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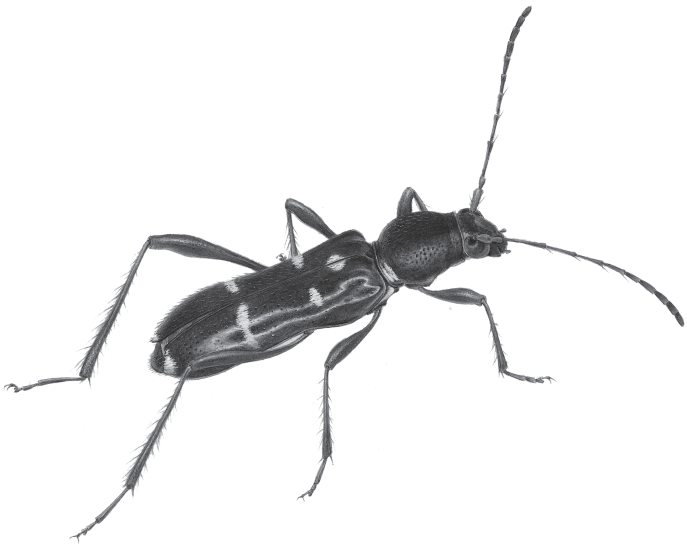
# LONGICORNISTS



**SPECIAL BULLETIN**
**OF THE**
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**No. 7**

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# Special Bulletin
# of the
# Japanese Society of Coleopterology
# No. 7
# [Longicornists]

This volume is dedicated to the commemoration of
Dr. Nobuo OHBAYASHI and Dr Masatoshi TAKAKUWA for their retirements.
The subtitle "Longicornists" means the lovers of longicorn beetles
and is derived from their entomological specialty

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# Preface

Two outstanding coleopterologists, Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History and Prof. Dr. Nobuo OHBAYASHI of Ehime University have retired from their employment in the spring of 2008 and 2009 respectively. They have energetically studied in their laboratories as specialists in coleopterology and have guided many younger entomologists during the past forty plus years. Prof. OHBAYASHI served the community as a president of the Japanese Society of Coleopterology during 1999 and 2002, and now as president of the Japanese Society of Systematic Entomology and the Japan Coleopterological Society. Dr. TAKAKUWA also served the community as a president of the former society during 2003 and 2006, and now as a curator for reappointment in his museum.

Our society has planned this special publication to honor their achievements and to thank Drs. OHBAYASHI and TAKAKUWA for their many troubles. We have published a total of six special publications entitled "Special Bulletin of the Japanese Society of Coleopterology" in the past of 35 years, of which five were commemorative issues honoring such society members as a former president and/or an important director. We would like to publish No. 7 issue on the occasion of the retirements of Drs. OHBAYASHI and TAKAKUWA in the spring of 2009. Our special bulletins are usually called by an unique subtitle describing their contents. The subtitle of this issue is "Longicornists" since these two coleopterologists are well known specialists of longicorn beetles.

A total of 22 original articles on taxonomy, phylogeny and the other miscellaneous matters about longicorn beetles by 21 authors mainly from Japan, but also China, Taiwan, Russia and Europe are published in this issue. I wish to express my hearty thanks to the authors for the contribution of their interesting papers. The Longicornists is also pleased to provide biographies of Drs. OHBAYASHI and TAKAKUWA and bibliographies of all their scientific writings.

We are expecting that these two splendid coleopterologists will stay forever young, keeping their health, and remaining active both in their own studies and in providing guidance to younger scientists.

April 30, 2009

Dr. Tatsuya NIISATO
President of the Japanese Society of Coleopterology

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*Spec. Bull. Jpn. Soc. Coleopterol.*, *Tokyo*, (7): 1–25, May 25, 2009

# My Brief Biography

**Nobuo OHBAYASHI**

I was born in Sengoku-cho, Gifu City on the 17th of March, 1944. On the 9th of July, 1945 when I was one, and one month before the end of World War II, Gifu City was the target of an American B29 air raid, but fortunately, I managed a hairbreadth escape on my mother's back from the terrifying firestorm.

I am the eldest son of Kazuo and Takako OHBAYASHI. My father was a journalist for the Mainichi Newspaper Co. Ltd., but also a famous amateur entomologist working on Cerambycidae. From my early days at elementary school, my father took me on field trips to collect insects. As a result, I became a great lover of insects, especially Coleoptera. When I was a high school student, I selected the Faculty of Agriculture at Ehime University for the next stage of my education in order to study entomology.

In 1962, I was admitted to the Entomological Laboratory at Ehime University in my first year. The laboratory included eminent faculty such as Drs. Tetsusaburo TACHIKAWA, Mutsuo MIYATAKE and Sadanari HISAMATU under Professor Tamotsu ISHIHARA, and also great seniors like Masataka SATÔ and Yutaka ARITA. But I was in the bloom of adolescence and did not study hard in spite of my favorable circumstances. I joined the Exploration Club and savored the joys of youth, such as caving, mountaineering and rock climbing, and also several fantastic collecting trips to the Ryukyu

Islands.

When I was a final-year student my father contracted cancer and I abandoned the idea of attending graduate school. The following April, after gaining employment at the Horticultural Experiment Station of the Kanagawa Prefectural Government, I lost my father who was not only my sponsor, but also my most important mentor. For a long time after my father's death I worked on a few taxonomic studies of Dermestidae and Cerambycidae, but I mainly worked in applied entomology, nematology and phytopathology for 27 years. During this period, the late Prof. Dr. SATÔ of Nagoya Women's University, who was my senior and like a big brother to me, always tried to bring me back to taxonomy. However, I was half-compelled to take a degree in my area of applied research under another senior, Prof. Dr. Y. ARITA of Meijô University. Fortunately, I managed to obtain the degree of Doctor of Agriculture from his University when I was 45 years old. The title of my thesis was, "Studies on the methods for controlling root-lesion nematode, *Platylenchus penetrans* Cobb infecting the Japanese radish".

In 1993, I stumbled across a chance to get a position with the Entomological Laboratory of my alma mater. It was one month before my 49th birthday. Here I restarted the taxonomic study of Cerambycidae. For the 16 years since then, I have been involved in entomology education and research. During this period, I made several collecting trips abroad, to countries such as Indonesia, Madagascar, Mongolia, China, Laos, Taiwan and Malaysia, and supervised more than 100 students despite heavy administrative tasks.

I just retired from Ehime University at the end of March 2009, and would like to thank all the honorable teachers, seniors, friends and many students. I am now free of my academic responsibilities but I would like to continue to study as long as I breathe.

(Submitted on April 1, 2009 with sincere gratitude.)

# A Bibliography of Writings by Nobuo OHBAYASHI
1962–2008

This list consists of his entomological, nematological and phytopathological research and related works published during the period from 1962 to 2008. Articles written in Japanese are given new English titles.

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# My Brief Biography

**Masatoshi TAKAKUWA**

I was born in Kanazawa Ward, Yokohama City, Kanagawa Prefecture, Japan on October 9, 1947, and I have been living there since then. I liked insect-collecting from boyhood and was known as "an insect boy" (*mushi kichigai*) in the neighborhood. In junior high school and high school, while belonging to the living things and collecting insects clubs, I also became interested in ferns and plankton. Although I first liked the butterfly among the insects, I came to be interested in the order Coleoptera, especially the longicorn- and mordellid-beetles. As a 2nd year student in junior high school I received instruction from Mr. Hiroyuki ISHIWATA of a graduate of the entomological laboratory of the Tokyo University of Agriculture who guided my interests.

In April, 1966, I entered the department of economics of the Tokyo Metropolitan University. I majored in urban problems at the university, but was almost uninterested in economics itself. I joined the Keihin Kontyû Society (1949–1971), and came to actively participate (vice-committee head from 1968 to 1969). As for insects, I received Mr. Shigeo TSUYUKI's and many other entomologists' instructions, and collected longicorn beetles eagerly. I caught a black strange form of *Pyrrhona laeticolor* in Yaku Is. of the N. Ryukyus in July, 1968, and it was after named subsp. *takakuwai* KUSAMA

in 1971 by the late Dr. Keiichi KUSAMA. This was the most turbulent era for the All-Campus Joint Struggle Committee movement; never the less I graduated from the university in March, 1970.

In February, 1971, two friends and I started the monthly specialty magazine about insects "Gekkan-Mushi" (total No. 458 in March, 2009). After that, I entered into Uchida Rokakuho Shinsha publishing company in March, 1972, to learn the editing business. I was able to visit to the Yaeyama Iss. of the S. Ryukyus in May and June, 1974, and at this time I came to understand the methods of collecting the tribe Mordellini including the genus *Glipa* which does not fly to flowers. I was engaged in the editing of "Gekkan-Mushi" again from July, 1974. At this time, I came to have a strong interest in the longicorn tribe Phrissomini of Japan. I was also able to join in the Ogasawara academic investigation of the National Science Museum, Tokyo as one of the late Dr. Yoshihiko KUROSAWA's assistants in June, 1976. I fortunately collected several new species of insects which contained a species of the longicorn tribe Clytini.

In April, 1973, I founded the Japanese Society of Coleopterology, Tokyo with Mr. Hiroshi FUJITA and others, and became the first associate editor of "Elytra" (this society merged with the Coleopterists' Association of Japan, Tokyo in 1989, and continues up to present as the Japanese Society of Coleopterology, Tokyo). I received guidance from Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, and described a new mordellid species (*Glipa iriei* TAKAKUWA) for the first time in "Elytra" in 1976. Publishing of "The Longicorn-Beetles of Japan in Color" (the Japanese Society of Coleopterology (ed.); the Kodansha issue) was planned in 1979, and I took charge of the editing and public relations, plate production and text description for most parts. Although this work thoroughly exhausted me mentally and physically, this pictorial book was published at last in November, 1984.

In April, 1978, I left the editorship of "Gekkan-Mushi" and became to an officer of the Preservation of Cultural Assets Division of the Kanagawa Prefectural Education Board on the recommendation of Mr. Toyohiko SHINBORI who was a member of the Kanagawa Prefectural Assembly at that time. The most important work assigned to me there was management of insect investigation in Kanagawa Prefecture (publishing the report in March, 1981), and I also supervised the office work for both Natural Monuments in Kanagawa Prefecture and the Kanagawa Nature Conservation Association. Through staff reassignment, I was transferred to the curatorial division of Kanagawa Prefectural Museum, Yokohama in April, 1985. While mainly performing surveillance study about the insects of Kanagawa Prefecture and its adjacent area, I advanced taxonomic research of longicorn- and mordellid-beetles.

In January, 1995, the Kanagawa Prefectural Museum divided into two departments, liberal arts science and natural science, and I moved to the latter at the Kanagawa Prefectural Museum of Natural History, Odawara. While mainly being engaged with the dynamic state of distribution of the tribe Phrissomini and taxonomy research of the tribe Mordellini, I tackled the red data insect investigation within Kanagawa Prefecture and an alien species problem. In August, 1998, a doctorate in

agriculture was granted me by the Tokyo University of Agriculture (Dissertation title: A taxonomic study of the mordellid subgenus *Stenoglipa* (Coleoptera, Mordellidae)).

From April, 2002 to March, 2008, I served as head curator, Division of Research and Curatorial Works of the Kanagawa Prefectural Museum of Natural History. In the meantime, I served as the president of the Japanese Society of Coleopterology from January, 2003 to December, 2006, and belonged to several committees of the Ministry of Environment, Yokohama City, Kawasaki City, etc.

In March, 2008, having reached retirement age I retired from the Kanagawa Prefectural Museum of Natural History. On December 27, 2008, through the courtesy of many entomologists, "Analysis of an Entomologist Masatoshi TAKAKUWA and his Surroundings, 232 pp., Hananomikai, Odawara" was published (in Japanese), and a retirement celebration party for me was held on a grand scale in Yokohama. Now, however, I am continuing in service to the Kanagawa Prefectural Museum of Natural History, Odawara as a curator for reappointment. I am going to continue taxonomic research of longicorn- and mordellid-beetles in the future, and try to further the conservation of the species diversity.

(Submitted on March 31, 2009 with much sincere gratitude.)

# A Bibliography of Writings by Masatoshi TAKAKUWA
1965–2008

The following bibliography consists of my entomological research and related works published during the period from 1965 to 2008 (except for all in newspapers, in discussion meetings, under my pen name, as an editorial member, etc.). Articles written in Japanese are given new English titles.

## 1965

1. Variation of insects. *Tadopooru*, *Yokohama* (Journal of Biology Club, Kanazawa High School, Yokohama), (1): 21–23. (In Japanese.)
   昆虫の変異. たどぽおる, (1): 21–23. 横浜市立金沢高校生物部.
2. Outline of research on fern flora on the northern Miura Peninsula [Kanagawa Pref.]. *Tadopooru*, *Yokohama*, (1): 35–45. (In Japanese.)
   三浦半島北部に於ける羊歯相調査概論. たどぽおる, (1): 35–45.
3. Butterfly fauna near Kanazawa High School [Yokohama]. *Tadopooru*, *Yokohama*, (1): 46. (In Japanese.)
   金［沢高］校付近の蝶相. たどぽおる, (1): 46.

## 1967

4. Records of 4 species of mordellid beetles [in C. Honshu]. *Insect Magazine*, *Tokyo*, (69): 70.
   ハナノミ 4 種の記録. *Insect Magazine*, (69): 70.
5. A trip to collect longicorn beetles [in Gunma Pref.]. *Insect Magazine*, *Tokyo*, (70): 27–32.
   カミキリを求めて. *Insect Magazine*, (70): 27–32.
6. Collecting trip for insects to Shiretoko [Hokkaido]. *Insect Season*, *Yokohama*, (1): 1–4, 1 tab. (In Japanese.)
   知床に虫を求めて. *Insect Season*, (1): 1–4, 1 付表.
7. An essay on insects. *Tadopooru*, *Yokohama*, (3): 29–32. (In Japanese.)
   虫随想. たどぽおる, (3): 29–32.

## 1968

8. Record of *Necydalis harmandi* from Aizu-Komagatake [Fukushima Pref.]. *Insect Magazine*, *Tokyo*, (72): 67. (In Japanese.)
   クロホソコバネカミキリ・会津駒ヶ岳の記録. *Insect Magazine*, (72): 67.
9. Prolificacy of *Konoa granulata* in Oshimizu [near Oze, Gunma Pref.]. *Insect*

*Magazine*, *Tokyo*, (72): 70. (In Japanese.)
オオハナカミキリが大清水に多産．*Insect Magazine*, (72): 70.
10. Record of *Anaglyptus bella* from the Izu Peninsula [Shizuoka Pref.]. *Insect Magazine*, *Tokyo*, (72): 73. (In Japanese.)
アカジマトラカミキリ伊豆の記録．*Insect Magazine*, (72): 73.
11. Record of *Asemum punctulatum* from Mt. Daibosatsu [Yamanashi Pref.]. *Insect Magazine*, *Tokyo*, (73): 59. (In Japanese.)
ヒメマルクビヒラタカミキリを大菩薩で得る．*Insect Magazine*, (73): 59.
12. Record of *Leptura duodecimguttata* from the southern Japanese Alps [Yamanashi Pref.]. *Insect Magazine*, (73): 61. (In Japanese.)
南アルプスにおけるキモンハナカミキリの記録．*Insect Magazine*, (73): 61.
13. Record of *Xystrocera globosa* from Yamanashi Pref. *Insect Magazine*, *Tokyo*, (73): 61. (In Japanese.)
アオスジカミキリの山梨県の記録．*Insect Magazine*, (73): 61.
14. Hibernation of *Aeolesthes chrysothrix* [in Yokohama]. *Insect Magazine*, *Tokyo*, (73): 61. (In Japanese.)
キマダラカミキリの成虫越冬の記録．*Insect Magazine*, (73): 61.
15. Record of *Plectrura metallica* from Shiretoko [Hokkaido]. *Insect Magazine*, *Tokyo*, (73): 63. (In Japanese.)
アカガネカミキリ知床の記録．*Insect Magazine*, (73): 63.
16. Record of *Cagosima sanguinolenta* from Oku-Nikko [Gunma Pref.]. *Insect Magazine*, *Tokyo*, (73): 64. (In Japanese.)
ハンノキカミキリ奥日光の記録．*Insect Magazine*, (73): 64.
17. On fauna and speciation on an island. *Tadopooru*, *Yokohama*, (4): 28–30. (In Japanese.)
島の生物［ファウナ］と種の分化について．たどぽおる，(4): 28–30.
18. A trip to Yaku-shima Is. [N. Ryukyus]. *Habataki*, *Tokyo*, (90): 1–6. (In Japanese.)
屋久島を行く．はばたき，(90): 1–6.
19. Collecting trip for insects to Yaku-shima Is. *Insect Season*, *Yokohama*, (6): 1–7. (In Japanese.)
屋久島に虫を求めて．*Insect Season*, (6): 1–7.
20. Record of two longicorn beetles from Yaku-shima Is. [N. Ryukyus]. *Coleopterists' News*, *Tokyo*, (3): 3. (In Japanese.)
屋久島のカミキリ 2 種の記録．甲虫ニュース，(3): 3.

## 1969

21. On selected longicorn beetles in Hinoharu [Yamanashi Pref.]. *Insect Magazine*, *Tokyo*, (74): 42. (In Japanese.)
日野春のカミキリについて．*Insect Magazine*, (74): 42.
22. Collecting *Prothalpia flavipennis* in the S. Japanese Alps [Yamanashi Pref.].

*Insect Magazine*, *Tokyo*, (74): 43. (In Japanese.)
キバネナガクチキムシを南アルプスにて採集. *Insect Magazine*, (74): 43.

23. *Agapanthia japonica* collected [in Togakushi, Nagano Pref.]. *Insect Magazine*, *Tokyo*, (74): 43. (In Japanese.)
フサヒゲルリカミキリ採集される. *Insect Magazine*, (74): 43.
24. *Ropica honesta* [sic] collected in Yamanashi Pref. *Coleopterists' News*, *Tokyo*, (6): 1. (In Japanese.)
山梨県で採れたフタホシサビカミキリ. 甲虫ニュース, (6): 1.
25. Collecting five species of the genus *Glipa* on Yaku-shima Is. *Coleopterists' News*, *Tokyo*, (6): 1. (In Japanese.)
屋久島でオビハナノミ類 5 種を採集. 甲虫ニュース, (6): 1.
26. Discovery of hibernating *Pterolophia annulata* [under fallen dead leaves in Yokohama]. *Coleopterists' News*, *Tokyo*, (6): 1. (In Japanese.)
ワモンサビカミキリの野外成虫越冬の記録. 甲虫ニュース, (6): 1.
27. Monologue to the society of a sub-normal student. *Polis*, *Tokyo* (Journal of a seminar on Urban Problem, Tokyo Metropolitan University), (4): 30–33. (In Japanese.)
劣等生の独言. ポリス, (4): 30–33. 東京都立大学柴田ゼミナール.

**1970**

28. Wandering notes; having a taste for drinking. *Chikukon-kaiho*, *Fukuoka*, (71): 1–3. (In Japanese.)
嗜酒彷徨. 筑昆会報, (71): 1–3.
29. Summarization of Keihin-longicornists' world in 1969. *Insect Magazine*, *Tokyo*, (75): 1–6. (In Japanese.)
1969 年京浜カミキリ界の総括. *Insect Magazine*, (75): 1–6.
30. Collecting *Brachyclytus singularis* in Kawasaki [Kanagawa Pref.]. *Insect Magazine*, *Tokyo*, (75): 22. (In Japanese.)
アカネトラカミキリを川崎で採集. *Insect Magazine*, (75): 22.
31. On *Molorchus* sp. collected in Himegawa-dani [Niigata Pref.]. *Insect Magazine*, *Tokyo*, (75): 22. (In Japanese.)
姫川谷にて得られた *Molorchus* sp. について. *Insect Magazine*, (75): 22.
32. List of longicorn beetles collected on Sata Cape [S. Kyushu]. *Insect Magazine*, *Tokyo*, (75): 22–23. (In Japanese.)
佐多岬で採集したカミキリ. *Insect Magazine*, (75): 22–23.
33. Prolificacy of *Leiopus guttatus* [in Yokohama, Kanagawa Pref.]. *Insect Magazine*, *Tokyo*, (75): 50. (In Japanese.)
ナカバヤシモモブトカミキリ多数採集される. *Insect Magazine*, (75): 50.
34. An observation of *Necydalis solida* [on Mt. Hotaka, Gunma Pref.]. *Nature and Insects*, *Tokyo*, **5**(10): 30. [Coauthored with S. KOIWAYA.] (In Japanese.)
オオホソコバネカミキリの 1 観察例. 昆虫と自然, **5**(10): 30.［小岩屋敏と共

著.］

## 1971

35. Additional Record of *Ropica honesta* [sic] from Yamanashi Pref. *Coleopterists' News*, *Tokyo*, (12): 5. (In Japanese.)
山梨県におけるフタホシサビカミキリの追加記録．甲虫ニュース，(12): 5.
36. Longicorn beetles collected at Shiroyama and Sata Cape, Kagoshima Pref. and first recorded species from Yaku Is. *Tsukushi-no-konchu*, *Fukuoka*, **12**(1/2): 25–28. (In Japanese.)
鹿児島県城山と佐多岬のカミキリ採集品及び屋久島初記録種について．筑紫の昆虫，**12**(1/2): 25–28.
37. Summarization of Keihin-longicornists' world in 1970. *Habataki*, *Tokyo*, (99): 14–19. (In Japanese.)
1970 年京浜カミキリ界の総括．はばたき，(99): 14–19.
38. Insect of the month: *Epiclytus yokoyamai*. *Gekkan-Mushi*, *Tokyo*, (0): 15. (In Japanese.)
今月の虫：ヨコヤマトラカミキリ．月刊むし，(0): 15.
39. Circle of entomologists: longicornia world—on species recently described—. *Gekkan-Mushi*, *Tokyo*, (0): 26–27. (In Japanese.)
虫屋の広場：カミキリ界～最近記載された種について～．月刊むし，(0): 26–27.
40. Circle of entomologists: longicornia world—from 1970 to 1971—. *Gekkan-Mushi*, *Tokyo*, (2): 21. (In Japanese.)
虫屋の広場：カミキリ界～'70 年から '71 年へ～．月刊むし，(2): 21.
41. Circle of entomologists: longicornia world—introduction of new members added to Japanese fauna—. *Gekkan-Mushi*, *Tokyo*, (3): 24–25. (In Japanese.)
虫屋の広場：カミキリ界～日本産新メンバー紹介～．月刊むし，(3): 24–25.
42. Observation of numerous *Dorcus montivagus* [at Mt. Hotaka, Gunma Pref.]. *Gekkan-Mushi*, *Tokyo*, (3): 37. (In Japanese.)
多数のヒメオオクワガタを見る．月刊むし，(3): 37.
43. Circle of entomologists: longicornia world—aim at unknown species of *Necydalis*—. *Gekkan-Mushi*, *Tokyo*, (4): 21. (In Japanese.)
虫屋の広場：カミキリ界～ネキのニューを狙え～．月刊むし，(4): 21.
44. Circle of entomologists: longicornia world—complaint of longicornists—. *Gekkan-Mushi*, *Tokyo*, (5): 23. (In Japanese.)
虫屋の広場：カミキリ界～カミキリ屋の泣きごと～．月刊むし，(5): 23.
45. Circle of entomologists: longicornia world—discovery of *N. major* from Hokkaido—. *Gekkan-Mushi*, *Tokyo*, (6): 18. (In Japanese.)
虫屋の広場：カミキリ界～北海道に *N. major* がいた!!～．月刊むし，(6): 18.
46. Circle of entomologists: longicornia world—let look again at common species—. *Gekkan-Mushi*, *Tokyo*, (6): 18. (In Japanese.)

虫屋の広場：カミキリ界〜普通種を見直そう〜．月刊むし，(6): 18.

47. Keihin Kontyu Doukoukai (ed.), New guide for collecting insects, 1. i＋i＋i-ii＋4＋261＋18 pp., 5 pls. Uchida Roukakuho-shinsha, Tokyo. [Coeditored and coauthored with T. SHIZUKUISHI and Y. NISHIYAMA.] (In Japanese.)
京浜昆虫同好会編，新しい昆虫採集案内 I. i＋i＋i-ii＋4＋261＋18 pp., 5 pls. 内田老鶴圃新社，東京．［雫石卓・西山保典と共編著．］

48. Keihin Kontyu Doukoukai (ed.), New guide for collecting insects, 2. i＋i-ii＋i-ii＋307＋21＋i-iii pp., 5 pls. Uchida Roukakuho-shinsha, Tokyo. [Coeditored and coauthored with T. SHIZUKUISHI and Y. NISHIYAMA.] (In Japanese.)
京浜昆虫同好会編，新しい昆虫採集案内 II. i＋i-ii＋i-ii＋307＋21＋i-iii pp., 5 pls. 内田老鶴圃新社，東京．［雫石卓・西山保典と共編著．］

49. Circle of entomologists: longicornia world—does only *Aulaconotus pachypezoides* hibernate—. *Gekkan-Mushi*, *Tokyo*, (8): 17. (In Japanese.)
虫屋の広場：カミキリ界〜タテジマだけが越冬するのか〜．月刊むし，(8): 17.

50. Record of *Mesechthistatus taniguchii* from Mt. Yatsugatake. *Gekkan-Mushi*, *Tokyo*, (8): 36. (In Japanese.)
八ヶ岳におけるタニグチコブヤハズカミキリの記録．月刊むし，(8): 36.

51. Another monologue to the society of a sub-normal student. *Polis*, *Tokyo*, (6): 41–46. (In Japanese.)
続・劣等生の独言．ポリス，(6): 41–46. 東京都立大学柴田ゼミナール.

52. On three longicorn beetles from Rishiri-jima Is. [Hokkaido]. *Coleopterists' News*, *Tokyo*, (14): 5. (In Japanese.)
利尻島のカミキリ 3 種について．甲虫ニュース，(14): 5.

53. *Necydalis niimurai* also emerged from [*Symplocos coreana*] in Kyushu. *Coleopterists' News*, *Tokyo*, (14): 5. (In Japanese.)
九州のサワフタギからもトガリバホソコバネカミキリが羽化．甲虫ニュース，(14): 5.

54. Record of *Macrosiagon cyanivestis* from Yaku-shima Is. *Coleopterists' News*, *Tokyo*, (14): 6. (In Japanese.)
屋久島におけるオスグロオオハナノミの記録．甲虫ニュース，(14): 6.

55. *Mesechthistatus binodosus* in Mt. Yahiko, Niigata Pref. *Coleopterists' News*, *Tokyo*, (14): 6. (In Japanese.)
新潟県弥彦山のコブヤハズカミキリ．甲虫ニュース，(14): 6.

56. An observation of *Acalolepta fraudatrix* eating leaves [of Cardueae in Shizuoka Pref.]. *Coleopterists' News*, *Tokyo*, (14): 6. (In Japanese.)
ビロウドカミキリの 1 後食例．甲虫ニュース，(14): 6.

## 1972

57. Circle of entomologists: longicornia world—introduction of new members added to Japanese fauna (2)—. *Gekkan-Mushi*, *Tokyo*, (11): 15. (In Japanese.)

虫屋の広場：日本産新メンバー紹介 (2)～．月刊むし，(11): 15.
58. With snow—a trip to Tohoku District for collecting *Damaster blaptoides viridipennis*—. *Gekkan-Mushi*, *Tokyo*, (11): 32–33. (In Japanese.)
雪と—キタカブリを求めて東北へ—．月刊むし，(11): 32–33.
59. Records of *Hoshihananomia kirai* from Iriomote Is. and *Glipa shirozui* from Yaku Is. *Gekkan-Mushi*, *Tokyo*, (13): 14–15. (In Japanese.)
キラホシハナノミ（西表島）とオオオビハナノミ（屋久島）の記録．月刊むし，(13): 14–15.
60. Circle of entomologists: longicornia world—introduction of new members added to Japanese fauna (3)—. *Gekkan-Mushi*, *Tokyo*, (13): 20–21. (In Japanese.)
虫屋の広場：日本産新メンバー紹介 (3)～．月刊むし，(13): 20–21.
61. An interim report on longicorn beetles of Izu Iss. *Gekkan-Mushi*, *Tokyo*, (18): 2–9. [Coauthored with J. Komiya, K. Sakai and M. Miyahara.] (In Japanese.)
伊豆諸島のカミキリ/その中間報告．月刊むし，(18): 2–9.［小宮次郎・酒井香・宮原道則と共著.］
62. Records of two longicorn beetles from Fudakake, eastern Tanzawa. *Kanagawa-Chuho*, *Odawara*, (39): 34–35. (In Japanese.)
東丹沢札掛のカミキリ 2 種の記録．神奈川虫報，(39): 34–35.

**1973**

63. Collecting data of *Glipa shirozui* at Mikura Is. [Izu Iss.]. *Gekkan-Mushi*, *Tokyo*, (23): 32–33. (In Japanese.)
御蔵島のオオオビハナノミの採集例．月刊むし，(23): 32–33.
64. I consider the collecting as acceptable. *The Nature Conservation*, *Tokyo*, (130): 8–9. (In Japanese.)
私は採集をこう考える：採集を是とする．自然保護，(130): 8–9.
65. Circle of entomologists: longicornia world—looking back on longicornia world of 1972—. *Gekkan-Mushi*, *Tokyo*, (25): 31–33. (In Japanese.)
虫屋の広場：カミキリ界～1972 年のカミキリ界を振り返って～．月刊むし，(25): 31–33.
66. Circle of entomologists: longicornia world—let more much investigate—. *Gekkan-Mushi*, *Tokyo*, (27): 43–44. (In Japanese.)
虫屋の広場：カミキリ界～もっと調査を～．月刊むし，(27): 43–44.
67. Keihin Kontyu Doukoukai (ed.), New guide for collecting insects, 2. i＋i-iii＋i＋i＋128＋160＋ii＋ii pp., 9 pls. Uchida Roukakuho-shinsha, Tokyo. [Coedited and coauthored with N. Kashiwai.] (In Japanese.)
京浜昆虫同好会編，新しい昆虫採集案内 III．i＋i-iii＋i＋i＋128＋160＋ii＋ii pp., 9 pls. 内田老鶴圃新社，東京.［柏井伸夫と共編著.］
68. On unrecorded species of *Hoshihananomia* in Yaku-shima Is. *Elytra*, *Tokyo*, **1**: 5. [Coauthored with T. Hatayama.] (In Japanese.)
屋久島産ホシハナノミ属の未記録種について．*Elytra*, **1**: 5.［畑山武一郎と

共著.］

69. Record of *Praolia citrinipes* from Daibosatsu, Yamanashi Pref. *Elytra*, *Tokyo*, **1**: 8. (In Japanese.)
山梨県大菩薩におけるヒゲナガヒメルリカミキリの記録. *Elytra*, **1**: 8.
70. Expressing a contra view to "I appeal to longicorn beetles lover". *Nature and Insects*, *Tokyo*, **8**(12): 26–27. (In Japanese.)
「カミキリムシ愛好者に訴える」に対し反論する. 昆虫と自然, **8**(12): 26–27.

**1974**

71. Phantom rivalry research to *Mesechthistatus* "Yahiko". *Gekkan-Mushi*, *Tokyo*, (35): 16–20. (In Japanese.)
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87. Record of *Mesosa pictipes* from Miyako Is. [S. Ryukyus]. *Elytra*, *Tokyo*, **2**: 27. (In Japanese.)
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89. Collecting *Aeolesthes chrysothrix* at Ishigaki Is. [S. Ryukyus]. *Gekkan-Mushi*, *Tokyo*, (46): 35. (In Japanese.)
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90. Indications about the phrissomine longicornia of Japan (1). *Gekkan-Mushi*, *Tokyo*, (48): 5–12. (In Japanese.)
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91. Tips for collecting longicorn beetles (3) *Leiopus guttatus*. *Gekkan-Mushi*, *Tokyo*, (50): 14. (In Japanese.)
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92. Tips for collecting longicorn beetles (4) *Apomecyna naevia*. *Gekkan-Mushi*, *Tokyo*, (51): 23. (In Japanese.)
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93. Tips for collecting longicorn beetles (5) *Chloridolum japonicum*. *Gekkan-Mushi*, *Tokyo*, (52): 8. (In Japanese.)

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148. A revision of the genus *Pothyne* THOMSON in Japan and Taiwan (Cerambycidae). *Elytra*, *Tokyo*, **7**: 1–14. [Coauthored with K. KUSAMA.]

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624. Explanation of cover photograph: Rare insects of Kanagawa Prefecture (3) *Spindasis takanonis*. *Insect fauna of Kanagawa*, **3**: ii. (In Japanese, with English book title.)
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表紙写真解説～次々と菌に冒されたエゾハルゼミ～. 神奈川虫報, (148): ii.

628. Record of *Agriosphodrus dohrni* from Aikawa, Kanagawa Prefecture. *Kanagawa-Chuho*, *Odawara*, (148): 6. (In Japanese.)
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636. Explanation of cover photograph: *Leptalina unicolor* just as though sucking water from the ground. *Kanagawa-Chuho*, *Odawara*, (149): ii. (In Japanese.)
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637. New record of *Hoshihananomia mitsuoi* from Saga Prefecture. *Coleopterists' News*, *Tokyo*, (149): 20. [Coauthored with T. TAKAHASHI.] (In Japanese.)
佐賀県初記録のミツオホシハナノミ. 甲虫ニュース, (149): 20.［高橋隆信と共著.］

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キラホシハナノミの与那国島からの記録. 甲虫ニュース, (149): 20.

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表紙写真解説～クワの実に来たホタルカミキリ～. 神奈川虫報, (150): ii.

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644. Explanation of cover photograph: Mysterious *Stenoxylita trialbofasciata* in Tanzawa. *Kanagawa-Chuho*, *Odawara*, (151): ii. (In Japanese.)

表紙写真解説～丹沢ミスジナガクチキ異変～．神奈川虫報，(151): ii.

645. Enjoyment of researching the distribution of the cerambycid genus *Mesechthistatus.*, *Kobu-tsushin*, *Sanda*, (3): 6–9. (In Japanese.)
コブヤハズ類調査の楽しさ (1)．こぶ通信，(3): 6–9.

646. Explanation of cover photograph: *Araragi enthea*, a kind of Izu-Hakone lacking elements. *Kanagawa-Chuho*, *Odawara*, (152): ii. (In Japanese.)
表紙写真解説～伊豆箱根欠如要素のオナガシジミ～．神奈川虫報，(152): ii.

647. Cerambycid beetles in twilight and early morning on the mountain top of Tanzawa-san. *Kanagawa-Chuho*, *Odawara*, (152): 1–5. (In Japanese.)
丹沢山頂における恵み―夕闇時と早朝に出会ったカミキリたち―．神奈川虫報，(152): 1–5.

648. Record of *Lemula rufithorax* from northern Tanzawa Mts. *Kanagawa-Chuho*, *Odawara*, (152): 5–6. [Coauthored with T. SHINBORI.] (In Japanese.)
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津久井石砂山で得た春のカミキリ 2 種．神奈川虫報，(152): 6.

650. Record of *Chrysomela viginipunctata* from northern Tanzawa Mts. *Kanagawa-Chuho*, *Odawara*, (152): 56. (In Japanese.)
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654. Explanation of cover photograph: *Pyrhalta nigromarginata*, almost indigenous to Sengokuhara of Hakone in Japan. *Kanagawa-Chuho*, *Odawara*, (153): ii. (In Japanese.)
表紙写真解説～日本では箱根仙石原にほぼ特産のクロヘリウスチャハムシ～．神奈川虫報，(153): ii.

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657. Explanation of cover photograph: *Luciola parvula* making the foot of Hakone its eastern limit. *Kanagawa-Chuho*, *Odawara*, (154): ii. (In Japanese.)
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674. Explanation of cover photograph: *Cicindela yuasai* making the peninsulas of Boso and Miura its eastern limit. *Kanagawa-Chuho*, *Odawara*, (156): ii. (In Japanese.)
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675. Host plant of *Schenklingia kasuga* in Hakone, Kanagawa Pref., with special reference to the circumstances on discovery. *Gekkan-Mushi*, *Tokyo*, (429): 17–18. [Coauthored with H. KARUBE.] (In Japanese.)
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# Contributed Papers

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# Two New Species and Two New Subgenera of Prioninae (Coleoptera, Cerambycidae) from Vietnam

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**Abstract** Two new species from Vietnam, *Prionus ohbayashii* and *Casiphia takakuwai* spp. nov. are described. Two new subgenera, *Meridianoprionus* subgen. nov. for *P. ohbayashii* sp. nov., and *Raucocasiphia* subgen. nov. for *C. vietnamica* and *C. takakuwai* sp. nov. are proposed.

Indochina is one of the hot spots on our planet where, during the latest half-century, there have been frequent discoveries of conspicuous new cerambycid species. Professor Nobuo OHBAYASHI and Doctor Masatoshi TAKAKUWA have made very important contributions to the knowledge of Asian cerambycid fauna including Indochina. On the occasion of their retirement, I found it a great opportunity to publish some remarkable new discoveries of Prioninae from this area.

In this paper, I am going to describe two new species under names *Prionus ohbayashii* and *Casiphya takakuwai* spp. nov. I erect a new subgenus *Meridianoprionus* of the genus *Prionus* for *P. ohbayashii* sp. nov. as well as another new subgenus *Raucocasiphia* of the genus *Casiphia* for *C. vietnamica* and *C. takakuwai* sp. nov.

Before going further, I would like to express my sincere gratitude to Dr. Shun-Ichi UÉNO of the National Museum of Nature and Science, Tokyo, for his kind help with my study. I also thank to Dr. Tatsuya NIISATO of Bioindicator Co., Ltd. for critically reading the original manuscript and Mr. Alain DRUMONT of Institut royal des Science Naturelles de Belgique for giving me many valuable suggestions concerning this study. I am indebted to Mr. Itsuro KAWASHIMA for the fine drawings included in this paper.

## ***Meridianoprionus*** subgen. nov. (Genus *Prionus*)

Type species: *Prionus* (*Meridianoprionus*) *ohbayashii* sp. nov.

M a l e. Antennae about 1.4 times as long as body, 12 segmented, segments 3–12 depressed, apico-external ends of segments 4–11 similarly triangularly projected. This subgenus is close to nominotypical *Prionus* by having hind tarsi rounded apicad but differs from it by the peculiar structure of the antennae which are very long, flattened, not imbricate and with the segments 4–11 each being almost same sized and shaped.

Female unknown.

*Range.* Southern Vietnam.

*Notes*. The southern limit of the genus *Prionus* in southeastern Asia around Indochina was supposed to lay sub-along to southern border of China and it has never been found in Indochina itself except for the northernmost part of Myanmar. This is the first discovery of a representative of the genus *Prionus* from southern Indochina, which conspicuously extends its distributional area at about 800 km south of China.

The principal reason why I regarded this subgenus as inside of the genus *Prionus*, notwithstanding the conspicuous difference of antennae, is that the type species has *Prionus*-like male genitalia which is quite different from those in the genera *Priotyrannus* or *Prionomma*, which, when being judged only from antennal structure, may be more agreeable to place this new species. It has some similarity to the genus *Dorysthenes* which is very abundant throughout Indochina but the short and dull jugular process and the shape of pronotum as well as the structure of male genitalia indicate it is not the member of the latter.

*Etymology*. Name of this subgenus is composed of two words — Meridianus (southern) and genus name *Prionus*. I have decided to give this name since it represents the southernmost extension of the genus *Prionus* in Asia.

### ***Prionus* (*Meridianoprionus*) *ohbayashii*** sp. nov.

(Figs. 1, 3–4)

M a l e. Integument blackish brown, antennae and legs dark brown, eyes black. Dorsal side almost glabrous, ventral side sparsely covered with hairs except for subglabrous abdomen.

