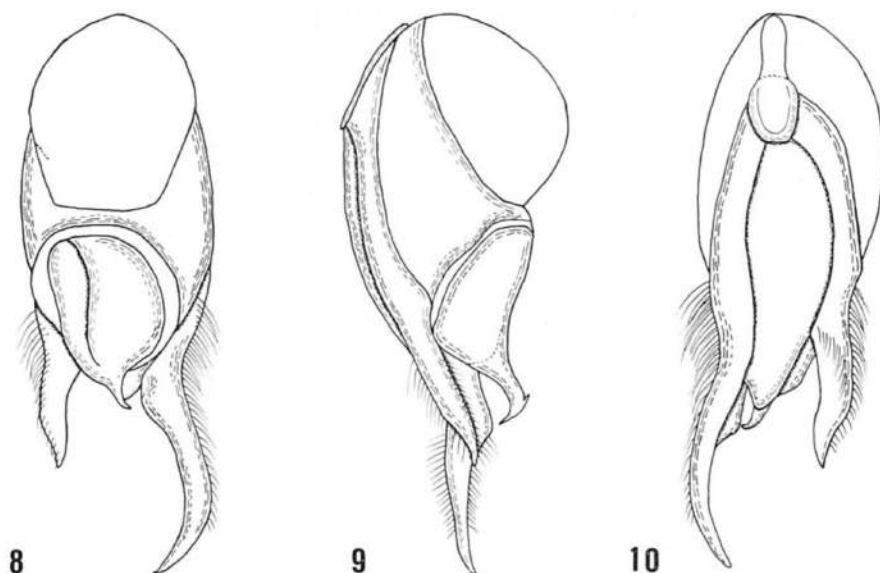
Other references are omitted.

Body length: 10.0–12.1 mm (from front margin of head to anal end).

This species closely resembles the preceding species in general appearance, but differs from it in the following points.

Body smaller in size; head suborbicular and less transverse (width/length=1.10), postocular region more strongly contracted and relatively long, more than 1.5 times as long as the diameter of eye; pronotum slightly longer than broad (length/width=1.10), surface much more obsoletely punctured.

Male genital organ decidedly different from that of *M. poweri* in the structure



Figs. 8-10. Male genital organ of *Megalopaederus lewisi* (CAMERON), from the vicinities of Marunuma in Oku-Nikkô — 8, Dorsal view; 9, lateral view; 10, ventral view. Scale: 1.0 mm.

of parameres, which are conspicuously asymmetrical; viewed ventrally, right paramere remarkably longer than the left, very elongate and forming a sickle-shape in apical half; left paramere slightly emarginate on the outer side near apex.

*Specimens examined.* Aomori Pref.: 1♀, Sarukura Spa, 14. VII. 1953, Y. WATANABE leg.; 1♂, 1♀, Yachi Spa, 11. VII. 1953, Y. WATANABE leg.; 2♀♀, Oirase, 14. VII. 1955, S. KUDÔ leg.; 1♀, Yasumiya, 19. VII. 1955, S. KUDÔ leg. Iwate Pref.: 1♀, Mt. Hayachine, 1. VIII. 1964, K. TAKAHASHI leg.; 2♀♀, Mt. Goyoh, 28. V. 1980, Y. TANOKUCHI leg. Yamagata Pref.: 1♂, Mt. Shirataka-yama, 30. VII. 1983, Y. WATANABE leg.; 1♀, Mt. Zaô, 7. VII. 1957, K. KUROSA leg.; 1♀, same locality, 24. VII. 1977, N. OHBAYASHI leg.; 2♀♀, Mt. Goshô-zan, 25. VII. 1960, S. KATSUYA leg.; 2♀♀, Mt. Yudono-san, 21. VII. 1955, Y. WATANABE leg.; 1♀, Tachiyazawa, Higashitagawa-gun, 2. VIII. 1960, Y. WATANABE leg.; 1♂, 2♀♀, same locality, 7. V. 1963, Y. WATANABE leg.; 1♂, near Atsumi Spa, 13. VII. 1960, Y. WATANABE leg.; 2♂♂, 1♀, Mt. Atsumi-dake, 2. IX. 1982, Y. WATANABE leg.; 1♂, Mt. Sanbôgura-san, 1. IX. 1982, Y. WATANABE leg.; 1♀, Mt. Maya-san, 1. IX. 1982, Y. WATANABE leg. Fukushima Pref.: 2♀♀, Akane-rindô, Haranomachi, 30. V. 1982, S. TSUYUKI leg.; 1♂, Haranomachi, 4. V. 1977, S. TSUYUKI leg.; 2♂♂, 1♀, Hinoemata, 11. VI. 1977, S. TSUYUKI leg.; 1♂, 1♀, Nanairi, Aizu, 14. VII.

1967, Y. WATANABE leg.; 1♀, Kasshi Spa, 26. VII. 1970, K. KIMURA leg. Niigata Pref.: 3♂♂, Mt. Shinbodake, 25. V. 1972, K. BABA leg.; 9♂♂, 11♀♀, Mt. Narumiyama, 19. VI. 1968, 14. VI. 1970, 5. IX. 1972, K. BABA leg.; 1♂, 1♀, Takane, Iwafune-gun, 26. VI. 1968, K. BABA leg.; 9♂♂, 17♀♀, Kurokawa-mura, 16. IX. 1960, 2. VI. 1961, 4. IX. 1964, 9. IX. 1965, 14. V. 1966, 31. VII. 1972, 5. VI. 1973, 29. V. 1976, K. BABA leg.; 5♂♂, 2♀♀, Ōishi-zan, Kitakanbara-gun, 20. VI. 1972, K. BABA leg.; 3♂♂, 1♀, Ninōji-dake, 2. X. 1972, 30. V. 1976, K. BABA leg.; 1♂, Takizawamine, Kitakanbara-gun, 4. VIII. 1965, K. BABA leg.; 2♂♂, 2♀♀, Yunokoya, 7. VI. 1963, Y. WATANABE leg.; 1♂, Nanatsugoya-san, 1. X. 1969, K. BABA leg.; 1♂, Tsuchitaru, 27. VIII. 1977, K. BABA leg.; 1♂, Yuzawa-mine, 3. X. 1967, K. BABA leg.; 4♂♂, Ōmine-zan, 2. X. 1972, K. BABA leg.; 1♂, 2♀♀, Kaikake Spa, 23. VI. 1967, K. BABA leg.; 1♂, Mt. Naeba, 25. VIII. 1974, K. BABA leg.; 12♂♂, 3♀♀, Mt. Takenoko-yama, 11. VII. 1966, 28. IX. 1967, 3. X. 1967, K. BABA leg.; 3♂♂, 10♀♀, Asakai, Minamiuonuma-gun, 18, 23. VI. 1967, K. BABA leg.; 7♂♂, 7♀♀, Mt. Mikuni-zan, 27. V. 1966, 1. VII. 1967, 4. VII. 1976, K. BABA leg. Gunma Pref.: 1♂, Sanpei-tōge, Oze, 14. VII. 1949, N. HAYASHI leg.; 8♂♂, 17♀♀, near Marunuma, 1~3. VII. 1962, 27. VIII. 1964, Y. WATANABE leg.; 1♂, 2♀♀, same locality, 12. VI. 1982, R. TERAKOSHI leg.; 2♀♀, Mt. Kashō-zan, 16. VI. 1972, N. IMAI leg.; 1♂, Mt. Haruna-san, 28. VI. 1981, S. TSUYUKI leg.; 9♂♂, 14♀♀, near Kirizumi Spa, 28. V. 1955, 26. V. 1962, Y. WATANABE leg.; 1♂, 2♀♀, same locality, 20. IV. 1964, K. TAKAHASHI leg.; 1♂, 1♀, Nidoage, Asama-kōgen, 7. VIII. 1967, M. NISHIKAWA leg. Tochigi Pref.: 5♂♂, 3♀♀, near Santo-goya, Oku-Nasu, 1. VIII. 1982, Y. WATANABE leg.; 2♂♂, near Akanuma, Oku-Nikkō, 12~14. X. 1983, Y. WATANABE leg.; 2♂♂, Jigoku-zawa, Oku-Nikkō, 12. X. 1983, Y. WATANABE leg. Ibaragi Pref.: 2♂♂, 1♀, Mt. Yamizo, 28. IX. 1974, M. KUBOTA leg.; 3♂♂, 2♀♀, Mt. Hanazono, 23. VII. 1974, M. KUBOTA leg.; 1♀, Mt. Gozen, 2. X. 1974, M. KUBOTA leg.; 1♂, Mt. Tsukuba, 26. X. 1980, Y. TANOKUCHI leg. Saitama Pref.: 5♂♂, 4♀♀, Mt. Hakutai-san, Chichibu, 7. VII. 1981, A. YOSHITANI leg.; 2♀♀, same locality, 18. VII. 1982, Y. WATANABE leg.; 12♂♂, 9♀♀, Kawamata, Chichibu, 21. V. 1972, 9. VI. 1980, 19. VI. 1984, Y. WATANABE leg.; 1♀, Urayama-dani, 6. VII. 1954, M. OHNO leg.; 2♂♂, Shōmaru-tōge, 16. V. 1982, H. HASEGAWA leg. Tokyo Pref.: 4♂♂, 4♀♀, Mt. Kumotori, 8. VII. 1965, Y. WATANABE leg.; 19♂♂, 9♀♀, Mt. Tenso, 15. X. 1977, Y. WATANABE leg.; 1♂, 1♀, Mizune-zawa, Okutama, 2. V. 1980, Y. WATANABE leg.; 4♂♂, 4♀♀, Nippara, 17. X. 1977, Y. WATANABE leg.; 4♂♂, 5♀♀, Mt. Gozen, 19. X. 1955, 17. VI. 1964, K. SASAKI leg.; 1♂, Mt. Takamizu, 5. V. 1951, T. JOHRAKU leg.; 3♂♂, 5♀♀, Mt. Mitake, 2. VI. 1968, H. KOBAYASHI leg.; 2♀♀, same locality, 17. VI. 1981, Y. WATANABE leg.; 1♀, same locality, 20. V. 1984, K. KARIMATA leg.; 1♂, 1♀, Itsukaichi, 7. VI. 1958, Y. WATANABE leg. Kanagawa Pref.: 1♂, Mt. Tanzawa, 8. VI. 1975, S. TSUYUKI leg.; 1♂, Myōjin-tōge, Nishi-Tanzawa, 16. IX. 1982, M. FURUKAWA leg.; 2♂♂, 1♀, Sagami-Ōyama, 14~19. IX. 1968, T. OKUMURA leg.; 1♂, 1♀, Hakone, 19. VI. 1938, S. NOMURA leg.; 1♂, Ashinoyu, 30. VI. 1983, Y. WATANABE leg.;

2♂♂, Mt. Kamiyama, 30. VI. 1983, Y. WATANABE leg. Shizuoka Pref.: 5♂♂, 2♀♀, Mt. Amagi, 3. V. 1957, 4. X. 1960, Y. WATANABE leg.; 2♂♂, 1♀, Ōdaru Spa, 18. VI. 1963, S. TACHIKAWA leg.; 39♂♂, 8♀♀, Takahachi on Mt. Fuji, 23. V. 1974, 4. VI. 1974, Y. WATANABE leg.; 8♂♂, 6♀♀, Ōsawa on Mt. Fuji, 27. V. 1980, 7. VI. 1980, S. MOCHIZUKI leg.; 7♂♂, 8♀♀, Shiotsuka-shita on Mt. Fuji, 15. IX. 1979, S. MOCHIZUKI leg.; 12♂♂, 3♀♀, Futago-yama on Mt. Fuji, 19. IX. 1979, S. MOCHIZUKI leg.; 2♂♂, 3♀♀, Niken-goya, 2. VI. 1964, K. NAKADA leg.; 3♂♂, same locality, 1. VIII. 1967, K. SAKAI leg.; 1♂, Dentsuku-tôge, 18. VII. 1967, K. KIMURA leg. Yamanashi Pref.: 1♂, 1♀, Tabayama-mura, 21. VI. 1982, N. KASHIWAI leg.; 2♂♂, 1♀, Mt. Ōtaba-tôge, 21. VI. 1982, N. KASHIWAI leg.; 2♂♂, 2♀♀, Fureoka, Ōtsuki, 23. V. 1982, Y. WATANABE leg.; 1♂, 2♀♀, Masutomi, 19. V. 1963, 27. V. 1984, Y. WATANABE leg.; 1♂, Kanayama, 14. VII. 1974, N. MORINO leg. Nagano Pref.: 1♂, Namiai, Shimo-Ina, 30. V. 1974, S. TERAMURA leg.; 1♂, 2♀♀, Minami-sawa, Ina, 6. VI. 1972, S. YAMAGUCHI leg.; 2♂♂, 2♀♀, Nobeyamagahara, Mts. Yatsugatake, 5. X. 1974, S. TSUYUKI leg.; 4♂♂, 3♀♀, Inagoyu, 31. VIII. 1983, H. SATÔ leg.; 22♂♂, 12♀♀, Tobira Spa, 22. VI. 1973, H. KOBAYASHI leg.; 1♂, Torii-tôge, 19. IX. 1976, T. HOZUMI leg.; 1♂, Mt. Nyûgasa, 2. VI. 1957, K. KIMURA leg.; 1♂, 1♀, Kakuma, 12. II. 1982, H. NAGASHIMA leg.; 3♂♂, 12♀♀, Akagawara, 3~4. VII. 1973, M. KUBOKI leg.; 1♂, 1♀, Mt. Sanpuku-tôge, S. Jap. Alps, 10. VII. 1979, T. SHIMOMURA leg.

*Distribution.* Japan (central to northeastern Honshu).

### *Megalopaederus wadai* SCHEERPELTZ

(Figs. 3, 11-16)

*Megalopaederus wadai* SCHEERPELTZ, 1957, Mem. Mus. Stor. nat. Venez. trident., Trento, 11 (for 1956-'57), p. 472.

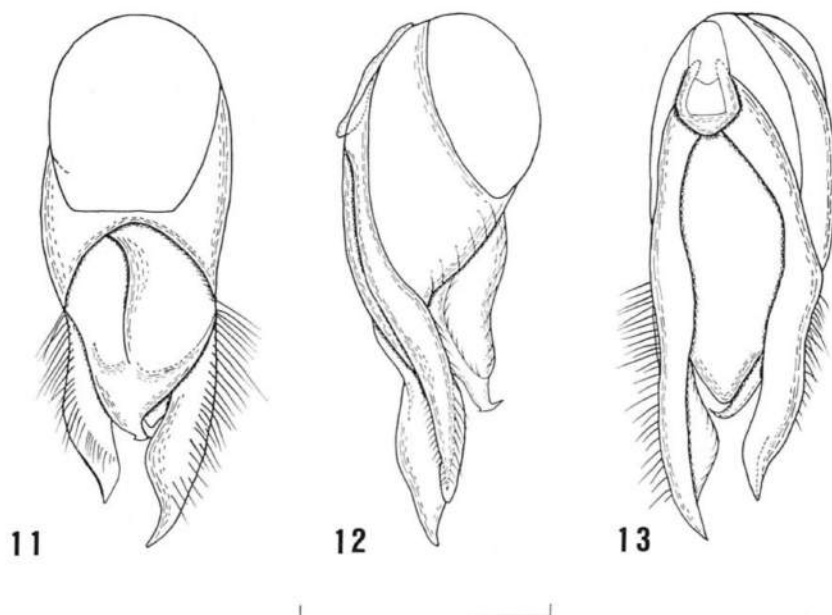
Other references are omitted.

Body length: 10.0-15.0 mm (from front margin of head to anal end).

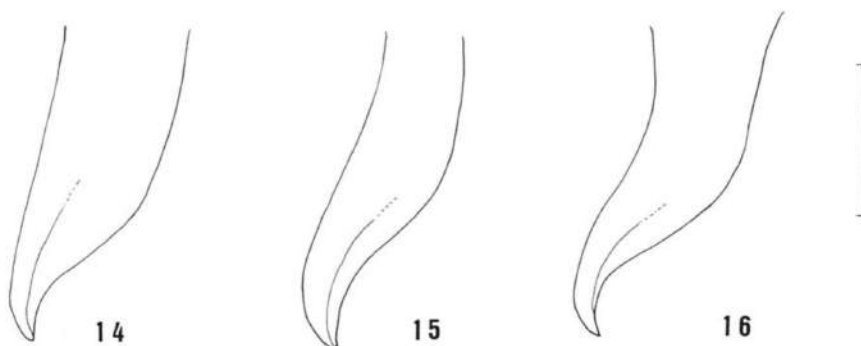
This species cannot be discriminated from *M. poweri* (SHARP) in external features, excepting the pronotum which is somewhat longer than broad (length/width=1.08). However, its male genital organ can be easily distinguished from that of *M. poweri* by the peculiarity of parameres: left paramere, viewed ventrally, abruptly curved outwards near apex; right one conspicuously and subtriangularly expanded in apical half.

*Specimens examined.* Toyama Pref.: 1♂, 4♀♀, Arimine, 16. VII. 1972, C. TANAKA leg. Kyoto Pref.: 1♀, Mt. Daihi, 13. V. 1958, T. SHIBATA leg.; 1♂, 1♀, same locality, 6. VI. 1959, collector unknown; 1♂, same locality, 21. V. 1965, M. Y. leg.; 2♂♂, 1♀, Seryô-tôge, 6. VIII. 1980, Y. WATANABE leg. Hyôgo Pref.: 5♂♂, 9♀♀, Mt. Hyônoson, 6. V. 1972, K. TSUJI leg. Okayama Pref.: 1♂, Onbaragawa, Tomata, 8. VI. 1975, T. AONO leg. Tottori Pref.: 1♂, Sannô, Saji-mura, 23. VI. 1981, S. UENO leg.; 1♂, Mt. Ohginosen, 21. IV. 1980, Y. TANOKUCHI leg. Fukuoka





Figs. 11–13. Male genital organ of *Megalopaederus wadai* SCHEERPELTZ, from Mt. Daihi-zan in Kyoto Pref. — 11, Dorsal view; 12, lateral view; 13, ventral view. Scale: 1.0 mm.



Figs. 14–16. Apical part of the left paramere of male genital organ of *M. wadai* SCHEERPELTZ. — 14, Specimen from Mt. Daihi-zan in Kyoto Pref.; 15, specimen from the Seryô-tôge in Kyoto Pref.; 16, specimen from Mts. Kujû in Ôita Pref. Scale: 0.25 mm.

Pref.: 1♂, Mt. Hiko-san, 6. VI. 1956, H. YAMAZAKI leg.; 3♀♀, same locality, 17. VII. 1959, M. CHÛJÔ leg. Ôita Pref.: 2♂♂, 2♀♀, Mts. Kujû, 23. IX. 1980, H. MAKIHARA leg.

*Distribution.* Japan (western Honshu, Kyushu).

*Remarks.* There is some variation in the shape of the left paramere of male



genital organ as seen from the ventral side. The apical part of this paramere is more strongly curved outwards in the specimens from Mt. Kujû in Kyushu than that in the specimens from Mt. Daihi in Honshu.

*Megalopaederus kurosawai* Y. WATANABE, sp. nov.

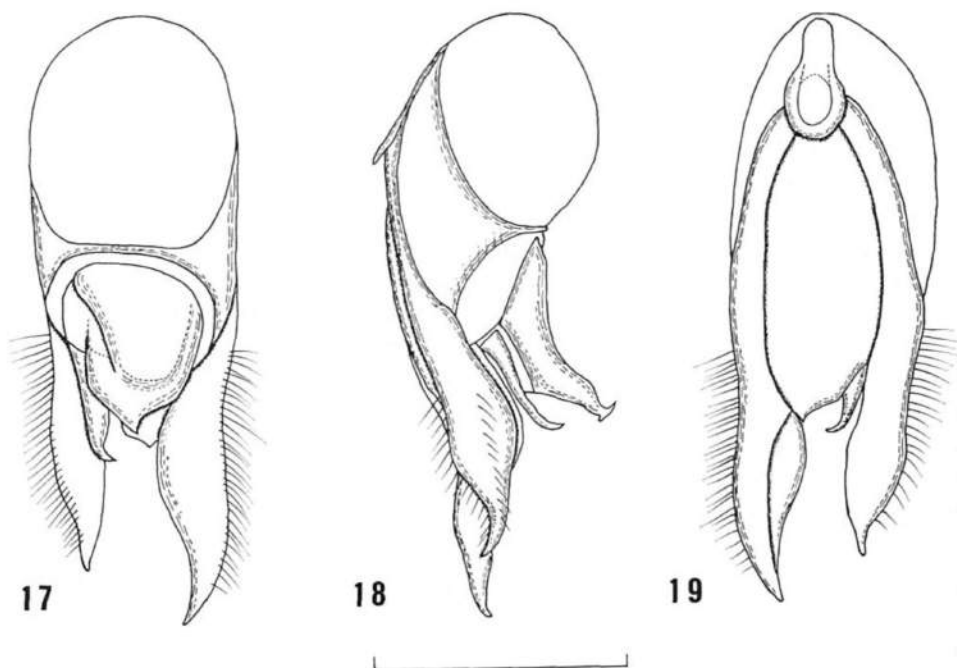
(Figs. 4, 17-19)

Body length: 10.5-13.4 mm (from front margin of head to anal end).

The present new species is closely similar to *M. wadai* in external features, and can be barely distinguished from the latter by the following points: body more robust; postocular region much longer than the longitudinal diameter of eye (1.31 to 1.47); elytra broader, almost as broad as pronotum.

The male genital organ is also similar to that of *M. wadai*, but differs from it in the following details: inner side of right paramere, viewed dorsally, expanded in apical half and extensively emarginate before apex; left paramere widened behind the median part and strongly curved ventrally at the apical part in profile.

*Type series.* Holotype: ♂, allotype: ♀, Mt. Daibosatsu, Yamanashi Pref., Honshu, Japan, 22. VI. 1985, Y. KUROSAWA leg. Paratypes: 1♂, 1♀, same data



Figs. 17-19. Male genital organ of *Megalopaederus kurosawai* Y. WATANABE, sp. nov., from Mt. Daibosatsu in Yamanashi Pref. — 17, Dorsal view; 18, lateral view; 19, ventral view. Scale: 1.0 mm.

as holotype; 1♀, Mt. Daibosatsu, Yamanashi Pref., Honshu, Japan, 20. V. 1960, Y. WATANABE leg.; 1♂, 1♀, same locality, 21~22. V. 1960, K. SAKUMA leg.; 2♀♀, same locality, 20. V. 1961, S. TACHIKAWA leg.; 3♀♀, same locality, 12. VI. 1966, K. SAKAI leg.; 3♂♂, 2♀♀, same locality, 4. V. 1975, W. SUZUKI leg.; 2♂♂, same locality, 25. V. 1980, Y. WATANABE leg.; 6♂♂, 2♀♀, same locality, 7. IX. 1982, R. TERAOKA leg.; 1♂, 1♀, same locality, 28. V. 1983, Y. WATANABE leg.; 3♂♂, 2♀♀, same data as above, H. HASEGAWA leg.; 3♀♀, Hikawa-rindô on Mt. Daibosatsu, Yamanashi Pref., Honshu, Japan, 6. VII. 1983, H. SATÔ leg.; 6♀♀, same locality, 13. VI. 1984, H. SATÔ leg.; 1♂, same locality, 20. VI. 1984, H. SATÔ leg.; 1♂, Yashajin-tôge, Yamanashi Pref., Honshu, Japan, 9. VII. 1962, A. KATÔ leg.; 2♂♂, 7♀♀, same locality, 26. V. 1982, Y. WATANABE leg.; 2♂♂, 1♀, Narada, Minamikoma-gun, Yamanashi Pref., Honshu, Japan, 27. V. 1972, K. MIYAJIMA leg.; 3♂♂, 3♀♀, same locality, 25. V. 1983, Y. WATANABE leg.; 5♂♂, 1♀, Hirogawara, Ashiyasu-mura, Yamanashi Pref., Honshu, Japan, 6. VI. 1964, Y. WATANABE leg.; 6♀♀, same locality, 11. VI. 1966, Y. WATANABE leg.; 7♂♂, 9♀♀, same locality, 28. V. 1972, K. MIYAJIMA leg.; 1♀, Mt. Kitadake, Yamanashi Pref., Honshu, Japan, 30. V. 1959, K. KIMURA leg.; 19♂♂, 8♀♀, Aoki-kôsen, Shirane-machi, Yamanashi Pref., Honshu, Japan, 13. VI. 1982, T. SENOH leg.; 1♂, Yanagisawa-tôge, Yamanashi Pref., Honshu, Japan, 25. X. 1970, Y. TSURUMAKI leg.; 1♀, Mt. Mitsutôge, Yamanashi Pref., Honshu, Japan, 25. IV. 1965, T. OKUMURA leg.; 3♂♂, 3♀♀, same locality, 26. VI. 1981, S. OKAJIMA leg.; 4♂♂, 2♀♀, same locality, 10. VII. 1982, T. SENOH leg.; 1♂, Koganezawa-rindô, Kitatsuru, Yamanashi Pref., Honshu, Japan, 29. VI. 1975, T. TSUYUKI leg.; 3♂♂, 3♀♀, near Lake Saiko, Yamanashi Pref., Honshu, Japan, 14. V. 1964, K. ARICHI leg.; 1♂, 2♀♀, same data as above, M. NISHIKAWA leg.; 1♂, 1♀, Aokigahara on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 3. VIII. 1974, K. SUGA leg.; 1♂, same locality, 22. IV. 1975, S. TACHIKAWA leg.; 5♂♂, 5♀♀, Mt. Sanpôwakeyama, Kamikuishshiki-mura, Yamanashi Pref., Honshu, Japan, 10. VIII. 1979, S. MOCHIZUKI leg.; 2♂♂, near Lake Motosu, Yamanashi Pref., Honshu, Japan, 18. IX. 1981, S. OKAJIMA leg.; 3♂♂, 3♀♀, foot of Mt. Ômuro-yama on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 17. V. 1980, S. MOCHIZUKI leg.; 2♂♂, 3♀♀, Ômuro-yama on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 25. VI. 1981, S. OKAJIMA leg.; 8♂♂, 7♀♀, Shôjiko-tozandô 2-gôme on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 14. X. 1980, S. OKAJIMA leg.; 4♂♂, 2♀♀, Fuji-rindô on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 16. IX. 1982, R. TERAOKA leg.; 2♂♂, 9♀♀, Subaru Line on Mt. Fuji, Yamanashi Pref., Honshu, Japan, 25. V. 1980, S. MOCHIZUKI leg.; 8♂♂, 2♀♀, Mt. Shinoi-yama, Tomizu, Yamanashi Pref., Honshu, Japan, 18. IX. 1979, S. MOCHIZUKI leg.; 1♂, Asagiri-kôgen on Mt. Fuji, Shizuoka Pref., Honshu, Japan, 18. V. 1968, M. EMI leg.; 1♂, same locality, 30. V. 1972, A. KANBE leg.; 1♂, same locality, 26. IV. 1974, Y. WATANABE leg.; 3♂♂, Mt. Kenashi-yama, Shizuoka Pref., Honshu, Japan, 1. V. 1976, S. MOCHIZUKI leg.; 6♂♂, 3♀♀, Mt. Tenshigadake, Shizuoka Pref., Honshu, Japan, 9. VIII. 1979, S. MOCHIZUKI leg.

The type series is preserved in the collection of the Laboratory of Entomology, Tokyo University of Agriculture, except for the following 12 paratypes from Mt. Daibosatsu: 2♂♂, 2♀♀ (Natn. Sci. Mus. (Nat. Hist.), Tokyo), 2♂♂, 2♀♀ (Brit. Mus. (Nat. Hist.), London); 2♂♂, 2♀♀ (Field Mus. Nat. Hist., Chicago).

*Distribution.* Japan (northern and eastern areas of the Tōkai District in Honshu).

It is a great pleasure to the author to name this species after Dr. Yoshihiko KUROSAWA, who had done many important taxonomic works on the Coleoptera.

### References

- CAMERON, M., 1930. New species of Staphylinidae from Japan. *Ent. month. Mag.*, **66**: 205–208 [part 2].
- SCHEERPELTZ, O., 1957. Vorläufige Diagnosen einiger neuen paläarktischen Arten und Formen der Gattung *Paederidus* MULS. REY, *Paederus* FABR. (mit den neuen Untergattungen *Eopaederus*, *Parderus* s. str. nov., *Heteropaederus*, *Dioncopaederus* und *Oedopaederus*), *Parameropaederus* nov. gen., *Lobopaederus* nov. gen. und *Megalopaederus* nov. gen.). *Mem. Mus. Stor. nat. Venez. trident., Trento*, **11** (for 1956–57): 447–475.
- SHARP, D., 1874. The Staphylinidae of Japan. *Trans. ent. Soc. London*, **1874**: 1–103.
- SHIBATA, Y., 1977. Provisional check list of the family Staphylinidae of Japan, II (Insecta: Coleoptera). *Ann. Bull. Nichidai Sanko*, (20): 16–83. (In Japanese.)

## Two New Muscicolous Species of the Genus *Quedius* (Coleoptera, Staphylinidae) from Taiwan

by

Yasutoshi SHIBATA

Tsurukawa 3-8-13, Machida-shi, Tokyo 194-01, Japan

**Abstract** Two new staphylinid beetles belonging to the subgenus *Raphirus* of the genus *Quedius* are described and illustrated under the names of *Q. (R.) kurosawai* and *Q. (R.) taiwanensis*. Both the species were muscicolous, having been found in the mountain districts of Taiwan.

Up to the present, only three species of the genus *Quedius* have been known in Taiwan. They are *Quedius (Microsaurus) insulans* CAMERON (1949, p. 176), *Q. (M.) miwai* BERNHAUER (1943, p. 181) and *Q. (Indoquedius) formosae* CAMERON (1949, p. 176).

Recently, the author obtained two elegant *Quedius* species belonging to the subgenus *Raphirus*. They were found from beneath moss-mats growing on fallen tree-trunks in the mountain districts and were readily recognized on their green or violaceous black coloration and rugose sculpture on the fore parts. After a careful examination, it became clear that these species did not agree with any of the known members of the subgenus *Raphirus*. They must be new to science, and will be described in the present paper.

Before going further, I wish to express my cordial thanks to Associate Professor Yasuaki WATANABE of Tokyo University of Agriculture, for his continuous guidance and encouragement, and to Professor Hiroshi INOUE, Otsuma Woman's University, for his kindness extended to me in various ways. Hearty thanks are also due to Dr. Wataru SUZUKI for his help in supplying with material, and to Mr. Akinori YOSHITANI for his assistance in preparing the illustrations of the whole insects inserted in the present paper.

### *Quedius (Raphirus) kurosawai* sp. nov.

(Figs. 1-5)

Body elongate and nearly parallel-sided. Moderately shining, abdomen rather opaque; fore parts bright greenish blue, with palpi, antennae and legs reddish yellow; abdomen black. Length: 6.3-6.7 mm.

Head rounded, somewhat transverse (greatest width of head including eyes / greatest length of head=1.14) and a little narrower than pronotum (greatest width of head including eyes / greatest width of pronotum=0.89); eyes very large and

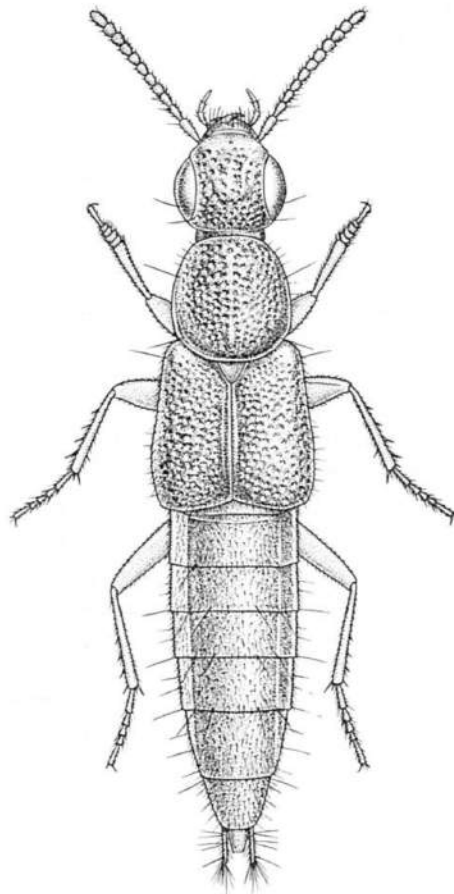
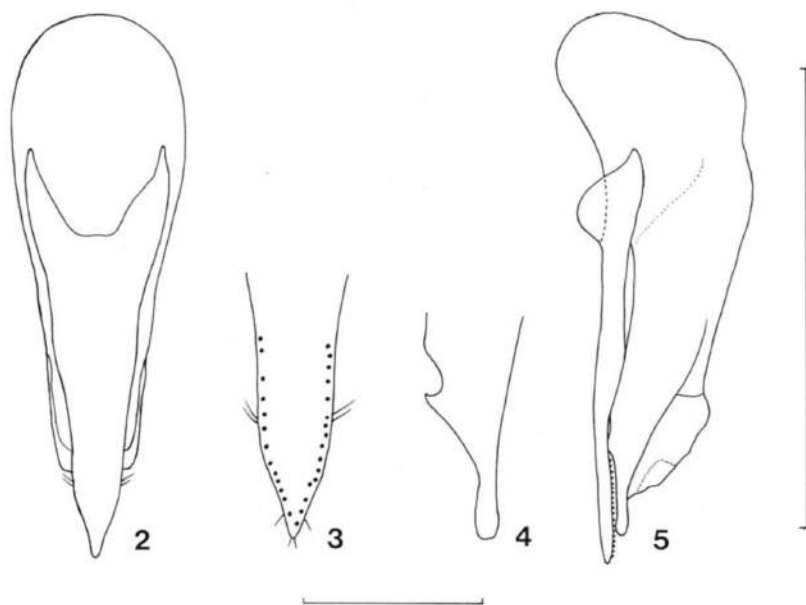


Fig. 1. *Quedius (Raphirus) kurosawai* sp. nov., ♂, from Tsuifeng in Taiwan.

moderately convex, postocular regions extremely short, about one-tenth as long as the eye seen from above (longitudinal diameter of eye / length of postocular region=9.92); frons almost impunctate and with fine ground microsculpture consisting of transverse lines and waves; disc without microsculpture, surface coarsely, closely and more or less rugosely punctured, the setiferous punctures becoming sparser on the slightly elevated middle, the pubescence being golden and decumbent forwards. Antennae moderately stout and relatively short, hardly extending beyond the middle of pronotum and hardly thickend towards the apicalmost segment; basal three segments polished, the remainings opalescent; 1st segment robust and dilated apically, 2nd a little broader than 3rd but about equal in length to the latter, 4th and 5th about equal in length, each distinctly longer than wide, 6th to 10th subequal in length and in width to one another, each slightly wider than long, the apicalmost about twice as long as 10th and subacuminate.

Pronotum well convex dorsally, somewhat narrower than elytra (greatest width of pronotum / greatest width of elytra=0.79), nearly as long as wide (length of pronotum measured along the midline / greatest width of pronotum=1.01), and widest a little behind the middle, moderately narrowed anteriorly but feebly so posteriorly; anterior margin nearly straight, posterior margin broadly rounded, side margins feebly arcuate in anterior third though widely arcuate in posterior two-thirds; anterior angles almost rectangular though not visible from above, posterior angles broadly rounded off; surface coarsely, closely and somewhat rugosely punctured and pubescent except for a transverse space along the posterior margin, and without ground microsculpture, the punctures being larger and deeper than those on head, the pubescence golden and decumbent backwards. Scutellum triangular, depressed above; surface with fine transverse wavy ground microsculpture and also a few minute and obsolete punctures.

Elytra nearly quadrate (greatest width of pronotum / greatest length of elytra=0.99), and distinctly longer than pronotum (greatest length of elytra / length of pronotum measured along the midline=1.30); sides faintly sinuate in anterior two-thirds, and distinctly dilated posteriorly; surface somewhat uneven, coarse punctures being confluent and forming transverse, vermiculate rugae, except on the side which is sparsely punctured, with golden pubescent hairs as on pronotum and without ground microsculpture between punctures.



Figs. 2-5. Male genitalia of *Quedius (Raphirus) kurosawai* sp. nov.; ventral view (2); ventral view of apical part of paramere with black tubercles (3); lateral view of apical part of median lobe (4); lateral view (5). (2 & 5, scale 1.0 mm; 3 & 4, scale 0.3 mm.)

Abdomen gradually tapering towards apical segment, rather finely and not so closely punctate and pubescent; basal five tergites provided on either side and along posterior margin with patches of distinct golden pubescence decreasing in number towards the apical tergite, and with distinct ground microsculpture composed of transverse lines; last sternite in male subtriangularly excised at the middle of hind margin, and with a triangular shallow and smooth depression in front of the excision. Legs elongate, front tarsi somewhat dilated in both sexes.

Genital organ moderately sclerotized and elongate, with basal part large and globular; median lobe a little shorter than paramere, gradually narrowed towards apex, apical portion with a fine median longitudinal carina which protrudes into a small triangular hook in profile; paramere slightly narrower than median lobe and distinctly tapering towards apex, fringed with four pair of setae, two apical and the other two latero-apical; black tubercles on the underside of paramere forming two long rows along lateral margins of paramere.

*Type series.* Holotype: ♂, Near Tsuifeng, about 2,200 m alt., Nantou Hsien, 21. VIII. 1976, Y. SHIBATA leg. Allotype: ♀, same data as the holotype. Paratypes: 16♂♂, 15♀♀, same data as the holotype; 4♂♂, 2♀♀, same locality as above, 2. VIII. 1977, Y. SHIBATA leg.; 1♂, Near Meifeng, about 2,100 m alt., 3. V. 1977, W. SUZUKI leg.; 1♂, 1♀, Near Sungkang, about 2,040 m alt., 23. VIII. 1976, Y. SHIBATA leg.

The holo- and allotypes are preserved in the collection of the Entomological Laboratory, Tokyo University of Agriculture. The paratypes are deposited in the author's private collection.

*Distribution.* Taiwan (mountain districts in the central part).

All the specimens of the type series were taken from beneath moist moss-mats thickly covering tree-trunks that had fallen near mountain streams.

The present new species resembles *Q. (R.) mussooriensis* CAMERON from East India, but can be easily distinguished from the latter by the absence of row of punctures on pronotum.

This new species is dedicated to Dr. Yoshihiko KUROSAWA, who has given me continuous guidance and encouragement.

*Quedius (Raphirus) taiwanensis* sp. nov.

(Figs. 6-10)

Closely allied to *Q. (R.) kurosawai*, but a little larger and darker, and differing from the latter in the following details.

Body relatively broad; colour violaceous black, with a little bluish to greenish lustre on the surface; mouth-parts and antennae reddish brown, sometimes basal three segments of antennae infusate, legs yellowish brown except for dark brown hind coxae, apical portion of femora, tibiae and tarsi; surface of head rather strongly, irregularly and rugosely punctured excepting frons and a little elevated vertex

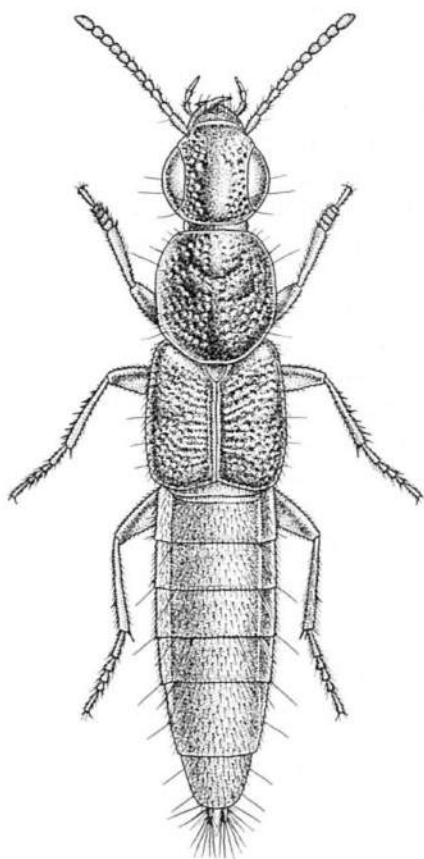


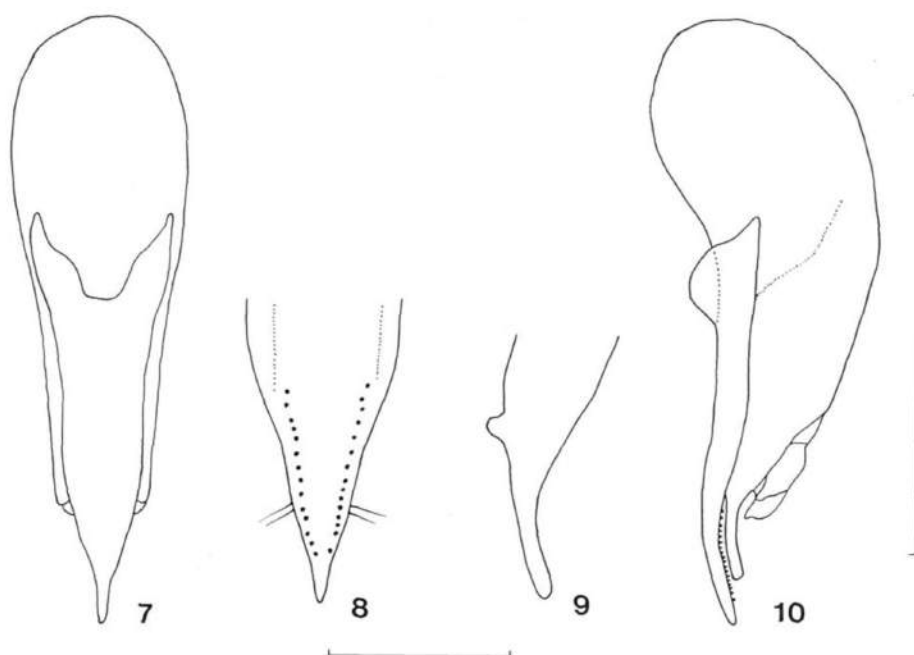
Fig. 6. *Quedioides (Raphirus) taiwanensis* sp. nov., ♂, from Piluchi in Taiwan.

which are scattered with a few minute punctures, and covered with weak micro-sculpture consisting of reticulation. Pronotum with an arcuate impression just before the middle of the disc, punctures as on head but more coarse and rugose than in *Q. (R.) kurosawai*. Scutellum impunctate. Elytra a little broader than pronotum (greatest width of elytra / greatest width of pronotum=1.17), surface more uneven, coarse punctures being confluent and forming coarse rugae, punctures and patches of golden pubescence on abdominal tergites are coarser and sparser, last sternite in male rather broadly subtriangularly excised at the middle of hind margin.

Male genital organ well sclerotized; median lobe much shorter than paramere; in lateral view, apical portion of median lobe curved dorsad and with a tubercle (not a carina) forming a blunt projection; paramere evidently narrowed apicad, and fringed with only two pair of setae at latero-apical portion.

*Type series.* Holotype: ♂, Near Piluchi, about 2,300 m alt., Nantou Hsien,





Figs. 7-10. Male genitalia of *Quedius* (*Raphirus*) *taiwanensis* sp. nov.; ventral view (7); ventral view of apical part of paramere with black tubercles (8); lateral view of apical part of median lobe (9); lateral view (10). (7 & 10, scale 1.0 mm; 8 & 9, scale 0.3 mm.)

3. VIII. 1983, Y. SHIBATA leg. Allotype: ♀, same data as the holotype. Paratypes: 1 ♀, same locality as above, 4. IV. 1984, Y. SHIBATA leg.; 2 ♂♂, Pilu-Shenmu, about 2,260 m alt., Hualien Hsien, 17. VIII. 1979, Y. SHIBATA leg.; 2 ♂♂, 1 ♀, Near Lalashan, about 1,600 m alt., 27. III. 1982, Y. SHIBATA leg.; 1 ♀, Near Tzuen, about 2,000 m alt., Hualien Hsien, 11. VIII. 1977, Y. SHIBATA leg.

The holo- and allotypes are preserved in the collection of the Laboratory of Entomology, Tokyo University of Agriculture. The paratypes are deposited in the author's private collection.

*Distribution.* Taiwan (mountain districts of the northern and central parts).

Though similar in general appearance to *Q. (R.) intricatus* FAUVEL from Burma, this new species can be readily recognized on reddish brown antennae and entirely yellowish middle coxae.

All the specimens from Piluchi were collected from beneath moist moss-mats growing on fallen tree-trunks by a stream; the specimens from Lalashan were found on rocks in a small stream, and the specimen from Tzuen was captured from beneath wet sphagnum growing on a vertical wall at the side of a small mountain stream.

## References

- BERNHAEUER, M., 1943. Neuheiten der palaearktischen Staphylinidenfauna. *Mitt. münchn. ent. Ges.*, **33**: 169-188.
- CAMERON, M., 1932. Coleoptera, Staphylinidae III. *In: the Fauna of British India, including Ceylon and Burma*. 443 pp. Taylor & Francis, London.
- 1949. New species of Staphylinidae (Col.) from Formosa. *Proc. R. ent. Soc. Lond.*, (B), **18**: 175-176.
- FAUVEL, A., 1895. Staphylinidae nouveaux de l'Inde et de la Malaisie. *Rev. Ent., Caen*, **14**: 180-286.
- SMETANA, A., 1971. Revision of the tribe Quediini of America north of Mexico (Coleoptera: Staphylinidae). *Mem. ent. Soc. Can.*, **79**: 1-303.

## A New Species of the Genus *Prismognathus* (Coleoptera, Lucanidae) from Northern Thailand

by

**Hiroshi FUJITA**

Taito 2-29-6, Taito-ku, Tokyo 110, Japan

and

**Toshiyuki ICHIKAWA**

Ōjihonchō 2-1-17, Kita-ku, Tokyo 114, Japan

**Abstract** A new species of the lucanid beetle, *Prismognathus kurosawai* sp. nov., is described. It is distinguished from all the other members of the genus by the peculiar conformation of mandibles.

The lucanid beetles of the genus *Prismognathus* MOTSCHULSKY, 1860, have not hitherto been recorded from Thailand. In 1983, Mr. T. SENOH, who is a member of the Laboratory of Entomology, Tokyo University of Agriculture, collected five specimens of a species of that genus on Doi Inthanon (2,571 m in altitude), which is the highest mountain in Thailand. This lucanid is very peculiar in the conformation of mandibles and is different from all the known members of *Prismognathus*. The authors will describe it as a new species in this paper.

The present authors wish to express their sincere gratitude to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for his critical reading the original manuscript. Thanks are also due to Mr. Masatoshi TAKAKUWA and Mrs. Yōko ICHIKAWA for their kind help in preparing this paper, to Mr. Toshio SENOH for his kindness in supplying with valuable material used in the present study, and to Mr. Toshio INOMATA for taking photographs inserted in this paper.

The specific name of this new lucanid was dedicated to Dr. Yoshihiko KUROSAWA who is the best specialist of Asian lucanid beetles.

*Prismognathus kurosawai* sp. nov.

[Japanese name: Kibanaga-tsuya-oni-kuwagata]

(Figs. 1-3)

*Male.* Body more or less dark reddish brown, distinctly with steely green tint all over.

Head rather small, transversely quadrate, about 1.8 times as broad as long,

with two pairs of callosities near front angles, of which the inner pair is large and weak; surface moderately covered with fine punctures; front angles bisinuate, with each lateral angle dully angulate; basal halves of lateral sides gradually narrowed basad in dorsal view; clypeus semicircular, with apical margin bisinuate in large specimens; eye about 0.3 times as long as the length of head, situated at antero-median part of the side of head, being divided by ocular ridge in anterior 1/4.

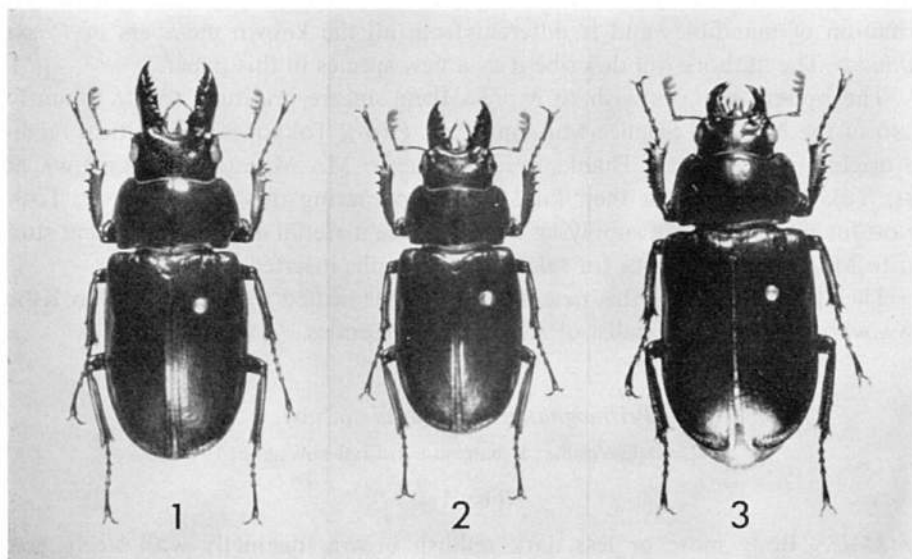
Mandible about 1.3 times as long as the length of head; sides almost parallel in basal 2/3, rapidly convergent towards apex in the remaining part and slightly arcuate inwards; apex acutely pointed; inner surface more or less concave longitudinally; upper edge of inner side provided with 5-6 rather weak teeth between basal 1/5 and 3/5, the teeth gradually becoming smaller apically, and distinctly emarginate in an arc in basal 1/5; lower edge of inner side with 6 or 7 teeth between apical 1/5 and 3/5, the teeth gradually decreasing in size towards base.

Antenna slender; 1st segment about 0.7 times as long as 2nd to 10th segments combined; 2nd to 6th each about as long as wide; 7th slightly broader than long; 8th to 10th pectinate.

Pronotum about 1.8 times as broad as the median length, and widest at basal 2/5; sides narrowed anteriorly and obtusely angulate at basal 1/3, the remainder slightly emarginate; disc more finely punctate than on head.

Scutellum more or less wider than long, semicircular, with very fine punctures.

Elytra about 1.4 times as long as wide, punctured as on pronotum; humeral angles broadly rounded; sides faintly broadened posteriorly, widest at basal 3/5, then rapidly convergent arcuately towards apices, which are very broadly rounded.



Figs. 1-3. *Prismognathus kurosawai* sp. nov. — 1, Male, holotype; 2, male, paratype; 3, female, paratype (allotype).

Legs slender; anterior tibia with spines on outer margin, apical 4 large, median 3 moderate, and basal 4 small; middle tibia externally with a small spine at basal 3/5; all tarsi comparatively slender.

*Female.* Body steely black, but the lustre is weaker than in male. Head somewhat smaller than in male, about 2.3 times as broad as long. Mandible shorter, about 0.9 times as long as the length of head, strongly curved inwards, with a large tooth at apical 2/5 of upper internal edge. Antennae shorter, slightly broader than in male. Pronotum about 0.6 times as long as wide. Elytra about 1.4 times as long as wide. Legs stouter; middle tibia externally with 3 spines near the middle, anterior 1 small, median 1 minute, and posterior 1 the largest; hind tibia with small outer spine.

Length: ♂, 21.0–26.0 mm (incl. mandibles), 18.5–21.0 mm (excl. mandibles); ♀, 25.0–25.5 mm (incl. mandibles), 23.0–23.5 mm (excl. mandibles).

Width: ♂, 7.0–8.0 mm; ♀, 9.0 mm.

Holotype: ♂, Doi Inthanon (2,300 m in altitude), northern Thailand, 5. VII. 1983, T. SENOH lgt. Paratypes: 1 ♀ (allotype), same data as the holotype; 2 ♂♂, same data; 1 ♀, same locality as the holotype, 7. VII. 1983, T. SENOH lgt.

*Distribution.* Northern Thailand.

*Type depository.* The holotype and a paratype (allotype) will be deposited in the National Science Museum (Nat. Hist.), Tokyo.

As was already mentioned in the introduction, this new species is easily distinguished from all the other members of *Prismognathus* hitherto known by the peculiar conformation of mandibles.

### References

- ARROW, G. J., 1950. Coleoptera Lamellicornia. Vol. IV. Lucanidae and Passalidae. *Fauna of India including Pakistan, Ceylon, Burma and Malaya*. xi+275 pp., 23 pls. Taylor & Francis, London.
- BENESH, B., 1960. Lucanidea. In HINCKS, W. D. (ed.), *Coleopterorum Catalogus Supplementa*, Pars 8 (ed. secunda). 178 pp. W. Junk, 's-Gravenhage.
- DIDIER, R., & E. SÉGUY, 1953. Catalogue illustré des Lucanides du globe. *Encycl. ent., Paris*, (A), 27: 1–223, with 112 pls. in the Atlas (1952).

## A New Stag-beetle of the Genus *Aegus* (Coleoptera, Lucanidae) from Taiwan

by

**Shûji OKAJIMA**

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

and

**Toshiyuki ICHIKAWA**

Ôjihonchô 2-1-17, Kita-ku, Tokyo 114, Japan

**Abstract** A new species of the genus *Aegus* is described from Taiwan. It is separable from the other members of the genus in the conformation of the ocular ridge.

The *Aegus* species are small to medium-sized stag-beetles belonging to the tribe Pseudodorcini of the subfamily Dorcinae,<sup>1)</sup> and are distributed mainly to the Oriental tropics and subtropics. There are more than 200 described species in the genus so far as we know. Its most remarkable feature is the structure of eyes, each of which is completely divided into two parts by well developed ocular ridge.

Recently, through the courtesy of Dr. Yoshihiko KUROSAWA and our colleagues, we had an opportunity to examine 10 males and 6 females of a strange stag-beetle collected in the mountain area of central Taiwan. Seemingly, it belongs to the genus *Aegus* MACLEAY, though its eyes are not completely divided. The posterior end of the ocular ridge is distinctly apart from the posterior margin of the eye in this unique species as in the other dorcine genera. Somewhat similar feature is known in *A. ogasawarensis* OKAJIMA et KOBAYASHI from the Bonin Islands, in which the posterior end of the ocular ridge is only a little distant from the posterior margin of the eye. If current generic concept were accepted, this Taiwanese species could well be placed in a genus other than *Aegus*. Unfortunately, however, generic classification of the Dorcinae is not yet in order. One of the reasons for this confusion is the traditional taxonomic method attaching importance to the secondary sexual characters of the male. Under such a condition, it is not advisable to erect a new genus for the Taiwanese species, since further taxonomic confusion may be brought about by taking such a step. In the present paper, there-

1) Sometimes this is included in the subfamily Lucaninae.

fore, we treat the genus *Aegus* in a broad sense.

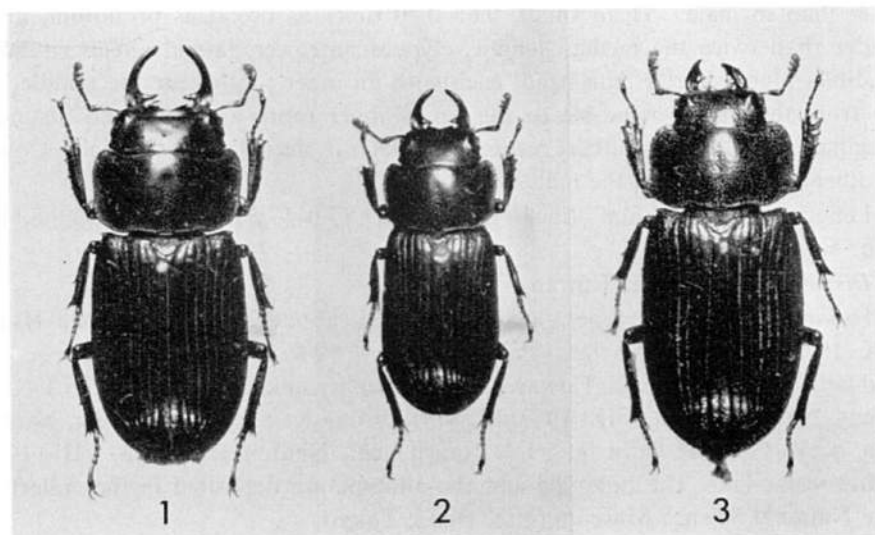
Before going further, we wish to offer our cordial thanks to Dr. Yoshihiko KUROSAWA and Dr. Takehiko NAKANE for their constant guidance and for their kindness in offering specimens for this study. Thanks are also due to Mrs. Yôko ICHIKAWA, Messrs. Hiroshi FUJITA, Osamu IMANISHI, Toshio INOMATA, Kazuyuki KAWADA, Toshio KOBAYASHI and Hiroyuki SAKAINO for their kindness extended to us in various ways.

*Aegus kurosawai* sp. nov.

(Figs. 1-3)

*Male.* Body almost black, sometimes with a slight brownish tinge, rather polished; maxillary and labial palpi, lateral margins of pronotum, extreme lateral margins of elytra, tibiae and tarsi tinged with red; antennae, mandibles, anterior portion of pronotum and femora weakly tinged with chestnut-brown.

Head small, 0.75-0.80 times as broad as pronotum, almost twice as broad as the median length, gradually broad to the base; surface sparsely scattered with small and shallow punctures which become larger and denser around eyes and on genae; frons somewhat concave; genae more or less produced beyond eyes, blunt and obtuse; clypeus 0.30-0.32 times as broad as the width of head, with anterior margin shallowly but triangularly emarginate, lateral angles blunt and obtuse; eyes not completely divided by ocular ridges, posterior ends of the ridges distinctly distant from posterior margins of eyes. Mandibles relatively short, slender, dis-



Figs. 1-3. *Aegus kurosawai* sp. nov. — 1, Large male, holotype; 2, small male, paratype; 3, female, allotype.

tinctly curved inwards, blunt at tips, finely and sparsely punctured at basal portion of dorsal surface, each with a small and blunt tooth at basal fifth, outer margin weakly angulate at base. Antennae typical of the genus, with first segment almost as long as or a little shorter than the remaining nine segments united.

Pronotum rather squarish, a little narrower than twice the median length, gradually narrowed to the base; margins narrowly reflexed, but the reflection is weak at the median portion of anterior margin; lateral margins almost smooth or feebly crenulate, but distinctly serrate in small individuals; anterior angles somewhat produced, smoothly rounded at apices; posterior angles gently rounded; disc with a median longitudinal groove, though weak; surface finely and sparsely punctured, the punctures becoming larger and denser on sides and in median groove. Scutellum a little wider than long, rounded at apex, rather semicircular, scattered with small and shallow punctures. Legs rather slender; four small dentations present on the outer margin of each anterior tibia, two or three on middle and two on posterior tibiae.

Elytra 1.75–1.85 times as long as the total length of head and pronotum, 1.43–1.57 times as long as broad, broadest across near middle; lateral margins of basal two-thirds subparallel, though slightly arcuate; humeral angles each with a small tooth-like projection; disc with eight striae scattered with punctures, the outer two of them not so deep; intervals weakly convex, sparsely and finely punctured, the punctures becoming larger and denser on outer intervals.

Length: 16.0–20.5 mm (incl. mandible), 13.5–17.0 mm (excl. mandible); width: 5.5–7.5 mm.

*Female.* Body oval; punctures on head and pronotum larger, stronger and denser than in male. Head small, 0.65–0.70 times as broad as pronotum, much broader than twice the median length; clypeus narrower, lateral angles rounded. Mandibles much shorter than head, each with an inner tooth near the middle, the edge from the tip of mandible to the tip of inner tooth arcuately and distinctly emarginate. Pronotum rather rectangular, lateral margins subparallel. Colour and other structures as in the male.

Length: 15.7–19.0 mm (incl. mandible), 15.0–17.5 mm (excl. mandible); width: 5.5–7.5 mm.

*Distribution.* Central Taiwan.

Holotype ♂ and allotype ♀: Sungkang (alt. about 2,000 m), Nantou Hsien, 1. IX. 1973, Y. KIYOYAMA lgt. Paratypes (9♂♂ 5♀♀ in total): 5♂♂ 3♀♀, collected with holotype; 1♂, C. Taiwan (detailed locality unknown), VII. 1969; 1♂ 1♀, Meifeng, Nantou Hsien, 1. IX. 1973, M. MATSUMURA lgt.; 1♂ 1♀, Meifeng, Nantou Hsien, 5. V. 1973, T. OCHI lgt.; 1♂, Nanshanchi, Nantou Hsien, 26. VIII. 1972, T. MIZUNUMA lgt. The holotype and the allotype are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

*Notes.* In the structure of the ocular ridges, which do not cover the posterior portions of the eyes, this species is isolated from all the other members of the genus.



This species is dedicated to Dr. Yoshihiko KUROSAWA in commemoration of his retirement from the National Science Museum, Tokyo.

#### References

- OKAJIMA, S., & H. KOBAYASHI, 1975. A new stag-beetle of the genus *Aegus* MACLEAY from the Bonin Islands (Coleoptera, Lucanidae). *Bull. natn. Sci. Mus., Tokyo*, (A), 1: 119-121.

## Studies on the Subfamily Cetoniinae (Coleoptera, Scarabaeidae) of Asia, V

by

**Shinji NAGAI**

3-14-15 Shimotakaido, Suginami-ku, Tokyo 168, Japan

**Abstract** Two new species of cetoniine scarabaeid beetles are described from Palawan, the Philippines. They are easily recognized on their coloration alone.

In this paper, I am going to describe two new species of cetoniine scarabaeid beetles obtained in the southern part of Palawan, the Philippines. One of them belongs to *Euselates*, a genus first recorded from the island. The other is a member of *Meroloba* and is related to *M. trivittata* MOSER.

The type series of the new species to be described are preserved in the Entomological Laboratory, Ehime University, except for a few paratypes deposited in the National Science Museum (Nat. Hist.), Tokyo.