Head short, 0.58 times as long as wide, front and vertex densely punctured; median groove shiny, not so deep but clearly visible along the entire length of head; antennal tubercles obtusely projected; jugular process short and pointed downwards; eyes protruding, inter space between eyes about as long as a fourth of each upper eye-lobe. Antennae 1.3 times as long as body, depressed except basal two segments, segments 4–11 longitudinally striate; segment 3 twice as long as segment 1, triangularly projected on apico-external angle; segment 4 about 1.6 times as long as segment 1, constricted at base, projected on apico-external angle and shortly pointed on internal angle; segments 5–11 almost same shaped as segment 4 and slightly decreasing in length and width towards the apex; segment 12 slender, 1.4 times as long as segment 1.

Pronotum glabrous, very sparsely scattered with fine punctures, subtrapezoidal, half as long as wide, with two triangular projections at each side, one in apical angle and another in middle; basal angle obtuse, not projected; disc flat, slightly convex at middle. Scutellum semicircular.

Elytra glabrous, finely punctured, about twice as long as wide, subparallel on basal three-fourths, smoothly rounded at apices; sutural end angled, without spine; each elytron with two indistinct costae.

Legs slender and long, glabrous, segment 1 of tarsi the longest, segment 2 slightly longer than 3, claw as long as segments 1 and 2 combined, metatarsi very narrow and

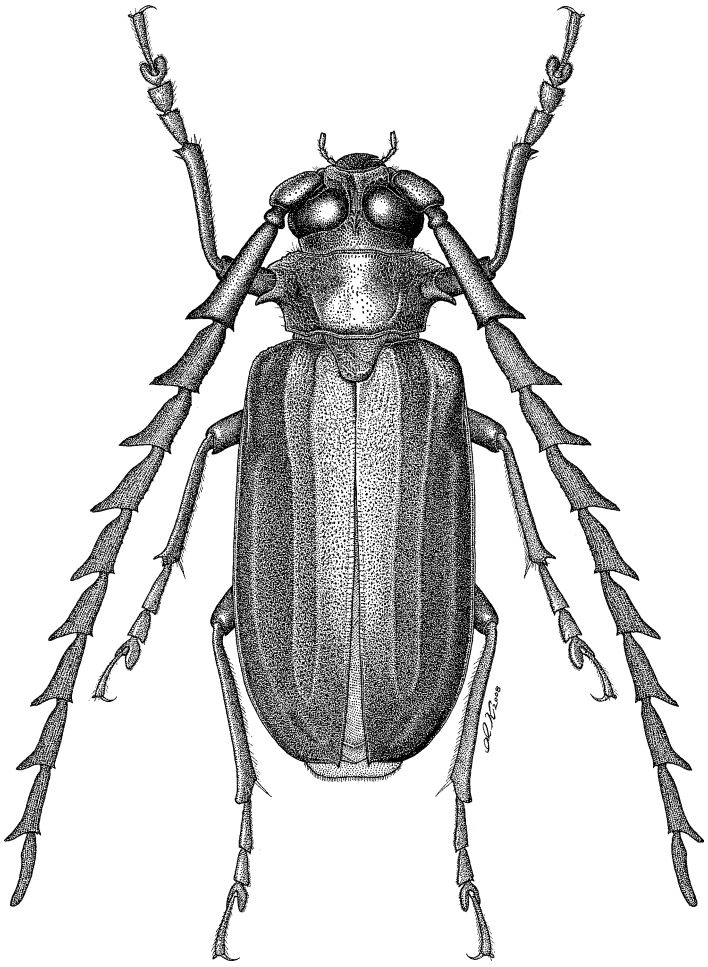


Fig. 1. *Prionus* (*Meridianoprionus*) *ohbayashii* sp. nov., ♂ habitus.

slender.

Underside covered with long golden hairs except for subglabrous abdomen.

Male genital organ similar to that of *Prionus corpulentus* BATES, 1878 but apical part of median lobe shorter; paramere smaller and with apical hairs longer and thicker.

Female unknown.

Body length. ♂: 27 mm.

*Distribution*. Lam Dong Prov., southern Vietnam.

*Type specimen*. Holotype ♂, Di Ling, Lam Dong Prov. Vietnam, V–2007. Preserved in my collection at this moment and will be deposited at the National Museum of Nature and Science, Tokyo, after systematic analysis of the group is finished.

*Notes*. This new species is very distinct in this genus and can easily be distinguished from any other species by the peculiar form of antennae which are somehow reminiscent of *Closterus boppei* LAMEERE from Madagascar. Judging from overall body structure, however, it resembles *Prionus corpulentus* BATES, 1878 from northwestern India and differs from it by longer antennae that have flattened segments with strongly projected apical angles as well as more slender metatarsi.

*Etymology*. This species is named in honor of Professor Dr. Nobuo OHBAYASHI of Ehime University, Matsuyama for his remarkable achievements in many fields.

### ***Raucocasiphia*** subgen nov. (Genus *Casiphia*)

Type species: *Casiphia* (*Casiphia*) *vietnamica* DRUMONT et KOMIYA, 2001.

M a l e. Antennae 0.5–0.6 times as long as body, bi-flabellate, 12 segmented. Elytron shorter than twice its width; hind wings in folded position distinctly projected beyond elytra.

F e m a l e. Antennae 8 segmented, club-shaped. Elytra on apical two-thirds dehiscent, suture near the base just after scutellum slitting.

*Range.* Northern Vietnam.

*Notes*. The genus *Casiphia* hitherto comprised five species divided into two subgenera, known from rather limited area around eastern end of the Himalayas and northern part of Indochina. The discovery of the sixth species, *C. takakuwai* sp. nov. from northern Vietnam gave us reason to believe, that this species and *C. vietnamica* comprise a new subgenus, distributed in northern Vietnam. The relations of three subgenera are given in the following key.

*Etymology*. Name of this subgenus is composed of three words: "Rau", "co" and the genus name *Casiphia*. "Rau-co" means in local language a flag-like antenna and insects of this subgenus are called by local peoples, "Xen-Toc Rau-co" which means a longicorn beetle with flag-like antennae.

### Key to the Subgenera of the Genus *Casiphia*

1. Male antennae simply flabellate (Yunnan and Sichuan) ..... .....Subgenus *Flabelloprionus* HEYROVSKÝ
— Male antennae bi-flabellate.....2
2. Male elytra extending beyond apex of abdomen. Female elytra on apical third dehiscent, without distinct slit on suture beyond scutellum (Tibet, Yunnan, Myanmar, Thailand and Laos) .....Subgenus *Casiphia* FAIRMAIRE
— Male elytra short, ending far before apex of abdomen. Female elytra on apical two-thirds dehiscent, with a short wedge-formed longitudinal slit on the suture just after scutellum (N. Vietnam).....Subgenus *Raucocasiphia* nov.

**List of *Casiphia* spp.**

Subgenus *Casiphia* FAIRMAIRE

1. *C.* (*C.*) *thibeticola* FAIRMAIRE (Tibet, Yunnan and Myanmar).
2. *C.* (*C.*) *inopinata* HÜDEPOHL (Thailand and Laos).

Subgenus *Flabelloprionus* HEYROVSKÝ

3. *C.* (*F.*) *szechuana*, HEYROVSKÝ (Sichuan).
4. *C.* (*F.*) *yunnana* DRUMONT et KOMIYA (Yunnan).

Subgenus *Raucocasiphia* nov.

5. *C.* (*R.*) *vietnamica* DRUMONT et KOMIYA (N. Vietnam).
6. *C.* (*R.*) *takakuwai* sp. nov. (N. Vietnam).

***Casiphia* (*Raucocasiphia*) *takakuwai*** sp. nov.

(Figs. 2, 5–9)

M a l e. Body either partly yellow (yellow form) or entirely black (black form).

Yellow form (Fig. 5): antennae, pronotum, basal three-fourths of elytra, most parts of legs yellowish brown, head, basal margin of pronotum which sometimes expand forward along median line, scutellum, apical parts of elytra, legs joints and underside black. Black form (Fig. 6): entirely matt black. Body thinly covered with very short white hairs which partly become very thin or almost glabrous.

Head finely granulate, about 0.7 times as long as wide; front shallowly concave; antennal tubercles small, widely separated; jugular processes short, dull; mandible short, curved on external side, acutely pointed at apex, provided with an acute internal dent close to apex and another obtuse one at middle. Eyes small, widely separated. Antennae 12 segmented, about 0.6 times as long as body, bi-flabellate in segments 3–11; segment 1 robust, segment 2 very short and washer-formed; segments 3–11 each consist of cylindrical shaft and two long wing parts which are projected from the shaft in V-form and are several times as long as the shaft itself; shafts of segments 3–11 gradually becoming thinner apically; length of shafts variable but relative length usually as follows: segment 5 = segment 10 > segment 3 > segment 4 = segment 11 > segment 2, segment 1 > segment 7 > segment 6 = segment 8 > segment 9 > segment 5 (and 10); segment 12 not having shaft part and similarly shaped to single wing part of segment 11.

Pronotum matt, finely granulate, lateral parts punctured, with apex wider than head, about as long as wide, lateral margins rounded; disc strongly convex. Scutellum large, semicircular, deeply punctured.

Elytra matt, finely puncto-granulate, about as long as wide, distinctly dehiscent at apical half; elytra usually do not actually meet each other on elytral suture, placed with a slit or touching only along very short length; lateral lines of elytra slightly widening beyond humeri, widest at about middle, moderately narrowed to apices; sutural angle

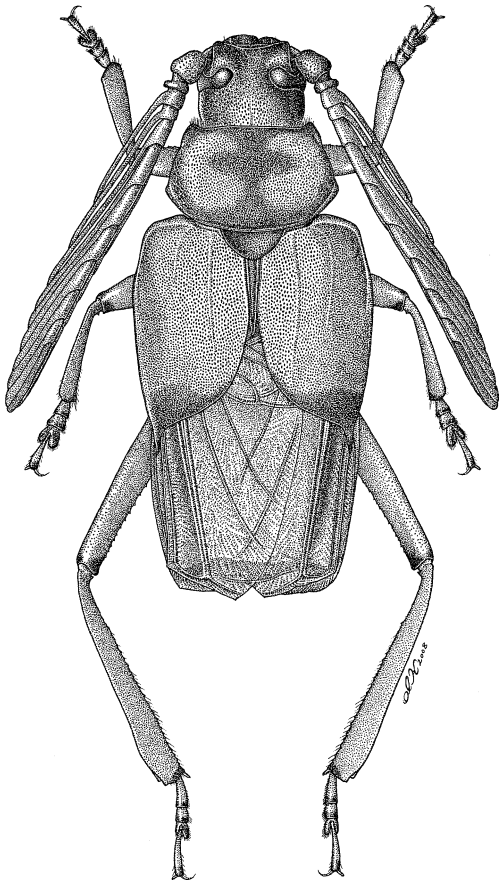
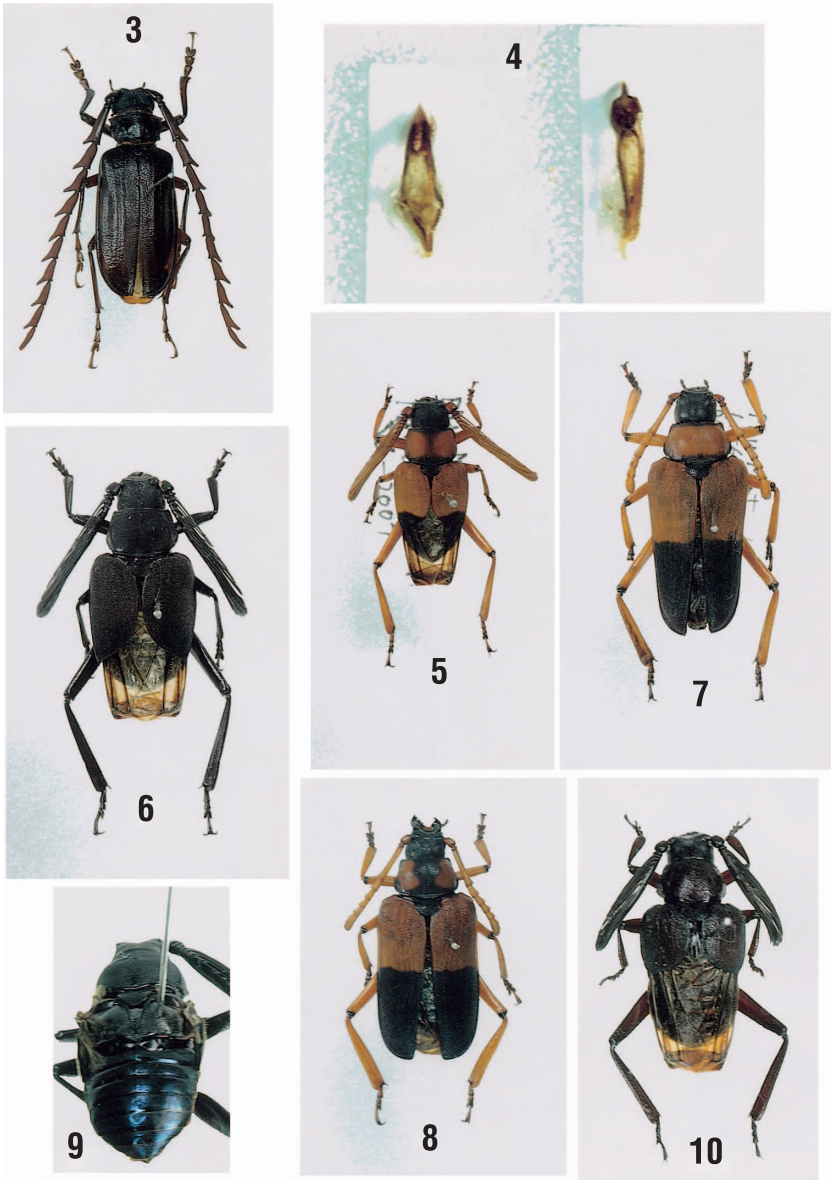


Fig. 2. *Casiphia* (*Raucocasiphia*) *takakuwai* sp. nov., ♂ habitus.

furnished with a long acute spine which is placed over lateral margin of terga because elytral suture is widely opened posteriad. Hind wings projected posteriad in folded position and as they are semi-transparent, apical 4 segments of tergites always visible.

Underside covered with short white hairs that are longer than those on dorsal side. Abdominal segment 1 as long as length of segment 2 and 3 combined; segment 4 shorter than segment 3, segment 5 very short. Tergites 1–8 clearly separated, strongly sclerotized, revealed under hind wing with feeble blue metallic tint (Fig. 9).

F e m a l e. Body color resembling the male yellow form. Elytra clearly bicolored, brown basal half, apical half black. Black form of female unknown. Antennae 0.4 times as long as body, 8 segmented; segment 3 as long as segments 4+5+6 combined, segment 8 as long as segments 4+5 combined; segments 3–7 serrated, segment 8 very thick, club-shaped. Elytra extending beyond the apex of abdomen and folded hind wings,




Figs. 3–4. *Prionus* (*Meridianoprionus*) *ohbayashii* sp. nov. —— 3, habitus, holotype ♂; 4, male genitalia.

Figs. 5–9. *Casiphia* (*Raucocasiphia*) *takakuwai* sp. nov. —— 5, habitus, holotype ♂; 6, habitus, paratype ♂, (black form); 7 & 8, habitus, paratypes ♀; 9, tergites, paratype ♂.

Fig. 10. *Casiphia* (*Raucocasiphia*) *vietnamica* DRUMONT et KOMIYA 2002, paratype ♂.

strongly dehiscent in apical two-thirds.

Body length (from apical margin of head to anal end of abdomen). ♂: 12–22 mm, ♀: 24–27 mm.

*Type series*. Holotype ♂, Phu Mat (1500) Nghe An Prov. Northern Vietnam, VII–2007. Allotype ♀ and 10 ♂♂, 3 ♀♀ paratypes, same data as the holotype. The holo- and allotypes are preserved in the National Museum of Nature and Science, Tokyo, and the paratypes are in KOMIYA's collection.

*Notes*. This new species is very similar to *C*. (*Raucocasiphia*) *vietnamica* DRUMONT et KOMIYA but differs from it in following points. The male of *Casiphia* (*Raucocasiphia*) *takakuwai* sp. nov. has its antennae longer than 0.6 times the body length; elytron twice as long as wide, while *C*. (*R*.) *vietnamica*, has its antennae shorter than 0.5 times the body length, elytron 1.2–1.4 times as long as wide. The female of *C*. (*R*.) *takakuwai* sp. nov. has its antennae serrated; elytra bicolored, without metallic tint, while the latter has its antennae not serrated, and black elytra with blue metallic tint.

*Etymology*. This new species is named in honor of Dr. Masatoshi TAKAKUWA of Kanagawa Prefectural Museum of Natural History on the occasion of his retirement. Hereby, I wish to express my respect to his studies and sincere gratitude for his help while at the position.

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# Discovery of the Lepturine Genus *Pidonia* MULSANT (Coleoptera, Cerambycidae) from Guangxi, Southwest China

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**Abstract** Two new species of the lepturine genus *Pidonia* MULSANT, first discovered in Guangxi, Southwest China, are described under the names *Pidonia* (*Pidonia*) *nobuoi* sp. nov. and *P.* (*P.*) *takakuwai* sp. nov.

The lepturine genus *Pidonia* MULSANT containing more than 150 species is known distributed in North America, continental Eurasia and East Asia. Before 1991, most species from continental China were described from the north, northeast and east China (GRESSITT, 1951; HAYASHI, 1971; TSHEREPANOV, 1979). Since 1991, HOLZSCHUH (1991a, b, 1992, 1995, 1998, 1999, 2003) described numerous species from southwest and northwest China. In southwest China, this genus was mainly discovered from Sichuan and Yunnan. During the survey of the cerambycid fauna of Guangxi, southwest China in 2000, author collected two interesting species at Mt. Dayao Shan. From the Guangxi province, no species of the genus *Pidonia* has so far been recorded or described. Both species consequently turned out to be new to science and are herein described under the names *Pidonia* (*Pidonia*) *nobuoi* sp. nov. and *P.* (*P.*) *takakuwai* sp. nov.

First and foremost, I wish to express my hearty thanks to Mr. Hai-Ming TANG, a science research manager at the Laboratory of the National Dayao Shan Nature Reserve, who kindly helped me during my survey trips. Thanks are as well due to Mr. Xing-Ke YANG, Institute of Zoology, Chinese Academy of Sciences, Beijing for having allowed me to examine the type specimens of *Pidonia* described by GRESSITT. I am indebted to Prof. Nobuo OHBAYASHI of Ehime University, Matsuyama as well as Dr. Tatsuya NIISATO of Bioindicator Co., Ltd., Tokyo for their critical review of the manuscript.

## Codes of the Institutes and Museum Collections

IZCA Institute of Zoology, Chinese Academy of Sciences (Beijing, China)
NMNS National Museum of Natural Science (Taichung, Taiwan)
NTUE Department of Entomology, National Taiwan University (Taipei, Taiwan)

WIC Wen-I CHOU private collection (Taipei, Taiwan)

***Pidonia* (*Pidonia*) *nobuoi*** sp. nov.

(Figs. 1–2, 5–7)

Body relatively large and slender, slightly tapering apically (male) or robust (female), with pale fulvous pubescence.

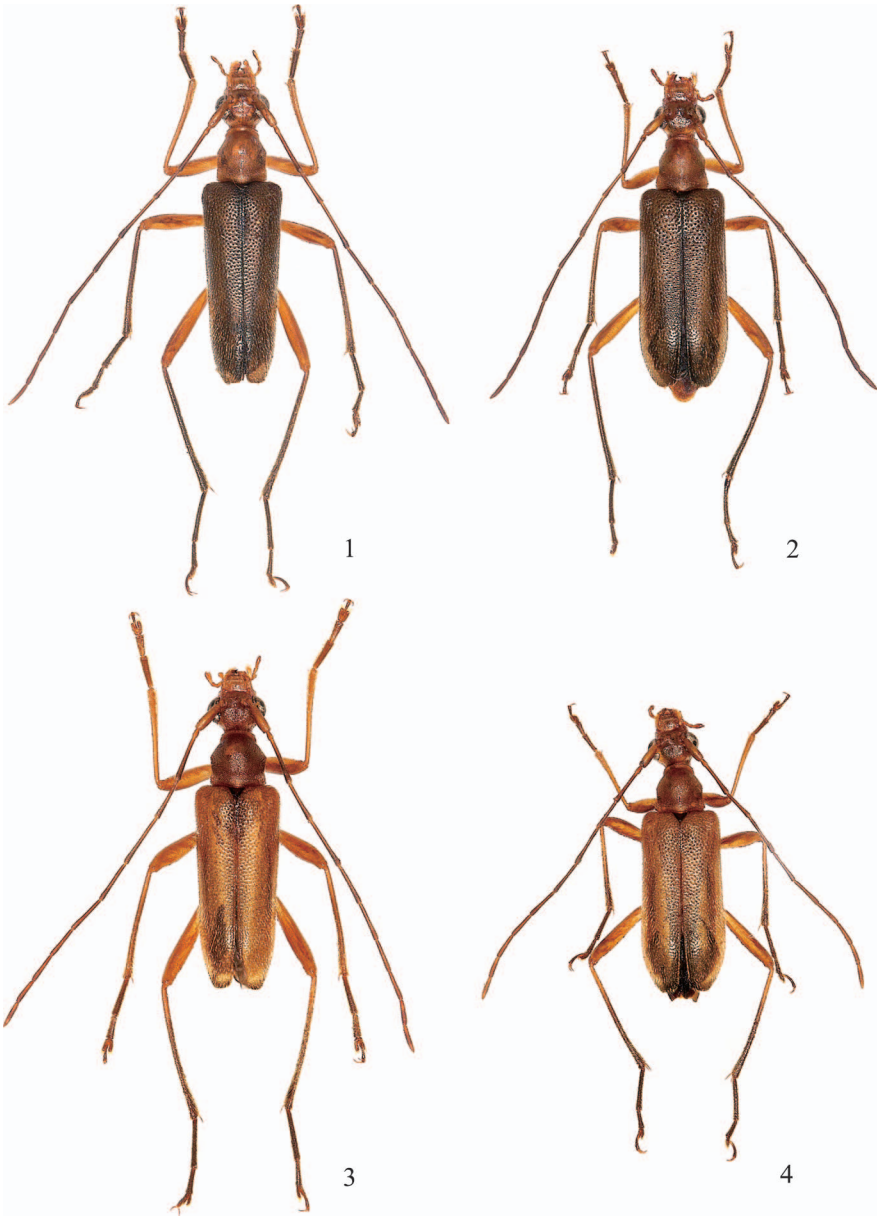
Length: 8.4–8.7 mm (male), 8.2 mm (female); width: 2.1–2.2 mm (male), 2.2 mm (female).

*Color*. Male: – Body yellowish fulvous to black; head dark fulvous; mouthpart brown, except for black apices of mandibles; eyes black; antenna with 1st and 2nd segments fulvous, 3rd to 11th segments dark brown; pronotum dark fulvous; scutellum black; coxae, trochanters, femora and pro-tibiae fulvous, mid- and hind-tibiae black, pro-tarsi dark brown, mid- and hind-tarsi black; claws fulvous; elytra dark fulvous with very fine sutural marking; apical band indistinct; venter entirely reddish fulvous except for black outer margins of meso- and metasterna.

Female: – Almost identical to male, except for fulvous abdomen.

*Structure*. Head across eyes broader in male (1.11 : 1) or narrower in female (0.96 : 1) than the basal width of pronotum, posteriorly narrowed, abruptly constricted at neck; terminal segment of maxillary palpus broadened apically, with shallowly convex outer margin, rounded at apex; tempora well developed, coarsely punctuate, clothed with sparse long setae; frons sub-vertical, transverse, coarsely punctuate; vertex shallowly emarginate at middle, with fine and short appressed pubescence; gula shining; eyes relatively prominent, moderately faceted, internal margins shallowly emarginate medially. Antenna long, slender, inserted just behind the level of frontal margins of eyes, last three (male) or two (female) segments crossing elytral apices; scape distinctly dilated towards apex, each segment densely covered with fine short pubescence, last segment 6.67 times (male) or 5.83 times (female) as long as wide; comparative lengths of each antennal segment as follows: 5th > 1st + 2nd = 3rd = 6th > 4th (male) or 5th > 6th > 1st + 2nd = 3rd > 4th (female).

Pronotum longer than the basal width (1.11 : 1 in both sexes), shallowly constricted both behind apex and before base, angulately expanded laterally just before middle which is slightly narrower (male, 0.93 : 1) or distinctly narrower (female, 0.89 : 1) than the basal width; base distinctly broader than apex (1.57 : 1 in male; 1.5 : 1 in female); disc spherically convex above, finely punctuate, with fine short pubescence. Prosternum with scattered pubescence. Meso- and metasterna densely furnished with fine appressed pubescence. Scutellum small, triangular, 0.75 times (male) or 0.6 times (female) as long as wide, sparsely clothed with fine long setae. Elytra 2.49 times (male) or 2.37 times (female) as long as the basal width, gradually narrowed posteriorly (male) or almost parallel-sided (female), apices truncate (male) or obliquely truncate (female); surface densely and finely punctuate, with scattered short pubescence, interspaces between punctures larger than punctures.




Figs. 1–4. *Pidonia* (*Pidonia*) species from Mt. Dayao Shan, Guangxi Zhuangzu Zizhiqu, SW. China. —— 1, *P.* (*P.*) *nobuoi* sp. nov., holotype male; 2, ditto, paratype female; 3, *P.* (*P.*) *takakuwai* sp. nov., holotype male; 4, ditto, paratype female.

Leg relatively slender, finely punctuate, with short pubescence; hind femora surpassing (male) or not reaching (female) elytral apices; tibiae linear, mid- and hind-tibiae slightly arcuate, with suberect pubescence; tarsi ventrally densely furnished with short pubescence, with third segment strongly dilated apically, deeply emarginate at middle of apex, metatarsus of first segment longer than the following two segments combined.

Abdomen relatively slender and gradually narrowing apically, densely covered with finely appressed pubescence; last sternite with apical margin transversely triangular, weakly emarginate (male) or rounded (female) at middle; last tergite in both sexes rounded.

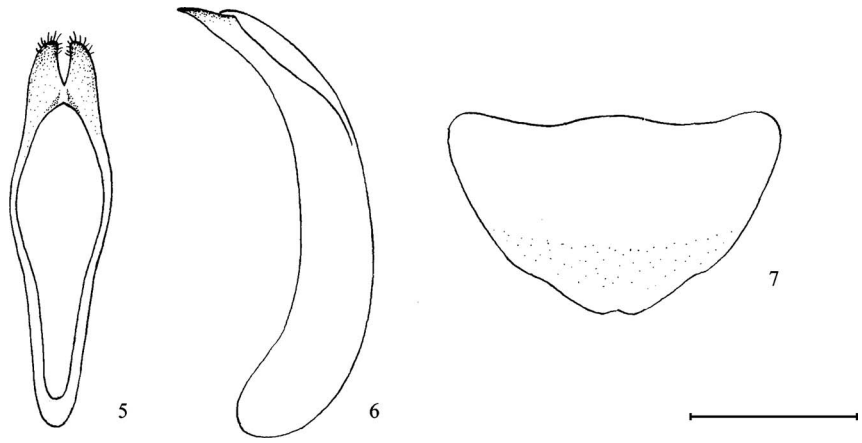
Male genitalia: – Median lobe long, relatively elongate, gradually sclerotized towards apex, widest at base, slightly curved and acutely pointed at apex in lateral view. Tegmen shorter than median lobe, with apical parts relatively long, shallowly curved at outer margins, furnished with sparse long terminal setae.

*Type series*. Holotype ♂, Mt. Dayao Shan, 1,000 m in alt., Jinxiu Yaozu Zizhixian, Guangxi Zhuangzu Zizhiqu, SW. China, 17～18–IV–2000, W.-I CHOU leg. (IZCA) Paratypes: Same data as the holotype, 2 ♂♂, 1 ♀ (NTUE and WIC).

*Biology*. Observed on flowers of *Acer* sp. (Aceraceae).

*Remarks*. This new species is most similar to *P.* (*P.*) *infuscata* (GRESSITT, 1939), but can be distinguished from it by slenderer body, slenderer and longer antenna and legs, narrower apical lobes of tegmen with shorter terminal setae, acute apex of median lobe, and so on.

*Etymology*. The specific epithet of this species is dedicated to Prof. Dr. Nobuo OHBAYASHI of Ehime University, Matsuyama who has provided excellent contribution to the field of Asian Cerambycidae.




Figs. 5–7. Male genitalia of *Pidonia* (*Pidonia*) *nobuoi* sp. nov. from Mt. Dayao Shan, Guangxi Zhuangzu Zizhiqu, SW. China. —— 5, Tegmen, dorsal view; 6, median lobe, lateral view; 7, last abdominal sternite, dorsal view. Scale: 0.5 mm.

### ***Pidonia* (*Pidonia*) *takakuwai*** sp. nov.

(Figs. 3–4, 8–10)

Body relatively large, slender, slightly tapering apically (male) or robust (female), with pale fulvous pubescence.

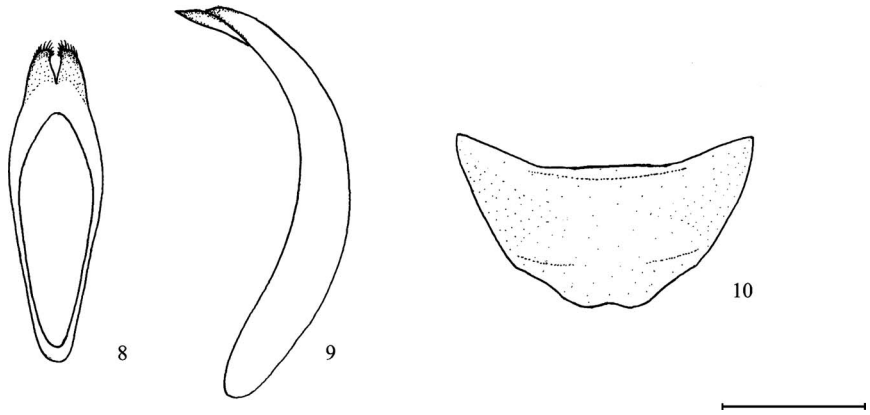
Length: 7.7–8.3 mm (male), 6.7–7.2 mm (female); width: 2.0–2.2 mm (male), 1.9–2.0 mm (female).

*Color*. Male: – Body yellowish fulvous, partly black; head fulvous, with mouthpart reddish brown except for black apices of mandibles; eyes black; antenna with 1st and 2 nd segments fulvous, 3rd to 11th segments dark fulvous; pronotum fulvous; scutellum dark fulvous; coxae, trochanters, femora and pro-tibiae fulvous, mid- and hind-tibiae blackish fulvous, pro-tarsi dark fulvous, mid- and hind-tarsi black, claws reddish brown; elytra fulvous with very fine apical band; venter of head, pro-, meso- and metasterna fulvous, outer margin of meso- and metasterna black; abdomen mostly fulvous, with black basal parts of basal three segments.

Female: – Almost identical to male, except for darker scutellum, broader apical band on elytra, mostly fulvous ventral surface except for black outer margins of meso- and metasterna.

*Structure*. Head across eyes as broad as the basal width of pronotum (1 : 1) in male, or slightly narrower (0.96 : 1) in female, narrowing posteriorly, abruptly constricted at neck; terminal segment of maxillary palpus slightly rounded apically; tempora well developed, finely punctured and sparsely clothed with long setae; frons subvertical, transverse, finely punctuate, sparsely clothed with short pubescence; vertex smooth medially, coarsely punctuate, with fine long pubescence; gula shining; eyes relatively prominent, moderately faceted, internal margins shallowly emarginate medially. Antenna long, slender, inserted just behind the level of frontal margins of eyes, last three segments surpassing elytral apices (male), alternatively terminal segment surpassing elytral apices (female); scape distinctly dilated towards apex, each segment densely covered with fine and short appressed pubescence, last segment 6.17 times (male) or 3.8 times (female) as long as wide; comparative length of each antennal segment as follows: 5th > 3rd > 1st + 2nd = 6th > 4th (male) or 5th > 1st + 2nd > 3rd = 6th > 4th (female).

Pronotum longer than the basal width (1.07 : 1 in male; 1.04 : 1 in female), shallowly constricted both behind apex and before base, angulatly expanded laterally just before middle which is as broad as the basal width (male) or less than the basal width (female); base distinctly broader than apex (1.53 : 1 in male; 1.64 : 1 in female); disc dorsally spherically convex, finely punctured, densely furnished with fine short pubescence. Prosternum with scattered fine short pubescence. Meso- and metasterna densely clothed with fine long pubescence. Scutellum small, triangular, 0.68 times (male) or 0.61 times (female) as long as wide, with sparse fine long setae. Elytra 2.41 times in male or 2.16 times in female as long as the basal width, gradually narrowing posteriorly (male) or almost parallel-sided (female), apices obliquely truncate at apices in both sexes; disc densely covered with coarse punctures, with scattered suberect




Figs. 8–10. Male genitalia of *Pidonia* (*Pidonia*) *takakuwai* sp. nov. from Mt. Dayao Shan, Guangxi Zhuangzu Zizhiqu, SW. China. —— 8, Tegmen, dorsal view; 9, median lobe, lateral view; 10, last abdominal sternite, dorsal view. Scale: 0.5 mm.

pubescence, interspaces between punctures less than punctures.

Leg relatively slender, finely punctured, with short pubescence; hind-femora in both sexes surpassing elytral apices; tibiae linear, mid and hind tibiae slightly arcuate, with suberect pubescence; tarsi ventrally densely with short pubescence, third segment strongly dilated apically and deeply emarginate at middle of apex, metatarsus of first segment longer than the following two segments combined.

Abdomen relatively slender, gradually narrowing apically, with dense fine appressed pubescence; last sternite with apical margin transversely semicircular, slightly emarginate (male) or rounded (female) at middle; last tergite round (male) or truncate (female).

Male genitalia: – Median lobe long, relatively slender, gradually sclerotized towards apex, widest at base, curved and acutely pointed at apex in lateral view. Tegmen distinctly shorter than median lobe, with apical parts relatively short, shallowly curved at outer margins, densely furnished with short terminal setae.

*Type series*. Holotype ♂, Mt. Dayao Shan, 1,200 m in alt., Jinxiu Yaozu Zizhixian, Guangxi Zhuangzu Zizhiqu, SW. China, 21～22–IV–2000, W.-I CHOU leg. (IZCA) Paratypes: Same data as the holotype, 5♂♂, 2♀♀ (NMNS, NTUE and WIC).

*Biology*. This species has been observed on flowering *Castanopsis* sp. (Fagaceae).

*Remarks*. This new species is most similar to *P.* (*P.*) *nobuoi* sp. nov., but can easily be distinguished from it by lightly color, coarser punctures of the elytra, broader apical lobes of tegmen, furnished with denser, shorter terminal setae, slender median lobe, and so on.

*Etymology*. The specific epithet of this species is dedicated to Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, a renowned specialist of Asian Mordellidae and Cerambycidae that has widely contributed to their

knowledge.

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# *Cornumutila quadrivittata* (GEBLER, 1830) and *C. lineata* (LETZNER, 1844), stat. rest. (Coleoptera, Cerambycidae) from Western Europe and Russia

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**Abstract** *Cornumutila quadrivittata* (GEBLER, 1830) was originally described as *Leptura* from Siberia (Altaj and Transbaicalia). Later the species was described once more as *Cornumutila semenovi* PLAVILSTSHIKOV, 1936, so became a junior synonym of *C. quadrivittata*. The species is distributed all over Siberia as far east as the Pacific Ocean and now firstly discovered also in Europe (Moscow region). The name "*Cornumutila quadrivittata*" was up to now incorrectly used for another species *Cornumutila lineata* (LETZNER, 1844), stat. rest., that is widely distributed in Europe and North Asia, but absent in East Siberia. *Cornumutila lineata* is characterized by abnormally short 3rd and 4th antennal segments. It is distributed throughout Central and South Europe, north-eastern part of European Russia, West and North Siberia.

**Key words:** Coleoptera, Cerambycidae, *Cornumutila*, taxonomy, zoogeography, new synonymy, Russia, western Europe.

## Introduction

*Leptura quadrivittata* GEBLER, 1830 was originally described based on two specimens: one from Altaj mountains, another from the vicinity of Baikal Lake ("Specimen unicum in montibus altaicis legit D. LEDEBOUR, alterum ad. l. Baikal captum"). A similar species was soon thereafter described from Central Europe as *Leptura lineata* LETZNER, 1844 "des Altvatergebirges" or "Gesenke"; presently Hrubý Jeseník, North Moravia, Czech Republic. This new species was in same article placed by K. LETZNER in a newly erected genus: *Cornumutila* LETZNER, 1844.

Ch. AURIVILLIUS (1912) was the first who correctly placed these two different species: *C. lineata* (LETZNER, 1844) and *C. quadrivittata* (GEBLER, 1830) into the same genus *Cornumutila*. But already L. HEYDEN (1891) supposed both names to be synonymous. This incorrect synonymy was formally established by A. P. SEMENOV-TIAN-SHANSKIJ (1915). His opinion is generally accepted up to now (WINKLER, 1929; PLAVILSTSHIKOV, 1932, 1936; PANIN & SAVULESCU, 1961; HEYROVSKÝ, 1955; ALLENSPACH, 1973; VILLIERS, 1978; TSHEREPANOV, 1979; LOBANOV *et al.*, 1981; BENSE, 1995; SLÁMA, 1998, 2006; SAMA, 2002; BARTENEV, 2004; ADLBAUER, 2006).

*Cornumutila lineata* (LETZNER, 1844), stat. rest. has a peculiar ratio of the lengths of several basal antennal segments: segments 3 and 4 are very short, 4th is shorter than 3rd in males and in females (Figs. 1–2). Siberian specimens of *Cornumutila* were not known for the European community, as they are very rare and up to now absent in most European collections. That is why incorrect synonymy of the European *C. lineata* and Siberian *C. quadrivittata* was generally accepted. Proportions of antennal joints of *C. quadrivittata* were not described in the original description (GEBLER, 1830).

Respecting the generally accepted synonymy, N. N. PLAVILSTSHIKOV (1936) described Siberian *Cornumutila* species with normal antennal segments (4th segment much longer than 3rd, about as long as 5th) once more as *C. semenovi* PLAVILSTSHIKOV, 1936 based on the specimens from North-East Siberia: Yakutia (Viluj river), Magadan region (estuary of Yana river), Chukotka Peninsula (Anadyr liman), Shantar Islands.

A. I. TSHEREPANOV (1979) was the first to observe a considerable variability of the relative length of 4th and 5th antennal segments in a large series of *Cornumutila* specimens from Altaj region – type area of *C. quadrivittata* (and he never saw European species with short 3rd and 4th antennal segments). Based on that variability he proposed to divide all *Cornumutila* populations into two subspecies: western – *C. quadrivittata quadrivittata* (GEBLER) (from Altaj mountain range to western Europe) and eastern – *C. quadrivittata semenovi* PLAVILSTSHIKOV 1936 (east from Altaj mountain range).

Later (LOBANOV *et al.*, 1981), TSHEREPANOV's position was published in form: *C. quadrivittata* = *C. semenovi*; and here the name "*C. quadrivittata*" was used for the European population. This synonymy was also accepted by A. I. MIROSHNIKOV (1989).

I have received several photos of *Cornumutila* specimens from Altaj originating from TSHEREPANOV's collection and identified by TSHEREPANOV as *C. q. quadrivittata* and *C. q. semenovi*. All of them belong to the same species – Siberian *C. quadrivittata* that has its 3rd and 4th antennal segments of normal proportions. All *Cornumutila* specimens from Altaj, South Siberia, Transbaicalia, North-East Siberia and Russian Far East have long 3rd and 4th antennal segments; these very specimens were described by F. A. GEBLER (GEBLER, 1830) as *Leptura quadrivittata*, inasmuch no other species are known from Altaj and South Siberia. Thus, *Leptura quadrivittata* GEBLER, 1830 = *Cornumutila semenovi* PLAVILSTSHIKOV, 1936. European species with short 3rd and 4th segments should be named *C. lineata* (LETZNER, 1844), stat. rest.

*Abbreviations*. Abbreviations used in the text are as follows:

DK – collection of D. G. KASATKIN (Rostov-na-Donu, Russia).
MD – collection of M. L. DANILEVSKY (Moscow, Russia).
MK – collection of M. Yu. KALASHIAN (Yerevan, Armenia).
MPSU – Moscow State Pedagogical University (Moscow, Russia).
SK – collection of S. I. KHVYLIA (Moscow, Russia).
SM – collection of S. V. MURZIN (Moscow, Russia).
SZM – Siberian Zoological Museum, Institute of Systematic and Ecology of Animals,

Russian Academy of Sciences, Siberian Branch (Novosibirsk, Russia).
ZIN – Zoological Institute of the Russian Academy of Sciences (SaintPetersburg, Russia).
ZMM – Zoological Museum of Moscow University (Moscow, Russia).

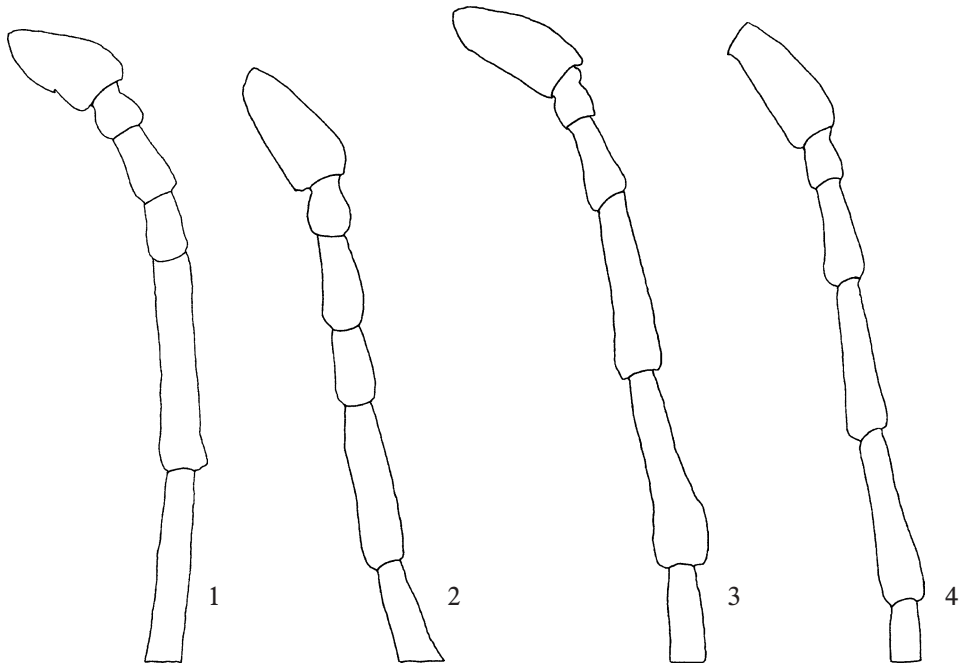
## Results

### Genus *Cornumutila* LETZNER, 1844

*Cornumutila* LETZNER, 1844: 173 (type species: *Leptura lineata* LETZNER, 1844; by monotypy); AURIVILLIUS, 1912: 202; PLAVILSTSHIKOV, 1932: 189; 1936: 310, 548.
*Letzneria* KRAATZ, 1879: 63 (type species: *Leptura lineata* LETZNER, 1844; monotypy); GANGLBAUER, 1882: 695; REITTER, 1912: 12.

*Diagnosis*. Head strongly transverse; gena of moderate length, about as long as half of transverse diameter of eye; 3rd antennal segment shorter than 1st; prothorax slightly tapering anteriorly; posterior pronotal angles rounded; elytra brown or black, each usually with two narrow longitudinal yellow lines (sometimes totally black or yellow).

*Remarks*. Genus name *Cornumutila* was established (LETZNER, 1844) for *Leptura*




Figs. 1–4. Basal antennal segments of *Cornumutila* species. —— 1, *C. lineata*, male; 2, ditto, female; 3, *C. quadrivittata*, male; 4, ditto, female.

*lineata* LETZNER, 1844 in the same page as original description of the species. The proposal of another name for this genus by G. KRAATS (1879) is hardly understandable.

### 1. *Cornumutila lineata* (LETZNER, 1844), stat. rest.

(Figs. 1–2)

*Leptura lineata* LETZNER, 1844: 173 ("des Altvatergebirges" or "Gesenke", actually Hrubý Jeseník, North Moravia, Czech Republic).

*Cornumutila lineata*: LETZNER, 1844: 173; AURIVILLIUS, 1912: 202 ("Schlesien, Karpaten, Russland, Tirol").

*Letzneria lineata* KRAATZ, 1879: 63; GANGLBAUER, 1882: 696; REITTER, 1912: 13.

*Cornumutila quadrivittata*: SEMENOV-TIAN-SHANSKIJ, 1915: 17, part.; WINKLER, 1929: 1155, part.; VACHON, 1934: 87, part.; PLAVILSTSHIKOV, 1936: 311, 549, part.; ALLENSPACH, 1973: 55, part.; VILLIERS, 1978: 143, part.; BURAKOWSKI *et al.*, 1990: 60, part.; DEMELT, 1966: 43, part.; LOBANOV *et al.*, 1981: 787, 799, part.; MIROSHNIKOV, 1989: 744, part.; ŠVÁCHA & DANILEVSKY, 1989: 186, part.; PESARINI & SABBADINI, 1994: 18, part.; TSHEREPANOV, 1996: 80, part.; SLÁMA, 1998: 227, part.; 2006: 12, part.; SAMA, 2002: 38, part.; ADLBAUER, 2006: 75, part.; TATARINOVA *et al.*, 2007: 96, part.

*Cornumutila quadrivittata quadrivittata*: TSHEREPANOV, 1979: 249, part.

*Diagnosis.* Antenna with segments 3rd and 4th short; 4th segment a little shorter than 3rd and two times or more shorter than 5th (Figs. 1–2); prothorax narrow, with dense punctation. Body length of males: 8.0–11.0 mm; females: 11.0–14.0 mm.

*Distribution*. See Fig. 5. Localities of this species are scattered all over South and Central Europe. It is known from Southeast France, North Italy, Switzerland, Austria, Czech Republic, Slovakia, Poland, Romania (BENSE, 1995, as "*C. quadrivittata*"). *Cornumutila lineata* is also known from Carpathian Mountains of West Ukraine (BARTENEV, 2004, as "*C. quadrivittata*"). According to N. N. PLAVILSTSHIKOV (1936, "*C. quadrivittata*") these species is distributed in the north-eastern part of European Russia (Yst-Tzilma in Pechora river valley) and in western Siberia (Verkhoturye, Sosva river; Tobolsk environs, Sureyi). It has recently been discovered in the north of Krasnoyarsk region: Dynkengda mountains in the west of Putorana plateau near Yt-Kyuel Lake. In the Komi Republic of Russia it was recorded from three localities (TATARINOVA *et al*., 2007, also as "*C. quadrivittata*") from Syktyvkar environs, near Yakshi (Troitzko-Pechorsk district) and in Severnye Maldy ridge (Polar Urals).

*Biology*. Only coniferous trees are known as host plants of *C. lineata*. Usually *Picea* and *Larix* were mentioned (SEKERA, 1946; VILLIERS, 1978), sometimes also *Pinus* (SAMA, 1988). A. L. LOBANOV (1976, according to TATARINOVA *et al.*, 2007) mentioned in his manuscript on dendrophagous insects of the Komi Republic, *Abies* and *Larix* as host plant of *C. lineata* (as *C. quadrivittata*). Adults have diurnal activity and emerge from May to August and can be observed in the lowlands and mountains alike (specially in western Europe), up to 1,000–1,400 m above the sea level. Biology of this species in western Europe was described in details by C. DEMELT (1966): populations occur on the northern slopes of the mountains; larvae develop in dead wood in the shaded side of the tree trunk at about 3–4 m above the ground level; development under the bark has never been observed; development of larva takes at least three years; adults

never visit flowers and were observed on the shaded side of standing trees without bark; beetles are generally very rare in nature.

Ecological data for *C. lineata* published by G. SAMA (2002, as *C. quadrivittata*) were taken from the publication by P. ŠVÁCHA and M. L. DANILEVSKY (1989), but these two authors themselves used the information published by A. I. TSHEREPANOV (1979), and thus concern *C. quadrivittata* and not *C. lineata*.

*Materials*. Male, Russia, West Siberia, Tobolsk environs, Sureyi, 11–VII–1926, B. CHALIKOV leg. – ZMM; female, Russia, Krasnoyarsk reg., west of Putorana plateau, Dynkengda mountains, north bank of Yt-Kyuel Lake, 3–VIII–1997, A. BABENKO leg. – MPSU; female, Slovakia, V. Tatry, LEKEŠ leg. – ZMM; 2 males and 2 females with the same label – ZIN; females, V. Tatry, 15–VII–1955, LEKEŠ leg. – ZIN; male, "ČSSR, Pohoři Praděd, VII–1970, Ing. SEKERA leg." – ZIN; male and female, "Slov., Vys. Tatry, VIII–1980 and VII–1979, ODVÁRKA leg." – SM.

*Remarks.* N. N. PLAVILSTSHIKOV (1936) recorded several localities for *C. lineata* (as "*C. quadrivittata*") from East Siberia based on the information that he received from his colleagues, but these data cannot presently be verified. Several of these records were allegedly based on his own materials. These specimens were hitherto not found in his collection. One of such localities of "*C. quadrivittata*" is the valley of Batobiy river in Yakutia (type locality of *C. semenovi*). Presently there is only one specimen of *Cornumutila* in PLAVILSTSHIKOV's collection originating from that locality (designated bellow as the lectotype of *C. semenovi*). No specimens of *C. lineata* from East (or South) Siberia are known.

In the monograph of Cerambycidae of the Komi Republic (TATARINOVA *et al.*, 2007), the distributional data for «*C. quadrivittata*» stand for *C. lineata*, and the peculiar morphology of the antennal segments of the European species is adequately described, but the illustrations used in the text are taken from TSHEREPANOV (1996) and actually represent Siberian *C. quadrivittata*, which absent in Komi.

## 2. ***Cornumutila quadrivittata*** (GEBLER, 1830)

(Figs. 3–4)

*Leptura quadrivittata* GEBLER, 1830: 193 ("montibus altaicis" and "ad. l. Baikal", actually Altaj mountain range and vicinity of the Lake Baikal).

*Cornumutila semenovi* PLAVILSTSHIKOV, 1936: 313, 549. ("Sibirien: Jakutien, Distr. Viljujsk", "Jana-Mündung, Ochotisches Meer", "Ins. Gross. Schantar", "Anadyr, Markovo"), part.

*Cornumutila quadrivittata semenovi*: TSHEREPANOV, 1979: 253, part.

*Cornumutila quadrivittata*: SEMENOV-TIAN-SHANSKIJ, 1915: 17, part.; WINKLER, 1929: 1155, part.; VACHON, 1934: 87, part.; PLAVILSTSHIKOV, 1936: 311; ALLENSPACH, 1973: 55, part.; VILLIERS, 1978: 143, part.; DEMELT, 1966: 43, part.; LOBANOV *et al.*, 1981: 787, 799, part.; LEE, 1982: 17; MIROSHNIKOV, 1989: 744, part.; ŠVÁCHA & DANILEVSKY, 1989: 186, part.; BURAKOWSKI *et al.*, 1990: 60, part.; PESARINI & SABBADINI, 1994: 18, part.; TSHEREPANOV, 1996: 80, part.; SLÁMA, 1998: 227, part.; 2006: 12, part.; SAMA, 2002: 38, part.; ADLBAUER, 2006: 75, part.; TATARINOVA *et al.*, 2007: 96, part.

*Diagnosis*. Antennae with antennal segments usual for Cerambycidae: 3rd and 4th

antennal segments relatively long; 4th segment about 2 times longer than 3rd and about as long as 5th (Figs 1–2); prothorax relatively wide, with sparse punctation. Body length of males: 8.7–10.5 mm; females: 11.3–11.7 mm.

*Distribution*. See Fig. 5. *Cornumutila quadrivittata* is distributed in Siberia from Altaj to Pacific Ocean, but was also discovered in Moscow region; absent from western Europe. N. N. PLAVILSTSHIKOV (1936) recorded it (as "*C. semenovi*") from Yakutia, Okhotskoe shore, Big Shantar Islands and Chukotka Peninsula; A. I. TSHEREPANOV (1979, as "*C. quadrivittatasemenovi*") mentioned Tuva Republic and Altaj (Teletzkoe Lake, Kolyushtu). A. I. MIROSHNIKOV (1989) recorded the species (as "*C. quadrivittata*") from Kozyrevsk in Kamchatka Peninsula. *Cornumutila quadrivittata* is also known from South Korea (LEE, 1982 – "Mt. Du-Ryu-San"). I have identified several specimens originating from Altaj (Uymen river; Aktash; Teletzkoe Lake, Kolyushtu; Kuray; Iogach near Artybach – left bank of Biya river), from Tuva (20 km north-westwards Hol-Oozhu), from south of Krasnoyarsk region (Us river valley), from Transbaikalia (Chokusy, Barguzin ridge and Kodar ridge in the north-east of Chita region), from Yakutia (232 km from Khandyga; Inyali river, Porozhniy ridge), from Kamchatka Peninsula (Palan), Chukotka Peninsula (upper level of Anadyr river) and one male from Moscow region (Zvenigorod environs).

This species is most probably also spread in Mongolia, although it has not been discovered there yet.

*Biology*. Adults are active from June to August; often in high elevations, up to 2,500 m above the sea level. Many important ecological data were published by A. I. TSHEREPANOV (1979): females lay eggs in slots of dead of trees that were stripped off bark. Host plants are *Pinus sibirica* DU TOUR, 1803, *Picea obovata* LEDEBOUR, 1833, *Larix sibirica* LEDEBOUR, 1833, *Abies sibirica* LEDEBOUR, 1833. Young larvae emerge from eggs from the mid- August to September. Developmental cycle is about three years. Pupation takes place deep in the wood in June after the 3rd hibernation. Pupal stage lasts about four weeks. Adults do not seek food, they copulate as they emerge from wood and lay eggs.

Several specimens were collected in the areas where *Pinus pumila* REGEL, 1858, is widely distributed.

*Materials*. Male, lectotype of *Cornumutilla semenovi* PLAVILSTSHIKOV, 1936 (present designation) with three labels: (1) "Type" [red]; (2) "Sibir, Jakutia, vall. fl. Batobiy, dist. Viluj, 14.VI.1916 [originally published as «24. 6. 1916»], ex coll. PODGORB."; (3) "*Cornumutila semenovi* m. N. PLAVILSTSHIKOV det. II. 35" – ZMM; female, paralectotype (present designation) with three labels: (1) "Type" [red]; (2) [0.5 v from mouth of Yana river, Okhotskoe shore, 8. VII. 930, SEMENOV T. Sh.] [in Russian]; (3) "*Cornumutila semenovi* m. N. PLAVILSTSHIKOV det. II. 35" – ZIN; male, paralectotype (present designation) with three labels: (1) "Type" [red]; (2) [B. Shantar Is., Okhotskoe see, 8. VII. 25 DILKEYT leg.] [in Russian]"; (3) "*Cornumutila semenovi* m. ab. *tianshanskyi* m. N. PLAVILSTSHIKOV det. II. 35" – ZIN; male, Altaj, Uymen river valley, 27–VII–1960, A. RASNITZYN leg. – ZIN; male (identified by A. I. TSHEREPANOV

as *C. quadrivittata*), Russia, Altaj region, Kuray, Argatur area, Larix forest, 17–VI–1960, RYZHOVA leg. – SZM; male, (identified by A. I. TSHEREPANOV as *C. quadrivittata*), Russia, Altaj, Iogach, A. KONONENKO leg. – SZM; male, (identified by A. I. TSHEREPANOV as *C. quadrivittata*), Russia, Tuva Republic, from *Larix* stump, 10–VII–1976 – SZM; male (identified by A. I. TSHEREPANOV as *C. quadrivittata*), Russia, Altaj, Teletzkoe Lake, Koliushtu, VII–1971 – SZM; 3 females (identified by A. I. TSHEREPANOV as *C. quadrivittata*), Russia, Altaj, Teletzkoe Lake, Koliushtu, 26–VII–1975 – SZM; male (identified by A. I. TSHEREPANOV as *C. semenovi*), Russia, Tuva Republic, 20 km NW Hol-Oozhu, 8〜9–VII–1989, D. LOGUNOV leg. – SZM; female, (identified by A. I. TSHEREPANOV as *C. semenovi*), Russia, Yakutia, 232 km from Khandyga along the road, 3–VII–1985, A. BARCELÓ leg. – SZM; male, (identified by A. I. TSHEREPANOV as *C. semenovi*), Russia, Yakutia, Inyali river valley, Porozhniy ridge, 9–VII–1990, V. ZINCHENKO leg. – SZM; male, Russia, Transbaikalia, Barguzin ridge, 18〜26–VIII–1933, NIKIPELOV leg. – SM; male, Russia, Moscow region, Zvenigorod biological station, 13–VII–1949 – SM; male, Russia, Altaj, Aktash, 23–VI–1981, V. PRASOLOV leg. – MD; male, same locality, 3–VII–1988, SAZONOV leg. – MD; male, Russia, Kamtchanka Peninsula, Palan, 27–VII–1978, IVLIEV leg. – MD; male, Russia, Chukotka Peninsula, Shchuchiy ridge, upper level of Anadyr river, 7–VII–1992, D. SHITIKOV leg. – MD; female, Russia, Transbaikalia, Chokusy, 22–VII–1989, P. KHVOYNA leg. – MD; male, Russia, Krasnoyarsk region, Us river valley, Idzhir ridge, 15 km NW mine "Krasnaya Zvezda", 9–VII–2004, A. BRINE leg. – DK; male, Russia, Krasnoyarsk region, Us river valley, between mouth of Teplaya river and mouth of Zolotaya river, 9〜11–VII–2004, A. BRINEV leg. – MK; female, Buritija, Malyj Khamar-Daban, Taezhnyj, F. I. Madagaev – SK; female, Jakutia, Suntar-Khayata ridge, Khandygayty river, 1–VII–1990, S. SAZONOV – SK; male, Chita region, Kodar ridge, 10–VII–1997, A. PETROV – SK; female, Russia, NE of Chita region, Kodar ridge, B. Liprindo Lake, 5〜15–VII–2001, A. BRINE leg. – DK.

*Remarks*. N. N. PLAVILSTSHIKOV (1936) identified two *Cornumutila* specimens from Siberia, Yakutia, vall. fl. Batobiy, dist. Viluy with different collecting dates as different species "*C. quadrivittata*" and "*C. semenovi*", but the former is absent in his collection.

The type series of *C. semenovi* PLAVILSTSHIKOV, 1936 consists of 3 specimens. A male with three labels has been designated as lectotype: (1) "Type"; (2) "Sibir, Jakutia, vall. fl. Batobiy, dist. Viluy, 14. VI. 1916 [published as «24. 6. 1916»], ex coll. Podgorb; (3) "*Cornumutila semenovi* m. N. PLAVILSTSHIKOV det. II. 35" – ZMM. Two other specimens are designated as paralectotypes: female with three labels: (1) "Type" [red]; (2) [0.5 v from mouth of Yana river, Okhotskoe shore, 8. VII. 930, SEMENOV T. Sh.] [in Russian]; (3) "*Cornumutila semenovi* m. N. PLAVILSTSHIKOV det. II. 35" – ZIN; male with three labels: (1) "Type" [red]; (2) [B. Shantar Is., Okhotsk See, 8. VII. 25 DICKEY leg.] [in Russian]"; (3) "*Cornumutila semenovi* m. ab. *tianshanskyi* m. N. PLAVILSTSHIKOV det. II. 35" – ZIN.

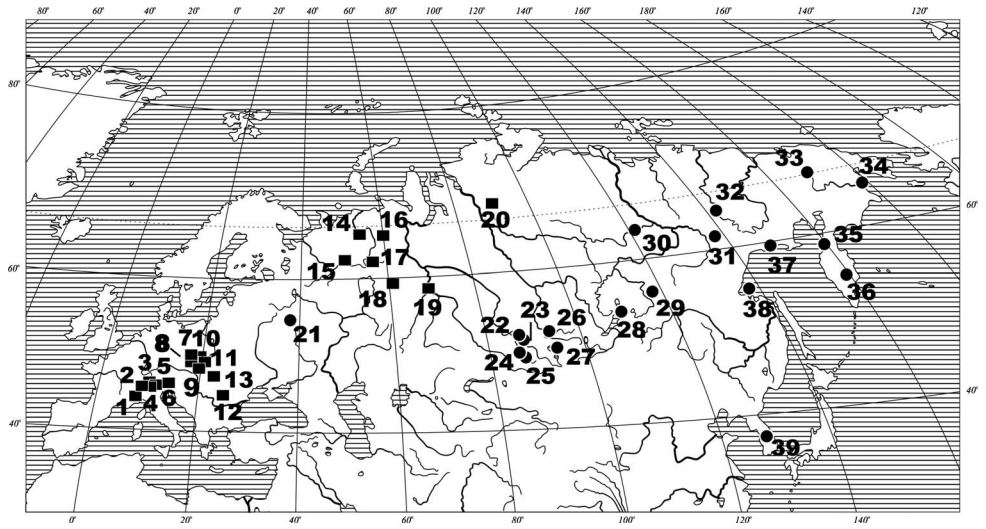



Fig. 5. Map of the distribution of the *Cornumutila* species: *C. lineata* (1–20), *C. quadrivittata* (21–39). —— 1, France, Hautes-Alpes de Provance; 2, Switzerland, Vale; 3, Switzerland, Graubunden; 4, Austria, Foralberg; 5, Austria, Salzburg; 6, Italy, Alto-Adige; 7, Czech Republic, Hrubý Jeseník – type locality; 8, Slovakia, East Tatry; 9, Slovakia, West Tatry; 10, Poland, West Beskids; 11, Poland, Tatry; 12, Romania, Feregash mountains; 13, Ukraine, Carpathian Mountains; 14, Ust-Tzilma, Komi Republic; 15, Syktyvkar environs, Komi Republic; 16, North Maldy mountains, Komi Republic; 17, Yaksha, Komi Republic; 18, Sosva river; 19, Tobolsk; 20, Yt-Kyuel Lake, Krasnoyarsk region; 21, Zvenigorod, Moscow region; 22, Iogach, Altaj; 23, Teletzkoe Lake, Altaj; 24, Aktash, Altaj; 25, Kuray, Altaj; 26, Us river valley, Krasnoyarsk region; 27, Hol-Oozhu, Tuva Republic; 28, Barguzin Ridge; 29, B. Liprindo Lake, Chita region; 30, Vilyusk, Yakutia; 31, 232 km from Khandyga, Yakutia; 32, Inyali river, Yakutia; 33, upper level of Anadyr river, Chukotka; 34, Markovo, Chukotka; 35, Palan, Kamchatka; 36, Kozyrevsk, Kamchatka; 37, mouth of Yana river, Magadan region; 38, Bolshoy Shantar Island; 39, South Korea.

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# Descriptions of Two New Species of *Strangalia* AUDINET-SERVILLE (Coleoptera, Cerambycidae) from Borneo, Sabah Notes on Lepturinae (XVI)

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**Abstract** Two new species of the lepturine genus *Strangalia* AUDINET-SERVILLE, *S. ohbayashii* sp. nov. and *S. takakuwai* sp. nov., are described from the Malaysian State of Sabah in northern Borneo.

**Key words:** Coleoptera, Cerambycidae, Lepturinae, *Strangalia ohbayashii* sp. nov., *Strangalia takakuwai* sp. nov., Sabah, Malaysia.

## Introduction

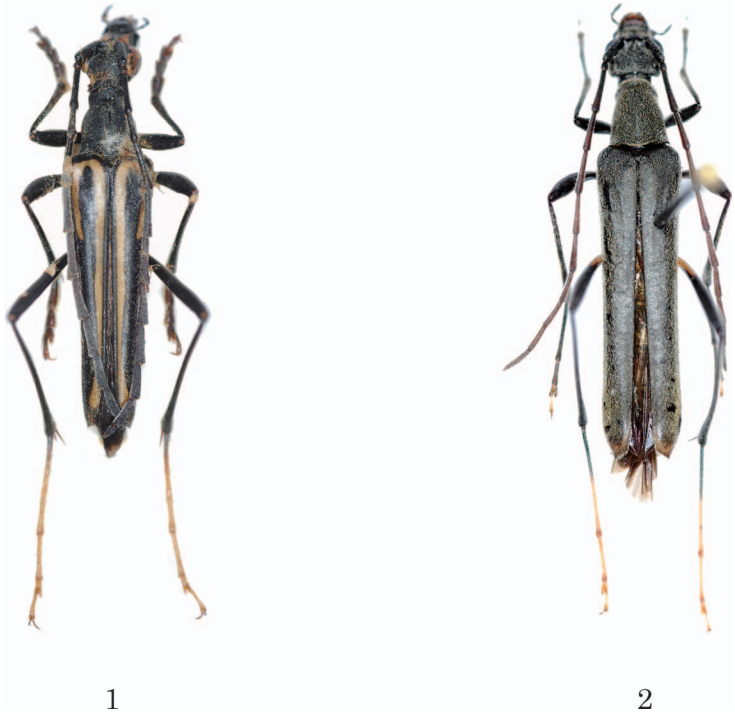
The longhorn beetle subfamily Lepturinae is currently represented in Borneo by 33 species classified in 13 genera. Among these, *Strangalia* AUDINET-SERVILLE is represented by two species, *S. baluense* FISHER and *S. conicollis* AURIVILLIUS (VIVES, 2003; FISHER, 1935). In this work, two new species of *Strangalia* are described from the specimens collected by our colleague Mr. Steven CHEW Kea Foo (Kota Kinabalu) and sent for study by Mr. Daniel HEFFERN (Houston, Texas). I am extremely grateful to the latter for his kind help making available for study his important collection of Cerambycidae from Borneo.

## *Strangalia ohbayashii* sp. nov.

(Figs. 1, 3–7)

Holotype male, 14.5 mm long, 2.9 mm wide, from Malaysia, State of Sabah, Trus Madi area, S. CHEW leg., 1–III–2003 (E. VIVES coll., Terrassa, Spain). Paratypes: 4 males from Malaysia, State of Sabah, Ranau, 17–VII–2002, E. VIVES leg.; 1 male, Crocker Range Mt., 26–III–2003, S. CHEW leg.; 1 male, Trus Madi area, 1–III–2003, S. CHEW leg. (E. VIVES coll., Terrassa, Spain); 1 male and 1 female from Malaysia, State of Sabah, Crocker Range, 3–IV–2007 and 8–IV–2007, local collector (D. HEFFERN coll., Houston, Texas).

Similar in general appearance to *S. baluense* FISHER, but is different mainly by hind tarsi entirely yellow and mesotarsi testaceous in some specimens, antennae entirely black or with yellowish spots externally beyond sixth antennal segment in a few specimens,



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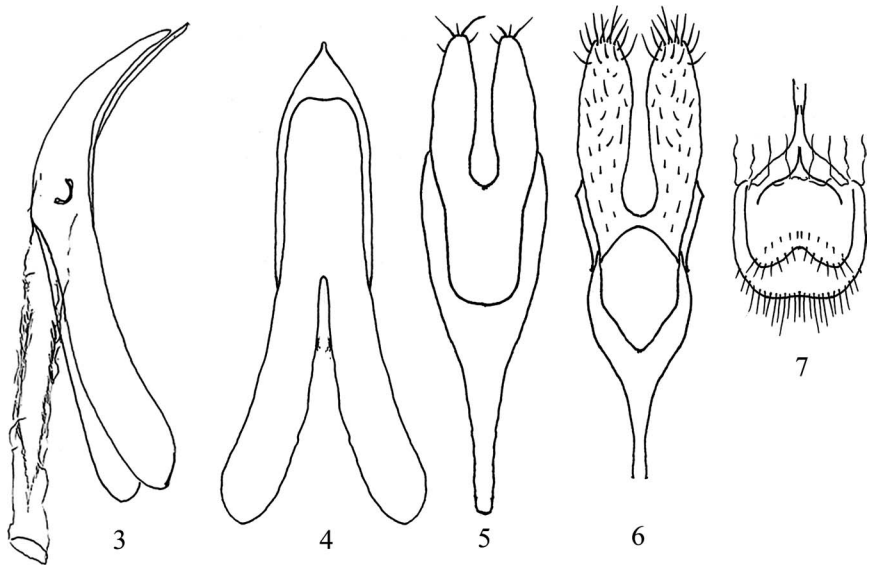
Figs. 1–2. *Strangalia* species from Borneo. —— 1, *S. ohbayashii* sp. nov., holotype male; 2, *S. takakuwai* sp. nov., holotype female. (J. BENTANACH Photo.)

frontally to antennal insertion with a yellow triangle at sides, anterior margin of head prolonged in a short parallel-sided rostrum, shorter than in *S. baluense*.

Integument alutaceous black, finely punctured with short golden pilosity except head ventrally yellow in the middle and base of palpi, and coxae, also partially yellow. Pronotum bell-shaped, very narrow and margined anteriorly; hind margin also margined, sinuated, with a small median lobe, protruding lateral lobes and prominent posterior angles; disc longitudinally furrowed by impunctured line. Scutellum triangular, with rounded apex and entirely covered by golden pilosity.

Elytra elongated, cuneiform, strongly tapering to apex, which is obliquely truncated with a strong external spine and a smaller internal spine; with a broad longitudinal sutural stripe reaching from base to apex of elytron and joined basally to a narrow, much shorter humeral stripe, reaching basal fourth only; disc slightly flattened, entirely covered by long golden pilosity on sutural band, and short black pilosity elsewhere. Legs long and slender, with male pro- and mesotarsi strongly dilated; metatarsus yellow, long and slender, first segment almost twice as long as second and third together. Abdomen with first four visible tergites smooth, chestnut-brown, shiny in their posterior margin.




Figs. 3–7. Male reproductive organ and abdominal tergites of *Strangalia ohbayashii* sp. nov., holotype. —— 3, Aedeagus, lateral view; 4, ditto, dorsal view; 5, tegmen, dorsal view; 6, ditto, ventral view; 7, tergites 7th and 8th.

Male reproductive organ (Figs. 3–6) with aedeagus long and arched, apex plate-shaped. Two basal sclerites of endophalus with small chitinous spikes medially; lateral parameres long, bent, parallel, with five or six long apical setae; tegmen very short. Apical setae in *S. baluense* are more numerous and the tegmen is longer.

*Etymology*. This species is named after our dear colleague and friend, Prof. Dr. Nobuo OHBAYASHI, as homage for his retirement from the Entomology Laboratory at the Ehime University, Matsuyama, Japan.

### ***Strangalia takakuwai*** sp. nov.

(Fig. 2)

Holotype: female, 13.0 mm long, 2.95 mm wide, from Malaysia, Sabah, Crocker Range, 21–VI–2007, local collector (D. HEFFERN coll., Houston, USA).

Integuments black; antennae testaceous beyond half of third segment; pro- and mesotarsi with last segments brown; metatarsus yellowish beyond middle of first segment; meso- and metafemora black except basal third yellow. Body entirely covered by dense short and recumbent grayish pubescence, silverish on legs.

Head subquadrate, only slightly longer than broad with a short anterior rostrum; back of head strongly narrowed, forming a short neck with curved margin and strongly punctured; temples as a small protruding rounded lobe behind eyes. Eyes of median size,

finely faceted. Base of antennae slightly protruding; longitudinal furrow between antennal insertions running through occiput and reaching the epistome; antennae long and slender, reaching apical sixth of elytra; antennal segments subcylindrical, third segment twice as long as first.

Pronotum conical, anterior margin conspicuously narrower than posterior and strongly margined; posterior margin sinuate and finely margined; sides of pronotum almost straight; pronotal disc convex with granulose punctuation. Prosternum finely rugulose, prosternal process plate-shaped and widening beyond coxae. Procoxal cavities open behind. Meso- and metasterna subrugose, with gray pubescence. Scutellum triangular, acuminated apically, covered by dense silvery gray pubescence.

Elytra long and narrow, slightly tapering apically; humeri round and protruding; apex obliquely truncated with a small external spine; elytral surface finely rugose, covered by gray pubescence. Hind wings grayish brown. Legs very long and slender, scarcely widened towards apical third of femora; protarsus narrow, meso- and metatarsi long and narrow, with first segment much longer than the remaining four together; onychium and claws testaceous. Abdomen with five visible tergites black, rugulose, with sparse gray pubescence.

*Notes*. This species is very different from other *Strangalia* species in Borneo. It is smaller than *S. baluense* and *S. ohbayashii*, its pronotum is conical and has open procoxal cavities, the elytral surface is entirely rugulose and lacks stripes of pale pubescence. The head shape, widened behind, is reminiscent of *Hayashiella malayana* VIVES et OHBAYASHI, but there are differences between these species, like the abdominal structure of females, lacking the ovipositor plate on apex of fifth sternite, and also the open procoxal cavities, closed in *Hayashiella* (VIVES & OHBAYASHI, 2001). This new species is provisionally included in *Strangalia* AUDINET-SERVILLE until we can study the male, which may prove more informative for a correct generic placement.

*Etymology*. This new species is named after our eminent colleague in the study of Cerambycidae, Dr. Masataka TAKAKUWA, as a token of recognition in his retirement.

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# A New Species of the Genus *Pachypidonia* (Coleoptera, Cerambycidae) from the Northern Part of Kachin State, Myanmar

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**Abstract** *Pachypidonia masakoae* sp. nov. from the northern part of Myanmar is described. It is similar to *P. bodemeyeri* (PIC) from Japan and *P. rubrida* HAYASHI from Taiwan, but can be distinguished from them by light reddish elongate elytra, shorter first segment of mid- and hind tarsi inspite of long claws, and much broader lateral lobes of male genital organ.

The genus *Pachypidonia* was established by GRESSITT (1953) based on *Pachypidonia crassicornis* GRESSITT, 1953 from Nagano Prefecture of Japan. The type species of the genus was regarded as junior synonym of *Leptura bodemeyeri* PIC, 1934 by NAKANE and OHBAYASHI (1957). So far this genus contained only two described species: *P. bodemeyeri* (PIC) from Japan and *P. rubrida* HAYASHI from Taiwan. Recently, I had an opportunity to examine a single specimen of this genus collected from northern part of Myanmar, which can easily be distinguished from the two known species. In this paper, I describe this new species under the name of *P. masakoae* sp. nov. as the first representative of the genus from continental Asia.

The following abbreviations are used in measurements of specimens examined: BL – body length, HW – maximum width of head, AL – antennal length, PL – length of pronotum, PW – maximum width of pronotum, EL – length of elytra, EW – humeral width of elytra, M – arithmetic mean.

## ***Pachypidonia masakoae*** sp. nov.

(Figs. 1a–d, 2a, 3a, 4a, 5a, d, 6a, d, g, 7a–d)

Very similar to *P. bodemeyeri* from Japan and *P. rubrida* from Taiwan, but can be distinguished from them by its light reddish elongate body as well as several details of external morphology and male genital organ.

M a l e. Colour largely light reddish orange, black in antennae, legs (apical parts of tarsi reddish), margin of scutellum and ventral surface except for prosternum. Body sparsely clothed with golden pubescence, though elytra densely uniformly pubescent.

Head distinctly quadrate, nearly as broad as long, sparsely provided with fine punctures; tempora well developed, arcuately dilated towards eyes, with basal margin transverse, bluntly angulate at sides; gula semicircular, depressed, coarsely rugose; eyes

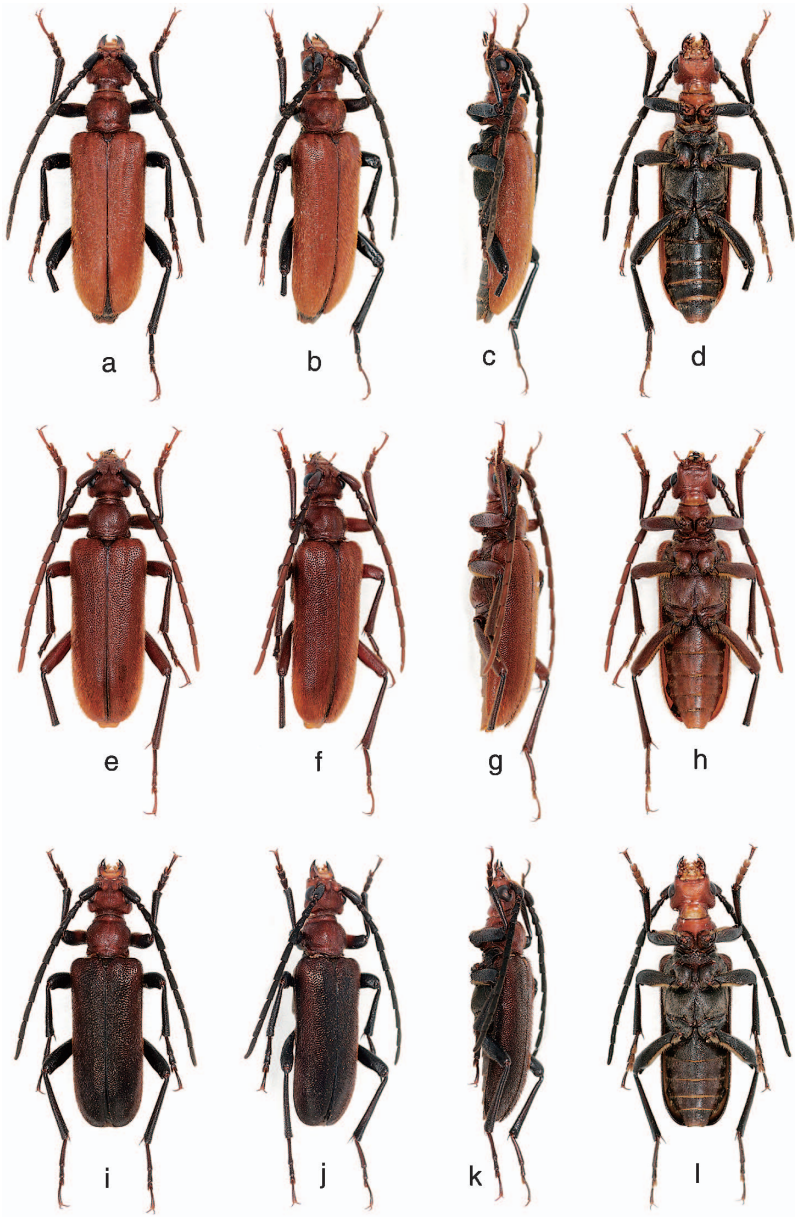


Fig. 1. Habitus of *Pachypidonia* spp. —— a–d, *P. masakoae* sp. nov., holotype ♂; e–h, *P. rubrida* HAYASHI, ♂; i–l, *P. bodemeyeri* (PIC), ♂; a, e, i, dorsal view; b, f, j, dorso-lateral view; c, g, k, lateral view; d, h, l, ventral view.

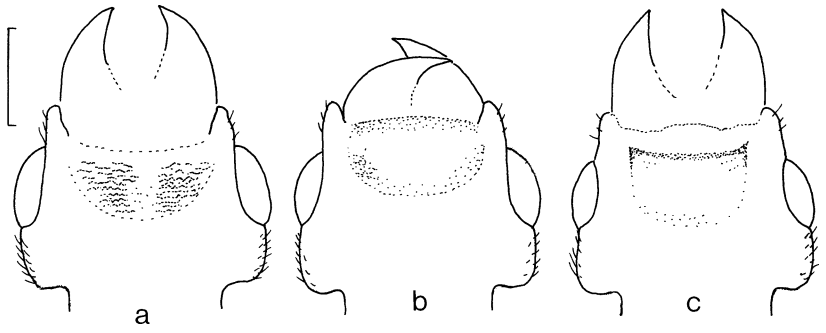


Fig. 2. Head of *Pachypidonia* spp. in ventral view. —— a, *P. masakoae* sp. nov.; b, *P. rubrida* HAYASHI; c, *P. bodemeyeri* (PIC). Scale 1 mm.