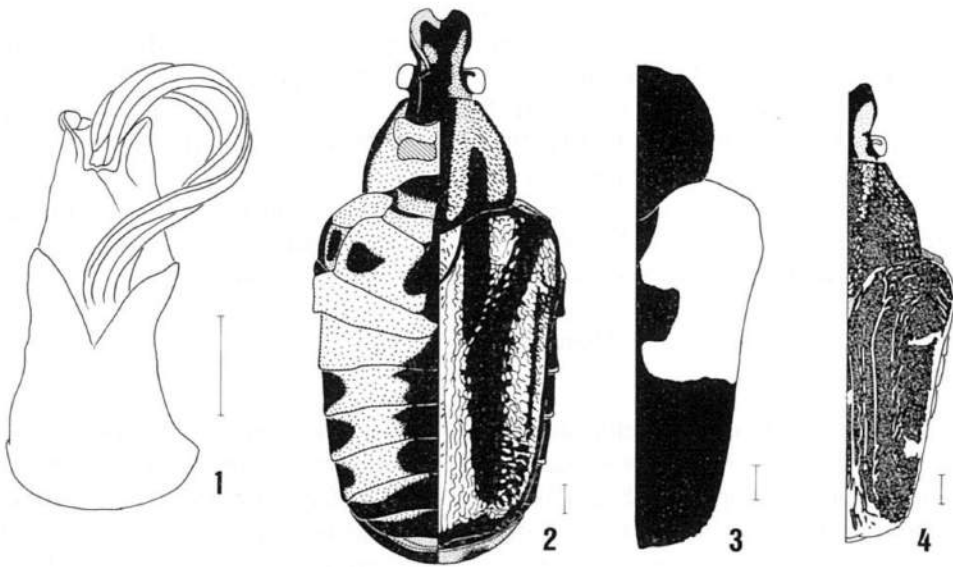
I wish to express my hearty thanks to Professors T. ISHIHARA, T. TACHIKAWA, M. MIYATAKE, Messrs. S. HISAMATSU and M. SAKAI, and Mrs. A. SAKAI for their kind advice and constant encouragement. Many thanks are also due to Dr. Y. KUROSAWA, Messrs. Y. NISHIYAMA and R. RODRIGUEZ for the gift or loan of valuable specimens and literature. Special thanks are due to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for his critical reading of the original manuscript of this paper.

### *Euselates dissimilis* sp. nov.

(Figs. 1-3, 5-6)

*Male.* Body elongate elliptical, about 2.37 times as long as wide, widest near base of elytra. Dorsal surface mat except on frontal area of head, ventral surface moderately shining with the derma lacking in vestiture. Color coal-black. Pubescence whitish yellow, very short and sparse on upper surface of head and pronotum, somewhat long on elytra, under surface of thorax and first to fourth abdominal segments, long and dense on inner sides of hind tibiae, and five and last abdominal segments; dorsal pattern ochreous, ventral pattern silky white, both formed by velvety vestiture as shown in Fig. 2.

Head elongate elliptical, punctured apically, rugose laterally, with frontal margin deeply emarginate, slightly elevated in frontal half and weakly keeled in basal half on the median black stripe. Pronotum somewhat convex, widely pro-



Figs. 1-4. — 1-3. *Euselates dissimilis* sp. nov.; 1, male genitalia of holotype, frontal view; 2, ventral (left half) and dorsal (right half) views of holotype ♂ (excluding legs); 3, dorsal (right half) view of paratype ♀ (excluding left half, head and legs). — 4. *Meroloba spadix* sp. nov., ♂; dorsal (right half) view of holotype (excluding left half and legs). Scale: 1 mm.

duced toward scutellum, weakly keeled on the median black stripe; sides feebly curved; sculpture under ochreous markings rugose. Elytra conjointly about 1.5 times as long as wide, uneven, well elevated on Y-shaped black stripes; side margins feebly reflexed throughout, apex gently rounded, apical corner gently rounded and margins minute saw-like, sutural angles faintly produced; surface strigose on ochreous marking near suture, the derma under the intermediate marking of each elytron roughly rugose at base. Mesosternal process conical, strongly carinate at anterior face. Metasternum with a fine median longitudinal groove extending from base to apex, impunctate near the groove, punctures elliptical at middle, rugose under silky white vestiture. Abdominal sternites gently arched and weakly channeled at center, impunctate near the channel, punctures semicircular under silky white vestiture of each sternite. Pygidium rugosely sculptured throughout.

*Female.* Distinctly different from male in the following points: body more robust, about 2.38 times as long as wide. Color entirely black except for basal three-fifths of elytra, which is reddish brown; hairs shorter and of darker color. Pronotum more rounded in outline.

Length: body, ♂, 18.5-19.2 mm, ♀, 20.2-20.4 mm; pronotum, ♂, 4.8-5.2 mm, ♀, 5.6-5.8 mm; elytra, ♂, 11.4-12.2 mm, ♀, 12.2-12.9 mm. Width: elytra, ♂, 7.4-7.7 mm, ♀, 8.5-8.6 mm.

*Distribution.* Philippines (Palawan Island).

*Holotype:* ♂, between Anibon and Kuta, alt. ca. 800 m, Mt. Mantalingajan, near Brooke's Point, S. Palawan I., 6. IV. 1980. *Paratypes:* 1♂, 1♀, Mainit, near Brooke's Point, S. Palawan I., V–VIII. 1980; 3♂♂, Mt. Iloilo, alt. ca. 900 m, near Brooke's Point, S. Palawan I., VII. 1983; 1♀, S. Palawan I., VIII. 1985. All the type specimens were collected by natives.

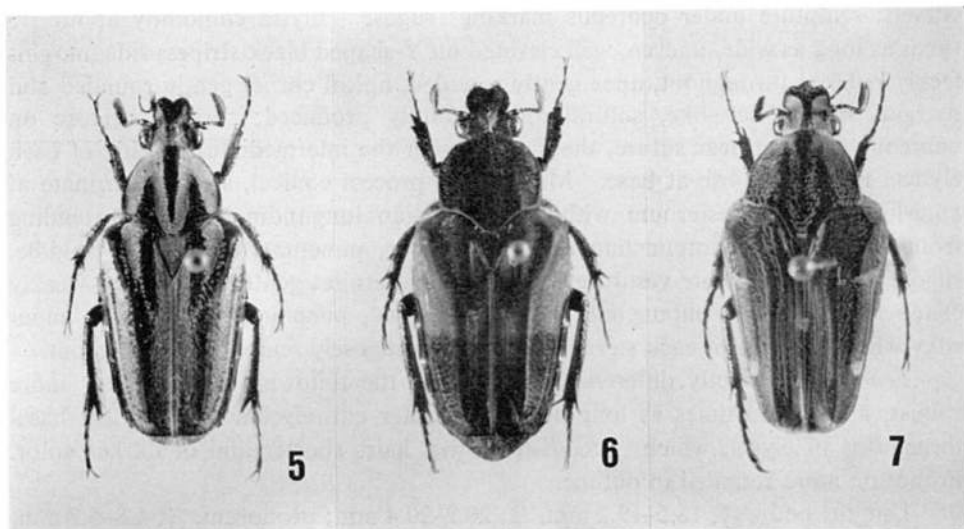
This new species is the first representative of the genus from Palawan Island. It is somewhat similar in color pattern to *Meroloba quadrilineata* NAGAI, 1984, in male, and to *Taeniodera abdominalis* (MOHNIKE, 1873) in female.

*Meroloba spadix* sp. nov.

(Figs. 4, 7)

*Male.* Body elongate elliptical, about 2.1 times as long as wide, widest near base of elytra. Dorsal surface mat except on the median coppery stripe on head, ventral surface coppery with greenish luster except for yellowish white vestiture. Color chestnut-brown on dorsal surface, black with coppery luster on ventral surface and legs; dorsal pattern yellowish white, ventral pattern silky yellow, both formed by velvety vestiture as shown in Fig. 4. Hairs very fine, short, yellowish brown on both surfaces, head, frontal margin and pygidium covered with somewhat long hairs; basal halves of femur, inner faces of middle and hind tibiae densely covered with long hairs.

Head elongate elliptical, with frontal margin deeply emarginate, median dark stripe slightly elevated and densely covered with circular punctures, minute punc-



Figs. 5–7. — 5–6. *Euselates dissimilis* sp. nov.; 5, holotype ♂; 6, paratype ♀. — 7. *Meroloba spadix* sp. nov; holotype ♂.

tures present on lateral yellowish white vestiture. Pronotum feebly convex on three median chestnut-brown markings, strongly produced toward scutellum, sculpture under yellowish white vestiture semicircular. Elytra conjointly about 1.3 times as long as wide, feebly elevated on two median brown stripes; side margins reflexed throughout, apical corner gently rounded with margins minutely saw-like, sutural angles faintly produced; surface strigose on yellowish white markings near suture, the derma under intermediate marking of each elytron roughly rugose at base, then the rugosity becoming finer posteriorly. Mesosternal process feebly produced conically, strongly carinate on anterior face. Metasternum impunctate at center, punctures elliptical at middle, rugose under silky yellow vestiture. Abdominal sternites sparsely punctured, punctures circular at middle of each sternite, minute punctures present under lateral silky yellow vestiture. Pygidium rugosely sculptured throughout.

*Female.* Unknown.

Length: body, ♂, 15.1 mm; pronotum, 4.9 mm; elytra, 9.6 mm. Width: elytra, ♂, 7.2 mm.

*Distribution.* Philippines (Palawan Island).

Holotype: ♂, Mt. Iloilo, alt. ca. 900 m, Brooke's Point, S. Palawan I., VII. 1983, by native collector.

This new species is the sixth species of the genus *Meroloba*, and is very closely related to *M. trivittata* MOSER, 1913. It is, however, easily distinguished from the latter by the basic coloration.

### References

- KRIKKEN, J., 1984. A new key to the suprageneric taxa in the beetle family Cetoniidae, with annotated lists of the known genera. *Zool. Verh., Leiden*, (210): 1-75.
- MIKŠIĆ, R., 1971. Revision der Gattung *Meroloba* THOMSON. *Folia ent. hung.*, **24**: 389-402.
- 1976. Monographie der Cetoniinae der paläarktischen und orientalischen Region, 1: 212-219, 273-357.
- MOHNIKE, O., 1874. Die Cetoniden der Philippinischen Inseln. *Arch. Naturg.*, **39**: 109-247.
- NAGAI, S., 1984. On some new cetoniid beetles from the Philippines. *Trans. Shikoku ent. Soc.*, **16**: 1-9.
- SCHENKLING, S., 1921. Scarabaeidae. In JUNK, W., & S. SCHENKLING (eds.), *Coleopterorum Catalogus*, pars 72 (pp. 134-147, 251-263). W. Junk, Berlin.
- WALLACE, A. R., 1868. A catalogue of the Cetoniidae of the Malayan Archipelago, with description of new species. *Trans. ent. Soc. London*, **4**: 519-601.

## The Buprestid Genus *Chalcophorella* KERREMANS and its Related Genera (Coleoptera, Buprestidae)

by

Masao TÔYAMA

4-16, Koshien 6, Nishinomiya, Hyogo 663, Japan

**Abstract** The classification of the buprestid genus *Chalcophorella* KERREMANS, 1903, and its allied genera is discussed. The genus *Chalcophorella* is discriminated into two distinct genera, *Chalcophorella* and *Stigmatophorella* OBENBERGER, 1942, stat. nov., and *Rossiella* OBENBERGER, 1942, which has been regarded as a subgenus of *Chalcophorella*, is newly treated as a subgenus of *Stigmatophorella*. The Australian genus *Pseudotaenia* KERREMANS, 1903, is also classified into two distinct genera, *Pseudotaenia* and *Austrophorella* gen. nov. A new tribe Chalcophorellini is established on the basis of the wing-venational characteristics. This new tribe includes only two genera *Chalcophorella* and *Austrophorella*.

The buprestid genus *Chalcophorella* KERREMANS, 1903, and its allied genera were classified by OBENBERGER (1942) into four genera, *Chalcophorella*, *Afrophorella* OBENBERGER, 1942, *Nipponobuprestis* OBENBERGER, 1942\*, and *Texania* CASEY, 1909. The genus *Chalcophorella* was further divided into three subgenera, *Chalcophorella* (s. str.), *Stigmatophorella* OBENBERGER, 1942, and *Rossiella* OBENBERGER, 1942.

In the course of my systematic study on the buprestid beetles, I was able to examine all the type species of these genera and subgenera. After my close examination, it became apparent that *Chalcophorella* must be separated into two distinct genera in view of the difference in the wing-venational characteristics. Therefore, *Stigmatophorella* is treated herewith as a full genus, and *Rossiella* is also newly treated as a subgenus of *Stigmatophorella*. On the other hand, I studied some species of the Australian genus *Pseudotaenia* KERREMANS, 1903, and found that this must also be divided into two distinct genera, *Pseudotaenia* and *Austrophorella* gen. nov., by the same reason as in *Chalcophorella*. The genera *Chalcophorella* and *Austrophorella* are very closely related, and are clearly different from the others belonging to the Buprestinae (=Chalcophorinae) in the wing-venational characteristics. I am, therefore, going to establish a new tribe Chalcophorellini for these two genera. More detailed account of the relationship between Buprestinae and Chalcophorinae will be given in a forthcoming paper.

This small paper is dedicated to Dr. Yoshihiko KUROSAWA for the commemoration of his retirement from the National Science Museum (Nat. Hist.), Tokyo.

\* Type species: *Chalcophora amabilis* SNELLEN VAN Vollenhoven, 1864 (present designation).

He has led me to the researches on the buprestid beetles.

I wish to express my sincere gratitude to Dr. Yoshihiko KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance, and to Dr. Shun-Ichi UÉNO of the same museum for his critical reading of the original manuscript.

### **Chalcophorellini** trib. nov.

Antennae with sensory pores evenly diffused on both sides of serrate segments. Maxillary palpi with the last segment elongate, slightly expanded at the middle, subtruncate but slightly rounded at apex. Pronotum with the basal margin slightly bisinuate, marginal carinae defined posteriorly. Scutellum distinct. Elytron with two small depressions. Prosternum without gular lobe; prosternal process longitudinally and coarsely punctate medially. Mesosternum not separated. Sternal cavity formed only by mesosternum. Metasternum with a distinct median groove. Legs relatively slender; posterior coxae with the posterior margin almost straight, and distinctly oblique; posterior tarsi with the first segment slightly shorter than the following two united. Claws simple.

Hind wing with a long radial cell, but without anal cell; vein R2 joining vein M2; cross vein (r-m) invisible; vein A2 short.

*Remarks.* This new tribe is allied to Julodini in wing-venational structure, but can be distinguished from it by the following characteristics: 1) different body shape; 2) pronotum with marginal carinae defined posteriorly, instead of being absent; 3) posterior tarsi with the first segment about as long as the following two united, while in Julodini, it is distinctly short and about as long as the second. This is also allied to Chalcophorini, but can be easily distinguished from it by the wing-venational structure; in the Chalcophorini, the anal cell is distinct on the hind wing. This is further similar to Agaeocerini, but can be distinguished from it by the following characteristics: 1) antennae with sensory pores evenly diffused on both sides of serrate segments, while in Agaeocerini, the sensory pores are diffused on both sides and concentrated in the terminal sockets on the ventral surface of serrate segments; 2) maxillary palpi with the last segment elongate, instead of being very compact; 3) pronotum with marginal carinae only in the posterior part, instead of being present throughout; 4) sternal cavity formed only by mesosternum, while in Agaeocerini, it is formed by mesosterna and metasternum.

The new tribe Chalcophorellini contains the following two genera.

### **Key to the Genera of the Tribe Chalcophorellini**

1. Pronotum very obsoletely impressed medially; elytra without dentation at apices; prosternum evenly convex. . . . . *Chalcophorella* KERREMANS, 1903.
- Pronotum without median groove; elytra distinctly dentate at apices; pro-

sternum strongly and transversely depressed along the anterior margin . . . .  
 ..... *Austrophorella* gen. nov.

Genus *Chalcophorella* KERREMANS, 1903

*Chalcophorella* KERREMANS, 1903, in WYTSMAN, Gen. ins., (12): 79–80. Type species: *Busprestis stigmatica* SCHOENHERR, 1817 (designated by OBENBERGER, 1942).

Body robust. Head distinctly narrower than the base of pronotum; frons distinctly concave; clypeal suture absent; clypeus somewhat triangularly emarginate on the anterior margin; eyes with the inferior rims distinctly converging above in frontal aspect; antennal cavities large; antennae eleven-segmented, serrate from the third segment, with the second segment the shortest, the third rather slightly serrate, distal ones distinctly serrate, and sensory pores evenly diffused on both sides of the distal eight segments.

Pronotum transverse; anterior margin bisinuate, and distinctly narrower than the posterior; posterior margin very slightly bisinuate; marginal carinae defined posteriorly; disc with an obsolete median impression. Scutellum small.

Elytra slightly broader than pronotum; basal margins subtruncate; lateral margins unarmed throughout; disc with two small depressions on each elytron.

Prosternum convex; anterior margin arcuately emarginate; prosternal process distinctly punctate medially. Mesosternum divided, but the two parts touch each other at one point. Sternal cavity formed only by mesosternum. Metasternum with a distinct median groove.

Legs slender; tibiae with two distinct spurs at each apex; posterior tarsi rather compact, with the first segment slightly shorter than the following two united.

*Distribution.* Balkans, Cyprus, Asia Minor, Iran.

Genus *Austrophorella* gen. nov.

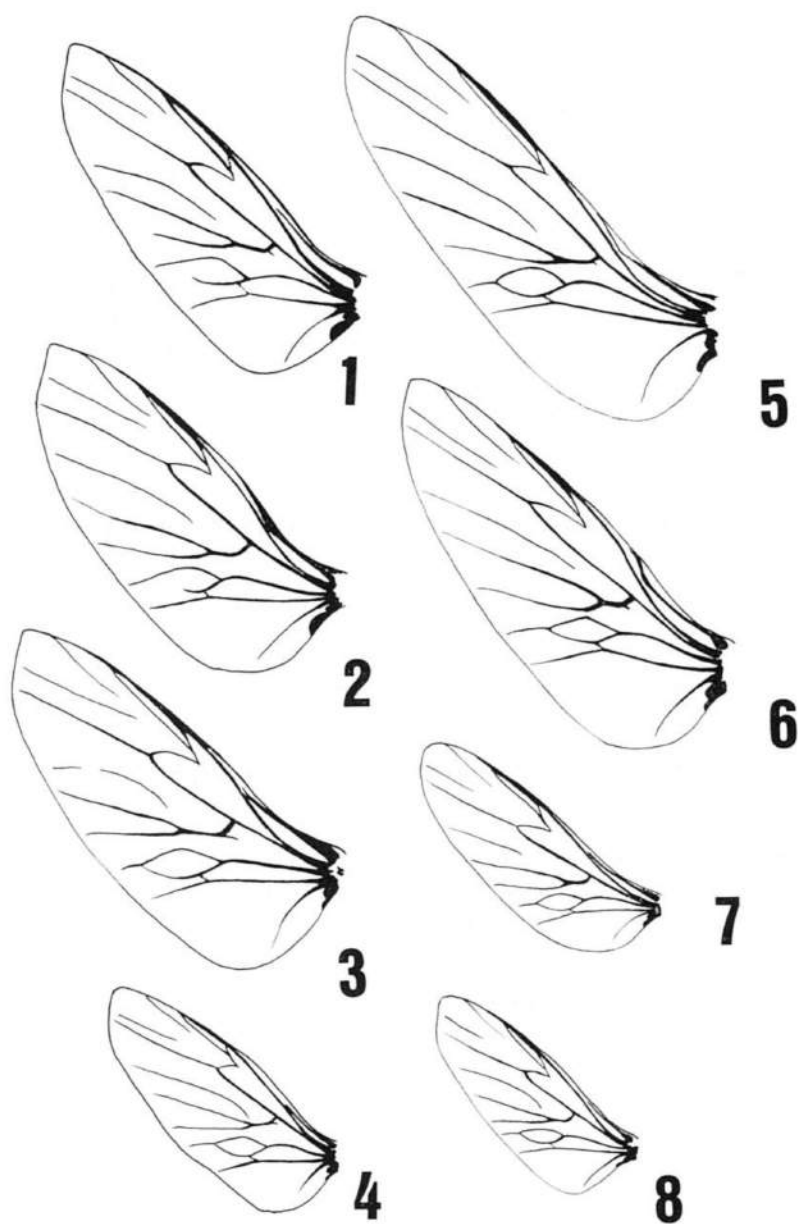
Type species: *Chalcotaenia quadrisignata* E. SAUNDERS, 1872.

Body robust. Head distinctly narrower than the base of pronotum; frons strongly concave; clypeal suture absent; clypeus subtriangularly emarginate on the anterior margin; eyes with the inferior rims distinctly converging above in frontal aspect; antennal cavities large; antennae eleven-segmented, serrate from the third segment, with the second segment the shortest, the third rather slightly serrate, distal ones distinctly serrate, and sensory pores evenly diffused on both sides of serrate segments.

Pronotum transverse; anterior margin distinctly bisinuate, and narrower than the posterior; posterior margin slightly bisinuate; marginal carinae defined posteriorly; disc uneven, without median impression. Scutellum small.

Elytra broader than pronotum; basal margins subtruncate; lateral margins distinctly dentate in posterior half; disc with two distinct depressions on each elytron.





Figs. 1-8. Hind wings. — 1, *Austrophorella quadrisignata* (E. SAUNDERS, 1872); 2, *Chalcophorella stigmatica* (SCHOENHERR, 1817); 3, *Stigmatophorella quadrioculata* (REDTENBACHER, 1843); 4, *Rossiella fabricii* (ROSSI, 1874); 5, *Pseudotaenia salamandra* (THOMSON, 1879); 6, *Afrophorella africana* (THOMSON, 1879); 7, *Texania campestris* (SAY, 1823); 8, *Nipponobuprestis amabilis* (SNEELN VAN VOLLENHOVEN, 1864).

Prosternum with the anterior margin sinuously emarginate; disc transversely and strongly depressed along the anterior margin; prosternal process punctate medially. Mesosternum divided, though the two parts touch each other at one point. Sternal cavity formed only by mesosternum. Metasternum with a distinct median impression.

Legs rather slender; tibiae with two distinct spurs at each apex; posterior tarsi rather lax, with the first segment slightly shorter than the following two united.

*Distribution.* Australia.

*Remarks.* The present genus is easily distinguished from the genus *Pseudotaenia* KERREMANS by the wing-venational structure. It contains only a single species, *Austrophorella quadrisignata* (E. SAUNDERS, 1972), comb. nov.

### Tribe *Chalcophorini* LACORDAIRE, 1857

*Chalcophorides* LACORDAIRE, 1857, Gen. Coléopt, 4: 14-15.

### Genus *Stigmatophorella* OBENBERGER, 1942, stat. nov.

*Stigmatophorella* OBENBERGER, 1942, Čas. Čs. Spol. ent., 39: 6 (subgenus of *Chalcophorella*). Type species: *Buprestis quadrioculata* REDTENBACHER, 1843 (present designation).

The present genus is easily distinguished from *Chalcophorella* by the tribal characteristics. It is divided into two subgenera.

### Key to the subgenera of the Genus *Stigmatophorella*

1. Elytra densely punctate and covered with short whitish hairs on markings, very sparsely punctate and hairless on blackish parts.....  
.....*Stigmatophorella* (s. str.) OBENBERGER, 1942.
- Elytra evenly punctate, without any markings...*Rossiella* OBENBERGER, 1942.\*

### Genus *Pseudotaenia* KERREMANS, 1903

*Pseudotaenia* KERREMANS, 1903, in WYTSMAN, Gen. ins., (12): 81. Type species: *Chalcotaenia salamandra* THOMSON, 1879 (present designation).

This genus is easily distinguished from the genus *Austrophorella* by the tribal characteristics.

### References

- CASEY, T. L., 1909. Studies in the American Buprestidae. *Proc. Wash. Acad. Sci.*, 11: 47-178.  
KERREMANS, C., 1902. Coleoptera Serricornia Fam. Buprestidae. In WYTSMAN, P. (ed.), *Gen. ins.*, (12a): i+1-48.

\* Type species: *Buprestis fabricii* ROSSI, 1874, by monotypy.

- KERREMANS, C., 1903. Coleoptera Serricornia Fam. Buprestidae. In WYTSMAN, P. (ed.), *Gen. ins.*, (12b-d): 49-338, 4 pls.
- 1909-'10. Chalcophorini: Chalcophorites (fin). *Monographie des Buprestides*, 4: i+1-287, pls. 23-26.
- NELSON, G. H., 1982. A new tribe, genus, and species of North American Buprestidae with consideration of subfamilial and tribal categories. *Coleopt. Bull.*, 35 (for 1981): 431-450.
- OBENBERGER, J., 1928. Opuscula Buprestologica I. Beiträge zur Kenntnis der Buprestiden (Col.). *Arch. Naturg.*, (A), 92 (9-11) (for 1926): 1-350, pls. 1-7.
- 1942. De genere *Chalcophorella* KERR. et generibus vicinis (Col. Bupr.). *Čas. Čs. Spol. ent.*, 39: 2-12.

Un nouveau genre de Buprestide originaire d'Indochine et  
appartenant à la tribu des Polycetesini  
(Coleoptera, Buprestidae)

par

**André DESCARPENTRIES**

Laboratoire d'Entomologie, Muséum national d'Histoire naturelle  
45, rue de Buffon, 75005 Paris, France

**Abstract** A new genus and species of Buprestidae belonging to the tribe Polycetesini is described from Indochina.

***Kurosawaxia* n. gen.**

Epistome séparé du front par un sillon transverse. Bords oculaires internes nettement convergents vers le vertex. Antennes dilatées à partir du quatrième article inclus, les articles IV-XI avec les pores sensoriels concentrés dans une fossette inférieure subterminale.

Pronotum à bord antérieur entièrement rebordé, ses fossettes latéro-basales rudimentaires, très peu distinctes. Sculpture constituée seulement par une ponctuation primaire, sans trace de ponctuation secondaire.

Elytres striés-ponctués, sans trace de côtes, tridentés au sommet et obsolètement serrulés le long de l'extrême bord latéro-postérieur, à partir de la première dent externe. Epipleures ne recouvrant pas les métaépisternes, repli épipleural n'atteignant pas le sommet de l'élytre.

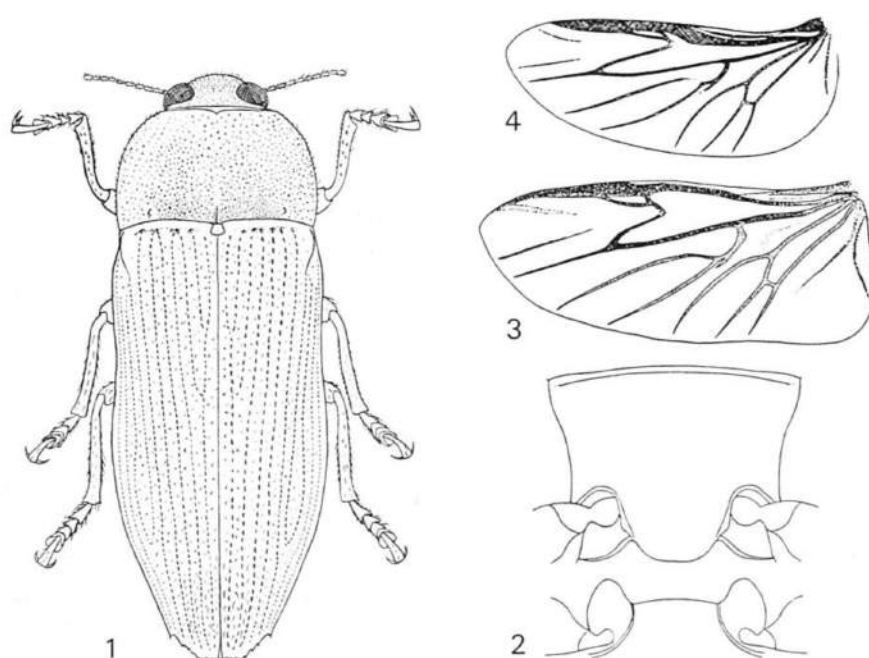
Saillie prosternale plus large que longue, à côtés rétrécis vers l'arrière, largement arrondie au sommet. Cavité sternale formée par le mésosternum seul (fig. 2); suture méso-métasternale subdroite.

Dernier sternite visible à bord postérieur largement arrondi.

Fémurs dépourvus de sillon sur la tranche inférieure, tibias avec une paire d'éperons normaux, les articles III et IV des tarses seuls pourvus de lamelles adhésives inférieures.

Face dorsale pubescente. Aile membraneuse avec la nervure Cu 1 rejoignant la nervure Cu 2 (fig. 3).

Parmi les Polycetesini, tribu créée par COBOS (1955, 1980), ce nouveau genre est proche de *Paraxenopsis* COBOS et *Xenopsis* E. SAUNDERS, il en diffère, entre autres caractères, par ses fémurs dépourvus de sillon destiné au logement des tibias, ces derniers étant munis d'éperons terminaux normaux. De *Paraxenopsis*, il diffère également par ses métatibias dépourvus de soies différenciées sur la tranche supé-



Figs. 1-3. *Kurosawaxia iris* n. gen., n. sp.; 1, habitus; 2, avant-corps, face ventrale; 3, aile.  
— Fig. 4. Aile de *Xenopsis laevis* E. SAUNDERS (d'après COBOS).

eure, la ponctuation du pronotum simple, la face dorsale pubescente. De *Xenopsis*, il diffère par le front séparé de l'épistome par un sillon, les antennes dentées à partir du quatrième article, non du cinquième, les tarses avec les articles III-IV seuls munis de lamelles adhésives et non les quatre premiers.

Espèce type du genre: *Kurosawaxia iris* n. sp.

*Observation.* Ce nouveau genre figure, sans indication d'identité, dans le tableau de détermination des représentants de la tribu des Polyctesini donné par A. COBOS (1980). En effet, sachant que cet excellent ami et collègue avait entrepris un important travail concernant la révision des genres constituant la sous-famille des Polycestinae, j'avais jugé utile, préalablement à sa description, de le lui communiquer, afin qu'il puisse l'incorporer dans son étude et que celle-ci, dès sa publication, ne soit pas incomplète.

Ce nouveau genre est dédié au Docteur Yoshihiko KUROSAWA, du National Science Museum, Tokio, en témoignage d'estime pour son importante contribution apportée à la connaissance des Buprestides asiatiques.

***Kurosawaxia iris* n. sp.**

(Figs. 1-3)

Long.: 10 à 15 mm; larg.: 4 à 6,1 mm. Large, semi-brillant. Tête bronzé

verdâtre ou bleuâtre plus ou moins sombre, pronotum vert bleuâtre à reflets rouge cuivreux ou violacés; écusson et disque élytral vert plus ou moins bleuâtre, cette teinte passant au pourpre violacé sur la zone suturale et vers le bord latéral pour se rejoindre un peu avant les apex, ces derniers bleu d'acier sombre. Dessous d'une teinte identique à celle des élytres. Antennes noir bleuâtre; fémurs vert bleuâtre à reflets cuivreux, tibias et tarses noir bleuâtre. Pubescence de la face dorsale un peu hirsute, blanc grisâtre, peu dense, courte, très fine, arquée.

Epistome subanguleusement et très obtusément échancré; front large et légèrement bombé en avant, non sillonné, sa surface recouverte d'un dense réseau de gros points alvéolaires à fond ombiliqué, vertex à sculpture identique mais un peu moins forte. Antennes à deuxième article moniliforme, d'un tiers plus court que le troisième, celui-ci à peine plus court que le quatrième, les articles dilatés à lobe arrondi.

Pronotum transverse, une fois trois quarts plus large que long, ayant sa plus grande largeur un peu avant la base, un peu plus étroit que les élytres (pris ensemble) dans leur plus grande largeur, ses côtés régulièrement arqués, bord antérieur droit, bord basal faiblement concave de part et d'autre de l'écusson. Disque bombé et légèrement aplani sur la ligne médiane, avec un léger et court sillon longitudinal médian contre l'écusson. Sculpture constituée par une ponctuation assez fine et dense, les points séparés par un espace égal à environ une fois et demie à deux fois leur diamètre, sauf le long de la base, où les points sont très serrés et déterminent de vagues rides obliquement transverses.

Écusson subtrapézoïdal.

Elytres, pris ensemble, deux fois plus longs que larges, leurs côtés parallèles en arrière de l'épaule, puis faiblement et subsinueusement rétrécis, s'élargissant ensuite jusqu'à un point situé un peu en arrière du milieu, où ils atteignent leur plus grande largeur, se rétrécissant à nouveau, tout d'abord en faible courbe, puis rectilignes et inermes jusqu'au premier denticule latéral. Disque bombé, légèrement déprimé sur la zone suturale postscutellaire et transversalement le long de la base, le calus huméral très peu saillant, la dépression humérale interne presque nulle; interstries plans, les impairs devenant convexes vers les apex à l'exception du premier, le septième élargi et plus fortement convexe vers le tiers postérieur.

Bord antérieur du prosternum nettement rebordé, saillie prosternale assez fortement et densément ponctuée, les points séparés par un espace égal au plus à leur diamètre. Mésosternum identiquement ponctué, relativement long en son milieu, séparant très nettement l'apophyse prosternale du métasternum, celui-ci très éparsement ponctué au milieu, très densément et plus grossièrement latéralement, avec une courte et assez profonde dépression longitudinale médiane située postérieurement, contre la pièce prémétacoxale. Sternites abdominaux assez finement ponctués sur la zone médiane, les points séparés par un espace égal à deux ou trois fois leur diamètre, bord postérieur du dernier visible étroitement relevé et lisse. Pubescence de la face ventrale identique à celle de la face dorsale.

♂ inconnu.

Holotype ♀ et un paratype du même sexe: Indochine, Nord Vietnam, Hoa-Binh (R. P. DE COOMAN leg.). Muséum national d'Histoire naturelle, Paris.

**Auteur cité**

- COBOS, A., 1955. Estudio sobre los Ptosimites de Ch. KERREMANS (Coleoptera, Buprestidae). *Bull. Inst. roy. Sci. nat. Belg.*, **31** (13): [1]–24, figs. 1–24.
- 1980. Ensayo sobre los géneros de la subfamilia Polycestinae (Coleoptera, Buprestidae), parte I. *Eos*, **54** (année 1978): [15]–94, figs. 1–54.

Descriptions of Adult Larvae of *Thrincopyge alacris* LECONTE  
and *Aphanisticus cochinchinae seminulum* OBENBERGER  
(Coleoptera, Buprestidae)

by

Svatopluk BÍLÝ

Department of Entomology, National Museum, Praha, Czechoslovakia

**Abstract** Adult larvae of *Thrincopyge alacris* LECONTE, 1858, from Texas and *Aphanisticus cochinchinae seminulum* OBENBERGER, 1929, from Hawaii are described and larvae of Thrincopyginae and Aphanisticini (Trachyinae) are characterized.

The subfamily Thrincopyginae was recently split by COBOS (1980) from Polycestinae on the basis of the form and distribution of antennal sensory pores of adults. Any larva of Thrincopyginae (formerly Thrincopygini of Polycestinae) has not been known so far except for the simple drawing of *T. ambiens* (LECONTE) published by BURKE (1917). In this paper, the larva was figured from the dorsal, ventral and lateral sides without any description or comments on its morphology.

Larvae of the tribe Aphanisticini (Trachyinae) have been also practically unknown up to now. A very simple and schematic drawing of an European species *Aphanisticus emarginatus* (FABRICIUS) was published by PERRIS (1877) and overtaken by SCHAEFER (1949). DEVENTER (1912) published descriptions of the larvae of *A. consanguineus* RITSEMA and *A. kruegeri* RITSEMA from Java. His descriptions are also insufficient and brief, and only a habitus of larvae was figured, because DEVENTER's paper deals mainly with the biology of these species.

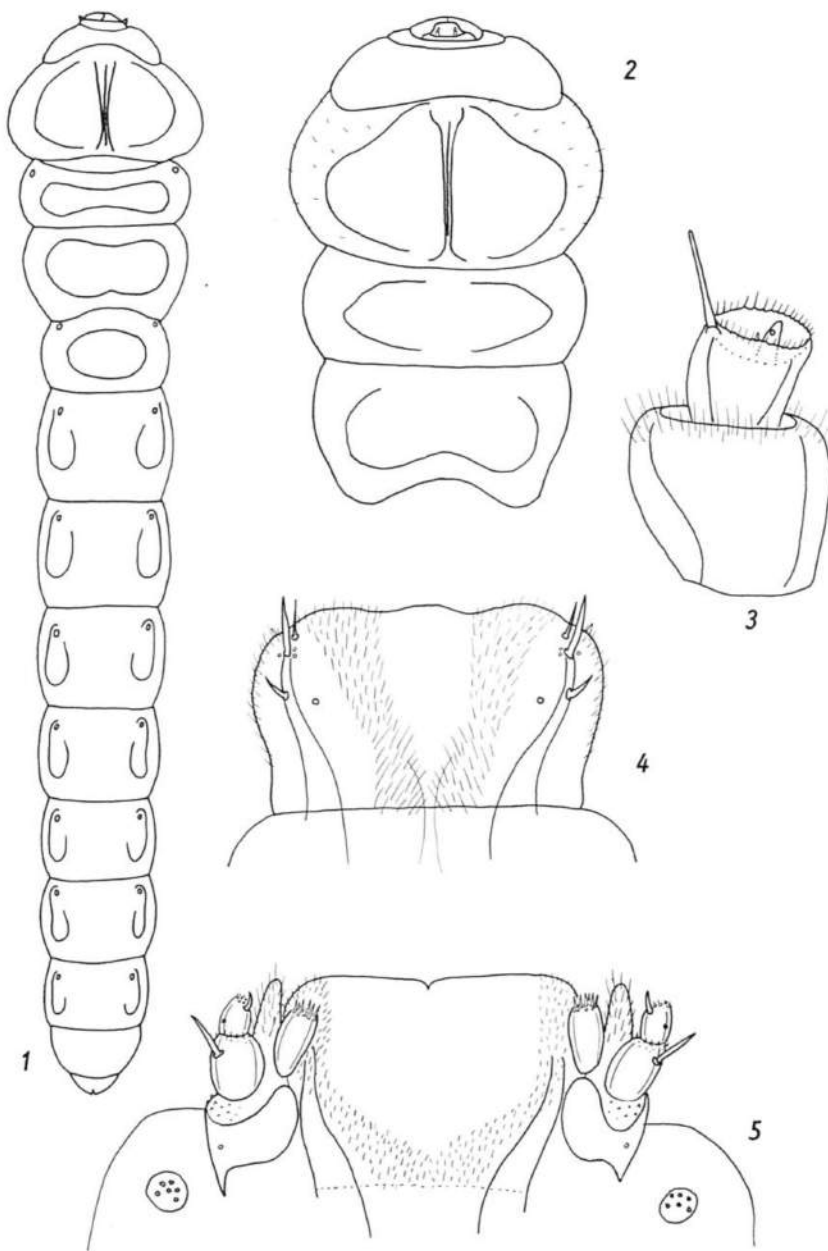
I wish to thank Dr. R. L. WESTCOTT of Salem, Ohio, and Dr. G. Y. FUNASAKI of Honolulu, Hawaii, for the material which was used for the following descriptions.

*Thrincopyge alacris* LECONTE, 1858

(Figs. 1-9)

Body of the last larval instar white or cream-white covered with very small and sparse microspinules. Pronotal and prosternal plates with very dense microspinules and with short, sparse bristles (Fig. 6). Prothorax (the widest part of body) only slightly enlarged, meso- and metathorax only slightly wider than abdominal segments (Fig. 1). Anal segment without any sclerotization. Both dorsal and ventral plates of prothorax only with one medial, sclerotized groove. Body shape very similar to that of *Ptosima* (BÍLÝ, 1972) and some Acmaeoderinae (VOLKOVITSH, 1979).





Figs. 1-5. Larva of *Thrincopyge alacris* LECONTE. — 1, Dorsal view, 30 mm; 2, prothorax, ventral view; 3, left antenna; 4, labrum; 5, labiomaxillary complex.

Body length of the last instar 28.0–35.0 mm, width of pronotum 5.5 mm, maximum width of abdomen 3.8 mm.

Head retracted completely into prothorax, only mouth parts and antennae visible (Figs. 1–2). Mandibles very short and stout, black with two apical (ventral and dorsal) and one medial teeth (Fig. 7). Labrum membranous, slightly wider than long with two lateral supporting sclerites (Fig. 4). Anterior margin of labrum twice slightly incurved. Anterolateral angles of labrum widely rounded with short marginal hairs and with three large sensory bristles and several sensory fields near apical part of supporting sclerites. Ventral surface of labrum (epipharynx) with two prolonged fields of fine sensory hairs (Fig. 4).

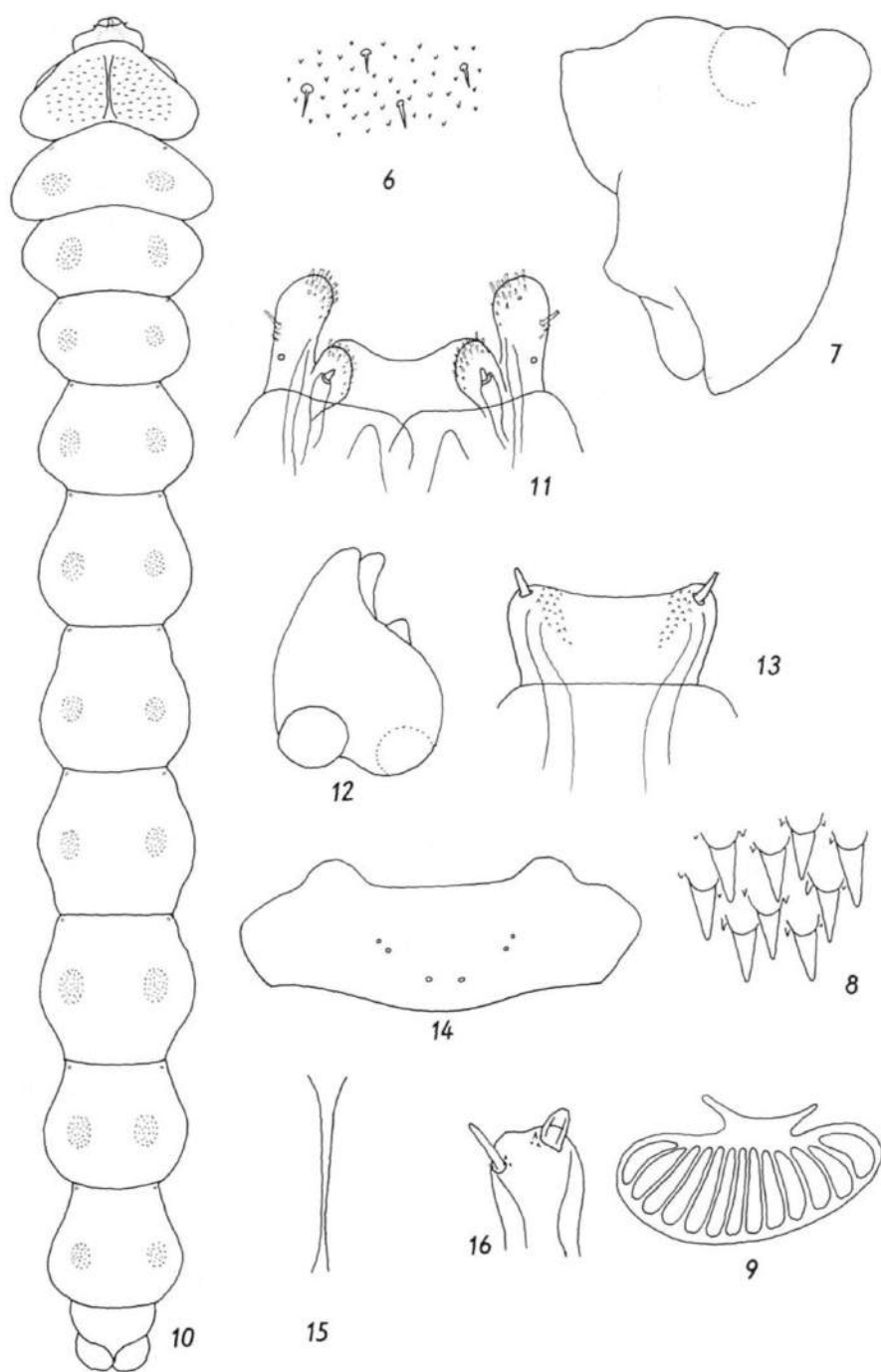
Labiomaxillary complex (Fig. 5) wide, membranous, cardo with a small rounded sclerite at the base of each stipes. These sclerites bear several sensory areas but no sensory bristles (common in larvae of other Buprestidae—BÍLÝ, 1975; VOLKOVITSH, 1979) were observed. Stipes rather sclerotized with one sensory area, palpus maxillaris well developed, two-segmented. Basal segment bears long, lateral sensory bristle and a row of short and very fine apical hairs. Apical segment of palpus maxillaris with one lateral sensory area, rather long, somewhat bent apical bristle and with a field of apical sensory hairs and areas. Galea long and and large, membranous, thumb-shaped with rather dense and long hairs. Lacinia well developed and sclerotized in the form of a separate segment at the base of galea. Praementum membranous with straight, medially notched anterior margin (Fig. 5). Lateral margins of dorsal surface of praementum with two oblique fields of fine hairs which connect each other at the base of praementum. Antennae short, two-segmented (Fig. 3). Apical cavity of the second segment with two sensory bristles and with a large sensory conus which may be a rudiment of the 3rd antennal segment. Lateral, apical pubescence and one apical sensory bristle of the second antennal segment well developed. Basal segment of antennae only with apical sensory hairs. No traces of stemmata were observed.

Pronotal and prosternal sclerotized grooves slightly enlarged anteriorly, well developed, brown, without special structure (Figs. 1–2). Spiracles relatively large, cribriform (spiracula multifolia) with well developed peritreme. Mesothoracic spiracle (Fig. 9) reniform, abdominal spiracles of the same shape as the mesothoracic one but smaller. Abdominal spiracles situated at the anterior part of dorsal depressions (Fig. 1). Abdomen 10-segmented, anal segment smooth conical with medial, vertically situated anal opening.

*Anatomy.* Inner structure of proventriculus very fine and dense. Almost whole inner surface of proventriculus covered with small, blister-shaped tubercles

---

Figs. 6–16. Larvae of *Thrinopyge alacris* LeConte (6–9) and *Aphanisticus cochinchinae seminulum* Obenberger (10–16). — 6, Structure of pronotal plate; 7, left mandible; 8, inner structure of proventriculus; 9, left mesothoracic spiracle. — 10, Dorsal view, 5.8 mm; 11, labiomaxillary complex; 12, left mandible; 13, labrum; 14, epistom; 15, medial prosternal groove; 16, left antenna.



bearing sharp spines (Fig. 8). There are 6 very long Malpighian tubes which are densely undulate and closely connected with the outer wall of a gut and 6 relatively short coeca gastrica.

*Material studied.* 3 specimens labelled: Texas, nr. Sanderson, Val Verde Co., July 2, 1972, R. L. WESTCOTT leg., ex. *Dasytirion* sp.

The larva of *T. alacris* (and probably of all Thrincopyginae) differs from larvae of other Buprestidae with only one pronotal groove in the cribriform abdominal spiracles ( $\times$  Acmaeoderinae with abdominal spiracles without peritrema) and in the articulated, sclerotized lacinia ( $\times$  Ptosiminae with lobe-shaped lacinia). The presence of separate galea and lacinia in buprestid larvae (Acmaeoderinae, Ptosiminae) is a rare and primitive phenomenon but the presence of well separated, sclerotized lacinia is quite unusual, and it supports COBOS' opinion (COBOS, 1980) that Thrincopygini must be split off from Polycestinae to a separate subfamily.

According to simple and insufficient BURKE's illustration of the larva of *T. ambiens* (BURKE, 1917), it is very difficult to distinguish larvae of both the species. The only different and well illustrated character is the shape of pronotal and prosternal plates with are longer than wide in *L. ambiens* and wider than long in *T. alacris*.

*Aphanisticus cochinchinae seminulum* OBERBERGER, 1929

(Figs. 10-16)

Body of the last larval instar orange or yellow-orange, smooth, only pronotal and prosternal plates with extremely small, transverse asperities (Fig. 10). Prothorax only slightly enlarged, mesothorax is the widest part of body, metathorax only slightly wider than abdominal segments. Anal segment bilobed without any sclerotization. Both dorsal and ventral plates of prothorax only with one medial, sclerotized groove (Figs. 10, 15). Body length of the last instar 5.6-5.8 mm, width of mesothorax 1.2 mm, width of abdomen 0.9 mm.

Head almost completely retracted into prothorax, only mouth parts visible. Mandibles (Fig. 12) short and robust, well sclerotized, black with two apical and one medial obtuse teeth. Labrum (Fig. 13) membranous, twice as wide as long with somewhat incurved anterior margin and with one short and thick sensory bristle at each anterior angle. Ventral surface of labrum (epipharynx) with two small fields of short sensory papillae (Fig. 13).

Labiomaxillary complex much reduced (Fig. 11), membranous. Praementum almost 4 times as wide as long in the middle with incurved anterior margin. Maxilla consisting only of two membranous, thumb-shaped lobes (larger galea and smaller lacinia), each bearing apical field of sensory bristles (Fig. 11). Galea bears also several sensory bristles and one sensory area at the middle of lateral margin. Palpus maxillaris only very small, conical, situated at the base of lacinia (Fig. 11). Epistom (Fig. 14) very simple, about 4 times as wide as long with bisinuous posterior margin.

Lateral parts of epistom slightly angulate. Three pairs of sensory areas at the middle of epistom, as figured (Fig. 14).

Antennae very short, two-segmented (Fig. 16), basal segment barrel-shaped with long and thick sensory bristle on outer margin. The second segment very small, conical with short accessory bristle at its base. No traces of stemmata were observed.

Pronotal sclerotized groove slightly enlarged both anteriorly and posteriorly (Fig. 10), prosternal groove enlarged anteriorly and very slightly posteriorly (Fig. 15). Both grooves finely sclerotized, yellow-brown.

Spiracles extremely small, barely visible, without peritreme, situated at antero-lateral angles of mesothorax and abdominal segments 1-8 (Fig. 10). Abdominal segments 1 and 2 slightly wider than long, segments 3-8 slightly longer than wide, segment 9 semispherical and pointed apically, segment 10 divided into two swollen lobes (Fig. 10). Prosternum with dorsal and ventral, oval plates covered with extremely fine transverse asperities (Fig. 10). Abdominal segments 1-8 with dorsal and ventral pair of oval, slightly rugose but not sclerotized plates (Fig. 10). No structure of proventriculus was observed.

*Material studied.* 4 specimens labelled: Hawaii, Ewa Oahu, 8. 2. 1985, coll. FUNASAKI, ex sugarcane. This subspecies (described from Singapore) was probably introduced to Hawaii with a sugarcane.

Larvae of the genus *Aphanisticus* (quite insufficiently known so far) are much specialized and reduced. Especially mouth parts of larva are much reduced in comparison with those of larvae of other Buprestidae (bilobed, membraneous maxilla, praementum without sensory bristles, palpus maxillaris not segmented). Unfortunately, there is no possibility to compare larval mouth parts of *Aphanisticus* with those of other members of Trachyinae. All authors dealing with larval stages of Trachyinae have not studied and illustrated mouth parts in detail. All known larvae of Trachyinae (*Trachys*, *Habroloma*) differ from larva of *Aphanisticus* (and probably all Aphanisticini) in the presence of dorsal and ventral, dark and sclerotized plates and in shorter and more enlarged body which becomes narrower from the mesothorax to the anal segment.

### References

- BÍLÝ, S., 1972. The larva of *Ptosima flavoguttata* (ILL.) (Coleoptera, Buprestidae). *Acta ent. bohemoslov.*, **69**: 18-22.
- 1975. Larvae of European species of the genus *Chrysobothris* ESCHSCH. (Coleoptera, Buprestidae). *Ibid.*, **72**: 418-424.
- BURKE, H. E., 1917. Flat-headed borers affecting forest trees in the U.S. *U.S. Dept. Agr. Bull.*, (437): 1-7, 9 pls.
- COBOS, A., 1980. Ensayo sobre los géneros de la subfamilia Polycestinae (Coleoptera, Buprestidae). Parte I. *Eos*, **54**: 15-94.
- DEVENTER, W., 1912. Handboek ten dienste van de suikerriet-cultuur en de rietsuiker-fabricage op Java. *Tweede deel. Amsterdam*: 47-52, 1 pl.

- PERRIS, M. E., 1877. Larves de Coléoptères. 590 pp., 14 pls. Deyrolle, Naturaliste, Paris.
- SCHAEFER, L., 1949. Les Buprestides de France. 511 pp. Éd. Scient. du Cab. Entomol., Paris.
- VOLKOVITSH, M. G., 1979. Obzor palearktiitsheskich grupp zlatok triby Acmaeoderini (Coleoptera, Buprestidae). *Ent. obozr.*, **52**: 333–354.

Author's address: Dr. Svatopluk Bílý, Department of Entomology,  
National Museum, Kunratice 1, 148 00 Praha 4, Czechoslovakia.

## Two Elaterid Beetles of the Genus *Megapenthes* (Coleoptera, Elateridae) from Japan and Taiwan

by

Wataru SUZUKI

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** Two elaterid beetles belonging to the genus *Megapenthes* are dealt with. *Melanoxanthus tattakensis* ÔHIRA, 1966, from Taiwan, is transferred to the genus *Megapenthes* and briefly redescribed. A new species is described from Honshu, Japan, under the name of *Megapenthes kurosawai*. It is very closely related to the Taiwanese species, but differs from it in the structure of antennae and pronotum.

The present paper is the result of my study on a species-group of the genus *Megapenthes* KIESENWETTER from Japan and Taiwan, which is characterized by having dark red pronotum in female.

*Melanoxanthus tattakensis* was described by ÔHIRA based on three specimens collected at Sungkang in central Taiwan. Though many coleopterists visited the same locality for collecting beetles, the species was not obtained for a long time. Fortunately, I was able to examine a number of specimens of the species taken at some localities in central Taiwan. After a close examination of this collection, it has become clear that the species does not agree with the generic characteristics of *Melanoxanthus* but belongs to the genus *Megapenthes*.

On the other hand, I recently found a species of the same genus from Honshu, Japan. At first, I considered it to be identical with the Taiwanese species because the female pronotum is dark red except for the apex and base. However, a careful examination of a long series of specimens has revealed that the Japanese species is new to science. It will be described in this paper.

Before going further, I wish to express my hearty thanks to Dr. Y. KUROSAWA and Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for their constant guidance and encouragement, and to Professors H. SAWADA and Y. WATANABE of the Tokyo University of Agriculture for valuable advice on the present study. Deep gratitude is also due to Messrs. A. ABE, K. AKIYAMA, M. HASEGAWA, H. KOBAYASHI, K. KAWADA, Y. KOMIYA, M. KUBOTA, T. NIISATO, S. SAITO, T. SHIMOMURA, Y. TAHIRA, S. TSUYUKI, K. USHIJIMA and S. YAMAGUCHI for their kindness in providing with the specimens used in this paper.

*Megapenthes tattakensis* (ÔHIRA, 1966), comb. nov.

[Japanese name: Mesuaka-kuro-kometsuki]

(Figs. 1, 2, 5 &amp; 7)

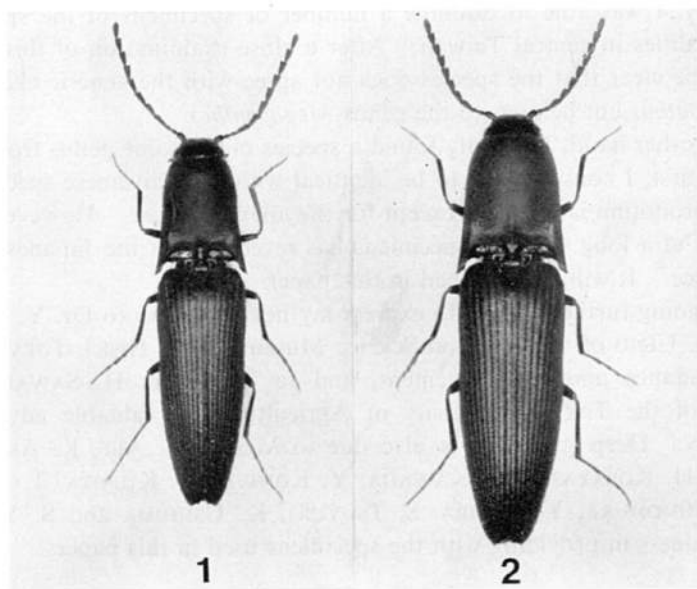
*Melanoxanthus tattakensis* ÔHIRA, 1966, Kontyû, Tokyo, 34: 266-267, figs. 26-27 (Sungkang).*Male.* Length 7.67-9.87 mm; width 1.87-2.27 mm.

Antennae short, barely reaching the apices of posterior angles of pronotum, moderately serrate from fourth segment, which is 1.96-2.06 times as long as wide. Pronotum 1.34-1.37 times as long as median width, gently convex above, not impressed on mid-lateral parts; sides straight, converging from the apices of posterior angles to anterior angles.

*Female.* Length 9.27-11.27 mm; width 2.2-2.6 mm.

Antennae with fourth to tenth segments weakly serrate; fourth segment 1.88-1.91 times as long as wide. Pronotum 1.25-1.27 times as long as median width. Elytra 2.79-2.90 times as long as humeral width.

*Specimens examined.* Near Meifeng (about 2,150 m alt.), Nantou Hsien: 3♂♂, 2♀♀, 2. V. 1967, T. SHIMOMURA leg.; 2♂♂, 1♀, 9. V. 1976, T. SHIMOMURA leg.; 1♀, 18. V. 1976, T. SHIMOMURA leg.; 2♂♂, 4♀♀, 20. V. 1976, T. SHIMOMURA & K. AKIYAMA leg.; 2♂♂, 1♀, 22. V. 1976, M. KUBOTA & T. SHIMOMURA leg.; 1♀, 24. V. 1976, T. SHIMOMURA leg.; 2♂♂, 5♀♀, 3. VI. 1976, T. SHIMOMURA leg.; 1♀, 21. VI. 1976, M. KUBOTA leg.; 1♂, 27. IV. 1977, S. SAITO leg.; 1♂, 28. IV. 1977, Y. KOMIYA leg.; 2♀♀, 30. IV. 1977, T. NIISATO leg.; 3♂♂, 2♀♀, 1. V. 1977,

Figs. 1-2. *Megapenthes tattakensis* (ÔHIRA), comb. nov.; 1♂, 2♀.



S. SAITO leg.; 1♂, 2. V. 1977, W. SUZUKI leg.; 1♂, 2♀♀, 3. V. 1977, W. SUZUKI leg.; 3♂♂, 4♀♀, 4. V. 1977, Y. KOMIYA & S. SAITO leg.; 2♂♂, 3♀♀, 7. V. 1977, W. SUZUKI leg.; 1♀, 1. V. 1978, S. SAITO leg.; 2♂♂, 4. V. 1978, Y. KOMIYA leg.; 1♀, 8. V. 1978, K. USHIJIMA leg. Near Tsuifeng (about 2,300 m alt.), Nantou Hsien: 4♂♂, 2♀♀, 10. V. 1978, Y. KOMIYA leg. Pilu Shenmu (about 2,440 m alt.), near Mt. Pilu-shan, Hwalien Hsien: 2♂♂, 3♀♀, 8. V. 1977, S. SAITO leg.; 2♀♀, 4. V. 1978, T. SHIMOMURA & S. SAITO leg.; 2♂♂, 5. V. 1978, S. SAITO leg.; 1♀, 16. V. 1978, T. SHIMOMURA leg.; 2♂♂, 1♀, 17. V. 1978, T. SHIMOMURA & S. SAITO leg.; 1♂, 18. V. 1978, S. SAITO leg.; 1♀, 20. V. 1978, T. SHIMOMURA leg.; 2♂♂, 1♀, 24. V. 1978, T. SHIMOMURA leg.

*Distribution.* Taiwan.

*Biology.* Most of the specimens examined were collected on the flowers of *Trochodendron aralioides* SIEBOLD et ZUCCARINI and *Prunus phaeosticta* (HANCE).

*Megapenthes kurosawai* W. SUZUKI, sp. nov.

[Japanese name: Kurosawa-tsuyakeshi-kometsuki]

(Figs. 3, 4, 6 & 8)

*Megapenthes opacus*: NAKANE, 1963, Icon. ins. japon. Col. nat. ed., 2, p. 162, pl. 81, fig. 26 (nec CANDÈZE, 1873).

*Megapenthes opacus*: CHÛJÔ & ÔHIRA, 1965, Mem. Fac. Lib. Arts & Educ. Kagawa Univ., 2: 16 (Towada) (nec CANDÈZE, 1873).

*Megapenthes opacus*: W. SUZUKI, 1975, Coleopt. News, Tokyo, (31/32): 15 (part) (Hinoemata) (nec CANDÈZE, 1873).

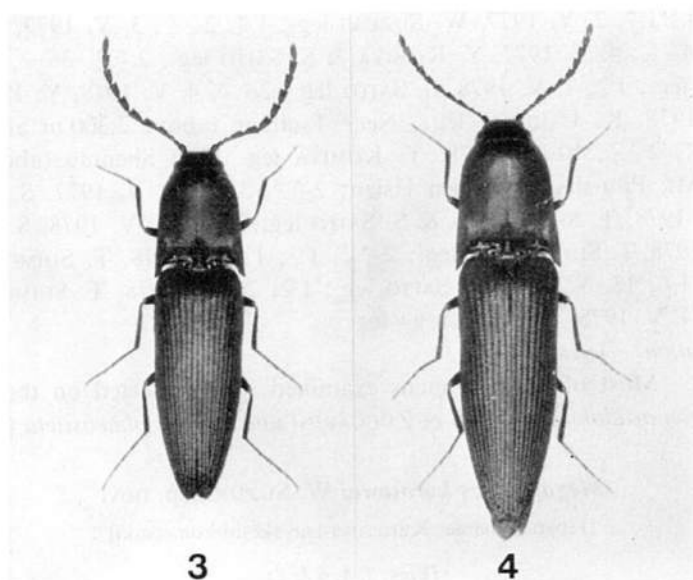
*Megapenthes opacus*: HAYASHI, 1975, Gakken Chûkôsei Zukan, Konchû, 2 (Coleoptera), pp. 86, 403 (nec CANDÈZE, 1873).

*Male.* Length 9.2–9.9 mm; width 2.3–2.4 mm.

Body elongate, subparallel-sided and convex above. Colour black, femora and tibiae dark brown, tarsi and trochantin reddish brown. Surface clothed with black setae except for the abdominal sternites, which are provided with reddish golden setae.

Head gently convex; frontal margin entire, bending downwards and somewhat strongly rounded at the middle; interocular distance about 6 times as broad as the dorsal width of each eye; punctures umbilicate, shallow and separated by a half or one-third of their diameter; interspaces finely reticulate. Antennae not so long, extending beyond the posterior angles of pronotum by eleventh segment; second segment subglobular, slightly longer than wide; third subconical, a little longer than second; second and third segments together about 0.9 times as long as fourth; fourth elongate-triangular, 1.57–1.67 times as long as wide and slightly longer than fifth; fourth to tenth segments acutely serrate.