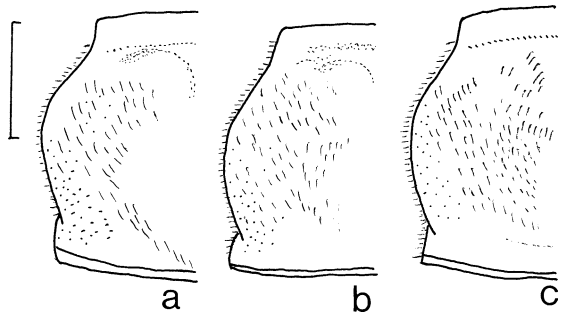


Fig. 3. Pronotum of *Pachypidonia* spp. in dorsal view. —— a, *P. masakoae* sp. nov.; b, *P. rubrida* HAYASHI; c, *P. bodemeyeri* (PIC). Scale 1 mm.

relatively large (Fig. 2a). Antennae moderate in length, stout, 0.75 times as long as body (Fig. 4a). Pronotum broader than long, 0.88 times as long as the maximum width, strongly contracted to apex; sides markedly divergent to the widest point before middle, thence weakly convergent to basal collar; disc sparsely weakly punctured (Fig. 3a). Scutellum almost triangular, roundly truncate at apex (Fig. 5a). Elytra long and broad, 2.45 times as long as the humeral width, parallel-sided, completely rounded at apices, with distinct sutural angles (Fig. 5d); disc closely finely punctured on basal halves, the punctuation almost disappearing on the remaining apical surface. Ventral surface closely punctured; anal ventrite transverse trapezoidal; anal tergite triangularly concave at middle. Legs rather short and stout; mid- and hind tarsi with 1st segment short, despite of rather long claw, 1st segment 1.07 times as long as following two segments combined, or 0.6 times as long as claw itself (Fig. 6a, d, g).

Male genital organ basically similar to that of *P. bodemeyeri* or *P. rubrida* (Fig. 7a–d). Median lobe little less than 1/4 of elytral length, markedly thick, distinctly convex, strongly arcuate in profile, especially near middle, with ventral plate broadly rounded

with almost truncate apex. Tegmen 8/9 the length of median lobe, with lateral lobes distinctly broad, 2.5 times as long as the basal width of each lobe, approximate at apices, which are densely clothed with rather long setae.

*Measurements of holotype.* BL 16.0, HW 2.5, AL 12.0, PL 2.3, PW 2.60, EL 10.3, EW 4.20 (in mm).

*Type specimen.* Holotype ♂, N. Putao, 2,500 m in alt., Kachin State, Myanmar, VII–2004, local collector leg. Holotype will be deposited in the collection of Yangon Natural History Museum, Myanmar.

*Comparative specimens examined.* *Pachypidonia bodemeyeri* (PIC, 1934): 1 ♂, Maruyama Park, Sapporo City, Hokkaido, Japan 30–VII–1988, K. ISHIDA leg.; 1 ♂, same locality, 31–VIII–1977, K. ISHIDA leg.; 1 ♂, Shikotsu-ko, Chitose City, Hokkaido, 24–V–1984, K. ISHIDA leg.; 1 ♂, Shindenhara, Tateiwa-mura V., Minamiaizu-gun co., Fukushima Pref., Japan, collected as a larva from dead branch on 25–III–1988, adult emerged on VI–1988, N. MORISHIMA leg.; 1 ♂, Mikawa-rindô, Hinoemata-mura V., Minamiaizu-gun co., Fukushima Pref., 10–VII–1988, N. KANEKO leg.; 2 ♂♂, Mt. Amagi-san, Izu City, Shizuoka Pref., Japan, 10–VIII–2006, Y. KANNO leg.; 1 ♂, Sakanotani-rindô, Mt. Hyounosen, Haga Town, Hyogo Pref., Japan, 4–VII–1993, I. TANAKA leg.; 1 ♂, same locality but 29–VII–2001, H. FUJIWARA leg.; 1 ♂, same locality and collector, but 18–VII–2005. Measurements of 10 ♂♂ (in mm): BL 12.5–16.5, HW 1.9–3.1 (M 2.5), AL 9.7–12.5 (M 11.6), PL 1.9–2.5 (M 2.3), PW 2.1–3.2 (M 2.6), EL 8.2–11.0 (M 9.5), EW 3.5–4.8 (M 4.1).

*Pachypidonia rubrida* HAYASHI, 1971: 1 ♂, near Sungkang, 1,900 m in alt., Jenai, Nantou Hisien, Taiwan, 4–VII–1982. Measurements in 1 ♂ (in mm): BL 15.5, HW 2.4, AL 12.5, PL 2.2, PW 2.5, EL 10.0, EW 4.2 (in mm).

*Distribution*. Myanmar (Kachin State).

*Etymology*. The new specific epithet of this species is dedicated to the late Mrs. Masako KUSAKABE, mother of the author. She suddenly passed away in the spring of 2007.

*Comparative notes.* *Pachypidonia masakoae* sp. nov. is closely allied to two other known species, *P. bodemeyeri* from Japan and *P. rubrida* from Taiwan, and considered to be their sibling species in northern Indochina. However, this new species can be distinguished from them by the following key.

## Key to Species of the Genus *Pachypidonia*

1. Elytra dark red usually with blackish tinge, broader and shorter in general, less than 2.40 times as long as the humeral width, with apices rounded at sutural angles; 1st hind tarsal segment more than 1.40 times as long as following two segments combined .....2
— Elytra light reddish orange, narrower and longer in general, 2.45 times as long as the humeral width, with apices angulate at sutural angles; antennae, legs, and ventral surface except for prosternum black; hind tarsi shorter, with 1st segment

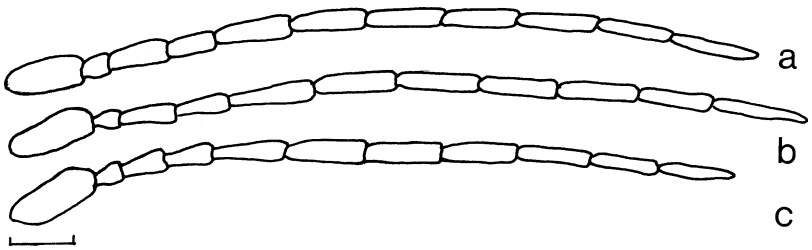


Fig. 4. Antenna of *Pachypidonia* spp. —— a, *P. masakoae* sp. nov.; b, *P. rubrida* HAYASHI; c, *P. bodemeyeri* (PIC). Scale 1 mm.

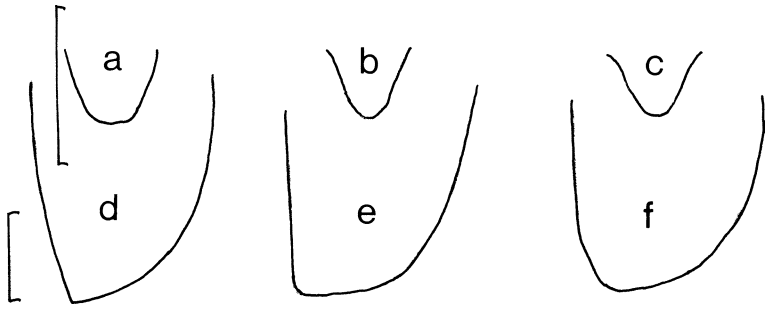


Fig. 5. Scutellum and elytral apex of *Pachypidonia* spp. —— a, d, *P. masakoae* sp. nov.; b, e, *P. rubrida* HAYASHI; c, f, *P. bodemeyeri* (PIC); a–c, scutellum; d–f, elytral apex. Scale 1 mm.

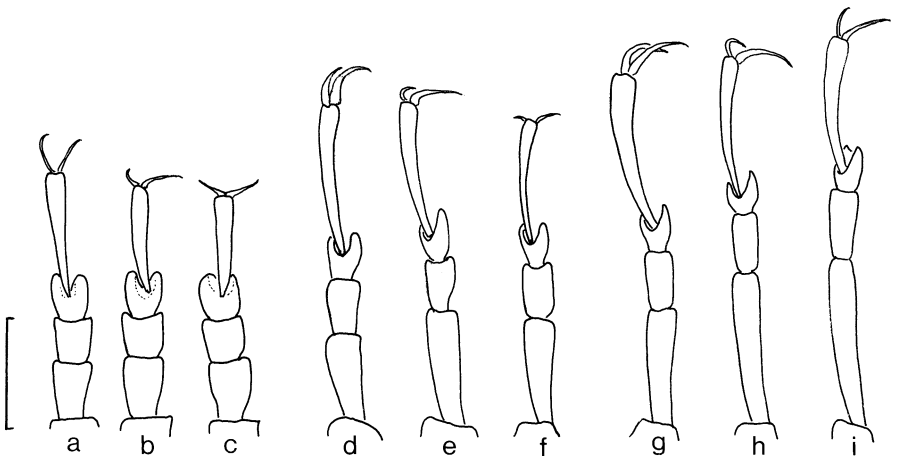


Fig. 6. Fore, mid and hind tarsi of *Pachypidonia* spp. —— a, d, g, *P. masakoae* sp. nov.; b, e, h, *P. rubrida* HAYASHI; c, f, i, *P. bodemeyeri* (PIC); a–c, fore tarsus; d–f, mid tarsus; g–i, hind tarsus. Scale 1 mm.

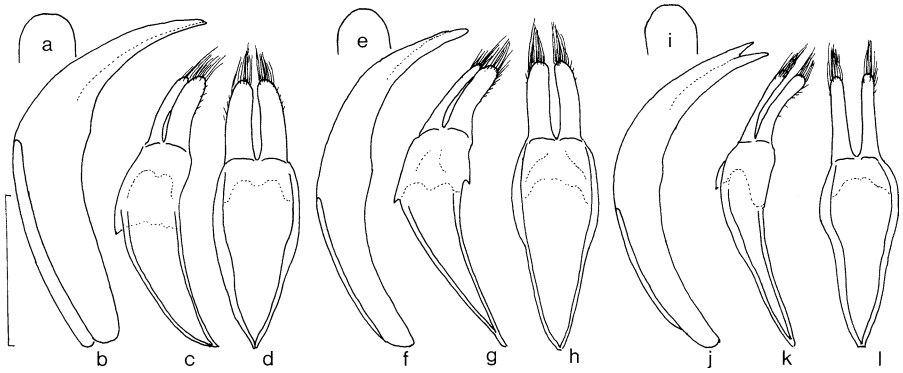


Fig. 7. Male genital organ of *Pachypidonia* spp. —— a–d, *P. masakoae* sp. nov.; e–h, *P. rubrida* HAYASHI; i–l, *P. bodemeyeri* (PIC); a, e, i, apical part of median lobe in ventral view; b, f, j, median lobe in lateral view; c, g, k, tegmen in dorso-lateral view; d, h, l, tegmen in ventral view. Scale 1 mm.

1.07 times as long as following two segments combined; lateral lobes of tegmen fairly broad. Northern Myanmar.....*P. masakoae* sp. nov.

2. Elytra blackish red, EL/EW 2.38; antennae blackish red; pronotum broadening before middle; lateral lobes of tegmen fairly broad, 3.0 times as long as the basal width of each lobe. Taiwan .....*P. rubrida* HAYASHI

— Elytra usually dark red to reddish black, EL/EW ca 2.30; antennae always black; pronotum broadening in middle; lateral lobes of tegmen long and slender, 3.5 times as long as the basal width of each lobe. Japan .....*P. bodemeyeri* (PIC)

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*Spec. Bull. Jpn. Soc. Coleopterol.*, *Tokyo*, (7): 139–167, May 25, 2009

# Review of the *Pyrocalymma* Generic-Group sensu HAYASHI & VILLIERS, 1997, with Descriptions of a New Genus and Two New Species (Coleoptera, Cerambycidae, Lepturinae)

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**Abstract** The *Pyrocalymma* generic-group proposed by HAYASHI and VILLIERS (1995) is reviewed. It is not a monophyletic group, but should instead be divided into more than two different groups. External and genital features indicate the monophyly of genera *Pyrrhona* BATES, 1884, *Formosopyrrhona* HAYASHI, 1957, and *Ohbayashia* HAYASHI, 1958. Likewise, *Pyrocalymma* THOMSON, 1864 is close to *Corennys* BATES, 1884. *Pachypidonia* GRESSITT, 1935, and a newly erected genus *Pyrocorennys* gen. nov., created to include *Pyrocalymma latipennis* PIC, 1927 and *Formosopyrrhona taiwanensis* HAYASHI, 1969, differ from two above mentioned groups, respectively. *Formosopyrrhona wakaharai* sp. nov. and *Corennys takakuwai* sp. nov. are also described.

## Introduction

HAYASHI and VILLIERS (1995) proposed the *Pyrocalymma* generic-group for the genera *Pyrocalymma* THOMSON, 1864, *Corennys* BATES, 1884, *Formosopyrrhona* HAYASHI, 1957, and *Pachypidonia* GRESSITT, 1935. Recently, we were able to examine a series of specimens belonging to these genera mainly from our own collections; these species were amassed during collecting visits to several Asian countries. By close examination of their morphological characteristics including the structure of male genitalia, we can conclude that the genera placed in the *Pyrocalymma* generic-group are not so close to each other, despite similarities in coloration or antennal structures.

Regarding the tribal affiliations of these genera, AURIVILLIUS (1912) placed the genera *Corennys* and *Pyrocalymma* into the tribe Eroschemini of the subfamily Cerambycinae (sensu lato). MATSUSHITA (1933) followed AURIVILLIUS and placed

them into Cerambycinae (sensu stricto). Later, GRESSITT (1951) was the first to transfer this tribe into the subfamily Lepturinae.

HAYASHI basically followed GRESSITT, and in his papers of 1957b, 1969, 1974 (except for that of 1960, which did not refer to the tribe) embraced the tribe Eroschemini. HAYASHI (1957a) placed the genus *Formosopyrrhona* in the tribe Lepturini in question for establishment of this genus because of its affinity to the genus *Pyrrhona* that has been consistently placed in the Lepturini. But in the same year (1957b), he described *Pyrocalymma satoi* in the tribe Eroschemini, although he later (1960) transferred it to the genus *Formosopyrrhona*.

In 1988, ŠVÁCHA indicated that the genus *Eroshema* of the tribe Eroschemini belongs to the subfamily Cerambycinae, but the oriental genera *Corennys* and *Formosopyrrhona* are undoubtedly lepturine. Then, based on the personal suggestion of Dr. ŠVÁCHA, N. OHBAYASHI (1992) transferred the genera *Formosopyrrhona* and *Corennys* into Lepturini.

HAYASHI and VILLIERS (1995) proposed the *Pyrocalymma* generic-group containing four genera: *Pyrocalymma*, *Corennys*, *Formosopyrrhona* and *Pachypidonia* in the subfamily Lepturini. However, our examination showed that the male genital structure of *Formosopyrrhona* is very close to that of *Pyrrhona* BATES, 1884 and *Ohbayashia* HAYASHI, 1953. On the other hand, the genera *Corennys* and *Pyrocalymma* seem to be close to each other. The genus *Pachypidonia* also shares some affinities with *Corennys*, but we got nowhere on the affiliated genera in the Leptutinae. In conclusion, the *Pyrocalymma* generic-group as proposed by HAYASHI and VILLIERS is not monophyletic, and hence it is inadequate to group these genera into a generic-group. In addition, *Pyrocalymma latipennis* Pic, 1927 and *Formosopyrrhona taiwanensis* HAYASHI, 1969 do not belong to *Formosopyrrhona* but into a new genus instead. In this paper, we discuss their generic status and well as their relationships.

## Synonymy and Description

### Genus ***Pyrrhona*** BATES, 1884

*Pyrrhona* BATES, 1884: 224; type species: *Pyrrhona laeticolor* BATES.

*Diagnostic characters.* Body more or less elongate, little convex. Head moderately prolonged anteriad; eyes large and slightly emarginate at inner sides; gena shorter than half the eye diameter; temples narrowed a short distance behind eyes, thence abruptly constricted. Antennae slender, only slightly dilated ecto-apically from seventh to tenth antennal segments, distinctly longer than body in male, shorter in female, inserted between eyes; third and fourth segment extremely abbreviated, much shorter than scape.

Prothorax almost as long as wide, slightly constricted near apex and base, slightly dilated at sides; hind angles acute, but not covering elytral humeri; basal margin bisinuate.

Elytra 2.8–3.0 times as long as wide, sparsely clothed with short fine suberect hairs throughout, elongate, narrowed posteriad, thence slightly expanded posteriorly with rounded apices. Prosternal intercoxal process narrow with laterally dilated base; procoxal cavities closed posteriorly. Stridulatory files of mesosternum symmetrically divided. Scutellum triangular, with rounded apex.

Hind tibiae and tarsi slightly curved; hind tarsi sulcate below with first segment more than 3 times as long as second and third segments combined.

*Male genitalia*. Tegmen narrowly roofed; each lateral lobe slender, nearly parallel-sided, with rounded apex, gently curved outward from base to basal third, then roundly narrowed apicad, ca 0.35 times as long as the total length of tegmen; apex provided with several apical setae of moderate length; ringed part almost straightly narrowed towards connate apex.

Median lobe rather thin, suddenly bent behind middle with slightly curved apex in lateral view, nearly parallel-sided in dorsal view; apex slightly constricted with sharp projection; median struts shorter than half length of median lobe with separate bases.

*Notes*. This genus is endemic to Japan and consists of a single species that has been divided into two subspecies.

### *Pyrrhona laeticolor laeticolor* BATES, 1884

(Figs. 1, 8)

*Pyrrhona laeticolor* BATES, 1884: 224, pl. 1, fig. 8; type locality: Yuyama, Kumamoto Pref., Japan.
*Pyrrhona laeticolor*: AURIVILLIUS, 1912: 251 (Encyclopini); MATSUSHITA, 1933: 184 (Lepturini).

*Specimens examined*. 1 ♀, Ono Lake, Mt. Akagi, Fujimi Village, Gunma Pref., Honshu, 24–VI–1995, K. TOYODA leg.; 1 ♀, Azegamaru, West Tanzawa, Honshu, ex larva, adult emerged on 25–XI–1978, Y. NOTSU leg.; 1 ♀, Ôwakudani, Hakone, Kanagawa Pref., Honshu, 12–V–1985, Y. NOTSU leg.; 2 ♂♂, 5 ♀♀, Tôgasa-yama, Tagata-gun co., Shizuoka Pref., Honshu, ex larvae, adults emerged on III–1976, T. NIISATO leg.; 1 ♂, Mennoki-tôge, Aichi Pref., Honshu, 27–V–1990, K. HATTA leg.; 1 ♂, Idani, Gifu Pref., Honshu, 31–V–1959, H. TORIGAI leg.; 1 ♂, 2 ♀♀, Koyayama, Odamiyama, Ehime Pref., Shikoku, ex larvae, adults emerged on II～III–1996, N. OHBAYASHI leg.; 1 ♂, same locality, but 25–V–2004, J. OGAWA leg.; 1 ♂, 1 ♀, Hirado, Nagasaki Pref., Kyushu, 22～28–IV–1988, H. YOSHITAKE leg.; 1 ♂, Mt. Fukuchi, Fukuoka Pref., Kyushu, 24–V–1949, K. MATSUDA leg.; 1 ♂, Mt. Kunimidake, Kumamoto Pref., Kyushu, 21–V–1972, S. NAOMI leg.; 1 ♀, same locality but 24–V–1974, S. NAOMI leg.; 1 ♂, Naidaizin, Kumamoto Pref., ex larva, adult emerged on III–1973, S. NAOMI leg.

*Distribution*. Japan: Honshu, Shikoku, Kyushu and Koshiki Isls.

### *Pyrrhona laeticolor takakuwai* KUSAMA, 1971

*Pyrrhona laeticolor takakuwai* KUSAMA, 1971: 24.

*Specimens examined*. 2♂♂, 2♀♀, Takatsukagoya, Mt. Miyanoura-dake, Yakushima Is., 1～7–IV–1979, T. WAKEJIMA leg.; 1♂, 1♀, Mt. Kuromi-dake, Yakushima Is., 4–V–1980, M. AMANO leg.; 1♂, 2♀♀, same locality, reared ex larvae, adults emerged between 5～15–V–1982, M. AMANO leg.

*Distribution*. Japan: Yakushima Is.

## Genus *Ohbayashia* HAYASHI, 1958

*Ohbayashia* HAYASHI, 1958: 4; type species: *Strangalomorpha nigromarginata* HAYASHI, 1953.

*Diagnostic characters.* Body elongate, tapering behind. Head moderately prolonged apicad; gena about half as long as eye diameter, temples narrowed in a short distance behind eyes, thence roundly constricted, eyes well developed and slightly emarginate at inner sides. Antennae inserted between eyes, slightly longer than body in male, a little or distinctly shorter in female, third segment nearly equal in length to scape and distinctly longer than fourth segment, fifth segment the longest.

Prothorax longer than broad, narrowed anteriad, weakly constricted near apex and base, sides slightly swollen at middle, hind angles dull. Prosternal intercoxal process very narrow with laterally dilated base, procoxal cavities opened posteriorly. Stridulatory files of mesonotum symmetrically divided. Scutellum triangular.

Elytra elongate, 3.1–3.4 times as long as wide, moderately narrowed posteriorly in male, slightly so in female, roundly truncate or rounded at apices, moderately clothed with fine suberect hairs throughout.

Legs long and slender, hind tibiae slightly curved. Hind tarsi sulcate below, first segment twice as long as third and third segments combined.

*Male genitalia*. Very similar to that of *Pyrrhona*. Each lateral lobe of tegmen slenderer than *Pyrrhona*, one-third as long as the whole length of tegmen.

*Notes*. This genus is distinguishable from *Pyrrhona* by the following features: third antennal segment nearly equal in length to scape and distinctly longer than fourth segment; hind tarsus with first segment twice as long as third and fourth segment combined. This genus likewise differs from *Formosopyrrhona* by its antenna with first to fourth segments lacking the tufts of hairs, not having such distinctly abbreviated third and fourth segments.

### *Ohbayashia nigromarginata nigromarginata* (HAYASHI, 1953)

(Figs. 2, 9)

*Strangalomorpha nigromaginata* HAYASHI, 1953: 40, pl. 8, fig. 3; type locality: Mt. Asahimaru, Tokushima Pref., Japan.

*Ohbayashia nigromarginata*: HAYASHI, 1958: 4, text fig.

*Specimens examined*. 2♂♂, 1♀, Tôgasa-yama, Tagata-gun co., Shizuoka Pref., Honshu, ex larvae, adults emerged in III–1975, T. NIISATO leg.; 28 exs., Koyayama,

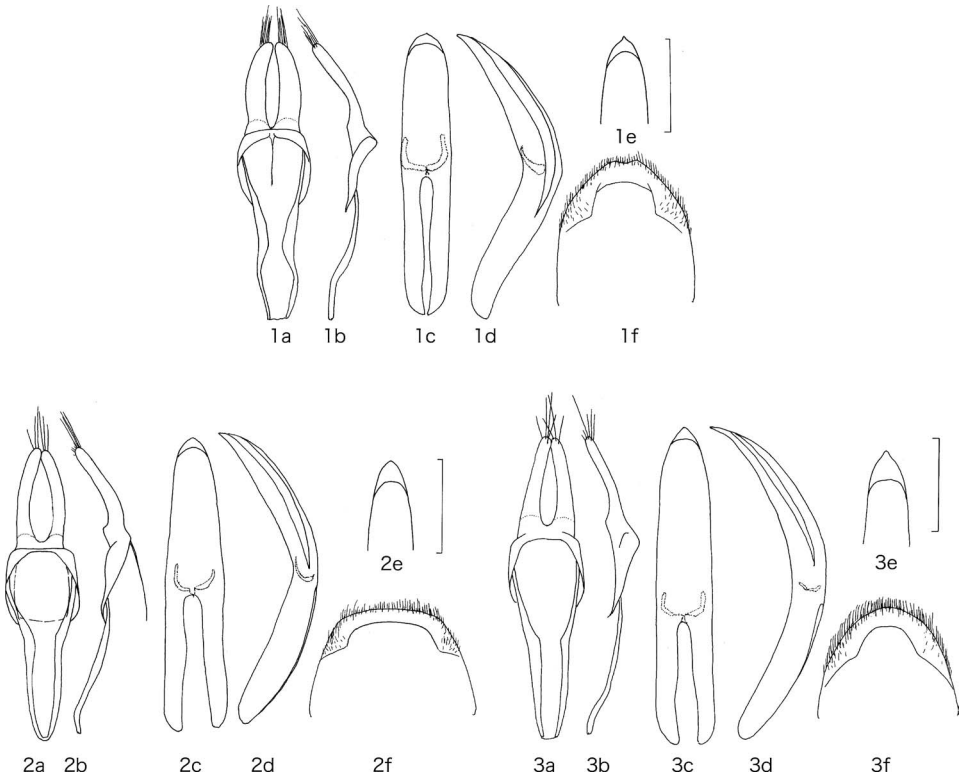



Fig. 1–3. Male genitalia of *Pyrrhona* and *Ohbayashia* spp. —— 1, *P. laeticolor laeticolor* BATES; 2, *O. nigromarginata nigromarginata* (HAYASHI); 3, *O. fuscoaenea* HAYASHI. —— a, Tegmen, dorsal view; b, ditto, lateral view; c, median lobe, dorsal view; d, ditto, lateral view; e, ditto, antero-dorsal view; f, eighth abdominal tergite. Scale: 0.5 mm.

Odamiyama, Ehime Pref., Shikoku, Japan, ex larvae, adults emerged in V–1995, N. OHBAYASHI leg.; 6 exs., same locality, ex larvae, adults emerged during II～III–1996, N. OHBAYASHI leg.

*Distribution.* Japan: Honshu and Shikoku.

### *Ohbayashia nigromarginata rufoflava* HAYASHI, 1968

*Ohbayashia nigromarginata rufoflava* HAYASHI, 1968: 12; type locality: Mt. Sobo, Ôita Pref.

*Specimens examined.* 4 ♂♂, 3 ♀♀, Kunimi-pass, Kumamoto Pref., Kyushu, 24–IV–1973, S. NAOMI leg.

*Distribution.* Japan: Kyushu.

### *Ohbayashia fuscoaenea* HAYASHI, 1974

(Figs. 3, 10)

*Ohbayashia fuscoaenea* HAYASHI, 1974: 7; type locality: Meifeng, Nantou Hsien, Taiwan.

*Specimens examined.* 1 ♂, 1 ♀, Meifeng, Jenai, Nantou Hsien, 30–IV–1977, T. NIISATO leg.; 1 ♂, Shiaoguihu, Pingtung County, 5–IV–1998, W.-I CHOU leg.; 1 ♀, Dahanshan, Pingtung County, 17–IV–2001, W.-I CHOU leg.; 1 ♀, Sungkan, Nantou County, 28–IV–1996, Y. NOTSU leg.

*Distribution.* Taiwan.

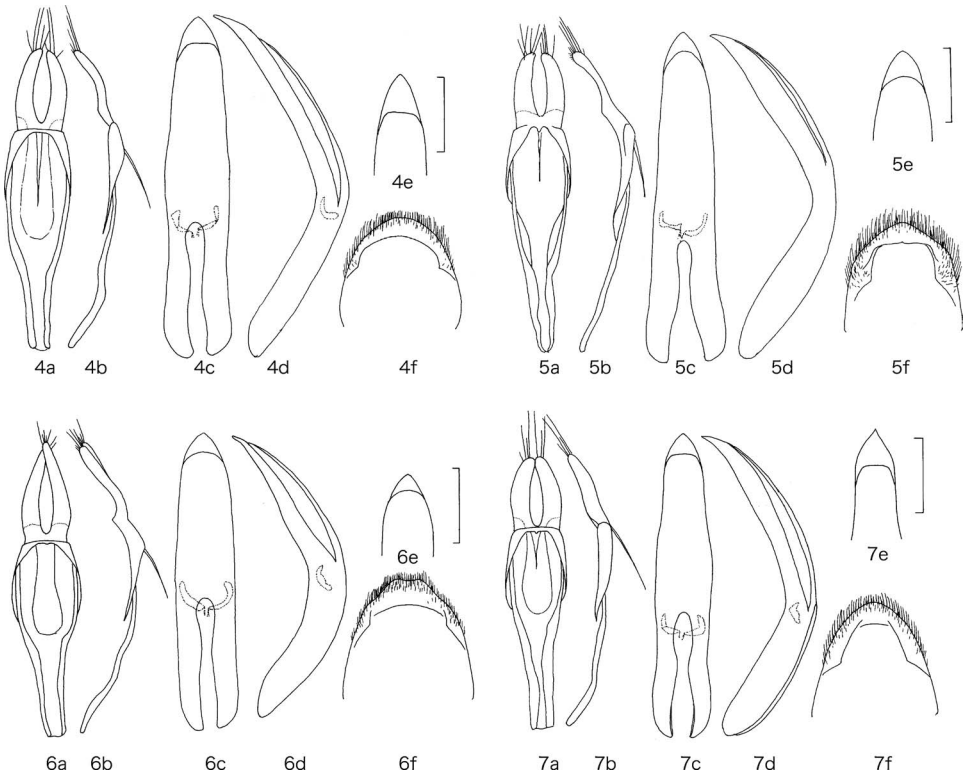
## Genus ***Formosopyrrhona*** HAYASHI, 1957

*Formosopyrrhona* HAYASHI, 1957a: 37 (Lepturinae?); type species: *Corennys cinnabarina* GRESSITT, 1951 = *Pyrocalymma hozanensis* MATSUSHITA, 1933. —— HAYASHI, 1960: 22 (Lepturinae); 1974: 13 (Eroschemini). —— N. OHBAYASHI, 1992: 5 (Lepturini). —— HAYASHI & VILLIERS, 1995: 13 (Lepturinae).

*Diagnostic character.* Differs from *Pyrrhona* as follows: Head with much more developed temples; antennae rather thick, first to fourth segments provided with suberect tufts of hairs, third to tenth segments distinctly dilated ecto-apically; prothorax narrowed anteriad, with sinuate sides, slightly constricted behind anterior margin; disc with a distinct or indistinct glabrous longitudinal line at middle. Elytra 3.0–3.2 times as long as wide, densely clothed with long and thick recumbent hairs throughout. Hind tarsi not sulcate below, first segment twice as long as next two segments combined.

*Male Genitalia.* In general, quite similar to the genus *Pyrrhona.* Each lateral lobe of tegmen less than one-third as long as the entire length of the tegmen; median lobe smoothly narrowed to moderately pointed apex.

*Notes*. The genus *Formosopyrrhona* was established by HAYASHI (1957a) on the basis of a Taiwanese species, *Corennys cinnabarina* GRESSITT, 1951. In the original description, HAYASHI (1957a) clearly mentioned that "the new genus is closely allied to Japanese genus *Pyrrhona*", and placed it in the tribe Lepturini with a question mark, probably because the genus *Corennys* had been included in the tribe Eroschemini. In 1960, HAYASHI transferred *Pyrocalymma hozanensis* MATSUSHITA, 1933 and *P. satoi* HAYASHI, 1957 to *Formosopyrrhona* of the Lepturinae. Subsequently, he described two species, *F. taiwanensis* HAYASHI, 1969 and *F. semilaeticolor* HAYASHI, 1974 under the tribe Eroschemini. In 1995, HAYASHI and VILLIERS revised *Formosopyrrhona*, and synonymized *Corennys cinnabarina* with *Formosopyrrhona hozanensis* (MATSUSHITA). In addition, they transferred *Pyrocalymma latipennis* PIC, 1927 to *Formosopyrrhona.* Then *Formosopyrrhona longula* HOLZSCHUH, 1999 was added to the Chinese fauna. However, our investigation suggests that *F. taiwanensis* and *F. latipennis* should be excluded from *Formosopyrrhona*, and we erect a new genus for them in later pages. As a result, *Formosopyrrhona* now includes four species as follows, as well as a new species, *F. wakaharai* sp. nov.




Figs. 4–7. Male genitalia of *Formosopyrrhona* spp. —— 4, *F. hozanensis* (MATSUSHITA); 5, *F. satoi* (HAYASHI); 6, *F. semilaeticolor* HAYASHI; 7, *F. wakaharai* N. OHBAYASHI et NIISATO, sp. nov. —— a, Tegmen, dorsal view; b, ditto, lateral view; c, median lobe, dorsal view; d, ditto, lateral view; e, ditto, antero-dorsal view; f, eighth abdominal tergite. Scale: 0.5 mm.

## *Formosopyrrhona hozanensis* (MATSUSHITA, 1933)

(Figs. 4, 13)

*Pyrocalymma hozanensis* MATSUSHITA: 231; type locality: Hôzan, Formosa. — GRESSITT, 1951: 121.
*Corennys cinnabarina* GRESSITT, 1951: 122, pl. 4, fig. 4; type locality: Mt. Rara, south of Urai, N. Formosa.
*Formosopyrrhona cinnabarina*: HAYASHI, 1957a: 38
*Formosopyrrhona hozanensis*: HAYASHI, 1960: 23. — HAYASHI & VILLIERS, 1995: 15.

*Specimens examined.* 3♂♂, 1♀, Lienhwachih, Yuchih, Nantou Hsien, Taiwan, 14～16–III–1980, T. NIISATO leg.; 1♂, Hsileng, Taoyuan Hsien, 28–IV–1982, N. OHBAYASHI leg.; 1♂, Mt. Lala-shan, Taoyuan Hsien, 7–V–1982, N. OHBAYASHI leg.; 3♂♂, Fushan, Yuanshan-side, I-lan Hsien, 28–III–2004, T. KURIHARA leg.; 1♂, Fushan, Wulai-side, Taipei Hsien, 29–III–2004, T. KURIHARA leg.

*Distribution*. Taiwan.

### *Formosopyrrhona satoi* (HAYASHI, 1957)

(Figs. 5, 12)

*Pyrocalymma satoi* HAYASHI, 1957b: 45, fig. 1; type locality: Is. Amami-ôshima, Japan
*Formosopyrrhona satoi*: HAYASHI, 1960: 23. —— HAYASHI & VILLIERS, 1995: 16, pl. 3, figs. 10–11.

*Specimens examined.* 1 ♂, Hatsuno, Amami-ôshima Is., Ryukyus, Japan, 15–IV–1963, N. OHBAYASHI leg.; 3 ♂♂, 1 ♀, same locality but 30–III–1999, N. OHBAYASHI leg.; 1 ♀, Mt. Yuwandake, Amami-ôshima Is., 2–IV–1993, M. KIMURA leg.; 1 ♂, same locality but 1～2–V–1986, Y, NOTSU leg.; 7 ♂♂, 1 ♀, Sumiyô-son, Amami-ôshima Is., ex larvae, adults emerged on 22–III–1990, K. MORI leg.; 5 ♂♂, 3 ♀♀, same locality, but adults emerged between 24～25–IV–2005, T. NIISATO leg.; 4 ♂♂, 2 ♀♀, Chûô-rindô, Amami-ôshima Is., ex larvae, adults emerged in V–2000, K. AKITA & M. MIKI leg.; 1 ♂, Nanjô, Nago-shi, Okinawa Is., Ryukyus, Japan, 26–III–1986, K. ISHIDA leg.; 1 ♂, 1 ♀, Ôkuni-rindô, Kunigami-son, Okinawa Is., ex larvae, adults emerged on 12–IV–1992, T. OHMOTO leg.; 1 ♂, same locality but 25–III–2000, M. SATÔ leg.

*Distribution*. Japan: Amami-ôshima Is., Tokuno-shima Is. and Okinawa Is.

### *Formosopyrrhona semilaeticolor* HAYASHI, 1974

(Figs. 6, 11)

*Formosopyrrhona semilaeticolor* HAYASHI, 1974: 13. —— HAYASHI & VILLIERS, 1995: 17, pl. 3, figs. 14–15.

*Specimens examined.* 1 ♂, 1 ♀, Sungkang～Meifeng, Jenai, Nantou Hsien, Taiwan, 30–IV, 2–V–1977, T. NIISATO leg.; 4 ♂♂, 1 ♀, Meifeng, Jenai, 20–IV–1996, C.-C. LUO leg.; 1 ♂, Sungkang, Jenai, Nantou Hsien, 28–IV–1996, Y. NOTSU leg.

*Distribution*. Taiwan.

### *Formosopyrrhona longula* HOLZSCHUH, 1999

*Formosopyrrhona longula* HOLZSCHUH, 1999: 20, fig. 24; type locality: Shennongia, Hubei, China.

*Specimen examined.* No specimens of this species were available for our study.

*Distribution*. China: Hubei.

### *Formosopyrrhona wakaharai* N. OHBAYASHI et NIISATO, sp. nov.

(Figs. 7, 14–15)

*Male*. Length 10.2 mm, width 2.2 mm at humeri, 2.3 mm at the widest point. Body black, elytra black, except for apical fifth which becomes reddish apicad, anterior margin of labrum, maxillary palpus with apex of the last segment, coxae and tarsal claws reddish brown.

Head covered with short yellowish suberect pubescence; tempora behind eyes with long feeble hairs; pronotum, scutellum and elytra furnished with long, recumbent

carmine hairs, which are most dense on apical three fifths of elytra; first to fourth segments of antenna with black suberect tufts of hairs; fifth to last segments with short black pubescence, though fifth and sixth intermixed with suberect short black hairs beneath; legs and underside of body moderately covered with black suberect hairs.

Head short, wider than pronotal base, finely and closely punctured; frons proclinate; gena one-third as long as axis of eye diameter; tempora short and roundly constricted to the neck. Antenna almost reaching elytral apex; first segment slightly curved, longer than third; third segment as long as fourth, fifth segment twice as long as second; fifth to tenth segments more or less flattened and triangularly dilated ecto-apically; relative lengths of segments from base to apex as follows: – 30 : 7 : 19 : 19 : 39 : 39 : 39 : 35 : 32 : 31 : 39.

Pronotum 1.06 times wider than long, almost parallel-sided in basal two-thirds, slightly constricted at basal third, thence convergent to collared apical margin, disc densely punctured with median longitudinal slight depression which is narrow and glabrous; base 1.6 times as wide as apex, bisinuate, lateral corners not projecting laterad. Scutellum triangular, with shallow punctures.

Elytra elongate, 3.3 times as long as wide across humeri; sides once constricted from humeri to middle and again expanded laterally towards apical fifth, which is the widest, thence roundly convergent to rounded inner angles; disk minutely and densely punctured.

Metasternum and episternum provided with deep and distinct punctures, which become shallower and sparser posteriad; abdominal sternites with indistinct rugose sculptures throughout.

Legs moderate in length, femora moderately clubate, hind tarsal segments slightly arcuate dorsally; first segment of hind tarsus three times as long as second and longer than the remaining segments combined.

Male genitalia as shown in Fig. 7 in comparison with those of the other congeners. Median lobe longer than tegmen; ventral plate sharply pointed at apex in lateral view; apical portion in antero-dorsal view, plate once slightly constricted and thence triangularly convergent apicad with sharply pointed apex; dorsal plate shorter than ventral plate, reaching some distance from the apex of ventral plate; median struts not connected basally.

Paramere one-third of entire length of the tegmen; each lobe rather strongly curved inwards in dorsal view, with three or four setae at the extremity; roof narrowly covering the base of ring; ring convergent towards middle, thence almost straightly extended basad with connected base.

Apical part of eighth tergite narrowly rounded, without angles and sparsely fringed with short hairs.

*Female*. Length 12.1 mm, width 2.9 mm at humeri, 3.2 mm at widest point. Similar to male, pronotum 1.22 times wider than long, but antenna shorter, reaching apical third of elytra; relative lengths of segments from base to apex as follows: – 31 : 7 : 22 : 26 : 36 : 36 : 31 : 27 : 24 : 21 : 28.

*Type series*. Holotype: ♂, Mt. Phu Pan, alt. 1,500～1,800 m, N20°11′/E104°01′, Houaphan Prov., northeastern Laos, 16–IV～15–V, 2004, local collector leg. Paratype: 1 ♀, same locality but 2～10–V–2005, local collector leg.

*Type depositories.* The holotype is preserved in the collection of Entomological Laboratory, Faculty of Agriculture, Ehime University, Japan. A paratype is deposited in the private collection of the first author.