Pronotum 1.12–1.18 times as long as median width, strongly convex in front, somewhat impressed on mid-lateral parts; sides almost straight, converging from the apices of posterior angles to apical fourth, then rounded to anterior angles;



Figs. 3-4. *Megapenthes kurosawai* W. SUZUKI, sp. nov.; 3, ♂ holotype; 4, ♀ paratype.

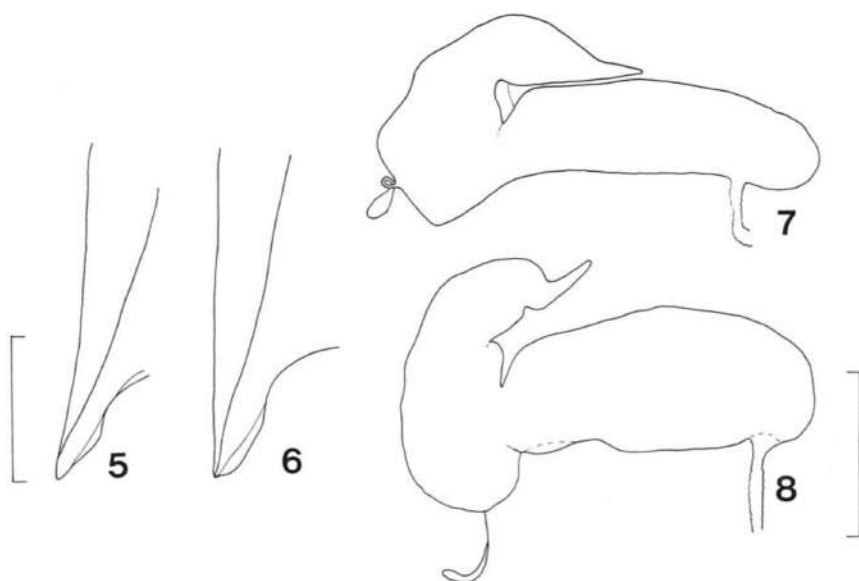
posterior angles robust, about 0.16 times as long as pronotal length; punctures umbilicate, separated by their own diameter and lacking on posterior angles; interspaces finely reticulate and opaque; disc with a median longitudinal impression on basal half, which is very shallow and indistinct. Scutellum elongate, tapering towards apex.

Elytra 2.67-2.68 times as long as humeral width; sides subparallel in basal half, then convergent posteriorly; apex of each elytron distinctly truncate and broadly and shallowly emarginate; striae deeply impressed, bearing deep and elongate punctures; intervals somewhat convex above, sparsely and minutely granulate, granules larger near base.

Posterior angles of propleuron abruptly pointed; propleural punctures minute and rather sparse, interspaces finely reticulate and rather opaque; prosternal punctures slightly sparser than those on pronotum; abdominal punctures rather elongate and densely set.

*Female.* Length 10.1-10.7 mm; width 2.3-2.7 mm.

Similar in general appearance to male. Body slightly more robust than in male. Colour black; pronotum and propleuron dark red, except for prosternal suture, apical margin of pronotum and base of prothorax (including posterior angles), which are black. Antennae short, barely reaching the bases of posterior angles of pronotum, moderately serrate from fourth segment; second and third segments together nearly as long as fourth segment, which is 1.56-1.77 times as long as wide. Pronotum 1.12-1.18 times as long as median width. Elytra 2.63-2.70 times as long as humeral width.



Figs. 5-8. — 5-6. Left posterior angle of pronotum: 5, *Megapenthes tattakensis* (ÔHIRA), comb. nov., ♂; 6, *M. kurosawai* W. SUZUKI, sp. nov., ♂. — 7-8. Bursa copulatrix, lateral view: 7, *M. tattakensis* (ÔHIRA), comb. nov.; 8, *M. kurosawai* W. SUZUKI, sp. nov. Scales: 0.5 mm (for Figs. 5-6) and 1.0 mm (for Figs. 7-8).

Holotype: ♂, near Teppozeki bridge, Higashimata route, Ôigawa-rindô, Southern Japanese Alps, Shizuoka Pref., 21. V. 1978, Y. TAHIRA leg. Paratypes (2♂♂ and 8♀♀ in total): 1♂, Mt. Kushigata-yama, Karuizawa, Yamanashi Pref., 15. V. 1966, S. YAMAGUCHI leg.; 1♂, Hôki-zawa, Nishi-tanzawa, Kanagawa Pref., 3. V. 1969, S. YAMAGUCHI leg.; 1♀, Heiroke, Kuzukawa, Hiraka-machi, Minami-tsugaru, Aomori Pref., 21. VI. 1970, A. ABE leg.; 1♀, Tobira Spa, Nagano Pref., 22. VI. 1973, H. KOBAYASHI leg.; 1♀, Hinoemata, Minami-aizu, Fukushima Pref., 9. VI. 1975, K. KAWADA leg.; 1♀, same locality, 11. VI. 1977, S. TSUYUKI leg.; 1♀, Mt. Kiso-komagatake, Central Japanese Alps, Nagano Pref., 2. VIII. 1979, M. HASEGAWA leg.; 1♀, Heiroke, Kuzukawa, Hiraka-machi, Minami-tsugaru, Aomori Pref., 29. V. 1983, A. ABE leg.; 1♀, Oirase, Fukaura-machi, Nishi-tsugaru, Aomori Pref., 27. V. 1984, A. ABE leg.; 1♀, Sukayu, Aomori-shi, Aomori Pref., 24. VI. 1984, A. ABE leg.

The holotype and some paratypes are preserved in my collection, except for three paratypes which are deposited in the collection of the British Museum (Nat. Hist.), London, Muséum National d'Histoire Naturelle, Paris, and National Science Museum (Nat. Hist.), Tokyo.

*Distribution.* Japan (Honshu).

*Remarks.* The present new species is very closely related to *Megapenthes tattakensis* (ÔHIRA) from Taiwan, but can be distinguished from the latter by the

following points: antennae acutely serrate in male, moderately serrate in female; pronotum usually impressed on mid-lateral parts, posterior angles stout and robust. The females of this species resemble *M. opacus* CANDÈZE from Japan, but can be distinguished from the latter by the following points: body a little smaller; pronotum with anterior margin and base usually black, surface moderately sparsely punctured, interspaces finely but distinctly reticulate (in *M. opacus*, the surface is rather densely punctured, and the interspaces are indistinctly reticulate).

This species is named in honour of Dr. Yoshihiko KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, who has kindly helped my studies.

### References

- CHÛJÔ, M., & H. ÔHIRA, 1965. Elaterid- and dicronychid-beetles from Aomori Pref., Japan, collected by Mr. Kensaku SHIMOYAMA. *Mem. Fac. Lib. Arts & Educ. Kagawa Univ.*, **2**: 1-32. (In Japanese with English summary.)
- GURJEVA, E., 1979. Elateridae; Elaterinae (Megapenthini, Physorhinini, Ampedini, Elaterini, Pomachilini). *Fauna SSSR*, **7** (4): 1-453.
- HAYASHI, N., 1975. *Megapenthes*. In NAKANE, T. (ed.), *Gakken Chûkôsei Zukan, Konchû*, **2** (Coleoptera): 86 & 403. Gakushu-kenkyu-sha, Tokyo. (In Japanese.)
- NAKANE, T., 1963. Elateridae. In NAKANE, T., et al. (eds.), *Inconographia Insectorum Japonicorum Colore naturali edita*, **2** (Coleoptera): 157-166, pls. 79-83. Hokuryukan, Tokyo. (In Japanese.)
- ÔHIRA, H., 1966. Notes on some Elateridae-beetles from Formosa II. *Kontyû, Tokyo*, **34**: 266-274.
- 1970. Notes on some elaterid-beetles from Japan (Coleoptera) (V). *Ent. Rev. Japan, Osaka*, **22**: 75-88, pls. 8-11. (In Japanese with English summary.)
- SUZUKI, W., 1975. On *Megapenthes opacus* CANDÈZE and *Elater candezei* (LEWIS) collected from Gumma and Fukushima Prefectures, Japan. *Coleopt. News, Tokyo*, (31/32): 15. (In Japanese.)

## Studies on the Anobiidae (Coleoptera) from Japan and Neighboring Countries

### VII. A New Taiwanese Species of the Genus *Trichodesma*

by

**Masahiro SAKAI**

Department of Parasitology, Ehime University School of Medicine,  
Shigenobu, Ehime 791-02, Japan

**Abstract** A new species of the anobiid genus *Trichodesma* is described as the first representative of the genus from Taiwan.

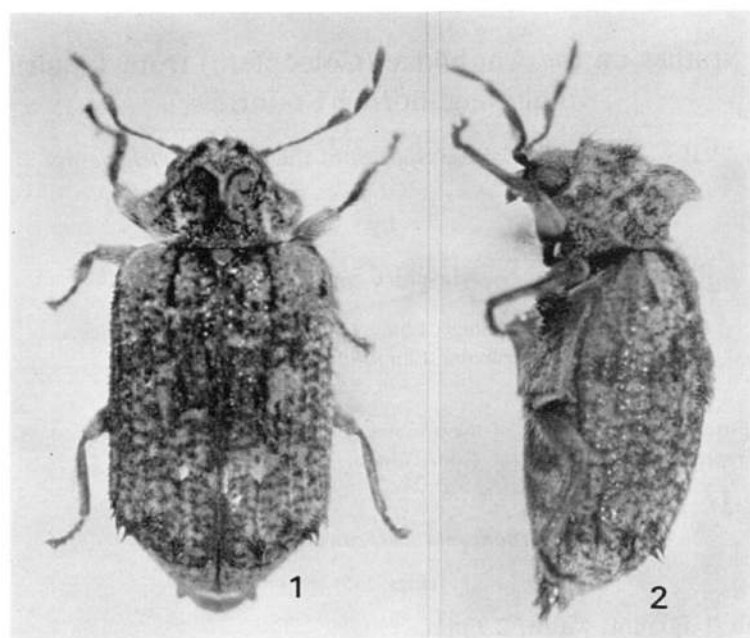
#### *Trichodesma kurosawai* sp. nov.

(Figs. 1-5)

Length: 5.0 mm; width: 2.3 mm.

*Female.* Body elliptical, about 2.15 times as long as wide. Colour of derma black to blackish brown; antennae, both palpi, and tarsi reddish brown to dark reddish brown. Pubescence variegated in colour, length and direction; ochreous short pubescence most dominant on dorsum, irregular in direction, forming inconspicuous transverse bands at base and behind middle of elytra, and appearing mottled between these bands; white pubescence occupying the apical area of elytra and wavyly marginating the posterior border of the basal ochreous band and anterior border of the posterior ochreous band, but the former margination is so fine as to be barely detectable; tufts black except for V-shaped fringe of pronotal crest, which is apparently diluted with brown and is adorned with orange hairs along the peripheries; long but fine concolorous erect hairs sparsely scattered on head, lateral marginal areas of pronotum and elytra, and on legs; ochreocinereous pubescence which is recumbent and mostly directed posteriorly densely covering the under surface of body.

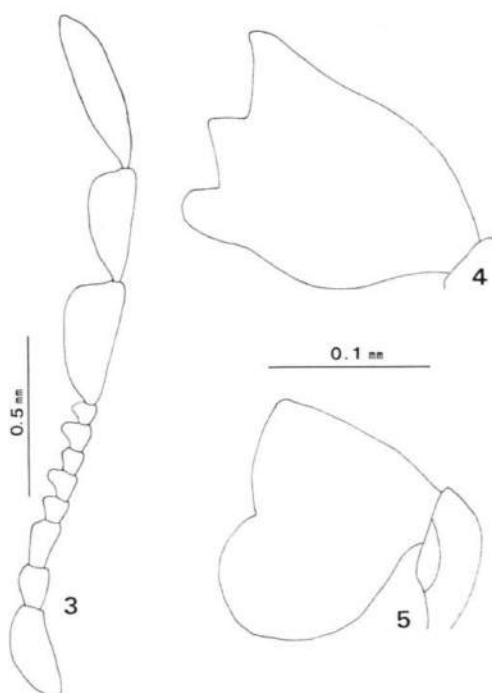
Head deflexed, finely and densely punctate; fronto-clypeal suture uncertain. Eyes large, well prominent, nearly circular, separated by about 1.38 times their entire diameter. Antennae a little shorter than the distance across humeri of elytra; 1st segment robust, slightly longer than 2nd and 3rd combined, funicular segment from 4th to 8th very short, transverse except for 6th which is a little longer than wide, 5th and 7th notably dilated apically, 9th to 11th very long, forming a loose club, with their combined length about 1.3 times as long as all the preceding segments combined, 10th similar to 9th in shape, though thinner, 11th longest, about 1.4 times as long as 10th, with the tip bluntly pointed. Last segment of



Figs. 1-2. *Trichodesma kurosawai* sp. nov., female. — 1, Dorsal aspect; 2, lateral aspect.

maxillary palpus with the apical margin bi-notched, seemingly trifurcate; last segment of labial palpus strongly dilated apically, with the apical margin weakly emarginate. Pronotum nearly cordiform in outline, transverse, about 1.2 times as wide as long, widest at anterior third, well convex above, produced into a "crest" behind centre, with lateral portion broadly explanate, slightly concave just before hind corner, though ill-defined; anterior corner gently rounded; lateral margin weakly arched in anterior two-thirds, slightly emarginate beside the concavity before hind corner; surface of pronotum granulate, granules becoming larger towards base, irregularly disposed on whole surface, but partially with chain-like arrangement. Scutellum cordate, with some fine punctures on disc, which are completely concealed under thick pubescence. Elytra conjointly about 1.7 times as long as wide, nearly uniformly convex above, subparallel-sided in basal four-fifths, then gently narrowing towards apex, with a pair of short horn-like processes at apices near suture; each elytron with 11 punctate striae (including a short scutellar striole) which are regularly aligned except on narrow baso-sutural area, punctures subcircular, large at centre, becoming much finer laterally, suturally and apically, evanescent inside humerus; tufts on elytra ordinarily located on odd numbered interstices as in the other members of this genus, but the basal tuft on 3rd interstice extends posteriorly and connects with median long tuft, though it is very shortly interrupted by white transverse hair-line.

Prosternum short, glabrous at centre, granulate at sides; prosternal process



Figs. 3-5. *Trichodesma kurosawai* sp. nov., female. — 3, Antenna; 4, last segment of maxillary palpus; 5, last segment of labial palpus.

broadly produced between procoxae, with the apex truncate. Metasternum densely, irregularly granulate, granules approximately same as or larger in size than those on pronotum, though mostly flattened and variegated in shape from circular to oblong oval; longitudinal deep pit present on mid-line at apex. Abdominal sternites finely and sparsely punctate, partially with short faint rows of fine granules; 2nd and 3rd visible sternites longest, subequal in length to each other, 4th shortest, less than half of 3rd; apical margin of 5th uniformly rounded. Legs stout, hairy; tarsal claws broadly toothed.

*Male.* Unknown.

*Holotype:* ♀, Tapan, Taiwan, 16. V. 1974, S. TAKEDA leg. (in coll. Ehime Univ.).

*Notes.* As only a single female specimen was available for the description of this new species, it was impossible to examine the male genitalic features. It is, however, evident that this new species is very closely related to *Trichodesma kirishimana* NAKANE from Japan and *T. venusta* LESNE from Sri Lanka, judging from the total similarity of vestitural appearance of body. From these two, this new species is easily distinguished by having a pair of notable horn-like processes at the apices of elytra.

The specific name is dedicated to Dr. Y. KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, who has made many excellent contributions to the Japanese coleopterology.

#### Acknowledgements

I wish to express my cordial thanks to Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his kindness in reading the manuscript. Thanks are also due to Mr. T. SHIBATA of Osaka City, who generously offered the valuable specimen for my study.

#### References

- LESNE, P., 1902. Voyage du Dr. W. HORN à Ceylan, Bostrychidae et Anobiidae. *Ann. Soc. ent. France*, 71: 476-479.
- NAKANE, T., 1978. New or little-known Coleoptera from Japan and its adjacent regions, XXIX. *Rept. Fac. Sci., Kagoshima Univ.*, (Earth Sci. & Biol.), 11: 129-134.



*Laius plagiatus* (WALKER) und verwandte Arten  
(Coleoptera, Malachiidae)

(39. Beitrag zur Kenntnis der indo-malaiischen Fauna)

VON

W. WITTMER\*

**Abstract** *Laius plagiatus* (WALKER) and allied species (Coleoptera, Malachiidae). The species of this group are revised and a key to the species is given, nine species new to science are described occurring in the Indian Subcontinent and adjacent countries.

Unter dem Namen *Laius plagiatus* (WALKER) befinden sich in den Sammlungen mehrere Arten vermischt, so daß es notwendig erschien, die Gruppe einer Revision zu unterziehen. Es handelt sich um durchwegs kleine Tiere mit grob punktierten Flügeldecken und weniger stark punktiertem Kopf und Halsschild. Die Färbung ist hauptsächlich schwarz mit dunkeln oder mit mehr oder weniger aufgehellten 1. und 2. Fühlerglieder. Die Flügeldecken besitzen ein gelbes bis braunes Querband auf dem vorderen Drittel, das zur Seite etwas verbreitert ist und ein weiteres Querband vor den Spitzen, das jedoch die Seiten nicht immer erreicht, längs der Naht sind die Querbänder miteinander verbunden; an den Seiten der Querbänder, besonders jedoch bei dem hinteren ist die braune Farbe manchmal ein wenig mit weiß vermischt.

Das Material aus folgenden Sammlungen wurde untersucht:

BM = British Museum, London (Mrs. E. R. PEACOCK)

MB = Museum Budapest (Dr. Z. KASZAB)

MP = Muséum de Paris (Dr. J. J. MENIER)

NHMB = Naturhistorisches Museum Basel (Dr. M. BRANCUCCI)

WW = coll. W. WITTMER, jetzt im NHMB

**Bestimmungstabelle für *Laius plagiatus* (WALKER)  
und verwandte Formen**

1. Seiten der Vorderstirn gegen die Wangen mehr oder weniger erhöht, bei einzelnen Arten kaum merklich (*L. elongatus*) erhöht. .... 2
- Seiten der Vorderstirn gegen die Wangen überhaupt nicht erhöht. .... 7
2. Der umgeschlagene Teil am Innenrand von Fühlerglied 3 nimmt weniger als

\* Den Herren Dr. R. GUGGENHEIM, Leiter des Laboratoriums für Rasterelektronenmikroskopie, Geologisch-Paläontologisches Institut der Universität Basel, sowie seinem Mitarbeiter, G. LÜÖND, danke ich verbindlichst für die ausgezeichneten Aufnahmen.

- 1/3 der Breite dieses Gliedes ein. .... 3
- Der umgeschlagene Teil am Innenrand von Fühlerglied 3 nimmt mehr als 1/3 der Breite dieses Gliedes ein (Abb. 1–2). .... 1. *L. plagiatu*s (WALKER)
3. Fühlerglied 3 von oben gesehen mit einer deutlichen Querleiste, die mehr oder weniger lang ist; weniger breit, weniger als 1.9 mal so breit wie lang. .... 4
- Fühlerglied 3 von oben gesehen ohne deutliche Querleiste; dieses Glied ist sehr schmal und breit, fast 1.9 mal so breit wie lang (Abb. 3–4). .... 2. *L. kurosawai* n. sp.
4. Vor dem umgeschlagenen Teil am Innenrande von Fühlerglied 3 befindet sich eine deutliche quere Vertiefung. .... 5
- Vor dem umgeschlagenen Teil am Innenrande von Fühlerglied 3 ohne quere Vertiefung. .... 11. *L. lueoendi* n. sp.
5. In der queren Vertiefung vor dem umgeschlagenen Teil des Fühlergliedes 3 fehlt eine kleine punkartige Erhöhung. Seiten der Vorderstirn gegen die Wangen wenig erhöht. .... 6
- In der queren Vertiefung vor dem umgeschlagenen Teil des Fühlergliedes 3 befindet sich eine kleine punkartige Erhöhung, die selten fehlt. Seiten der Vorderstirn gegen die Wangen stark erhöht (Abb. 5–7). ... 3. *L. juengeri* n. sp.
6. Fühlerglied 1 nach außen eckig erweitert und breit, flach eingedrückt (je nach Drehung) siehe Abb. 9. .... 4. *L. kanarensis* PIC
- Fühlerglied 1 nach außen weniger stark eckig erweitert (Abb. 10). .... 4. *L. kanarensis* PIC var.
7. Glatte Stellen fehlen auf dem Kopf vollkommen, der ganze Kopf ist dicht, tief punktiert. .... 9
- Eine glatte, unpunktete Stelle befindet sich an den Seiten der Vorderstirn gegen die Wangen, oder längs den Augen. .... 8
8. Die glatte Stelle ist eingedrückt und befindet sich jederseits auf der Vorderstirn, sie beginnt über den Fühlerwurzeln und erreicht nicht ganz den Vorderrand der Augen. Fühler Abb. 11. .... 5. *L. canaliculatus* n. sp.
- Die glatte Stelle befindet sich längs der Augen, sie ist nicht eingedrückt. Fühler Abb. 13–14. .... 6. *L. partepolitus* n. sp.
9. Die Querleiste auf Fühlerglied 3 fehlt. .... 10
- Die Querleiste auf Fühlerglied 3 ist gut entwickelt. .... 11
10. Fühlerglied 1 mit einem kleinen spitzen Fortsatz an der Basis (Abb. 16). Äußerer Eindruck auf Fühlerglied 3 wenig tief. .... 7. *L. afghanisticus* WITTMER
- Fühlerglied 1 mehr parallel, ohne kleinen spitzen Fortsatz an der Basis oder dieser ist weniger entwickelt (Abb. 18). Äußerer Eindruck auf Fühlerglied 3 tiefer. .... 8. *L. pakisticus* n. sp.
11. Querleiste auf Fühlerglied 3 weniger als halb so lang wie das Glied breit ist. .... 12

- Querleiste auf Fühlerglied 3 mehr als halb so lang wie das Glied breit ist. . . 13
- 12. Fühlerglied 1 ungefähr in der Mitte ziemlich stark nach außen verbreitert und leicht eingedrückt, etwas länger als breit. Eindruck neben dem umgeschlagenen Teil am Innenrande ungefähr gleich groß wie der äußere (Abb. 19).  
.....9. *L. burmensis* n. sp.
- Fühlerglied 1 in der Mitte nach beiden Seiten erweitert, breiter Eindruck neben dem umgeschlagenen Teil am Innenrande kleiner als der äußere (Abb. 21).  
.....10. *L. jacelinae* n. sp.
- 13. Die Querleiste auf Fühlerglied 3 ist gegen den umgeschlagenen Teil am Innenrande nicht wulstförmig verdickt. .... 14
- Die Querleiste auf Fühlerglied 3 ist wulstförmig verdickt, was gegen den umgeschlagenen Teil am Innenrande am deutlichsten zur Geltung kommt (Abb. 23). ....11. *L. lueoendi* n. sp.
- 14. Fühlerglied 1 zur Spitze nicht oder kaum verbreitert, am Außenrande ausgehöhlt. .... 15
- Fühlerglied 1 zur Spitze keulenartig verbreitert, am Außenrande nicht abgeflacht (Abb. 25). ....12. *L. variolosus* BOURGEOIS
- 15. Der erhöhte Teil von Fühlerglied 1 ist kürzer (Abb. 31); Höhlen bei Glied 3 weniger tief (Abb. 27–28). ....13. *L. foveicornis* PIC
- Der erhöhte Teil von Fühlerglied 1 ist länger (Abb. 32); Höhlen bei Glied 3 viel tiefer (Abb. 29–30). ....14. *L. bengalensis* n. sp.

# 1. *Laius plagiatu*s (WALKER)

(Abb. 1–2)

*Malachius plagiatu*s WALKER, 1858, Ann. Mag. nat. Hist., (3), 2: 283.

*Laius plagiatu*s: CHAMPION, 1921, Ann. Mag. nat. Hist., (9), 7: 332, t. 8, f. 11.

Die Art ist aus Ceylon (Sri Lanka) beschrieben und scheint nur dort vorzukommen. CHAMPION (1921) meldet sie von einer ganzen Anzahl Lokalitäten in Indien, doch hat eine Untersuchung gezeigt, daß die Tiere anderen Arten angehören, die im nachfolgenden beschrieben werden.

Außer dem Holotypus für den kein näherer Fundort bekannt ist, sah ich Material von folgenden Lokalitäten:

Anuaradhapura, 1♂, ex coll. BOURGEOIS, MP, 2♂ ex coll. R. HICKER, WW; Pidurutalagala, 18. XII. 1979, V. MAHLER, WW; W Province, Labugama, 24 miles ESE Colombo, 21. I. 1962, 1♂ WW.

Für die Aufnahme der ersten Fühlerglieder (Abb. 1–2) diente 1♂ von Labugama. Die Art ist sehr auffällig durch den langen umgeschlagenen Teil am Innenrand des Fühlergliedes 3, der ca. 1/3 der Breite dieses Gliedes ausmacht. Die Seiten der Vorderstrin sind gegen die Wangen wenig, jedoch deutlich erhöht.

# 2. *Laius kurosawai* n. sp.

(Abb. 3–4)

- ♂. Die braune Färbung der Flügeldecken ist etwas ausgedehnter als bei den

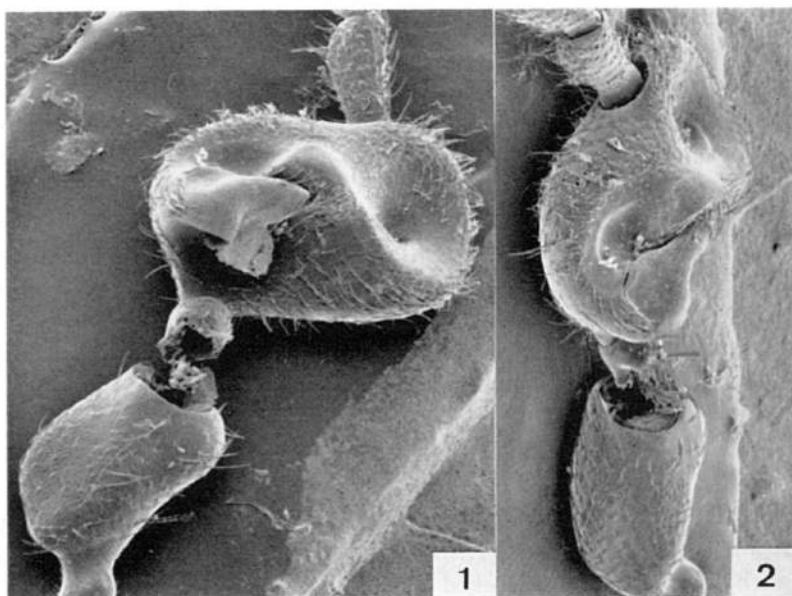


Abb. 1–2. Fühler von *Laisus plagiatu* (WALKER) ♂ in verschiedenen Stellungen, 110×.

meisten übrigen Arten, indem besonders die schwarze Färbung an der Basis schmaler ist.

Seiten der Vorderstirn gegen die Wangen ungefähr in der Mitte nur ganz wenig erhöht. Fühler Abb. 3–4, Glied 1 im basalen Teil erhöht und über die Basis gezogen, was bei Abb. 4 besonders gut ersichtlich ist, das Glied ist nach vorne verbreitert und die ganze Oberfläche ein wenig abgeflacht; Glied 3 verhältnismäßig breit, ca. 1.75 mal so breit wie lang, die beiden vorderen Eindrücke sind flach, der äußere größer als der innere, nach hinten ist das Glied gerundet und ohne Eindrücke, nicht durch eine Leiste vom vorderen Teil getrennt.

Länge: 3.3–3.5 mm.

*Fundort*: Indien, Tamil Nadu: Yanamalai Hills, Madurai, 6. IV. 1980, Gy. TOPÁL, Holotypus und 11 Paratypen MB, 4 Paratypen NHMB.

Von den Arten mit leicht erhöhten Seiten der Vorderstirn ist *kurosawai* die einzige ohne Querleiste, sie ist neben *L. afghanisticus* WITTMER zu stellen.

Es freut mich sehr, die obige Art dem verdienstvollen coleopterologischen Forscher, Herrn Dr. Yoshihiko KUROSAWA, Tokyo, widmen zu dürfen.

### 3. *Laisus juengeri* n. sp.

(Abb. 5–7)

♂. Seiten der Vorderstirne gegen die Wangen stark beulenartig erhöht, die Beule verliert nach vorne langsam an Höhe, zwischen den Beulen etwas eingedrückt.

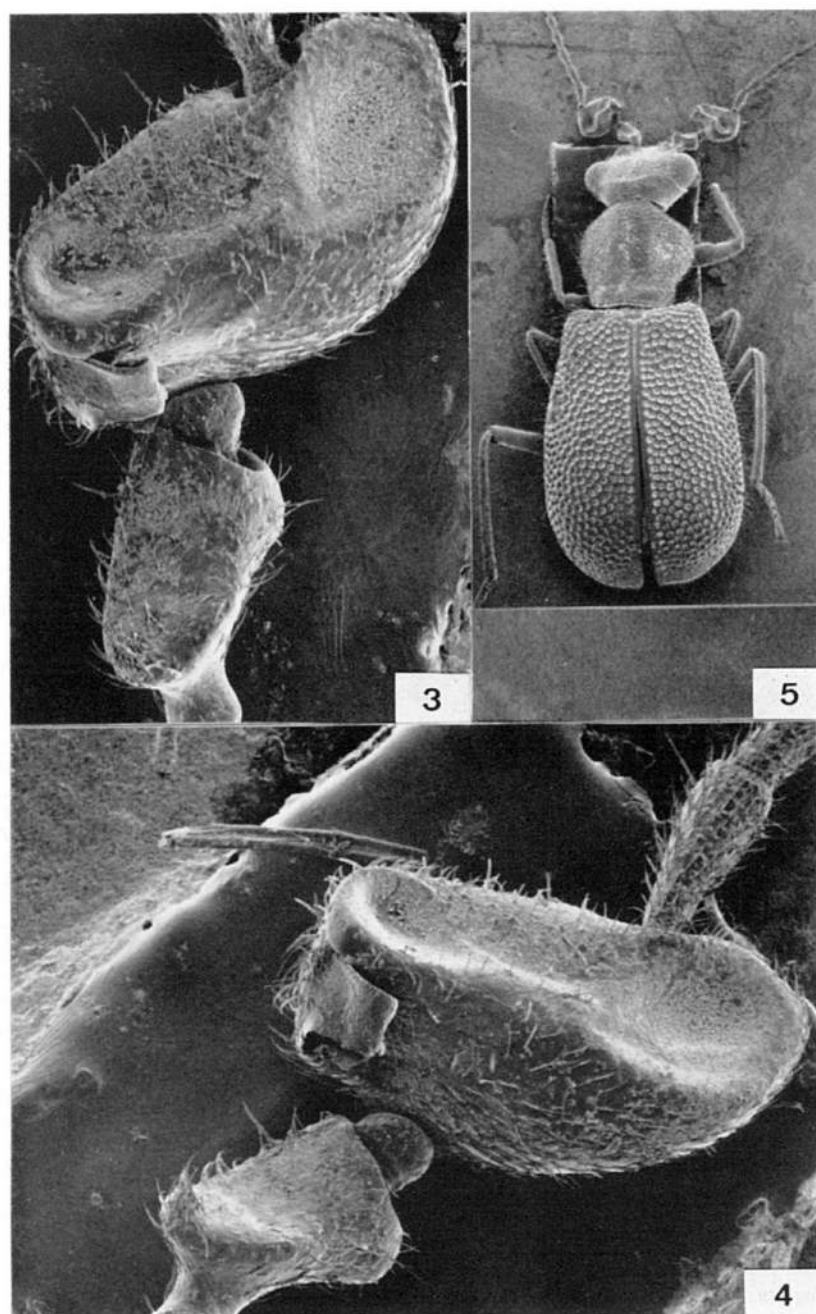


Abb. 3-5. — 3-4. Fühler von *Laius kurosawai* n. sp. ♂ in verschiedenen Stellungen, 150 $\times$ . — 5. Gesamtbild von *Laius juengeri* n. sp. ♂, 20 $\times$ .

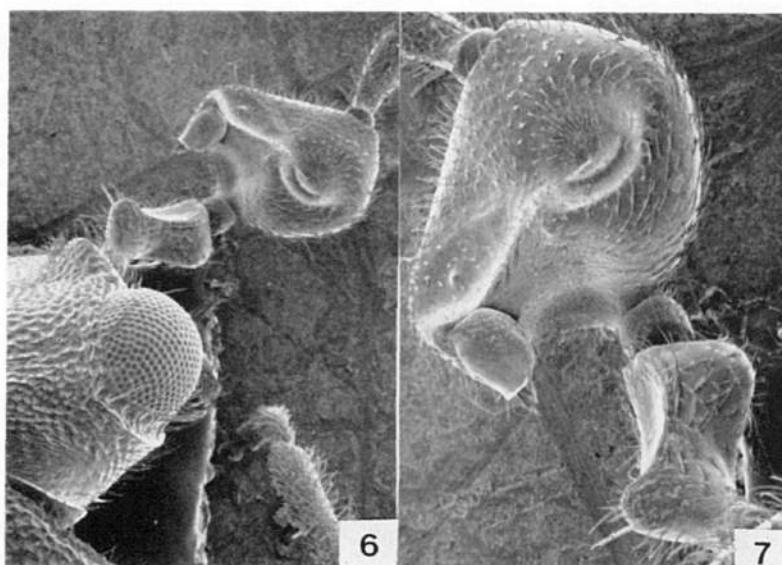


Abb. 6-7. Fühler von *Lais juengeri* n. sp. ♂ in verschiedenen Stellungen: 6, 80×. 7, 150×.

Fühler Abb. 6-7, Glied 1 an der Basis nach oben erhöht, nach außen leicht erweitert und etwas abgeflacht (besonders gut auf Abb. 7 sichtbar), Glied 3 ca. 1.47 mal breiter als lang, die beiden vorderen Eindrücke sind flach, der innere ist mehr länglich, weniger tief und ist schräg vor dem umgeschlagenen Teil mit einer kleinen punktierten Erhöhung versehen, die selten fehlt, äußere Vertiefung mehr rund; nach hinten sind die Eindrücke nur mit einer angedeuteten Leiste abgegrenzt, die neben dem umgeschlagenen Teil am deutlichsten ist.

Länge: 2.8–3 mm.

*Fundort*: Indien, Goa: Molem, 120–140 m, 3.–4. III. 1984, W. WITTMER, Holotypus und 40 Paratypen NHMB, 2 Paratypen MP.

Es freut mich sehr, diese Art meinem lieben Freunde Ernst JÜNGER, dem erfolgreichen Schriftsteller und begeisterten Koleopterologen zum 90. Geburtstage widmen zu können.

Bei keiner anderen Art sind die Seiten der Vorderstirne so stark beulenartig erhöht wie bei dieser, sie ist neben *L. lueoendi* zu stellen.

#### 4. *Lais kanarensis* PIC, n. stat.

(Abb. 8–10)

*Lais kanarensis* PIC, 1917, Mém. exot.-ent., (25): 4.

*Lais plagiatus* var. *kanarensis*: GREINER, 1937, in W. JUNK, Coleopt. Cat., (159): 153.

CHAMPION (1921) setzt diese Art in Synonymie zu *plagiatus* und GREINER (1937) führt sie ohne ersichtlichen Grund als Varietät von *plagiatus* auf. Das verhältnismäßig reichhaltige Material aus Südindien in den Sammlungen des BM und MP erlaubte

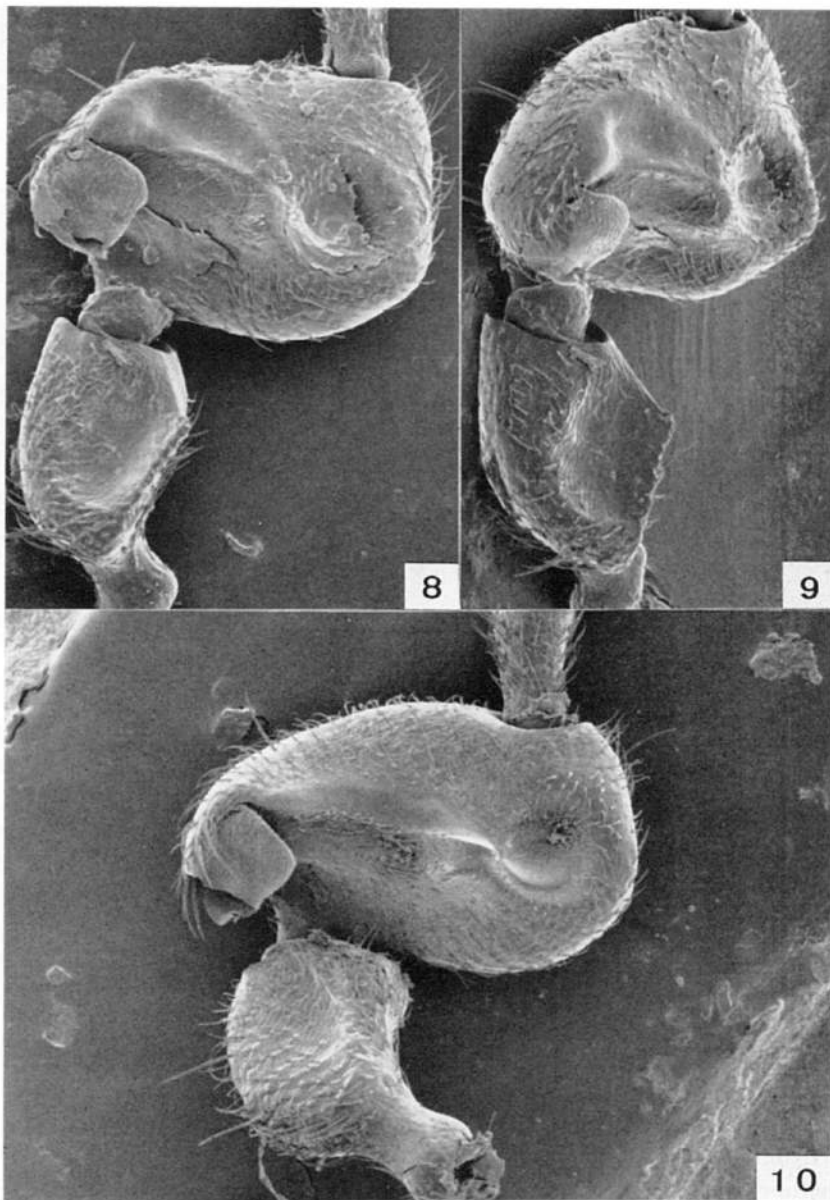


Abb. 8–10. Fühler von *Laius kanarensis* Ptc ♂ in verschiedenen Stellungen, 150×.

mir, das ♂, das zu *kanarensis* gehört, auszusuchen. Die Art ist weit verbreitet und liegt von folgenden Fundorten vor: Kodaikanal, 1 ♂ MP, 1 ♂ BM; Trichinopoli, 1 ♂ MP; Ramnad (Madura), 1 ♂ MP; Nilgiri Hills, 16 Ex. BM, 3 Ex. NHMB; Khandul-lah, BM; Kanara, Holotypus ♀ von Ptc.



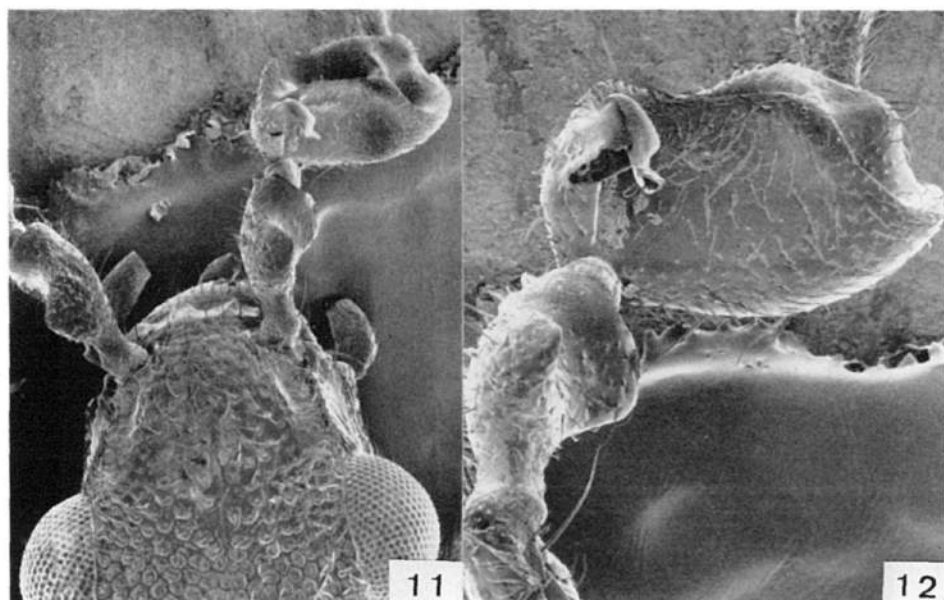


Abb. 11–12. *Laisus canaliculatus* n. sp. ♂. — 11. Kopf und Fühler, 75×. 12. Fühler, 150×.

Für die Aufnahmen der ersten Fühlerglieder, Abb. 8–9, diente 1♂ von Khandulalah und für Abb. 10 von Nilgiri Hills. Bei diesen Exemplaren und weiteren aus Südindien sind die Seiten der Vorderstirn gegen die Wangen deutlich erhöht. Bei anderen von Nilgiri Hills, H. L. ANDREWES, BM, ist diese Erhöhung kaum angedeutet. Die Form des Fühlergliedes 1 variiert etwas, indem dasselbe nicht immer gleich stark nach außen erweitert ist.

#### 5. *Laisus canaliculatus* n. sp.

(Abb. 11–12)

♂. Seiten der Vorderstirne gegen die Wangen nicht erhöht, dafür mit einem Längseindruck (Abb. 11) der über der Fühlerwurzel beginnt und in Richtung Vorder- rand des Auges verläuft, ohne dieses zu erreichen, der Längseindruck ist nur ganz schwach mit Runzeln versehen und bildet dadurch einen Kontrast zu der groben Punktierung, die ihn umgibt; Stirne zwischen den Augen seicht, breit eingedrückt; Vorderstirne zwischen den Fühlerwurzeln leicht erhöht, mit einer glatten Stelle; Rest des Kopfes grob punktiert. Fühler Abb. 11–12, Glied 1 nach der Basis leicht nach oben verbreitert, am Außenrand gerundet ausgerandet, Glied 3 ca. 1.65 mal so breit wie lang (gemessen nach Abb. 12), die vorderen beiden Aushöhlungen sind groß und tief und werden durch eine Leiste voneinander getrennt. Für die Aufnahmen diente 1 Exemplar von Dhankuta-Hile.



Länge: 2.7–2.9 mm.

*Fundorte:* O Nepal: Taplejung, 2. X. 1978, BHAKTA B. Ch., Holotypus und 93 Paratypen NHMB, 3 Paratypen BM, 3 Paratypen MP; Hile–Arun River, 2,000–300 m, 26. V. 1983, M. BRANCUCCI, 2 Paratypen NHMB; Dhankuta–Hile, 1,150–2,000 m, 24.–25. V. 1983, M. BRANCUCCI, 6 Paratypen NHMB; Habagayri, 1,760 m 23. V. 1979, BHAKTA B. Ch., 1 Paratypus NHMB.

Die einzige Art mit einem Längseindruck jederseits über der Fühlerwuzel und deutlich eingedrückter Stirne zwischen den Augen. Die Fühlerglieder 1–3 erinnern stark an *L. bengalensis* WITTMER, doch fehlen dieser Art die charakteristischen Merkmale am Kopfe; das Fühlerglied 3 ist ähnlich wie bei *bengalensis*, jedoch verschieden durch die tieferen vorderen Aushöhlungen, die durch eine Leiste voneinander getrennt sind, bei *bengalensis* sind diese Aushöhlungen nicht durch eine Leiste getrennt.

6. *Laius partepolitus* n. sp.

(Abb. 13–14)

♂. Seiten der Vorderstirn gegen die Wangen nicht erhöht, neben dem Augeninnenrand mit einer schmalen, glatten, also unpunktierten, länglichen Stelle; Stirne zwischen den Augen schwach eingedrückt. Fühler, Abb. 13–14, Glied 1 an der Basis nach oben nur wenig erhöht, gegen die Spitze je nach Stellung mehr oder weniger stark verbreitert, oder sogar fast parallel; Glied 3 verhältnismäßig lang,

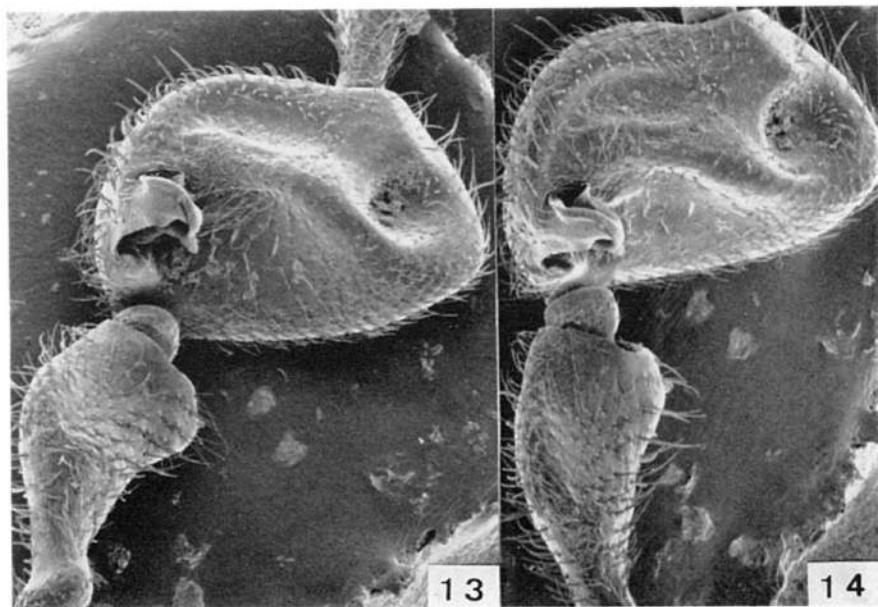


Abb. 13–14. Fühler von *Laius partepolitus* n. sp. ♂ in verschiedenen Stellungen, 150×.

nur ca. 1.5 mal so breit wie lang, die beiden vorderen Eindrücke sind miteinander verbunden, was bei Abb. 15 sichtbar ist.

Länge: 2.6–2.8 mm.

*Fundort:* Indien U.P., Haldwani Distr., Kumaon, H. G. CHAMPION, Holotypus und 7 Paratypen BM, 3 Paratypen NHMB; R. Sarda Gorge, Kumaon, XII. 1918, H. G. CHAMPION, 1 Paratypus ♂, BM.

Diese Art wurde von CHAMPION (1921) als *L. foveicornis* PIC bestimmt. Sie unterscheidet sich von allen anderen bisher beschriebenen durch die schmale, glatte, unpunktierte längliche Stelle jederseits am Innenrande der Augen. Die Form der Fühler erinnert ein wenig an *bengalensis* WITTMER.

#### 7. *Laius afghanistanicus* WITTMER, n. stat.

(Abb. 15–16)

*Laius foveicornis* ssp. *afghanistanicus* WITTMER, 1956, Rev. suisse Zool., 63: 155.

Das Studium der Holotype im MP hat ergeben, daß *afghanistanicus* WITTMER als eigene Art zu betrachten ist. Sie unterscheidet sich von *foveicornis* durch die Form der Fühlerglieder 1 und 3. Bei beiden Arten ist das Glied 1 an der Basis erhöht, bildet aber *afghanistanicus* eine Spitze, bei *foveicornis* einen kurzen, leistenförmigen Fortsatz; bei Glied 3 sind die vorderen Eindrücke bei *afghanistanicus* mehr rund und die Basis des Gliedes ist zipfelförmig verlängert (Abb. 16), bei *foveicornis* sind die vorderen Eindrücke mehr länglich und der Fortsatz an der Basis des Gliedes ist nicht so stark verlängert.

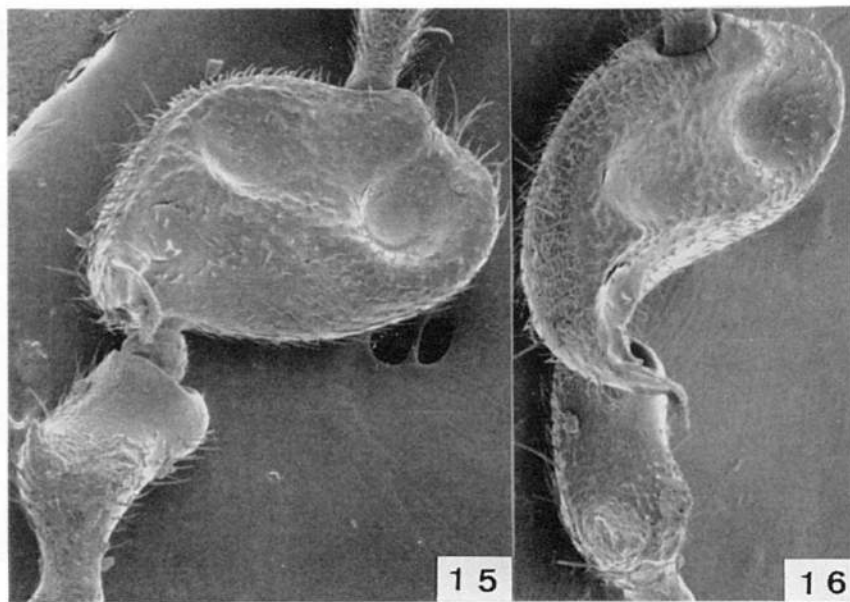


Abb. 15–16. Fühler von *Laius afghanistanicus* WITTMER ♂ in verschiedenen Stellungen, 150×.

Für die Abbildungen diente der Holotypus von Kutiau, Nuristan.

8. *Laius pakistanicus* n. sp.

(Abb. 17–18)

♂. Seiten der Vorderstirne gegen die Wangen nicht abgesetzt und erhöht, sondern gerundet, Punkte groß aber sehr flach. Fühler Abb. 17–18, Glied 1 über der Basis wohl erhöht, gerundet, nicht eckig oder mit einer Leiste; Glied 3 verhältnismäßig breit und kurz, ca. 1.8 mal breiter als lang, von den beiden vorderen Vertiefungen ist besonders die äußere sehr tief, die innere größer und seichter, der Fortsatz an der Basis ist gebogen, ziemlich lang. Abbildungen nach dem Holotypus.

Länge: 2.6–2.8 mm.

Fundorte: Pakistan: Murgzar, Swat, 5000', VI. 1974, C. BARONI URBANI, Holotypus NHMB; Bahrain, Swat, 4500', 20.–21. VI. 1974, C. BARONI URBANI, 2 Paratypen NHMB; SE Mingora, Karakar, Swat, 1100 m, 25. V. 1978, C. HOLZSCHUH, 4 Paratypen NHMB.

Diese Art ist nahe mit *L. afghanisticus* WITTMER verwandt, von der sie sich durch die verschieden gebauten Fühler unterscheidet. Bei *pakistanicus* ist die erhöhte Stelle an der Basis von Fühlerglied 1 gerundet und bei den vorderen Vertiefungen bei Glied 3 ist die äußere tiefer, die innere seichter; bei *afghanisticus* ist die erhöhte Stelle an der Basis von Glied 1 spitz und bei den beiden vorderen Vertiefungen von Glied 3 ist die äußere flacher und die innere etwas tiefer als bei *pakistanicus*.

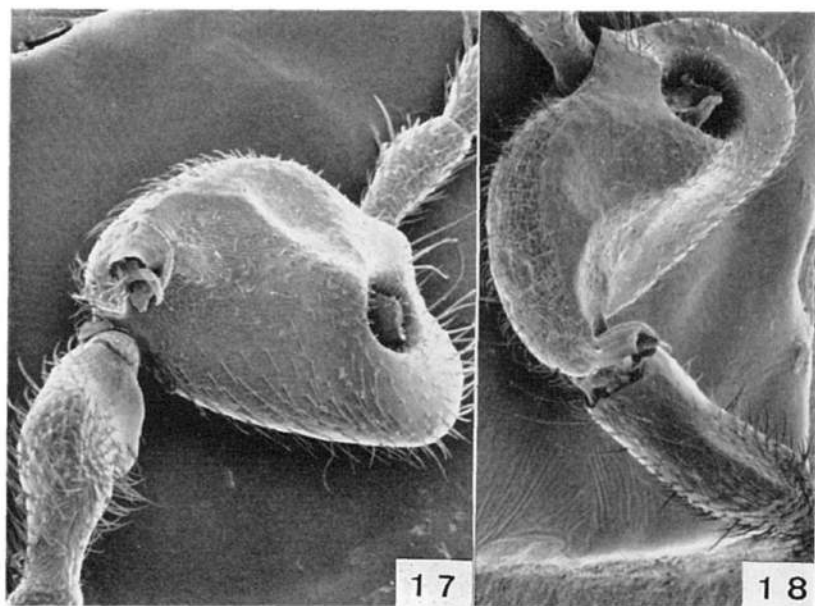


Abb. 17–18. Fühler von *Laius pakistanicus* n. sp. ♂ in verschiedenen Stellungen, 150×.

9. *Laius burmensis* n. sp.

(Abb. 19–20)

♂. Seiten der Vorderstirne gegen die Wangen nicht abgesetzt und erhöht, sondern gerundet; Vorderstirne leicht eingedrückt. Fühler Abb. 19–20, Glied 1 auf der ganzen Oberfläche abgeflacht, nach vorne verbreitert, flache Stelle gegen die Basis leicht eckig vorgezogen (Abb. 20); Glied 3 mit verhältnismäßig tiefer Vertiefung vor dem umgeschlagenen Teil an der Basis, die nach hinten durch eine deutliche Querleiste abgegrenzt ist.

Länge 3 mm.

*Fundort*: Upper Burma: Kyauktan, Shwebo Dn., H. C. CHAMPION, Holotypus BM.

Diese Art ist auffällig durch die flache Oberfläche von Glied 1 und erinnert dadurch an *kanarensis* PIC (Abb. 11), doch das Glied 3 ist sehr verschieden durch den tiefen Eindruck an der Basis, der durch eine quere Leiste abgegrenzt ist.

10. *Laius jocelynae* n. sp.

(Abb. 21–22)

♂. Die Seiten der Vorderstirne sind in ihrem vordersten Teile, bei 1 Exemplar leicht erhöht, bei den übrigen nicht erhöht, bei allen gegen die Wangen gerundet. Fühler Abb. 21–22, das Glied 1 ist auf der Aufnahme etwas verkürzt, es ist länger als breit (von außen gesehen), an der Basis etwas spitzer nach innen erweitert, als

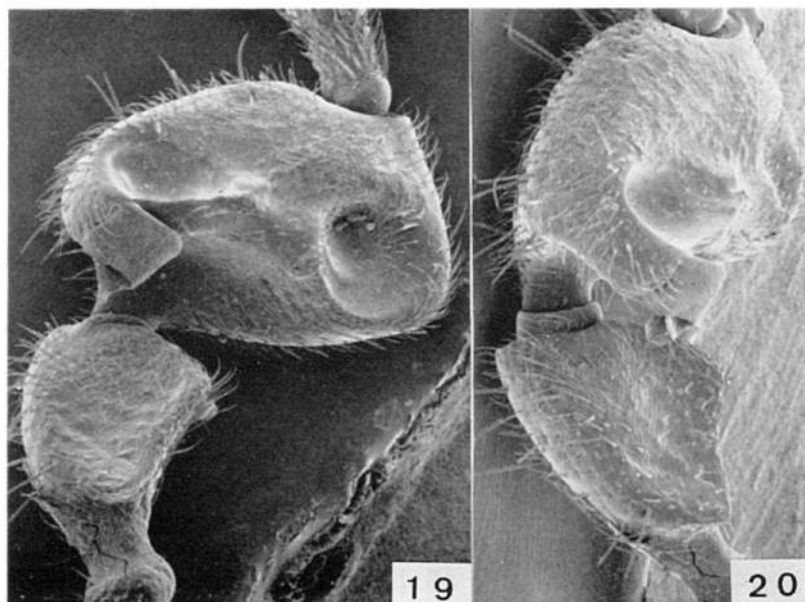


Abb. 19–20. Fühler von *Laius burmensis* n. sp. ♂ in verschiedenen Stellungen, 150×.

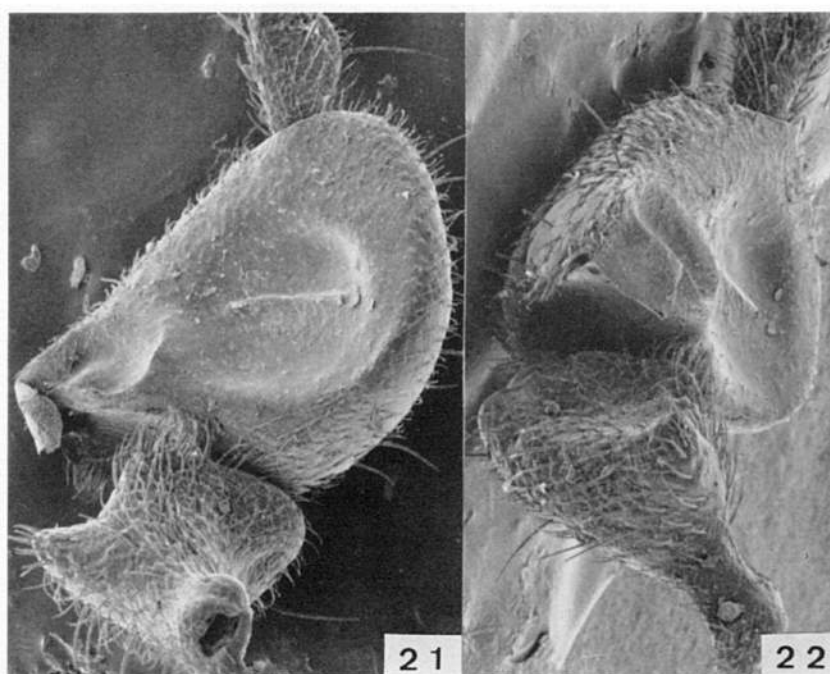


Abb. 21–22. Fühler von *Laius jocelynae* n. sp. ♂ in verschiedenen Stellungen, 150×.

an der Spitze nach außen, die Spitze ist mehr gerundet; Glied 3 ungefähr 1.5 mal breiter als lang, der äußere Eindruck sehr ausgedehnt und flach, der innere viel kleiner und an der Basis durch eine kurze Leiste abgegrenzt. Für die Aufnahmen wurde der Holotypus verwendet.

Länge: 3 mm.

*Fundort*: S India: Mettur Cauvery, River Dam, Salem Dep., Holotypus und 3 Paratypen MP, 1 Paratypus NHMB.

Es freut mich, diese schöne Art der verdienstvollen Mitarbeiterin im Pariser Museum, Frau Jocelyne NAVATTE, widmen zu dürfen.

Diese Art ist neben *L. burmensis* WITTMER zu stellen, von der sie sich durch den Bau der Fühlerglieder 1 und 3 unterscheidet; das Glied 1 ist auffällig durch die Verbreiterungen an der Basis und an der Spitze und Glied 3 durch den ungewöhnlich großen und flachen äußeren Eindruck.

# 11. *Laius lueoendi* n. sp.

(Abb. 23–24)

♂. Die Seiten der Vorderstirne sind gegen die Wangen nicht oder kaum erhöht, Stirne zwischen den Augen flach. Fühler Abb. 23–24, Glied 1 von oben gesehen auf dem vorderen Teile eingedrückt und hier leicht nach außen verbreitert,

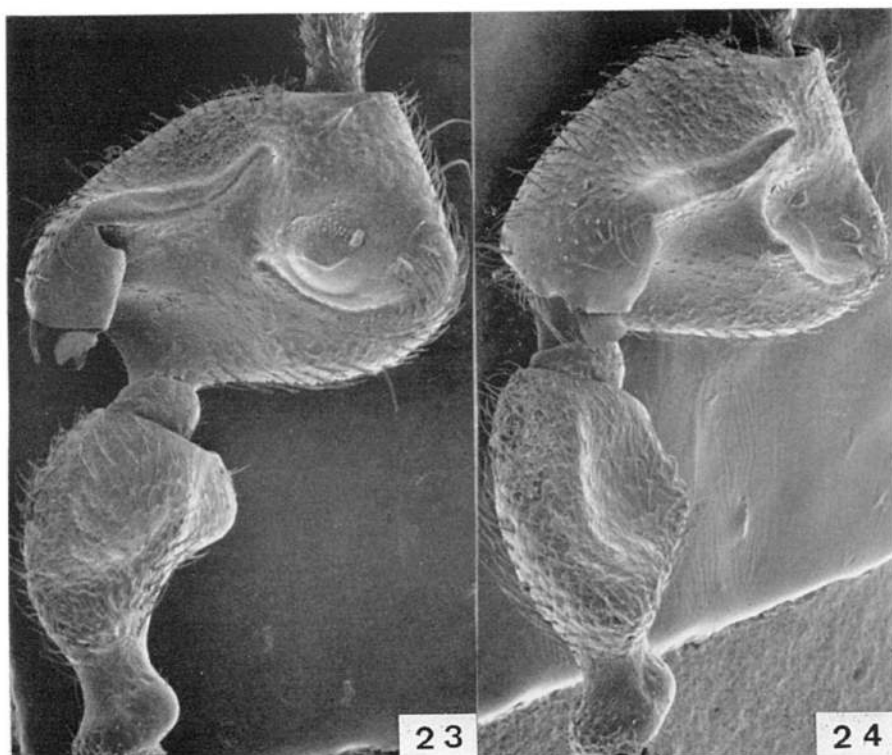


Abb. 23–24. Fühler von *Lais lueoendi* n. sp. ♂ in verschiedenen Stellungen, 150×.

an der Basis gerundet erhöht; Glied 3 verhältnismäßig lang, nur ca. 1 1/4 mal so breit wie lang, auffällig durch eine fast wulstförmige Leiste, die mehr als die Hälfte der Breite einnimmt und durch nur eine Aushöhlung vor der Basis.

Länge: 3.3 mm.

*Fundort*: Indien: Khandulla, H. E. Cox, Holo- und 1 Paratypus im BM. Mysore, H. L. ANDREWES, im Tausch an PIC gelangt, von CHAMPION als *plagiatus* WALKER bestimmt, 2 Paratypen ♂ ♀ MP.

Es freut mich, diese hübsche Art Herrn G. LÜÖND, Laboratorium für Raster-elektronenmikroskopie, Basel, zu widmen, in Dankbarkeit für seine große Hilfe bei den photographischen Aufnahmen.

Die Art wurde von CHAMPION (1921) als *L. plagiatus* WALKER bestimmt, sie unterscheidet sich jedoch leicht durch die verschieden gebauten Fühlerglieder 1 und 3 und die nicht oder kaum erhöhten Seiten der Vorderstirne in der Mitte gegen die Wangen.

Weil die Vorderstirne gegen die Wangen nicht oder nur ganz leicht erhöht ist (Exemplar von Mysore), figuriert die Art 2 mal in der Bestimmungstabelle. Für die Abb. 23–24 wurde das Exemplar von Mysore verwendet.

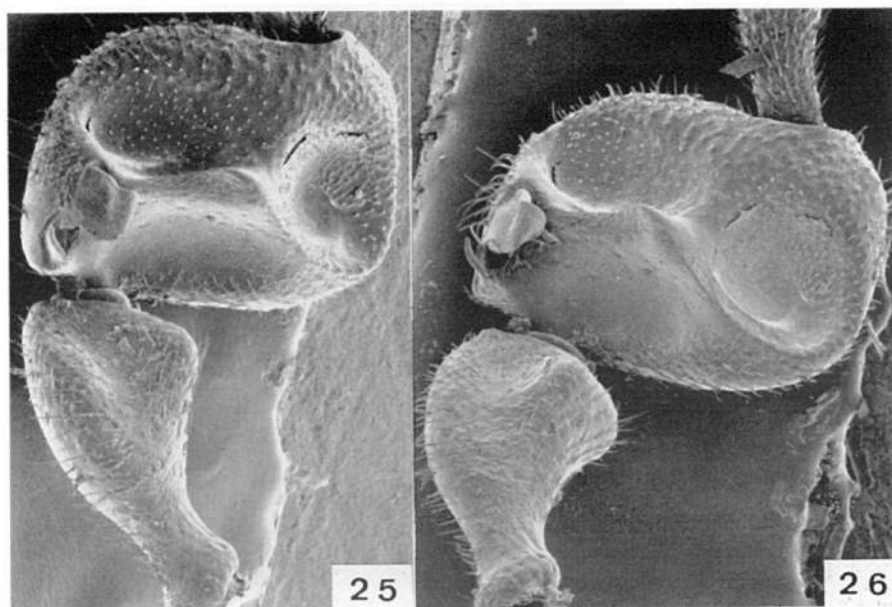


Abb. 25–26. Fühler von *Laius variolosus* BOURGEOIS ♂ in verschiedenen Stellungen, 110×.

## 12. *Laius variolosus* BOURGEOIS

(Abb. 25–26)

*Laius variolosus* BOURGEOIS, 1905, Ann. Soc. ent. Fr., 74: 131.

Eine Typenserie bestehend aus 7♂ 6♀ befindet sich im MP, 1 Pärchen im NHMB, das für die Herstellung der Aufnahmen der ersten Fühlerglieder (Abb. 25–26) verwendet wurde. *L. variolosus* ist die größte Art aus der *plagiatus*-Gruppe und mißt 4 mm. Der Kopf ist zwischen den Augen bis zum Clypeus ziemlich flach, schwach eingedrückt, die ganze Oberfläche stark gewirkt, matt, der Längskiel in der Mitte nimmt die halbe Kopflänge ein; Seiten der Vorderstirne in der Mitte gegen die Wangen nicht erhöht; Fühlerglied 1 gegen die Spitze keulenartig verbreitert, mit einem länglichen Eindruck auf der Spitzenhälfte; Glied 3 fast 1.4 mal breiter als lang, eine der wenigen Arten mit 3 deutlichen Eindrücken, der hintere von dem vorderen (inneren) durch einen Kiel getrennt, der fast in der Mitte einen stumpfen Zahn bildet.

## 13. *Laius foveicornis* PIC

(Abb. 27–28, 31)

*Laius foveicornis* PIC, 1917, Mém. exot.-ent., (25): 5.

CHAMPION (1921) führt diese Art von River Sarda Gorge und Chakrata, Jaunsar auf, doch gehören nur die beiden Exemplare von Chakrata, Jaunsar, BM, zu



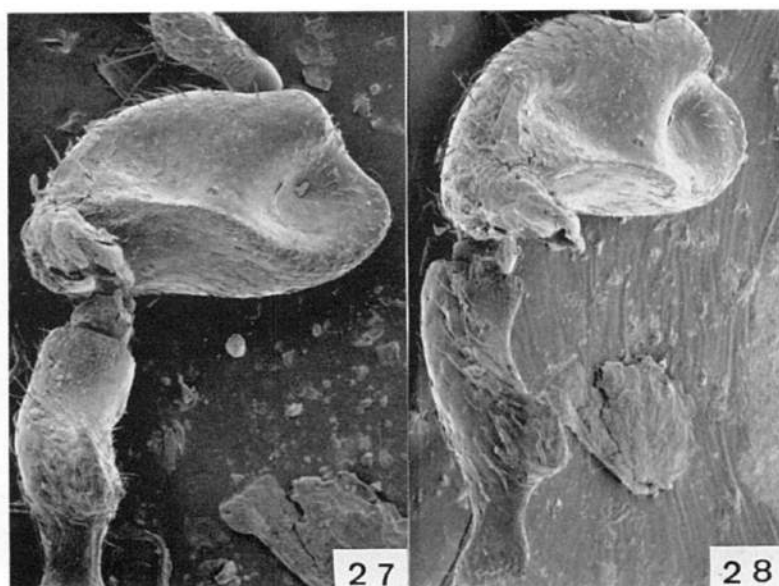


Abb. 27–28. Fühler von *Laius foveicornis* PIC ♂ in verschiedenen Stellungen, 150×.

*foveicornis*. Die beiden Typen von PIC, ein Pärchen, stammen von Kulu, ex ROST. Für die Aufnahmen der ersten Fühlerglieder diente der Holotypus von PIC.

Seiten der Vorderstirne gegen die Wangen nicht erhöht. Fühler Abb. 27–28, Glied 1 verhältnismäßig lang und schlank, Außenrand etwas ausgehöhlt, an der Basis mit einer abgeflachten Erhöhung (Abb. 31); Glied 3 fast 1.8 mal so breit wie lang, mit 2 Aushöhlungen auf dem vorderen Teile, von denen die äußere tiefer ist, nach hinten fast kielförmig abgesetzt.

#### 14. *Laius bengalensis* n. sp.

(Abb. 29–30, 32)

♂. Seiten der Vorderstirne gegen die Wangen nicht erhöht, Punktierung grob und tief. Fühler und Kopf Abb. 29–30. Fühlerglied 1 (Abb. 32) verhältnismäßig lang und schlank, Außenrand ausgehöhlt, an der Basis mit einer abgeflachten Erhöhung; Glied 3 ca. 1.5 mal so breit wie lang, mit 2 Aushöhlungen auf dem vorderen Teil, welche beide sehr tief sind. Alle Abbildungen nach 1 Exemplar von Hatiya-Hong Gaon.

Länge: 3–3.2 mm.

*Fundorte*: O Nepal: Hatiya-Hong Gaon, 1,500–2,300 m, 29. V. 1980, W. WITTMER, C. HOLZSCHUH, Holotypus und 8 Paratypen NHMB; Chichila-Mure, 1,900 m, 24. V. 1980, W. WITTMER, C. HOLZSCHUH, 18 Paratypen NHMB; Mure-Num, 1,900–1,500 m, 25. V. 1980, W. WITTMER, C. HOLZSCHUH, 4 Paratypen NHMB; Hedangna-Lamobagar Gao, 1,100–1,200 m, 27. V. 1980, W. WITTMER, C.



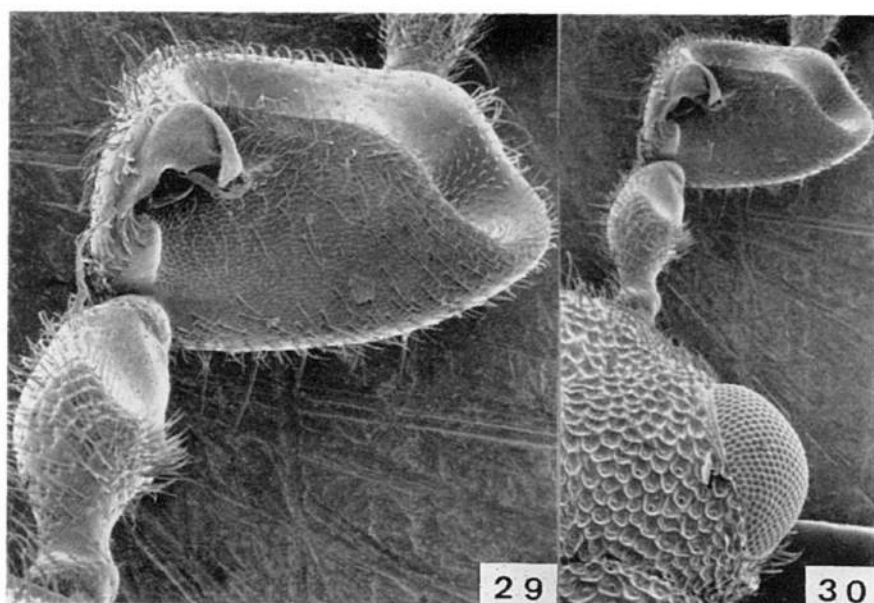


Abb. 29–30. *Laius bengalensis* n. sp. ♂. — 29. Fühler, 150×. 30. Kopf und Fühler, 150×.

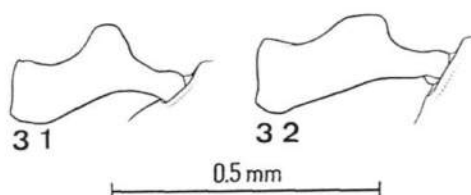


Abb. 31–32. Fühlerglied 1 von: 31, *Laius foveicornis* Pic ♂; 32, *L. bengalensis* n. sp. ♂.

HOLZSCHUH, 1 Paratypus NHMB; Navagaon–Num, 1,900–1,500 m, 16. VI. 1980, W. WITTMER, C. HOLZSCHUH; Num, 1,550 m, 5.–6. VI. 1983, M. BRANCUCCI, 1 Paratypus NHMB; Arunthan–Chichila, 1,560–1,300 m, 23. V. 1980, W. WITTMER, C. HOLZSCHUH; Habagayri, 1,760 m, 25. V. 1979, BHAKTA B. Ch., 28 Paratypen NHMB; Magehan, 1,700 m, 25. V. 1979, BHAKTA B. Ch., 8 Paratypen; Lamobagar Gola, 1,400 m, 8.–14. VI. 1983, M. BRANCUCCI, 13 Paratypen, 2 Paratypen MP, 3 Paratypen BM; Sundarijal, 1,465 m, 15.–21. VI. 1983, M. BRANCUCCI, 34 Paratypen; Phakdingma, Khumbu, 2,500 m, 2. VI. 1979, BHAKTA B. Ch., 40 Paratypen, 2 Paratypen MP. Indien, W Bengalen: Kalimpong, Darjeeling Distr., 950 m, VI. 1982, Ch. J. RAI, 46 Paratypen NHMB, 3 Paratypen MP, 3 Paratypen BM.

Diese Art ist sehr nahe mit *L. foveicornis* Pic verwandt, von der sie sich durch das verschieden gebaute Fühlerglied 1 unterscheidet, siehe Abb. 31 und 32, sowie durch Glied 3 das weniger breit ist und dessen Aushöhlungen auf dem vorderen Teil deutlich tiefer sind als bei *foveicornis*.

**Literatur**

- CHAMPION, G. C., 1921. Notes on various African and Asiatic species of *Laius*, GUÉRIN, with an account of their accessory ♂-characters (Coleoptera). *Ann. Mag. nat. Hist.*, (9), 7: 322–343.

Adresse des Verfassers:

Dr. Walter WITTMER

Naturhistorisches Museum

CH-4001, Basel (Switzerland)

## The Genus *Attalus* (Coleoptera, Melyridae) of the Ryukyu Archipelago

by

Masataka SATO

Biological Laboratory, Nagoya Women's University,  
Nagoya 468, Japan

**Abstract** The Ryukyuan species of the genus *Attalus* are enumerated. Of the nine species known, five are new to science and are described under the names *A. amami*, *A. kurosawai*, *A. tokara*, *A. walteri* and *A. yonaguni*.

In the Ryukyu Archipelago, 4 species of the genus *Attalus* have hitherto been known. They were either described or recorded from there by WITTMER (1960, 1971, 1982) and NAKANE (1963). Checking the names of Japanese melyrid beetles in the preparation of the third volume of "The Coleoptera of Japan in Color", I recognized the existence of some additional new species of the genus in the Ryukyus. Most of them were taken during my third Ryukyuan research made 23 years ago.

In the present paper, I am going to revise all the Ryukyuan species of the genus *Attalus* based on the material mentioned above. Their male genitalia are illustrated for the first time on this occasion.

The abbreviations used in the present paper for the depository of specimens are as follows.

EU=Entomological Laboratory, College of Agriculture, Ehime University.

NSMT=National Science Museum (Nat. Hist.), Tokyo.

NWU=Biological Laboratory, Nagoya Women's University.

WW=Dr. Walter WITTMER's collection, Basel.

I am much pleased to take part in the publication for commemorating the retirement of Dr. Yoshihiko KUROSAWA, who has made excellent contributions to the field of coleopterology.

Before going further, I wish to express my hearty thanks to Dr. Walter WITTMER and Dr. Shun-Ichi UENO for their kind support in many ways and also to Dr. Y. ARITA, Dr. K. BABA, Mr. N. OHBAYASHI and Mr. M. SAKAI for their kind help in obtaining the material.

### Genus *Attalus* ERICHSON

*Attalus* ERICHSON, 1840, Entomographien, 1: 89.

*Acletus* LECONTE, 1852, Proc. Acad. Phila., 6: 167.

*Pteropus* WOLLASTON, 1854, Ins. Mader., 245.

*Scalopterus* MOTSCHULSKY, 1859, Bull. Soc. Natur. Moscou, 32(3): 406.

*Anthocomus*: GORHAM, 1882, Biol. Centr.-Amer. Coleopt., (III), 2: 114 (in part).

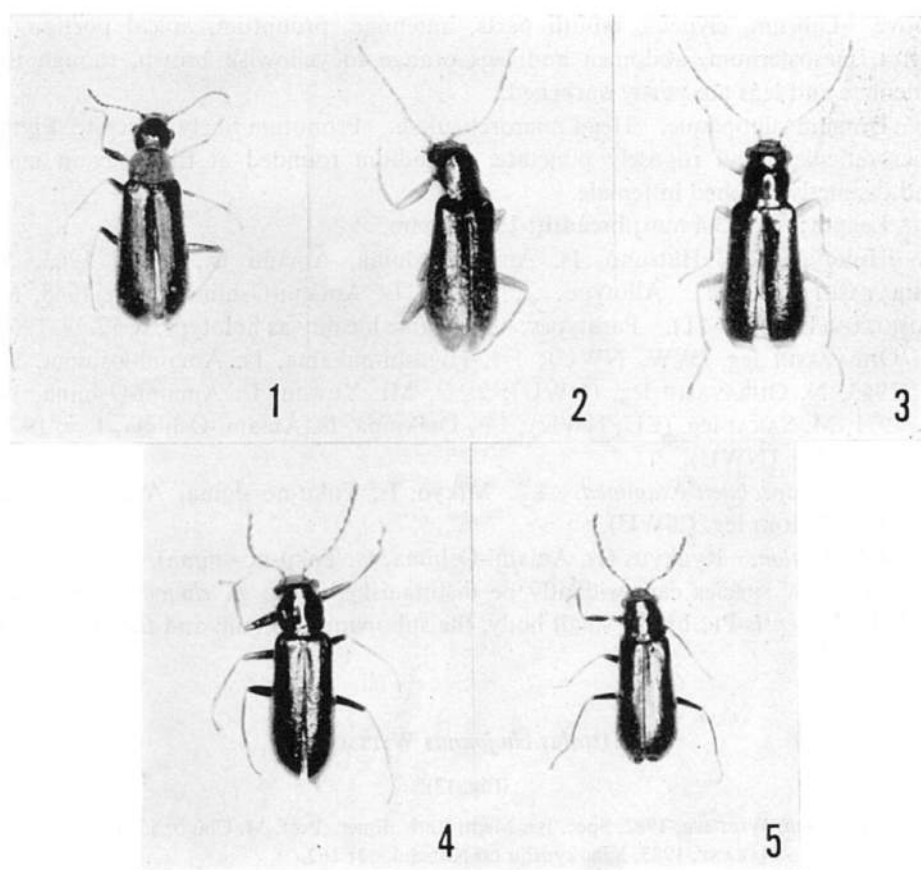
*Ebaeus*: GORHAM, 1882, Biol. Centr.-Amer. Coleopt., (III), 2: 120 (in part).

Type species: *Attalus lusitanicus* ERICHSON, 1840.

Body small in size, elongate and closely covered with whitish pubescence all over. Head narrower than pronotum, almost flattened on disc; clypeus and labrum distinct and transverse; antennae inserted on front margin of frons near the sides, contiguous with clypeal suture, 11-segmented, long, filiform, sometimes slightly serrate, reaching basal fifth of elytra in female and the middle in male; maxillary palpi 3-segmented, short, with the terminal segment fusiform; eyes lateral and rather large. Pronotum broader than long; each angle rounded. Elytra broader than pronotum, about 1.5 times as long as broad, the sides a little expanded terminally with rounded apices; disc provided with long, sparse and black hairs in addition to the primary pubescence. Abdomen completely covered by elytra. Legs long, slim; tarsi 5-segmented, 1st to 4th segments short and lobed below, 5th the longest, stout and nearly of the same length as the two precedings taken together, 2nd in male long, projecting and covering 3rd, forming black comb at the apex; claws small, provided with membranous small pieces on the underside. Median lobe of male genitalia slender, strongly curved at basal third.

#### Key to the Species of the Genus *Attalus* from the Ryukyus

- 1 (6) Trochanter provided with a distinct spine in male but without it in female.
- 2 (3) Elytra black with orange apices and subopaque.....*A. amami* M. SATO, sp. nov.
- 3 (2) Elytra brownish black to black tinged with cyaneous sheen and somewhat shining.
- 4 (5) Pronotum, coxae, trochanter and femora orange in colour. ....*A. tokara* M. SATO, sp. nov.
- 5 (4) Pronotum and legs black in colour.....*A. trochantinus* WITTMER
- 6 (1) Trochanter lacking spine in both sexes.
- 7 (8) Elytra tinged with cyaneous sheen. Legs yellowish brown. Apex of pygidium rounded in male and emarginate in female.....*A. niponensis* PIC
- 8 (7) Elytra tinged with aeruginous sheen. Legs yellowish brown, partly dark brown. Apex of pygidium moderately emarginate in male and notched in female.....*A. chujoanus* WITTMER
- 9(12) Elytra black tinged with serpentinous sheen, with the apices yellowish.
- 10(11) Yellowish areas of elytral apices narrow, with defined borders. Apex of pygidium rounded in male.....*A. okinawanus* WITTMER
- 11(10) Yellowish areas of elytral apices rather wide, with ambiguous borders.



Figs. 1-5. Habitus. — 1. *Attalus amami* M. SATÔ, sp. nov. — 2. *Attalus okinawanus* WITTMER. — 3. *Attalus walteri* M. SATÔ, sp. nov. — 4. *Attalus kurosawai* M. SATÔ, sp. nov. — 5. *Attalus yonaguni* M. SATÔ, sp. nov.

- Apex of pygidium strongly emarginate in male.....  
 .....*A. walteri* M. SATÔ, sp. nov.
- 12 (9) Elytra black tinged with lasureus sheen.
- 13(14) Apex of pygidium moderately rounded in both sexes.....  
 .....*A. kurosawai* M. SATÔ, sp. nov.
- 14(13) Apex of pygidium somewhat widely rounded in male and more or less  
 truncate in female.....*A. yonaguni* M. SATÔ, sp. nov.

*Attalus amami* M. SATÔ, sp. nov.

(Figs. 1, 6, 11)

Head, elytra, metasternum and mesepisternum black with weak lasureus tinge

above. Labrum, clypeus, mouth parts, antennae, pronotum, apical portion of elytra, mesosternum, abdomen and legs orange to yellowish brown, though the antennae and legs are partly darkened.

Dorsum subopaque. Head microreticulate. Pronotum finely punctate. Elytra microreticulate and rugosely punctate. Pygidium rounded at the apex in male and distinctly notched in female.

Length: 2.9–3.4 mm; breadth: 1.0–1.3 mm.

Holotype: ♂, Hatsuno, Is. Amami-Ōshima, Amami Is., 5. iv. 1963, N. OHBAYASHI leg. (EU). Allotype: ♀, Yuwan, Is. Amami-Ōshima, 3. iv. 1968, M. TOMOKUNI leg. (NSMT). Paratypes: 4♀♀, same locality as holotype, 6, 12. iv. 1963, N. OHBAYASHI leg. (WW, NWU); 1♂, Higashi-nakama, Is. Amami-Ōshima, 29. iii. 1963, N. OHBAYASHI leg. (NWU); 2♀♀, Mt. Yuwan, Is. Amami-Ōshima, 17. iv. 1971, M. SAKAI leg. (EU, NWU); 1♀, Daikuma, Is. Amami-Ōshima, 1. v. 1977, M. SAKAI leg. (NWU).

*Further specimen examined.* 1♂, Mikyo, Is. Toku-no-shima, Amami Is., 12. iv. 1968, K. IOKI leg. (NWU).

*Distribution.* Ryukyus (Is. Amami-Ōshima, Is. Toku-no-shima).

This new species can evidently be distinguished from *A. chujoanus* WITTMER and *A. niponensis* PIC by the small body, the subopaque dorsum and the elytra with orange apices.

#### *Attalus chujoanus* WITTMER

(Fig. 13)

*Attalus chujoanus* WITTMER, 1982, Spec. Iss. Mem. Retir. Emer. Prof. M. Chûjô, 53 (Insel Amami: Naze). — NAKANE, 1983, Kita-kyushu no Konchû, 30: 162.

Is. Toku-no-shima is newly recorded for a locality of this species.

*Specimens examined.* 15 exs., Kametoku, Is. Toku-no-shima, Amami Is., 6. iv. 1968, K. IOKI leg. (NUW).

*Distribution.* Ryukyus (Is. Takara-jima, Is. Amami-Ōshima, Is. Toku-no-shima).

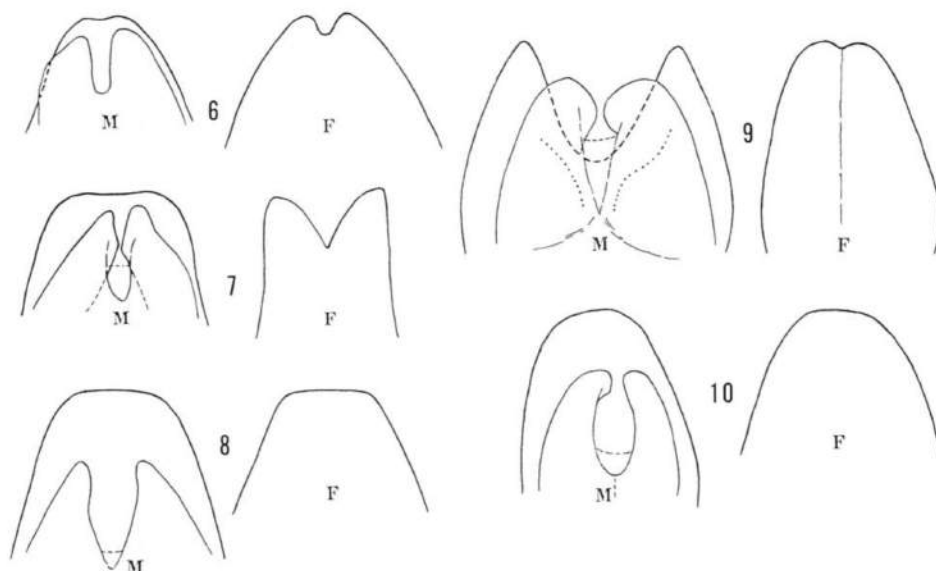
#### *Attalus kurosawai* M. SATÔ, sp. nov.

(Figs. 4, 10, 18)

Mostly black to brownish black tinged with lasureus sheen above. Labrum, clypeus, mouth parts, antennae, trochanters, tibiae and tarsi brown, apical halves of antennae and femora sometimes dark brown.

Head rugosely punctate in anterior half and smooth in posterior half. Pronotum minutely punctate. Elytra closely and somewhat rugosely punctate. Pygidium rounded at the apex in both sexes.

Length: 3.3–3.9 mm; breadth: 1.1–1.4 mm.



Figs. 6-10. Terminal tergite (pygidium) and terminal sternite of *Attalus* species: M, ventral aspect of male; F, dorsal aspect of female. — 6. *A. amami* M. SATÔ, sp. nov. — 7. *A. tokara* M. SATÔ, sp. nov. — 8. *A. yonaguni* M. SATÔ, sp. nov. — 9. *A. walteri* M. SATÔ, sp. nov. — 10. *A. kurosawai* M. SATÔ, sp. nov.

Holotype: ♂, Is. Kuchi-no-shima, Tokara Is., 22. v. 1962, M. SATÔ leg. (NSMT). Allotype: ♀, same data as holotype (NWU). Paratypes: 22 exs., same data as holotype (WW, EU, NSMT, NWU).

*Distribution.* Ryukyus (Is. Kuchi-no-shima).

This species is dedicated to Dr. Yoshihiko KUROSAWA for commemorating his contributions to the coleopterology on the occasion of his retirement.

General appearance of the new species is almost the same as that of *A. trochantinus* WITTMER, but it is distinguished from the latter by lacking a spine on the trochanter and by the different form of pygidium and male genitalia.

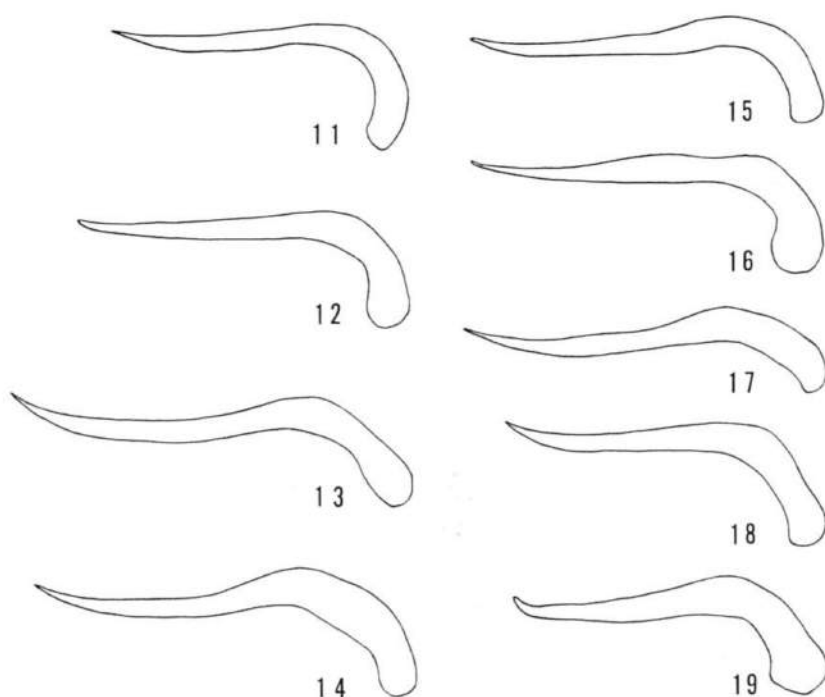
### *Attalus niponensis* PIC

(Fig. 14)

*Attalus niponensis* PIC, 1907, Échange, 23 (269): 134 (Japon). — NAKANE, 1956, Akitu, Kyoto, 5: 66; 1983, Kita-kyushu no Konchû, 30: 162.

After originally described by PIC (1907) from Japan without precise locality, this species was recorded from the northern Ryukyus by NAKANE (1963) and WITTMER (1971).

*Specimens examined.* 1♀, Sata-misaki, Kyushu, 28. v. 1958 (NWU); 2♂♂, same locality, 25. iv. 1963, Y. ARITA leg. (NWU); 3♀♀, same locality, 8. v. 1959,



Figs. 11–19. Median lobe of male genitalia in lateral aspect of *Attalus* species. — 11. *A. amami* M. SATÔ, sp. nov. — 12. *A. okinawanus* WITTMER. — 13. *A. chujoanus* WITTMER. — 14. *A. niponensis* PIC. — 15. *A. trochantinus* WITTMER. — 16. *A. tokara* M. SATÔ, sp. nov. — 17. *A. walteri* M. SATÔ, sp. nov. — 18. *A. kurosawai* M. SATÔ, sp. nov. — 19. *A. yonaguni* M. SATÔ, sp. nov.

Y. MIYAKE leg. (NWU); 4♀♀, Is. Kuchi-no-shima, Tokara Is., 21–22. v. 1962, M. SATÔ leg. (NWU); 31 exs., Is. Naka-no-shima, Tokara Is., 26. v. 1962, M. SATÔ leg. (EU, NWU); 3♀, same island, 4, 6. iv. 1971, M. SAKAI leg. (EU).

*Distribution.* Japan (S. Kyushu, Is. Tane-ga-shima, Is. Yaku-shima), Ryukyus (Is. Kuchi-no-shima, Is. Naka-no-shima).

#### *Attalus okinawanus* WITTMER

(Figs. 2, 12)

*Attalus okinawanus* WITTMER, 1960, Mitt. schweiz. ent. Ges., **33**: 110 (Okinawa: Nakasone). — NAKANE, 1983, Kita-kyushu no Konchû, **30**: 162.

Is. Miyako-jima is newly recorded for a locality of this species.

*Specimens examined.* 1♂, Nakagusuku Park, Is. Okinawa-hontô, Okinawa Is., 2. iv. 1969, M. CHÛJÔ leg. (WW); 1♂, 1♀, Toyama, Is. Okinawa-hontô, 11. iv. 1958, K. IHA leg. (NWU); 2♀♀, Hirara-shi, Is. Miyako-jima, Miyako Is., 6. iv. 1978,



K. BABA leg. (NWU).

*Distribution.* Ryukyus (Is. Okinawa-hontô, Is. Miyako-jima).

*Attalus tokara* M. SATÔ, sp. nov.

(Figs. 7, 16)

Head and elytra black to brownish black tinged with cyaneous sheen. Pronotum orange. Clypeus, mouth parts, basal 3 or 4 segments of antennae, gula, pro- and mesosterna, episternum, coxae, trochanters and basal halves of femora brown to yellowish brown. Apical 7 or 8 segments of antennae, apical halves of femora, tibiae and tarsi dark brown.

Head finely and very sparsely punctate. Pronotum finely and sparsely punctate. Elytra closely and rugosely punctate and microreticulate in integument. Pygidium rounded at the apex in male and strongly emarginate in female.

Length: 3.3–3.6 mm; breadth: 1.0–1.4 mm.

Holotype: ♂, Is. Ko-takara-jima, Tokara Is., 1. vi. 1962, M. SATÔ leg. (EU). Allotype: ♀, same data as holotype (NMU). Paratypes: 4♂♂, 1♀, same data as holotype (WW, NSMT, NWU); 3♂♂, 2♀♀, Is. Takara-jima, Tokara Is., 27. iv. 1971, M. SAKAI leg. (EU, NWU).

*Distribution.* Ryukyus (Is. Takara-jima, Is. Ko-takara-jima).

The new species is somewhat similar in colour to *A. chujoanus* WITTMER and *A. niponensis* PIC, but differs from them in the presence of a spine on trochanter. This belongs to the same species-group as *A. trochantinus* WITTMER which has a spine on the trochanter, though it can be easily separated from that species in the different coloration.

*Attalus trochantinus* WITTMER

(Fig. 15)

*Attalus trochantinus* WITTMER, 1982, Spec. Iss. Mem. Retir. Emer. Prof. M. Chûjô, 53 (Insel Oshima). — NAKANE, 1983, Kita-kyushu no Konchû, 30: 162.

Though the present species was originally described from Is. Amami-Ôshima, it is newly added to the faunas of the Tokara Is. and Is. Toku-no-shima in this paper.

*Specimens examined.* 20 exs., Is. Ko-takara-jima, Tokara Is., 1. vi. 1962, M. SATÔ leg. (EU, NWU); 1♀, Is. Takara-jima, Tokara Is., 27. iv. 1971, M. SAKAI leg. (NWU); 1♂, Ashikebu, Is. Amami-Ôshima, Amami Is., 28. iii. 1968, M. TOMOKUNI leg. (NWU); 9 exs., Is. Toku-no-shima, Amami Is., 9. iv. 1968, H. TAGUCHI leg. (NWU); 1♂, Kametoku, Is. Toku-no-shima, 7. iv. 1968, K. IOKI leg. (NWU).

*Distribution.* Ryukyus (Is. Takara-jima, Is. Ko-takara-jima, Is. Amami-Ôshima, Is. Toku-no-shima).

*Attalus walteri* M. SATÔ, sp. nov.

(Figs. 3, 9, 17)

*Attalus okinawanus*: M. SATÔ, 1985, Coleopt. Japan Col., Osaka, 3: 166, pl. 26, fig. 27.

Head, pronotum, elytra and ventral surface black tinged with serpentine sheen, except for the apices of elytra which are yellow. Clypeus, mouth parts, basal 4 or 5 segments of antennae, legs and peripheries of abdominal segments yellowish brown. Labrum and apical 6 or 7 segments of antennae brown.

Head finely and very sparsely punctate and smooth in integument. Pronotum finely and sparsely punctate. Elytra closely and somewhat rugosely punctate. Pygidium deeply emarginate at the apex in male and weakly emarginate at the apex and carinate at the middle in female.

Length: 3.1–3.4 mm; breadth: 1.2–1.4 mm.

Holotype: ♂, Tsina, Is. Okino-erabu-jima, 28. iii. 1968, K. IOKI leg. (EU). Allotype: ♀, same data as holotype (NWU). Paratypes: 7 exs., same data as holotype (NWU); 9 exs., Is. Okino-erabu-jima, 4. iv. 1968, H. TAGUCHI leg. (WW, EU, NWU); 6 exs., Furusato, Is. Yoron-tô, 1. iv. 1968, K. IOKI leg. (NSMT, NWU).

*Distribution.* Ryukyus (Is. Okino-erabu-jima, Is. Yoron-tô).

The present species is dedicated to Dr. Walter WITTMER, who is the best specialist of this group of beetles in the world and is the most honourable senior friend of mine.

This new species is somewhat similar to *A. okinawanus* WITTMER, but is readily recognized on the clearly defined yellowish area of elytral apices, more distinctly sinuate median lobe of male genitalia and the apex of pygidium deeply emarginate in male and carinate in female.

*Attalus yonaguni* M. SATÔ, sp. nov.

(Figs. 5, 8, 19)

Body almost black to brownish black tinged with weak lasureous sheen above. Mouth parts, basal 4 segments of antennae, trochanters, tibiae and tarsi brown to yellowish brown.

Head almost smooth and shining. Pronotum finely and sparsely punctate, shining. Elytra closely and rugosely punctate, more or less shining. Pygidium more or less truncate at the apex in both sexes.

Length: 2.8–3.3 mm; breadth: 1.0–1.3 mm.

Holotype: ♂, Kubura, Is. Yonaguni-jima, Yayeyama Is., 23. iii. 1972, H. NAKAMORI leg. (NSMT). Allotype: ♀, Sonai, Is. Yonaguni-jima, 22. iii. 1972, S. AZUMA leg. (NWU). Paratypes: 1♂, same locality as holotype, 24. iii. 1972, H. NAKAMORI leg. (NWU); 1♀, Higawa, Is. Yonaguni-jima, 26. iii. 1972, S. AZUMA leg. (NWU).

*Distribution.* Ryukyus (Is. Yonaguni-jima).

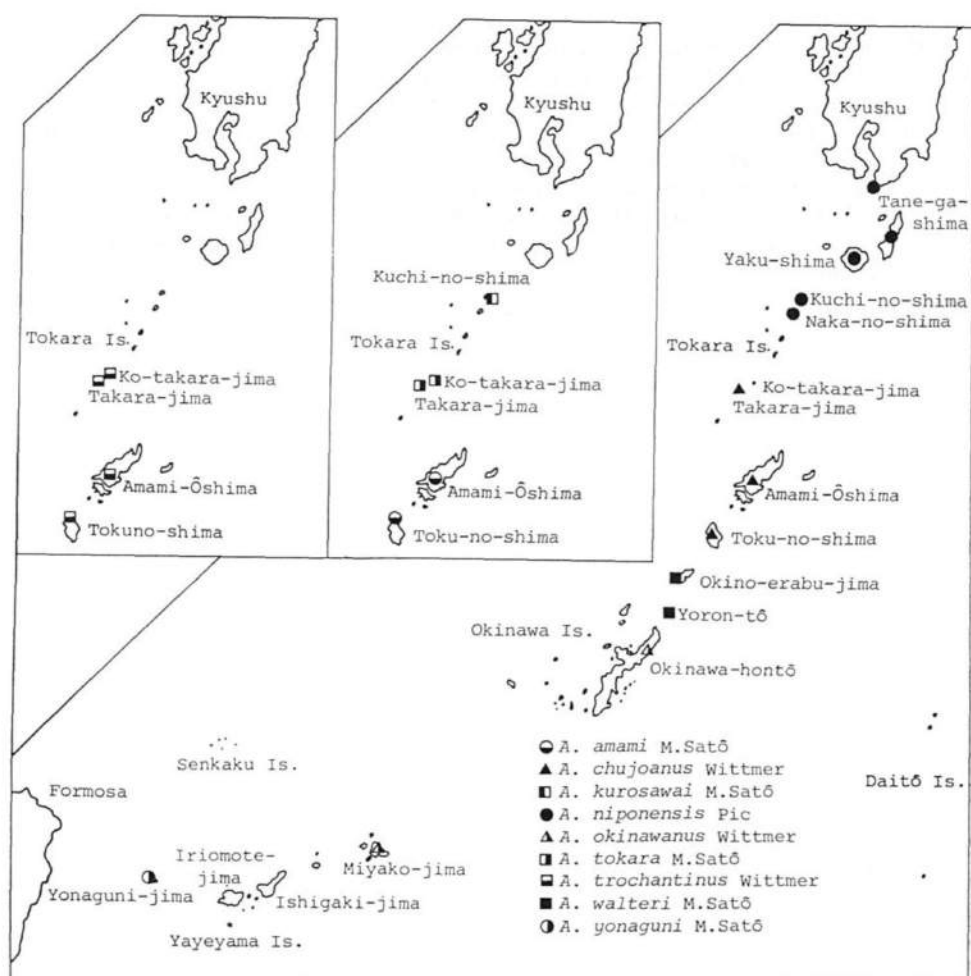


Fig. 20. Map showing the distribution of *Attalus* species in the Ryukyus.

The present new species most closely resembles *A. kurosawai* sp. nov., but is separable from it by having small body, the pygidium more or less truncate at the apex and the male genitalia relatively stout.

### References

- NAKANE, T., 1956. On Japanese Malachiinae (I) (Coleoptera, Melyridae). *Akitu, Kyoto*, 5: 65-66. (In Japanese.)  
 — 1983 a. Notes on Japanese Melyridae (Coleoptera). *Kita-kyushu no Konchū*, 30: 161-166. (In Japanese.)  
 — 1983 b. Some records of Melyridae from the Ryukyus. *Nature & Insects, Tokyo*, 18:

(14): 9. (In Japanese.)

PIC, M., 1907. Coléoptères exotiques nouveaux ou peu connus. *Échange*, **23** (269): 134–135.

SATÔ, M., 1985. Family Melyridae. In KUROSAWA, Y., et al. (eds.), *The Coleoptera of Japan in Color*, **3**: 163–168, pl. 26. Hoikusha, Osaka. (In Japanese.)

WITTMER, W., 1960. 24. Beitrag zur Kenntnis der palaearktischen Malacodermata (Col.). *Mitt. schweiz. ent. Ges.*, **33**: 107–110.

——— 1971. Family Cantharidae and Malachiidae. In CHÛJÔ, M. (ed.), *Coleoptera of the Loo-choo Archipelago (III)*. *Mem. Fac. Educ. Kagawa Univ.*, part II, (202): 16–17.

——— 1982. Zur Kenntnis der Malachiidae (Coleoptera) des Ryukyu Archipels (70. Beitrag zur Kenntnis der palaearktischen Malachiidae). *Spec. Iss. Mem. Retir. Emer. Prof. M. Chûjô*, 51–54.

## Notes on the Colydiidae (Coleoptera) of Japan and Formosa

by

Hiroyuki SASAJI

Biological Laboratory, Fukui University, Fukui 910, Japan

**Abstract** Three new colydiid species, *Dastarcus kurosawai* (Ryukyus), *Neotrichus serraticollis* (Ryukyus) and *N. lanyuensis* (Formosa) are described. Keys to the species of the genera *Dastarcus* and *Neotrichus* of Japan and Formosa are also provided.

The colydiid beetles occurring in Japan and Formosa have been studied by several previous authors, but the systematic status of many species still remain unclarified. On this occasion, I am going to deal with the species belonging to the genera *Dastarcus* and *Neotrichus*, and to describe three new species.

Before going further, I wish to express my cordial thanks to Prof. J. AOKI, Yokohama National University, Mr. Y. HIRANO, Odawara, Prof. S. OSAWA, Nagoya University, Mr. K. SAWADA, Kawasaki, Mr. T. SHIBATA, Osaka, and Prof. Emer. T. SHIRÔZU, Fukuoka, for their kind offers of the valuable materials.

### *Dastarcus longulus* SHARP, 1885

(Fig. 1 A)

*Dastarcus longulus* SHARP, 1885, J. Linn. Soc. London, 19: 76, pl. 3 (Japan: Konose in Higo).

*Specimens examined.* Mt. Takao, Tokyo (2 exs., 2. v. 1954, YAMASAKI leg.); Mt. Somayama, Fukui Pref. (3 exs., 10. v. 1964; 1 ♀, 22. v. 1983, H. SASAJI leg.); Mt. Monju, Fukui Pref. (3 ♂♂ 1 ♀, 14. vi. 1978; 1 ♀, 10. viii. 1977, H. SASAJI leg.); Nose, Osaka Pref. (1 ♀, 1. viii. 1959, T. ONO leg.; 1 ♀, 21. v. 1961, T. KAWATSU leg.); Ikeda, Osaka Pref. (1 ♀, 2. viii. 1959, N. OHTANI leg.); Ôgonzan, Hiroshima Pref. (3 ♂♂ 2 ♀♀, 4. v. 1969, S. OSAWA leg.); Nanshanchi, Formosa (2 ♂♂, 30. iv. 1965, T. SHIRÔZU leg.; 2 ♀♀, 17. ix. 1970, Y. KIYOYAMA leg.); Penpuchi, Formosa (1 ♂, vi. 1965, T. SHIRÔZU leg.; 1 ♂, 7. iv. 1971, H. NOMURA leg.); Chipon, Formosa (2 ♀♀, 22. iii. 1971, H. NOMURA leg.).

*Distribution.* Japan (Honshu, Kyushu, Tsushima), Formosa—new record.

*Notes.* Specimens from Formosa are slightly different from the Japanese ones in the shape of pronotum, especially of the basal corners, but it is difficult to separate them at the species level.

*Dastarcus kurosawai* sp. nov.

(Fig. 1 B, C)

Elongate oblong oval, about 2.3 times as long as wide. Black, bearing yellowish grey and black scale-hairs in various densities by areas forming maculations, though the dorsal scale-hairs often fall off partially.

Head slightly narrower than  $1/2$  of body width; eye relatively large, transverse in frontal view, strongly prominent. Antenna as long as interocular distance, inserted apart from eye; 1st segment stout, subtriangular, convex externally; 2nd subcylindrical, angulated at external part of base; 3rd cylindrical, thickening apically, as long as second and longer than 4th; 8th and 9th distinctly transverse; 10th trapezoidal, 1.5 times as wide as long, arcuately widening apically; terminal segment semicircular.

Pronotum 1.2 times as wide as long, and 0.8 as wide as the body width; anterior corners weakly produced anteriorly, nearly rectangle with rounded tip; lateral sides of pronotum gently and nearly uniformly arcuate; basal corners obtusely angulate; basal side almost straight, very weakly bisinuate; pronotal disc weakly and uniformly convex at wide central area, two longitudinal furrows represented along each lateral side, latero-basal parts distinctly depressed. Pronotum with strong punctures beside the median line which is impunctate and smooth, but those punctures are not very strong and close as in *longulus*, each puncture bearing a black scale-hair. Very dense patches of long grey scale-hairs represented at median areas near the anterior margin, latero-median areas a little before the middle in length, and areas along the lateral sides.

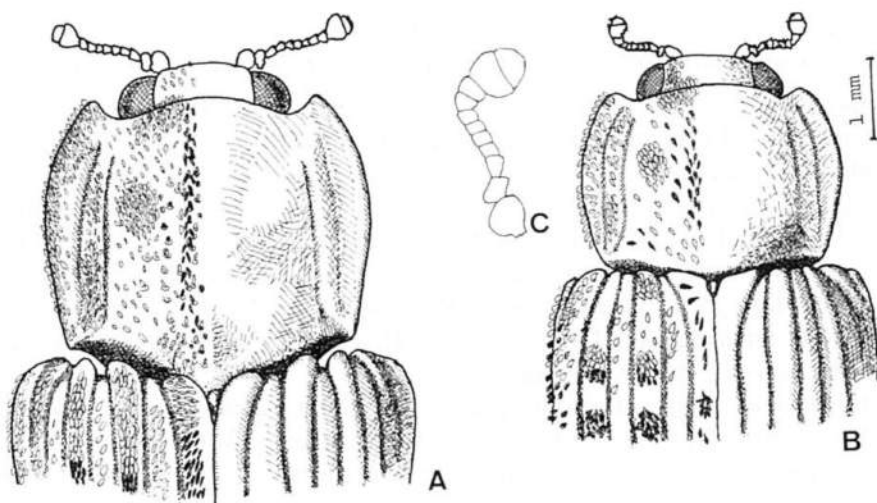


Fig. 1. A: *Dastarcus longulus* SHARP; B-C: *D. kurosawai* sp. nov. — A-B, Anterior parts of bodies, left halves showing the distribution of scale-hairs, and right halves showing the condition of surfaces; C, left antenna. 1 mm scale is applied to A & B.

Elytral sides relatively strongly arcuate, elytral apex rather narrowly prominent with a round tip. Furrows of elytral striae deep and clear, each with a row of strong punctures. First elytral interspace with about ten small and dense patches of black scale-hairs; 3rd interspace intermittently with about 10 very dense and large patches of scale-hairs except for short basal and apical parts where distribution of scale-hairs is irregular; colour of scale-hairs of 3rd interspace is grey in almost all at basal 1/10 of elytral length and several ones at 2/5 from apex, and black in the others. Fifth interspace also intermittently bearing grey and black scale-hairs as well as 3rd, and grey ones distributed as follows: several ones at 1/10 from base and almost all at apical 2/5. Humeral areas rather densely with grey scale-hairs. Second and 4th interspaces very sparsely bearing scale-hairs; lateral parts of elytra rather irregularly bearing black and grey scale-hairs.

Body length: 4.0–7.3 (6.0) mm; width: 1.7–3.1 (2.6) mm (those of the holotype are in parentheses).

*Distribution.* The Ryukyus (Nakano-shima, Okinawa, Ishigaki-jima, Iriomote-jima).

*Japanese name:* Kurosawa-ô-hosokatamushi.

Holotype (♂): Banna-dake, Ishigaki-jima, 3. iv. 1967, H. SASAJI leg., preserved in the collection of the Entomological Laboratory, Kyushu University, Fukuoka.

Paratypes: 1♂, Nakano-shima, Tokara Is., 16. vii. 1961, Y. HAMA leg.; 1♀, Yona, Okinawa, 11. vii. 1963, Y. HAMA leg.; 1♂ 5♀♀, the same data as the holotype; 1♂, Mt. Banna-dake, 23. v. 1964, Kazuhiro SAWADA leg.; 1♂ 1♀, Hirakubo, Ishigaki-jima, 29. vi. 1964, H. KONISHI leg.; 1♂, Mt. Omoto, Ishigaki-jima, 26. vii. 1963, Y. HAMA leg.; 1♂, same locality, 9. vii. 1964, Y. HAMA leg.; 1♂ 1♀, Ishigaki-jima, 30. viii. 1961, M. OKABE leg.; 6♂♂ 9♀♀, Iriomote-jima, 26–27. vii. 1962, Y. HAMA & H. NOMURA leg.

This new species closely resembles *D. longulus* SHARP from Japan proper and Formosa, but it is easily separable by the following key. The species name is dedicated to Dr. Y. KUROSAWA, one of the excellent leaders of coleopterology in Japan.

#### Key to the Species of *Dastarcus* of Japan and Formosa

- 1(2) Pronotum usually longer than 4/5 of the width; anterior corners of pronotum acutely prominent anteriorly; lateral sides of pronotum arcuate in anterior half and nearly straight in basal half; basal corners acute; pronotal disc with a pair of rather distinct elevations at a little before the middle in length, the posterior areas to which are depressed, basal area of median line usually distinctly depressed. Median line of pronotum without distinct smooth area, central area of pronotum extremely strongly and very closely punctured. The 3rd and 5th interspaces of elytra continuously and very densely bearing erect scale-hairs. Body length: 5.7–10.1 mm, width: 2.8–4.1 mm.

- .....*D. longulus*
- 2(1) Pronotum shorter than 4/5 of the width; anterior corners of pronotum nearly rectangular and weakly prominent anteriorly; lateral sides gently and nearly uniformly arcuate; basal corners obtuse; pronotal disc without distinct elevation or depression excepting 2 lateral longitudinal furrows and a pair of latero-basal shallow depressions. Median line area of pronotum smooth and impunctate, punctures in central area of pronotum strong but not extremely so such as above. The 3rd and 5th interspaces of elytra intermittently bearing erect scale-hairs forming several patches. Body length: 4.0–7.3 mm, width: 1.7–3.1 mm.....*D. kurosawai*

*Notes.* I examined a single specimen collected at Is. Lutao off the eastern coast of Formosa, and it is related to *D. kurosawai* but probably referred to a different species.

*Neotrichus hispidus* SHARP, 1885

*Neotrichus hispidus* SHARP, 1885, J. Linn. Soc. London, 19: 61, pl. 3 (Japan: Nagasaki, Oyayama, Hitoyoshi, Kashiwagi, Nikko).

*Specimens examined.* 38 examples from the following localities: Aomori Pref.: Tsuta; Fukushima Pref.: Futamata; Fukui Pref.: Arashi, Ikegahara, Taniyama; Nara Pref.: Mt. Inamura; Wakayama Pref.: Mt. Gomadan, Mt. Kooya; Tottori Pref.: Mt. Daisen; Kagawa Pref.: Mt. Tsurugi; Ehime Pref.: Omogo-kei; Tokushima Pref.: Niku-buchi-dani; Fukuoka Pref.: Mt. Hikosan, Mt. Kumado; Tsushima: Mt. Ariake (1 ex., 22. v. 1961, Y. KIMURA leg.); Yakushima: Hananoego (1 ex., 25. vii. 1966, H. NOMURA leg.).

*Distribution.* Japan (Honshu, Shikoku—new record, Kyushu, Tsushima—new record, Yakushima—new record).

*Neotrichus serraticollis* sp. nov.

(Fig. 2 A)

Elongate oblong, parallel-sided, 3.7 times as long as wide. Dull dark black brown; antennae excepting blackish club, mouth parts and legs dark reddish brown.

Head relatively large, 0.8 as wide as pronotal width; shorter than width. Eye relatively large, the longitudinal diameter 1/2 of interocular distance, weakly prominent laterally. Tempora simple, short, distinctly narrowing basally. Surface of eye coarsely faceted and bearing short scale-hairs. Hind part of head weakly convex and granulated. Clypeus weakly expanded laterally, with a pair of oblique furrows at lateral parts. Antenna slightly shorter than head width; 1st segment stout and cylindrical; 2nd sphaerical, a little longer than wide; 3rd cylindrical, distinctly thickening apically, much longer than 2nd; each of 4th to 8th cylindrical, nearly as long as thick; 9th distinctly thicker than 8th, transverse; 10th trapezoidal,



much wider than long; terminal transverse oval, slightly narrower than the preceding, and rather loosely articulate.

Pronotum subquadrate, slightly longer than wide, widest near the anterior end, whose width is very slightly narrower than the maximum elytral width. Lateral sides of pronotum straightly and very weakly narrowing basally with 11 or 12 distinct tubercles, each of which bears a scale-hair. Anterior corners nearly rectangular; anterior margin arcuately convex except for narrow lateral parts. Pronotal disc closely granulated, each granule with a single scale-hair; pronotal base with a fine and indistinct furrow along the margin. Scutellum small, subquadrate.

Elytra almost parallel-sided with semicircular apex. Each elytral stria forming a row of strong and deep punctures, each of which follows an erect scale-hair. Humerus with a few denticles.

Prosternal process somewhat longer than wide, with a rounded tip and with a longitudinal furrow. Legs relatively stout; tips of femora roundly expanded below; tibiae longitudinally carinate. Apical margin of 5th abdominal segment nearly semicircular in male, and slightly pointed in female. Scale-hairs on dorsum very elongate, weakly thickening apically, each with a rounded tip and pale yellow grey in colour.

Body length: 3.1–4.0 (3.5) mm; width: 0.85–1.10 (0.93) mm (those of the holotype are in parentheses).

*Distribution.* The Ryukyus (Ishigaki-jima).

*Japanese name:* Nokomune-hosokatamushi.

Holotype (♂): Mt. Banna-dake, Ishigaki-jima, 9. ix. 1982, Kazuhiro SAWADA leg., preserved in the collection of the Entomological Laboratory, Kyushu University, Fukuoka.

Paratypes: 1♂ 3♀♀, the same data as the holotype; 1♀, Mt. Omoto, Ishigaki-jima, 9. iv. 1976, H. SASAJI leg.

The present new species is closely related to *N. serratus* SHARP from Ceylon, but it is separable from the latter by the narrower head and the pronotal sides with more than 10 tubercles.

### *Neotrichus lanyuensis* sp. nov.

(Fig. 2 B)

Closely related to the preceding species, *N. serraticollis*. Eye small, the longitudinal diameter less than 1/3 of interocular distance, scarcely prominent laterally, without hairs on surface. Tempora angulately produced laterally behind eye, then suddenly narrowing posteriorly. Clypeus well-developed, almost concealing basal antennal segment. Antenna slightly shorter than head width; 2nd segment stout, much longer than thick and about twice as long as 3rd which is also elongate; two terminal segments compactly articulate and forming a club which is slightly longer than thick.

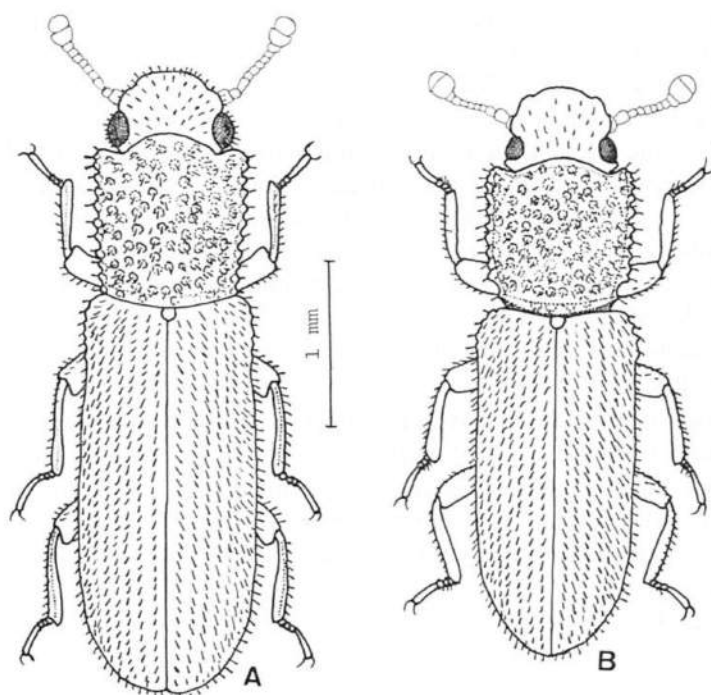


Fig. 2. A: *Neotrichus serraticollis* sp. nov.; B: *N. lanyuensis* sp. nov. 1 mm scale is applied to both.

Pronotum scarcely longer than wide; lateral sides almost parallel, slightly arcuate at short anterior and posterior ends; basal corners obliquely truncate; anterior corners weakly produced anteriorly, with a sharp tip; anterior side of pronotum weakly marginate; basal side rather distinctly arcuate with a deep margination; granules of pronotal disc as in *serraticollis*. Elytra also as in *serraticollis* but apex rather pointed. Tip of femora rather simple and longitudinal carina of tibiae indistinct. Dorsal scale-hairs thinner than in *serraticollis* in general.

Body length: 3.45–3.55 (3.45) mm; width: 1.00–1.05 (1.00) mm (those of the holotype are in parentheses).

*Distribution.* Is. Lanyu, off the southeastern coast of Formosa.

*Japanese name:* Kôtô-nokomune-hosokatamushi.

Holotype (♂): Is. Lanyu, near Formosa, 15. vii. 1972, Y. MAEDA leg., preserved in the collection of the Entomological Laboratory, Kyushu University, Fukuoka.

Paratypes: 3♀, Is. Lanyu, 3–5. vi. 1972, Y. KIYOYAMA leg.

This new species is distinguishable from *serraticollis* by the following key.

Key to the Species of *Neotrichus* of Japan and Formosa

- 1(2) Pronotal sides bisinuate narrowing basally, distinctly convex at anterior parts. Pronotal disc much uneven with several distinct depressions and elevations. Denticles of pronotal sides rather irregular. 3.5–5.2 mm. ....  
 ..... *N. hispidus*
- 2(1) Pronotal sides nearly straight, nearly parallel or slightly narrowing basally. Pronotal disc evenly and weakly convex and granulated. Denticles of pronotal sides regularly arranged.
- 3(4) Tempora simple, gently narrowing posteriorly. Pronotal surface without lateral carina. Second antennal segment small, shorter than 3rd. Two terminal antennal segments loosely articulate. 3.1–4.0 mm. ....  
 ..... *N. serraticollis*
- 4(3) Tempora produced laterally behind eye and suddenly narrowing posteriorly. Pronotal surface with longitudinal carina along the sides. Second antennal segment large, distinctly longer than 3rd. Two terminal antennal segments compactly articulate. 3.4–4.0 mm. .... *N. lanyuensis*

## References

- DAJOZ, R., 1977. Coléoptères Colydiidae et Anommatidae paléarctiques. *Fn. Eur. Bass. Méditerran.*, **8**: 1–275.
- GROUVELLE, A., 1908. Coléoptères de la région Indienne, Rhysodidae, Trogositidae, Nitidulidae, Colydiidae, Cucujidae. *Ann. Soc. ent. Fr.*, **77**: 315–495, pls. 6–9.
- SHARP, D., 1885. On the Colydiidae collected by Mr. G. LEWIS in Japan. *J. Linn. Soc. London, Zool.*, **19**: 58–84, pl. 3.
- 1885. On some Colydiidae obtained by Mr. G. LEWIS in Ceylon. *Ibid.*, **19**: 117–131, pl. 6.

Two New *Augolesthus* (Coleoptera, Tenebrionidae)  
from East Asia, with Notes on the Known  
Species of the Genus

by

Kimio MASUMOTO

15-9, Higashikamigo-cho, Totsuka-ku, Yokohama 247, Japan

**Abstract** Two new species of the cnodalonine genus *Augolesthus* are described, one from Taiwan and the other from Thailand. A new name is given for a pre-occupied species, and two new combinations are proposed.

The genus *Augolesthus* was originally erected by MOTSCHULSKY (1872, p. 26) for a tenebrionid beetle from the "Indes orientales." It was included in the tribe Tenebrionini by GEBIEN (1941) in his catalogue of Tenebrionidae. Later, KULZER (1952) recognized a peculiar group in the tribe Cnodalonini, and distinguished it as the new genus *Chrysomaia*. He described four new species besides the type of the genus, *Eucyrtus carbunculus* FAIRMAIRE, and also transferred *E. protensus* FAIRMAIRE to the new genus. Re-examining MOTSCHULSKY's type specimen of *Augolesthus pureofasciatus* now preserved in the Zoological Museum, Moscow State University, KASZAB (1983) noticed that *Chrysomaia* is synonymous with *Augolesthus*, and proposed six new combinations under the genus. They are wholly Oriental and form an assemblage of very beautiful species belonging to the tenebrionid tribe Cnodalonini.

In this paper, I am going to describe two new species of the genus, one from Taiwan and the other from Thailand. At the same time, I will remove to *Augolesthus* two species which have previously been placed under the genus *Eucyrtus*. This new combination has brought about a homonymy, and I will propose a new replacement name for it. The holotypes of the new species to be described are preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Before going into further details, I wish to express my hearty thanks to Dr. Z. KASZAB, Természettudományi Múzeum, Budapest, who not only informed me new knowledge about the genus but also permitted me to examine invaluable specimens including the types for this study. Sincere thanks are due to Dr. Y. KUROSAWA, National Science Museum (Nat. Hist.), Tokyo, Messrs. M. NISHIKAWA, Kanagawa Prefecture, T. SHIMOMURA, Tokyo, and N. NISHIKAWA, Hokkaido University, for the loan of material, and also to Dr. Y. CAMBEFORT and Mme. D. BONORA, Muséum National d'Histoire Naturelle, Paris, and Miss P. GILBERT, British Museum (Natural History), for their help in consulting with literature. I am greatly indebted to Mr.

T. ENDO, Tokyo, for drawing beautiful figures of the two new species, and also to Dr. S.-I. UENO, National Science Museum (Nat. Hist.), Tokyo, for reading through the original manuscript.

This paper is dedicated to Dr. Yoshihiko KUROSAWA for commemorating his retirement from the chief of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

### Description of New Species

#### *Augolesthus kurosawai* sp. nov.

(Fig. 1)

Dark reddish brown, with 6 apical segments of antennae, prepisterna, apical portions of femora, tibiae and tarsi blackish, upper sides of pro- and mesotibiae greenish, head and pronotum greenish blue, elytra more greenish; elytra with purplish transverse band which is narrowly margined with bluish tinge; strongly and metallicly shining above. Elongate, subparallel-sided; strongly convex longitudinally.