*Diagnosis*. This new species is most probably closely related to *F. longula* from Hubei, China, but can be distinguished from it by short and roundly constricted tempora, and shape of pronotum which is almost parallel-sided in basal two-thirds. This new species is also distinguishable from *F. satoi* from Ryukyus, Japan and *F. hozanensis* from Taiwan by its black ground color of elytra instead of reddish brown; almost parallel-sided pronotum in basal two-thirds instead of gradually narrowed apicad; scutellum provided with the same hairs on elytra instead of pale pubescence; sparser fringes of hairs on the first to fourth antennal segments than the others. This new species is also probably closely related to *F. semilaeticolor*, but the length of the fourth antennal segment equals the third, instead of fourth segment being distinctly shorter.

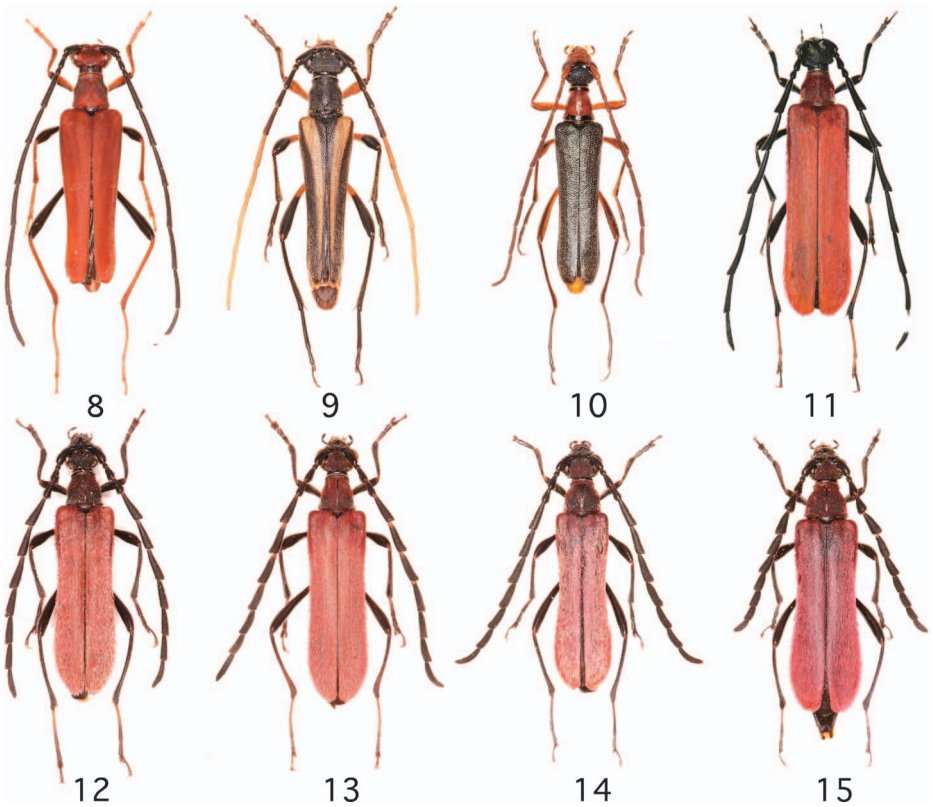
*Etymology*. The specific epithet of this new species is dedicated to Mr. Hiroyuki WAKAHARA, a resident of Vientiane, Laos for his continuous help during our several surveys in this country.

## Genus ***Pyrocalymma*** THOMSON, 1864

*Pyrocalymma* THOMSON, 1864: 159; type species: *Pyrocalymma pyrochroides* THOMSON, 1864.

*Diagnostic characters.* Body broad and robust, slightly dilated posteriad. Head short and almost vertical in front, with a median groove extending from clypeus to vertex; gena about half of the eye diameter; tempora well developed, parallel-sided for a distance of about a half of an eye diameter behind eyes, thence abruptly constricted to the neck. Eyes moderate in size, finely facetted, slightly emarginate at inner sides. Antennae inserted between eyes, evenly pubescent without tufts of hairs, reaching to apical third of elytra in male, to the middle of elytra in female; scape ob-conical, slightly curved and equal in length to the third segment; third to tenth segments more or less flattened, strongly dilated ecto-apically, triangular in form; last segment slightly constricted near the apex.

Pronotum slightly wider than long, narrowed from base to apex with slight swelling in middle of lateral sides, slightly constricted behind anterior margin, transversally depressed along basal margin; basal margin trisinuate; lateral angles slightly projecting laterad with rounded apices. Prosternal intercoxal process narrow with dilated base, procoxal cavity opened posteriad; mesocoxal cavity widely open to epimeron; metasternal epimeron slightly narrowed posteriad with rounded apex. Stridulatory files of mesosternum asymmetrically divided by slightly curved line. Scutellum triangular with rounded apex.




Figs. 8–15. Habitus of *Pyrrhona*, *Ohbayashia* and *Formosopyrrhona* spp. —— 8, *P. laeticolor laeticolor* BATES, male; 9, *O. nigromarginata nigromarginata* (HAYASHI), male; 10, *O. fuscoaenea* HAYASHI, male; 11, *F. semilaeticolor* HAYASHI, male; 12, *F. satoi* (HAYASHI), male; 13, *F. hozanensis* (MATSUSHITA), male; 14, *F. wakaharai* N. OHBAYASHI et NIISATO, sp. nov., holotype, male; 15, ditto, paratype, female.

Elytra 2.5–2.7 times as long as wide, slightly widened apicad from base to apical fourth, thence narrowed to rounded apices; each bearing four longitudinal distinct costae.

Legs moderate in length; femora slightly thickened towards distal third; hind tibiae slightly curved with very short tibial spurs; hind tarsus two-thirds as long as hind tibia, not sulcate below, with first segment twice as long as second.

*Male genitalia*. Tegmen not roofed; each lateral lobe short and wide, ca 0.25–0.30 times as long as the total length of tegmen, slightly curved inwardly, outer angle gently rounded, provided with rather short setae densely distributed on ventral surface, and sparsely so on the apex; ringed part almost straightly narrowed towards separate apices.

Median lobe thick, moderately curved in lateral view, nearly parallel-sided in dorsal

view; apex of ventral plate widely rounded without projection; median struts barely shorter than half length of median lobe with separate bases.

*Notes*. The genus *Pyrocalymma* was established by THOMSON (1864) on the basis of an Indian species, *P. pyrochroides* THOMSON, 1864. Later on, further species in this genus have been described: *P. conspicua* GAHAN, 1906 from Myanmar, *P. notatipes* PIC, 1927 from Tonkin, *P. latipennis* PIC, 1927 from Yunnan, *P. diversicornis* PIC, 1946 from Yunnan, *P. hozanensis* MATSUSHITA, 1933 from Taiwan and *P. satoi* HAYASHI, 1957 from Ryukyus (Amami-ôshima Is.). However, the six above-mentioned species have later either been transferred to *Corennys* or *Formosopyrrhona*, respectively. After 36 years blank, *P. thailandensis* HAYASHI et VILLIERS, 1994 was described from North Thailand. In addition, we lift a variety of *P. pyrochloides* described by PIC (1927) into an independent species. This genus thus presently includes only the following three species.

### *Pyrocalymma pyrochroides* THOMSON, 1864

(Figs. 16, 25–26)

*Pyrocalymma pyrochroides* THOMSON, 1864: 160; type locality: Darjeeling, India. —— KANO, 1928: 226. —— HAYASHI & VILLIERS, 1995: 4.

*Specimens examined*. 6♂♂, 7♀♀, Mt. Phu Pan, Saleui Village, Houapan Province, NE Laos, 1–V–2002, 5–V–2002, 16～18–V–2004, 5～15–V–2003, 18–V–2004, 10–V–2007, T. MIZUSAWA, N. OHBAYASHI, T. TSURU, H. WAKAHARA or local collector leg.; 1♂, 1♀, Zan Phut, S. Kumon Range, Kachin State, N. Myanmar, 28–V–2000, local collector leg.

*Distribution*. North India, Nepal, Myanmar, Laos and Taiwan?

*Notes*. KANO (1928) recorded this species from Taiwan. His description coincides well with external features of this species. Since this unique record there have been no more reports on any further specimens.

### *Pyrocalymma dallieri* PIC, 1927

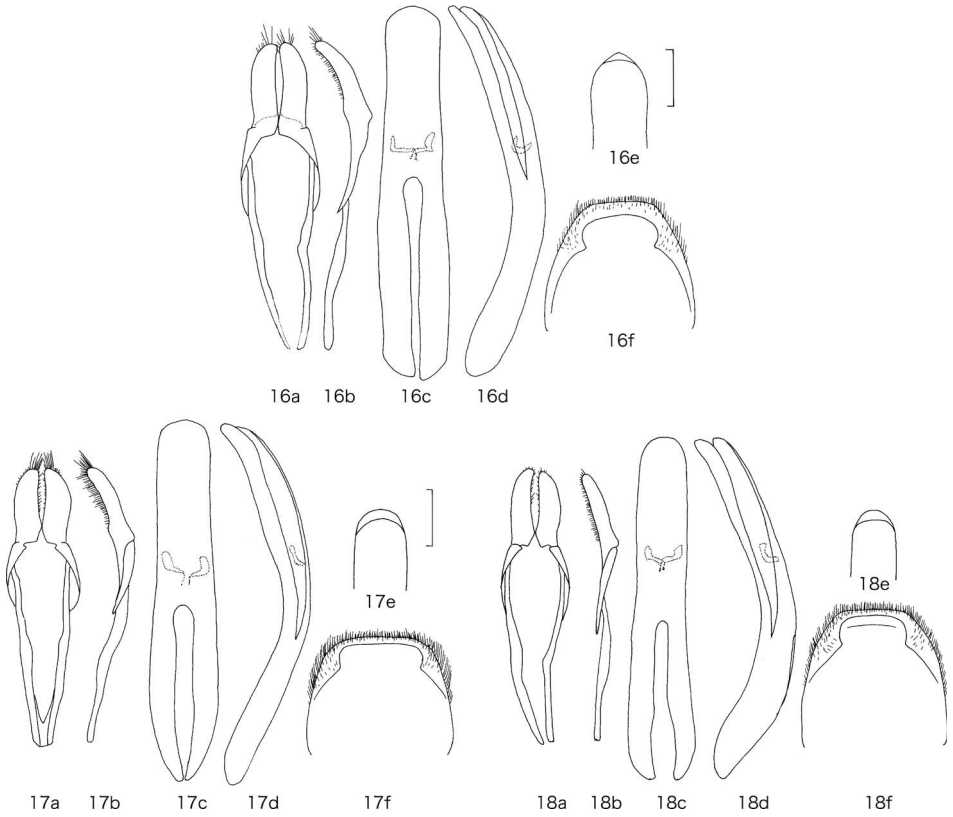
(Figs. 17, 27)

*Pyrocalymna* (sic) *pyrochroides* v. *Dallieri* PIC, 1927: 26; type locality: Tonkin.

*Specimens examined*. 1♂, 2♀♀, near Conia Pass, Mt. Pia Oac, Cao Bang Prov., N. Vietnam, 19～22–V–1999, local collector leg.; 1♂, Mt. Tam Dao, Vinh Phu Prov., North Vietnam, V–2007, local collector leg..

*Distribution*. North Vietnam.

*Notes*. This species was first described from Tonkin as a variety of *P. pyrochroides*. Its original description was very concise and we repeat it here: "Thorace rufo, medio diverse sed nigro notato." Although the type specimen of this variety has not been located in PIC's collection, housed in NMHN, the specimens originating from North




Figs. 16–18. Male genitalia of *Pyrocalymma* spp. —— 16, *P. pyrochroides* THOMSON; 17, *P. dallieri* PIC; 18, *P. thailandensis* HAYASHI et VILLIERS. —— a, Tegmen, dorsal view; b, ditto, lateral view; c, median lobe, dorsal view; d, ditto, lateral view; e, ditto, antero-dorsal view; f, eighth abdominal tergite. Scale: 0.5 mm.

Vietnam that we examined could be easily distinguished from the specimens from Laos and Myanmar by their black median line of pronotum and infuscate basal three-fourths of elytra. Therefore, we decided to lift its status into an independent species.

### *Pyrocalymma thailandensis* HAYASHI et VILLIERS, 1994

(Figs. 18, 28–29)

*Pyrocalymma thailandensis* HAYASHI et VILLIERS, 1994: 62, pl. 5, figs. 4, 5. — HAYASHI & VILLIERS, 1995: 5, pl. 2, figs. 1–2.

*Specimens examined*. 1 ♀, Puping, Doi Pui, Chiang Mai, North Thailand, 4–V–1988, M. TAO leg.; 1 ♂, Chiang Mai, Thailand, 30–VI–1992, local collector leg.; 1 ♂,

1 ♀, Vangpapao, Chiang Mai, N. Thailand, 16–V–1996, H. KAN leg.
*Distribution*. North Thailand.

## Genus *Corennys* BATES, 1884

*Corennys* BATES, 1884: 224; type species: *Corennys sericata* BATES, 1884. —— N. OHBAYASHI, 1992: 4, fig. 10. —— HAYASHI & VILLIERS, 1995: 6.

Body parallel-sided or slightly dilated posteriorly. Head moderately broad, abruptly constricted some distance behind eyes, gena shorter than half of eye diameter, eyes large, incised at inner margins; tempora usually suddenly constricted in some distance behind eyes. Antennae thick, reaching to nearly two-thirds of elytra in male, or near the middle of elytra in female; each segment cylindrical; first to fifth segment in male, or first to seventh or eighth segments in female, densely clothed with suberect bristles; fifth to tenth segments of both sexes usually more or less dilated ecto-apically.

Prothorax broadened basad, slightly constricted near the apex and base with median longitudinal depression. Prosternal intercoxal process dilated apicad; procoxal cavities almost closed posteriorly. Stridulatory files of mesosternum asymmetrically divided by more or less curved line, which is slightly tilted to left side. Scutellum triangular.

Elytra long, 3.0–3.3 times as long as wide, almost parallel-sided in male, slightly broadening near apical fifth in female, with rounded apices.

Hind tarsus shorter than hind tibia, first segment nearly as long as the next two segments combined.

*Male genitalia*. Tegmen not roofed or indistinctly roofed by translucent membrane; each lateral lobe short and wide, usually less than one-third as long as the total length of tegmen, constricted near base and widest around apical third, provided with rather short setae densely distributed on ventral surface, and few setae on apex; ringed part almost straightly narrowed towards separate or connate apices.

Median lobe thick, moderately curved in lateral view, nearly parallel in dorsal view; apex of ventral plate widely rounded with median projection; median struts nearly one-third as long as median lobe with completely connate base.

*Notes*. The genus *Corennys* was established by BATES on the basis of Japanese species, *C. sericata* BATES, 1884. HAYASHI and VILLIERS (1995) recognized seven species in this genus, although their key to identification of these species was rather difficult to use. We were able to examine the type specimens (or photographs of these) of *C. conspicua* (GAHAN), *C. notatipes* (PIC), *Corennys diversicornis* (PIC) (synonymized with *C. conspicua* by HAYASHI & VILLIERS, 1995), *Corennys sanguinea* KANO, *Corennys taiwana* HAYASHI. All these species are very similar to each other and seem to represent individual or local variations. However, we have not been able to amass enough specimens from China or India, and thesefore tentatively follow HAYASHI and VILLIERS (1995). On the other hand, *Corennys sericata* BATES, and three species,

*C. circellaris*, *C. caduca* and *C. sensitiva*, described by HOLZSCHUH from China represent doubtlessly valid taxa. In this paper, another new species from Thailand is described.

### *Corennys sericata* BATES, 1884

(Figs. 19, 30–31)

*Corennys sericata* BATES, 1884: 224; type localities: Nanai, Hokkaido; Chuzenji, Tochigi Pref.; Ontake, Nagano Pref. —— HAYASHI & VILLIERS, 1995: 9, pl. 2, figs. 3–4.

*Specimens examined*. 2 ♀♀, Oyamagawa-rindô, Kawai-mura, Iwate Pref., Honshu, 30–VII～1–VIII–1982, N. OHBAYASHI leg.; 2 ♂♂, 1 ♀, Mt. Hakusan, Ishikawa Pref., Honshu, 9–VIII–1970, M. TOMOKUNI leg.; 1 ♂, Marunuma, Nikkô, Tochigi Pref., Honshu, 2–VII–1951, H. HATTORI leg.; 1 ♂, 1 ♀, Hotaka-Tashiro, Gunma Pref., Honshu, 24–VII–1987, Y. NOTSU leg.; 11 ♂♂, 2 ♀♀, Mt. Hotaka, Katashina-mura, Gunma Pref., 8–VIII–1976, T. NIISATO leg.; 1 ♂, Konroku-pass, Ozegahara, Gunma Pref., 23–VII–1987, Y. NOTSU leg.; 1 ♂, Kamikôchi, Nagano Pref., Honshu, 5–VIII–1954, M. OHTAKE leg.; 1 ♀, same locality, but 19–VII–1958, M. SATÔ leg.; 1 ♂, same locality, but 27–VII–1977, K. HATTA leg.; 2 ♂♂, same locality, but 1–VIII–1986, M. SATÔ leg; 1 ♂, Mt. Hakkai, Ôtaki-mura, Nagano Pref., 3–VIII–2005, S. NAGAI leg.; 5 ♂♂, 3 ♀♀, Kiriake-onsen, Akiyamagô, Nagano Pref., 20～22–VII–1996, S. NAGAI leg.; 1 ♂, 1 ♀, Hirogawara, South Japan Alps, Yamanashi Pref., Honshu, 29–VII–1967, N. OHBAYASHI leg.; 1 ♂, Hinokiboramaru, West Tanzawa, Kanagawa Pref., Honshu, 3～4–VII–1979, Y. NOTSU leg.; 1 ♂, Nakao, Gifu Pref., Honshu, 6–VII–1954, M. OHTAKE leg.; 1 ♀, Mt. Daisen, Tottori Pref., Honshu, 17～19–VII–1973, Y. NOTSU leg.; 3 ♂♂, Mt. Tsurugi, Tokushima Pref., Shikoku, 23–VII–1967, K. IOKI leg.; 1 ♀, same locality, but 11～12–VII–1976, M. SAKAI leg.; 1 ♂, Mt. Ishizuchi, Ehime Pref., Shikoku, 20～21–VII–1997, N. OHBAYASHI leg.

*Distribution*. Japan: Honshu, Shikoku and Kyushu.

### *Corennys cardinalis* (FAIRMAIRE, 1887)

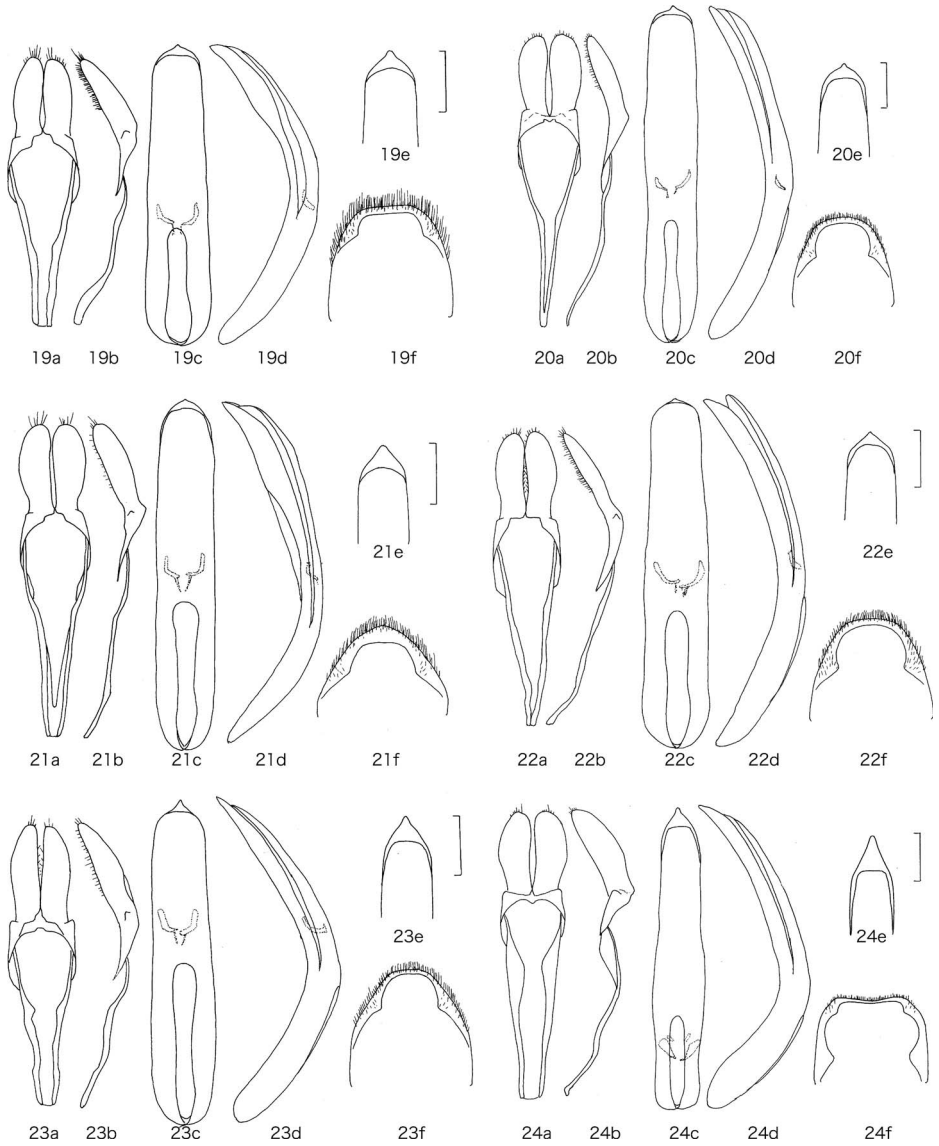
*Ephies cardinalis* FAIRMAIRE, 1887: 131; type locality: Yunnan.
*Corennys cardinalis*: HAYASHI & VILLIERS, 1995: 11.

*Specimens examined*. No specimens of this species were available for this study.
*Distribution*. China: Yunnan.

### *Corennys conspicua* (GAHAN, 1906)

(Figs. 34–35)

*Pyrocalymma conspicua* GAHAN, 1906: 89; type locality: Ruby Mines, Burma.
*Corennys conspicua*: HAYASHI, 1963: 132. —— HAYASHI & VILLIERS, 1995: 10, pl. 1, figs. 1–2.
*Pyrocalymna* (sic) *diversicornis* PIC, 1946: 17; type locality: Yunnan, China.
*Corennys diversicornis*: PIC, 1953: 41.




Figs. 19–24. Male genitalia of *Corennys* spp. —— 19, *C. sericata* BATES; 20, *C. notatipes* (PIC); 21, *C. sanguinea* KANO; 22, *C. taiwana* HAYASHI; 23, *C. sensitiva* HOLZSCHUH; 24, *C. takakuwai* N. OHBAYASHI et NIISATO, sp. nov. —— a, Tegmen, dorsal view; b, ditto, lateral view; c, median lobe, dorsal view; d, ditto, lateral view; e, ditto, antero–dorsal view; f, eighth abdominal tergite. Scale: 0.5 mm.

*Specimens examined*. A photograph (Fig. 34) of the type (female) of *Pyrocalymma conspicua* GAHAN housed in BMNH, London, taken by late Dr. M. SATÔ; 1 ♀ (Fig. 35), [MNHN, Paris: Tali H v. Yunnan / Type / *diversicornis* n sp / Holotype / *Corennys diversicornis* Pic, M. HAYASHI et A VILLIERS det 1974]

*Distribution*. Myanmar, India and China: Yunnan.

*Notes*. HAYASHI and VILLIERS (1995) synonymized *Pyrocalymma diversicornis* PIC with *P. conspicua* GAHAN. We were not able to compare these two species directly instead we could only compare the photographs of the type specimens of the two taxa, and we tentatively accept the result of their taxonomic position. On the other hand, the relationship between *C. diversicornis* (PIC) and *C. cardinalis* (FAIRMAIRE), both from Yunnan are left unresolved.

### ***Corennys notatipes*** (PIC, 1927)

(Figs. 20, 42–44)

*Pyrocalymna* (sic) *notatipes* PIC, 1927: 26; type locality: Chapa.
*Corennys notatipes* HAYASHI, 1963: 131. —— HAYASHI & VILLIERS, 1995: 9, pl. 1, fig. 3.

*Specimens examined*. 1 ♂ (Fig. 42), [MNHN, Paris: Tonkin Chapa 12 V. 1918 JEANVOINE / Type / *notatipes* n sp / Lectotype / *Pyrocalymma notatipes* Pic Lectotype A Villiers det 1974]; 23 ♂♂, 16 ♀♀, Mt. Phu Pan, Saleui Village, Houaphan Province, NE Laos, IV～V, 2002～2006, N. OHBAYASHI leg.

*Distribution*. North Vietnam and Laos.

### ***Corennys sanguinea*** KANO, 1933

(Figs. 21, 36–38)

*Corennys sanguineus* KANO, 1933: 271, pl. 4, fig. 2; type locality: Numanoshita, Arisan, Formosa. —— HAYASHI & VILLIERS, 1995: 11, pl. 2, figs. 5–6.
*Corennys sericata sanguinea*: GRESSITT, 1951: 123, pl. 4, fig. 8.

*Specimens examined*. 1 ♂ (Fig. 36), Numanoshita (700 ft. in alt.), Arisan, 18–V–1927, T. KANO leg. (holotype is in the collection of the NMNS, Tokyo); 2 ♂♂, Mt. Anma-shan, Taichung Hsien, 25～28–VI–2002, N. OHBAYASHI leg.

*Distribution*. Taiwan; China: Hainan.

*Notes*. This species has often been confused with *C. taiwana* HAYASHI, but it can be distinguished from the latter by its well developed temple, which is angularly constricted, rather distinct elytral striae. Likewise, the male of *C. sanguinea* lacks a pair of aggregated hairs on both sides of median depression on posterior part of metasternum. According to the specimens that we were able to examine, these two species showed sympatric distribution at Mt. Anma-shan and Mt. Ari-shan of Taiwan.

### *Corennys taiwana* HAYASHI, 1963

(Figs. 22, 39–41)

*Corennys taiwana* HAYASHI, 1963: 130, fig. 1B; type locality: Puli, Formosa. — HAYASHI & VILLIERS, 1995: 12, pl. 2, figs. 7–8.

*Specimens examined*. 1 ♂ (Fig. 39), Puli, Formosa (alt. 500 m), no further data (holotype is in the collection of NMNS, Tokyo); 3 ♂♂, 1 ♀, Fushan, I-lan Hsien, 29–III–2004, T. KURIHARA leg.; 19 ♂♂, 1 ♀, Hsileng, Taoyuan Hsien, 26～28–IV–1982, N. OHBAYASHI leg.; 1 ♂, Palin～Chitan, Taoyuan Hsien, 27–IV–1978, K. USHIJIMA leg.; 1 ♀, Mt. Lala-shan, Taoyuan Hsien, 7–V–1982, N. OHBAYASHI leg.; Nanshanchi, Jenai, Nantou Hsien, 29–IV–1977, T. NIISATO leg.; 1 ♂, same as the preceding, but 5–IV–1978; 6 ♂♂, 2 ♀♀, same as the preceding, but 16～17–IV–1978; 1 ♂, same as the preceding, but, 23–IV–1978; 2 ♂♂, same as the preceding, but 28–IV–1978; 1 ♀, same as the preceding, but 27–III–1980; 2 ♂♂, Mt. Kuwangtaoshan, Jenai, 21–IV–1999, C.-C. LUO leg.; 1 ♀, Lushan, Jenai, Nantou Hsien, 5–V–1971, Y. HAYASHI leg.; 1 ♂, 4 ♀♀, Lushan, Jenai, 2, 5–V–1977, Y. KOMIYA leg.; 1 ♂, same locality, but 2–V–1978, T. NIISATO leg.; 1 ♂, Wushe, Jenai, 12–V–1977, Y. KOMIYA leg.; 1 ♂, Guandaoshan, Jenai, Nantou Hsien, 10–IV–2004, T. TSURU leg.; 4 ♂♂, Sungkang, Jenai, Nantou Hsien, 29–VI–1971, 2–VII–1971, 26–VI, 1972, Y. MAEDA leg.; 2 ♂♂, 1 ♀, Meifeng, Jenai, 30–IV–1977, T. NIISATO leg.; 3 ♂♂, 1 ♀, same locality as the preceding, but 4–V–1977, Y. KOMIYA leg.; 1 ♀, 2 ♂♂, Lienhwachih, Yuchih, 14～15–III–1980, T. NIISATO leg.; 1 ♀, Pilu～Shenmu, Hsiulin, Hwalien Hsien, 14–V–1977, T. NIISATO leg.; 3 ♂♂, same locality as the preceding, but 3–VI–1980, A. NISHIYAMA leg.; 5 ♂♂, 1 ♀, Mt. Anma-shan, Taichung Hsien, 25～28–VI–2002, N. OHBAYASHI leg.; 1 ♀, Mt. Ari, alt. 2,000 m, Chiayi Hsien, 10–VI–1938, H. INOUE leg.; 1 ♂, Shiaoguihu, Pingtung, 10–IV–1998, W.-I CHOU leg.; 1 ♂, 1 ♀, Siangyang～Liyuan, Taitung Hsien, 7～8–VII–2004, S.–T. HISAMATSU leg.; 1 ♀, Shih Shan, near Liukuei, Kaohsiung Hsien, 28–VI–1986, K. BABA leg.; 1 ♂, Chuyunshan, near Liukuei, 26–IV–1981, W. CHEN leg.; 1 ♂, Nankangshan, near Liukuei, 25, 31–III–1980, W. CHEN leg.; 1 ♂, Shenping, near Liukuei, 21–III–1980, T. NIISATO leg.

*Distribution*. Taiwan.

*Notes*. This species is widely distributed in Taiwan. There is some variation among different populations regarding the constriction of tempora that is rounded or angulated, as well as the proportion of elytra that is wide and short, or narrow and long, respectively.

### *Corennys circellaris* HOLZSCHUH, 1992

*Corennys circellaris* HOLZSCHUH, 1992: 12, fig. 9; type locality: Emei Shan, Sichuan, China. —— HAYASHI & VILLIERS, 1995: 12, pl. 2, fig. 9 (this figure should not be *C. circellaris*).

*Specimens examined*. No specimens of this species were available for this study.

*Distribution*. China: Sichuan.

### *Corennys caduca* HOLZSCHUH, 1998

*Corennys caduca* HOLZSCHUH, 1998: 28, fig. 36; type locality: Dashennongjia, W-Hubei, China.

*Specimens examined*. No specimens of this species were available for this study.
*Distribution*. China: Hubei.

### *Corennys sensitiva* HOLZSCHUH, 1998

(Figs. 23, 32–33)

*Corennys sensitiva* HOLZSCHUH, 1998: 29, fig. 37; type locality: Heishui, 35 km N of Lijiang, Yunnan, China.

*Specimens examined*. 1 ♂, 1 ♀, Mt. Yulong, Lijiang, Yunnan, 11–VII–2003, HU & TANG leg.
*Distribution*. China: Yunnan.

### *Corennys takakuwai* N. OHBAYASHI et NIISATO, sp. nov.

(Figs. 24, 45–46)

*Male*. Length 14.6–16.3 mm, width 3.4–3.8 mm. Body black; head except for clypeus, both sides of frons and pronotum dusky red; scutellum black; elytra carmine red; apical margin of labrum, apex of last maxillary palpi, underside of head, middle of prosternum, insides of coxae, femora and tibiae of fore legs, and extreme base of mid coxae reddish brown.

Head with clypeus and frons sparsely covered with short pale suberect hairs intermixed with long hairs; vertex to occiput moderately clothed with long recumbent golden hairs that are combed towards the middle. Antenna with first to fifth segments except outer apex of fifth segment densely clothed with suberect black hairs of moderate length, the remainder segments densely furnished with very short fine suberect pale pubescence. Pronotum densely clothed with sub-recumbent golden hairs, which are combed obliquely from behind to middle, though middle area combed in opposite direction and forming a heart-shaped marking due to the shot-silk-effect. Scutellum densely clothed with suberect black hairs. Elytra densely clothed with suberect golden hairs, which are alternately arranged in directions and each elytron forming two or three longitudinal rows of stripes due to the shot-silk-effect. Legs moderately furnished with suberect brownish hairs, except for insides of mid- and hind femora and tarsi, which are almost glabrous.

Head across eyes 1.5 times as wide as pronotal apex; frons with both lateral sides distinctly carinate, deeply concave from top of triangular smooth area to vertex; gena 0.4 times as long as axis of eye; tempora scarcely developed, roundly constricted to the neck; eyes almost entire, with light emargination along antennal insertion. Antenna thick, reaching apical sixth of elytra; sixth to tenth segments more or less flattened and lightly expanded ecto-apically; relative lengths of segments from base to apex as follows: –

32 : 7 : 32 : 25 : 32 : 35 : 35 : 34 : 33 : 30 : 42.

Pronotum campanulate, slightly constricted near basal third, 0.9 times as long as basal width; apical and basal margin collared; base 1.3 times as wide as apex, distinctly bisinuate with rounded lateral corners; disc densely punctured with transverse depression along basal margin. Scutellum regular triangular.

Elytra elongate, 3.1 times as long as humeral width, 2.8 times as long as its widest point, slightly dehiscent in apical ninth, nearly parallel-sided, though slightly expanded laterad near apical seventh, which is the widest, then arched to obliquely truncate apex; disc densely punctured with two feeble, but distinct carinae on each elytron. Disc of sternum densely and ruggedly punctured, except for prosternum which is transversally wrinkled. Metasternum with middle of posterior half deeply grooved with distinctly ridged sides, but without tufts of hairs.

Legs rather short and stout; femora clavate, with hind one provided with a dull projection on apical ninth of underside; hind tibia slightly curved, with two distinct carinae on both dorsal sides; hind tarsus nearly as long as tibia, with first segment twice as long as second; third segment deeply cleft to near the base.

Abdomen provided with shallow and fine punctures getting sparser from basal sternite to apical ones; last sternite depressed medially, with widely emarginate apical margin.

Male genitalia as shown in Fig. 24. Tegmen with lateral lobes 0.3 times as long as total length, widest near middle; apex widely rounded with a few very short hairs; roof indistinct; ringed part straightly convergent towards roundly connate apex.

Median lobe slightly longer than tegmen, slightly expanded laterally from middle to basal fourth in dorsal view, slightly curved with strong bending near basal third in lateral view; ventral plate narrowly prolonged apicad from antero-dorsal view; median struts connate at base, nearly one-third as long as total length of median lobe in lateral view.

Apical margin of eighth tergite sparsely fringed with short hairs, almost truncate or lightly emarginate with rounded angles.

*Type series*. Holotype: ♂, Doi Suthep, N. Thailand, 7–IV–1981, M. ITO leg. Paratypes: 2 ♂♂, same data as holotype.

*Type depositories*. The holotype is preserved in the collection of Entomological Laboratory, Faculty of Agriculture, Ehime University, Japan. Two paratypes are

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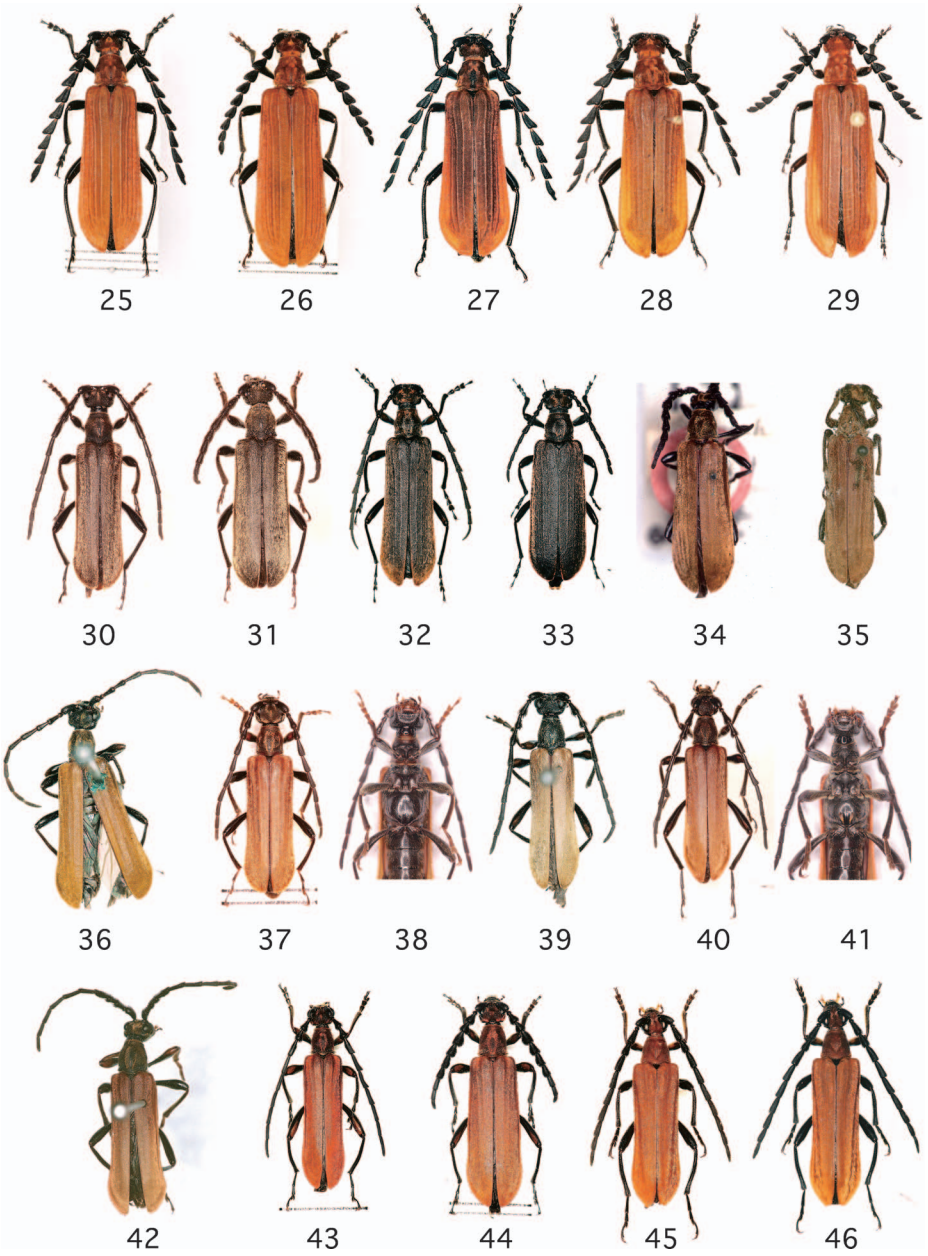
Figs. 25–46. Habitus of *Pyrocalymma* and *Corennys* spp. —— 25, *P. pyrochroides* THOMSON, male; 26, ditto, female; 27, *P. dallieri* PIC, male; 28, *P. thailandensis* HAYASHI et VILLIERS, male; 29, ditto, female; 30, *C. sericata* BATES, male; 31, ditto, female; 32, *C. sensitiva* HOLZSCHUH, male; 33, ditto, female; 34, *P. conspicua* GAHAN, holotype (BMNH); 35, *P. diversicornis* PIC, holotype (MNHN); 36, *C. sanguineus* KANO, holotype (NMNS); 37, *C. sanguineus* KANO, male; 38, ditto, metasternum; 39, *C. taiwana* HAYASHI, holotype (NMNS); 40, *C. taiwana* HAYASHI, male; 41, ditto, metasternum; 42, *P. notatipes* PIC, holotype (MNHN); 43, *C. notatipes* (PIC), male; 44, ditto, female; 45, *C. takakuwai* N. OHBAYASHI et NIISATO, sp. nov., holotype, male; 46, ditto, paratype, male.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deposited in the private collection of the first author.

*Notes*. This is a quite unique species among its congeners, characterized by an undeveloped temple, alternately arranged golden hairs on elytra, densely haired scutellum, relatively long hind tarsus, and so on.