Head somewhat transverse hexagonal, rather closely punctate throughout, strongly elevated posteriorly, flattened in front; frons declined forwards, with frontal suture fine and arcuate, reaching outer margin; clypeus transverse, feebly convex above, with front margin very slightly but widely emarginate medially, rounded on both sides; genae rather small and oblique, raised in outer portions, depressed along fronto-genal borders; eyes medium-sized and oblique, moderately convex above and produced laterad, distance between them about 3 times the length of their transverse diameter; ocular sulci deep along inner sides of eyes and straightly extending to rear. Antennae rather short, hardly reaching the middle of pronotum, with 6 apical segments widened and flattened, 10th the widest and 11th ovoid, relative length of each segment from basal to apical: 0.8, 0.3, 0.6, 0.4, 0.4, 0.6, 0.6, 0.7, 0.7, 0.7, 0.9.

Pronotum 1.3 times as broad as long, broadest at basal 2/5; front border moderately arcuate forwards; base bisinuate and margined; sides rather steeply declined, arcuate and weakly sinuate before base, entirely bordered along margins; front angles rounded; hind angles a little acute and pointed postero-laterad; disc rather strongly convex above, moderately closely punctate, the punctures approximately twice as large as those on head, becoming a little smaller to lateral portions. Scutellum triangular with rounded sides, scattered with minute punctures laterally.

Elytra about twice as long as broad, more than 3 times the length and 1.2 times the breadth of pronotum, subparallel-sided but roundly narrowed to rear in apical 1/3, then roundly produced at apex; disc punctate-striate, distance between the punctures 2-4 times their diameter; intervals nearly flat or feebly convex, microsculptured and sparsely scattered with minute punctures; sides bordered though the borders are almost invisible from above, steeply declined and lightly enveloping

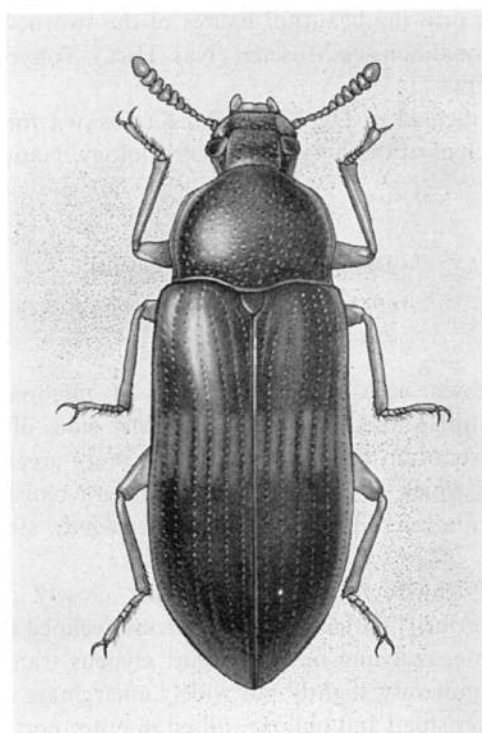


Fig. 1. *Augolesthus kurosawai* sp. nov., ♂.

hind body, remarkably indented at basal  $1/3$ ; purplish band located at basal  $1/3$ ,  $2/9$  the length of elytra.

Mentum subcordate, obliquely truncate apically, pubescent anteriorly, gouged and asperate on both sides; gula parabolic and microshagreened, bordered by fine impressions anteriorly; terminal segment of each maxillary palpus medium-sized, with rather rounded outer side about twice the length of inner and 1.3 times the length of weakly arcuate apical.

Prosternum weakly microshagreened, shallowly and sparsely punctate in middle, coarsely and rather closely so laterally, finely margined along front border, raised and bisulcate (often with fine median line) between coxae, with prosternal process wide triangular and bluntly pointed at apex; mesosternum rather short, depressed and coriaceous anteriorly, with V-shaped elevation at hind border; metasternum broad and weakly microshagreened, scattered with small punctures, which become larger to lateral portions, with median impression in basal  $2/3$ . Abdomen weakly microshagreened, rather closely punctate, the punctures becoming finer to apical portion.

Legs medium-sized; profemur with tooth near the apex of inner margin; protibia moderately thickened and slightly curved downwards to the apex, haired in

apical 2/3 of underside; tarsi with relative length of each segment from basal to apical: 0.5, 0.4, 0.4, 0.4, 1.7; 0.7, 0.4, 0.4, 0.5, 1.7; 1.1, 0.4, 0.6, 2.0, respectively.

Body length: 8.0–8.5 mm.

Holotype: ♂, Taiyuanshan, Kaohsiung Hsien, Taiwan, 13. VI. 1984, K. MASUMOTO leg. Paratypes: 1 ex., same data as the holotype; 3 exs., Taiyuanshan, 21. VII. 1984, CHEN Wenlong leg.

This new species somewhat resembles *A. pulcher* (PIC, 1927) from Indochina, but can be distinguished from the latter by its body narrower, the pronotum more strongly but less closely punctate with front angles not angulate (hind ones rather strongly angulate), and the elytra more sparsely punctate in rows, less strongly striate along scutellar striae, more remarkably produced in apical portion, with purplish band narrower and interrupted in middle.

The present species marks the eastern limit of the generic distribution of *Augolesthus*.

*Augolesthus thailandicus* sp. nov.

(Fig. 2)

Piceous, with 5 basal segments of antennae, mouth-parts and tarsi dark reddish brown, head, femora and tarsi, basal half of epipleuron and metasternum indigo-blue, basal 1/7 of elytra and prepisterna greenish blue, pronotum, scutellum and elytra purplish; upper surface strongly and metallically shining. Rather elongate, feebly widened posteriorly; moderately convex above.

Head subhexagonal, rather closely punctate (the punctures becoming finer and closer to front), strongly raised posteriorly, flattened in front; frons shortly and rather steeply declined towards straight fronto-clypeal border, both ends of which are grooved, extend obliquely and then reach outer margin; clypeus rather broad, feebly convex above, with front margin truncate and very slightly emarginate, rounded on both sides; genae medium-sized, subauricular, depressed along fronto-genal borders; eyes medium-sized and transverse, moderately convex above and also laterad, distance between them about 2.5 times their width; ocular sulci deep, extending to rear and slightly diverging from each other. Antennae rather short, hardly reaching the middle of pronotum, with 6 apical segments rather strongly widened and flattened, 10th the widest and 11th somewhat ovoid, relative length of each segment from basal to apical: 0.7, 0.3, 0.6, 0.3, 0.3, 0.4, 0.4, 0.6, 0.6, 0.6, 0.8.

Pronotum a little more than 1.3 times as broad as long, broadest at basal 2/5; front border moderately arcuate forwards, sinuate on both sides; base bisinuate and clearly margined; sides entirely bordered, moderately declined laterad, arcuate and rather noticeably sinuate before base; front angles obtusely produced forwards; hind angles acute and pointed postero-laterad; disc rather strongly convex above, moderately closely punctate, the punctures a little larger than those on head and intermixed with smaller ones, which are about quarter the size of larger ones.



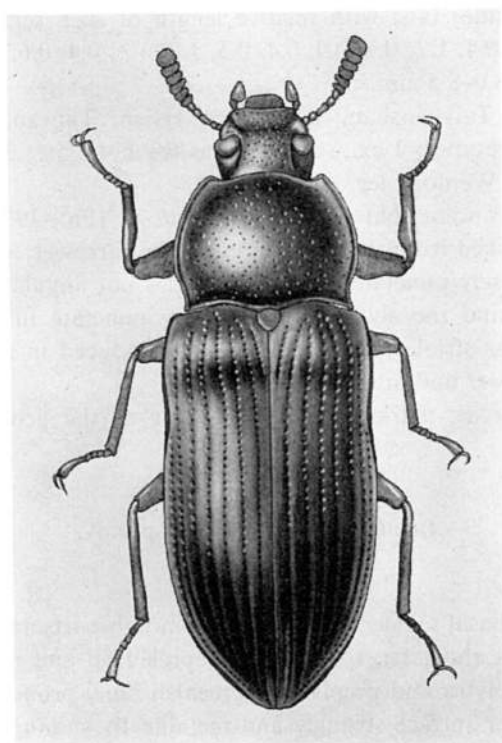


Fig. 2. *Augolesthus thailandicus* sp. nov., ♀.

Scutellum shortly linguiform, sparsely scattered with minute punctures.

Elytra about 1.8 times as long as broad, 3 times the length and 1.2 times the breadth of pronotum, broadest at apical  $3/7$ , feebly narrowed to front and roundly so to rear from the broadest point, narrowly roundly produced at apex; disc rather strongly punctate-striate, the punctures in striae 0.8–2.5 times their diameter apart, becoming larger but sparser to outer portions, and notching intervals; intervals weakly convex, feebly microshagreened, scattered with microscopic punctures; sides clearly bordered though the borders are almost invisible from above, steeply declined laterad and lightly enveloping hind body, noticeably indented at basal quarter; dorsum lightly depressed transversely at basal  $2/9$ .

Mentum elongate subcordate, asperate and pubescent anteriorly; gula parabolic and microshagreened, with a short impression on each side along lateral suture anteriorly; terminal segment of each maxillary palpus rather large and securiform, with arcuate outer side about 1.6 times the length of inner and 1.1 times the length of straight apical.

Prosternum coriaceous, margined at apex, moderately raised and bisulcate between coxae, with prosternal process depressed and semicircular; mesosternum rather short, depressed and rugosely punctate anteriorly, with V-shaped elevation



at the median part of hind border; metasternum broad and feebly microshagreened, microscopically punctate in middle, the punctures becoming larger to lateral portions, with median impression in basal 3/4. Abdomen feebly microshagreened, rather closely punctate, the punctures becoming finer to apex.

Legs in female (type!) medium-sized; profemur without tooth near each apex; protibia moderately bent downwards, rather remarkably thickened at basal 1/3 of upper side along inner margin; tarsi with relative length of each segment from basal to apical: 0.5, 0.3, 0.3, 0.4, 1.6; 0.5, 0.4, 0.4, 0.4, 1.7; 0.8, 0.4, 0.3, 1.7, respectively.

Body length: 7.7 mm.

Holotype: ♀, Doi Suthep, 1,100 m alt., Chiang Mai, NW Thailand, 22. V. 1982, T. SHIMOMURA leg.

This new species is unique in the colour pattern of the dorsum, which is relatively flat for the members of *Augolesthus*.

#### List of the Known Species of the Genus

##### *Augolesthus* MOTSCHULSKY

*Augolesthus* MOTSCHULSKY, 1872, Bull. Soc. Natur. Mosc., **45**(3): 26. Type species:

*Augolesthus purpureofasciatus* MOTSCHULSKY.

*Chrysomaia* KULZER, 1952, Ent. Arb. Mus. Frey, **3**: 755.

- 1) *A. purpureofasciatus* MOTSCHULSKY, 1872, Bull. Soc. Natur. Mosc., **45**(3): 34. Indes orientales.
- 2) *A. pici* nom. nov.  
For *Eucyrtus purpureofasciatus* PIC, 1925, Mél. exot.-ent., (43): 9 (nec MOTSCHULSKY, 1872). Kina-Balu.
- 3) *A. carbunculus* (FAIRMAIRE, 1885)  
*Eucyrtus carbunculus* FAIRMAIRE, 1885, C.-R. Soc. ent. Belg., **3**(64): CIX. Sumatra et Bornéo.
- 4) *A. protensus* (FAIRMAIRE, 1893)  
*Eucyrtus protensus* FAIRMAIRE, 1893, Notes Leyden Mus., **15**: 44. Singapore.
- 5) *A. violaceofasciatus* (PIC, 1925), comb. nov.  
*Eucyrtus violaceofasciatus* PIC, 1925, Mél. exot.-ent., (43): 9. Java.
- 6) *A. pulcher* (PIC, 1927), comb. nov.  
*Eucyrtus pulcher* PIC, 1927, Mél. exot.-ent., (49): 19. Than-Moi.
- 7) *A. elegans* (KULZER, 1952)  
*Chrysomaia elegans* KULZER, 1952, Ent. Arb. Mus. Frey, **3**: 757. Landorangung, Kurintii, Sumatra.
- 8) *A. latus* (KULZER, 1952)  
*Chrysomaia lata* KULZER, 1952, Ent. Arb. Mus. Frey, **3**: 759. N. Borneo, Kina-balu.
- 9) *A. borneensis* (KULZER, 1952)  
*Chrysomaia borneensis* KULZER, 1952, Ent. Arb. Mus. Frey, **3**: 760. Borneo,

Kina-balu.

- 10) *A. violaceus* (KULZER, 1952)

*Chrysomaia violacea* KULZER, 1952, Ent. Arb. Mus. Frey, **3**: 762. Südost-Borneo.

- 11) *A. kurosawai* sp. nov.

Taiwan.

- 12) *A. thailandicus* sp. nov.

Thailand.

### Literature Cited

- FAIRMAIRE, M. L., 1885. Malacodermes, Lymexylonide et Hétéromères nouveaux recueillis par M. DEBY à Sumatra et à Bornéo. *C.-R. Soc. ent. Belg.*, **3** (64): CV-CXII.
- 1893. Coléoptères nouveaux des Indes orientales, de la famille des Scarabaeidae, Rhipiceridae, Tenebrionidae et Oedemeridae. *Notes Leyden Mus.*, **15**: 17-64.
- GEBIEN, H., 1941. Katalog der Tenebrioniden (Coleoptera Heteromera), II. *Mitt. münch. ent. Ges.*, **31**: 626-657.
- 1942. Ditto, III. *Ibid.*, **32**: 691-705.
- KASZAB, Z., 1983. Synonymie indoaustralischer und neotropischer Tenebrioniden (Coleoptera). *Acta zool. Acad. Sci. hung.*, **29**: 129-138.
- KULZER, H., 1952. Siebenter Beitrag zur Kenntnis der Tenebrioniden (Col.). Einige neue Gattungen und Arten der Tribus Cnodalonini aus dem Nachlaß von H. GEBIEN in col. G. FREY. *Ent. Arb. Mus. Frey, Tübing.*, **3**: 719-764, 2 pls.
- MOTSCHULSKY, V., 1872. Enumération des nouvelles espèces de Coléoptères rapportés de ses voyages, II. *Bull. Soc. Natur. Moscou*, **46** (3): 23-37.
- PIC, M., 1925. Nouveautés diverses. *Mél. exot.-ent.*, (43): 1-32.
- 1927. Coléoptères de l'Indochine. *Ibid.*, (49): 1-36.

## The Group of *Glipa formosana* (Coleoptera, Mordellidae) from Amami-Oshima Island of the Ryukyus

by

**Masatoshi TAKAKUWA**

Section of Zoology, Kanagawa Prefectural Museum,  
Minaminaka-dôri 5-60, Naka-ku, Yokohama 231, Japan

**Abstract** The group of *Glipa formosana* from Amami-Oshima Island is classified into three species, of which a new species and a new subspecies are described.

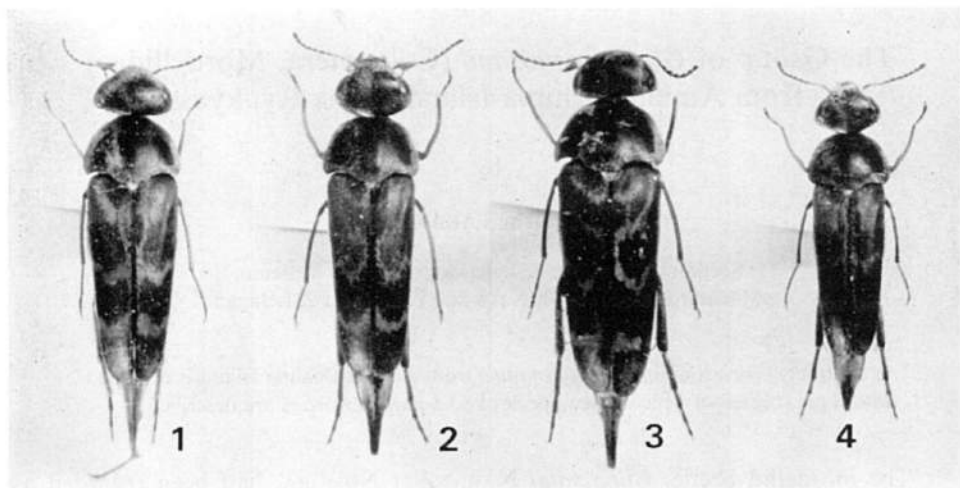
The mordellid beetle, *Glipa satoi* NAKANE et NOMURA, had been regarded as a synonym of *G. formosana* PIC, until the present author noted in 1977 that it was an independent species. At the same time, he suggested that four species of the same group occurred in Amami-Oshima Is. of the central Ryukyus and Taiwan. Recently, he had an opportunity to examine many specimens of this group of mordellids from Amami-Oshima Is. and Taiwan. After a careful examination, it became clear that actually three species occurred in Amami-Oshima Is.

In this paper, a new species and a new subspecies will be described. Two holotypes designated in this paper are deposited in the National Science Museum (Nat. Hist.), Tokyo.

Before going further, the author wishes to express his deep gratitude to Dr. Yoshihiko KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, for his continuous guidance, and to Dr. Shun-Ichi UENO of the same museum for his critical reading the original manuscript of this paper. Deep thanks are also due to Mr. Takeichirô HATAYAMA for his kind help, Mr. Hirotaka MATSUKA for taking photographs inserted in this paper and many entomologists supplying with valuable materials.

### Group of *Glipa formosana*

Tempora narrow, but projecting laterally near the middle. Maxillary palpus brownish yellow in male; last segment with outer margin more or less longer than the inner. Antenna with segments 1-4 or 5 lightened and the remainder darkened; segments 5-10 fully serrate; terminal one elongate obovate or quadrate, 2.2-3.0 times as long as wide. Pronotum clothed with golden yellow pubescence in male and whitish yellow one in female near margins. Elytra rather short, brownish at least in basal halves; discal maculations as follows: one or two pairs of oblique stripes in anterior areas, a pair of which join x-shaped maculation in antero-median areas, and posterior

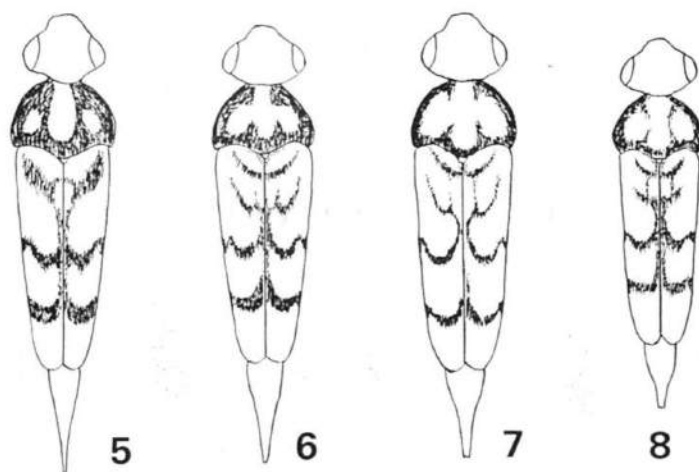


Figs. 1-4. Group of *Glipa formosana* from Amami-Oshima Is. — 1. *G. formosana* PIC (♀). — 2. *G. satoi yanma* subsp. nov. (♂, holotype). — 3. Same (♀, paratype). — 4. *G. uenoi* sp. nov. (♂, holotype).

transverse fascia which is often prolonged anteriorly along sutural margins. Pygidium rather short; apex fairly or very narrowly truncate. Front tibia in male arcuate in dorsal view, nearly straight or faintly sinuate in lateral view, with a long, vague outer carina. Male genitalia somewhat slender; left piece of paramere with a branch gradually attenuate towards apex, the tip dully pointed; right piece of paramere elongated securiform, with a large protruding part and long branch which is shaped as a short sword at the apical part.

#### Key to the Species of the Group of *Glipa formosana* from Amami-Oshima Island

1. Elytra brownish all over, each with an oblique broad stripe on anterior part; pronotal blackish maculations completely divided into three parts; pygidium slenderer, about 3.0 times as long as wide; inner spur of hind tibia 2.0-2.2 times as long as the outer one; right piece of paramere rapidly broadened apicad, the apex very widely truncate; left piece of paramere without hairs on basal part of ventral surface.....*G. formosana*.
- Elytra usually brownish in basal halves, each with one or two thin oblique stripes on anterior part; pronotal blackish maculation not or incompletely divided into three parts; pygidium shorter, 1.9-2.4 times as long as wide; inner spur of hind tibia 1.6-1.8 times as long as the outer one; right piece of paramere gradually broadened apicad, the apex narrowly rounded; left piece of paramere with long hairs on medio-basal part of ventral surface .....2.
2. Body larger, 9.9-12.0 mm (incl. head and pygidium); posterior fascia on elytra



Figs. 5-8. Maculate patterns on pronotum and elytra in the male of the group of *Glipa formosana*. — 5. *G. formosana* PIC. — 6. *G. satoi satoi* NAKANE et NOMURA. — 7. *G. satoi yanma* subsp. nov. — 8. *G. uenoi* sp. nov.

usually not connected with x-shaped maculation; pygidium longer, about 2.3–2.4 times as long as wide; pronotal blackish maculation not divided into three parts; left piece of paramere branching at apical 3/10; right piece of paramere sparsely with long erect hairs on apical part of ventral surface.....

..... *G. satoi yanma* subsp. nov.

- Body smaller, 9.2–9.4 mm (incl. head and pygidium); posterior fascia on elytra connected with x-shaped maculation along sutural margins; pygidium shorter, about 1.9–2.2 times as long as wide; pronotal blackish maculations incompletely divided into three parts; left piece of paramere branching at apical 2/5; right piece of paramere somewhat densely clothed with short fine hairs on apical part of ventral surface..... *G. uenoi* sp. nov.

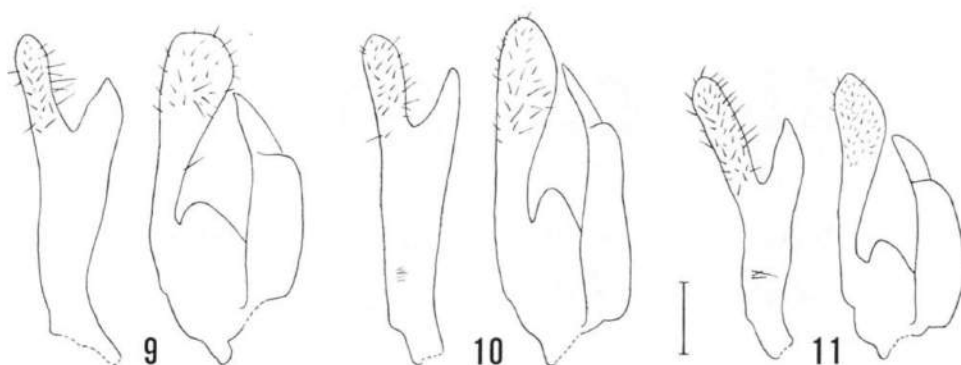
### *Glipa formosana* PIC

(Figs. 1, 5, 9)

- [ *Glipa formosana* PIC, 1911, Échange, 27: 190 (partim). — ERMISCH, 1940, Ent. Bl. Biol. Syst. Käfer, 36: 163, fig. 2. — TAKAKUWA, 1977, Coleopterists' News, (39): 5; 1985, Coleopt. Japan Col., Osaka, 3: 380, pl. 65, fig. 34.

*Specimens examined.* Amami-Oshima Is.: 1♂, Hatsuno, 26. VI. 1970, T. MIZUNUMA leg.; 1♀, Takadayama, 29. VI. 1969, H. IRIE leg.; 1♀, Yuwan, 28. VI. 1985, M. TAKAKUWA leg.; etc. Taiwan: 1♂ 2♀♀, Jiuyuehtan, Nantou Hsien, 14. V. 1975, K. AKIYAMA leg.; etc.

*Range.* Amami-Oshima Is. and Taiwan.



Figs. 9–11. Male genitalia of the group of *Glipa formosana*. — 9. *G. formosana* Pic. — 10. *G. satoi yanma* subsp. nov. — 11. *G. uenoi* sp. nov. (Scale: 0.25 mm.)

*Glipa satoi satoi* NAKANE et NOMURA, stat. nov.

*Glipa satoi* NAKANE et NOMURA, 1950, Trans. Kansai ent. Soc., 15: 1, fig. 1. — TAKAKUWA, 1977, Coleopterists' News, (39): 5; 1985, Coleopt. Japan Col., Osaka, 3: 380, pl. 65, fig. 35, r. (Partim.)

*Glipa formosana*: NAKANE, 1950, Trans. Kansai ent. Soc., 15: 21. — NOMURA, 1963, Icon. ins. japon. Col. nat. ed., 2: 247, pl. 124, fig. 6. (Nec Pic.)

*Glipa (Macroglipa) formosana*: NOMURA, 1967, Ent. Rev. Japan, 18: 9 (nec Pic.).

*Specimens examined.* Taiwan: 10♂♂ 1♀, Jiuyuehtan, Nantou Hsien, 9. V. 1978, Y. KOMIYA leg.; etc.

*Range.* Taiwan.

*Glipa satoi yanma* subsp. nov.

(Figs. 2–3, 7, 10)

*Glipa formosana*: NOMURA, 1963, Icon. ins. japon. Col. nat. ed., 2: 247; 1966, Ent. Rev. Japan, 18: 47 (nec Pic.). (Partim.)

*Glipa satoi*: TAKAKUWA, 1977, Coleopterists' News, (39): 5; 1985, Coleopt. Japan Col., Osaka, 3: 380 (partim).

*Glipa* sp. (4): TAKAKUWA, 1977, Coleopterists' News, (39): 5.

This new subspecies is apparently different from the nominotypical subspecies in the larger blackish maculation of pronotum (Fig. 7). It is also distinguished from the latter by the following points: 1) elytral blackish pubescence finer, at least on the apical portion, 2) x-shaped maculation of elytra in male obliquely running from anterior areas to sutural margins, then usually separated from sutures immediately (Fig. 7), 3) pygidium slightly stouter, 2.3–2.4 times as long as wide.

*Variation.* Posterior fascia of elytra rarely straight transversely, and rarely joining x-shaped maculation along sutural margins.

Body length: 7.9–10.0 mm (incl. head and excl. pygidium).

*Type series.* Holotype, ♂, along Yanma River, Amami-Oshima Is., 2. VII. 1985, M. TAKAKUWA leg. Paratypes: same locality as the holotype: 6♂♂, 27. VI. 1985, M. TAKAKUWA leg.; 2♂♂, 1. VII. 1985, M. TAKAKUWA leg. Amami-Oshima Is.: 2♂♂, Mt. Yuwan, 5. VII. 1968, Y. KISHIDA leg.; 2♀♀, ditto, 24. VII. 1974, M. KUBOKI leg.; 1♂, Kamiya, 17. VI. 1969, H. IRIE leg.; 1♂, Hatsuno, 4. VI. 1969, S. MORIYA leg.; 2♀♀, Nishinakama, 13. VI. 1975, M. FUKAMACHI leg.

*Range.* Amami-Oshima Is.

*Glipa uenoi* sp. nov.

(Figs. 4, 8, 11)

*Glipa* sp. (2): TAKAKUWA, 1977, *Coleopterists' News*, (39): 5.

*Male.* Body steely black with cyaneous or pinkish purpureous tinge; elytra chestnut brown in basal halves except near margins; mouth-parts except for dark castaneous to blackish mandibles, maxillary palpi, antennae beneath and genitalia brownish yellow; antennae above brownish yellow to blackish, segments 1-4 brownish yellow and gradually darkened apically, terminal segment dark yellowish brown at apical third; fore legs except for darkened tarsi, middle femora, basal parts of middle tibiae, spurs of middle and hind tibiae and claws brown to reddish brown.

Head densely clothed with golden yellow pubescence, with fine, darkened hairs around vertex. Pronotum clothed with golden yellow pubescence near margins, with three large black spots of dark fuscous pubescence: a median longitudinal one and a pair of lateral ones, of which the latter are barely separated from the former by a pair of thin or vague stripes of golden yellow hairs. Scutellum densely clothed with white pubescence. Elytra clothed with fine, pale reddish yellow pubescence on basal third except near sutural margins, the remainder clothed with dark fuscous pubescence, and bearing maculations of golden yellow hairs as follows: a pair of oblique stripes arcuately running from inside humeral parts to sutural margins behind scutellum, a pair of short sutural stripes from bases to apices of the former stripes, x-shaped maculation in medio-anterior areas, a pair of thin, parallel stripes connecting the anterior oblique stripes and x-shaped maculation, and posterior transverse fascia joining the x-shaped maculation along sutural margins. Pygidium densely clothed with whitish pubescence on basal 1/3-2/5, with dark golden yellow hairs on apical portion, the remainder clothed with dark fuscous pubescence. Meso- and metasterna and abdominal segments 1-3 clothed with whitish or yellowish pubescence, abdominal segments 4-5 clothed with dark golden yellow to dark fuscous pubescence. Fore and middle legs clothed with minute yellowish pubescence, hind legs with whitish yellow to golden yellow one.

Head finely and densely punctate, moderately convex; eyes oval, densely with short hairs; tempora very narrow, but projecting laterally near the middle. Last segment of maxillary palpus with outer margin slightly longer than the inner one, with apical margin about twice as long as the inner one. Antenna almost equal in

length to the width of head; relative lengths of segments in the holotype as follows: 1.3: 1: 1.2: 1.3: 1.6: 1.5: 1.4: 1.3: 1.3: 1.3: 2.1; segments 5–10 apparently serrate; terminal segment elongate obovate, about 2.2 times as long as wide. Pronotum transverse, about 1.32 times as wide as long, widest behind middle; disc finely and densely punctate; lateral margins arcuate in dorsal view, nearly straight in lateral view; hind angles dully angulate. Scutellum triangular with apex rounded. Elytra densely punctate, narrower than pronotum, about 2.43 times as long as wide; sides gradually and straightly convergent posteriorly, rather abruptly so with slight curving before apices, which are narrowly rounded. Pygidium short, about 2.0–2.2 times as long as wide; sides abruptly convergent apically; apex transversely truncate. Anal sternite slightly longer than wide, with a large median longitudinal concavity; apex nearly straightly truncate. Front tibiae moderately arcuate in dorsal view, slightly curved downwards in lateral view. Inner spur of hind tibia about 1.8 times as long as the outer one.

Genitalia somewhat slender. Left piece of paramere branching at apical 2/5, clothed with long erect hairs on apical 2/5 of ventral surface, also with three long hairs on basal 3/10 of ventral surface. Right piece of paramere somewhat densely clothed with minute hairs on apical portion of ventral surface, with a protruding part at basal 3/10–2/5; apex of branch narrowly rounded in ventral view.

*Female.* Dorsal surface with pale yellow pubescence instead of golden yellow one. Pygidium about 1.9 times as long as wide, clothed with whitish pubescence except for dark fuscous one on median part of apical third. Front tibiae darkened, very feebly arcuate in dorsal view.

Body length: 7.6–7.8 mm (incl. head and excl. pygidium).

*Type series.* Holotype, ♂, along Yanma River, Amami-Oshima Is., 2. VII. 1985, M. TAKAKUWA leg. Paratypes: 2♂♂, same locality as the holotype, 27. VI. 1985, M. TAKAKUWA leg. Amami-Oshima Is.: 1♂, Mt. Yuwan, 5. VII. 1968, Y. KISHIDA leg.; 1♂ 1♀, Hatsuno, 10–11. V. 1969, H. YOKOYAMA leg.; 1♂, Nishinakama, 7. VI. 1969, H. YOKOYAMA leg.

*Range.* Amami-Oshima Is.

This new species is very similar to *G. satoi yanma* subsp. nov., but is easily distinguished from the latter by the smaller body and shorter pygidium.

## References

- CHÛJÔ, M., 1959. Coleoptera of the Loo-Choo Archipelago (1). *Mem. Fac. lib. Arts & Educ. Kagawa Univ.*, (II), (69): 1–15.
- ERMISCH, K., 1940. Revision der ostasiatischen *Glipa*-Arten (Col. Mord.). *Ent. Bl. Biol. Syst. Käfer*, 36: 161–173.
- NAKANE, T., 1950. New or little known Coleoptera from Japan and its adjacent regions V. *Trans. Kansai ent. Soc.*, 15: 20–24.
- & S. NOMURA, 1950. Ditto 1. *Ibid.*, 15: 1–17.
- NOMURA, S., 1963. Family Mordellidae. In NAKANE, T., et al. (eds.), *Icon. ins. japon. Col. nat.*



- ed.*, 2: 247-255, pls. 124-128. (In Japanese.)
- NOMURA, S., 1966. Mordellid-fauna of the Loocho Islands, with descriptions of some new forms. *Ent. Rev. Japan*, 18: 41-53, 1 pl.
- 1967. The Mordellidae from Formosa. *Ibid.*, 19: 5-34.
- PIC, M., 1911. Coléoptères exotiques nouveaux ou peu connus. *Échange*, 27: 191-192.
- TAKAKUWA, M., 1977. On the relatives of *Glipa formosana* PIC, with a correction of record from Yaku-shima Island. *Coleopterists' News*, (39): 5. (In Japanese.)
- 1985. Tribe Mordellini. In KUROSAWA, Y., et al. (eds.), *Coleoptera of Japan in Color*, 3: 376-388. Hoikusha, Osaka. (In Japanese.)

The Cerambycidae (Coleoptera) of Thailand,  
chiefly based on the Collection made by the Japan-U.S.  
Co-operative Science Program in 1965

by

Masao HAYASHI

Osaka Jonan Women's Junior College, Yuzato,  
Higashisumiyoshi-ku, Osaka 546, Japan

**Abstract** The cerambycid fauna of Thailand is dealt with chiefly based on the collection made by the Japan-U.S. Co-operative Science Program in 1965 and partly on the material from other sources. Eighty-two species are enumerated, including two new forms, *Typodryas kurosawai* and *Comusia thailandica*, and numerous species newly recorded from Thailand.

It is a great honour and pleasure to the present author to be invited to contribute a paper to the commemorative publication on the occasion of the retirement of Dr. Yoshihiko KUROSAWA, Director of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

From their boyhood, an unfailing friendship has been kept between Dr. KUROSAWA and the present author for about forty years. Dr. KUROSAWA has always been very kind to help the author's studies in supplying with invaluable material from various parts of the world and in many other ways. Through his impartial favour, the present author has been able to examine many interesting specimens and to add important knowledge to the field of cerambycid studies. He therefore wishes to express his cordial thanks to Dr. KUROSAWA for his cooperation and help, and sincerely hopes that Dr. KUROSAWA will continue in good health his activities in entomology and biogeography.

The Cerambycidae of Thailand have not been satisfactorily studied as compared with those of such neighbouring areas of hers as Vietnam, Laos, Cambodia, Malaysia, Burma, India, and the Himalayas, though there are certain fragmentary reports by PASCOE, THOMSON, GAHAN, BRONGNIART, GRESSITT, HAYASHI, and so on. In the present paper, the result of the author's study on the cerambycid collection made by the Japan-U.S. Co-operative Science Program in 1965 (JUS) will chiefly be dealt with, and a new species of the genus *Typodryas* will be described from this collection. Besides, the following collections of Thai cerambycids were examined, and the results are incorporated in the present report. The author heartily thanks to Mr. D. CHAIGLOM, Dr. H. WATANABE, Mr. T. SUGIYAMA and Mr. K. MATSUDA for their kindness and generosity.

Collection of the Forest Department, Ministry of Agriculture, Government of

Thailand, through the courtesy of Mr. Dumrong CHAIGLOM, Bangkok (Thai); a new species to be described herein is included.

Collection of Dr. Hiroyuki WATANABE, Faculty of Agriculture, Kyoto University, made by his frequent visits to Thailand and kindly given to the present author (H).

Collection of Mr. Tsutomu SUGIYAMA, Gifu, kindly given to the present author (H).

Collection of Mr. Kiyoshi MATSUDA, Takarazuka (M).

The species marked with asterisks are newly recorded from Thailand.

#### Subfamily Disteniinae

#### *Typodryas kurosawai* sp. nov.

(Fig. 1)

*Male.* Body metallic green, head somewhat cupreous, prothorax and elytra purple laterally; mouth parts, palpi and neck black; sides of breast darkened, abdomen dull green. Antennae and legs black tinted with blue, furnished beneath with long dark hairs densely from third joint to apex. Body covered with pale yellow tomentose in general.

Head narrow and long, vertical in short frons, prolonged ahead in clypeus, labrum and mandibles; labrum brown, membranous, frons and genae scarcely punctured, apex of frons triangularly incised at middle, genae very short, vertex and occiput rugulose, with a fine median longitudinal furrow from apex of frons through vertex to base of occiput; temples long, arcuately narrowed posteriorly to parallel-sided neck. Antennae long and slender, 1.8 times as long as body, scape long, fully extending to before prothoracic lateral tubercles, gradually thickened apically, and arcuate at base; relative length of each joint is as follows:—6: 0.5: 8: 8.5: 8.5: 8: 7.5: 7.3: 6.5: 6: 7. Prothorax (incl. lateral tubercles) broader than long, fairly constricted behind apex and before base, distinctly conically tuberculate laterally behind middle, transversely finely plicate at apical and basal collars, disc furnished with a central diamond-shaped portion, which is finely sparsely punctulate and confluent transversely rugulose, and dully obliquely impressed laterally at the sides of the portion, transversely partly obliquely plicate at sides, and simple on lateral tubercles. Scutellum quadrate. Elytra long, broader than prothorax (incl. lateral tubercles) at base, almost straightly narrowed posteriorly to obliquely emarginate apex, with sharp long marginal and short sutural spines; disc furnished with a pair of distinct longitudinal carinae at sides, which are prolonged to before apex, and another pair of shallow costae on basal half or further between the carinae and suture; sparsely coarsely punctured between these carinae and costae on basal quarter of the disc and to behind middle on epipleura. Legs long and slender; hind femora fully surpassing elytral apex. Front trochanter armed with a short spine at the apex. Body beneath finely closely punctulate throughout.

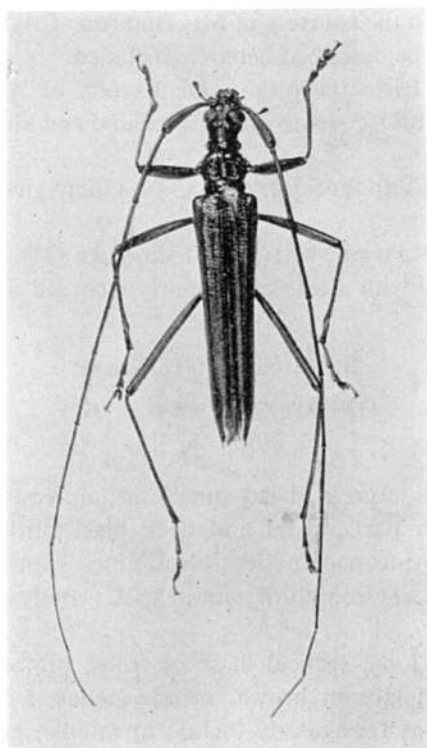


Fig. 1. *Typodryas kurosawai* sp. nov.; male, from Doi Suthep.

Length 29 mm, width 6 mm.

Holotype: male, Doi Suthep, Chiang Mai, northern Thailand, June 18, 1965, S. ASAHINA leg. (JUS) (Natn. Sci. Mus. Coll.).

*Distribution.* Thailand.

This new species differs from *T. chalybeata* (PASCOE, 1866) from Sarawak, Borneo, and Singapore in having quite different body colour instead of steel blue, more distinct lateral tubercles of prothorax and longer body, from *T. callichromoides* THOMSON, 1864, from Assam, Burma, northern Vietnam and Laos in having different body colour and spined front trochanter, etc., from *T. trochanterius* GAHAN, 1906, from Assam in having longer body of different colour, etc., from *T. unidentatus* VILLIERS, 1958, from Java in having different body colour and a simple triangular apex of elytra, etc., and from *T. cambodianus* VILLIERS, 1958, in having different body colour instead of blue head and prothorax, blue-green elytra, broader prothorax, with carinae and dense punctures, etc.

The present author has a pleasure to dedicate this beautiful species to Dr. Y. KUROSAWA on the occasion of his retirement.

## Subfamily Prioninae

*Anomophysis modesta* QUENTIN et VILLIERS, 1981

2♀, Salang Luang, April 24 &amp; May 3, 1961, P. BOONKRONG leg. (Thai)

\**Eurypoda cordieri* LAMEERE, 1916

1♀, Khao Yai, 1,000 m, May 4, 1964, D. CHAIGLOM leg. (H)

\**Aegolipton marginalis* (FABRICIUS, 1775)

1♀, Salang Luang, May 3, 1961, P. BOONKRONG leg. (Thai)

\**Ancyloprotus bigibbosus* WHITE, 1853

1♀, Bau Luang, Oct. 20, 1969, P. R. leg. (H)

*Baladeva walkeri* WATERHOUSE, 1840

1♂, Nao Lum Pang, July 15, 1960, D. CHAIGLOM leg.; 1♂, Huay Lumpang, July 20, 1963, CHALEMSAKE leg. (Thai &amp; H)

\**Sarmyds antennatus* PASCOE, 1867

1♂, Nam Prom Dam, July 25, 1980, H. WATANABE leg. (H)

## Subfamily Philiinae

*Philus costatus* GAHAN, 1893

1♀, Wtaradit, April 7, 1961, PRAYOON leg. (Thai)

## Subfamily Cerambycinae

*Tetraommatus insignis* GAHAN, 1894

1 ex., Mangkon, Aug. 10, 1960, D. CHAIGLOM leg. (H)

*Comusia thailandica* sp. nov.

Light reddish testaceous; apices of mandibles, eyes, second and the succeeding antennal joints, bases and apical tips of femora and all tibiae and tarsi black. Body furnished with certain long hairs on mouth parts, antennae, apex of elytra and tibiae and tarsi, and generally covered with very fine yellow tomentose.

Head inclined and abbreviated in front, parallel-sided behind eyes; eyes large, coarsely faceted, emarginate inside, upper lobe transverse and narrow, lower lobe round, longer than gena below it. Antennae distinctly longer than body, scape short, thickened to apex, with a narrow complete cicatrix at apex; relative length of each joint as follows:— 6.5: 1.6: 4.8: 4.5: 9: 9: 9: 10: 8: 9: 9; first to sixth thickened, seventh to eleventh slender. Prothorax broader than long (ratio, 5: 4), a little broader at apex than at base (ratio, 4: 3.8), with a dull but large lateral tubercles behind middle, sinuately constricted at the parts more than one-fourth the pronotal length behind apex and before base; disc uneven, roundly concave at centre, with a

pair of longitudinal depressions at sides; very finely densely punctulate. Scutellum triangular. Elytra broader than prothorax at base, 2.58 times as long as the basal width, almost parallel-sided for basal half and then shallowly narrowed posteriorly to separately rounded apices; disc coarsely densely punctured. Legs of moderate length, femora pedunculate and clavate in apical halves, tibiae rather short, carinate, and tarsi short, tarsal claws divaricate.

Length 16 mm, width 4 mm.

Holotype: male, Salan Luang, Thailand, April 24, 1961, P. BOONKONG leg. (H)

*Distribution.* Thailand.

This new species is somewhat allied to *C. bicoloricornis* (PIC, 1926) from northern Vietnam and Laos; however, it differs from the latter in having quite different coloration of legs, instead of pale except for hind femoral club, and also differs from *C. apicalis* (PIC, 1922) from northern Vietnam and Laos in having unicolorous elytra instead of apically black, pale testaceous elytra, notwithstanding similar coloration of legs.

*Xystrocera globosa* (OLIVIER, 1795)

1♂, Nam Prom Dam, August 22, 1980, H. WATANABE leg. (H)

*\*Noserius tibialis* PASCOE, 1867

1♂, Loey, Feb. 7, 1965, P. BOONKONG leg. (H)

*\*Trirachys bilobulatus* GRESSITT et RONDON, 1970

1♀, Lampang, April 2, 1967, D. CHAIGLOM leg.; 1♀, Phukrading, Dec. 13, 1965, BOONCHAI leg. (H)

*Plocaederus obesus* GAHAN, 1890

1♀, Thailand, no further data, H. WATANABE leg. (H)

*Dialeges pauper* PASCOE, 1856

1♀, Fang, June 13, 1965, S. ASAHINA leg. (JUS)

*Pachylocerus sulcatus* BRONGNIART, 1892

1♀, Suraburi, July 11, 1959, W. H. leg. (JUS)

*\*Erythrurus laticornis* FAIRMAIRE, 1895

1♂, Chiang Mai, June 5, 1980, H. SUGIYAMA leg. (H)

*Pachyteria dimidiata* WESTWOOD, 1848

2♂♂, 1♀, Chiang Mai, August 7, 1976, K. MATSUDA leg. (M)

*\*Polyzonus obtusus* BATES, 1879

3 exs., Doi Suthep, August, 10, 1976, T. OKANO leg.; 2 exs., Doi Suthep, August

5, 1976, K. MATSUDA leg. (M)

*Polyzonus siamensis* PODANY, 1979

1 ♀, Chiang Doi, August 10, 1976, T. OKANO leg. (M)

\**Polyzonus saigonensis* BATES, 1879

1 ♂, Chiang Dao, July 14, 1960, D. CHAIGLOM leg. (H)

\**Polyzonus tetraspilotus* HOPE, 1835

1 ex., Kon Kaen, August 12, 1965, SIMCHAI leg. (H)

\**Anubis cyaneus* PIC, 1924

1 ♂, Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

*Anubis fimbriatus* BATES, 1879

1 ♂, Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

*Anubis inermis* WHITE, 1853

1 ex., Kon Kaen, August 15, 1965, IKEM leg. (H)

*Anubis bipustulatus* THOMSON, 1865

1 ♂, Fang, July 3, 1960, D. CHAIGLOM leg.; 1 ♂, Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

\**Rosalia (Eurybatus) decempunctata* (WESTWOOD, 1848)

1 ♀, Doi Suthep, April 3, 1978, K. MIWA leg. (M)

*Xylotrechus buqueti* (CASTELNAU LAPORTE et GORY, 1841)

1 ex., Doi Suthep, August 11, 1976, K. MATSUDA leg. (M)

\**Bicon ruficeps* PIC, 1922

1 ex., Khao Yai, May 4, 1964, D. CHAIGLOM leg.; 1 ex., Duktongchai, June 27, 1964, P. BOONKONG leg. (Thai & H)

\**Artimpaza laosensis* GRESSITT et RONDON, 1970

1 ex., Chiang Mai, June 7-8, 1980, H. SUGIYAMA leg. (H)

\**Artimpaza argenteomaculata* PIC, 1922

1 ex., Chiang Mai, June 5, 1980, H. SUGIYAMA leg. (H); 1 ex., Mae-Sa Waterfall, June 16, 1965, S. ASAHINA leg. (JUS)

\**Artimpaza curtelineata* (PIC, 1922)

1 ex., Fang, June 14, 1965, S. ASAHINA leg. (JUS)

*Nida flavovittata* PASCOE, 1867

1 ex., Mae Klang Waterfall, June 11, 1965, S. ASAHINA leg. (JUS)

## Subfamily Lamiinae

*Cacia (Ipocregyes) cephaloides* BREUNING, 1968

1 ex., Mae Klang Waterfall, June 11, 1965, S. ASAHINA leg. (JUS)

*Apomecyna leucosticta* (HOPE, 1831)

1 ♀, Doi Suthep, Aug. 8, 1976, K. MATSUDA leg. (M)

*Apomecyna histrio* (FABRICIUS, 1792)

4 exs., Doi Suthep, August 7, 1976, K. MATSUDA leg. (M)

*Apomecyna cretacea* (HOPE, 1831)

1 ♀, Khao Yai, June 5-6, 1965, S. ASAHINA leg. (JUS)

*Apomecyna saltator* (FABRICIUS, 1781)

3 exs., Doi Suthep, August 8, 1976, K. MATSUDA leg.; 2 exs., Bang Bo, August 15, 1976, K. MATSUDA leg. (M)

*Apomecyna saltator niveosparsa* FAIRMAIRE, 1895

1 ex., Fang, June 13-16, 1965, K. MORIMOTO leg. (JUS); 3 exs., Bang Bo, August 15, 1976, K. MATSUDA leg. (M)

*Eucomatocera vittata* WHITE, 1846

1 ex., Mae Klang, June 11, 1965, K. MORIMOTO leg. (JUS)

*Tetraglenes hirticornis* (FABRICIUS, 1798)

1 ex., Mae Klang, June 11, 1965, K. MATSUDA leg.; 1 ex., Haadyai, June 28, 1965, K. MATSUDA leg. (M); 1 ex., Fang, June 13-16, 1965, K. MORIMOTO leg. (JUS)

*\*Pterolophia (Hylobrotus) bisulcaticollis* PIC, 1926

1 ex., Thailand, reared from seedling of cocconut, checked by plant protection officer, A. NISHITAI of Kobe, November 26, 1984. (H)

*Pterolophia (Hylobrotus) lateralis* GAHAN, 1894

2 exs., Doi Suthep, August 7-8, 1976, K. MATSUDA leg. (M); 1 ex., Nam Prom Dam, July 25, 1980, H. WATANABE leg. (H)

*\*Phrissomorimus brunneus* BREUNING et ITZINGER, 1943

1 ex., Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

*Aristobia approximinator* (THOMSON, 1865)

1 ♀, Phugrdung, Oct. 29, 1963, LEOY leg. (Thai)

*Aristobia horridula* (HOPE, 1831)

1 ex., Doi Suthep, August 4, 1976, K. MATSUDA leg. (M)



*\*Celosterna pallinosa sulphurea* HELLER, 1907

1♂, Khon Kaen University, Khon Kaen, August 13, 1980, H. WATANABE leg. (H); 1♂, Khon Kaen, July 5, 1965, SINCHAI leg. (Thai)

*\*Arctolamia grisea* PIC, 1927

1♂, Doi Suthep, July 7, 1960, D. CHAIGLOM leg. (H)

*\*Cremnosterna plagiata* (WHITE, 1858)

1♀, Khon Kaen, August 13, 1965, SINCHAI leg.; 1♂, Chiang Mai, June 2, 1980, H. SUGIYAMA leg. (H)

*Paraleprodera triangularis* (THOMSON, 1864)

1 ex., Doi Suthep, June 13, 1965.

*\*Epepeotes luscus* FABRICIUS, f. *densemaculatus* BREUNING, 1943

1♂, 1♀, Mae-Sa Waterfall, June 16, 1965, S. ASAHINA leg. (JUS)

*\*Epepeotes uncinatus salvazai* PIC, 1925

1♂, Mae-Sa Waterfall, June 16, 1965, S. ASAHINA leg. (JUS); 1♀, Chiang Mai, May 1980. (H)

*Macrochenes isabellianus* AURIVILLIUS, 1920

1♂, 1♀, Doi Suthep, August 7, 1976, K. MATSUDA leg. (M); 1♂, Nam Prom Dam, Aug. 21, 1980, H. WATANABE leg. (H); 1♀, Mae Klang Waterfall, June 11, 1965, S. ASAHINA leg. (JUS)

*Pharsalia (Cycos) subgemmata* (THOMSON, 1857)

1♂, Doi Suthep, August 11, 1976, K. MATSUDA leg. (M); 1♀, Fang, June 13-15, 1965, K. MORIMOTO leg. (JUS)

*Anoplophora (Cyriocrates) elegans* (GAHAN, 1888)

1♀, Doi Suthep, August 16, 1976, T. OKANO leg. (M)

*Stratiocerus princeps* LACORDAIRE, 1869

1♂, 1♀, Nam Prom Dam, Dec. 24, 1979 & Jan. 14, 1980, H. WATANABE leg. (H)

*Gerania bosci* (FABRICIUS, 1801)

4 exs., Chiang Mai, August 16, 1976, T. OKANO leg. (M)

*\*Paragnia fulvomaculata* GAHAN, 1893

1♂, Doi Suthep, June 8, 1965, S. ASAHINA leg. (JUS)

*Anamera densemaculata* BREUNING, 1940

1♂, Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

*Blepephaeus luteofasciatus* (Gressitt, 1941)

1♂, Chiang Dao, June 15, 1965, K. MORIMOTO leg. (JUS)

*\*Monochamus basifossulatus* Breuning, 1938

1♂, 1♀, Khao Chong, June 26, 1965, S. ASAHINA leg. (JUS); 1♂, Chiang Dao, June 4, 1980, H. SUGIYAMA leg. (H)

*\*Acalolepta punctifrons* (Gahan, 1895)

1♀, Fang, June 13, 1965, S. ASAHINA leg.; 1♂, Mae-Sa Waterfall, June 16, 1965, S. ASAHINA leg. (JUS)

*Batocera rufomaculata* (DeGeer, 1775)

1♂, Thonburi, Jan. 10, 1963 (Thai); 1♂, Prajob, Sept. 15, 1963, VASNA leg.

*Batocera rubus* (Linne, 1758)

1♀, Patalung, Aug. 1962, D. CHAIGLOM leg. (Thai); 1♂, Udon, April 29, 1964, P. BOONKONG leg.

*Batocera roylei* (Hope, 1833)

1♀, Tap Berk, June 7, 1969, D. CHAIGLOM leg. (Thai)

*Gnoma longicollis* (Fabricius, 1787)

1♂, Khao Chong, June 24–27, 1965, K. MORIMOTO leg. (JUS)

*Parorsidis nigrosparsa* (Pic, 1929)

1♂, Muak Lek, June 5, 1965, K. MORIMOTO leg. (JUS)

*Olenecamptus bilobus laosus* Dillon et Dillon, 1948

3♂♂, Chiang Mai, August 8, 1976, K. MATSUDA leg. (M)

*Olenecamptus fouqueti* Pic, 1932

1♂, Nam Prom Dam, Aug. 26, 1980, H. WATANABE leg. (H)

*Olenecamptus siamensis* Breuning, 1936

1♀, Chulalongkon University, Bangkok, Oct. 1, 1963, PRAKONG leg. (H)

*Moechotypa suffusa* (Pascoe, 1862)

1♀, Phupar, July 12, 1965. (Thai)

*Moechotypa delicatula* (White, 1858)

1♀, Khonkaen, July 31, 1965, IHEM leg. (Thai)

*Diastocera wallichi* (Hope, 1831)

1♀, Nam Prom Dam, July 18, 1980, H. WATANABE leg. (H)

*\*Threnetica lacrymans* (THOMSON, 1864)

1 ♂, Chiang Mai, June 10, 1967, P. BOONKONG leg. (Thai)

*\*Exocentrus (Pseudocentrus) indicola* FISHER, 1931

1 ♂, Chiang Dao, June 4, 1980, H. SUGIYAMA leg. (H)

*Stibara tricolor* (FABRICIUS, 1792)

1 ex., Chiang Dao, June 4, 1980, H. SUGIYAMA leg. (H)

*\*Glenea posticata* GAHAN, 1894

1 ex., Doi Suthep, August 11, 1976, K. MATSUDA leg. (M)

*\*Glenea viridescens* PIC, 1927

1 ex., Doi Suthep, June 1, 1980, T. SUGIYAMA leg. (H)

*\*Glenea diverselineata intermedia* BREUNING, 1968

1 ♂, Doi Suthep, April 1, 1980, T. SUGIYAMA leg. (H)

*Glenea siamensis* GAHAN, 1897

1 ex., Doi Suthep, August 9, 1976, K. MATSUDA leg. (M)

*\*Glenea indiana* Thomson, 1857, f. *albodivisa* PIC, 1946

1 ex., Chiang Mai, April 1, 1980, H. SUGIYAMA leg. (H)

*Glenea (Stirolene) cantor* (FABRICIUS, 1782)

1 ex., Doi Suthep, August 16, 1976, T. OKANO leg. (M)

### Selected Bibliography

- BRONGNIART, C., 1892. Coléoptères—Longicornes. *Nouv. Arch. Mus. Hist. nat., Paris*, (3), **3**: 239–253, pl. 10.
- GAHAN, C. J., 1888 a. On longicorn Coleoptera of the family Lamiidae. *Ann. Mag. nat. Hist.*, (6), **1**: 270–281, pl. 16.
- 1888 b. On new lamiide Coleoptera belonging to the *Monohammus*-group. *Ibid.*, (6), **2**: 389–401.
- 1890. Notes on longicorn Coleoptera of the group Cerambycinae, with descriptions of new genera and species. *Ibid.*, (6), **6**: 247–261.
- 1891. Ditto. *Ibid.*, (6), **9**: 19–34.
- 1897. Notes on the longicorn genus *Glenea*, NEWM., with descriptions of new species. *Ibid.*, (6), **19**: 473–493.
- 1900. On some longicorn Coleoptera from the Island of Hainan. *Ibid.*, (7), **5**: 347–357.
- 1901. A revision of *Astathes*, NEWM., and allied genera of longicorn Coleoptera. *Trans. ent. Soc. London*, **1901**: 37–74, pl. 4.
- 1906. Cerambycidae. Vol. I. *Fauna of British India incl. Ceylon and Burma*. xviii+329 pp. Taylor & Francis, London.
- GRESSION, J. L., 1935. New longicorn beetles from the Philippines, Borneo and Siam (Col., Cer.).

- Philip. J. Sci.*, **58**: 267-280.
- GRESSITT, J. L., 1941. A collection of longicorn beetles from Thai (Col., Cer.). *Philip. J. Sci.*, **74**: 331-347, 1 pl.
- , J. A. RONDON & S. V. BREUNING, 1970. Cerambycids of Laos. *Pacif. Ins. Mon.*, **24**: 650 pp.
- HAYASHI, M., 1967. Some longicorn beetles from Thailand, chiefly collected by the Thai-Japanese Forestry Expedition 1963 (Col., Cer.). *Bull. Osaka Jonan Women's Jr. Coll.*, **2**: 1-16, pl. 1.
- , 1974. A new species of *Leptepania* HELLER from Thailand (Cer., Col.). *Ent. Rev. Japan*, **26**: 27.
- , 1984. Study of Asian Cerambycidae (Col.) VII. *Bull. Osaka Jonan Women's Jr. Coll.*, **17/18**: 17-38, pls. 1-2.
- PASCOE, F. P., 1862. Notices of new or little-known genera and species of Coleoptera Part III. *J. Ent.*, **1**: 319-370, pls. 16-17.
- THOMSON, J., 1864. Diagnoses (Avril, 1865). *Systema Cerambycidarum*. 578 pp.

Two New Cerambycid Beetles from Kyushu  
— Studies on Cerambycidae (Coleoptera) of Japan (5) —

by

**Hiroshi MAKIHARA**

Forestry and Forest Products Research Institute,  
P.O. Box 16, Tsukuba Norin Kenkyu Danchi-nai, Ibaraki 305, Japan

**Abstract** In the present paper, two new species, *Tengius kurosawai* and *Chlorophorus nodai*, from Kyushu, Japan, are described. The former is related to *T. ohkuboi* MATSUSHITA from Shikoku and Honshu, and the latter is very similar to *C. amami* HAYASHI from Amami-Oshima Is.

Subfamily Disteniinae

Tribe Disteniini

*Tengius kurosawai* sp. nov.

[Japanese name: Kyushu-ohkubo-kamikiri]

(Figs. 1 B, B', 2 B, 3 B, B', B'', 4 B, B', B'')

*Tengius ohkuboi*: KUSAMA *et al.*, 1984, Longicorn-Beetles of Japan in Col., 152, pl. 5, 30a.

Body black to blackish brown; head and pronotum black; mouth parts, 1st segments of antennae and femora blackish brown to dark reddish brown; 2nd to 11th segments of antennae, scutellum, marking on the disc of elytra and legs (excluding femora) dark reddish brown to reddish brown.

Head minutely punctate; vertex and occiput with sparse prostrate and inclined short silver hairs; genae with sparse, inclined, short black hairs; labrum and mouth parts with sparse, inclined, somewhat longer brown hairs. Apical segments of maxillary palpi somewhat smaller and campanulate, their apical and median parts of the same width. Antennae long, relative length to body 1.55 (in male) or 1.40 (in female); relative length of each segment 11.1: 1.2: 12.4: 11.0: 11.4: 11.8: 11.2: 9.7: 7.5: 6.1: 6.7 (in male), or 12.2: 1.2: 13.4: 11.6: 11.4: 11.6: 11.0: 9.5: 7.3: 5.5: 5.5 (in female); each segment with sparse prostrate and inclined short yellow hairs, which are denser towards apical segments; apices of 3rd to 9th segments with prostrate long black fasciculi on ventral side.

Pronotum 1.05 (in male) or 1.20 (in female) times as wide as long, with a pair of side projections at middle and a pair of dull admedian tubercles at basal 1/3; disc deeply punctate, with sparse prostrate short brown hairs; central portion of disc flat (in male) or somewhat convex (in female).

Scutellum rotundate semicircular, punctured, with dense prostrate short yellow hairs.

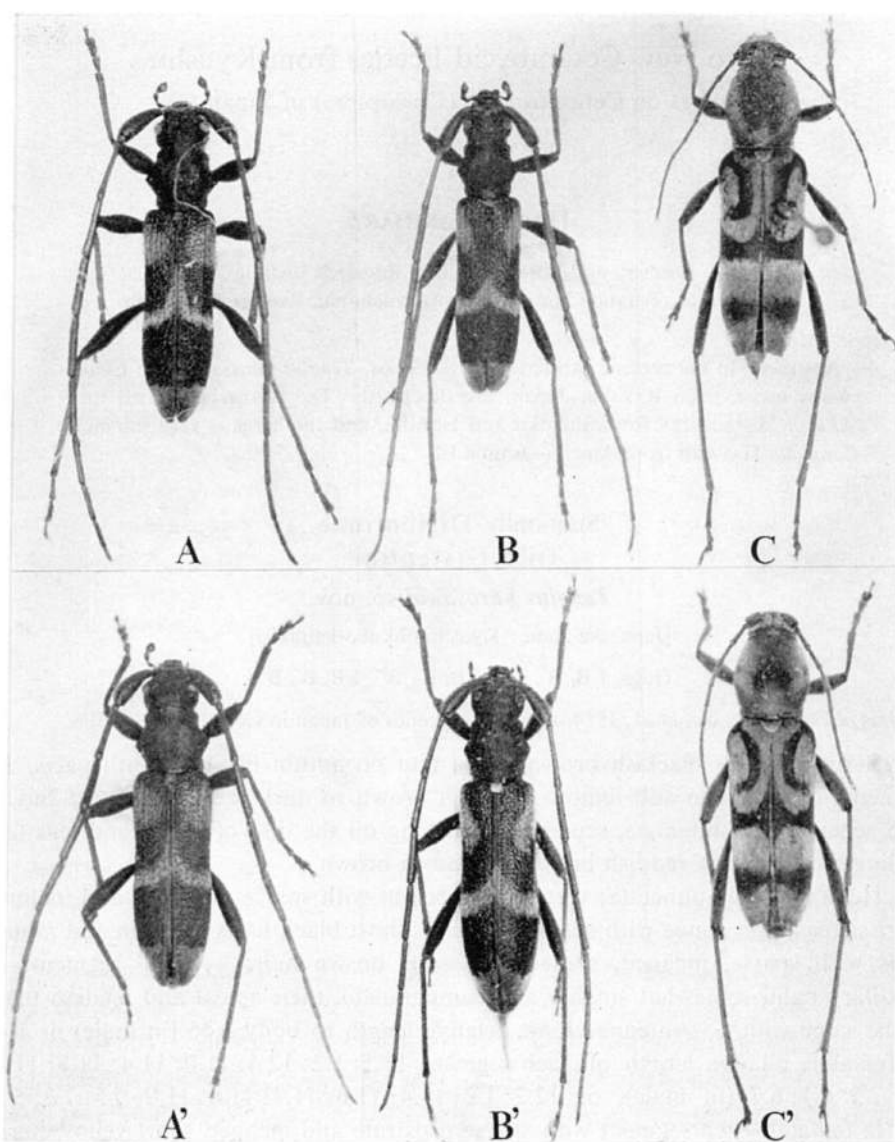


Fig. 1. *Tengius* spp. and *Chlorophorus* spp. — A, A': *T. ohkuboi* MATSUSHITA. B, B': *T. kurosawai* sp. nov. C: *C. amami* HAYASHI. C': *C. nodai* sp. nov. A, B: male. A', B': female.

Elytra slender, about 2.9 (in male) or 2.8 (in female) times as long as wide, punctured, punctures sparser towards apices, with dense inclined short hairs, which are denser towards apices (excluding three pairs of markings). Disc with three pairs of markings; basal ones wide, extending obliquely backwards from humeri to 4th intervals at basal  $1/4$ , formed by dense prostrate short whitish yellow pubes-

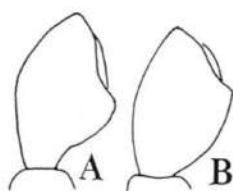


Fig. 2. Apical segment of maxillary palpus of *Tengius* spp. — A: *T. ohkuboi*. B: *T. kurosawai* sp. nov.

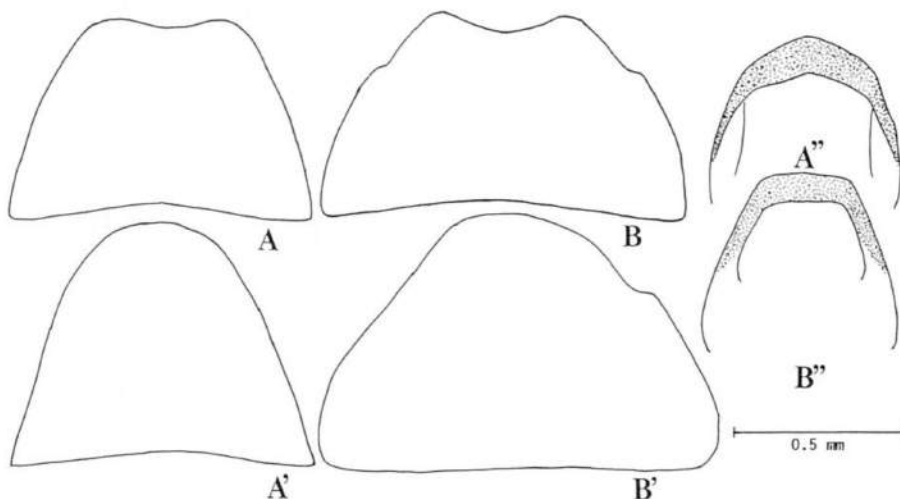


Fig. 3. Seventh (A, A', B, B') and eighth (A'', B'') abdominal sternites of *Tengius* spp. — A, A', A'': *T. ohkuboi*. B, B', B'': *T. kurosawai* sp. nov. A, A'', B: male. A', B', B'': female.

cence; middle ones somewhat narrower, weakly curved anteriorly towards middle of suture from apical 2/5 of margins, formed by somewhat denser, prostrate, short yellow pubescence; apical ones wide, with somewhat denser, suberect, rather long brown hairs.

Legs long; femora with sparse prostrate short brown setae; tibiae with inclined short yellowish brown hairs, which are denser and longer towards apices, and with sparse, inclined, somewhat longer golden yellow setae on dorsal sides near apices; tarsi with sparse, inclined, somewhat longer whitish yellow hairs on dorsal sides.

Ventral side with sparse, inclined, somewhat shorter whitish yellow hairs (excluding mesepimera, mesepisterna and metepimera); mesepimera, mesepisterna and metepimera with somewhat denser, inclined, short yellow hairs; thoracic sternites finely punctured; abdominal sternites sparsely punctured; 7th abdominal sternite wide, deeply and widely concave (in male) or convex (in female) at apical margin; 8th abdominal sternite truncated at apex in male.

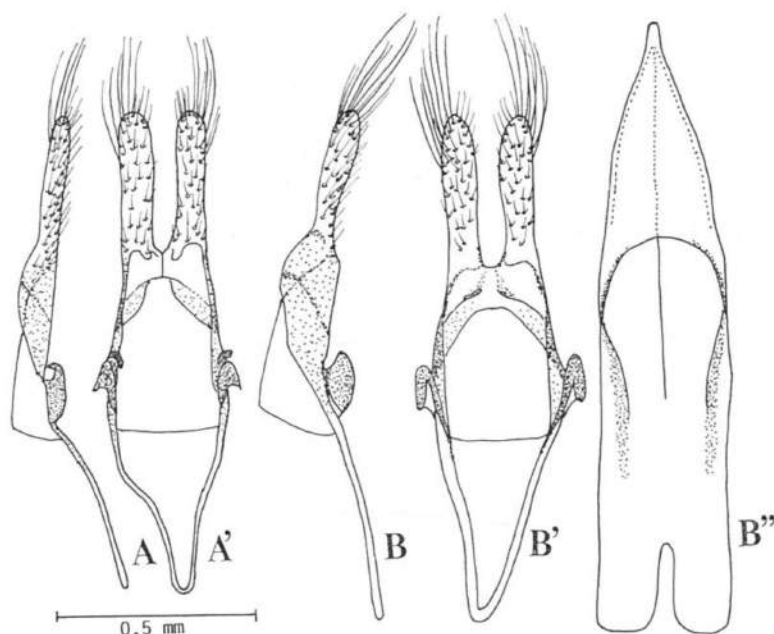


Fig. 4. Male genitalia of *Tengius* spp. — A, A': *T. ohkuboi*. B, B', B'': *T. kurosawai* sp. nov. A, A', B, B': tegmen. B'': penis. A, B: lateral view. A', B', B'': ventral view.

Male genitalia slender, about 1.2 mm in length; penis somewhat wider and thinner; tegmen strongly geniculate, with a pair of hooks like spatula, strongly sclerotized at the widest portion, with long parameres, short roof and membranous basal piece.

Length: 7.5 mm (male) or 7.8–9.5 mm (female).

*Distribution.* Kyushu, Japan.

*Type material.* Holotype, ♂ (Type No. 2550, Kyushu Univ.), Mt. Kunimidake, Kumamoto Pref., Kyushu, 26. vi. 1971, S. NAOMI leg. Paratypes: 1 ♀, Mt. Takakuma, Kagoshima Pref., Kyushu, 13–15. vii. 1960, A. NAGATOMI leg.; 1 ♂, Ōnaminoike, Mts. Kirishima, Kagoshima Pref., Kyushu, 7. vii. 1963, A. TANAKA leg.; 1 ♀, Mt. Ōkue, Ōita Pref., Kyushu, 8. vii. 1972, S. NAOMI leg.; 1 ♀, Shiiya Pass, Kumamoto Pref., Kyushu, 1. vii. 1973, S. NAOMI leg.; 1 ♂ 2 ♀, same locality and collector, 27. vii. 1973; 1 ♀, Mt. Sobo, Ōita Pref., Kyushu, 29. vii. 1973, S. NAOMI leg.; 1 ♂ 1 ♀, Mt. Shiraiwa, Miyazaki Pref., Kyushu, 29. vi. 1975, M. AMANO leg.; 1 ♂, Shiiya Pass, Kumamoto Pref., Kyushu, 22. vii. 1976, S. NAOMI leg.

*Type depository.* The holotype is preserved in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University. One paratype is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo. The remaining paratypes are preserved in the author's collection.



*Remarks.* This new species is related to *T. ohkuboi* MATSUSHITA from Shikoku and Honshu, but differs from it in the following characters.

*Tengius ohkuboi* (Fig. 1 A, A'): Apical segment of maxillary palpi larger, dilated apically and constricted before the base (Fig. 2 A); pronotum wider, 1.15 times as wide as long in male; central part of pronotum somewhat convex in male; basal markings of elytra each semicircular; basal and middle markings of elytra with dense pubescence; apical markings of elytra with short hairs; elytra wider, about 2.8 (in male) or 2.6 (in female) times as long as wide; basal part of elytra somewhat convex; elytral punctures smaller and shallower; 7th abdominal sternite somewhat narrower (Fig. 3 A, A'); apical margin of 8th abdominal sternite rounded (Fig. 3 A''); tegmen of male genitalia thinner in lateral view (Fig. 4 A), with a pair of hooks twisted internally at the widest portion (Fig. 4 A, A').

*Tengius kurosawai* sp. nov. (Fig. 1 B, B'): Apical segment of maxillary palpi somewhat smaller, apical part as wide as middle (Fig. 2 B); pronotum somewhat narrower, 1.05 times as wide as long in male; central part of pronotum flat in male; basal markings of elytra straightly oblique; basal and middle markings of elytra with thinner pubescence; apical markings of elytra with somewhat longer hairs; elytra slenderer, about 2.9 (in male) or 2.8 (in female) times as long as wide; basal part of elytra flat; elytral punctures larger and deeper; 7th abdominal sternite wider (Fig. 3 B, B'); apical margin of 8th abdominal sternite truncated (Fig. 3 B''); tegmen of male genitalia thicker in lateral view (Fig. 4 B), with a pair of hooks like spatula at the widest portion (Fig. 4 B, B').

#### Subfamily Cerambycinae

##### Tribe Clytini

#### *Chlorophorus nodai* sp. nov.

[Japanese name: Meshima-kiro-tora-kamikiri]

(Fig. 1 C')

*Chlorophorus yayeyamensis*: EJIMA & NODA, 1973, Fauna & Flora Danjo Isls., 123, fig. 9.

*Female.* Body stout, reddish brown.

Head finely punctured, with dense, prostrate, short brownish yellow pubescence, with a median furrow from frons to occiput. Antennae short, relative length to body 0.63; relative length of each segment 12.4: 4.0: 10.8: 11.1: 11.8: 9.6: 9.9: 8.0: 7.4: 6.5: 8.4; 1st to 11th segments with dense, prostrate, short, dirty yellow pubescence, which is denser and shorter towards apical segment; 3rd to 11th segments with somewhat sparser, erect or suberect, short whitish yellow hairs, and apex of each segment with sparse, inclined, long yellowish brown hairs, which are sparser and shorter towards apical segment on ventral side.

Pronotum widest at basal 9/20; disc with dense, prostrate, short brownish yellow hairs, which are denser from interior to exterior side and with sparse erect or suberect long yellow hairs.

Scutellum semicircular, finely punctured, with dense, prostrate, short brownish yellow hairs, which are denser towards apex.

Elytra with dense, prostrate and imbricate, somewhat shorter brownish yellow hairs excluding three pairs of markings formed by dense prostrate short black hairs; basal black marking lunate from humeri to near margin at basal 1/3; median band strongly protruded both anteriorly and posteriorly at suture, and again strongly protruded anteriorly and weakly so posteriorly at sides; apical marking transverse triangular on apical 1/4; apices truncated, with sharp marginal small projections.

Legs short; fore legs with dense, inclined, somewhat longer brownish yellow hairs; mid and hind legs with dense, prostrate or inclined, short pale yellow hairs.

Ventral side with dense, prostrate, short pale brownish yellow pubescence, especially denser on mes- and metepisterna.

Length: 12.8 mm.

*Male.* Unknown.

*Distribution.* Meshima Is., Danjo Islands of Nagasaki Pref., Kyushu, Japan.

*Type material.* Holotype, ♀ (Type No. 2551, Kyushu Univ.), Meshima Is., Danjo Isls., Nagasaki Pref., Kyushu, 8. viii. 1972, M. NODA leg.

*Type depository.* The holotype is preserved in the collection of the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

*Remarks.* This new species is similar to *C. amami* HAYASHI from Amami-Ōshima Is., but differs from it in the following characters.

*Chlorophorus amami:* Dorsal side of body with pale yellow pubescence and ventral side with greenish pale yellow pubescence; median furrow on head weaker; pronotum widest at the middle; median black band on elytra not protruded posteriorly at suture.

*Chlorophorus nodai* sp. nov.: Dorsal side of body with brownish yellow pubescence and ventral side with pale yellow pubescence; median furrow on head well developed; pronotum widest at basal 9/20; median black band on elytra strongly protruded posteriorly at suture.

#### Acknowledgements

I wish to express my sincere gratitude to Dr. Y. KUROSAWA for his continuous guidance. My thanks are due to Dr. S. NAOMI of Kyushu University, Dr. A. NAGATOMI of Kagoshima University and Mr. M. NODA of Nagasaki City for the donation or the loan of the valuable specimens.

#### References

- EJIMA, S., & M. NODA, 1973. Beetles from Danjo Isls. *Fauna & Flora of Danjo Isls.*, 121–123. (In Japanese.)  
HAYASHI, M., 1968. Studies on Cerambycidae from Japan and its adjacent regions (Col.), XV. *Ent. Rev. Japan, Osaka*, 20: 20–28.  
——— & K. KOJIMA, 1956. On *Tengius ohkuboi* MATSUSHITA (Col.; Ceramb.). *Ibid.*, 7: 21–22.

(In Japanese with English summary.)

KUSAMA, K., *et al.*, 1984. The Longicorn-Beetles of Japan in Color. 565 pp., 96 pls. Kodansha, Tokyo. (In Japanese.)

MATSUSHITA, M., 1938. Neue und wenig bekannte Bockkäfer aus Shikoku. *Ins. Matsum.*, 12: 99-106.

Two New Lepturine Beetles of the Tribe Xylosteini  
(Coleoptera, Cerambycidae) from the Darjeeling  
District and the Malay Peninsula

by

Nobuo OHBAYASHI

Miura Branch, Kanagawa Horticultural Experiment Station,  
3002 Shimomiyada, Hasse-machi, Miura City, Kanagawa 238-03, Japan

and

Tôru SHIMOMURA

1-17, Ohi 3-chome, Shinagawa-ku, Tokyo 140, Japan

**Abstract** Two new lepturine cerambycids of the tribe Xylosteini are described under the names of *Notorhabdium immaculatum* and *Palaeoxylosteus kurosawai*, from the Cameron Highlands in the Malay Peninsula and Tonglu in the Darjeeling District, respectively. The new genera are closely related to *Leptorhabdium* and *Xylosteus*, respectively, and though the definition of the tribe is not yet clear, they are placed in the Xylosteini.

In the collection of insects made by the National Science Museum expedition to the Himalayas, a strange lepturine cerambycid was found. It was obtained on the Singalila Dara on the borders between East Nepal and the Darjeeling District of West Bengal, and seemed to have a close relationship with *Xylosteus*. On the other hand, one of us obtained a specimen of its relative from the Cameron Highlands in the Malay Peninsula. Though related, this species seemed to have a closer affinity to *Leptorhabdium* than to *Xylosteus*.

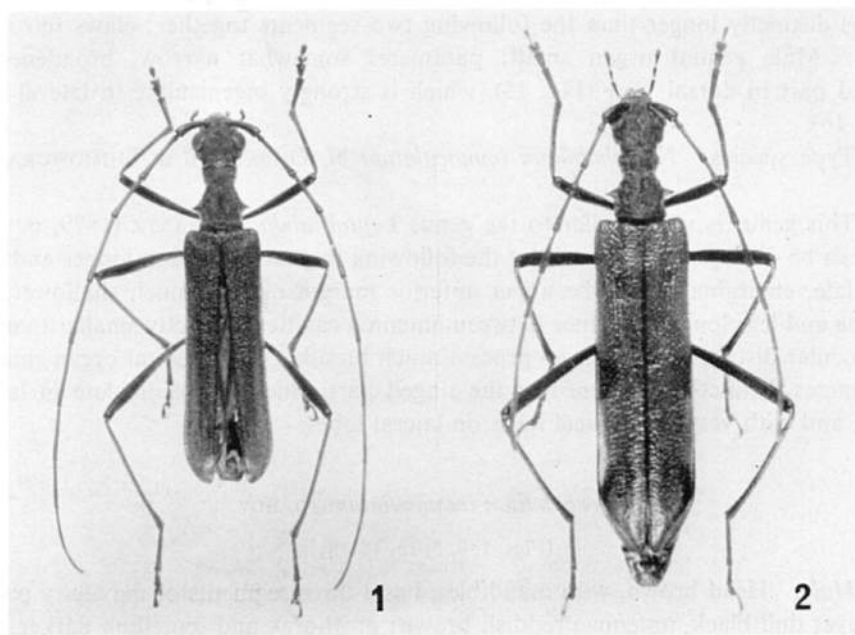
The two genera have been currently placed in the tribe Xylosteini. Each contains four described species mainly distributed in southeastern Europe but also in North America. We have seen all but one of these eight species, and have come to the conclusion that the two species under consideration are not only new to science but belong to two new genera of their own. Unfortunately, the definition of the tribe Xylosteini is not yet clear. It is said to be characterized by the possession of such primitive features as coarsely faceted eyes, abbreviated head, and so on, but these are not common in the genera usually placed in the tribe. However, the two new genera to be described in the present paper are no doubt close to the genus *Xylosteus*, the type of the tribe, and can safely be regarded as the members of the Xylosteini in a strict sense.

Before going into further details, we wish to express our hearty thanks to Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, under whose

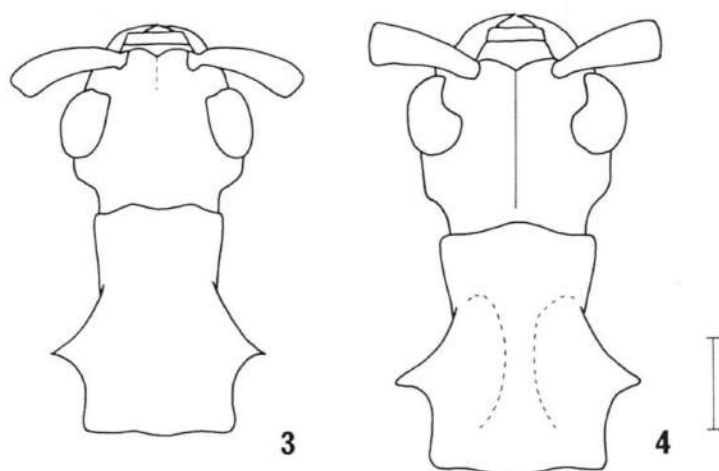
leadership the Himalayan expedition was carried out and who kindly read through the original manuscript of this paper. Deep gratitude is also expressed to Mr. Masaaki TOMOKUNI, a member of the expedition, and to Mr. Shinji NAGAI, who gave us the opportunity to study on the invaluable material used in preparing the present report.

*Notorhabdium* gen. nov.

Body slender and subparallel-sided. Head moderately and obliquely produced anteriad in lateral view, with short frons; tempora fairly long and subangulate (Fig. 3); vertex broad, distance between antennal cavities smaller than the interocular distance; terminal segment of maxillary palpus securiform (Fig. 5); eyes moderately coarsely faceted, very shallowly emarginate at the upper anterior margins; antennae thin, distinctly longer than body length in male, inserted on frons before the anterior margins of eyes, scape distinctly swollen towards apex, 3rd segment much longer than scape, 4th segment shorter than 3rd. Prothorax distinctly longer than the width across acute lateral tubercles, sides strongly constricted at anterior third and distinctly so before posterior margin, both anterior and posterior margins very narrowly bordered; prosternum narrowest at middle; mesosternal process gradually narrowed posteriorly and rounded apically; metasternal



Figs. 1-2. — 1. *Notorhabdium immaculatum* gen. et sp. nov., male, holotype. — 2. *Palaeoxylosteus kurosawai* gen. et sp. nov., female, holotype.



Figs. 3-4. Head and prothorax of *Notorhabdium* and *Palaeoxylosteus* in dorsal view. — 3, *N. immaculatum* sp. nov., male; 4, *P. kurosawai* sp. nov., female. Scale: 1.0 mm.

process broad and roundly truncate at its apex (Fig. 13), disc triangularly depressed and both apical corners raised. Elytra elongate, subparallel-sided; apices almost rounded. Legs very long and slender; tibial spurs terminal; first segment of hind tarsus distinctly longer than the following two segments together; claws retrose in male. Male genital organ small; parameres somewhat narrow, broadened at ringed part in dorsal view (Fig. 15), which is strongly bigeniculate in lateral view (Fig. 16).

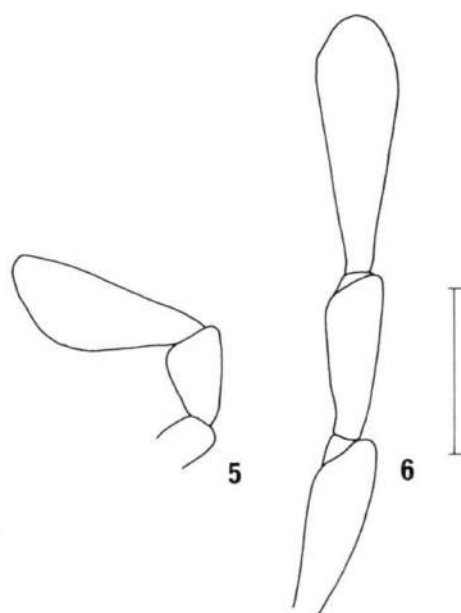
Type species. *Notorhabdium immaculatum* N. OHBAYASHI et SHIMOMURA, sp. nov.

This genus is very similar to the genus *Leptorhabdium* KRAATZ (1879, p. 118), but can be distinguished from it by the following respects: tempora longer and subangulate, emargination at the upper anterior margin of eyes much shallower, antennae and legs longer, distance between antennal cavities distinctly smaller than the interocular distance, metasternal process much broader, male genital organ smaller, parameres distinctly broadened at the ringed part which is bigeniculate in lateral view, and with very long apical hairs on lateral lobes.

*Notorhabdium immaculatum* sp. nov.

(Figs. 1, 3, 5, 13, 15-18)

*Male.* Head brown, with mandibles, basal three segments of maxillary palpus and eyes dull black, antennae reddish brown; prothorax and scutellum darker than the disc of head; elytra reddish brown; legs reddish brown, trochanters somewhat paler; underside of meso- and metathoraces dark red to dull black; abdominal

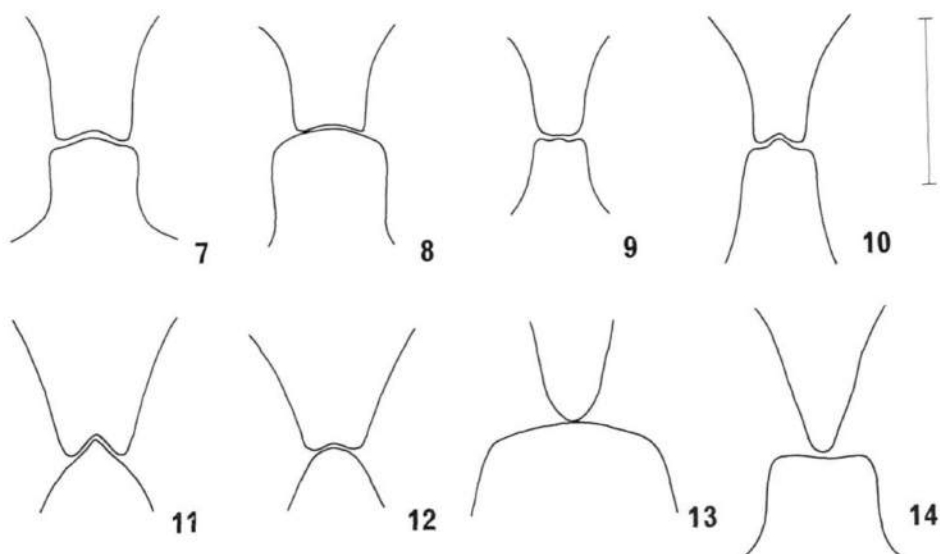


Figs. 5-6. Apical segments of maxillary palpus of *Notorhabdium* and *Palaeoxylosteus*. — 5, *N. immaculatum* sp. nov., male; 6, *P. kurosawai* sp. nov., female. Scale: 0.5 mm.

sternites paler than thoracic ones.

Head slightly narrower than prothorax measured across lateral tubercles (4.8: 5.0), tempora distinct, briefly subparallel behind eyes and then strongly constricted behind (Fig. 3); frons distinctly concave between antennal tubercles which are somewhat contiguous and weakly raised at inner ridges; vertex scarcely convex in frontal view, but faintly impressed with a median line, finely and densely punctured, with short recumbent pale yellow pubescence from vertex to frons; eyes large and moderately convex; terminal segment of maxillary palpus distinctly dilated apicad, rounded and obliquely truncate at apex (Fig. 5), segments of maxillary palpus in a ratio of 0.5: 1.8: 1.0: 2.2; antenna about a fourth longer than body length, scape slightly arcuate just before apex, apices of 3rd and 4th segments more apparently swollen than in the succeeding segments; relative lengths of antennal segments = 5.2: 1.0: 8.3: 7.3: 10.4: 9.8: 9.7: 8.2: 7.3: 6.2: 5.7.

Prothorax about 1.4 times as long as posterior width, distinctly longer than wide measured at the widest part across lateral tubercles (5.4: 5.0), which are conical and situated at basal third; no discal prominence; anterior margin trisinate in dorsal view; anterior margin / width across lateral tubercles / posterior margin = 3.2: 5.0: 3.8; surface finely and densely punctured, with short recumbent pale yellow pubescence; prosternum transversely wrinkled in apical half, basal half more or less rugoso-punctate; procoxal cavities slightly open behind; prosternal process narrow and distinctly broadened apically, weakly depressed longitudinally, truncate at



Figs. 7-14. Meso- and metasternal processes of *Leptorhabdium* spp., *Xylosteus* spp., *Noto-rhabdium immaculatum* and *Palaeoxylosteus kurosawai*. — 7, *L. nitidum* HOLZSCHUH; 8, *L. illyricum* (KRAATZ); 9, *L. caucasicum* (KRAATZ); 10, *L. pictum* (HALDEMAN); 11, *X. bartoni* OBENBERGER et MAŘAN; 12, *X. spinolea* FRIVALDSZKY; 13, *N. immaculatum* sp. nov.; 14, *P. kurosawai* sp. nov. Scale: 0.5 mm.

apex; scutellum nearly triangular though rounded apically, surface finely and densely punctured, with recumbent pale yellow pubescence.

Elytra about 3.25 times as long as humeral width, nearly parallel-sided, very slightly narrowed from shoulders to median portion, apices widely rounded with sutural angles subangulate; surface with short recumbent pale yellow pubescence, indistinctly striate and somewhat regularly punctured in rows in basal half, irregularly punctured in apical half, the punctures becoming shallower and finer posteriorly and obsolete near apex.

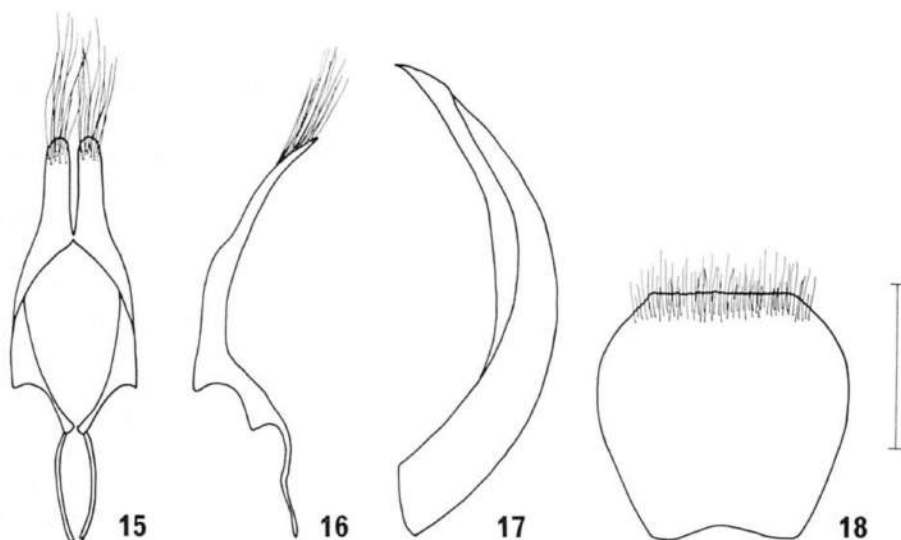
Legs with fine pale yellow pubescence; basal three segments of metatarsus in a ratio of 7.5: 2.4: 1.2.

Ventral surface of meso- and metathoraces finely and densely punctured, with dense recumbent silky white pubescence. Abdominal sternites densely and very minutely punctured, with recumbent silky white pubescence, the pubescence distinctly shorter than those of thoraces; 5th sternite nearly truncate at apex; 8th tergite rotundate, truncate at anterior margin which is slightly serrulate (Fig. 18); male genitalia as shown in Figs. 15-17.

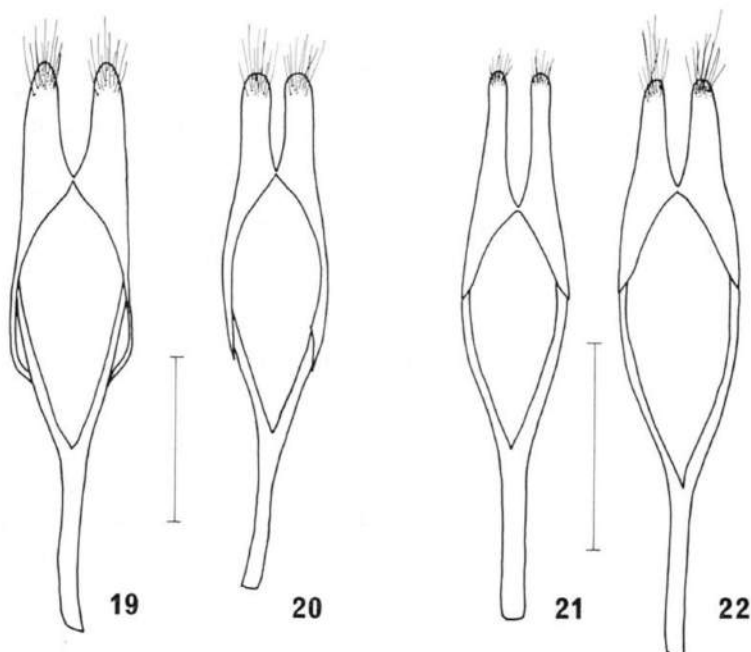
Length: 15.4 mm (measured from tips of mandibles to elytral apices); width: 2.9 mm (measured at humeral angles of elytra).

Holotype: Male, Mt. Jasar, Cameron Highlands, Pahang, Malaysia, III-1985, native collector (in coll. N. OHBAYASHI).





Figs. 15–18. Male genitalia and 8th abdominal tergite of *Notorhabdium immaculatum* sp. nov. — 15, Parameres in dorsal view; 16, parameres in lateral view; 17, median lobe in lateral view; 18, 8th abdominal tergite in dorsal view. Scale: 0.5 mm.



Figs. 19–22. Parameres of *Leptorhabdium* spp. and *Xylosteus* spp. in dorsal view. — 19, *L. nitidum* HOLZSCHUH; 20, *L. illyricum* (KRAATZ); 21, *X. spinolea* FRIVALDSZSKY; 22, *X. bartoni* OBNENBERGER et MAŘAN. Scales: 0.5 mm (Figs. 19 & 20), 1.0 mm (Figs. 21 & 22).

*Palaeoxylosteus* gen. nov.

Body slender and subparallel-sided. Head weakly and obliquely produced anteriorly in lateral view, about as long as width across eyes; frons short and subvertical; tempora long and subangulate (Fig. 4); vertex broad, distance between antennal cavities smaller than the interocular distance; maxillary palpus long, terminal segment clavate and almost rounded at apex (Fig. 6); eyes moderately coarsely faceted, weakly emarginate at upper anterior margins; antennae slender, inserted on frons on mid-eye level in lateral view, scape distinctly swollen towards apex, 3rd segment longer than scape, 4th segment much shorter than 3rd, and shorter than scape. Prothorax slightly shorter than width across acute lateral tubercles; sides strongly constricted at anterior third and distinctly so before posterior margin; posterior margin very narrowly bordered but anterior margin hardly so; prosternum narrowest at middle, intercoxal cavities widely open behind; mesosternal process narrowed posteriorly and strongly concave; metasternal process not so broad but distinctly broader than mesosternal process, weakly depressed medially (Fig. 14). Elytra elongate and subparallel-sided; apices narrowly rounded. Hind wings normal, not rudimentary in female. Legs slender; tibial spurs terminal; first segment of hind tarsus distinctly longer than the following two segments together; claws normal in female.

Type species. *Palaeoxylosteus kurosawai* N. OHBAYASHI et SHIMOMURA, sp. nov.

This genus is more closely related to *Xylosteus* FRIVALDSZKY (1838, p. 180) than to *Leptorhabdium* KRAATZ (1879, p. 118) by the following reasons: 4th antennal segment shorter than 1st, terminal segment of maxillary palpus clavate and not dilated apically in female, and anterior margin of pronotum not bordered. It is, however, distinguished from *Xylosteus* by the following respects: tempora much longer, maxillary palpus much longer, prothorax longer, mesosternal process narrower and strongly concave, and elytra longer.

*Palaeoxylosteus kurosawai* sp. nov.

(Figs. 2, 4, 6, 14)

*Female.* Body black; head black, with apices of each palpal segment brown; antenna with scape black, 2nd–11th segments dark brown, gradually becoming paler from 5th segment towards apex; prothorax and scutellum black; elytra dark brown, each with blackish markings as follows: a discal small obscure spot at basal fifth, a narrow longitudinal stripe along whole sutural margin, a lateral longitudinal stripe on pleural ridge from humerus to apical fifth, the stripe subtriangularly extending inwards at median portion and bearing an oblique marking branching off at apical fifth of pleural ridge; legs black with brown tarsi.

Head distinctly narrower than prothorax measured across lateral tubercles (4.2: 5.0), tempora long, nearly subparallel behind eyes and then abruptly narrowed

towards neck (Fig. 4), finely and densely punctured from frons to occiput, with sparse recumbent golden pubescence; frons sharply concave between antennal tubercles which are somewhat contiguous and distinctly raised at inner ridges; vertex nearly flat in frontal view, with a shallow median furrow from frons to occiput; segments of maxillary palpus in a ratio of 0.9: 3.0: 2.0: 3.2; antennae reaching apical fourth of elytra; relative lengths of antennal segments=4.7: 1.7: 7.9: 4.0: 7.3: 6.7: 7.0: 6.4: 5.7: 4.2: 3.5.

Prothorax about 1.25 times as long as posterior width, slightly narrower than width measured at the widest part across lateral tubercles (4.9: 5.0), which are conical and situated at basal three-sevenths; disc with a pair of obscure prominence beside shallow median longitudinal impression; anterior margin weakly produced in dorsal view; anterior margin / width across lateral tubercles / posterior margin=3.2: 5.0: 3.8; surface finely and densely punctured, with recumbent golden pubescence; prosternum microscopically shagreened and transversely wrinkled in apical half, basal half rugoso-punctate; prosternal process somewhat short, distinctly broadened apically, subtruncate at apex; scutellum subtriangular, broadly rounded at apex, minutely punctured, with short golden pubescence.

Elytra about 3.5 times as long as humeral width, about 2.5 times as long as the length from tips of mandibles to posterior margin of prothorax, nearly parallel-sided, gradually narrowed from apical fifth towards apices, sutural angles rounded; somewhat coarsely and sparsely punctured, with short golden pubescence; space between punctures weakly raised.

Legs with fine pale yellow pubescence; basal three segments of metatarsus in a ratio of 8.0: 3.0: 1.8.

Ventral surface of meso- and metathoraces microscopically shagreened, minutely and moderately punctured, with subrecumbent golden pubescence; abdominal sternites microscopically shagreened, extremely minutely punctured, with short recumbent golden pubescence; 5th sternite weakly emarginate at apex and slightly depressed before it.

Length: 20.3 mm (measured from tips of mandibles to elytral apices); width: 3.6 mm (measured at humeral angles of elytra).

Holotype: Female, Tonglu, 3,000 m alt., Darjeeling District, West Bengal, Northeast India, 3-XI-1981, M. TOMOKUNI lgt. (deposited in the National Science Museum (Nat. Hist.), Tokyo).

### References

- KRAATZ, G., 1870. Zur Abbildung eines deutschen Pärchens von *Xylosteus spinolae* FRIV. *Dtsch. ent. Z.*, 14: 413-415, pl. 3, fig. 6.  
— 1879. Ueber die mit der Bockkäfer-Gattung *Xylosteus* verwandten, zum Theil neuen Genera. *Ibid.*, 23: 118.  
LINSLEY, E. G., & J. A. CHEMSAK, 1972. Cerambycidae of North America. Part VI, No. 1. Tax-

onomy and classification of the subfamily Lepturinae. *Univ. Calif. Publ. Ent.*, (69): 1-138, pls. 1-2.

PLAVILSTSHIKOV, N. N., 1936. Cerambycidae (P.1.). *Faune de l'URSS, Insectes Coléoptères*, 21: 106-124, 492-498.

Lectotype Designation of Japanese *Pidonia* (Coleoptera,  
Cerambycidae) Preserved in the British Museum  
(Natural History)

by

Shusei SAITO

Japan Wildlife Research Center,  
Hongo 3-39-12, Tokyo 113, Japan

**Abstract** The type series of the five Japanese species of *Pidonia* described by W. H. BATES are examined and their lectotypes are selected. In case any other species are included in the type series, their correct identification is noted.

The classification of the cerambycid beetles belonging to the genus *Pidonia* MULSANT is very difficult because of their close similarity and the existence of complicated local and individual variations, the patterns of which resemble between different species. In recent years, however, our knowledge of this group of cerambycids has made a rapid progress, thanks to the efforts of several enthusiastic specialists. On the other hand, none of these workers have endeavoured to re-examine the type series of the species described in earlier times.

Needless to say, it is difficult to identify such variable species correctly by the original descriptions given in the 1800's. Besides, there is always a possibility that more than two species are included in the type series under the same name. Under this situation, I felt it indispensable to re-examine the type series of Japanese *Pidonia* and to confirm the current identification of the respective species.

Through the courtesy of Dr. J. E. MARSHALL and Mr. R. D. POPE of the Department of Entomology, British Museum (Natural History), I was able to borrow 36 specimens of Japanese *Pidonia*, which were considered to be the type series of *P. aegrota*, *grallatrix*, *signifera*, *mutata* and *amentata*, all described by H. W. BATES. Of these, 23 specimens bear neither syntype labels nor determination labels, and cannot be proved to be parts of the syntypes of the above species. In this paper, therefore, I will only report the results of my study on the 13 specimens with syntype labels and reliable determination labels by BATES. I have selected lectotypes for all the five species. In case more than two species are included in a type series, selection of lectotypes was made with particular care after due consideration of BATES' descriptions and determination labels.

I wish to express my cordial thanks to Dr. J. E. MARSHALL and Mr. R. D. POPE of the Department of Entomology, British Museum (Natural History), London for their kindness in lending me the type series of the cerambycid beetles in question,

to Dr. Y. KUROSAWA and Dr. S.-I. UENO of the National Science Museum (Nat. Hist.), Tokyo, for their constant guidance and for reading through the manuscript, to Drs. S. OKAJIMA and W. SUZUKI of the Laboratory of Entomology, Tokyo University of Agriculture, for their helpful advice during the course of this study, and to Mr. T. MATSUMOTO for his kind help in various ways. Thanks are also due to Mr. T. INOMATA for taking photographs inserted in this paper.

### 1. *Pidonia (Mumon) aegrota* (BATES)

(Fig. 1)

*Grammoptera aegrota* BATES, 1884, p. 214.

*Pseudopidonia aegrota*: PIC, 1902, pp. 23, 26.

*Pidonia (Pseudopidonia) debilis*: MATSUSHITA & TAMANUKI, 1940, p. 8 (nec KRAATZ, 1879).

*Pidonia (Mumon) debilis*: HAYASHI, 1968, p. 15 (nec KRAATZ, 1897).

*Pidonia (Mumon) aegrota*: KUBOKI, 1982, p. 120.

Lectotype: female, with the following inscription on three labels: "Japan./G. LEWIS./1910-320."; "SYNTYPE"; "*Grammoptera/aegrota*/BATES".

### 2. *Pidonia (Pidonia) grallatrix* (BATES)

(Fig. 2)

*Grammoptera grallatrix* BATES, 1884, p. 214.

*Pseudopidonia grallatrix*: PIC, 1902, p. 27.

*Pidonia (Pseudopidonia) grallatrix*: MITONO, 1940, p. 25.

*Pidonia (Pidonia) grallatrix*: HAYASHI, 1969, p. 82.

Lectotype: female, with the following inscription on four labels: "Miyano-shita"; "Japan./G. LEWIS./1910-320."; "SYNTYPE"; "*Grammoptera/grallatrix*/BATES".

### 3. *Pidonia (Pidonia) signifera* (BATES)

(Figs. 6, 10)

*Grammoptera signifera* BATES, 1884, p. 215.

*Pidonia (Pseudopidonia) signifera*: PIC, 1901, p. 338. — MITONO, 1940, p. 26.

*Pseudopidonia signifera*: PIC, 1902, p. 27.

*Pidonia signifera*: HIRAYAMA, 1940, p. 155.

Lectotype: Female (Fig. 6), with the following inscription on three labels: "Japan./G. LEWIS./1910-320."; "SYNTYPE"; "*Grammoptera/signifera*/BATES".  
Paralectotype: male (Fig. 10): "Hitoyoshi./15. V.-17. V. 81."; "Japan./G. LEWIS./1910-320."; "SYNTYPE"; "*Grammoptera/signifera*/♂ var.?"

BATES described four varieties of "*P. signifera*" as follows:

"Var. ♀. Fascia ante-apicali deest (thoracis marginibus anticis et posticis scutelloque fulvis).

"Var. ?♂. Multo minor, vitta discoidali cum fascia conjuncta, pedibus (tarsis exceptis) toto fulvis. Long. 6–7 millim. ♂.

Var. ♀ (*G. mutata*). Elytra fulva, vitta angusta suturali ante apicem terminata (ibique macula triangulari), maculis tribus utrinque marginalibus apiceque nigris, thoracis marginibus anticis et posticis, antennis et pedibus fulvis. Long. 10 millim.

Var. ♀. Eadem: sed vitta suturali multo latiori, femoribus 4 posticis apice, antennis (basi excepta) nigris.

The descriptions of the first and last "Var. ♀" may have been made on the specimens shown in Figs. 7 and 8, respectively. The former is a female of *Pidonia discoidalis* PIC, and the latter is a female of *P. grallatrix*. The second "Var. ?♂" may have been described on the specimen in Fig. 10, which is herewith designated as the paralectotype.

#### 4. *Pidonia (Pidonia) mutata* (BATES)

(Fig. 9)

*Grammoptera signifera* var. *mutata* BATES, 1884, p. 215.

*Pseudopidonia signifera* (BATES), ab. *mutata*: MITONO, 1940, p. 27.

*Pidonia (Pseudopidonia) yanoi* TAMANUKI, 1942, p. 38 (synonymized with *mutata* by HAYASHI, 1968, p. 54).

*Pidonia (Pseudopidonia) mutata*: HAYASHI, 1955, p. 27.

Lectotype: female, with the following inscription on four labels: "Yuyama./ 10. V.–14. V. 81."; "Japan./G. LEWIS./ 1910–320."; "SYNTYPE"; "*Grammopt./ signifera/var. mutata*".

#### 5. *Pidonia (Cryptopidonia) amentata* (BATES)

(Fig. 3)

*Grammoptera amentata* BATES, 1884, p. 215.

*Pseudopidonia amentata*: PIC, 1902, p. 27.

*Pidonia (Pseudopidonia) amentata*: MITONO, 1940, p. 24.

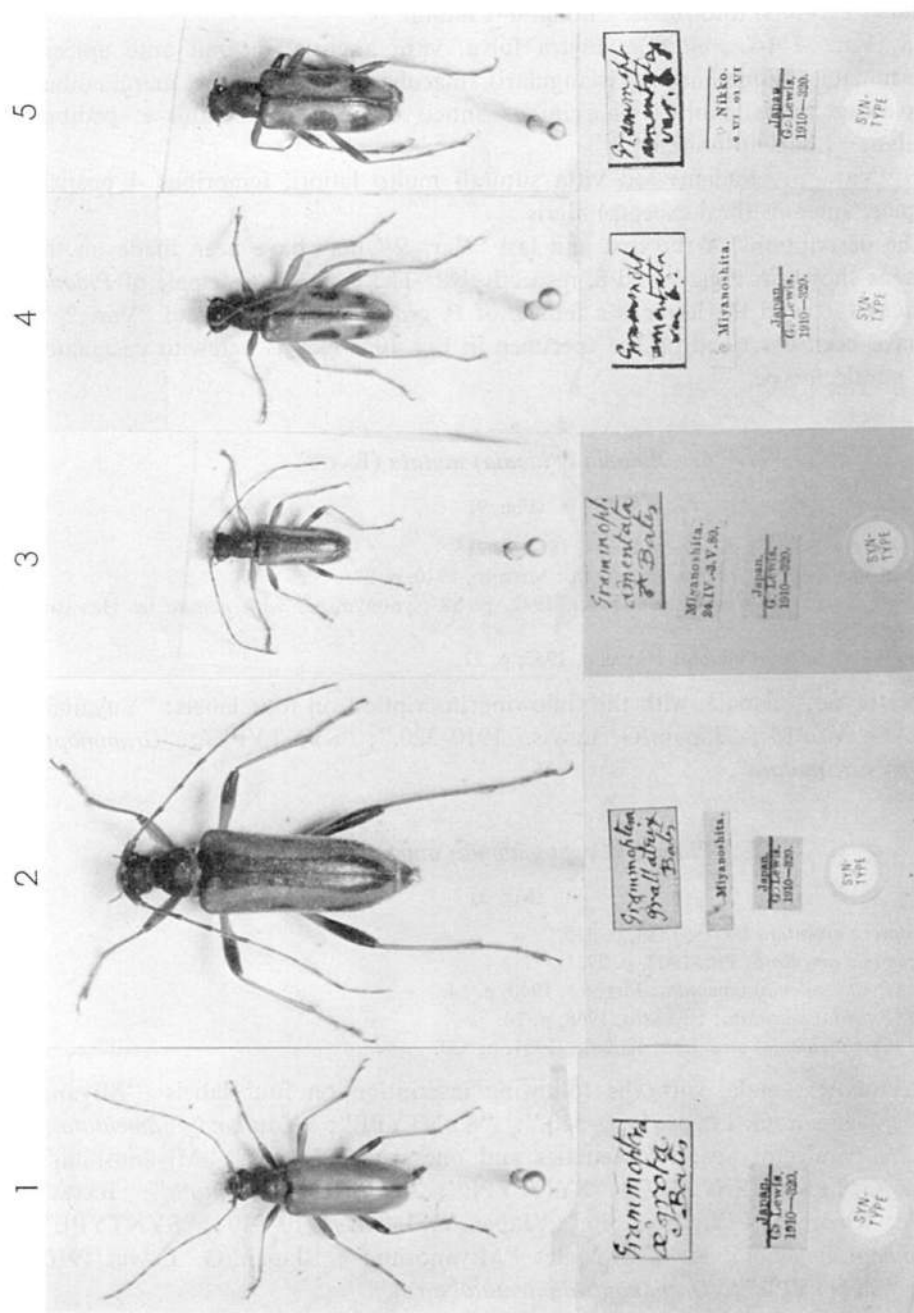
*Pidonia (Pidonia) amentata*: HAYASHI, 1968, p. 24.

*Pidonia (Cryptopidonia) amentata*: KUBOKI, 1981, p. 530.

Lectotype: male, with the following inscription on four labels: "Miyano-shita."; "Japan./G. LEWIS./1910–320."; "SYNTYPE"; "*Grammopt./amentata/♂ BATES*". Paralectotypes: two females and one male. Female: "Miyano-shita."; "Japan./G. LEWIS./1910–320."; "SYNTYPE"; "*Grammopt./amentata/♀ BATES*". Female: "Oyama./24. V.–26. V. 80."; "Japan./G. LEWIS./1910–320."; "SYNTYPE"; "*Grammopt./amentata/var. a*". Male: "Miyano-shita."; "Japan./G. LEWIS./1910–320."; "SYNTYPE"; "*Grammopt./amentata/var. a*".

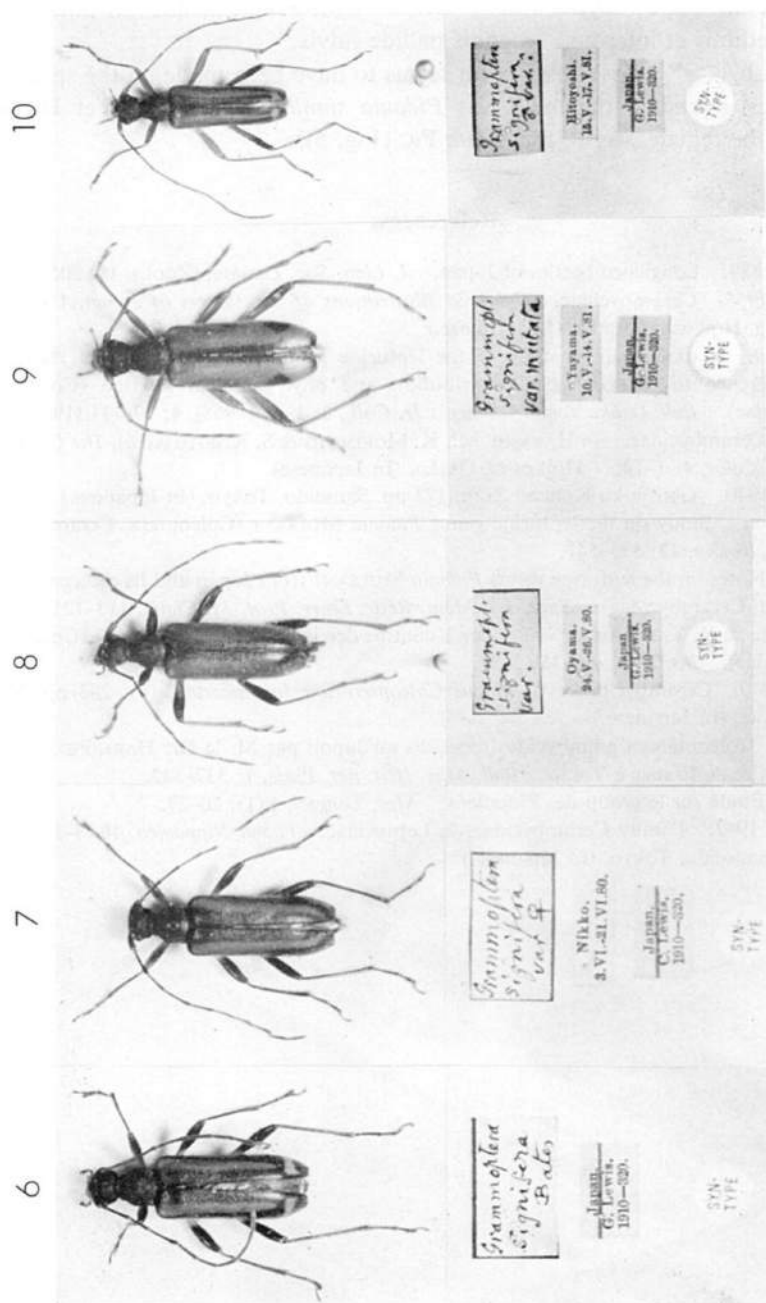
BATES described the following two varieties:

"Var. a. ♂♀. Elytrorum plaga fulva laterali usque ad apicem con-



Figs. 1-5. Types of *Pidonia aegrota*, *P. grallatrix* and *P. amentata*. — 1, *Pidonia* (*Mumon*) *aegrota*, lectotype; 2, *P. (Pidonia)* *grallatrix*, lectotype; 3, *P. (Cryptopidonia)* *amentata*, lectotype; 4, *P. (C.) sinillima* OHBAYASHI et HAYASHI, male, included in the type series of *Grammoptera amentata*; 5, *P. (C.) insuturata* (PIC), female, included in the type series of *G. amentata*.





Figs. 6-10. Types of *Pidonia signifera* and *P. mutata*. — 6, *Pidonia (Pidonia) signifera*, lectotype; 7, *P. (P.) discoidalis* Pic, female, included in the type series of *Grammoptera signifera*; 8, *P. (P.) grallatrix*, female, included in the type series of *G. signifera*; 9, *P. (P.) mutata*, lectotype; 10, *P. (P.) signifera*, paralectotype.

tinuata maculas tres includenti.

Var. b. ♂♀. Elytris fulvis, sutura angusta maculisque utrinque tribus nigris; pedibus et interdum antennis pallide fulvis."

Of "Var. b. ♂♀" whose description seems to have been made on the specimens shown in Figs. 4 and 5, the male was *Pidonia simillima* OHBAYASHI et HAYASHI (Fig. 4), and the female was *P. insuturata* PIC (Fig. 5).

### References

- BATES, H. W., 1884. Longicorn beetles of Japan. *J. Linn. Soc. London*, (Zool.), **18**: 205-262.
- HAYASHI, M., 1955. Cerambycidae. *Coloured Illustrations of the Insects of Japan*, 1 (Coleoptera): 19-76. Hoikusha, Osaka. (In Japanese.)
- 1968-'69. A monographic study of the lepturine genus *Pidonia* Mulsant (1863) with special reference to the ecological distribution and phylogenetical relation (Coleoptera: Cerambycidae). *Bull. Osaka Jonan Women's Jr. Coll.*, **3**: 1-61 (1968), **4**: 69-111 (1969).
- 1984. Cerambycidae. In HAYASHI, M., K. MORIMOTO & S. KIMOTO (eds.), *The Coleoptera of Japan in Color*, **4**: 1-146. Hoikusha, Osaka. (In Japanese.)
- HIRAYAMA, S., 1940. Genshoku Konchu Zufu. 172 pp. Sanseido, Tokyo. (In Japanese.)
- KUBOKI, M., 1981. Study on the lepturine genus *Pidonia* Mulsant (Coleoptera, Cerambycidae), I. *Kontyû, Tokyo*, **49**: 525-541.
- 1982. Notes on the lepturine genus *Pidonia* Mulsant from Japan and its adjacent regions (Coleoptera, Cerambycidae). *Spec. Iss. Mem. Retir. Emer. Prof. M. Chûjô*, 113-121.
- MATSUSHITA, M., & K. TAMANUKI, 1940. Zur Kenntnis der japanischen Lepturinen (Coleoptera: Cerambycidae). *Ins. Matsum.*, **15**: 3-8.
- MITONO, T., 1940. Cerambycidae. *Catalogus Coleopterorum Japonicorum*, (8): 283 pp. Noda-shobo, Taipei. (In Japanese.)
- PIC, M., 1901. Coléoptères Cerambycides recueillis au Japon par M. le Dr. HARMOND, ministre pleipotentiaire de France à Tokio. *Bull. Mus. Hist. nat. Paris*, **7**: 337-342.
- 1902. Étude sur le group des Pidoniens. *Mat. Longic.*, **4** (1): 20-27.
- TAMANUKI, K., 1942. Family Cerambycidae, 2, Lepturinae. *Fauna Nipponica*, **10** (8-15): i+1-8+1-159. Sanseido, Tokyo. (In Japanese.)

## A New Species of the Lepturine Genus *Pidonia* (Coleoptera, Cerambycidae) from Central Honshu, Japan

by

Mikio KUBOKI

Ohara 1-47-15, Setagaya-ku, Tokyo 156, Japan

**Abstract** A new species belonging to the cerambycid genus *Pidonia* MULSANT is described, *P. takechii* n. sp. Its vertical distribution is noted with reference to the vertical vegetational zonation.

The genus *Pidonia* MULSANT consists of about 80 known species distributed over the temperate zone of the Holarctic Region. Up to the present, 39 species have been known to occur in Japan (KUBOKI, 1984).

The present paper contains the result of my study on a species of this genus obtained from central Honshu, Japan. This species is new to science and will be named *Pidonia takechii*. Its holotype will be deposited in the collection of the Laboratory of Entomology, Tokyo University of Agriculture, Tokyo, Japan.

Before going further, I wish to express my hearty thanks to Messrs. H. ABE, H. EBIHARA, K. MORIKAWA, K. SUZUKI and S. TAKECHI, who gave me opportunity to study on the interesting material.

### *Pidonia (Pidonia) takechii* sp. nov.

[Japanese name: Asama-hime-hanakamikiri]

(Figs. 1-7)

Body relatively large, elongate and furnished with pale fulvous pubescence.

Length: 11.6-7.7 mm (male), 11.8-8.0 mm (female); breadth: 2.7-1.9 mm (male), 3.0-2.4 mm (female).

**Color.** Body fulvous to black; vertex, frons, tempora and antennal supports reddish fulvous to dark brown; mouthparts fulvous to brown except for reddish brown apex of each mandible; eyes black; antennae reddish to dark brown, sometimes third and following segments infuscated at their apices; prothorax and scutellum reddish to dark brown; coxae and trochanters brownish yellow, femora dark brown to black in apical halves and fulvous in basal halves, sometimes almost fulvous, tibiae and tarsi fulvous, claws reddish brown; elytra yellowish brown with black markings, the black markings enlarged in female. Ventral surfaces: in male, head fulvous to reddish brown, thorax dark brown, abdomen dark brown, sometimes second to fifth sternites reddish brown; in female, head and thorax fulvous

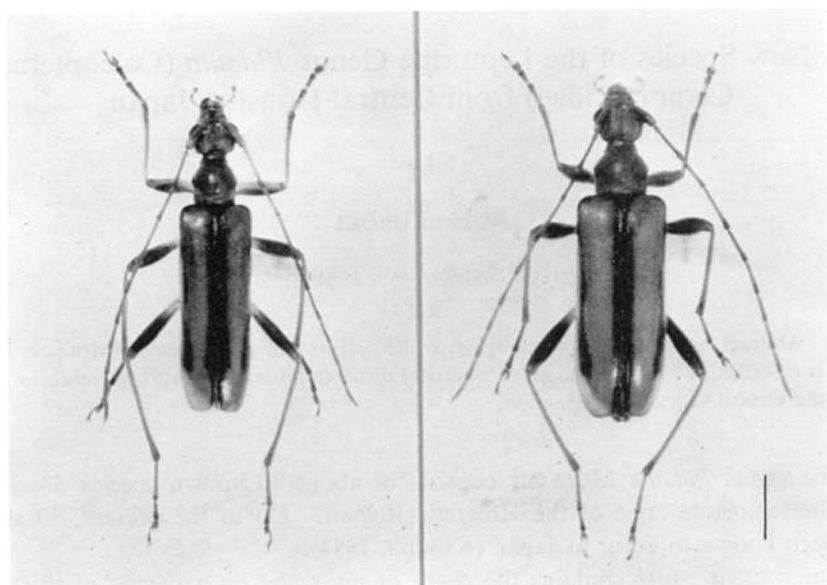


Fig. 1. *Pidonia takechii* sp. nov., ♂ (left), ♀ (right), from Yunomaru-rindô in Nagano Prefecture. Scale: 2 mm.

to reddish brown, sometimes meso- and metasterna darkened, abdomen fulvous to reddish brown.

Elytral markings: in male, sutural marking narrowly present, combining with basal marking, basal marking narrowly present, prolonging towards shoulder, latero-basal, latero-median and latero-posterior markings distinctly present, sometimes fused with one another, latero-basal marking combining with basal marking, latero-posterior marking rarely lacking, apical band entirely lacking; in female, elytral markings more developed than in male, sutural marking distinctly present, sometimes broadened, joining basal band, latero-basal, latero-median and latero-posterior markings frequently fused with one another, forming a narrow longitudinal submarginal vitta, apical band entirely lacking.

Structure. Head broader across eyes than basal width of prothorax (male, 1.17:1; female, 1.06:1); terminal joint of maxillary palpus broadened apically with straight outer margin; tempora narrowed posteriorly in anterior half and abruptly constricted in posterior half, almost impunctate and shining with several setae; frons subvertical and transverse, covered with coarse punctures, bearing a fine but distinct median longitudinal furrow extending backwards to vertex; vertex convex above, coarsely punctured; two to five supraorbital setae present, especially one seta long; gula shining, very sparsely clothed with long pubescence. Eyes relatively prominent, moderately faceted, strongly emarginate at middle of internal margins. Antennae relatively long and slender, inserted just behind level across

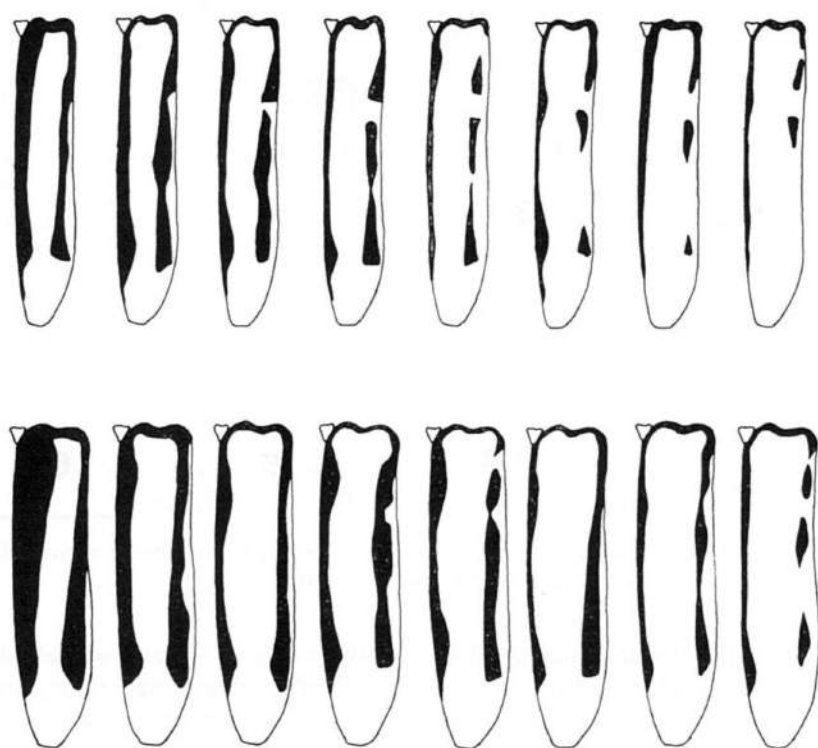
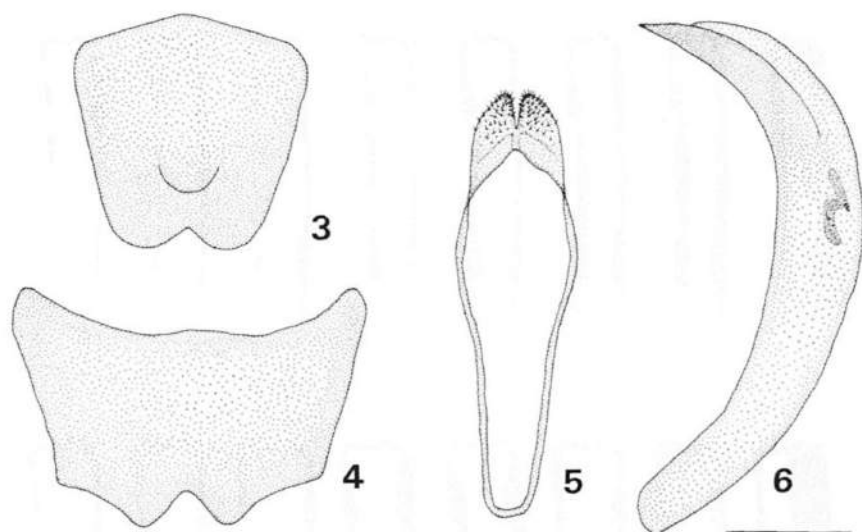


Fig. 2. Variation of elytral markings in *Pidonia takechii* sp. nov. Upper row, male; under row, female.

frontal margins of eyes; apical one segment beyond elytral apices in male; antennae barely attaining elytral apices in female; first segment distinctly dilated towards apex, weakly shining, sparsely clothed with fine pubescence, second to eleventh segments densely clothed with fine appressed fine pubescence and sparsely with fine erect pubescence; comparative length of each antennal segment as follows:— $5 > 3 > 6 = 1 + 2 > 4$ .