*Etymology*. The specific epithet of this new species is dedicated to Dr. Masatoshi TAKAKUWA, for the memory of our friendship, stretching over three decades.

### *Pyrocorennys* N. OHBAYASHI et NIISATO, gen. nov.

Type species: *Pyrocalymma latipennis* PIC, 1927.

*Diagnostic characters.* Body rather wide and robust. Head short and inclined downwards in front, vertex deeply concave; occiput flattened; tempora distinct and roundly constricted in a short distance behind eyes, eyes moderate in size, slightly emarginate on upper sides. Antennae inserted just in front of eyes, reaching to apical fifth of elytra in male and to apical third in female; fifth to tenth segments slightly dilated ecto-apically, more or less flattened.

Prothorax wider than long, almost straightly narrowed from base to apex; disc longitudinally depressed between a pair of large swellings, transversely depressed on basal area; lateral angles obtusely projecting laterad; basal margin distinctly marginate and deeply bisinuate.

Elytra almost parallel-sided, with rounded outer angles of apices, 2.5–2.6 times as long as wide; each elytron with four longitudinal feeble costae; sides of scutellum elevated. Prosternal process between coxae very narrow, thence slightly widened apicad; procoxal cavities opened posteriorly. Stridulatory files of mesosternum symmetrically divided. Scutellum triangular, strongly inclined anteriad.

Hind tibiae slightly curved, with very short tibial spurs. Hind tarsus as long as hind tibia, not sulcate below; first segment twice as long as second, shorter than second and third segments combined. Apex of last abdominal sternite triangularly incised with ridged sides in male, and roundly emarginate in female.

*Male genitalia*. Tegmen without roof, each lateral lobe robust, slightly twisted near apical third, one-fifth as long as total length of tegmen; ringed part once constricted near apical third, thence almost straightly extended to separate bases.

Median lobe moderately thick, doglegged behind middle, thence slightly curved apicad in lateral view, smoothly narrowed to moderately pointed apex in dorsal view.

*Notes*. This new genus is probably related to the genus *Pyrocalymma*, but can be distinguished from it by not strongly serrate, but distally slightly swollen antennal segments. Hind tarsus is as long as hind tibia instead of 0.6 times as long.

*Etymology*. Generic name is created by combination of two related genera *Pylocalymma* and *Corennys.*

### ***Pyrocorennys latipennis latipennis*** (PIC, 1927), comb. nov.

(Fig. 49–52, 55)

*Pyrocalymna* (sic) *pyrochroides* v. *latipennis* PIC, 1927: 26; type locality: Tali Haut, Yunnan.
*Etymology*. Generic name is created by combination of two related genera *Pylocalymma* and *Corennys*.
*Pyrocalymna* (sic) *brevipennis* PIC, 1946: 17; type locality: Tali Hu, Yunnan.
*Corennys brevipennis*: HAYASHI, 1963: 131.
*Formosopyrrhona latipennis*: HAYASHI & VILLIERS, 1995: 17, pl. 1, fig. 4.

*Specimens examined*. 1 ♀ (Figs. 49–50), [MNHN: Tali Haut Yunnan / Type / in coll Boppe / *Pyr. pyrochroides* v. *latipennis* mihi / Holotype]; 1 ♀ (Figs. 51–52), [MNHN: Tali H v. Yunnan / Type / *brevipennis* Pic / Holotype / *Formosopyrrhona brevipennis* (Pic) M. HAYASHI et A VILLIERS det 1974]; 1 ♀, Mt. Phu Pan, Saleui Village, Houaphan Province, NE Laos, 5–V–2002, local collector leg.; 1 ♀, same locality but 16–IV～15–V–2004, local collector leg.

*Distribution*. China: Yunnan; Laos.

*Notes*. PIC confused the epithets '*latipennis*'and '*brevipennis*' because he attached different determination labels on two different specimens originating from the same locality in China. One is *Pyrocalymna* (sic) *pyrochroides* v. *latipennis* and the other is *Pyrocalymma brevipennis*. The former species was described in 1927; later, in 1946, he described var. *prescutellaris* of *Pyrocalymna* (sic) *brevipennis* (forme typique) with differential diagnosis. Again, in 1953, he changed the combination into *Pyrocalymna* (sic) *latipennis* var. *prescutellaris* with the following note: "Une coquille a dénature le non en *brevipennis* PIC (Misc. Entom. XLIII, p. 17)". As a result, the species name of *Pyrocalymna* (sic) *brevipennis* PIC, 1946 should be a valid name but junior synonym of *Pyrocalymma latipennis*.

### ***Pyrocorennys latipennis prescutellaris*** (PIC, 1946), stat. et comb. nov.

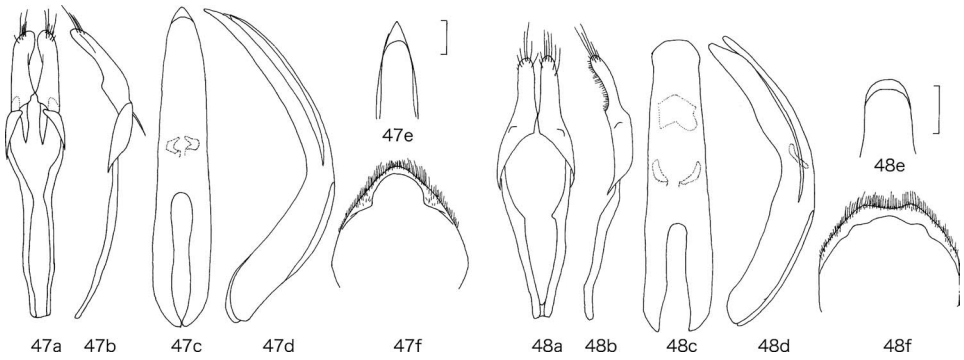
(Figs. 53–54, 56)

*Pyrocalymna* (sic) *brevipennis* var. *prescutellaris* PIC, 1946: 17; type locality: Chapa, Tonkin.
*Corennys latipennis* var. *prescutellaris*: PIC, 1953, Misc. ent., 47: 42.
*Corennys brevipennis prescutellaris*: GRESSITT & RONDON, 1970: 42, Fig. 9a.
*Formosopyrrhona latipennis*: HAYASHI & VILLIERS, 1995: 17, pl. 1, fig. 4.

*Specimens examined*. 1 ♂ (Figs. 53–54), [MNHN, Paris: TONKIN Chapa 6. V. 1918 JEANVOINE / Type / v. *prescutellaris* mihi (de *brevipennis* Pic)]; 1 ♀, Conia Pass, Mt. Pia Oac, Cao Ban Province, N. Vietnam, 27–V–1999, local collector leg.

*Distribution*. North Vietnam.

*Notes*. PIC (1946) distinguished the var. *prescutellaris* from "forme typique" as follows: "Élytres relativement courts et larges (forme typique), parfois un peu relevés vers l'écusson, ou bien élytres plus longs et fortement surélevés vers l'écusson (var. *prescutellaris*, nova)". We have not seen enough materials for comparison, and therefore tentatively treat this form as a subspecies of *Pyrocorennys latipennis*.




Figs. 47–48. Male genitalia of *Pyrocorennys latipennis taiwanensis* (HAYASHI): 47, and *Pachypidonia bodemeyeri* (PIC): 48. —— a, Tegmen, dorsal view; b, ditto, lateral view; c, median lobe, dorsal view; d, ditto, lateral view; e, ditto, antero-dorsal view; f, eighth abdominal tergite. Scale: 0.5 mm.

### *Pyrocorennys latipennis taiwanensis* (HAYASHI, 1969), comb. nov.

(Figs. 47, 57–58)

*Formosopyrrhona taiwanensis* HAYASHI, 1969: 61; type locality: Taiwan. — HAYASHI & VILLIERS, 1995: 17, pl. 4, figs. 16–17.

*Specimens examined*. 1 ♂, 1 ♀, Mt. Kuantao Shan, Renai, Nantou Hsien, central Taiwan, 8–V–1988; 1 ♂, 9 ♀♀, Kaofeng, Nantou Hsien, Taiwan, 13–V–2004; same locality, but 16 ♂♂, 18 ♀♀, 20–IV～4–V–2007.

*Distribution*. Taiwan.

*Notes*. When compared to a female of *P. latipennis* from Vietnam, we were not able to find any differential characteristics between them. However, we tentatively retain this species as a subspecies of *P. latipennis*, mainly because we were not able to examine the male genitalia of *P. latipennis*.

## Genus *Pachypidonia* GRESSITT, 1935

*Pachypidonia* GRESSITT, 1935: 166; type species: *Pachypidonia crassicornis* GRESSITT, 1935=*Leptura bodemeyeri* PIC, 1934.

Body parallel-sided or slightly dilated posteriorly. Head moderately broad, abruptly constricted a short distance behind eyes, gena shorter than half of eye diameter, eyes large, incised at inner margins. Antennae thick, each segment cylindrical, slightly exceeding the middle of elytra in male, shorter in female.

Prothorax wider than long, roundly expanded laterad, broadened behind, slightly constricted near apex, distinctly so near base. Prosternal intercoxal process dilated behind, procoxal cavities posteriorly almost closed. Stridulatory files of mesonotum asymmetrically divided. Scutellum tongue-shaped.

Elytra almost parallel-sided, ca 2.3 times as long as wide, slightly broadened before the apices in female. First segment of hind tarsi distinctly longer than the next two segments combined.

*Male genitalia*. Tegmen not roofed; each lateral lobe rather thick, one-third as long as total length of tegmen, not constricted but widened near base, subparallel-sided towards rounded apex, provided with rather short dense setae on ventral surface, and several long ones on the apex; ringed part almost straightly narrowed towards subconnate apices.

Median lobe thick, moderately curved in lateral view, slightly tapering towards widely rounded apex without median projection in dorsal view; median struts nearly one-third as long as median lobe with separate base.

*Notes*. Systematic position of this peculiar genus has been discussed several times. A. SAITO (1989) indicated the resemblance of its female reproductive organ with the genus *Corennys*. N. OHBAYASHI (1992) quoted her opinion, but also added the comment of ŠVÁCHA that the larval morphologies of them are quite different from each other. However, HAYASHI and VILLIERS (1995) included it in the *Pyrocalymma* generic-group, based on the resemblance of their external characters.

Our examination of male genitalia indicates that this genus likewise exhibits only weak support for a close relationship with the genera *Corennys* or *Pyrocalymma*. Since we are presently unable to resolve its exact systematic position, we retain the current status quoted.

### *Pachypidonia bodemeyeri* (PIC, 1934)

(Figs. 48, 59)

*Leptura bodemeyeri* PIC, 1934: 17; type locality: Kobe, Japon.
*Leptura* (*Anoploderomorpha*) *bodemeyeri*: MITONO, [1941]: 33.
*Leptura* (*Vadonia*) *bodemeyeri*: TAMANUKI, [1942]: 82, fig. 112.
*Pachypidonia bodemeyeri*: NAKANE & OHBAYASHI, 1957: 51.
*Pachypidonia crassicornis* GRESSITT, 1935: 168; type locality: Kamikochi, Nagano Pref.
*Leptura* (*Vadonia*) *kochiana* MATSUSHITA, 1935: 308; type locality: Nagaoka-Gori, Nishitoyonaka-mura, Kochi Pref.

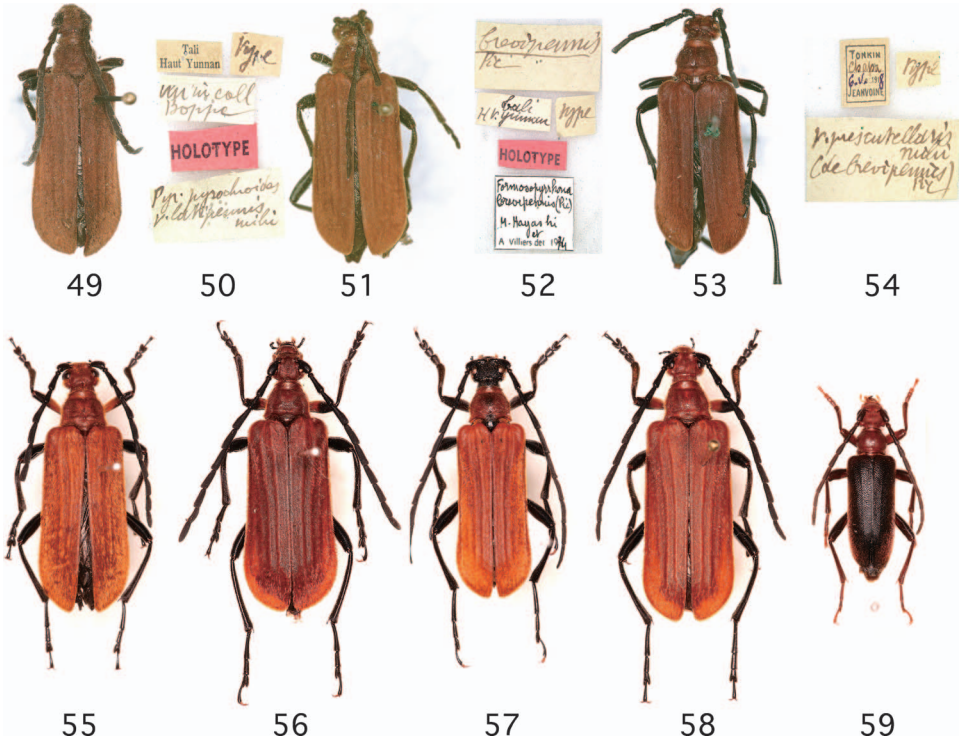
*Specimens examined*. 1 ♂, Hirakura, Misugi-mura, Mie Pref., Honshu, 10–VI–2000, K. AKITA leg.; 1 ♂, Jyôjyusha, Mt. Ishizuchi, Ehime Pref., Shikoku, 10–VII–1954, K. SASAKI leg.

*Distribution*. Japan: Honshu, Shikoku and Kyushu.

### *Pachypidonia rubrida* HAYASHI, 1971

*Pachypidonia rubrida* HAYASHI, 1971: 4; type locality: Sungkang, Nantou, Taiwan.

*Specimen examined*. 1 ♀, Sungkang, Jenai, Nantou Hsien, Taiwan, 9–VI–1987, C.-C. LUO leg.




Figs. 49–59. Habitus of *Pyrocorennys* and *Pachypidonia* spp. —— 49, *Pyrocalymma pyrochroides* v. *latipennis* PIC, holotype (MNHN); 50, ditto, labels; 51, *Pyrocalymma brevipennis* PIC, holotype (MNHN); 52, ditto, labels; 53, *Pyrocalymma brevipennis* var. *prescutellaris* PIC, holotype (MNHN); 54, ditto, labels; 55, *Pyrocorennys latipennis latipennis* (PIC), female from Laos; 56, *Pyrocorennys l. prescutellaris* (PIC), female from N. Vietnam; 57, *Pyrocorennys l. taiwanensis* (HAYASHI), male; 58, ditto, female; 59, *Pachypidonia bodemeyeri* (PIC).

*Distribution*. Taiwan.

## Key to the Genera included in the Present Study

1. Elytra narrow, usually more than three times as long as wide; hind tarsus long and slender, with first segment longer than twice the length of second and third segments combined. Male genitalia with each lateral lobe of tegmen slender and curved inwards.....2
— Elytra wide, usually less than 2.8 times as long as wide; hind tarsus more or less thick, with first segment shorter than twice the length of second and third segments combined. Male genitalia with each lateral lobe of tegmen thick and rather short. .....4

2. Antenna with third and fourth segments distinctly abbreviated.....3
— Antenna with third and fourth segments slightly abbreviated; hind tarsal segment twice as long as second and third segments combined.....*Ohbayashia*
3. Antenna thick and stout, each segment prolonged ecto-apically from fifth to tenth segments, with first to fourth segments furnished with tufts of long suberect hairs; hind tarsus with first segment twice as long as second and third segments combined. .....*Formosopyrrhona*
— Antenna slender, only slightly dilated ecto-apically from seventh to tenth segments, without tufts of long suberect hairs on first to fourth segments, hind tarsus with first segment three times as long as second and third segments combined. ..... .....*Pyrrhona*
4. Hind tarsus as long as hind tibia. Male genitalia with each lateral lobe robust, slightly twisted near apical third; median lobe smoothly narrowed to moderately pointed apex.....*Pyrocorennys*
— Hind tarsus distinctly shorter than hind tibia.....5
5. Third to tenth antennal segments distinctly serrate. Male genitalia with each lateral lobe short, slightly curved inwards with gently rounded outer angle; apex of median lobe widely rounded without projection. .....*Pyrocalymma*
— Fifth to tenth antennal segments slightly dilated ecto-apically.....6
6. First to fifth antennal segments densely clothed with suberect bristles. Male genitalia with short and wide lateral lobes, constricted near base; each lobe swollen laterad and widest around apical third; apex of median lobe widely rounded with median projection. .....*Corennys*
— First to fifth antennal segments without suberect bristles. Male genitalia with lateral lobes not constricted but widened near base, parallel-sided towards rounded apex; apex of median lobe widely rounded without median projection..... .....*Pachypidonia*

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# Seven New Taxa of the Genus *Merionoeda* PASCOE (Coleoptera, Cerambycidae) from Borneo, Mainly from South Kalimantan

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**Abstract** Six new species and one new subspecies of the genus *Merionoeda* PASCOE originating from Borneo, mainly from South Kalimantan are described; they are *M. ohbayashii* sp. nov., *M. takakuwai* sp. nov., *M. fulvicollis* sp. nov., *M. clara* sp. nov., *M. laticornis kalimantana* ssp. nov., *M. planicollis* sp. nov. and *M. mutata* sp. nov.

Of about eighty-five currently known species of the genus *Merionoeda*, fewer than ten species have hitherto been recorded from Borneo*. F. P. PASCOE (1856–1869) was the first describing four species from Sarawak, followed by C. AURIVILLIUS and K. M. HELLER who added three and two species in 1923 and 1924, respectively. The number of *Merionoeda* species recorded here is rather modest, considering the sheer size of this island with its corresponding geo-topological and biological diversities, lying in the pivotal biogeographical region. Since we have been able to explore the fauna of Borneo more intensively, in particular that of South Kalimantan area, we have found seven additional taxa of this genus, which are described in the following lines.

This paper is dedicated to Prof. Dr. Nobuo OHBAYASHI and Dr. Masatoshi TAKAKUWA on the occasion of their retirements from Ehime University, Matsuyama and the Kanagawa Prefectural Museum of Natural History, Odawara, respectively.

The holotype and allotype specimens designated in the present paper are preserved in the National Museum of Nature and Science, Tokyo, and the paratypes are in the private collections of the authors. The abbreviations used for the ratio of the measurements are explained in our previous paper (YOKOI & NIISATO, 2008, p. 59).

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*) After the completion of this manuscript, we have obtained a publication written by C. HOLZSCHUH, in which 8 new *Merionoeda* species from Sabah of Borneo were described. Total number of *Merionoeda* taxa from Borneo has thus reached 27.

### *Merionoeda ohbayashii* sp. nov.

(Figs. 1–2, 15–20)

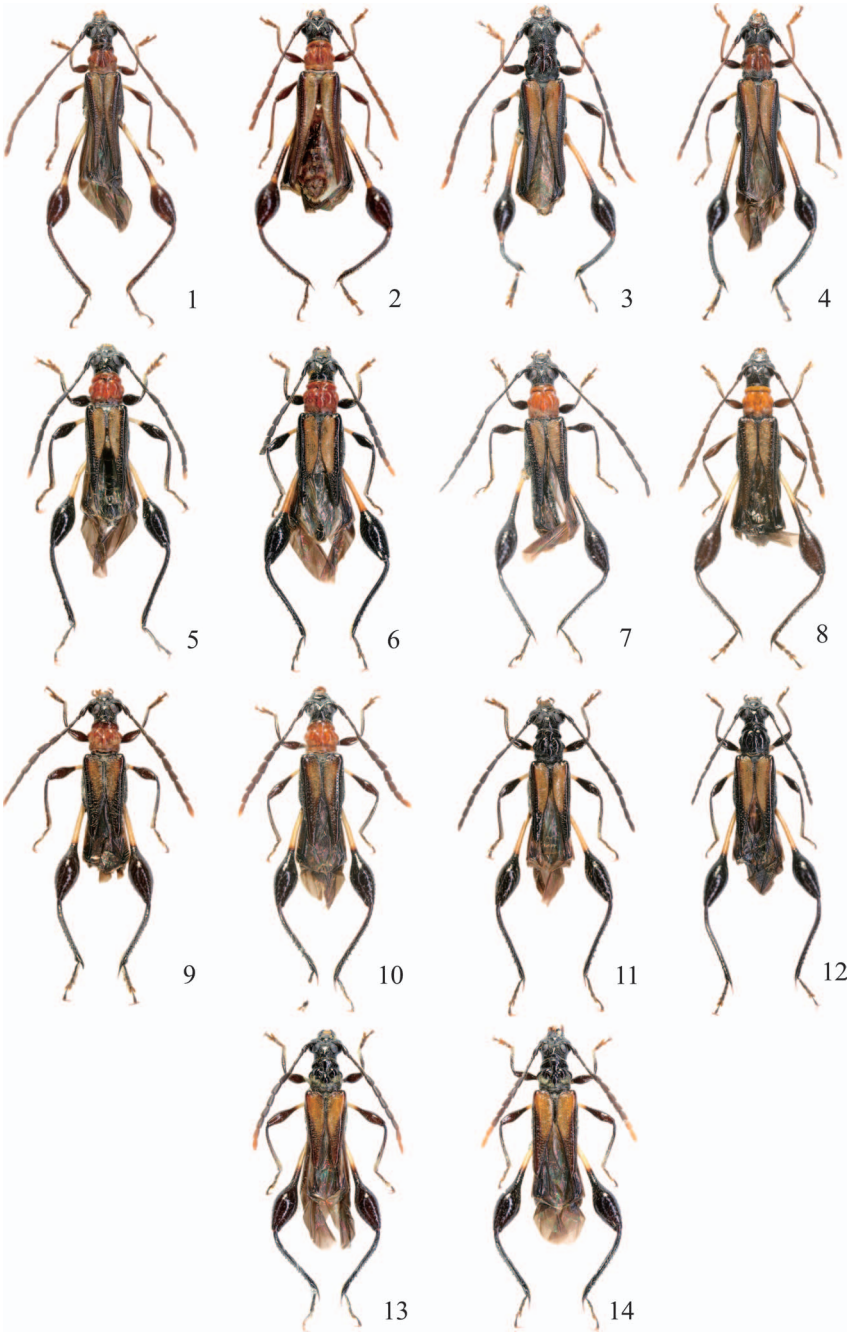
Body length 5.8–7.0 mm in ♂, 6.8–7.0 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour dark brown to reddish black, though pitchy black in head and abdomen, reddish yellow in prothorax, pale yellow in basal halves of elytra except for suture; base of fore, basal third of mid and basal fourth of hind femur pale yellow, gradually darkened apicad, hind femur additionally has pale yellow ring just before the swollen part; weakly shiny, elytra partly matt.

Head moderately projected forward with rather elongated neck, weakly convex, slightly wider than the maximum width of pronotum, HW/PW 1.07–1.15 (M 1.1) in ♂ and 1.03–1.08 (M 1.05) in ♀, provided with dense medium-sized punctures and a few short silvery hairs near upper eye-lobes, narrowly glabrous near vertex; occiput with dense large punctures behind upper eye-lobes, rugose or coarsely punctured at sides; frons half the length of the basal width, strongly declivous toward deep median groove, with large scattered coarse punctures, FA/FB 0.76–0.86 (M 0.81) in ♂ and 0.87–0.92 (M 0.9) in ♀; clypeus rather long, about 2/3 the length of basal width, distinctly narrowed towards apex, raised near middle, with large coarse irregular punctures, fronto-clypeal suture very deep; eyes large, prominent, very deeply and narrowly emarginate under antennal scapes, separated from one another by 1/3 the width of occiput in ♂ and slightly more in ♀. Antennae fairly long, attaining abdominal apex in ♂ and elytral apex in ♀, clothed with minute silvery pubescence on segments 5–11 and a few short silvery hairs on segments 1–4, additionally with sparse short silvery hairs on undersides of segments 2–6; scape weakly clavate, moderately arcuate, with small scattered punctures, segments 3 and 4 nearly equal in length and 4/5 the length of scape, segment 5 obtusely and segments 6–11 moderately flattened, segments 6–10 moderately serrate, terminal segment bluntly toothed at apex.

Pronotum almost as long as wide, moderately narrowed to apex, PL/PW 1.0–1.05 (M 1.01) in ♂ or 1.0–1.05 (M 1.02) in ♀, PA/PW 0.73–0.78 (M 0.76) in ♂ or 0.75–0.8 (M 0.77) in ♀, PB/PW 0.92-1.0 (M 0.95) in ♂ or 0.91–0.95 (M 0.92) in ♀; sides with large lateral swellings near middle, moderately constricted before and hardly so behind swellings; apex and base thickly bordered; disc with three distinct callosities, of which median one the smallest, club-shaped, raised to the level between basal sixth to basal half and linked to the middle of apical margin by a flattened longitudinal costa, a pair of large oblique semi-elliptical one of half the length of pronotum at a level between basal third to apical fifth, densely punctured in a broad line around the median callosity and its

Figs. 1–14. Habitus of new *Merionoeda* species from Borneo. —— 1–2, *M. ohbayashii* sp. nov.; 3–4, *M. takakuwai* sp. nov.; 5–6, *M. fulvicollis* sp. nov.; 7–8, *M. clara* sp. nov.; 9–10, *M. laticornis kalimantana* ssp. nov.; 11–12, *M. planicollis* sp. nov.; 13–14, *M. mutata* sp. nov.; odd number, male; even number, female.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peduncle, though almost glabrous on top of the callosities, scattered with large coarse punctures on the remaining areas, clothed with short pale yellow hairs and a few long pale hairs at sides near base, shagreened on basal third to fourth. Scutellum trapezoidal, emarginate at apex, clothed with pale yellow, and sometimes darker pubescence.

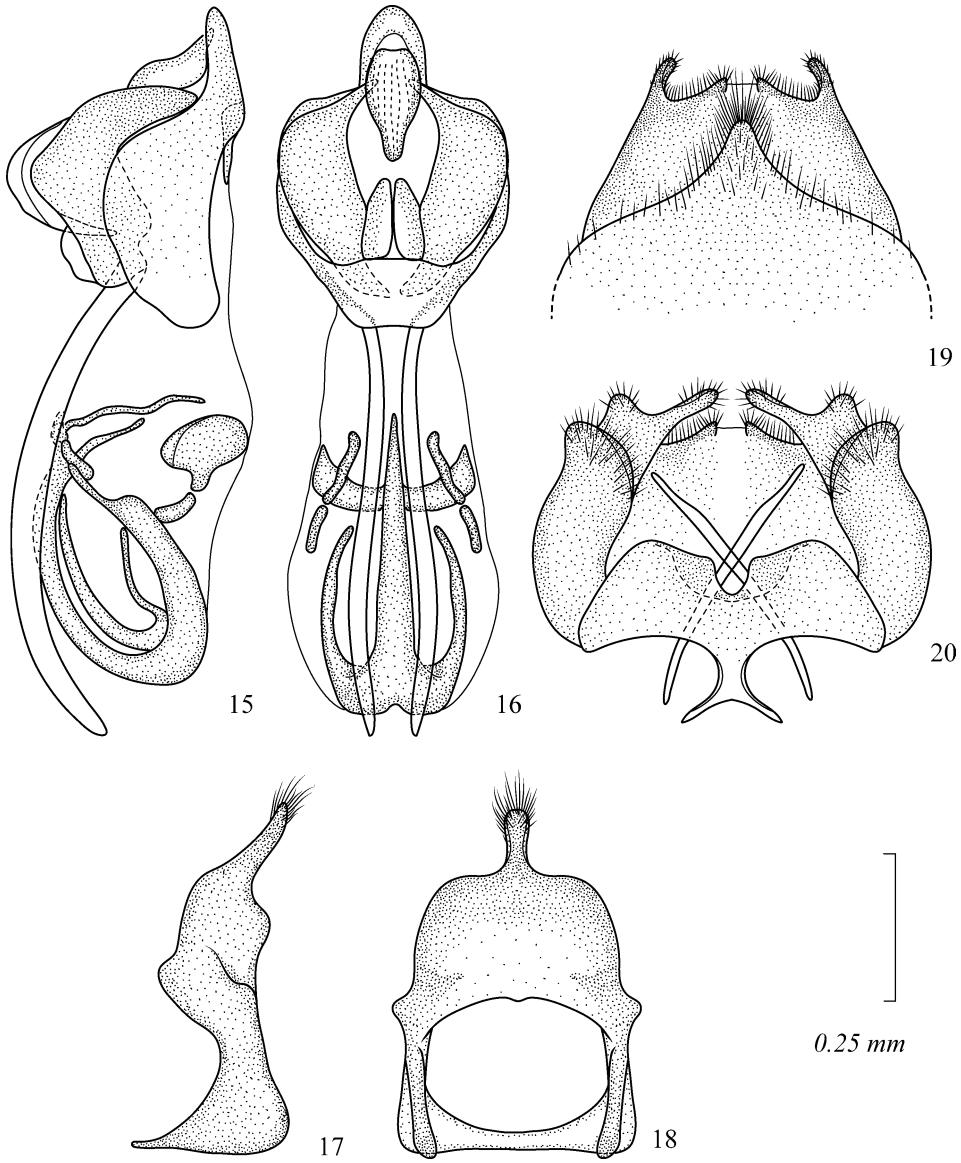
Elytra long and very narrow, reaching the base of tergite 6, EL/EW 2.67–2.77 (M 2.74) in ♂ or 2.76–2.78 (M 2.77) in ♀; sides strongly projected forward at humeri, distinctly emarginate between basal eighth to apical sixth, strongly dehiscent in apical 3/4, apical part pronounced, knife-shaped, sutural border prominent, especially in apical half; disc depressed near middle, strongly declivous towards sides, provided with a prominent costa from humerus to apex, which is thickened and flattened in basal half with a series of large punctures thereupon, additionally with medium to large-sized punctures in somewhat regular rows, which decrease in number from 9 to 2 towards apex, lateral part irregularly marked with more large-sized punctures.

Venter of thoraces rather matt, clothed with silvery pubescence weakening on apical third and basal tenth of prosternum, near middle of mesosternum and at sides of metasternum; sides of metasternum with large punctures; prosternum moderately prominent behind apical margin, inter-coxal process strongly compressed between coxae; mesosternal process broad, sub-parallel-sided, widely and deeply emarginated at apex, metasternum prominently convex. Abdomen moderately arcuate laterally, sparsely clothed with silvery pubescence on ventrites 1–2 except for the middle of apical margins, more sparsely pubescent on ventrites 3–4; basal ventrite 2/5 the length of abdomen in ♂ and half the abdominal length in ♀; ventrite 2 1/5 in ♂ and 1/4 in ♀; anal ventrite in apical half entirely emarginate forming a transverse sub-trapezoid in ♂, shallowly so in ♀; male anal tergite sharply produced in middle of apical margin.

Legs fairly long; hind femur surpassing abdominal apex by about apical 2/5, moderately arcuate, rather suddenly clavate in apical 3/8, with short erect hairs; hind tibia 4/5 the length of femur, slightly arcuate, with small dents in two rows on external sides, terminal spur short, reaching only the middle of 1st tarsal segment, adjacent secondary terminal spur relatively large, 2/5 the length of the principal spur.

Median lobe slightly shorter than 3/5 the length of abdomen, apical lobe strongly convex, expanded laterad, widest at apical fourth, markedly narrowed apicad and basad; dorsal plate rather broadly divided on dorsum, with weakly arcuate inner lines; apical part of ventral plate somewhat bent upwards, bluntly pointed from lateral view, spatulate from dorsal view; median struts 3/5 the length of median lobe, moderately arcuate in profile; copulatory piece as shown in Figs. 15–16. Tegmen almost quadrate, almost half the length of median lobe; paramere of mono-lobe sub-trapezoidal, with prolonged projection in middle of apical margin, somewhat thickened apicad, with rather short setae near apex. Eighth abdominal segment somewhat transverse globose; tergite provided with a pair of bifurcate lateral projections, of which the inner stem is narrowly produced inwardly, external stem short, bluntly tuberculate; sternite transverse fan-shaped, deeply concave in middle of apical margin.

*Type series.* Holotype ♂, Papagaran, near Alat/Barabai, about 700 m in alt., South




Figs. 15–20. Male genitalia and 7th–8th abdominal segments of *Merionoeda ohbayashii* sp. nov. —— 15, Median lobe, lateral view; 16, ditto, dorsal view; 17, tegmen, lateral view; 18, ditto, dorsal view; 19, 7th and 8th abdominal segments, dorsal view; 20, 8th abdominal segment, ventral view.

Kalimantan, Indonesia, 16〜19–X–2005, Y. YOKOI leg. Allotype ♀, same data as the holotype. Paratypes (7♂♂, 1♀): 6♂♂, 1♀, same data as the holotype; 1♂, same except the date, 20〜22–X–2005.

*Additional specimen examined.* 1♀, Sallapa Village, 50〜100 m in alt., Mentavi Is., S. Siberut Isls. Indonesia, I–2007, local collector leg.

*Distribution.* Borneo: South Kalimantan, Indonesia; Siberut Is., Indonesia.

*Notes.* *Merionoeda ohbayashii* sp. nov. and the following *M. takakuwai* sp. nov. are both rather peculiar regarding the appearance of their elytra. Of all the known *Merionoeda* species, the new species can be best compared to *M. annulus* HOLZSCHUH. It can be, however, distinguished from it by the following characteristics: pronotum shorter, more strongly punctured, with more prominent callosities; elytra narrower with average EL/EW 2.74 in ♂ and 2.77 in ♀ (those of *M. annulus* 2.4), lacking pubescence near suture and rather matt unlike *M. annulus*; hind femur pale yellow in about basal fourth, whereas totally black except for the pale ring in *M. annulus*, its swollen part smaller than the latter; hind tibia weakly arcuate with dents, whereas strongly arcuate without dents and with longer terminal spur in *M. annulus.* Male genitalia, parameres in particular is distinctly different between that two related species. Apical part of paramere in *M. ohbayashii* is narrow mono-lobed, whereas bifurcated in *M. annulus.* The resemblance with *M. calcarata* PASCOE at a first glance is more superficial. Form of elytra, punctuation on pronotum, colour pattern of hind femur are fundamentally different between these two species.

Specimens of *M. ohbayashii* were collected on various white blooming tree flowers in and near virgin forests of South Kalimantan. They seem to be, however, less common than other species. One specimen recorded from Siberut Island suggests that this new species is most likely also distributed on the island of Sumatra, which lies between these two collecting sites.

### *Merionoeda takakuwai* sp. nov.

(Figs. 3–4, 21–26)

Body length 5.3–7.2 mm in ♂, 7.2–7.7 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour black, eyes and each basal half of antennal segments 3–4 slightly reddish, pronotum often reddish brown in ♀; elytra dark brown, weakly shiny, apical halves matt, with triangular pale yellow maculation near suture in basal halves which is about 3/4 width of elytra near humeri and half near middle; base of fore, basal fourth of mid and/or the entire peduncle of hind femora pale yellow; terminal segment of antenna paler in apical half.

Head similar to that of *M. ohbayashii* sp. nov., HW/PW 1.03–1.13 (M 1.08) in ♂ or 1.05 in ♀, provided with dense, medium-sized punctures throughout and a few short silvery hairs near upper eye-lobes, near vertex and in middle of frons almost glabrous, occiput with dense, large coarse punctures; frons moderately declivitous towards deep

median groove, FA/FB 0.86–0.9 (M 0.88) in ♂ or 0.94–1.0 (M 0.97) in ♀; clypeus 3/5 the length of basal width; antennae almost as in *M. ohbayashii*, though lacking rows of additional hairs on the undersides of segments 2–6, scape with a few scattered large shallow punctures.

Pronotum almost as in *M. ohbayashii*, though slightly longer than wide, PL/PW 1.0–1.08 (M 1.04) in ♂ or 1.04–1.06 (M 1.05) in ♀, PA/PW 0.72–0.88 (M 0.76) in ♂ or 0.77–0.79 (M 0.77) in ♀, PB/PW 0.86–0.93 (M 0.89) in ♂ or 0.90–0.94 (M 0.92) in ♀; furnished with dense short silvery hairs near base and at sides, basal third to fifth shagreened. Scutellum trapezoidal, deeply emarginated at apex, silvery, often weakly pubescent.

Elytra similar to those of *M. ohbayashii* though not quite as long and narrow, reaching the base of tergite 6, with similar prominent costa and punctuation on disc, EL/EW 2.57–2.77 (M 2.63) in ♂ or 2.61–2.67 (M 2.64) in ♀.

Ventral surface similar to that of *M. ohbayashii*, though more matt, partly clothed with silvery pubescence on meso- and metasterna; abdominal ventrite also similar even in anal sternite; male anal tergite slightly more obtuse in median projection.

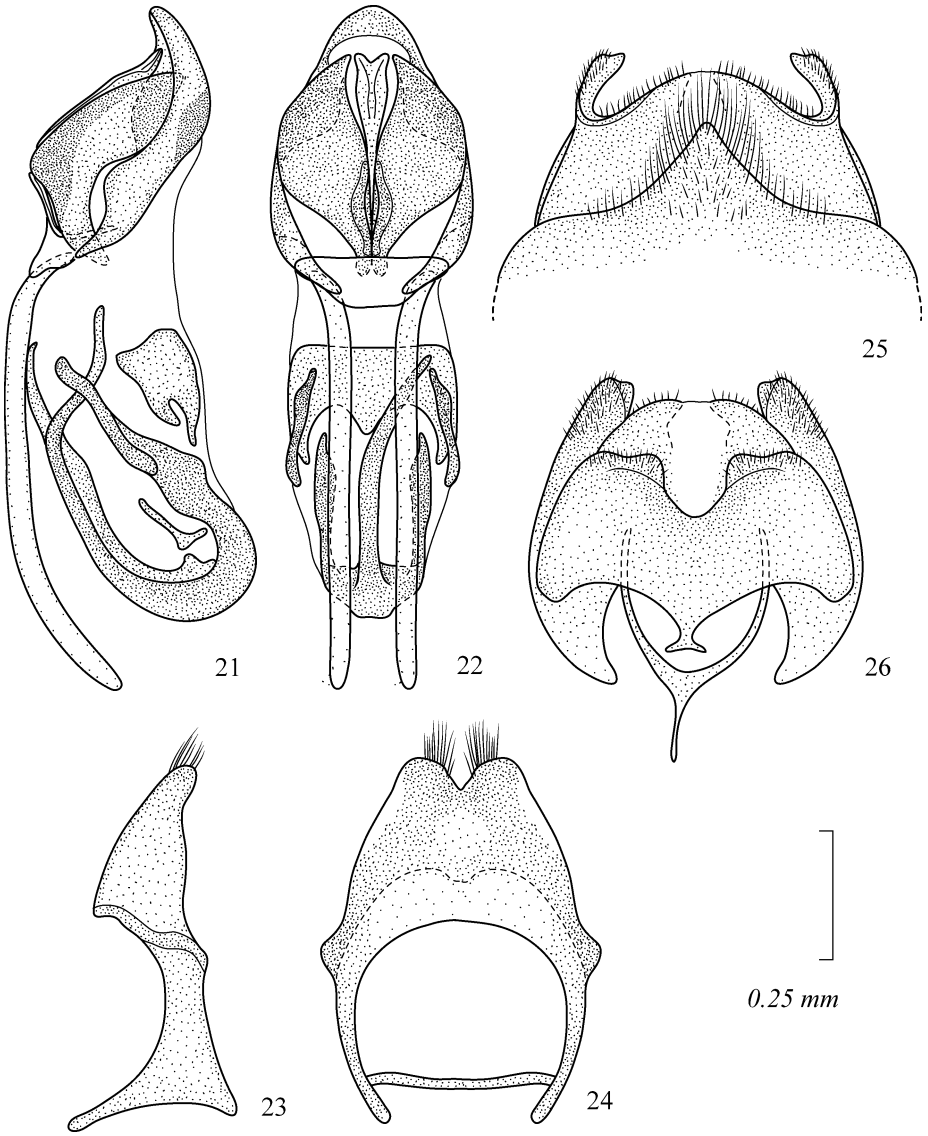
Legs long and fairly slender; hind femur surpassing abdominal apex by about apical third, weakly arcuate, prominently clavate and suddenly thickened in apical 3/8, with short erect hairs; hind tibia as in *M. ohbayashii.*

Median lobe slightly less than half the length of abdomen, apical lobe elongate globose, moderately convex, widest near middle, moderately arcuate at sides; dorsal plate rather narrowly dehiscent in apical half, almost approximate in basal half; apical part of ventral plate weakly bent upwards in arcuate line, bluntly pointed from lateral view, broadly rounded from dorsal view; median struts slightly longer than half the length of median lobe, weakly arcuate in profile; copulatory piece as shown in Figs. 21–22. Tegmen broad, moderately arcuate at sides, almost 3/5 the length of median lobe; parameres divided in apical fourth, with each lobe broadly rounded, provided with medium-sized setae on inner side. Eighth abdominal segment almost globose; tergite moderately rounded on apical margin, with a pair of short, broad lateral projections, their apical ends concave; sternite ordinary fan-shaped, with apical margin slightly sinuate at sides, deeply broadly concave in middle.