Prothorax longer than basal width (male, 1.26: 1; female, 1.14: 1), deeply constricted both behind apex and before base, and angularly prominent laterally just before middle; breadth across prominent portions distinctly broader than base (male, 1.07: 1; female, 1.05: 1); basal margin bisinuate, obviously broader than apical margin (male, 1.46: 1; female, 1.50: 1); disk of pronotum convex above, finely and closely punctured, sparsely clothed with fine pubescence; posterior lateral setae long; prosternum shining, extremely thinly clothed with short pubescence; meso- and metasterna finely punctate, densely clothed with fine appressed pubescence. Scutellum small and triangular, slightly longer than broad, bearing thin pubescence on the surface. Elytra 2.80 times (male) or 2.51 times (female) as long



Figs. 3-6. *Pidonia takechii* sp. nov., ♂. — 3, Last tergite; 4, last sternite; 5, lateral lobes, ventral view; 6, median lobe, lateral view. Scale: 0.3 mm.

as basal width, gradually narrowed posteriorly (male) or almost parallel-sided (female), and separately subtruncate at apices; surface closely and deeply punctate and densely clothed with subappressed pubescence; interspace between punctures broader than diameter of each puncture.

Legs relatively slender, finely punctate, clothed with short pubescence; femora clavate, with subappressed pubescence; hind femora not reaching elytral apex in both sexes; tibiae linear, with suberect pubescence; tarsi densely clothed with short pubescence on under surface; first segment of metatarsus longer than the following two taken together; third segment strongly dilated apically and deeply emarginate at middle of apex.

Abdomen elongate and gradually convergent towards apex; surface of each sternite densely covered with extremely fine pubescence; in male, apex of last sternite triangularly emarginate at middle (Fig. 4), apex of last tergite deeply emarginate at middle (Fig. 3); in female, apex of last sternite round, apex of last tergite shallowly emarginate at middle.

Male genital organ moderately sclerotized; median lobe relatively thick, curved ventrally (Fig. 6) and acutely pointed at apex; lateral lobes shorter than median lobe, each apex produced and sparsely furnished with short terminal hairs (Fig. 5); endophallus with a short diverticulum at base, long and furnished with a pair of falcate sclerites.

*Type series.* Holotype: ♂, Yunomaru-rindô (2,050 m alt.), near Mt. Kagonotô, Nagano Pref., 20. vii. 1985, M. KUBOKI leg. Paratypes: 4♂♂, 3♀♀, same data as the holotype; 1♂, Yunomaru-rindô (2,050 m alt.), 20. vii. 1985, S. TAKECHI leg.;

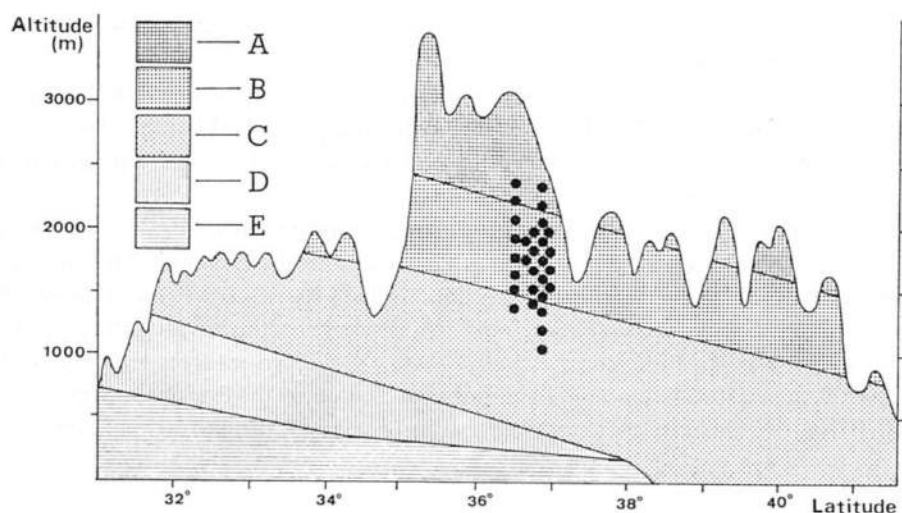


Fig. 7. Vertical distribution of *Pidonia takechii* KUBOKI in connection with vertical vegetational zones of Honshu, Shikoku and Kyushu. — A, Climax of alpine desert, grassland and scrub (including *Pinus pumila* formation); B, climax of conifer forest (*Abies-Picea* formation); C, climax of deciduous broadleaved forest (*Fagus crenata* formation); D, climax of intermediate conifer forest (*Tsuga sieboldi* formation); E, climax of evergreen broadleaved forest (*Castanopsis cuspidata* formation).

8♂♂, 4♀♀, Yunomaru-rindô, near Mt. Sanpôgamine, Nagano Pref., 17. vii. 1977, H. EBIHARA leg.; 17♂♂, 6♀♀, Yunomaru-rindô, 14. vii. 1984, S. TAKECHI leg.; 35♂♂, 18♀♀, Yunodaira (2,050 m alt.), Mt. Asama, Nagano Pref., 27–28. vii. 1972, M. KUBOKI leg.; 2♂♂, 1♀, Takamine-rindô (1,880 m alt.), Nagano Pref., 20. vii. 1985, S. TAKECHI leg.; 1♂, Asama-sansô (1,500 m alt.), Nagano Pref., 20. vii. 1985, S. TAKECHI leg.; 11♂♂, 8♀♀, Asama-sansô (1,500 m alt.), 30. vi. 1985, S. TAKECHI leg.; 10♂♂, 6♀♀, Asama-sansô (1,500 m alt.), 30. vi. 1985, M. KUBOKI leg.; 21♂♂, 1♀, Kurumazaka Pass (2,000 m alt.), near Mt. Kurofu, Nagano Pref., 14. vii. 1985, S. TAKECHI leg.; 1♂, Kurumazaka Pass (2,000 m alt.), 20. vii. 1985, S. TAKECHI leg.; 3♂♂, 4♀♀, Kurumazaka Pass (2,000 m alt.), 20. vii. 1985, M. KUBOKI leg.; 6♂♂, 1♀, Yamada Pass (2,000 m alt.), Nagano Pref., 20. vii. 1985, M. KUBOKI leg.; 3♂♂, Kaorikusa (1,500 m alt.), Gunma Pref., 20. vii. 1985, S. TAKECHI leg.; 18♂♂, 12♀♀, Mt. Shirane (1,500–2,100 m alt.), Gunma Pref., 21–23. vii. 1975, M. KUBOKI leg.; 6♂♂, 4♀♀, Mt. Hakkenzan (1,900 m alt.), Gunma Pref., 20. vii. 1980, H. EBIHARA leg.; 13♂♂, 7♀♀, Takanosu Pass (1,200 m alt.), Niigata Pref., 30. vi.–1. vii. 1984, S. TAKECHI leg.; 13♂♂, 2♀♀, Akayu-rindô (1,000 m alt.), Niigata Pref., 30. vi. 1984, S. TAKECHI leg.; 4♂♂, Akayu Spa (1,100 m alt.), Niigata Pref., 1. vii. 1984, S. TAKECHI leg.; 5♂♂, 4♀♀, Mt. Naeba, Niigata Pref., 4. viii. 1984, H. ABE leg.; 9♂♂, 25♀♀, Midagaiki (2,250 m alt.), Gunma Pref., 1. viii. 1982, K. SUZUKI leg.; 6♂♂, 2♀♀, Konsei Pass (2,000 m alt.), Tochigi Pref., 6. viii. 1980, M. KUBOKI leg.; 3♂♂, Sugenuma (1,750 m alt.), Gunma Pref., 27–28. vii. 1985, K. MORIKAWA

leg.; 4♂♂, 2♀♀, Konsei Pass, Gunma Pref., 6. viii. 1985, K. MORIKAWA leg.

*Distribution.* Japan (central Honshu).

The vertical distribution of this new species is shown in Fig. 7 in connection with the vertical vegetational zones of Japan excepting Hokkaido. Its distributional range is limited horizontally in central Honshu and vertically mainly to the evergreen conifer zone.

The author examined a number of specimens obtained in the Mikuni and Asama mountain areas and considered that they could be classified into three good species belonging to the *maculithorax* group. These species are *P. maculithorax* PIC, *P. bouvieri* PIC and *P. takechii* sp. nov. According to the investigation made in Akayu Spa, Niigata Prefecture, *P. maculithorax* vertically occupies the broadleaved forest; *P. bouvieri* widely occurs from lower mountain to the evergreen conifer zone; and *P. takechii* inhabits the conifer forest and is one of the most dominant species in the evergreen conifer zone.

*Flight period.* June to August.

*Flower records.* *Rhododendron*, *Weigela*, *Filipendula*, *Angelica*, *Astilbe*, *Ligustrum*, *Geranium*.

*Remarks.* This new species is closely allied to *Pidonia bouvieri* PIC, but can be distinguished from the latter by the following key:

1. Dorsal surface of abdomen almost dark brown; middle and hind femora black in apical halves; median lobe of male genital organ acutely pointed at apex; diverticulum of endophallus relatively short and thick.....*P. takechii* sp. nov.
- Dorsal surface of abdomen almost fulvous; middle and hind femora fulvous in apical halves; median lobe of male genital organ blunt at apex; diverticulum of endophallus relatively long and slender.....*P. bouvieri* PIC.

### Reference

- KUBOKI, M., 1984. Lepturinae (*Pidonia*). In: The Longicorn-Beetles of Japan in Color, pp. 173-200, pls. 9-14. Kodansha, Tokyo. (In Japanese.)



A New Cerambycid Beetle of the Genus *Glaphyra* (Coleoptera,  
Cerambycinae) from the Central Mountains of Taiwan,  
with Description of a New Subgenus

by

Tatsuya NIISATO

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** A new cerambycid beetle belonging to the genus *Glaphyra* is described from the central mountains of Taiwan. It is basically similar to the known members of the genus, but is different from them in the large fore body, the stout and thick appendages, the emarginate apical margin of pronotum, and so on. A new subgenus, *Epanioglaphyra*, is erected for this new species in view of the peculiarities.

The genus *Glaphyra* was erected by NEWMAN (1840, p. 19) for receiving the North American species, *G. semiusta* NEWMAN (*loc. cit.*) (= *G. bimaculata semiusta*). Although it is no doubt independent in the present sense, the genus was considered a synonym of *Molorchus* FABRICIUS (1792, p. 356) for a long time by many authors. It is easily discriminated from *Molorchus* by the large eyes and the posteriorly closed anterior coxal cavities. At the same time, subgeneric classification of *Glaphyra* is the most important problem to be solved. Recent authors (cf. VILLIERS, 1978; HAYASHI, 1983) had not adopted the subgenera for *Glaphyra*, because of confused state of classification.

In the spring of 1980, I collected a specimen of a strange molorchine cerambycid on the central mountains of Taiwan. At first sight, it looked like an intermediate form between *Glaphyra* and *Epania*, but was barely discriminated from the latter by its prothoracic structure, especially in the presence of small lateral tubercles. A careful examination has revealed that it is a new species of *Glaphyra*, and that it is fairly isolated and has no close relatives within the genus.

In the present paper, I am going to describe this interesting new species under the name of *Glaphyra kurosawai*. Though the subgeneric classification of *Glaphyra* has not yet been clarified, a new subgenus, *Epanioglaphyra*, will be erected for it in view of the peculiarity of the species.

Subgenus *Epanioglaphyra* nov.

Type species: *Glaphyra kurosawai* sp. nov.

Basically similar to *Glaphyra* s. str., but distinguished from that subgenus by the large fore body, the thick and stout appendages, the emarginate apical margin

of pronotum, and incomplete elytral suture.

Body robust, somewhat flattened, with large fore body, and thick stout appendages. Colour reddish brown to black, with pale maculation on elytra. Head transverse, large, flattened above though concave near vertex; eyes large, widely separated from each other, deeply emarginate by antennal cavities; genae fairly narrow; labrum transverse, with the apex weakly and arcuately emarginate; mandibles short and fairly broad, bluntly hooked at apices; antennae stout and fairly short; scape thick, distinctly longer than segment 3, segment 2 a little longer than wide, segments 3 and 4 thickened apically, segments 5-7 more or less serrate at each apex, segments 8-10 filiform, terminal segment slightly arcuate and weakly appendiculate at apex. Pronotum large, distinctly longer than wide; sides constricted just behind apex and just before base, with small lateral tubercles behind middle; apex and base bordered throughout, emarginate near the middle; disc flattened, with a pair of swellings at sides behind middle, approximately punctured except near the apical and basal margins. Scutellum large and transverse. Elytra strongly abbreviated, barely reaching abdominal tergite 1, strongly dehiscent, narrowly bordered throughout except for the bases, with sutural margins not perfectly met even at the bases; sides arcuately convergent towards apices; base strongly slanting

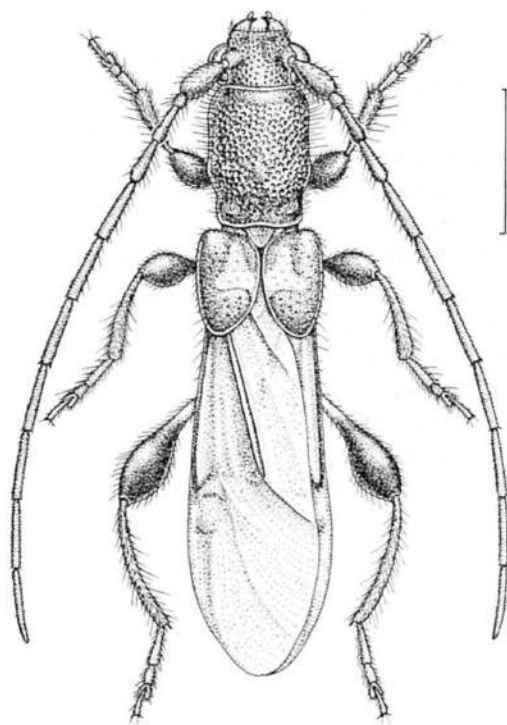


Fig. 1. *Glaphyra* (*Epanioglaphyra*) *kurosawai* subgen. et sp. nov. Scale: 2 mm.

inwards, with the margins almost straight; disc flattened though uneven, declivous on the bases, with concavities near the suture behind scutellum and the middle. Hind wings relatively short, a little longer than hind body, arcuately emarginate near the base of hind margins; veins  $A_1$  and  $Cu_2$  strongly sinuate; cross vein  $Cu_2-a_1$  absent. Prosternal process rather narrow between anterior coxal cavities, reaching the mid-level of them; furcasternum well developed externally and weakly raised, with the anterior process strongly elevated towards apex. Mesosternal process rather broad between mid coxal cavities, barely reaching the anterior margin of metasternum. Abdomen broad, elongate barrel-shaped. Legs short and stout, with femoral clubs distinct; tibiae arcuate, especially in hind ones, with hind tibial spurs forming elongate spatulas.

*Range.* Taiwan.

*Notes.* Though the type species of this new subgenus is very strange in facies, it belongs to the genus *Glaphyra* NEWMAN beyond all doubt. It agrees with the typical forms of the genus in such basic characters as the large and prominent eyes, the short pleural processes and externally developed furcasternum of prothorax, and the wing venation. The condition of the venter of thorax is one of the important characters for both the generic and subgeneric classifications of the Molorchini. In this respect, the type species of *Epanioglaphyra* shows closer relationship with the Japanese species, *G. takeuchii takeuchii* (OHYASHI). In the venation of hind wings, *Glaphyra kurosawai* is almost identical with the known forms of *Glaphyra*, with the only exception that the veins  $A_1$  and  $Cu_2$  are rather strongly sinuate in the former. Besides, the genitalic structure is also characteristic of the genus, though this is not sufficiently studied in most species of *Glaphyra* and its relatives.

*Glaphyra (Epanioglaphyra) kurosawai* sp. nov.

(Figs. 1-4)

*Male.* Medium-sized species of large fore body, with thick stout appendages. Colour dark reddish brown to reddish brown; head black, with mouth parts reddish brown, except for black mandibular tips and yellowish brown palpi; eyes yellowish brown; prothorax black though both the apical and basal margins are slightly reddish; elytra dark reddish brown, each with L-like shaped pale yellow spot on middle, which is almost reaching suture; legs dark reddish brown, with basal halves of mid and hind femora pale yellow. Body clothed with long, erect, pale yellow or yellowish brown hairs, and short, recumbent, pale hairs, the former of which are conspicuous on prothorax and legs; sides near apical margin of pronotum, scutellum, venter of meso- and metathoraces, and sides of abdominal sternites 3-7 densely with silvery white pubescence; antennal segments 2-6 with a sparse row of long, erect, reddish brown hairs, and also with segments 5-11 densely with minute pale pubescence; tarsi and apical halves of fore and mid tibiae densely with yellow pubescence, and hind tarsi densely with silvery white pubescence.

Head rather transverse and voluminous, one and one-fourth the apical width of prothorax, flattened above though broadly concave near vertex, moderately scattered with rather large punctures; frons about a half as long as the basal width, with arcuate grooves along the lateral sides entire and deep, and a weak median longitudinal groove extending to vertex; clypeus one-fifth as long as the basal width, with base arcuately emarginate and apex almost transversely truncate; genae narrow, one-third as deep as lower eye-lobes; eyes moderately prominent, separated from each other by a little more than a half the width of head; antennae stout, relatively short though still fairly longer than body, scape strongly clavate, sparsely scattered with rather large punctures, segment 3 about three-fourths as long as scape, a little shorter than segment 4 and about two-thirds as long as segment 5, segments 5-7 slightly decreasing in length, terminal segment a little longer than segment 10.

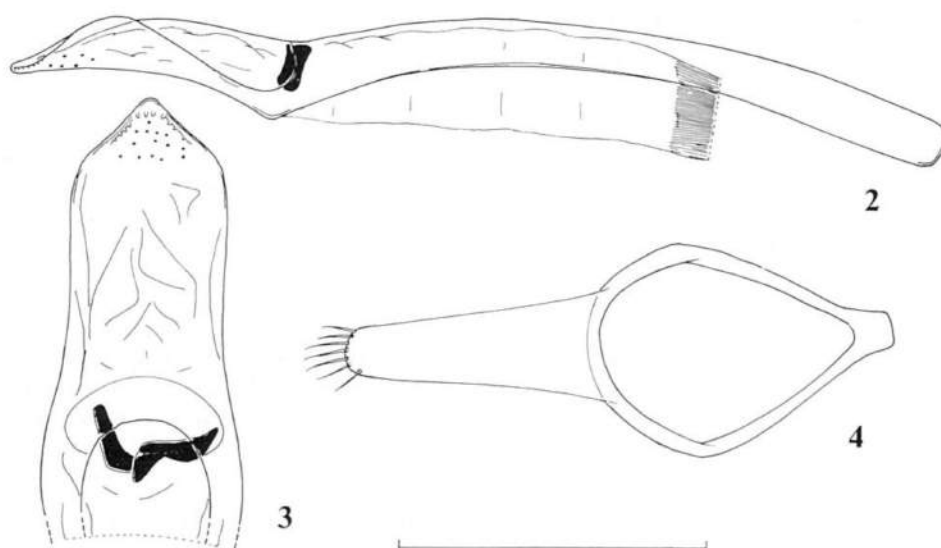
Pronotum large, slightly divergent towards apex, about one and half as long as the apical width, about one-third the length of hind body, and a little more than three-fourths the humeral width of elytra; sides subparallel for a very short distance from apex, rather weakly arcuate to apical two-fifths, then weakly dilated and convergent to basal sixth, the most prominent part being provided with a obtuse though distinct tubercle on each side, and then almost parallel to basal angles; apex broadly and arcuately emarginate near the middle; base weakly arcuate though emarginate at the middle, a little narrower than apex; disc almost flattened, more or less obliquely concave just before base, with a pair of weak rounded swellings at the sides of basal third; surface rather approximately provided with large punctures, with a small impunctured area at basal third in the middle. Scutellum semicircular, about one-third as long as the basal width, longitudinally concave at middle.

Elytra strongly abbreviated, reaching the middle of abdominal tergite 1, about four-fifths as long as the humeral width; sides with humeri distinctly prominent, weakly arcuate in front, straightly convergent at a level between basal two-fifths and apical three-eighths, then arcuately convergent towards apices, which are completely rounded; disc almost flattened, longitudinally and distinctly concave near suture behind scutellum, and obliquely so near the middle; surface sparsely with medium-sized punctures. Hind wings one and one-tenth the length of hind body.

Prosternum rather closely provided with large punctures; prosternal process weakly elevated, gradually and arcuately attenuate towards apex. Mesosternum sparsely punctured, with mesosternal process gradually attenuate towards apex, which is completely rounded. Metasternum punctured as on mesosternum, with the anterior margin slightly produced. Abdomen rather sparsely punctured, with anal sternite arcuately emarginate.

Legs stout and rather short; hind legs about two-thirds as long as body, with femur strongly clavate in apical three-fifths, tibia rather distinctly arcuate, and the first tarsal segment a little longer than the following two segments combined.

Male genital organ rather small and moderately sclerotized. Median lobe about one-third the length of hind body, with the apical part slightly depressed



Figs. 2-4. Male genitalia of *Glaphyra* (*Epanioglaphyra*) *kurosawai* subgen. et sp. nov. —  
2, Median lobe, lateral view; 3, ditto, dorsal view; 4, tegmen, dorsal view. Scale:  
0.5 mm.

above though strongly turned up at the sides; viewed laterally, apical part slightly pointed, with the ventral margin weakly emarginate; viewed dorsally, apical lobe rather broad, sinuately and gradually attenuate towards apex, which is triangularly produced; basal orifice roundly emarginate. Tegmen about five-eighths as long as median lobe, slender; paramere narrow, slightly attenuate towards apex, and rounded at the extremity, bearing seven short apical setae in the holotype.

Body length: 7.5 mm.

Holotype, ♂, Lienhwachih experimental forest (about 800 m alt.), approximately 8 km south of Puli, Yuchih County, Nantou Pref., central Taiwan, 24. III. 1980, T. NIISATO leg. (deposited in the Natn. Sci. Mus., Tokyo).

*Notes.* This new species seems exceedingly rare among the Taiwanese molorchine beetles. I have seen only the male holotype specimen collected at the Lienhwachih experimental forest in Nantou Prefecture. The specimen was found in the morning on the flowers of *Castanopsis* sp. at the top position. The tree was about 15 m high and grew in a bamboo forest.

#### Acknowledgements

I wish to express my cordinal thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his constant guidance and reading the original manuscript of this paper. Thanks are also due to Dr. Yoshihiko KUROSAWA of the same museum, Professors Hiromasa SAWADA and Yasuaki WATANABE of

the Laboratory of Entomology, Tokyo University of Agriculture, for their constant guidance, and Mr. Akinori YOSHITANI for his assistance in drawing.

### Literature Cited

- \*FABRICIUS, J. C., 1792. *Entomologia Systematica emendata et aucta*. 330+538 pp. Kiliae.
- GRESSITT, J. L., 1936. New longicorn beetles from Formosa, IV (Coleoptera: Cerambycidae). *Philip. J. Sci.*, **65**: 147-173, pl. 1.
- 1948. New longicorn beetles from China, XII (Col.: Ceramb.). *Lingnan Sci. J.*, **22**: 43-52, pl. 1.
- 1951. Longicorn beetles of China. *Longicornia*, **2**: 1-667, pls. 1-22.
- HAYASHI, M., 1960. On some longicorn beetles from Taiwan and China with descriptions of six new species (Coleoptera, Cerambycidae). *Bull. Osaka Jonan Women's Jr. Coll.*, **1**: 1-11, pl. 1.
- 1974. New and unrecorded longicorn beetles from Taiwan (Coleoptera: Cerambycidae). *Ibid.*, **9**: 1-36.
- 1983. Family Cerambycidae (Cerambycinae). *Check-list of Coleoptera of Japan*, (24): 1-32.
- 1984. Study of Asian Cerambycidae, VI (Coleoptera). *Ent. Rev. Japan*, **39**: 85-90, pl. 3.
- & K. MATSUDA, 1976. A revisional synopsis of genus *Molorchus* FABRICIUS of Japan and Taiwan, with the descriptions of three new forms (Col., Cerambycidae). *Bull. Osaka Jonan Women's Jr. Coll.*, **11**: 25-39, pls. 1-5.
- KANO, T., 1933. New and unrecorded longicorn-beetles from Japan and its adjacent territories. II. *Kontyû, Tokyo*, **7**: 130-140.
- MULSANT, E., 1862-1863. Histoire naturelle des Coléoptères de France, Longicornes, ed. 2. *Ann. Sc. imp. Agric. nat. Indust., Lyon.*: 1-590.
- NEWMAN, E., 1840 a. Entomological notes. *Entomologist*, **1**: 17-32.
- 1840 b. Nonnullorum Cerambycitum, Novam Hoolandiam et Insulam Van Diemen habitantium characteres. *Ann. Mag. nat. Hist.*, **5**: 14-21.
- 1842. Addenda and Corrigenda. *Entomologist*, **1**: 418.
- VILLIERS, A., 1978. Faune des Coléoptères de France I, Cerambycidae. 611 pp. Lechevalier, Paris.
- WHITE, A., 1853, 1855. Catalogue of Coleopterous Insects in the Collection of the British Museum, Parts 7-8. *Longicornia* I, II. 409 pp., 10 pls.

---

\* Original not seen.

## New or Little Known Chrysomelidae (Coleoptera) from Japan and its Adjacent Regions, IV

by

Shinsaku KIMOTO

Biological Laboratory, Department of General Education,  
School of Medicine, Kurume University, Kurume 830, Japan

**Abstract** The following synonyms are proposed: *Neosermylassa* CHÛJÔ = *Sphenoraia* CLARK, *Pedrillia nigricollis* JACOBY = *Zeugophora bicolor* (KRAATZ), *Oulema hayashii* OHNO = *O. erichsoni* (SUFFRIAN), *Cryptocephalus kimotoi* NAKANE = *C. nigrofasciatus* JACOBY, *Cryptocephalus obliquostriatus* MOTSCHULSKY = *C. parvulus* MÜLLER, *Cryptocephalus chujoi* NAKANE = *C. signaticeps* BALY, and *Gonioctena chujoi* MEDVEDEV = *G. honshuensis* NAKANE. It is suggested that *Cryptocephalus hakonensis* TAKIZAWA might be a synonym of *C. pseudofulvus* MEDVEDEV, and the species is recorded for the first time from Hokkaido. A record of *Cryptocephalus janthinus* from Japan is corrected as that of *C. weymarni* GRESSITT et KIMOTO. *Euliroetis abdominalis* (BALY) is recorded for the first time from Honshu, and *Aphthona formosana* CHEN from Shikoku.

This paper is revised and supplementary notes on KIMOTO (1964-1966), and KIMOTO and GRESSITT (1966). A number of new synonyms, correction of scientific names, and additional records of distribution are presented.

### Subfamily Zeugophorinae

#### Genus *Zeugophora* KUNZE

*Zeugophora* KUNZE, 1818, Neue Schr. naturf. Ges. Halle, 2 (4): 71 (type species: *Crioceris subspinosa* FABRICIUS, 1781).

*Auchenia* THUNBERG, 1792, Nova Acta Upsala, 5: 95. — SILFVERBERG, 1983, Bull. zool. Nomencl., 40: 252 (proposed to suppress under plenary power).

#### *Zeugophora* (*Pedrillia*) *bicolor* (KRAATZ)

*Pedrillia bicolor* KRAATZ, 1879, Dtsch. ent. Z., 23: 120, pl. 2, fig. 9 (Amur).

*Pedrillia nigricollis* JACOBY, 1885, Proc. zool. Soc. London, 33: 195 (Wadatoge). *New synonym.*

*Distribution.* Japan (Honshu, Shikoku), Korea, E. Siberia.

### Subfamily Criocerinae

#### *Oulema erichsoni* (SUFFRIAN)

*Lema erichsoni* SUFFRIAN, 1841, Ent. Ztg., Stettin, 2: 104 (Europe).

*Lema sapporoensis* MATSUMURA, 1911, J. Fac. Agr. Tôhoku Imp. Univ., Sapporo, 4: 140 (Sapporo).



Josankei; S. Sachalin).

*Oulema hayashii* OHNO, 1962, Ent. Rev. Japan, 14: 45 (Nagano). *New synonym.*

*Distribution.* Japan (Hokkaido, Honshu, Kyushu), Sakhalin, Siberia, Europe.

### Subfamily Cryptocephalinae

#### *Cryptocephalus hakonensis* TAKIZAWA

*Cryptocephalus hakonensis* TAKIZAWA, 1982, Ent. Rev. Japan, 37: 55 (Hakone, Kanagawa Pref.).

*Specimens examined.* Meakandake, in Hokkaido, 3 exs., 30. vii. 1962, Y. MIYATAKE. Nukabira, in Hokkaido, 1 ex., 4. viii. 1962, Y. MIYATAKE.

*Distribution.* Japan (Hokkaido, Honshu).

This species is here recorded for the first time from Hokkaido. According to the characteristics of male genitalia, this species closely resembles *Cryptocephalus pseudofulvus* MEDVEDEV, from "Kuni-tashi", rather than *C. amicus* BALY or *C. kiyosatonus* KIMOTO. It is possible that this is only a color variation of *pseudofulvus*.

#### *Cryptocephalus nigrofasciatus* JACOBY

*Cryptocephalus nigrofasciatus* JACOBY, 1885, Proc. zool. Soc. London, 1885: 200 (Nowata, Matsuida, Fukin, Road to Oyama, Wada toge).

*Cryptocephalus kimotoi* NAKANE, 1963, Framg. coleopt., ed. NAKANE, (5): 19 (Iwanadome nr. Shimashima). *New synonym.*

*Distribution.* Japan (Honshu, Shikoku, Kyushu), N. China.

#### *Cryptocephalus nitidulus* FABRICIUS

*Cryptocephalus nitidulus* FABRICIUS, 1787, Mant. Ins., 1: 84 (Russia meridionali). — KOMIYA, 1964, Ent. Rev. Japan, 16: 64 (Japan: Rebun Is.).

*Cryptocephalus approximatus*: KIMOTO, 1965, Kontyû, Tokyo, 33: 311 (S. Kuriles).

*Cryptocephalus fortunatus borealis* MEDVEDEV, 1966, Forest. Ent.-Fauna Kuril, Kamch. & Magad., 39 (S. Kuriles).

*Distribution.* Japan (Rebun), S. Kuriles, Sakhalin, W. Siberia, N. & W. Europe.

#### *Cryptocephalus parvulus* MÜLLER

*Cryptocephalus parvulus* MÜLLER, 1776, Zoologiae Danicae Prodromus, 58 (Europe).

*Cryptocephalus fulcratus* GERMAR, 1824, Ins. Spec. Nov., 556 (Europe). — JACOBY, 1885, Proc. zool. Soc. London, 1885: 203 ("Jen-sai").

*Cryptocephalus obliquostratus* MOTSCHULSKY, 1866, Bull. Soc. imp. Natur. Moscou, 39 (1): 176 (Japan). — KIMOTO, 1964, J. Fac. Agr. Kyushu Univ., 13: 156 (Japan). *New synonym.*

*Cryptocephalus permolestus* BALY, 1873, Trans. ent. Soc. London, 1873: 95 (Nagasaki). — KIMOTO, 1964, J. Fac. Agr. Kyushu Univ., 13: 156 (= *obliquostratus*).

*Cryptocephalus amatus* BALY, 1873, Trans. ent. Soc. London, 1873: 96 (nec HALDERMANN, 1849) (Japan).

*Cryptocephalus inurbanus* HAROLD, 1874, Coleopt. Heft., 12: 152 (n. n. for *C. amatus* BALY).

*Cryptocephalus consolanus* BALY, 1874, Trans. ent. Soc. London, 1874: 217 (n. n. for *C. amatus* BALY).



*Distribution.* Japan (Hokkaido, Honshu, Sado, Shikoku, Kyushu), Sakhalin, Korea, Mongolia, N. China, Siberia, Europe.

*Cryptocephalus signaticeps* BALY

*Cryptocephalus signaticeps* BALY, 1873, Trans. ent. Soc. London, **1873**: 91 (Nagasaki; "China").

*Cryptocephalus chujoi* NAKANE, 1963, Fragm. coleopt., ed. NAKANE, (5): 19 (Nozawa, Niigata, Honshu). *New synonym.*

*Distribution.* Japan (Honshu, Shikoku, Kyushu, Tsushima).

*Cryptocephalus weymarni* GRESSITT et KIMOTO

*Cryptocephalus weymarni* GRESSITT et KIMOTO, 1961, Pacif. Ins. Mon., **1A**: 168 (N. China, E. Siberia). — KIMOTO & HIURA, 1964, Bull. Osaka Mus. nat. Hist., (17): 10 (Akita).

*Cryptocephalus janthinus*: KOMIYA, 1983, Coleopterists' News, Tokyo, (62): 6 (Hokkaido).

*Distribution.* E. Siberia, N. China, Japan (Hokkaido, Honshu).

Genus *Pachybrachis* CHEVROLAT

*Pachybrachis* CHEVROLAT, 1837, in DEJEAN, Cat. Coleopt., ed. 3: 444 (type species: *Cryptocephalus hieroglyphicus* LAICHARTING, 1781).

*Pachybrachys* REDTENBACHER, 1845, Gatt. dtsh. Käfer-Fauna, 118.

*Pachybrachis eruditus* (BALY)

*Pachybrachys eruditus* BALY, 1873, Trans. ent. Soc. London, **1873**: 98 (Nagasaki).

*Pachybrachys eruditus* ab. *nigrescens* NAKANE, 1963, Fragm. coleopt., ed. NAKANE, (5): 19 (Kiso-Fukushima, Kamikochi).

*Distribution.* Japan (Hokkaido, Honshu, Sado, Shikoku, Kyushu), NE China.

Subfamily Chrysomelinae

*Goniocтена* (*Goniocтена*) *honshuensis* NAKANE

*Goniocтена honshuensis* NAKANE, 1963, Fragm. coleopt., ed. NAKANE, (5), 9 (Shimashima).

*Goniocтена sibirica*: BÉCHYNÉ, 1947, Acta. Mus. nat. Prag., **38** (3): 103, pl. 1, fig. 9, pl. 8, figs. 8-9 (Siberia). — KIMOTO, 1963, Fragm. coleopt., ed. NAKANE, (3): 4 (Hokkaido, Honshu); 1964, J. Fac. Agr. Kyushu Univ., **13**: 281 (Hokkaido, Honshu).

*Goniocтена chujoi* MEDVEDEV, 1966, Forest Ent.-Fauna Kuril, Kamch. & Magad., 41, fig. 2 (Kuriles). — TAKIZAWA, 1971, Kontyû, Tokyo, **39**: 173 (Sakhalin); 1971, *ibid.*: 177 (S. Kuriles: Kunashiri, Etorohu). *New synonym.*

*Distribution.* Japan (Hokkaido, Honshu), S. Kuriles, Siberia.

Subfamily Galerucinae

*Euliroetis abdominalis* (BALY)

*Aenidea abdominalis* BALY, 1874, Trans. ent. Soc. London, **1874**: 180 (Nagasaki).

*Specimens examined.* Kurotogadani - Top, Mt. Kongo, Osaka Pref., 1 ex., 15. vi. 1967, Y. MIYATAKE. Byobuzaka, Mt. Kongo, Osaka Pref., 1 ex., 6. vi. 1968, I. HIURA.

*Distribution.* Japan (Honshu, Kyushu).

This species is here recorded for the first time from Honshu.

#### Genus *Sphenoraia* CLARK

*Sphenoraia* Clark, 1865, Ann. Mag. nat. Hist., (3), 16: 262 (type species: *Galleruca bicolor* HOPE, 1831).

*Sphenoraoides* LABOISSIÈRE, 1934, Ann. Assoc. Nat. Levallois-Perret, 21: 131 (type species: *Galleruca fulgida* REDTENBACHER, 1848).

*Neosermylassa* CHÛJÔ, 1957, Mem. Fac. Lib. Arts & Educ. Kagawa Univ., 2 (31): 14 (type species: *Sermylassa* (*Neosermylassa*) *japonica* CHÛJÔ, 1957). *New synonym.*

#### *Sphenoraia intermedia* JACOBY (Fig. 1)

*Sphenoraia intermedia* JACOBY, 1885, Proc. zool. Soc. London, 1885: 747 (Japan: Noheyi).

*Sermylassa* (*Neosermylassa*) *japonica* CHÛJÔ, 1957, Mem. Fac. Lib. Art & Educ. Kagawa Univ., 2 (31): 15, fig. 7 (Kyoto, Gumma, Yamagata). — KIMOTO, 1965, J. Fac. Agr. Kyushu Univ., 13: 397 (= *intermedia*).

*Sermylassa* (*Neosermylassa*) *intermedia*: KIMOTO, 1965, J. Fac. Agr. Kyushu Univ., 13: 397 (Honshu).

*Distribution.* Japan (Honshu).

#### Subfamily Alticinae

#### *Aphthona formosana* CHEN (Fig. 2)

*Aphthona formosana* CHEN, 1934, Ann. Soc. ent. France, 103: 179 (Formosa).



Fig. 1. *Sphenoraia intermedia* JACOBY.

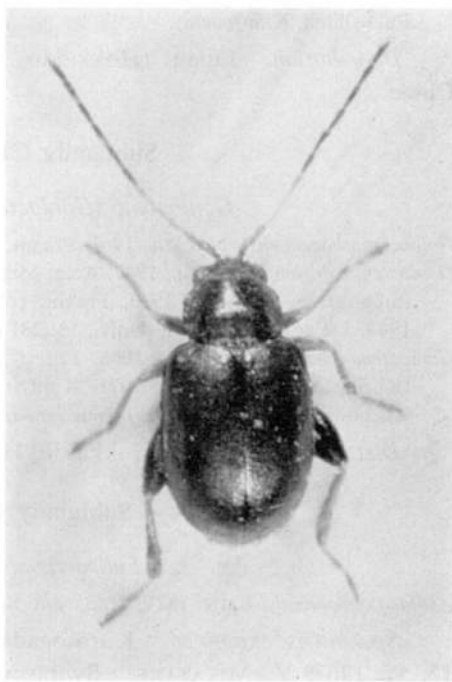


Fig. 2. *Aphthona formosana* CHEN.

*Specimen examined.* Omogokei, Ehime Pref., 1 ex., 3-4. v. 1958, Y. MIYATAKE.  
*Distribution.* Japan (Shikoku, Kyushu, Yakushima), Ryukyu Is. (Tokara, Amami-Oshima, Tokunoshima, Okinoerabu, Okinawa, Ishigaki, Iriomote), Taiwan.  
This species is here recorded for the first time from Shikoku,

### References

- KIMOTO, S., 1964-'66. The Chrysomelidae of Japan and the Ryukyu Islands, I-XI. *J. Fac. Agr. Kyushu Univ.*, **13**: 99-164 (1964), 235-303 (1964), 369-459 (1965), 601-671 (1966).  
—— & J. L. GRESSITT, 1966. The Chrysomelidae of Ryukyu Archipelago. *Pacif. Ins.*, **8**: 467-577.  
—— & I. HIURA, 1964. A list of the chrysomelid specimens preserved in the Osaka Museum of Natural History, I. *Bull. Osaka Mus. nat. Hist.*, (17): 5-18.  
KOMIYA, Y., 1964. The chrysomelid beetles from Rebun Island, Hokkaido, Japan. *Ent. Rev. Japan*, **16**: 64-66. (In Japanese.)  
—— 1983. A newly recorded species of *Cryptocephalus* from Japan. *Coleopterists' News, Tokyo*, (62): 6. (In Japanese.)  
MEDVEDEV, L. N., 1966. New forms of leaf-beetles (Coleoptera, Chrysomelidae) from the Kurile Islands. *Forest. Ent.-Fauna Kuril, Kamch. & Magad.*, 39-44. (In Russian.)  
NAKANE, T., 1953. New or little-known Coleoptera from Japan and its adjacent regions. XVI. *Fragm. coleopt.*, ed. NAKANE, (5): 19-20.  
SILFVERBERG, H., 1983. *Zeugophora* KUNZE, 1818 (Insecta, Coleoptera): proposed conservation under the plenary power. Z.N. (S.) 2405. *Bull. zool. Nomencl.*, **40**: 252-254.  
TAKIZAWA, H., 1971. A list of chrysomelid beetles from Sakhalin in the collection of the Entomological Institute, Hokkaido University (Coleoptera). *Kontyû, Tokyo*, **39**: 172-176.  
—— 1971. Notes on Chrysomelidae of the Kurile Islands (Coleoptera). *Ibid.*, **39**: 176-177.  
—— 1982. Notes on Japanese Chrysomelidae. *Ent. Rev. Japan*, **37**: 55-60.

## Two New Species of the Genus *Phaulimia* (Coleoptera, Anthribidae) from the Ryukyu Islands

by

**Toshio SENO**

Laboratory of Entomology, Tokyo University of Agriculture,  
Sakuragaoka, Setagaya-ku, Tokyo 156, Japan

**Abstract** Two new species of the anthribid genus *Phaulimia* are described, *P. maculithorax* sp. nov. from Ishigaki-jima Is. and *P. kurosawai* sp. nov. from Iriomote-jima Is.

Through the courtesy of Dr. Yoshihiko KUROSAWA, the author had an opportunity to examine many interesting insects collected in the Ryukyu Archipelago by the 1973 expedition of the National Science Museum, Tokyo. They contained two strange species of anthribid beetles belonging to the genus *Phaulimia*. After a careful examination, both proved to be new to science. They will be described in the present paper for commemorating the retirement of Dr. KUROSAWA.

The genus *Phaulimia* was established by PASCOE (1859) for *P. ephippiata* PASCOE from Borneo. It was, however, not readily separated from *Hypseus* PASCOE, 1860, and *Ulorhinus* SHARP, 1891. As the result of his re-examination of all the species theretofore included in these genera, MORIMOTO (1972) regarded *Hypseus* as a synonym of *Phaulimia*, whose taxonomic status was newly defined by himself. Up to the present, eight species of this genus, *aberrans*, *angusta*, *annulipes*, *confinis*, *decorata*, *incerta*, *minor* and *rufobasis*, have been known from Japan.

Before going further, the author wishes to express his sincere gratitude to Dr. Yoshihiko KUROSAWA and Dr. Shun-Ichi UENO of the National Science Museum (Nat. Hist.), Tokyo, for their constant guidance and for reading through the manuscript, and to Professor Katsura MORIMOTO of the Entomological Laboratory, Kyushu University, Fukuoka, for his valuable advice and for giving the author the privilege to see many photographs of the type specimens taken by himself at the British Museum (Nat. Hist.). Deep appreciation is also due to Professors Hiromasa SAWADA and Yasuaki WATANABE of the Laboratory of Entomology, Tokyo University of Agriculture, for their constant guidance and encouragement, and to Mr. Akinori YOSHITANI for his assistance in preparing drawings.

*Phaulimia maculithorax* SENO, sp. nov.

[Japanese name: Munemon-menaga-higenagazoumushi]

(Fig. 1)

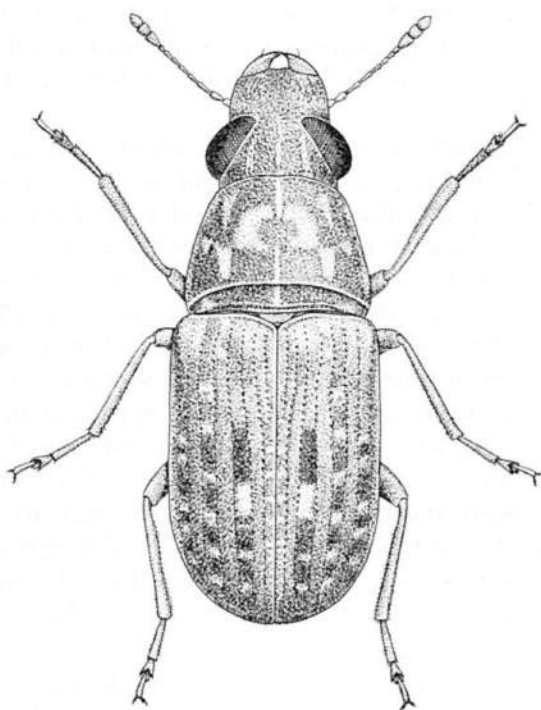


Fig. 1. *Phaulimia maculithorax* SENOH, sp. nov.

Length: 4.3–4.6 mm (from apical margin of pronotum to apices of elytra).

*Female.* Body convex above and moderately broad, about 2.1 times as long as wide excluding head. Colour entirely black except for mouthparts, antennae and legs, which are brown to light brown. Pubescence dense, blackish brown, pale yellow and black; pale yellow hairs of pronotum forming the following patches: a pair of inverse-triangular and a median linear patches at the subapical part, a thick <->-shaped patch at the centre, a pair of oblong and a median linear patches before the basal transverse carina, a median patch at the basal part, and obscure patches at the sides; odd intervals of elytra tessellated with pale yellow and black small patches, which are particularly distinct in posterior half, the median patches of the third interval being large and pily.

Head visible from above, rather densely and reticulately punctate, the punctures becoming finer on the occipital area, finely pubescent; eyes expanded latero-posteriorly, moderately separated from each other; rostrum transverse, thin, and widest above antennal cavities, about 2.4 times as broad as the interocular area, somewhat depressed on the medio-basal half, anterior margin weakly trisinate, its surface covered with coarse punctures forming irregular reticulation and inconspicuous hairs. Antennae short, extending barely beyond the anterior margin of pronotum, basal two segments ovate, 1st a little longer than 2nd, 3rd longer than

4th which is nearly as long as 5th, 6th nearly as long as 7th and shorter than 5th, 8th the shortest, club compact and almost symmetrical, 9th triangular, apically dilated, about 1.2 times as long as wide, 10th a little shorter than the terminal one which is shorter than the 9th.

Pronotum trapezoidal and convex above, about 1.4 times as wide as long, gradually narrowed anteriorly; anterior margin weakly emarginate, lateral sides slightly incurved just before the basal angles of carina; surface densely covered with small punctures, basal transverse carina evenly weakly arcuate, most widely distant from elytral base at the middle, and connected with lateral carina at an obtuse angle, lateral carina declivous, extending to the middle of side margin. Scutellum small, clothed with pale yellowish hairs. Elytra strongly convex above, about 1.5 times as long as wide, parallel-sided in basal three-fourths, then narrowed posteriorly, and truncated at apex, basal margin incurved at the middle; subbasal area of each elytron provided with a weak swelling extending from 2nd to 6th intervals; striae punctures becoming smaller and shallower from base towards apex, their diameter distinctly smaller than the widths of intervals. Pygidium subtriangular, vertical, about 1.18 times as broad as long, basal margin strongly emarginate at the middle, lateral margins gradually convergent towards widely rounded apex; surface densely covered with coarse punctures all over, hairs rather fine and inconspicuous.

Prosternum sparsely and deeply punctate, and distinctly covered with hairs which are decumbent irregularly, the punctures distinctly larger than those on pronotum; metasternum sparsely punctate, the punctures weaker than those on prosternum. Sternites covered with small punctures which are sparser and shallower than those of metasternum, and with fine hairs like metasternum; viewed from side, 1st to 4th visible sternites almost horizontal conjointly, the terminal one somewhat slanting. Legs relatively slender; anterior femur a little shorter than the median which is shorter than the posterior; anterior, median and posterior tibiae subequal in length to one another; anterior, median and posterior tarsi also subequal in length to one another.

*Male.* Pygidium subtriangular, somewhat inclined forwards, about 1.26 times as broad as long, basal margin more strongly emarginate than in female, lateral margins gradually convergent towards widely rounded apex.

*Type series.* Holotype ♀, allotype ♂, paratypes 3♀♀, Yonehara, Ishigaki-jima Is., the Ryukyus, 22–23. V. 1973, S. HISAMATSU leg. The type series is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

*Distribution.* Japan (Ishigaki-jima Is.).

*Notes.* In general appearance, this species resembles *Hypseus brunneus* JORDAN (1928 b, p. 117) from Singapore, *H. varius* JORDAN (1928 b, p. 118) from Mindanao, and *H. argutus* JORDAN (1928 b, p. 120) from Sumatra, but can be distinguished from them by the broad prothorax, the difference in the pronotal markings, and so on.

*Phaulimia kurosawai* SENOH, sp. nov.

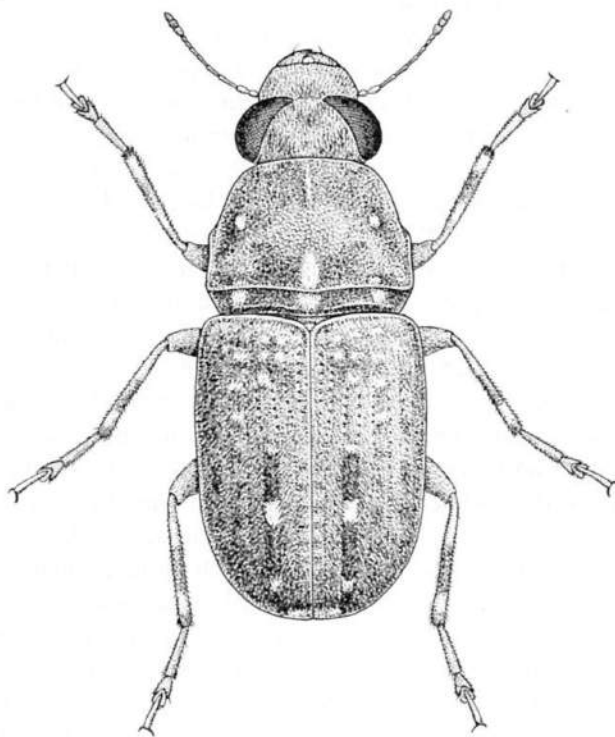
[Japanese name: Kurosawa-menaga-higenagazoumushi]

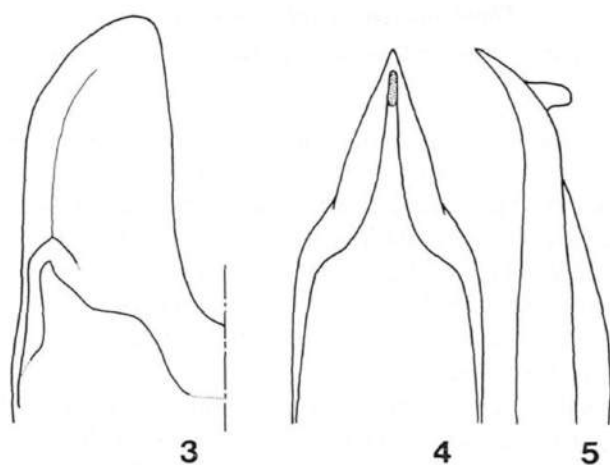
(Figs. 2-5)

Length: 4.7 mm (from apical margin of pronotum to apices of elytra).

*Male.* Body oblong, about 2.1 times as long as wide excluding head. Shining; colour predominantly black, mouthparts, antennae, apical margin of pronotum, basal and apical parts of elytra and legs dark brown to reddish brown. Pubescence relatively dense, pale yellow on head, ash-grey, blackish brown and pale yellow on pronotum, ash-grey, black, yellowish and white on elytra, yellowish on pygidium, and pale yellow to greyish on the underside of body; pale yellow hairs on pronotum forming four distinct patches, a pair of small round patches at both sides, an oblong one before the middle of basal transverse carina, and a square one behind the middle of the carina; pubescence on elytra forming leopard-brindled patches, which are particularly distinct on basal fourth, two black and a white oblong pily patches on the third interval behind middle and four yellowish patches at the subapical part.

Head elevated beneath eyes, densely covered with coarse punctures forming irregular reticulation; eyes very large, strongly expanded latero-posteriorly and

Fig. 2. *Phaulimia kurosawai* SENOH, sp. nov.



Figs. 3-5. *Phaulimia kurosawai* SENOH, sp. nov., male. — 3, Genital segment in ventral view, right half; 4, apical part of median lobe in dorsal view; 5, the same in lateral view.

remarkably approximate to each other; rostrum transverse, almost parallel-sided though somewhat narrowed in anterior half, about 6.0 times as broad as the interocular area, surface densely covered with coarse punctures like head, provided with a short impunctate carina along the mid-line on basal half, anterior margin weakly incurved at the middle; mandibles densely covered with haired punctures in basal half. Antennae short, hardly reaching the anterior margin of pronotum, basal two segments swollen in apical two-thirds, each segment of funicle bearing a few, rather fine hairs at the subapical part, 3rd the longest, 4th and 5th subequal in length to each other, 6th and 7th also subequal in length to each other, 5th distinctly longer than 6th, 8th the shortest, club compact, 9th triangular, as long as wide, 10th subtriangular, slightly broader than long, shorter than 9th which is shorter than 11th, which is spatulate and about 1.5 times as long as wide.

Pronotum transverse, about 1.3 times as wide as long, strongly narrowed posteriorly in basal sixth, subparallel-sided in basal third, then gradually narrowed anteriorly; surface densely covered with small distinct punctures, and with hairs which are somewhat finer than on the other parts of dorsum; basal transverse carina slightly incurved at the middle, and connected with lateral carina almost at a right angle, the latter declivous, extending beyond the middle of side margin. Scutellum small, clothed with whitish hairs. Elytra relatively broad, about 1.5 times as long as wide, subparallel in basal half, then narrowed posteriorly, truncated at the apex, with weak subbasal swellings; stria punctures deep, becoming smaller towards apex, their diameter a little smaller than the widths of intervals. Pygidium inclined forwards, hardly longer than wide, lateral margins gradually convergent towards widely rounded apex; surface moderately densely covered with distinct punctures, and densely covered with distinct hairs.



Prosternum densely and strongly punctate, the punctures larger and deeper than those on pronotum, and densely covered with pale yellowish hairs at the lateral parts before middle; metasternum sparsely punctate, the punctures weaker than on prosternum. Sternites covered with small punctures weaker than those of metasternum, and relatively sparsely covered with fine hairs except for lateral parts; viewed from side, 1st to 4th visible sternites conjointly horizontal, the terminal one somewhat slanting. Legs mottled; anterior femur short, the median one evidently shorter than the posterior; anterior tibia obviously shorter than the median which is nearly as long as the posterior; anterior tarsus shorter than the median one which is nearly as long as the posterior.

Tergite of genital segment bilobed, with many fine hairs on the underside, sternite bifurcate, having some fine hairs at the inner face of the subapical parts; dorsal plate of median lobe abruptly narrowed at the subapical part, being provided with a remarkable dorsal process at the apex, apical part of the ventral plate beak-like.

*Female.* Unknown.

Holotype ♂, environs of Mt. Goza-dake, Iriomote-jima Is., the Ryukyus, 17. V. 1973, S. HISAMATSU leg. The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

*Distribution.* Japan (Iriomote-jima Is.).

*Notes.* In general appearance, this species is similar to *P. confinis* (SHARP, 1891) described from Japan, but can be distinguished from the latter by the following characteristics: body large and broad; interocular area narrow; rostrum provided with a short impunctate carina along the mid-line in basal half; sternite of genital segment bifurcate, having some fine hairs at the inner face of the subapical parts; dorsal plate of median lobe abruptly narrowed at the subapical part and provided with a remarkable dorsal process at the apex; apical part of the ventral plate sharp; and so on.

## References

- JORDAN, K., 1894. On Anthribidae in the museum of the honourable Walter ROTHSCHILD. *Novit. zool.*, 1: 591-651.
- 1895. Zur Kenntniss der Anthribidae. *Stett. ent. Ztg.*, 56: 122-204, 369-401.
- 1897. Anthribidae from the Islands of Engano, Mentawai and Sumatra, collected by Dr. E. MODIGLIANI. *Annl. Mus. Stor. nat. Genova*, (2), 18: 623-643.
- 1909. Some new south Indian Anthribidae in the collection of Mr. H. E. ANDREWES. *Novit. zool.*, 16: 307-309.
- 1912. Formosan Anthribidae collected by H. SAUTER. *Ibid.*, 19: 137-145.
- 1923 a. Les Anthribides de l'Indochine. *Faune ent. Indochine, Saigon*, 6: 71-113 (and *Opusc. Inst. sci. Indochine*, (1): 41 pp.).
- 1923 b. New eastern Anthribidae. *Novit. zool.*, 30: 167-185.
- 1928 a. Further records of Anthribidae from French Indochina, with the addition of the descriptions of two new species from other countries. *Ibid.*, 34: 77-94.
- 1928 b. New Anthribidae from the Old World. *Ibid.*, 34: 105-128.

- JORDAN, K., 1931. Anthribidae collected by F. C. DRESCHER on the Island of Java. *Novit. zool.*, **36**: 288-302.
- 1933. New Oriental Anthribidae (Coleoptera). *Ibid.*, **38**: 362-383.
- 1937 a. Some Old-World Anthribidae. *Ibid.*, **40**: 199-207.
- 1937 b. New Anthribidae from India and Java. *Ibid.*, **40**: 333-335.
- MORIMOTO, K., 1972. A key to the genera of Oriental Anthribidae (Coleoptera). *Bull. Gov. For. Expt. Stn.*, (246): 35-54, 17 plates.
- 1981. The family Anthribidae of Japan (Coleoptera). Part 4. *Esakia*, (17): 53-107.
- PASCOE, F. P., 1859. On some new Anthribidae. *Ann. Mag. nat. Hist.*, (3), **4**: 431-439.
- 1860. On some new Anthribidae. *Ibid.*, (3), **5**: 35-48.
- SHARP, D., 1891. The rhynchophorous Coleoptera of Japan. Part II. Apionidae and Anthribidae. *Trans. ent. Soc. London*, **1891**: 293-328.
- SHIBATA, T., 1963. Studies on Japanese Anthribidae, II. (Coleoptera). *Ent. Rev. Japan, Osaka*, **16**: 1-9, 1 plate.
- 1980. Studies on Japanese Anthribidae, V. (Coleoptera). *Ibid.*, **34**: 39-45.
- WOLFRUM, P., 1929. Anthribidae. In JUNK, W., & S. SCHENKLING (eds.), *Coleopterorum Catalogus*, pars 102 (pp. 3-145). W. Junk, Berlin.
- 1953. Anthribidae. In HINCKS, W. D. (ed.), *Coleopterorum Catalogus Supplementa*, pars 102 (pp. 3-63). W. Junk, 's-Gravenhage.

## The Family Curculionidae of Japan

### V. Tribe Camptorhinini\*

by

Katsura MORIMOTO

Entomological Laboratory, Faculty of Agriculture,  
Kyushu University, Fukuoka 812, Japan

**Abstract** A revision of the cryptorhynchine tribe Camptorhinini of Japan is presented. New taxa and synonymies treated in this paper are as follows: *Camptorhinus dorsonigratus* sp. nov.; *C. kurosawai* sp. nov.; *C. mangiferae* MARSHALL, 1925 (= *Camptorrhinus rotundicollis* NAKANE, 1963, syn. nov.); *C. notabilis* (WALKER, 1858) [*Cryptorhynchus*] (= *Camptorrhinus albizziae* MARSHALL, 1933, syn. nov. = *Camptorrhinus albizziae pumilio* HELLER, 1937, syn. nov. = *Camptorrhinus minoensis* NAKANE, 1963, syn. nov.).

The Camptorhinini are a tribe of the subfamily Cryptorhynchinae and comprise 5 genera and 75 species from the tropical and temperate regions of the Old World, especially from Africa and Madagascar, and only one genus, *Camptorhinus* and 4 species have been recorded from Japan. In this paper, I revise the Japanese species of *Camptorhinus*, with descriptions of 2 new species and synonymic notes.

The materials treated in this paper are mostly in the collection of Kyushu University and partly in the collection of the National Science Museum (Nat. Hist.), Tokyo, and the private collections of Dr. S. MIYAKAWA and Mr. K. EMOTO. Four specimens of *C. dorsonigratus* collected by G. LEWIS were kindly submitted to me by Dr. R. T. THOMPSON of the British Museum (Natural History).

To these entomologists and Dr. Y. KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo, I wish to express my sincere gratitude for their kind favour on materials. Thanks are due to Prof. Y. HIRASHIMA of Kyushu University for his helpful suggestions and encouragement in the course of the present study.

### *Camptorhinus* SCHOENHERR

*Camptorhinus* SCHOENHERR, 1826, Curc. disp. meth.: 283. (Type species: *Rhynchaenus pilipes* FABRICIUS by original designation).

*Camptorrhinus* GEMMINGER et HAROLD, 1871, Cat. Coleopt., 8: 2552. (Incorrect subsequent spelling.)  
*Rhinodes* STURM, 1826, Cat. Ins. Samml.: 190. (Type species: *Curculio statua* FABRICIUS by monotypy).

\* Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 178).

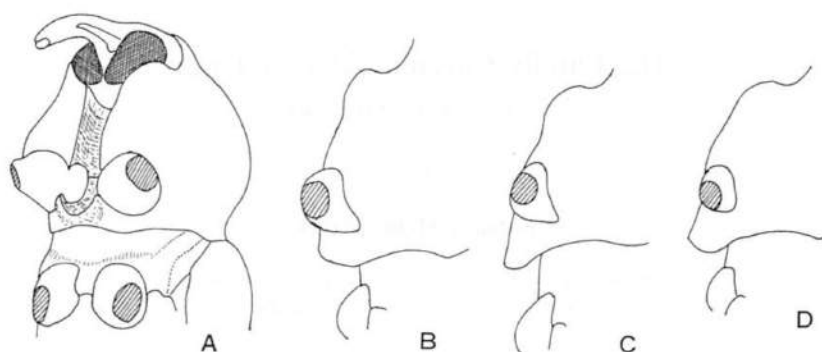


Fig. 1. Prothorax of *Camptorhinus* spp. — A, Latero-ventral; B–D, lateral, showing the posterior well of pectoral canal. — A, B: *C. dorsalis* (BOISDUVAL). C: *C. mangiferae* MARSHALL. D: *C. dorsonigratus* sp. nov.

This genus contains 53 species from Africa, Southern Europe, Southern Asia, New Guinea, Australia, Solomon Isls., and Japan.

#### Key of Japanese Species

(*C. squamosohirtus* is not included.)

- 1(4) Prothorax strongly swollen in male, less so in female. Fore tibiae and basal two segments of fore tarsi with long setae in male (Figs. 2 A, D; 3 A), tibiae angulate internally at basal third.
- 2(3) Post-coxal portion of pectoral canal produced well beyond the basal margin of prothorax (Fig. 1 C). Legs slenderer, middle tibiae and basal segment of middle tarsi with long setae as in fore legs in male (Fig. 2 B), hind tibiae of the same width and weakly bent at basal third in both sexes. Antennae with second segment of funicle much longer than first. A black basal small patch just below the hind angle of pronotum extends onto the base of elytron below shoulder and onto the tip of mesepimeron. Male aedeagus with penis less sclerotized dorsally, deeply and U-shapedly concave at apex. Length: 6.4–8.5 mm.....*Camptorhinus mangiferae* MARSHALL
- 3(2) Post-coxal portion of pectoral canal not produced posteriorly beyond the basal margin of prothorax (Fig. 1 B). Legs broader, middle tibiae and tarsi not fringed with long setae, hind tibiae weakly but distinctly angulate internally at basal third. Antennae with second segment of funicle subequal to first in length. Prothorax often with a small black scaly patch just below the hind angle of pronotum on each side, which does not extend onto elytron nor to mesepimeron. Male aedeagus with penis robust, parallel-sided, with a pair of dense hair tufts at apex ventrally. Length: 4.8–9.0 mm.....*Camptorhinus dorsalis* (BOISDUVAL)

- 4(1) Prothorax and fore tibiae similar in both sexes, fore tibiae and tarsi not fringed with long setae in male.
- 5(6) Pronotum, elytra and hind femora covered with blackish scales, with a greyish antescutellar patch on pronotum and a transverse band on apical third of elytra, scutellum greyish, underside greyish to pale brownish grey, with a pair of broad indefinite dark stripes on abdomen. Elytra with 3rd, 5th and 7th intervals scarcely costate and with several scaled indefinite nodules on basal half, costate and nodulose between the middle and sub-apical calli. Tibiae angulate internally at the middle. Posterior wall of pectoral canal convex posteriad with its apex slightly beyond and its ventral margin not beyond the posterior margin of thorax (Fig. 1 D). Antennae with first segment of funicle as long as second. Male aedeagus with penis densely hairy on apico-ventral portion. Length: 3.6–5.7 mm. ....  
 ..... *Camptorhinus dorsonigratus* sp. nov.
- 6(5) Scaling predominantly greyish to greyish brown, at most with blackish large patch between fifth intervals on elytra and median broad stripe on pronotum. Post-coxal portion of pectoral canal well beyond the posterior margin of prothorax.
- 7(8) Pronotum without any trace of median keel. Alternate intervals of elytra scarcely costate on basal half. Scaling predominantly greyish brown, with a blackish broad median stripe on pronotum and a common large patch between fifth intervals on the basal two-thirds of elytra, and with a pair of white small indefinite patches on 3rd to 5th intervals at basal third of elytra. Tibiae weakly angulate internally at basal third. Aedeagus with penis U-shapedly concave at apex. Length: 4.0–4.6 mm. ....  
 ..... *Camptorhinus kurosawai* sp. nov.
- 8(7) Pronotum with a trace of median keel in the middle. Alternate intervals of elytra costate. Derm covered with greyish to greyish brown shiny scales, with a white antescutellar patch on pronotum and a transverse band at apical third of elytra, with a broad median dark stripe on pronotum, and with a black stripe at the base of first interval on elytra and conjoint lateral stripe from pleurum of prothorax a little behind the anterior margin to apical third of elytron on 10th interval at base and soon going over onto 9th. Tibiae angulate internally at the middle. Aedeagus with penis bluntly angulate at apex. Length: 3.8–5.5 mm. ....  
 ..... *Camptorhinus notabilis* (WALKER)

*Camptorhinus mangiferae* MARSHALL

(Figs. 1 C, 2, 7 A)

*Camptorhinus mangiferae* MARSHALL, 1925, Bull. ent. Res., 15: 341, pl. 16, fig. 3. (India: Bihar & Orissa, bred from mango trees).

*Camptorhinus rotundicollis* NAKANE, 1963, Fragm. coleopt., (9): 37. (Kyoto, Echigo). — NAKA-

NE, 1963, Icon. Ins. Jap. Col. nat. ed., 2: 370, pl. 185, fig. 15. Syn. nov.

*Male.* Derm black, with greyish to brownish scaling; pronotum with a broad median dark brown to blackish stripe, with a small black patch just below the hind angle, which extends onto the base of elytron below shoulder and onto the tip of mesepimeron, and with two pairs of whitish small spots in dark stripe before and behind the middle formed by 3-4 scales and with a whitish small antescutellar patch; scutellum with brownish scales in the center and greyish at the periphery; elytra with a large common blackish patch between fifth intervals from apical third to basal fourth and between third intervals on basal fourth, a variable irregular common black patch on declivity between fifth intervals, lateral two or three intervals dark brownish above metepisternum and two basal ventrites, with a pair of whitish irregular small patches at basal third on fourth interval, which often expand into adjoining intervals; underside paler, ventral margin of mesepisternum and anterior portion of metepisternum often darker, with three darker stripes on venter, median one narrower and paler at base; femora with shafts brownish excepting the base, and each with an indefinite brown ring a little basal to the tooth; tibiae with a dark patch at basal third.

Rostrum scarcely curved, closely and rugosely punctate throughout. Antennae with second segment of funicle 1.2-1.4 times as long as first. Pronotum slightly longer than broad, strongly rounded at sides and gently convex, with a

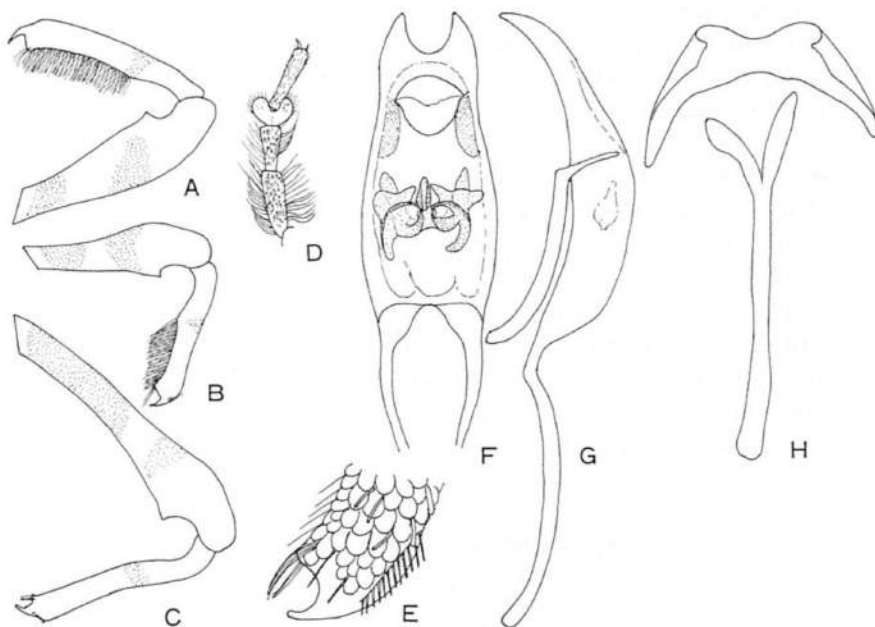


Fig. 2. *Camptorhinus mangiferae* MARSHALL, male. — A, Fore leg; B, middle leg; C, hind leg; D, fore tarsus; E, apex of hind tibia; F, G, penis; H, genital segment.

trace of abbreviated median carina only visible at apical third. Scutellum convex, longer than broad. Elytra with punctured striae narrower than intervals, their punctures partly or almost concealed by scales, first interval weakly convex on declivity, third and fifth intervals weakly costate and the latter terminating abruptly forming subapical callus. Tibiae angulate internally at basal third. Fore and middle tibiae, basal two segments of fore tarsi and basal segment of middle tarsi with long hairs. Posterior wall of pectoral canal produced well beyond the basal margin of prothorax. Aedeagus with penis U-shapedly concave at apex.

*Female.* Pronotum less rounded laterally and less convex dorsally. Fore tibiae shorter, tibiae and tarsi without long hairs. Venter with dark areas broader.

Length: 6.4–8.5 mm.

*Specimens examined.* Kurokawa, Niigata Pref., one female, 24. vii. 1964, K. BABA leg. Mt. Gozusan, Sasagami-son, Niigata Pref., one male, 15. vi. 1980, A. SEINO leg. Kumochi-cho, Kobe City, one female, 3. vii. 1953, S. SHIBANAI leg.

*Distribution.* Japan (Honshu), India.

In the original description of *rotundicollis*, NAKANE gave the male character as "protarsi and apical half of inner margin of 4 hinder tibiae provided with long yellowish hairs in male," but this is apparently erroneous and his illustration of this species in *Iconographia* agrees well with *mangiferae*.

### *Camptorhinus dorsalis* (BOISDUVAL)

(Figs. 1 A, B, 3, 7 B, C)

*Cryptorhynchus dorsalis* BOISDUVAL, 1835, Voy. Astrolabe, 2: 434 (Nova Hollandia).

*Camptorhinus dorsalis*: BOHEMAN, 1837, in SCHOENHERR's Gen. Spec. Curc., 4(1): 177. — MORIMOTO, 1894, Coleopt. Japan Col., 4: 331, pl. 65, fig. 18.

*Camptorhinus dorsalis*: GEMMINGER & HAROLD, 1871, Cat. Coleopt., 8: 2552.

*Camptorhinus artensis* MONTROUZIER, 1860, Ann. Soc. ent. Fr., (III), 8: 825 (Art).

Similar in shape and color patterns to *C. mangiferae*, but differing from it in the following points:

Black patch just below the hind angle of pronotum smaller and not extending to elytra, lateral margin of elytra not infusate. Rostrum weakly curved, shiny excepting the scaled base, separately punctate, with a median carina excepting the apex. Antennae with second segment of funicle subequal to first in length. Elytra with the punctures in striae large, much broader than intervals, the latter zigzag on dorsal area. Fore tibiae and basal two segments of fore tarsi with long hairs, but not so in middle legs. Legs broader, hind tibiae distinctly angulate internally at basal third. Posterior wall of pectoral canal not produced posteriorly beyond the hind margin of prothorax. Male aedeagus with penis parallel-sided, with a pair of hair tufts at apex ventrally.

Length: 4.8–9.0 mm.

*Specimens examined.* Kuroshima I., one male, 10. vii. 1978, H. FUJITA leg. Nakanoshima I., 4 exs., v–vii, M. SATÔ & H. SHIMA leg. Amami-Oshima I., 3 exs.,

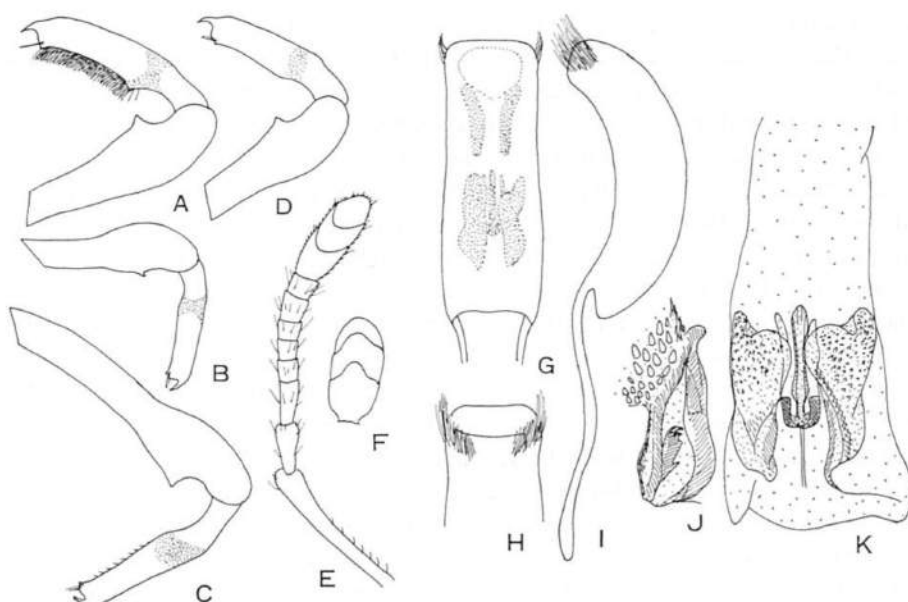


Fig. 3. *Camptorhinus dorsalis* (BOISDUVAL). A-C, E-K, Male; D, female. — A, D, Fore leg; B, middle leg; C, hind leg; E, antenna; F, antennal club seen from different angle; G, penis, dorsal; H, apical part of penis, ventral; I, penis, lateral; J, inner surface of the right sclerite by gonopore of penis; K, internal sac of penis, dorsal.

v-vii, N. HAYASHI, H. MAKIHARA & Y. MIYAKE leg. Okinawa I., 9 exs., iii-vi. H. IRIE, M. KINA, H. MAKIHARA & Y. MIYAKE leg. Ishigaki I., 32 exs., iii-vii, H. IRIE, K. IHA, K. KOJIMA, T. ESAKI & T. SHIRÔZU leg. Iriomote I., 13 exs., iii-viii, M. CHÛJÔ, K. KOJIMA, O. YAMAJI, H. IRIE, I. FUJIYAMA, H. MAKIHARA & Y. MIYATAKE leg. Hateruma I., 6 exs., 22-24. vi. 1977, H. IRIE leg. Kenting P., Pingtung Hsien, Taiwan, one male, 3. iv. 1965, S. UENO leg.; three males and one female, 14-17. v. 1978, T. SENOH leg. Lienhuachi, Nantou Hsien, Tawian, one male, 30. v. 1980, H. MAKIHARA leg. Lan-Yu I., near Taiwan, one male, 8. viii. 1968, H. MAKIHARA leg. Lam Tsuen Valley, Hong Kong, one female, 29. v. 1965, Y. MIYATAKE leg. Doi Suthep, Thailand, one female, 21. v. 1980, T. SENOH leg. Chiang Dao, Thailand, one male, 13. vi. 1965, Y. MIYATAKE leg. Doi Chiang Dao, Thailand, one female, 18. v. 1980, T. SENOH leg. 19 miles from Tapah, Malaysia, one male and one female, 5 & 29. iv. 1976, Y. MIYAKE leg. Tanarata, Malaysia, two females, 29. iii. 1974, Y. MIYAKE leg. Mt. Talem, Mindanao, Philippines, one female, 30. vi. 1977, M. SATÔ leg. Bulolo, Papua New Guinea, one male and one female, 6. viii. 1979, K. KUSAMA & K. SUGIYAMA leg. Lae, Papua New Guinea, one male, 3. ii. 1985, K. MORIMOTO leg.

*Distribution.* Japan (Ryukyus), Taiwan, Hongkong, Thailand, Malaysia, Philippines, New Guinea, Solomon, Australia, and Guam.

This species is probably the same with *porcatus* (FABRICIUS, 1801) described



from Sumatra, but the latter species was synonymized with *tibialis* (SPARRMAN, 1785) from Cap. Bonae Spei (Cape of Good Hope) by BOHEMAN, 1844. I hesitate to treat these in a species in this paper because of the lack of informations on *porcatus* and *tibialis* since BOHEMAN (1844), and because the locality of *tibialis* is so remote from the range of *dorsalis*.

*Camptorhinus dorsonigritus* sp. nov.

(Figs. 4, 7 D)

*Male and female.* Derm black, antennae, rostrum and tarsi reddish brown, with dense blackish scaling above and greyish scaling on the underside; pronotum with a whitish antescutellar patch, each side of the patch with a black velvety patch, which extends onto the base of second and third intervals of elytra, often with two pairs of black velvety indefinite small patches, one before the middle, the other behind the middle near side margins; scutellum whitish; elytra with a greyish transverse band at apical third between fifth intervals, first intervals, median portion between fifth intervals, lateral margins above hind coxae and apical area on declivity often with small indefinite irregular black velvety patches; lower surface below the middle of pleura of prothorax clothed with greyish scales, venter with a pair of

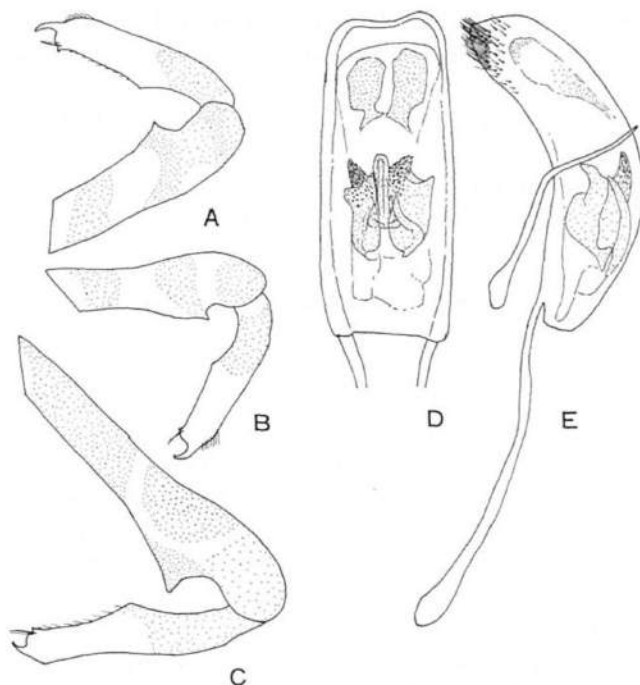


Fig. 4. *Camptorhinus dorsonigritus* sp. nov., male. — A, Fore leg; B, middle leg; C, hind leg; D, E, penis.

broad dark stripes; femora blackish, with greyish bases and two rings, hind femora often almost blackish; tibiae blackish on basal half and the rest greyish.

Head densely covered with concave scales and with a few squamiform setae. Rostrum weakly curved, densely punctate at base, the punctures becoming sparser and smaller apically, with a median carina on basal half in male; less closely punctate in female. Antennae inserted in the middle (male) or just behind the middle (female) of rostrum, first segment of funicle as long as second. Prothorax a little longer than broad (15: 13), broadest at the middle, rounded at sides and more strongly narrowing anteriorly, weakly convex dorsally, dorsum with close small punctures and with a trace of abbreviate median carina in the middle. Scutellum longer than broad, weakly convex. Elytra parallel-sided on basal two-thirds, striae narrower than intervals, with oblong punctures, first interval weakly convex on declivity, third, fifth and seventh intervals scarcely convex and with several scaled indefinite nodules on basal half, costate and nodulose between the middle and sub-apical calli. Posterior wall of pectoral canal convex posteriad with its apex slightly beyond and its ventral margin not beyond the basal margin of prothorax. Fore and middle tibiae bluntly but distinctly angulate internally a little basal to the middle, hind tibiae sharply angulate internally at the middle. Male aedeagus with penis densely hairy on apicoventral portion.

Length: 3.6–5.7 mm.

Holotype male (Type No. 2516, Kyushu Univ.), Kamisaibara-son, Okayama Pref., 16. v. 1971, O. YAMAJI leg. Paratypes: Asahi-mura, Hokkaido, one male, 29. vi. 1952, T. HASEGAWA leg. Yuyama, Kumamoto Pref., one male and four females, 10–14. v. 1981, G. LEWIS leg. Mt. Takachiho, Kagoshima Pref., one female, 3. v. 1959, H. YAMAMOTO leg.

*Distribution.* Japan (Hokkaido, Kyushu).

This is easily separable from the others by the scaly coloration.

*Camptorhinus kurosawai* sp. nov.

(Figs. 5, 7 E)

*Male and female.* Derm reddish brown, with scaly markings and coloration almost the same as in *mangiferae*.

Rostrum weakly curved, closely and rugosely punctate, with a median unpunctured carina in male; closely punctate and with a median carina at base, finely and sparsely punctate on apical two-thirds in female. Antennae inserted in the middle (male) or behind the middle (female) of rostrum, first segment of funicle as long as second. Pronotum a little longer than broad (30: 27), broadest and rounded at the middle, straightly and weakly narrowed posteriorly, dorsal black portion almost flat, without any trace of median carina. Scutellum longer than broad, convex. Elytra with alternate intervals not elevated on basal half and slightly elevated behind the middle, fifth interval terminating abruptly so as to form a weak

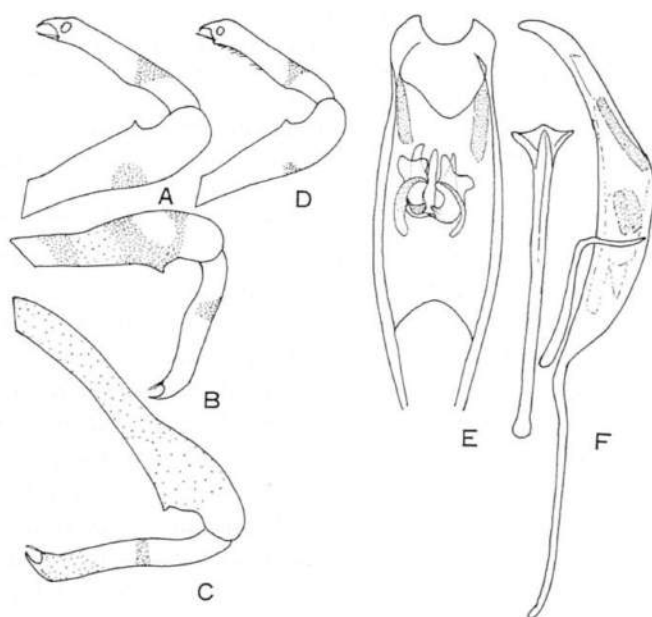


Fig. 5. *Camptorhinus kurosawai* sp. nov. A-C, Female; D-F, male. — A, D, Fore leg; B, middle leg; C, hindleg; E, F, penis.

tubercle. Post-coxal portion of pectoral canal well beyond the basal margin of prothorax. Hind femora slender, with long curved stalk. Tibiae with weak angulation internally at basal third. Aedeagus with penis U-shapedly concave at apex.

Length: 4.0–4.6 mm.

Holotype female (Type No. 2517, Kyushu Univ.), Yugawa R., Wakamatsu, Fukushima Pref., 14. x. 1947, Y. KUROSAWA & Y. HOSHI leg. Paratype: Gyono-hara, Oogo-cho, Kobe City, one male, vi. 1964, emerged from twig of chestnut tree, Y. MURAKAMI leg.

*Distribution.* Japan (Honshu).

This new species is similar to a small individual of *mangiferae* MARSHALL in having the similar scaly marking and coloration, rugose rostrum and U-shapedly concave penis, but the alternate intervals of elytra are not elevated at the basal half, the basal two segments of antennal funicle are of the same length, and the tibiae are not fringed with long hairs in the male.

The name is dedicated to Dr. Yoshihiko KUROSAWA, an eminent coleopterist, for his first collection of this interesting and rare species.

### *Camptorhinus notabilis* (WALKER)

(Figs. 6, 7 F)

*Cryptorhynchus notabilis* WALKER, 1858, Ann. Mag. nat. Hist., (3), 3: 264. (Ceylon).

*Camptorrhinus notabilis*: MARSHALL, 1930, Ann. Mag. nat. Hist., (10), 5: 576.

*Camptorrhinus albizziae* MARSHALL, 1933, Ann. Mag. nat. Hist. (10), 12: 572. (Assam & Dehra Dun, from *Albizzia lucida*, *Albizzia* sp. & *Shorea robusta*). — GARDNER, 1934, Ind. For. Rec., 20: 20, pl. 3, figs. 39–45 (larva). Syn. nov.

*Camptorrhinus albizziae pumilio* HELLER, 1937, Stett. ent. Ztg., 98: 65. (Java). Syn. nov.

*Camptorrhinus albizziae*: MORIMOTO, 1984, Coleopt. Japan Col., 4: 331, pl. 65, fig. 19. (Honshu, Kyushu, Taiwan, India).

*Camptorrhinus minooensis* NAKANE, 1963, Fragm. coleopt., (9): 38. (Osaka: Minoo). Syn. nov.

*Male and female.* Derm black, antennae, rostrum and tarsi reddish brown, with dense imbricate shiny scaling; scales predominantly greyish to leaden greyish brown, pronotum with a white antescutellar stripe from the base to the middle, each side of the stripe darker, lateral margin of prothorax with a blackish stripe from the middle posteriorly in a line to tenth stria of elytron, which extends to ninth stria a little behind shoulder; scutellum white; elytra leaden grey, with a white curved fascia between fifth interval at apical third, anterior and posterior areas of the fascia darker, first interval blackish on basal third, tenth interval blackish from the base to above third ventrites or tessellate behind hind coxa, ninth interval also blackish behind shoulder to above second ventrite; venter with a pair of indefinite dark brown stripes, often the stripes enlarged internally and forming a transverse large patch on second to fourth ventrites; femora each with two or three indefinite brown patches, which are often indistinct on anterior 4 femora and the basal patch

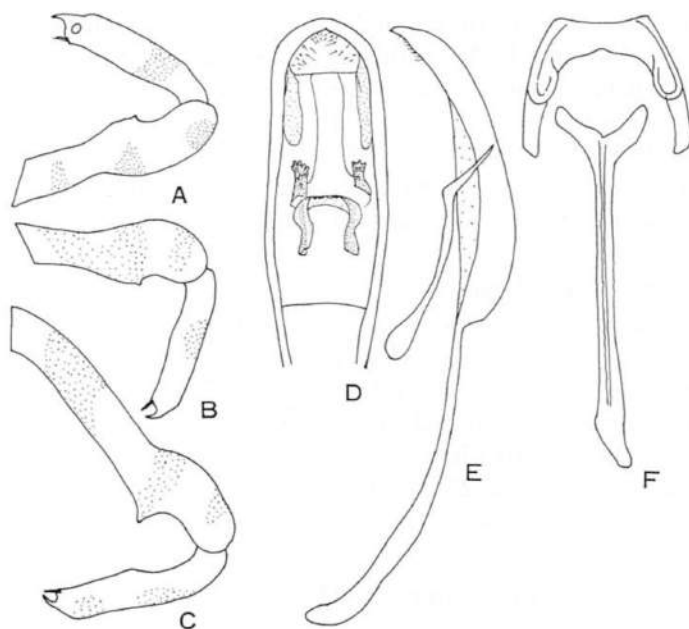


Fig. 6. *Camptorrhinus notabilis* (WALKER), male. — A, Fore leg; B, middle leg; C, hind leg; D, E, penis; F, genital segment.

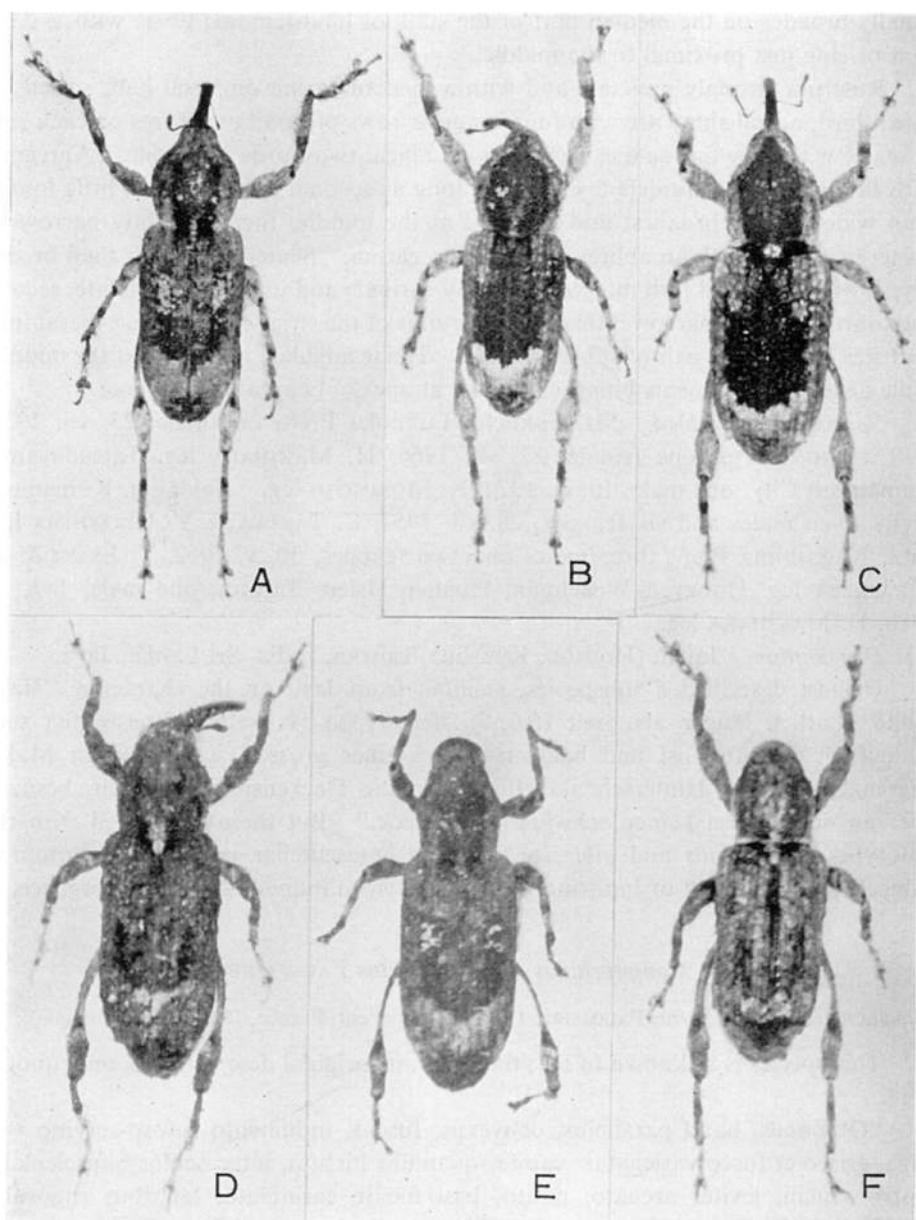


Fig. 7. *Camptorhinus* spp. — A: *C. mangiferae* MARSHALL, male, B: *C. dorsalis* (BOISDUVAL), male. C: Ditto, female. D: *C. dorsonigritus* sp. nov., paratype, male. E: *C. kurosawai* sp. nov., holotype, female. F: *C. notabilis* (WALKER), male.

usually broader on the median part of the stalk of hind femora; tibiae with a dark spot or ring just proximal to the middle.

Rostrum strongly punctate and with a median carina on basal half, scaled on basal third, apical shiny are with four irregular rows of small punctures on each side in male; with very fine sparse punctures on apical two-thirds in female. Antennae with first segment of funicle  $5/4$  times as long as second. Prothorax a little longer than wide (10:9), broadest and rounded at the middle, then straightly narrowing posteriorly, disk with an abbreviated median carina. Scutellum longer than broad. Elytra with third and fifth intervals strongly carinate and unevenly granulate, second and fourth intervals narrower than the punctures of the striae and zigzag. Basal four ventrites each with a pair of suberect setae. Tibiae angulate internally at the middle. Male aedeagus with penis bluntly angulate at apex. Length: 3.8–5.5 mm.

*Specimens examined.* Mt. Fukuchi, Fukuoka Pref., one male, 25. vii. 1955, S. TAKASHIMA leg.; one female, 27. vii. 1966, H. MAKIHARA leg. Tatsudayama, Kumamoto City, one male, 10. ix. 1974, K. MORIMOTO leg. Naidaijin, Kumamoto Pref., seven males and six females, 28. vii. 1952, C. TAKEYA & Y. HIRASHIMA leg. Sata, Kagoshima Pref., three males and two females, 30. v. 1952, T. ESAKI & Y. HIRASHIMA leg. Hungyeh Wenchuan, Hualien Hsien, Taiwan, one male, 1–3. vi. 1980, H. MAKIHARA leg.

*Distribution.* Japan (Honshu, Kyushu), Taiwan, India, Sri Lanka, Java.

HELLER described a subspecies, *pumilio*, from Java on the characters "Halschild deutlich länger als breit (5.6:5), der weisse Halsschildmittelstreifen sehr undeutlich und kurz ist und beiderseits von einer grossen schwärzlichen Makel begrenzt wird, die Hinterschenkel überragen die Deckenspitze deutlich, besitzen aber an der Wurzel keinen schwärzlichen Fleck." But these agree well with the holotypes of *notabilis* and *albizziae*, and the antescutellar patch of pronotum is subject to become dirt or indistinct in the time-worn individuals after emergence.

### *Camptorhinus squamosohirtus* FAIRMAIRE

*Camptorhinus squamosohirtus* FAIRMAIRE, 1897, Bull. Soc. ent. France, 1897: 70 (Ile Ishigaki).

This species is unknown to me; therefore, its original description is only quoted here.

"Oblongus, haud parallelus, convexus, fuscus, indumento lutoso-cervino vestitus, griseo et fusco variegatus; capite squamulis hirsuto, inter oculos bifasciculato, rostro gracili, leviter arcuato, polito, basi medio carinulato, lateribus rugosulo; prothorace elytris angustiore, longitudine vix latiore, antice paulo, postice vix angustato, dorso dense fere rugose punctato, utrinque vitta pallidiore antice cum altera conjuncta, squamis erectis sparsuto, disco penicillis 2 fuscis signato; elytris oblongis, ad humeros angulatis, medio leviter ampliatis, post medium angustatis, dorso striatis, striis laxè punctatis, intervallis fere planis, medio fascia angulari communi albida, antice et postice fusco marginata, lituris aliquot fuscis et albidis

sparsuto et setulis clavatis parce hirtis; femoribus clavatis, subtus dente triangulari acuto armatis, cum tibiis fusco annulatis. — Long. 5 mill. (rostr. excl.).

S'éloigné de la majorité des *Camptorhinus* par sa forme non parallèle et se rapproche au contraire d'une espèce de Madagascar, le *C. denticaudatus* FAIRM.

### References

- BOISDUVAL, J. A., 1835. Faune de l'Océane comprenant les Coléoptères, les Hémiptères, les Névroptères, les Hyménoptères et les Diptères. *Voyage de l'Astrolabe*, Zoologie II. 705+7 pp. Roret, Paris.
- CHEVROLAT, L. A., 1884. Diagnoses de trois nouvelles espèces de Curculionides. *Ann. Soc. ent. Fr.*, (6), 4 Bull.: CII.
- FABRICIUS, J. C., 1801. Systema Eleutheratorum secundum ordines, genera, species: adiectis synonymis, locis, observationibus, descriptionibus. II. 687 pp. Kiliae.
- FAIRMAIRE, L., 1883. Essai sur les Coléoptères de l'Archipel de la Nouvelle-Bretagne. *Ann. Soc. ent. Belg.*, 27: 31-47.
- 1897. Description de six Coléoptères de l'île Ishigaki-Sima. *Bull. Soc. ent. Fr.*, 1897: 68-72.
- FAUST, J., 1894. Viaggio di Leonardo FEA in Birmania e regioni vicine. LX. Curculionidae. *Ann. Mus. civ. Stor. nat. Genova*, (2), 14 [34]: 153-370.
- GARDNER, J. C. M., 1934. Immature stages of Indian Coleoptera (14), (Curculionidae). *Ind. For. Rec.*, 20: 1-42, pls. 1-6.
- 1938. Ditto (24, Curculionidae contd.). *Ibid.*, (n.s.), 3: 227-261, pls. 1-6.
- GEMMINGER, M., & E. VON HAROLD, 1871. Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus. 8: 2180-2668. Monachii.
- HELLER, K. M., 1937. Coleoptera Javana, mit Berücksichtigung der ihnen nahestehenden Formen anderer Herkunft. *Stett. ent. Ztg.*, 98: 51-78, pl. 1.
- HOFFMAN, A., 1958. Coléoptères Curculionides (3<sup>e</sup> partie). *Faune de France*, 62: 1219-1839. Paul Lechevalier, Paris.
- HUSTACHE, A., 1924. Synopsis des Curculionides de Madagascar. *Bull. Acad. Malg.*, 7: 3-582.
- 1936. Curculionidae: Cryptorrhynchinae. *Coleopterorum Catalogus*, pars 151 (317 pp.). 's-Gravenhage.
- LACORDAIRE, M. T., 1866. Genera des Coléoptères, VII. 602 pp. Paris.
- LEA, A. M., 1913. Revision of the Australian Curculionidae belonging to the subfamily Cryptorrhynchides. Part XI. *Proc. Linn. Soc. N. S. Wales*, 34: 602-616.
- MARSHALL, G. A. K., 1925. New Curculionidae attacking trees in India. *Bull. ent. Res.*, 15: 339-344, pl. 16.
- 1933. On new Indian Curculionidae. *Ann. Mag. nat. Hist.*, (10), 12: 565-583.
- MEYER, P., 1896. Bestimmungs-Tabellen der europäischen Coleopteren: Curculionidae. 4 Theil. Die palaearctischen Cryptorrhynchiden. 56 pp. Paskau.
- MORIMOTO, K., 1962. Key to families, subfamilies, tribes and genera of the superfamily Curculionoidea of Japan excluding Scolytidae, Platypodidae and Cossoninae. *J. Fac. Agr., Kyushu Univ.*, 12: 21-66.
- 1978. On the genera of Oriental Cryptorrhynchinae. *Esakia*, (11): 121-143, 62 figs.
- 1984. In HAYASHI *et al.*, The Coleoptera of Japan in Color, IV. 438 pp., 72 pls. Hoikusha, Osaka. (In Japanese.)
- NAKANE, T., 1963. New or little-known Coleoptera from Japan and its adjacent regions. XX. *Fragm. coleopt.*, pars 8-10: 31-40.
- 1963. Iconographia Insectorum Japonicorum Colore naturali edita, II. 443 pp., 192 pls.

- Hokuryukan, Tokyo. (In Japanese.)
- PASCOE, F. P., 1885. List of the Curculionidae of the Malay Archipelago collected by Dr. Odoardo BECCARI, L. M. d'ALBERTIS, and others. *Ann. Mus. civ. Stor. nat. Genova*, 2: 201-331, pls. 1-3.
- 1886. Descriptions of some new genera and species of Curculionidae, mostly Asiatic. Part. III. *Ann. Mag. nat. Hist.*, (5), 19: 370-380, pl. 11.
- REITTER, E., 1912. Bestimmungs-Tabellen der europäischen Coleopteren. LXVIII. Heft 68. Bestimmungs-Schlüssel für die Unterfamilien, Tribus und Gattungen der Curculinidae. *Verh. naturf. Ver. Brunn*, 51: 1-90.
- SCHOENHERR, C. J., 1826. Curculionidum Dispositio Methodica. x+338 pp. Lipsiae.
- 1837. Genera et Species Curculionidum, cum Synonymia hujus Familiae. IV. 1121 pp. Paris.
- 1844. Ditto. VIII. 438 pp. Paris.
- WALKER, F., 1859. Characters of some apparently undescribed Ceylon insects. *Ann. Mag. nat. Hist.*, (3), 3: 258-265.
- ZIMMERMAN, E. C., 1942. Curculionidae of Guam. *B. P. Bishop Mus. Bull.*, (172): 73-146, 7 pls.



## The Sawfly Genus *Metallopeus* (Hymenoptera, Tenthredinidae) of Taiwan

by

Akihiko SHINOHARA

Entomological Laboratory, College of Agriculture, University  
of Osaka Prefecture, Sakai, Osaka 591, Japan

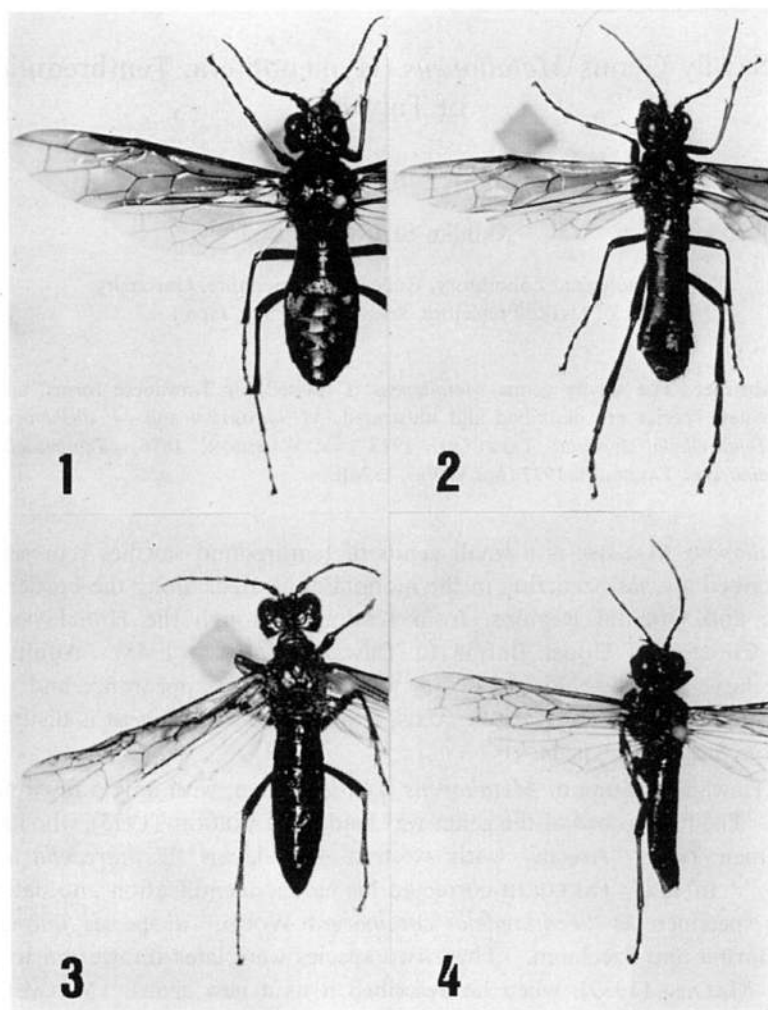
**Abstract** The sawfly genus *Metallopeus* is revised for Taiwanese forms, and two new species are described and illustrated, *M. kurosawai* and *M. alishanicus* [= *Tenthredella clypeata*: TAKEUCHI, 1923 (not CAMERON, 1876) = *Tenthredella coccinocera*: TAKEUCHI, 1927 (not WOOD, 1874)].

*Metallopeus* MALAISE is a small genus of tenthredinid sawflies represented by eight described species occurring in the mountainous areas along the borders of the Palearctic and Oriental Regions, from Kashmir through the Himalayas, Tibet, southern China, and Upper Burma to Taiwan (MALAISE, 1945). Adults of the genus are large metallic-colored sawflies with the general appearance and venation as in the huge genus *Tenthredo* LINNAEUS, from which *Metallopeus* is distinguished by the large flattened clypeus.

The Taiwanese fauna of *Metallopeus* is little known, with only a few references available. The first record of the genus was made by TAKEUCHI (1923), who identified his specimen from "Arisan" with western Himalayan "*Tenthredella clypeata* CAMERON." In 1927, TAKEUCHI corrected his earlier identification and determined the same specimen as "*Tenthredella coccinocera* WOOD," a species known from Sikkim, Burma and Szechuan. These two species were later transferred to *Metallopeus* by MALAISE (1937), when he described it as a new genus. MALAISE (1945) included Taiwan in the distribution of *M. coccinocerus*, doubtlessly following TAKEUCHI (1927). All of these records are thus based on a single specimen in TAKEUCHI's collection, which is now housed in the University of Osaka Prefecture (UOP).

My studies on a small collection of *Metallopeus*, including the above-mentioned specimen in UOP and Himalayan specimens representing *M. clypeatus* (CAMERON) and *M. coccinocerus* (WOOD), have shown that two species of the genus occur in Taiwan, both new to science. I describe the two new species in this paper.

It gives me a great pleasure to dedicate this small paper to Dr. Y. KUROSAWA of the National Science Museum (Nat. Hist.), Tokyo (NSMT), who has so willingly helped and continuously encouraged my studies on sawflies. I express my hearty thanks to Dr. D. R. SMITH (U. S. Department of Agriculture, Washington, D. C.)



Figs. 1-4. *Metallopeus kurosawai* n. sp. (1, 2) and *M. alishanicus* n. sp. (3, 4). — 1, ♀, Paratype; 2, ♂, paratype; 3, ♀, holotype; 4, ♂, paratype.

for his critical review of the manuscript, to Mr. H. KUMAMOTO (Kusatsu), Drs. Y. KUROSAWA and M. OWADA (NSMT), Drs. M. S. SAINI and B. SINGH (Punjabi University, Patiala), Mr. T. SHIMOMURA (Tokyo) and Mr. S. TSUYUKI (Zushi) for their generous gift or loan of the specimens, and to Prof. H. KUROKO and the staff of the Entomological Laboratory, UOP, for their constant guidance.

*Metallopeus kurosawai* n. sp.

(Figs. 1, 2, 5, 7, 9, 11, 13, 15, 17-19)

*Female* (holotype). Length 14 mm. Metallic dark greenish blue, dorsal side of

head with reddish coppery reflection and dorsal side of abdomen metallic dark blue; antenna black, basal segments with dark bluish reflection; labrum whitish with apical half blackish brown; apical tarsal segments blackish brown, lacking metallic luster. Forewing, except for clear hyaline base of anal and posterior cells, strongly infuscated, with bluish reflection; infuscation very slightly weaker towards apex; hindwing less strongly but distinctly infuscated, except for clear hyaline anellan and postellan cells; veins and stigma blackish brown to black.

Anterior margin of clypeus nearly truncate, with shallow round incision at middle (Fig. 7); supraantennal tubercle gently sloping posteriorly and not distinctly separated from weakly raised frontal ridge; frontal area convex anteriorly but no pyramidally raised tubercle as large and high as ocellus; surface of upper part of face between frontal ridge and eye smooth, with very sparse indistinct punctures; postocellar area distinctly transverse (length: width about 2:3), moderately convex, rather flattened above, without median carina; hind orbit (gena) with low but distinct dorsoventral bulge; hind orbital carina (postgenal carina) hardly produced posteriorly (Fig. 5), with no carina branching anteriorly from it. Antenna short, about as long as head and thorax combined; scape distinctly thickened with dense long blackish hairs; flagellum distinctly tapering towards apex; relative lengths of segments about 13\*: 7: 16: 13: 11: 8: 7: 6: 6.

Mesonotal middle and lateral lobes densely covered with small punctures; mesoscutellum strongly pyramidally elevated to narrowly rounded tip, distinctly transversally flattened, anterior side with rather sparse shallow punctures and posterior side with dense distinct punctures; scutellar appendage (posttergite) hardly carinate longitudinally, with large distinct punctures medially; metascutellum triangularly raised in caudal view; thorn-like process on mesosternum\*\* thick, distinctly compressed and carinate.

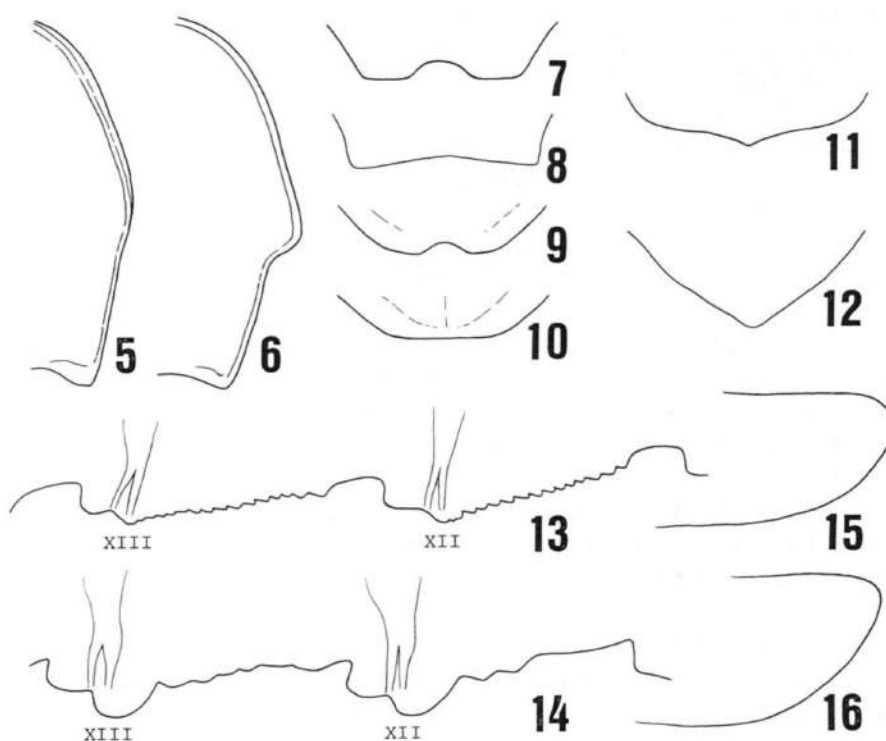
Abdominal terga very distinctly micro-striated, giving dull luster; micro-striation less distinct on propodeum, especially in median and anterior part. Sawsheath as in Fig. 15; teeth of lancet as in Fig. 13.

*Male* (paratype). Length 14 mm. Ground color metallic dark blue, head and thorax partly with greenish tinge; color otherwise similar to that of female.

Clypeus slightly inflated on both sides, with anterior margin roundly emarginate (Fig. 9); supraantennal tubercle and frontal ridge more strongly elevated than in female and distinctly separated from each other; postocellar area distinctly transverse (length: width about 3:4), evenly convex, without median carina. Antenna more slender than in female, slightly longer than head and thorax combined; relative lengths of segments about 12: 7: 17: 14: 12: 10: 8: 7: 7. Propodeum very distinctly micro-striated as in other terga. Otherwise similar in structure to female. Subgenital plate as in Fig. 11; genitalia as in Figs. 17–19.

\* Length of scape includes that of radicle.

\*\* The area conventionally called the "mesosternum" in sawfly systematics is now regarded as a part of the pleuron (SHINOHARA, in press).



Figs. 5–16. *Metallopeus kurosawai* n. sp. (5, 7, 9, 11, 13, 15) and *M. alishanicus* n. sp. (6, 8, 10, 12, 14, 16). — 5, 6, Posterior parts of heads, lateral views, ♀, holotypes; 7, 8, anterior parts of clypei, ♀, holotypes; 9, 10, same, ♂, paratypes; 11, 12, posterior parts of subgenital plates, paratypes; 13, 14, lancets, teeth of 12th and 13th segments (10th and 11th teeth in *M. kurosawai* and 12th and 13th teeth in *M. alishanicus*) from apices, holotypes; 15, 16, sawsheaths, lateral views, holotypes.

*Distribution.* Taiwan.

Holotype. ♀, “Horisha [=Puli], 10. V. 1913, coll. M. MAKI” (NSMT). Paratypes. 1♀, Mt. Lalashan, Taipei-Taoyuan Hsien, 2. V. 1981, S. TSUYUKI (coll. A. SHINOHARA); 1♀, same locality, 16. IV. 1980, T. SHIMOMURA (coll. H. KUMAMOTO); 1♂, Shinboku [=Shenmu], Hualien Hsien, 20. V. 1978, T. SHIMOMURA (coll. A. SHINOHARA).

*Variation.* The three females examined range in length from 14 to 15.5 mm but otherwise variation is slight.

*Etymology.* This brilliant new species is named in honor of Dr. Y. KUROSAWA, NSMT.

*Remarks.* Comparative comments are given under the next species.

*Metallopeus alishanicus* n. sp.

(Figs. 3, 4, 6, 8, 10, 12, 14, 16, 20–22)

*Tenthredella clypeata*: TAKEUCHI, 1923, p. 45 (not CAMERON, 1876).*Tenthredella coccinocera*: TAKEUCHI, 1927, p. 203 (not WOOD, 1874).

*Female* (holotype). Length 15 mm. Dark greenish bronze, dorsal side of abdomen metallic dark blue; antenna blackish brown to black, basal segments with dark bluish reflection; labrum whitish basally, brownish medially, and becoming dark brown apically and marginally; apical tarsal segments blackish brown, lacking metallic luster. Forewing strongly infuscated, with bluish reflection, infuscation very slightly weaker towards apex; hindwing nearly clear hyaline, with very slight infuscation towards apex; veins and stigma blackish brown to black.

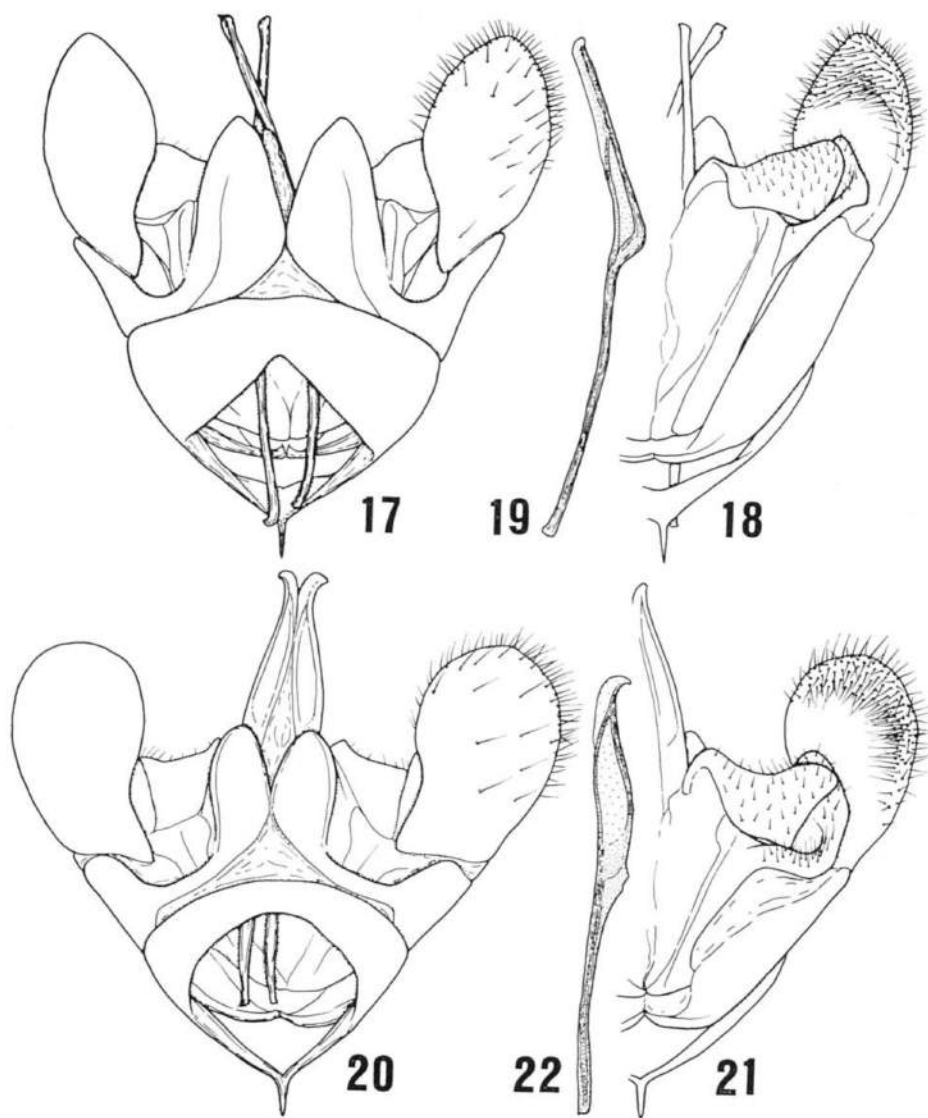
Anterior margin of clypeus very shallowly emarginate (Fig. 8); supraantennal tubercle rather steeply sloping posteriorly and continuous to weakly raised frontal ridge; frontal area rather flat, with slight depression just in front of median ocellus and with no pyramidally raised tubercle as large and high as ocellus; surface of upper part of face between frontal ridge and eye smooth, with very sparse indistinct punctures; postocellar area slightly wider than long (length: width about 5:6), strongly convex, roof-like, with distinct median carina; hind orbit (gena) with distinct dorsoventral bulge; hind orbital carina (postgenal carina) strongly and roundly produced posteriorly (Fig. 6), with no carina branching anteriorly from it. Antenna longer than head and thorax combined; scape normal, with dense brownish hairs; relative lengths of segments about 12: 7: 19: 15: 13: 11: 10: 9: 9.

Mesonotal middle and lateral lobes rather densely covered with small punctures; mesoscutellum strongly pyramidally elevated to narrowly rounded tip, scarcely transversally flattened, anterior side nearly impunctate and posterior side with dense distinct punctures; scutellar appendage (posttergite) bluntly but distinctly carinate longitudinally, without distinct punctures; metascutellum roundly raised in caudal view; thorn-like process on mesosternum thin, only slightly compressed and scarcely carinate.

Abdominal terga, except for very smooth propodeum, distinctly micro-striated, giving dull luster. Sawsheath as in Fig. 16; teeth of lancet as in Fig. 14.

*Male*. (paratype). Length 12 mm. Ground color metallic dark blue; otherwise similar in color to female.

Clypeus more convex than in female, with anterior margin nearly truncate (Fig. 10); frontal ridge more strongly raised than in female and frontal area rather deeply concave in front of median ocellus; postocellar area distinctly transverse (length: width about 2:3), roof-like, with distinct median carina. Antenna more slender than in female; relative lengths of segments about 11: 7: 18: 16: 14: 12: 10: 9: 8. Scutellar appendage with few punctures; thorn-like process on mesosternum thicker than in female, distinctly compressed and carinate. Structure



Figs. 17–22. *Metallopeus kurosawai* n. sp. (17–19) and *M. alishanicus* n. sp. (20–22), ♂ genitalia, paratypes. — 17, 20, Ventral views; 18, 21, dorsal views; 19, 22, penis valves, lateral views.

otherwise similar to that of female. Subgenital plate as in Fig. 12; genitalia as in Figs. 20–22.

*Distribution.* Taiwan.

Holotype. ♀, “9. V. 1922, Arisan [=Alishan], MORI” (UOP). Paratype.

1♂, "VI. 1914, Arisan, coll. M. MAKI" (NSMT).

*Etymology.* The specific name is after the type locality, Mt. Alishan, which is a famous mountain in central Taiwan, about 20 km west of Mt. Yushan, Taiwan's highest peak.

*Remarks.* The two *Metallopeus* species from Taiwan, *kurosawai* and *alishanicus*, have much in common. They are distinguished from the other eight congeners by the following combination of characters: frontal area with no pyramidally raised tubercle of about same size as ocellus in front of median ocellus (such tubercle present in *M. inermis* MALAISE, *M. cupreolus* MALAISE and *M. sinensis* MALAISE); punctures on upper part of face between frontal ridge and eye very sparse and indistinct, very different from much denser and more distinct punctures on mesonotal middle and lateral lobes (punctures on upper part of face scattered and very distinct, uniform with those on mesonotum in *M. trigon* MALAISE and *M. splendidus* (KONOW)); abdominal terga very distinctly micro-striated, giving dull luster (abdominal terga without distinct micro-striation in *M. kashmirensis* MALAISE, *M. clypeatus* (CAMERON) and *M. coccinocerus* (WOOD)).

*Metallopeus kurosawai* and *alishanicus* are easily separated as follows:

1. Anterior margin of clypeus with round incision at middle (Figs. 7 & 9); post-ocellar area rather flattened above, without median longitudinal carina; hind orbital carina hardly produced posteriorly (Fig. 5); antenna short, with thickened scape; scutellar appendage with some large distinct punctures; hindwing distinctly infuscated. Female: scape (including radicle) subequal to or slightly longer than 4th antennal segment or two apical (8th and 9th) segments combined; thorn-like process on mesosternum thick, distinctly compressed and carinate; teeth of lancet as in Fig. 13. Male: frontal area flat or slightly convex in front of median ocellus; subgenital plate as in Fig. 11; genitalia as in Figs. 17–19.....*M. kurosawai*
- Anterior margin of clypeus with no round incision at middle (Figs. 8 & 10); postocellar area roof-like, with median longitudinal carina; hind orbital carina strongly produced posteriorly (Fig. 6); antenna long, with scape not particularly thickened; scutellar appendage impunctate or with few punctures; hindwing almost clear hyaline. Female: scape much shorter than 4th antennal segment (about 4: 5) or two apical segments combined (about 2: 3); thorn-like process on mesosternum thin, only slightly compressed and scarcely carinate; teeth of lancet as in Fig. 14. Male: frontal area rather deeply concave in front of median ocellus; subgenital plate as in Fig. 12; genitalia as in Figs. 20–22.....*M. alishanicus*

## References

- MALAISE, R., 1937. On some sawflies (Hymenoptera: Tenthredinidae) from the Indian Museum, Calcutta. *Rec. Ind. Mus.*, **36**: 453–474.

- MALAISE, R., 1945. Tenthredinoidea of South-eastern Asia, with a general zoogeographical review. *Opusc. ent., Suppl.*, 4: 1-288, pls. 1-20.
- SHINOHARA, A., in press. A new apterous sawfly from Sulawesi, Indonesia (Hymenoptera, Pergidae, Perreyiinae) and the pleural origin of the ventral region of the sawfly mesothorax. *Syst. Ent.*
- TAKEUCHI, K., 1923. Sawflies of Taiwan. *Trans. nat. Hist. Soc. Formosa*, 13: 39-46. (In Japanese.)
- 1927. Some new sawflies from Formosa. *Ibid.*, 17: 201-209.



昭和 61 年 3 月 15 日 印 刷  
昭和 61 年 3 月 20 日 発 行

発行者 甲 虫 談 話 会  
印刷所 株式会社 国際文献印刷社  
東京都新宿区高田馬場 3-8-8