*Type series.* Holotype ♂, Papagaran, about 700 m in alt., near Alat/Barabai, South Kalimantan, Indonesia, 23〜30–X–2007, Y. YOKOI leg. Allotype ♀, same data as the holotype. Paratypes (6 ♂♂, 2 ♀♀): 1 ♂, 1 ♀, same locality and collector as the holotype, but 23〜30–X–2007; 3 ♂♂, same except the date, 23〜28–IX–2004; 2 ♂♂, same except the date, 16〜19–X–2005; 1 ♀, same except the date, 23〜30–X–2007.

*Distribution.* Borneo: South Kalimantan, Indonesia.

*Notes. Merionoeda takakuwai* sp. nov. and *M. ohbayashii* sp. nov., resemble each other with similar basic structure of head, pronotum, elytra and legs etc. However, they differ in details such as the relative lengths of elytra and pronotum. Other obvious differences are found in the coloration patterns of elytra, legs and pronotum. In addition, male genitalia of both species are fundamentally different. The parameres of tegmen of




Figs. 21–26. Male genitalia and 7th–8th abdominal segments of *Merionoeda takakuwai* sp. nov. —— 21, Median lobe, lateral view; 22, ditto, dorsal view; 23, tegmen, lateral view; 24, ditto, dorsal view; 25, 7th and 8th abdominal segments, dorsal view; 26, 8th abdominal segment, ventral view.

*M. takakuwai* is broadly subparallel-sided with a notch on apex, while it is singly narrowly elongate in *M. ohbayashii.*

Specimens of *M. takakuwai* sp. nov. were collected on white blooming tree flowers in and in the vicinity of virgin forests of South Kalimantan. As is the case with the newly described species *M. ohbayashii*, they seem to be less common. It is interesting to note that both of these similar species are sympatric to the same habitat.

### ***Merionoeda fulvicollis*** sp. nov.

(Figs. 5–6, 27–32)

Body length 6.0–6.9 mm in ♂, 7.0–7.8 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour black, shiny; prothorax reddish yellow; elytra dark brown to black, each elytron with elongate triangular pale yellow maculation near suture covers about 3/4 of the elytral width in basal 3/5, maculation clearly and distinctly bordered; fore and mid femur partly pale yellow, as well as nearly whole peduncle of hind femora; terminal segment of antenna likewise more or less pale yellow, often so in two apical segments in ♀.

Head similar to that of *M. ohbayashii* sp. nov., though as wide as the maximum width of pronotum in ♂ or slightly narrower in ♀, HW/PW 0.99–1.04 (M 1.02) in ♂ or 0.88–0.95 (M 0.92) in ♀, provided with very dense, medium-sized punctures and silvery hairs along the upper eye-lobes, widely glabrous near vertex, punctuation on vertex as in *M. ohbayashii* though widely glabrous near middle; frons 2/5 the length of the basal width, weakly declivous towards the deep though short median groove, almost glabrous except for a few short pale yellow hairs, FA/FB 0.67–0.79 (M 0.72) in ♂ or 0.8–0.85 (M 0.83) in ♀; clypeus sparsely clothed with fairly long pale yellow hairs. Antennae moderately long, surpassing elytral apices though not reaching abdominal apex in ♂ or barely attaining elytral apices in ♀, clothed with similar pubescence to that of *M. ohbayashii* though additional hairs on undersides of segments 2–6 longer and denser; scape moderately clavate and arcuate, segment 4 slightly longer than segment 3 and 2/3 the length of scape, segments 5–11 rather strongly flattened and serrate, segments 6–10 about 2/5 as wide as long in ♂ and half as long in ♀, terminal segment bluntly teethed at apex.

Pronotum similar to that of *M. ohbayashii* though slightly wider than long, PL/PW 0.9–1.0 (M 0.96) in ♂ or 0.92–0.96 (M 0.94) in ♀, PA/PW 0.66–0.74 (M 0.7) in ♂ or 0.71–0.73 (M 0.72) in ♀, PB/PW 0.88–0.91 (M 0.9) in ♂ or 0.86–0.9 (M 0,88) in ♀; three callosities on disc wider, more rounded and flattened, of which the median one relatively small, club-shaped or elongate drop-shaped, raised to the level approximately between basal seventh and 3/4, both oblique callosities semi-elliptical, very large, 3/5 the length of pronotum, raised to a level between basal sixth and apical fifth, rather sparsely covered with scattered medium-sized punctures and short pale yellow hairs around the callosities, glabrous on apical margin and callosities, though basal third of the median

and basal fourth of oblique callosities clothed with pale yellow hairs, shagreened and clothed with pale yellow hairs on basal sixth to eighth. Scutellum trapezoidal, slightly emarginated at apex, clothed with pale yellow pubescence.

Elytra moderate in length, reaching the base of tergite 6, EL/EW 2.06–2.27 (M 2.15) in ♂ or 2.15–2.2 (M 2.18) in ♀; sides moderately projected forward at humeri, almost linear though weakly convergent from basal tenth to 2/3, thence slightly arcuate towards apices, strongly dehiscent in apical 3/5, apical part broadly pronounced, knife-shaped; disc weakly transversely depressed between apical half and fourth, moderately declivous at sides, provided with medium to large punctures in irregular rows, which decrease in number from 9 to 3 towards apex, apical part densely and somewhat irregularly punctured.

Ventral surface almost as in *M. ohbayashii*, though inter-coxal process not so strongly compressed between coxae as is usual for the related species of the genus, rather matt except for shiny apical half of prosternum, more or less clothed with short silvery hairs; male anal tergite similar to that of *M. ohbayashii*, though more obtusely produced in middle; male anal sternite in apical half arcuately emarginate in almost entire width.

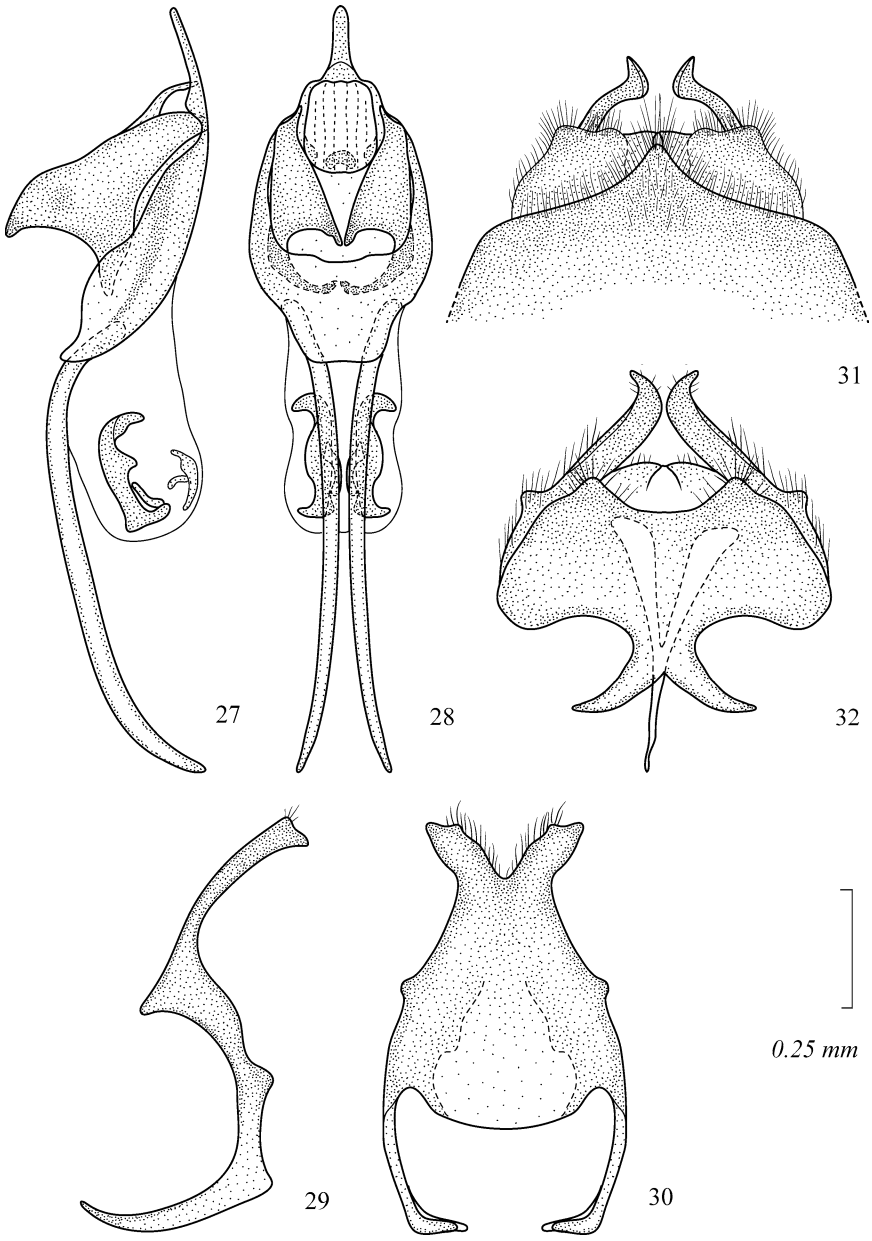
Legs fairly stout; hind femur surpassing abdominal apex by about apical 3/8, slightly arcuate, rather gradually clavate in apical half, with short erect hairs; hind tibia 3/4 the length of femur, slightly arcuate with small dents in two rows on external side, terminal spur fairly short, not reaching apex of 1st tarsal segment.

Median lobe of slender shape, slightly less than 3/5 the length of abdomen, with apical lobe markedly dilated posteriad, apical corner from lateral view bluntly dent, from apical 2/3 (that is the widest) slightly narrowed anteriad; dorsal plate in straight line strongly divided from base to apex; apical part of ventral plate weakly bent upwards in arcuate line, narrowly produced from lateral and dorsal views; median struts half the length of median lobe, very slender, moderately arcuate in profile; copulatory piece as shown in Figs. 27–28. Tegmen widely spatulate, with parameres widely dehiscent, slightly more than half the length of median lobe; parameres dehiscent in wide V-shape in apical fifth of the entire length, slightly emarginate at each apical margin, clothed with rather short setae along inner side. Eighth abdominal segment transverse trapezoidal; tergite with a pair of arcuate, rather long lateral projections, apical parts boots-shaped; sternite transverse fan-shaped, deeply broadly concave medially.

*Type series.* Holotype ♂, Papagaran, about 700 m in alt., near Alat/Barabai, South Kalimantan, Indonesia, 16〜19–X–2005, Y. YOKOI leg. Allotype ♀, same data as the holotype. Paratypes (7 ♂♂, 2 ♀♀): 4 ♂♂, 1 ♀, same data as the holotype; 3 ♂♂, 1 ♀, same as the preceding but 23〜30–X–2007.

*Distribution.* Borneo: South Kalimantan, Indonesia.

*Notes.* Of all the known *Merionoeda* species, this new species can be best compared to *M. laticornis* HOLZSCHUH, sharing characteristics such as reddish yellow pronotum, rather short elytra, similarly structured antennae and legs etc. It can be distinguished from it by the following characteristics: elytron of *M. fulvicollis* sp. nov. is slightly longer and narrower (with EW/EL 2.15) than that of *M. laticornis* (with about twice EW/




Figs. 27–32. Male genitalia and 7th–8th abdominal segments of *Merionoeda fulvicollis* sp. nov. —— 27, Median lobe, lateral view; 28, ditto, dorsal view; 29, tegmen, lateral view; 30, ditto, dorsal view; 31, 7th and 8th abdominal segments, dorsal view; 32, 8th abdominal segment, ventral view.

EL). Elytral maculation is obviously different, with a clear, distinct coloration border running nearly parallel to sides in *M. fulvicollis* instead of rather blurred border convergent to middle in *M. laticornis*. Further, callosities on pronotum are less prominent, median one is narrower in *M. fulvicollis*. Lastly, male genitalia, parameres of tegmen in particular, are fundamentally different, since that of *M. fulvicollis* is bifurcated, or broadly Y-shaped, whereas that of *M. laticornis* is sub-spherical with a slight shallow concavity at apex. *M. fulvicollis* also resembles the newly described subspecies *M. laticornis kalimantana* ssp. nov. described herein. On the other hand, with *M. apicicornis* HOLZSCHUH, it shares similar body colour, small body size and structure of antennae. Since the pronotum of *M. apicicornis* is of pitchy black colour it is immediately evident that these are two different species. They additionally differ in relative lengths and coloration pattern of elytra, dissimilar structure of pronotum, and above all, in apparent differences in the male genitalia.

Specimens of *M. fulvicollis* were collected on various white blooming tree flowers in and in the vicinity of virgin forests of South Kalimantan. They seem to be, however, less common than other species.

### ***Merionoeda clara*** sp. nov.

(Figs. 7–8, 33–38)

Body length 6.9–7.3 mm in ♂, 6.7–7.6 mm in ♀ (from apical margin of clypeus to abdominal apex).

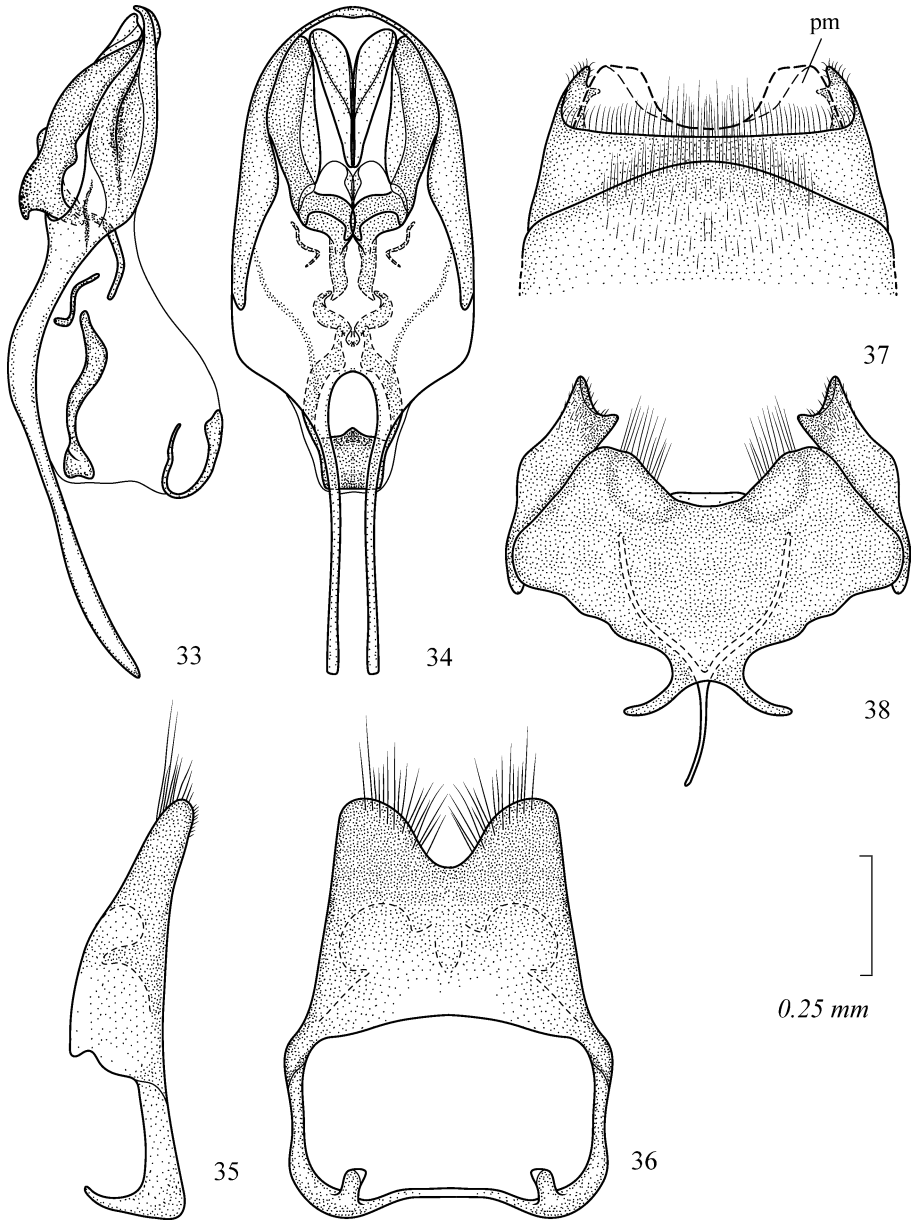
M a l e and f e m a l e. Colour similar to the above described *M. fulvicollis* sp. nov., though approximately 3/10 or only about half of the peduncle of hind femora pale yellow; antennal segments except for the paler apical half of the last segment in ♀ dark brown to black.

Head, eyes and antennae similar to those of *M. fulvicollis*, though distinctly wider than the maximum width of pronotum in ♂ or slightly wider in ♀, HW/PW 1.12–1.13 (M 1.13) in ♂ or 1.0–1.08 (M 1.03 in ♀; eyes separated from one another by 1/3 the width of occiput in ♂ or 1/2 in ♀; frons less convergent to apex than in *M. fulvicollis*, FA/FB 0.89–0.9 (M 0.9) in ♂ or 0.9–0.95 (M 0.91) in ♀, rather densely punctured near the median groove in ♂ and less densely so in ♀, decorated with short pale yellow hairs throughout.

Pronotum similar to that of *M. planicollis* sp. nov. with flattened disc and coherent callosities; even though distinctly longer than wide; PL/PW 1.13 in ♂ or 1.04–1.13 (M 1.04) in ♀, PA/PW 0.73–0.75 (M 0.74) in ♂ or 0.66–0.73 (M 0.71) in ♀, PB/PW 0.93–0.96 (M 0.95) in ♂ or 0.9–0.92 (M 0.91) in ♀.

Elytra similar to that of *M. fulvicollis*, though slightly longer and narrower; EL/EW 2.21–2.23 (M 2.22) in ♂ or 2.26–2.3 (M 2.28) in ♀.

Ventral surface similar to that of *M. fulvicollis*, more or less clothed with silvery hairs of moderate length; anal tergite slightly rounded near middle; anal sternite in apical 3/4 widely emarginate in a transverse trapezoidal shape.




Figs. 33–38. Male genitalia and 7th–8th abdominal segments of *Merionoeda clara* sp. nov. —— 33, Median lobe, lateral view; 34, ditto, dorsal view; 35, tegmen, lateral view; 36, ditto, dorsal view; 37, 7th and 8th abdominal segments (pm: outline of paramere), dorsal view; 38, 8th abdominal segment, ventral view.

Legs long and fairly slender; hind femur surpassing abdominal apex by about apical 2/5, weakly arcuate, moderately clavate in about apical 2/5, provided with short erect hairs; hind tibia 4/5 the length of femur, slightly arcuate, with small dents in two rows on external sides, terminal spur short, reaching only middle of 1st tarsal segment; hind tibia as in *M. fulvicollis*.

Median lobe wide spatulate, gradually narrowing from before base to broadly rounded apex, weakly convex in profile, slightly less than 3/5 the length of abdomen; dorsal plate in arcuate line markedly divided from base to apex, exposing a narrow, fan-shaped plate for almost entire length; apical part of ventral plate provided with a minute dent in profile; median struts 2/5 the length of median lobe, very slender, almost straight in profile; copulatory piece as shown in Figs. 33–34. Tegmen very wide, sub-trapezoidal in parameres, transverse quadrate in ring part, about 3/5 the length of median lobe; parameres with sides straightly convergent apicad, apex in apical third in the entire length rather widely emarginate in V-shape, clothed with long to medium-sized setae along inner sides. Eighth abdominal segment almost lozenge-shaped; tergite provided with a pair of thick lateral projections, bifurcate at each apex; sternite large, transverse fan-shaped, deeply broadly concave in middle of apical margin.

*Type series.* Holotype ♂, Papagaran, about 700m in alt., near Alat/Barabai, South Kalimantan, Indonesia, 23〜30–X–2005, Y. YOKOI leg. Allotype ♀ and 1 ♂, 2 ♀♀ paratypes, same data as the holotype.

*Distribution.* Borneo: South Kalimantan, Indonesia.

*Notes.* *Merionoeda clara* sp. nov., appears somewhat similar to *M. fulvicollis* sp. nov. at a first glance, since the coloration of head, pronotum and elytra are almost identical. The pronotum of this new species is, in contrast to the latter, flattened with rather coherent callosities, like those of *M. planicollis* sp. nov. or *M. marginallis* HOLZSCHUH. Moreover, the hind femur of this species is, with its smaller swollen part, distinctly slenderer. In addition, the coloration of hind femur and antennae are also different. These two species can be thus easily distinguished. *Merionoeda calcarata*, that could eventually be compared to this newly described species, has longer elytra and pronotum with distinct callosities. Because of the aforementioned differences these two species can be easily distinguished. The new species likewise resembles *M. marginalis* HOLZSCHUH, or, in spite of a normal location of eyes, its close relative *M. apicifusca* HOLZSCHUH. Although the structures of pronotum, elytra and legs are similar, this new species has a fundamentally different pattern of the elytral coloration. Concerning the male genitalia, at least four of the above mentioned species share bifurcated tegmen. But the form of the tegmen is distinctly different among these species: in *M. fulvicollis* the apex of tegmen is widely V-shaped, in *M. marginalis* it is rather simply acute, in *M. calcarata* it is rounded and in *M. clara* it has broad apical edge. Therefore, judging also from the male genitalia *M. clara* can be clearly be distinguished from the other similar species.

### *Merionoeda laticornis kalimantana* ssp. nov.

(Figs. 9–10, 39–44)

Body length 6.0–6.9 mm in ♂, 6.3–7.7 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour black, with reddish yellow prothorax except for dark apical and basal margins, shiny; elytra with elongated triangular pale yellow to yellowish brown maculation near suture in basal halves, about half the width between humeri, narrowed to middle, often much smaller and darker, coloration transition gradual and blurred; pedunculate parts of femora pale yellow; terminal segment of antenna more or less pale yellow, often two apical segments pale yellow in ♀.

Head similar to that of the nominotypical *M. l. laticornis* HOLZSCHUH, though as wide as the maximum width of pronotum in ♂, slightly narrower in ♀, with pale yellow hairs and very dense medium-sized punctures along upper eye-lobes, rather broadly glabrous near vertex; temple and occiput densely provided with large coarse punctures, partly rugose; clypeus long, 3/5 the length of basal width, clothed with sparse, often long and flying pale yellow hairs at apex and sides; HW/PW 1.0–1.02 (M 1.0) in ♂ or 0.88–0.95 (M 0.92) in ♀, FA/FB 0.74–0.8 (M 0.78) in ♂ or 0.82–0.89 (M 0.84) in ♀. Antennae stout and rather short, attaining elytral apices in ♂ or almost not attaining them in ♀, clothed with minute silvery pubescence on apical seven segments and short silvery hairs on basal four segments, additionally with sparse long pale yellow hairs along undersides of segments 2–6; segments 5–11 strongly flattened and serrate, segments 6–10 slightly more than half the width in ♂ and 2/3 in ♀; terminal segment bluntly toothed at apex.

Pronotum similar to that of *M. l. laticornis*, with slightly narrower median callosity; mostly glabrous though around the callosities densely provided with large irregular punctures, becoming less dense along basal margin, with fairly long dense flying silvery hairs on basal fourth to basal third reaching basal half of callosities, additionally with a few long flying pale yellow hairs throughout except on the callosities, shagreened on basal sixth to basal fourth; PL/PW 0.92–0.98 (M 0.96) in ♂ or 0.86–0.95 (M 0.91) in ♀, PA/PW 0.65–0.7 (M 0.69) in ♂ or 0.66–0.7 (M 0.68) in ♀, PB/PW 0.87–0.96 (M 0.9) in ♂ or 0.88–0.91 (M 0.89) in ♀. Scutellum trapezoidal, with slightly emarginate apex, clothed with silvery pubescence.

Elytra similar to those of *M. l. laticornis*, though pubescent along suture and longitudinal costae more prominent at apex; EL/EW 1.94–2.0 (M 1.97) in ♂ or 1.97–2.05 (M 2.02) in ♀; sides moderately projected forward at humeri, moderately declivous, moderately convergent in straight line from basal fifth to 3/4, thence slightly arcuate towards apices, strongly dehiscent in apical 3/5, apical part broadly pronounced knife-shaped; disc depressed transversally from apical halves to fourth, provided with punctures in irregular rows, that are decrease in number from 9 to 2 towards apex, punctures on apical half and sides become larger, coarser and semi-elliptical, with diminishing interspaces and partly fused with each other.

Ventral surface almost as in *M. l. laticornis*, more shiny, clothed with relatively long, occasionally erect silvery hairs; male anal tergite widely rounded; anal sternite in apical half entirely emarginate in a transverse trapezoidal shape.

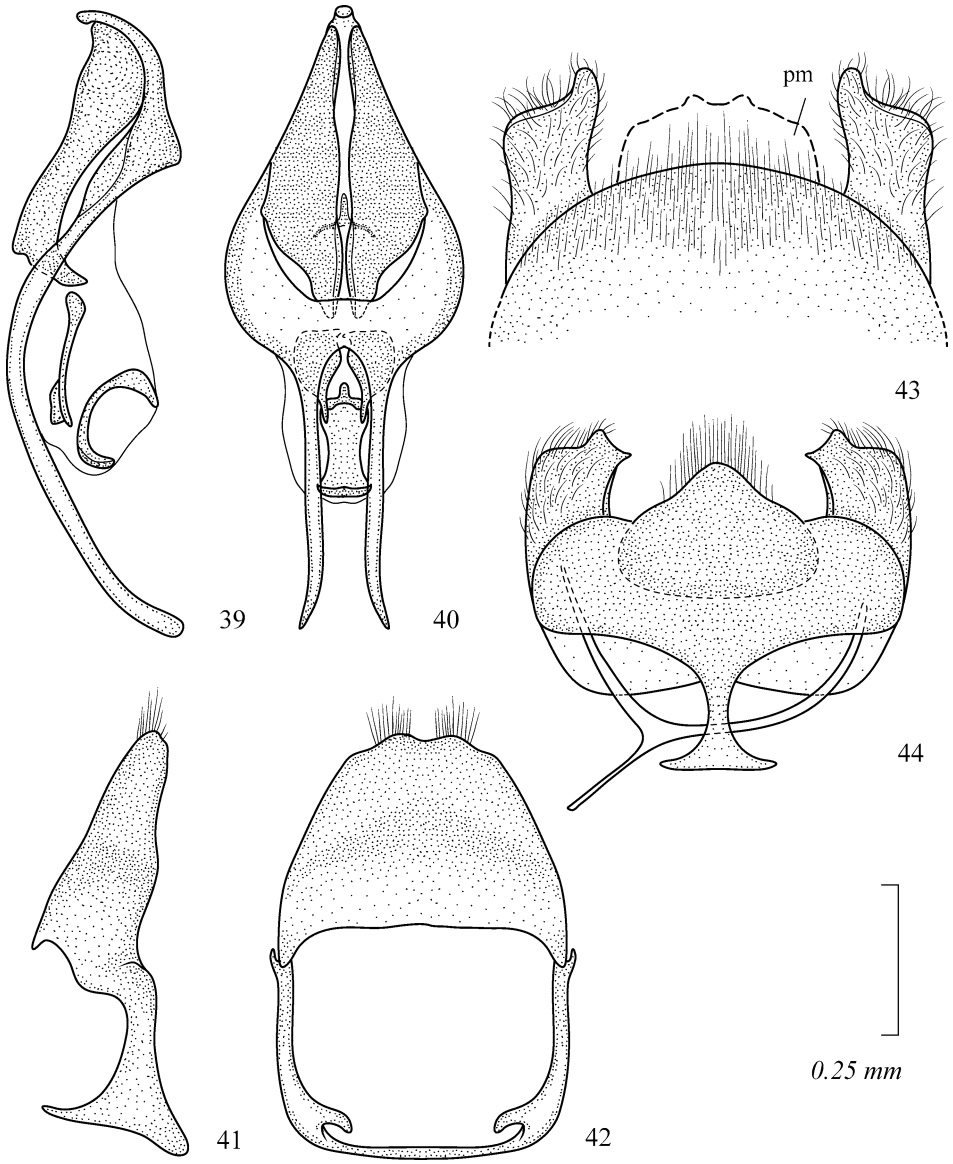
Legs almost as in *M. l. laticornis*, fairly stout; hind femur surpassing abdominal apex by about apical 2/5, slightly arcuate, rather gradually clavate in apical half, with short erect hairs; hind tibia 4/5 the length of femur, moderately arcuate, with small dents in two rows at external side, terminal spur fairly long, reaching the apex of the 1st tarsal segment.

Median lobe drop-shaped, apical part markedly pointed, rather weakly convex in profile, slightly less than 2/5 the length of abdomen; dorsal plate very narrowly dehiscent in apical 2/3, almost approximate in basal third; apical part of ventral plate markedly bent upwards in arcuate line; median struts about half the length of median lobe, very slender, weakly arcuate in profile; copulatory piece as shown in Figs. 39–40. Tegmen of semi-circular paramere and quadrate ring part 2/3 the length of median lobe; parameres with sides arcuately convergent, stopping short of slightly emarginate apex, slightly emarginate at middle of apex and clothed with short setae on each small lobe. Eighth abdominal segment transverse; tergite provided with a pair of very thick lateral projections, projection produced at inner corner of each apical part, shallowly emarginate, with small inner dent at the extremity from ventral view; sternite large, transverse fan-shaped, with a very large sub-triangle plate on apical margin.

*Type series.* Holotype ♂, Papagaran, near Alat/ Barabai, about 700 m in alt., South Kalimantan, Indonesia, 25〜30–X–2007, Y. YOKOI leg. Allotype ♀, same data as the holotype. Paratypes (6 ♂♂, 5 ♀♀): 6 ♂♂, 4 ♀♀, same data as the holotype; 1 ♀, same as the holotype except the date, 23–X–2005.

*Distribution.* Borneo: South Kalimantan, Indonesia.

*Notes. Merionoeda laticornis kalimantana* ssp. nov. shares numerous characteristics with the nominotypical subspecies from southern Thailand such as structure of pronotum, head and legs, relative lengths of the elytra, and in particular the more or less reddish yellow instead of totally dark coloration of pronotum. On the other hand, the appearance at first glance is rather different, due to the dissimilar coloration and pubescence. This new subspecies is furthermore clothed with pubescence on elytra along the suture, while in the case of the nominotypical subspecies this pubescence is limited to the vicinity of the scutellum. The coloration of this new subspecies in general tends to be distinctively darker, since the maculation on elytra is darker and obviously smaller. In particular, elytra are darkened near scutellum and along suture. Moreover, apical and basal margins of pronotum are often dark showing the tendency for darkening. In addition, elytral punctuation is slightly denser and the longitudinal costae are, unlike in *M. l. laticornis*, visible near apex. In addition, median callosity on pronotum is slightly narrower. There is, on the other hand, an analogy regarding the male genitalia, both of them sharing more or less singly arcuate paramere. Conclusively these two subspecies differ mainly in their coloration, pubescence, several details of external morphologies and male genitalia, while many of their morphological characteristics are identical.




Figs. 39–44. Male genitalia and 7th–8th abdominal segments of *Merionoeda laticornis kalimantana* ssp. nov. —— 39, Median lobe, lateral view; 40, ditto, dorsal view; 41, tegmen, lateral view; 42, ditto, dorsal view; 43, 7th and 8th abdominal segments (pm: outline of paramere), dorsal view; 44, 8th abdominal segment, ventral view.

Therefore, it seems more appropriate to place this new taxon as a subspecies of *M. laticornis* occurring in southern Borneo. The geographical circumstances seem to support this classification, since the location of this newly elected subspecies is from South Kalimantan which is far from southern Thailand, where the nominotypical *M. l. laticornis* occurs.

Incidentally, *M. basalis* AURIVILLIUS with its completely pitchy black pronotum bears a certain resemblance to *M. laticornis* in its external morphology, and, since its pronotum is similarly coloured, it resembles the new subspecies even more closely.

Specimens of *M. l. kalimantana* were collected on various white blooming tree flowers in and in the vicinity of the virgin forests of South Kalimantan. They seem to be, however, less common than other species in the type locality.

### ***Merionoeda planicollis*** sp. nov.

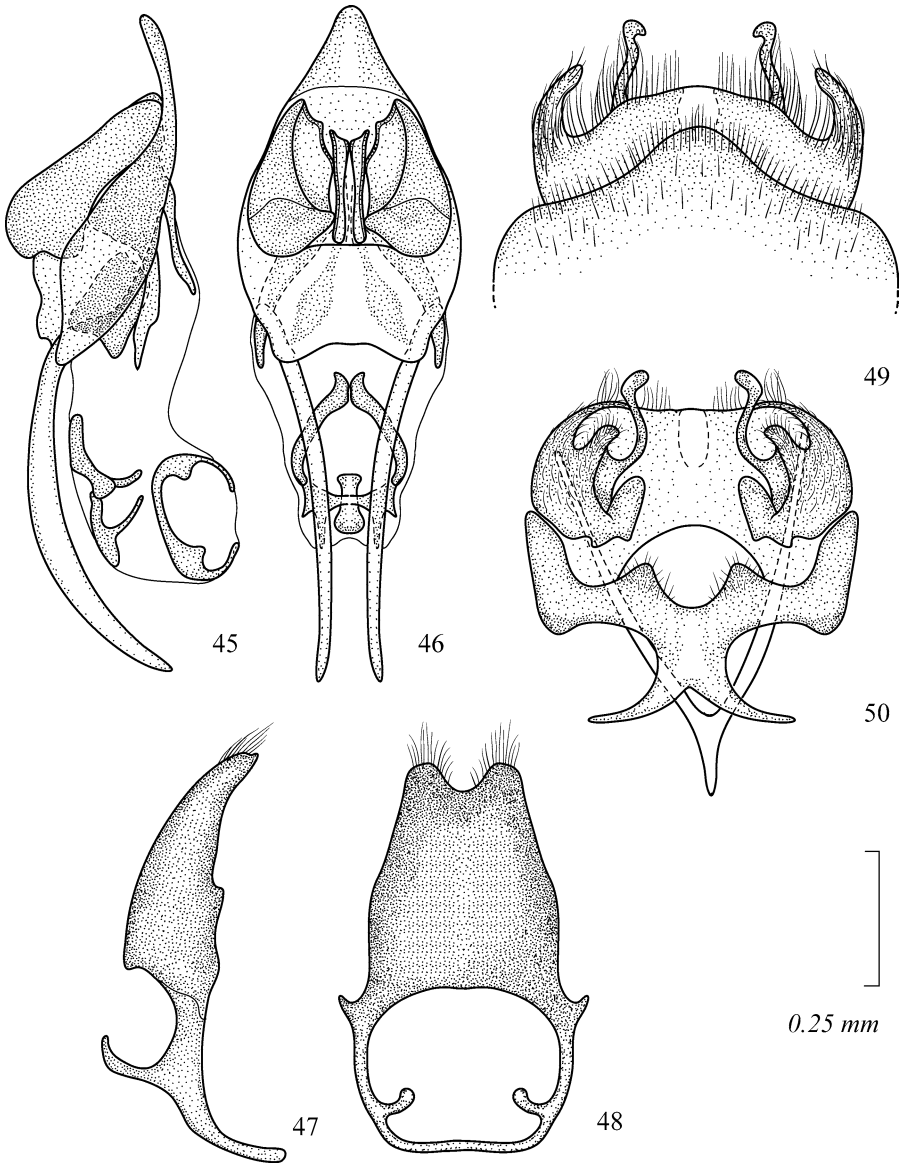
(Figs. 11–12, 45–50)

Body length 5.4–6.6 mm in ♂, 6.1–6.8 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour black, shiny; elytron decorated with an elongated triangular yellowish brown maculation on basal 2/3, about 3/4 the width of disc near humeri and gradually convergent apicad; fore and mid femora partly, and nearly entire peduncle of hind femora yellowish brown.

Head and eyes almost as with the newly described *M. fulvicollis* sp. nov., slightly wider than the maximum width of pronotum in ♂ or identical in width in ♀, HW/PW 1.02–1.08 (M 1.04) in ♂ or 0.98–1.03 (M 1.0) in ♀; widely glabrous though with scattered medium-sized punctures and with series of pale yellow hairs along the upper eye-lobes; occiput irregularly punctured behind upper eye-lobes and rugose at sides; FA/FB 0.72–0.8 (M 0.77) in ♂ or 0.77–0.92 (M 0.86) in ♀; clypeus with sparse, fairly long pale yellow hairs; eyes separated from one another by about 2/5 the width of occiput in ♂ and by almost half the occipital width in ♀; antennae medium in length, surpassing the elytral apices but almost attaining the abdominal apex in ♂ or barely so to elytral apices in ♀, with similar pubescence and setae as *M. fulvicollis*, segments 5–11 rather strongly flattened and serrate with segments 6–11 2/5 as wide as long in ♂ or half as long in ♀.

Pronotum almost as in *M. fulvicollis*, though slightly longer than wide; PL/PW 1.0–1.08 (M 1.04) in ♂ or 1.0–1.07 (M 1.03) in ♀, PA/PW 0.66–0.75 (M 0.7) in ♂ or 0.65–0.7 (M 0.68) in ♀, PB/PW 0.86–0.9 (M 0.88) in ♂ or 0.84–0.92 (M 0.88) in ♀; disc slightly more flattened, with three weakly raised callosities approximate each other and their interspaces weakly impressed, of which a median, largest club-shaped one the largest at a level between basal tenth to 2/3, a pair of oblique semi-elliptical ones of 3/5 the length of pronotum at a level between basal eighth to apical fifth, glabrous on callosities, though provided with a few coarse punctures and rather long pale yellow hairs along interspaces between the callosities, on apical margin clothed with a few long hairs. Scutellum trapezoidal, slightly emarginate at apex, silvery pubescent.




Figs. 45–50. Male genitalia and 7th–8th abdominal segments of *Merionoeda planicollis* sp. nov. —— 45, Median lobe, lateral view; 46, ditto, dorsal view; 47, tegmen, lateral view; 48, ditto, dorsal view; 49, 7th and 8th abdominal segments, dorsal view; 50, 8th abdominal segment, ventral view.

Elytra as in *M. fulvicollis*, EL/EW 2.05–2.12 (M 2.1) in ♂ or 2.1–2.19 (M 2.16) in ♀.

Ventral thoraces almost as in *M. fulvicollis*, rather matt, more or less clothed with silvery hairs, more densely near prosternal and mesosternal processes; transverse groove on metasternum rather deep; anal tergite roundly produced in middle; anal sternite widely arcuately emarginate in apical 5/12.

Legs fairly long, with hind femur surpassing abdominal apex by about apical half, weakly arcuate, gradually clavate on apical half, with short, mostly dark erect hairs; terminal spur of hind tibia fairly long, almost reaching the apex of 1st tarsal segment.

Median lobe drop-shaped, with apical part obtusely pointed, moderately narrowed basad from basal 2/5 which is the widest, distinctly convex in profile, almost half the length of abdomen; dorsal plate very widely divided in semicircle-shaped from apex to just before base, inner margins gradually declivitous, widely exposing a longitudinal plate in almost its entire length; apical part of ventral plate prolonged, markedly bent forwards in arcuate line, thickened at the extremity; median struts 9/20 the length of median lobe, rather slender, moderately arcuate in profile; copulatory piece as shown in Figs. 45–46. Tegmen elongate, with parameres semi-trapezoidal, ring part rounded quadrate, slightly longer than half the length of median lobe; parameres with sides gently convergent to basal third, thence moderately convergent towards shallowly emarginate apex, each lobe clothed with medium-sized setae. Eighth abdominal segment slightly transverse; tergite provided with a pair of trifurcate lateral projections, widely separated in ventral side, upper stem relatively thick, arcuate, median one narrowly produced in arcuate line, exposing long boots-shaped apical part even from dorsal view, lower one short, obtuse at apex; sternite forming a pair of sinuate lobes, roundly emarginate in middle of apical margin.

*Type series.* Holotype ♂, Papagaran, about 700 m in alt., near Alat/ Barabai, South Kalimantan, Indonesia, 23～30–X–2007, Y. YOKOI leg. Allotype ♀ and 8 ♂♂, 5 ♀♀ paratypes: same data as the holotype.

*Distribution.* Borneo: South Kalimantan, Indonesia.

*Notes. Merionoeda planicollis* sp. nov. shares a flattened pronotal disc and approximate callosities with *M. marginalis* HOLZSCHUH, *M. apicifusca* HOLZSCHUH and *M. clara* sp. nov., although the coloration pattern and other characteristics are completely different. It is probably most similar to *M. nigricollis* AURIVILLIUS. On the other hand, its male genitalia fundamentally justifies it as a different species. The paramere of tegmen in the former is bifurcated whereas that of the latter is singly projected with emarginated apex. Regarding the external morphology, *M. planicollis* can be distinguished from *M. nigricollis* by the following characteristics: first, the relative lengths of hind femur are quite different in those two species, surpassing the abdominal apex by half in *M. planicollis*, instead of by only 2/5 in *M. nigricollis.* Second, the callosities on pronotum are more flattened and coherent in *M. planicollis.* Finally, the coloration of *M. planicollis* is also different, since parts of legs are rather universally yellowish brown instead of pale yellow in *M. nigricollis.* Hairs on hind femur are also mostly dark, rather than pale

yellow. *Merionoeda planicollis* also resembles, to a lesser degree type specimens of *M. atricollis* HELLER, differing from these by the same characteristics as already mentioned above. *Merionoeda planicollis*, *M. nigricollis* and *M. atricollis* are probably closely related to each other and may form a species-group within the genus.

Specimens of *M. planicollis* were collected on various white blooming tree flowers in and in the vicinity of virgin forests of South Kalimantan. They seem to be rather common and dominant.

### ***Merionoeda mutata*** sp. nov.

(Figs. 13–14, 51–56)

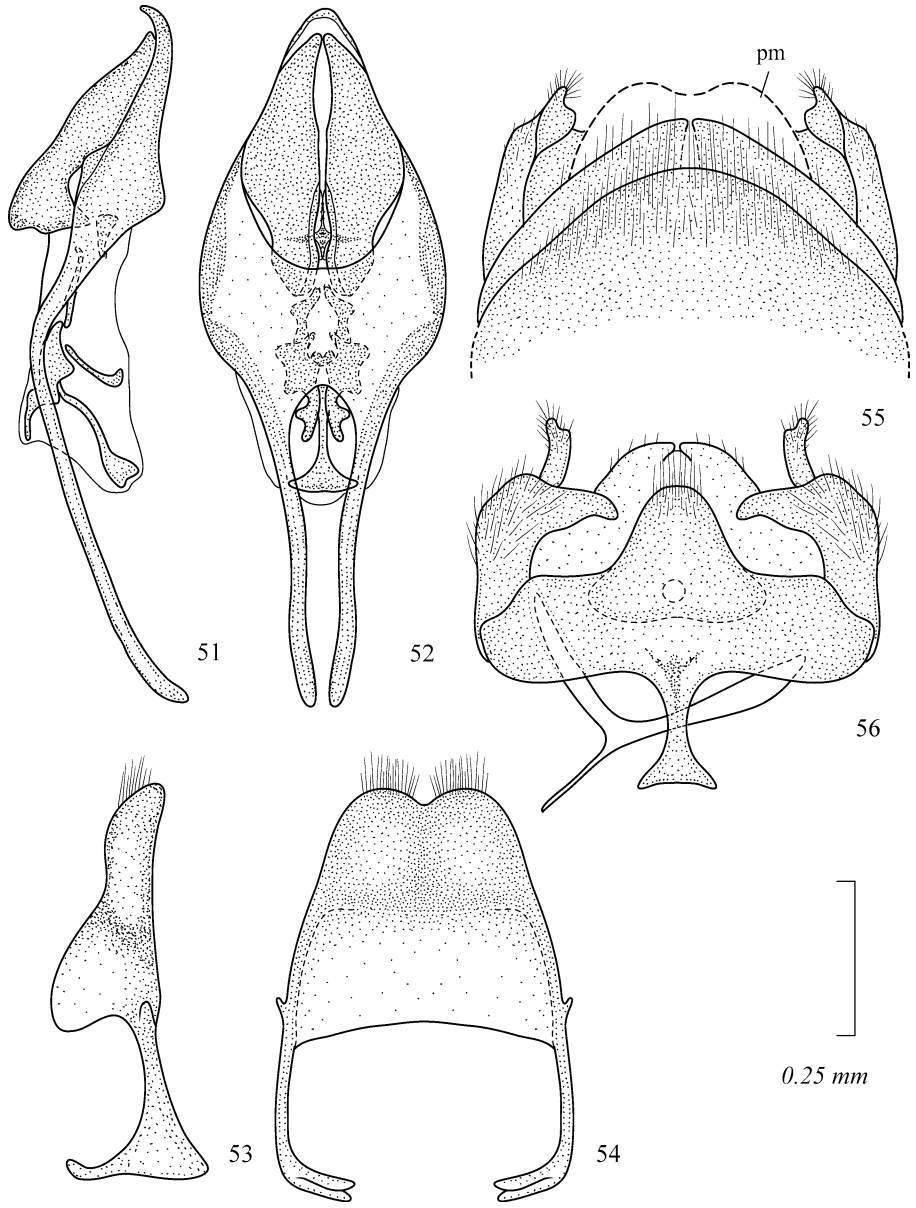
Body length 6.0 mm in ♂, 5.9–6.0 mm in ♀ (from apical margin of clypeus to abdominal apex).

M a l e and f e m a l e. Colour dark brown to black, rather shiny, venter of thoraces in ♀ also abdomen, reddish brown; elytra dark brown, with a wide sub-triangular pale yellowish maculation on basal halves, margin of maculation undefined, gradually transitioning from yellowish to light brown; base of fore, basal third of mid and basal fourth or half of peduncle of hind femur pale yellow.

Head, eyes and antennae basically similar to the previously described *M. planicollis* sp. nov., head slightly wider than the maximum width of pronotum in ♂ and identically wide in ♀, HW/PW 1.08 in ♂ and 1.0 in ♀, with medium-sized punctures and fairly long pale yellow hairs around the upper eye-lobes; occiput entirely provided with dense, medium-sized punctures, rugose on sides, near middle on dorsum in ♂; frons 1/3 the length of its basal width, distinctly convergent to apex, FA/FB 0.8 in ♂ and 0.9 in ♀, declivous towards the very deep median groove, glabrous except for a few short pale yellow hairs; clypeus long, 2/3 the length of basal width, with sparse, fairly long pale yellow hairs. Antennae fairly short, though surpassing elytral apex or attaining the base of tergite 5 in ♂, but stopping short of elytral apex in ♀, with similar pubescence and setae; segment 5 moderately, and segments 6–11 strongly flattened; segments 8–9 2/5 as wide as long in ♂ and half in ♀, segments 6–10 strongly serrate.

Pronotum as long as wide (maximum width between lateral swellings), PL/PW 1.0 in ♂ or 0.98–1.0 (M 0.99) in ♀, PA/PW 0.71 in ♂ or 0.73–0.78 (M 0.76) in ♀, PB/PW 0.88 in ♂ or 0.9–0.92 (M 0.91) in ♀; disc with a median callosity relatively small, drop-shaped and raised at a level between basal eight and 3/5, a pair of oblique, semi-elliptical ones of 3/5 the length of pronotum at a level between basal sixth to apical fourth, almost glabrous, only with a few punctures and short silvery hairs surrounding the callosities, clothed with fairly long, lying silvery hairs near basal margin, silvery hairs reaching and covering basal half of callosities and entering the interspaces between callosities, shagreened on basal sixth to fourth. Scutellum trapezoidal, weakly impressed at apex, thinly silvery pubescent or almost glabrous.

Elytra almost as in *M. planicollis*, though punctuation coarser, slightly more than twice as long as wide, EL/EW 2.16 in ♂ or 2.05–2.14 (M 2.1) in ♀.




Figs. 51–56. Male genitalia and 7th–8th abdominal segments of *Merionoeda mutata* sp. nov. —— 51, Median lobe, lateral view; 52, ditto, dorsal view; 53, tegmen, lateral view; 54, ditto, dorsal view; 55, 7th and 8th abdominal segments (pm: outline of paramere), dorsal view; 56, 8th abdominal segment, ventral view.

Venter of thoraces almost as in *M. planicollis*, though pro- and mesosternum weakly clothed with short silvery hairs; metasternum with rather deep transverse median groove; abdomen with two basal ventrites clothed with silvery pubescence, thinly so ventrites 3–4, anal ventrite widely emarginate in ♂.

Legs rather long, with hind femur surpassing abdominal apex by about apical half, slightly arcuate, gradually clavate in apical half, club sub-elliptical, with short erect hairs; hind tibia 3/4 the length of femur, moderately arcuate, with small dents in two rows on external side, terminal spur fairly long, though almost reaching apex of 1st tarsal segment.

Male genitalia basically similar to that of *M. laticornis kalimatana* ssp. nov. Median lobe almost as that of *M. l. kalimatana*, though apical part obtusely produced, not so distinctly bent forwards from lateral view, with shorter dorsal plate. Tegmen with parameres shallowly emarginate in middle, with slightly rounded apex. Eighth abdominal segment similar to that of *M. l. kalimatana*; tergite provided with a pair of large lateral projections, their apical parts strongly produced inwardly, supplemented with a narrow bifurcate stem near apical part of projection; sternite distinctly transverse, with very large sub-triangular plate strongly prominent forwardly.

*Type series.* Holotype ♂, Mamut, about 700 m in alt., Ranau, Sabah, Malaysia, 9～10–IV–2005. Y. YOKOI leg. Allotype ♀, same data as the holotype. Paratype: 1♀, Papagaran, about 700 m in alt., near Alat/Barabai, South Kalimantan, Indonesia, 23～30–X–2007, Y. YOKOI leg.

*Distribution.* Borneo: Sabah, E. Malaysia; South Kalimantan, Indonesia.

*Notes.* This species shares black coloration and yellow maculation on elytra with a number of other species of the genus. However, the coloration pattern on elytra appears to be similar only to *M. basalis* AURIVILLIUS, with which it also shares certain characteristics of the male genitalia. It can be nevertheless easily distinguished from it by the following differences: firstly, elytral maculation is triangular and yellowish rather than rectangular and brown as is the case with *M. basalis*. Secondly, only half of the peduncle of hind femur is pale, instead of the entire part in *M. basalis*. Finally, antennal segments 6–10 are not so strongly flattened as they are in *M. basalis*.

The holotype and allotype of *M. mutata* sp. nov. were collected on white blooming tree flowers of unknown species near a forest in Sabah and paratype was collected in a virgin forest of South Kalimantan. This species seems to be rather rare.

## Acknowledgements

We would like to thank Dr. Klaus-Dieter KLASS of Staatliche Naturhistorische Sammlungen Dresden, for enabling us to study the holotypes preserved there, Mr. Carolus HOLZSCHUH, Villach, Austria for providing us with paratypes for the comparative study and Dr. Martin BAEHR of Zoologische Staatssammlung, Munich, Germany for allowing us to observe HÜDEPOHL's collection. Finally, we would like to thank Mr. Theodore L. CHILDERS for his critical reading of the original draft of this paper.

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*Spec. Bull. Jpn. Soc. Coleopterol.*, *Tokyo*, (7): 193–204, May 25, 2009

# Two New *Euryarthrum* BLANCHARD (Coleoptera, Cerambycidae) from Kalimantan, Indonesia, with a Checklist of the Species

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**Abstract** *Euryarthrum ohbayashii* sp. nov. and *E. takakuwai* sp. nov. are described from West Kalimantan, Indonesia. *Euryarthrum ohbayashii* is similar to *E. gibbulum*, but can be distinguished from the latter mainly by its stouter body and male genitalia with median lobe sharply projected at apex. Two pairs of velvety red oblique vittae on the elytra characterize *Euryarthrum takakuwai*. Checklist of the species is provided.

## Introduction

The genus *Euryarthrum* BLANCHARD, 1845, which belongs to the tribe Prothemini of the subfamily Cerambycinae, is distinguished from the supposedly related genus *Prothema* PASCOE, 1856 mainly by the compressed and externally projected antennal segments VI–X (GRESSITT & RONDON, 1970). Ecological information on *Euryarthrum* species is extremely limited, but GRESSITT and RONDON (1970) noted that several adults of *Euryarthrum carinatum* PASCOE, 1866 were collected on clearings and in burned forests of central Laos.

To date, 16 *Euryarthrum* species have been described from the following Southeast Asian countries: Indonesia, Singapore, Malaysia, Thailand, Laos, and Vietnam (BLANCHARD, 1945; PASCOE, 1856, 1866; FUCHS, 1966; HAYASHI, 1977; HÜDEPOHL, 1988; HOLZSCHUH, 1991, 2008).

Recently, we examined specimens of two *Euryarthrum* species that were collected from West Kalimantan, Indonesia. After careful examination, we concluded that they are new to science. Here, we describe the two new species and illustrate their important taxonomic features. In addition, a checklist of the species of *Euryarthrum* is provided to summarize the current knowledge concerning the taxonomy of the genus.

## Material and Methods

This study is based on specimens preserved at the National Institute for Agro-Environmental Sciences, Tsukuba, Japan (NIAES). External structures were observed under a Nikon SMZ1500 stereoscopic microscope. Habitus photographs were taken with Olympus E-500 digital camera. Measurements of various body parts are coded as follows: LB＝length of the body, from the apical margin of clypeus to the apices of closed elytra; WH＝maximum width across the head, between outer margins of eyes; LG＝length of the gena, from upper to lower margins; LL＝length of the lower eye lobe, from upper to lower margins; WP＝maximum width across the pronotum; LP＝length of the pronotum, from the base to apex along the midline; WE＝maximum width across the elytra; LE＝length of the elytra, from the level of the basal margins to the apices of the closed elytra. All measurements are in mm. To examine the male terminalia, specimens were macerated in hot water and dissected under the stereoscopic microscope. The abdominal segment VIII was first removed from the body and subsequently cleaned in hot 10% KOH solution for 5 to 10 minutes. Male terminalia extracted from the abdominal segment VIII were mounted on slides with glycerol and studied with a Leitz Orthoplan optical microscope and drawn in detail through an attached camera lucida. Scale bars were calibrated using a Nikon objective micrometer. Verbatim label data indicated by quotation marks are provided for the holotypes. Separate lines of the labels are indicated by a forward slash ("/").

## Taxonomy

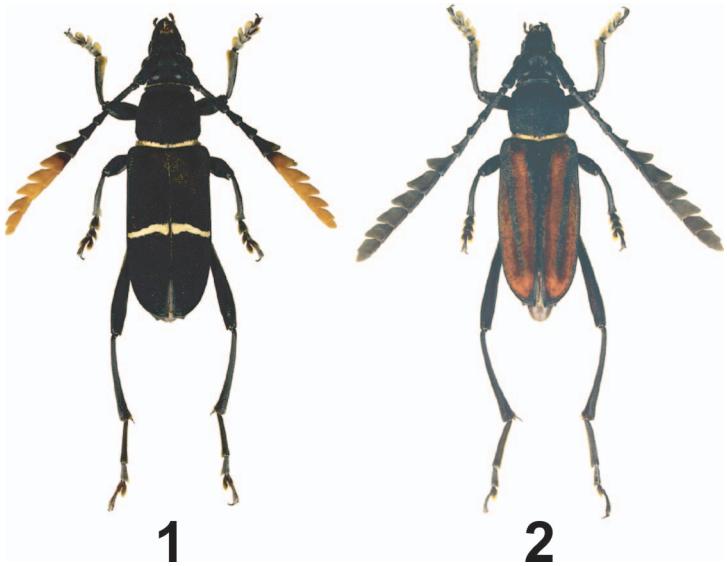
### *Euryarthrum ohbayashii* sp. nov.

(Figs. 1, 3–12)

*Description*. Male. Dimensions: LB: 14.40, WH: 2.70, LG: 1.25, LL: 1.00, WP: 3.40, LP: 3.30, WE: 4.40, LE: 8.75 (N＝1 for all measurements). Habitus as in Fig. 1.

Black in general appearance; clypeus and labrum reddish brown; antennal segments VII–XI testaceous, except basal 1/3 of segment VII; coxae red-tinged. Body surface opaque; head except vertex and occiput more or less shiny. Body relatively small and stout.

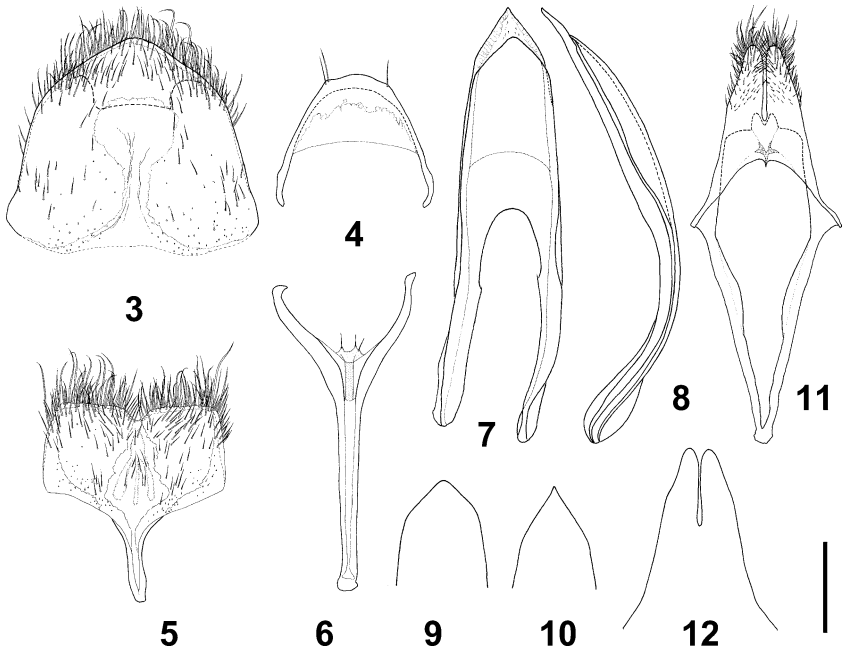
Head covered with shiny light-colored hairs; occiput nearly glabrous, bearing three very long hairs along posterior margin of each eye; vertex rather sparsely covered with incurved hairs; frons nearly glabrous, with a very long hair on each side near middle; clypeus glabrous; genae and neck sparsely covered with minute hairs; gula moderately covered with fine curved hairs. Antennal segments I–II nearly glabrous, covered with fine curved hairs on outer surface; segments III–V nearly glabrous with scattered minute hairs; segment VI finely pubescent, except basal part which is nearly glabrous; segments VII–XI densely covered with brown pubescence. Prothorax nearly glabrous, with two




Figs. 1–2. *Euryarthrum* species. —— 1, *E. ohbayashii*, holotype male; 2, *E. takakuwai*, holotype male.

pale yellow transverse bands of dense stout hairs along basal and apical margins; apical margin fringed with a row of short golden hairs; sides in basal half bearing several slender shiny hairs; prosternum moderately covered with fine curved hairs, bearing three slender shiny hairs on apical 1/3 of each side. Scutellum sparsely covered with light-colored fine hairs. Elytra nearly glabrous, with a pale yellow transverse band of shiny stout hairs in middle, with scattered minute hairs along margin; median band weakly sinuate. Legs moderately covered with dark and light-colored minute hairs; mid coxae rather densely covered with shiny white hairs; mid femora nearly glabrous on basal half of dorsal surface, with scattered fine golden hairs; hind femora on basal half of dorsal surface nearly glabrous, fringed with sub-recumbent setae along anterior margins; fore tibiae on dorsal surface covered with golden setae; scales sub-erect, becoming longer and denser apically; mid- and hind tibiae on apical half along internal margins moderately covered with golden setae. Mesosternum moderately covered with shiny fine hairs; mesepisterna on internal half moderately covered with dark fine hairs, mingled with white hairs, on external half densely covered with shiny white stout hairs; mesepimera sparsely covered with dark minute hairs. Metasternum moderately covered with shiny fine hairs, nearly glabrous on disc, bearing a pair of shiny white transverse bands of long stout hairs along apical margin; metepisterna sparsely covered with dark to light-colored fine hairs, densely covered with shiny white stout hairs on basal half. Sternites covered with hairs as those on metasterna; sternites I–IV along apical margin with a transverse band of shiny white stout hairs, respectively; sternite V fringed with golden incurved hairs along apical margin.

Head moderately projected forwards, slightly narrower than pronotum, WH/WP 0.79, with a shallow median sulcus which extends from occiput to base of frons; occiput longitudinally wrinkled-punctured, slightly narrower than vertex between antennal insertions; vertex irregularly shallowly punctured, flattened, not prominent along median sulcus; frons medially with a pair of crescent concavities facing each other, shallowly rugosely punctured; bottom of each puncture of frons opaque; interstices between punctures of frons strongly shiny; clypeus weakly narrowed to and truncate at apex, glabrous, strongly shiny; mandibles longitudinally wrinkled-punctured, strongly shiny; neck transversely wrinkled-punctured, lustrous; genae slightly deeper than lower eye lobes, LG/LL 1.25; eyes large, moderately prominent. Antennae relatively stout, reaching apical 1/4 of elytra, eleven-segmented; segments I–V sub-cylindrical; scape short, strongly wrinkled-punctured; segments II–VI (except apical part of VI) feebly punctured, opaque; segment III slender, much longer than scape; segment IV short, nearly half as long as segment III; segment V nearly as long as IV, slightly externally projected near apex; segments VI–XI strongly externally broadened; segment VI rapidly externally widened on basal half, thence more strongly widened towards apex; external margin of segment XI abruptly narrowed on apical 1/3. Prothorax nearly as long as wide, WP/LP 1.03, finely reticulately punctured; pronotum smooth, dorsally weakly convex, with a weak costa along apical margin; basal margin weakly bisinuate; apical margin slightly apically produced; sides gradually dilated from constricted base, widest at middle, gently narrowed apically, thence strongly convergent toward apical constriction; each side costate along apical constriction; prosternum rugosely punctured, moderately shiny; prosternal process in middle of apical part tuberculate; tubercle small and spherical from ventral view. Scutellum sub-triangular, with minute punctures. Elytra moderate in length, LE/WE 1.99, slightly wider than and more than twice as long as pronotum, WE/WP 1.29, LE/LP 2.65, finely reticulately punctured, opaque in bottoms of punctures, shallow and partly merged with each other; disc flattened except for weak post-scutellar prominences, smoothly declivous on apical half, lacking sub-median ridges; suture minutely acutely projected at apex; sides slightly dilated from humeri to middle, widest at middle, gradually narrowed to apical 1/4, thence gently convergent apicad; epipleura distinct and thickened along their entire length, each armed with an obtuse triangular projection at apex. Mesosternum rugosely punctured on basal half; punctures becoming indistinct on apical half; mesosternal process with apical margin moderately emarginate in middle; mesepisterna finely rugosely punctured; mesepimera with scattered minute punctures. Metasternum finely densely punctured and slightly shiny; disc more minutely and sparsely punctured, opaque, flattened; intercoxal area of metasternum finely rugosely punctured, opaque, prominent along midline; metepisterna finely reticulately punctured, slightly shiny. Sternites finely densely punctured, weakly shiny; sternites I–IV with a thin glabrous part along apical margin; sternite I long, nearly as long as sternites II–V combined; sternite II less than 1/3 the length of sternite I, slightly longer than III; sternites III and IV sub-equal in length; sternite V nearly as long as II. Legs relatively short, minutely punctured, moderately shiny; fore femora carinate




Figs. 3–12. Male terminalia of *Euryarthrum ohbayashii*. —— 3, Tergite VIII in dorsal view; 4, tergite IX in dorsal view; 5, sternite VIII in ventral view; 6, sternite IX in ventral view; 7, median lobe in dorsal view; 8, ditto in lateral view; 9, apex of dorsal plate; 10, apex of ventral plate; 11, tegmen in dorsal view; 12, lateral lobes. Scale bar＝0.50 mm.

along anterior margin of dorsal and ventral surfaces; mid- and hind femora carinate along posterior margin of dorsal and ventral surfaces; each tibia bearing a pair of dark brown bristles at apex; bristles on hind legs much longer than those of fore- and mid legs; fore tibiae slightly externally expanded on apical part; mid tibiae strongly incurved; hind tibiae slender, flattened; tarsal segment I slender on hind legs, nearly six times as long as wide.

Tergite VIII (Fig. 3) wide, semicircular; sides rather strongly narrowed on basal 2/3, thence rapidly convergent toward apex; apical margin obtusely projected in middle, moderately fringed with setae. Tergite IX (Fig. 4) slightly apically angulate, bearing one or two long setae on each side of apex. Sternite VIII (Fig. 5) transverse, with short basal apodemes; ventral contour of body and apodemes continuous; arms broad, short, slightly longer than basal apodemes, with internal margins apically gradually convergent, with external margins broadly shallowly arcuate; fenestral area slightly open, narrow, sub-rhomboidal; apical margin truncate, notched in middle, densely covered with setae. Sternite IX (Fig. 6) Y-shaped, slender, nearly twice as long as sternite VIII, with a slender sclerite bearing three minute setae at apex. Median lobe (Figs. 7, 8) with relatively short and stout body; median struts moderate in length, nearly as long as body,

moderately curved in profile; dorsal plate (Fig. 9) wide, with obtuse triangular apex; ventral plate (Fig. 10) very acutely projected at apex; median foramen located at basal 1/3 of body. Tegmen (Fig. 11) nearly as long as median lobe; lateral lobes (Fig. 12) sharply narrowed towards apex, narrowly separated from each another; ring part much longer than lateral lobes.

F e m a l e. Unknown.

*Type material*. Holotype male (NIAES), "[INDONESIA]/West Kalimantan/nr Benkayang IV. 1998" (white label, printed); "[HOLOTYPE] male/*Euryarthrum ohbayashii*/Yoshitake & Niisato, 2009" (red label, printed); "NIAES COLLECTION" (yellow label, printed).

*Distribution*. Indonesia (Kalimantan).

*Etymology*. This species is named after Dr. Nobuo OHBAYASHI.

*Notes*. *Euryarthrum ohbayashii* resembles *E. gibbulum* by having the elytra bearing a light-colored transverse band and lacking sub-median ridges. However, *E. ohbayashii* can be easily distinguished from *E. gibbulum* by the stouter body. In addition, *E. ohbayashii* possesses the following characteristics: pronotum weakly costate along apical margin; epipleura more acutely and strongly projected at apices; intercoxal area of metasternum prominent along midline; ventral plate of male median lobe very acutely projected at apex; lateral lobes of male tegmen slenderer and sub-contiguous.

### ***Euryarthrum takakuwai*** sp. nov.

(Figs. 2, 13–20)

*Description*. M a l e. Dimensions: LB: 12.70, WH: 2.40, LG: 1.00, LL: 0.85, WP: 2.95, LP: 3.00, WE: 3.80, LE: 8.00 (N＝1 for all measurements). Habitus as in Fig. 2.

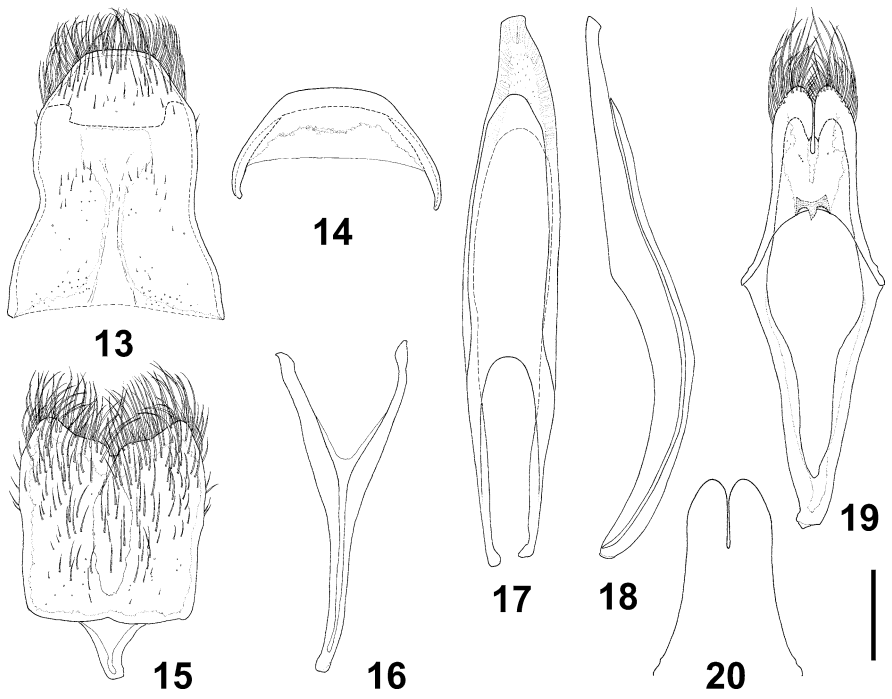
Dull black in general appearance; labrum reddish brown; clypeus and legs red-tinged. Body relatively small and stout.

Occiput along posterior margin of each eye bearing two long hairs; vertex thinly covered with incurved hairs; genae sparsely covered with minute hairs, mingled with fine hairs. Antennal segments I–V nearly glabrous, with only scattered minute hairs. Prothorax along basal margin provided with a dull yellow transverse band of fine shiny stout hairs arranged in a row; sides on basal half bearing three slender shiny hairs; prosternum moderately covered with fine curved hairs. Scutellum nearly glabrous, with sparse scattered minute hairs. Elytra with two pairs of oblique vittae on disc and lateral declivity; each vitta composed of long scaly hairs, parallel-sided and truncate at apex; discal vitta running from base between post-scutellar protuberance and humerus to sub-apical part, slightly narrowed toward apex; lateral vitta originates behind humerus, widened toward apex; both vittae apically connected with each other. Fore femora on ventral surface nearly glabrous; mid femora on dorsal surface nearly glabrous, lacking golden hairs; hind femora on dorsal surface nearly glabrous, finely pubescent (except for apical part); fore tibiae on apical 2/3 of dorsal surface covered with golden setae; mid- and hind tibiae on apical part along internal margins moderately covered with golden

setae. Mesepisterna on basal 2/3 rather sparsely covered with dark fine hairs, mingled with white stouter hairs, rather densely covered with white long recumbent hairs on apical 1/3; mesepimera nearly glabrous, with scattered dark minute hairs. Metasternum moderately covered with fine light-colored hairs, sparsely mingled with sub-erect longer hairs; metepisterna apically densely covered with shiny white stout hairs. Sternites I and II entirely densely covered with shiny white stout hairs, except glabrous median parts of apical margins; sternites III and IV densely covered with shiny white stout hairs, except glabrous median parts of basal and apical margins; sternite V sparsely covered with fine to stout white hairs.

Head slightly narrower than pronotum, WH/WP 0.81, with a median sulcus which extends from vertex to base of frons; sulcus becoming shallower apically; occiput shallowly punctured, with two carinae along median sulcus; carinae extending to base of vertex; vertex densely punctured; genae slightly deeper than lower eye lobes, LG/LL 1.18. Antennae long, reaching elytral apices; scape moderate in length, finely, but densely punctured; segments II–VI (except apical part of segment VI) finely, but densely punctured, slightly shiny; segment III nearly as long as scape, slightly rugose; segment IV nearly half as long as III, feebly rugose; segment V as long as IV, acutely externally projected near apex; segment VI rapidly externally widened from base to basal 1/3, thence more strongly widened toward apex. Prothorax nearly as long as wide, LP/WP 1.02; pronotum finely granulate-punctured, dorsally strongly convex; apical margin barely produced in middle; sides gently dilated from constricted base, rather abruptly expanded in middle, straightly narrowed apicad, thence strongly constricted at apex, carinate along apical constriction; carinae dorsally connected with each another; prosternum moderately rugosely punctured; prosternal process simple, not tuberculate. Scutellum broadly linguiform, with obscure punctures. Elytra moderate in length, LE/WE 2.10, slightly wider than and more than 2.5 times as long as pronotum, WE/WP 1.29, LE/LP 2.67; post-scutellar protuberance weak, finely granulate-punctured, elongate, reaching middle of elytra, becoming lower and tapering off apically; finely reticulately punctured, opaque in bottoms of moderately deep punctures; epipleura distinct and thickened along their entire length, each epipleura armed with a triangular projection at apex. Mesosternal process with apical margin moderately emarginate in middle. Metasternum entirely finely wrinkled-punctured, moderately shiny. Sternites densely minutely punctured, moderately shiny; sternites I–IV with a thin glabrous part along apical margin; glabrous part mostly concealed by stout hairs that extend from its basal margin; sternite I longer than sternites II–IV combined; sternite II 1/4 as long as I, nearly as long as III; sternites III and IV sub-equal in length, medially sparsely punctured; sternite V nearly twice as long as IV. Apical external expansions of fore tibiae weak; apical bristles on mid tibiae short.

Tergite VIII (Fig. 13) longer than wide; sides strongly narrowed on basal 1/3, slightly dilated to apical 1/3, thence rapidly narrowed toward apex; apical margin truncate, densely fringed with very long setae. Tergite IX (Fig. 14) broadly truncate at apex, asetose. Sternite VIII (Fig. 15) sub-quadrate; basal apodemes short and robust;




Figs. 13–20. Male terminalia of *Euryarthrum takakuwai*. —— 13, Tergite VIII in dorsal view; 14, tergite IX in dorsal view; 15, sternite VIII in ventral view; 16, sternite IX in ventral view; 17, median lobe in dorsal view; 18, ditto in lateral view; 19, tegmen in dorsal view; 20, lateral lobes. Scale bar＝0.50 mm.

ventral contour of body and apodemes discontinuous; arms broad, long, nearly three times as long as basal apodemes, with internal margins broadly shallowly arcuate; external margins of arms on basal half sub-parallel, slightly dilated to sub-apical part, thence rapidly narrowed apically; fenestral area slightly open, narrowly elliptic; apical margin broadly shallowly concave, notched in middle of concavity, densely covered with long setae. Sternite IX (Fig. 16) Y-shaped, slender, slightly longer than sternite VIII, simple, not appendiculate. Median lobe (Figs. 17, 18) with slender body; median struts short, nearly half as long as body, moderately curved in profile; dorsal plate broadly rounded at apex; ventral plate on apical 1/3 asymmetrical, slightly bent from dorsal view, truncate at apex; median foramen located on apical 1/3 of body. Tegmen (Fig. 19) shorter than median lobe; lateral lobes (Fig. 20) stout, sub-contiguous with each another, with external margins parallel on basal half; ring part much longer than lateral lobes.

F e m a l e. Unknown.

*Type material*. Holotype, male (NIAES), "[INDONESIA]/West Kalimantan/nr Benkayang IV 1998" (white label, printed); "[HOLOTYPE] male/*Euryarthrum taka-*

*kuwai*/Yoshitake & Niisato, 2009" (red label, printed).

*Distribution.* Indonesia (Kalimantan).

*Etymology.* This species is named after Dr. Masatoshi TAKAKUWA.

*Notes.* Species of the genus *Euryarthrum* usually bear one or two light-colored transverse bands on the elytra. *Euryarthrum takakuwai* and *E. elegans* HAYASHI, 1977 are unique in the genus by having a pair of oblique vittae of velvety red scaly hairs on elytral disc. Also, these two species have a complete carina along the apical margin of the prothorax and simple prosternal process, lacking a projection. However, *E. takakuwai* can be readily distinguished from *E. elegans* by the presence of another pair of similar vittae on the lateral declivity of the elytra. In addition, the antennal segment V is ecto-apically projected *E. takakuwai*, whereas this projection is absent in *E. elegans*.

## Checklist of the Species of *Euryarthrum*

### *Euryarthrum* BLANCHARD, 1845

*Euryarthrum* BLANCHARD, 1845: 149 (type species: *E. albocinctum* BLANCHARD, 1845). —— PASCOE, 1869: 578. —— AURIVILLIUS, 1912: 292 (catalogued). —— HÜDEPOHL, 1988: 412 (keyed). —— HEFFERN, 2005: 19 (Bornean Longicornia, catalogued).

*Blemmya* PASCOE, 1856: 42 (type species: *B. whitei* PASCOE, 1856).—— LACORDAIRE, 1869: 526.

*Distribution.* Indonesia, Singapore, Malaysia, Thailand, Laos and Vietnam.

#### 1. *Euryarthrum albocinctum* BLANCHARD, 1845

*Euryarthrum albocinctum* BLANCHARD, 1845: 170 (type locality: Singapore). —— PASCOE, 1869: 579 (Sarawak). —— LACORDAIRE, 1869: 527, pl. 91, fig. 3. —— AURIVILLIUS, 1912: 292 (catalogued). —— HAYASHI, 1976, 9: 27, fig. 7. —— HEFFERN, 2005: 19 (catalogued).

*Blemmya whitei* PASCOE, 1856: 42, pl. 16, fig. 6 (type locality: Borneo).

*Distribution.* Singapore, Malaysia (Borneo).

#### 2. *Euryarthrum apicefasciatum* HÜDEPOHL, 1988

*Euryarthrum apicefasciatum* HÜDEPOHL, 1988: 409 (type locality: Cameron Highlands, 14 miles).

*Distribution.* Malaysia (Malay Peninsula).

#### 3. *Euryarthrum atripenne* PASCOE, 1866

*Euryarthrum atripenne* PASCOE, 1866: 525 (type locality: Penang). —— HÜDEPOHL, 1988: 412 (keyed).

*Distribution.* Malaysia (Penang).

### 4. *Euryarthrum aurantiacum* HOLZSCHUH, 2008

*Euryarthrum aurantiacum* HOLZSCHUH, 2008: 233 (type locality: Malaysia, Borneo, Sabah, Mt. Trus-Madi).

*Distribution.* Malaysia (Borneo).

### 5. *Euryarthrum bifasciatum* (PASCOE, 1856)

*Blemmya bifasciata* PASCOE, 1856: 43 (type locality: Sarawak).
*Euryarthrum bifasciatum*: PASCOE, 1869: 579. —— AURIVILLIUS, 1912: 292 (catalogued). —— HÜDEPOHL, 1988: 412 (keyed). —— HEFFERN, 2005: 19 (catalogued). —— HOLZSCHUH, 2008: 232 (=*E. lambii* PASCOE, 1866).
*Euryarthrum lambii* PASCOE, 1866: 524 (type locality: Penang). —— AURIVILLIUS, 1912: 292 (catalogued). —— HÜDEPOHL, 1988: 412 (keyed). —— HEFFERN, 2005: 19 (catalogued).

*Distribution.* Malaysia (Malay Peninsula, Penang, Borneo), Indonesia (Belitung Is., Sumatra), Thailand.

### 6. *Euryarthrum carinatum* PASCOE, 1866

*Euryarthrum carinatum* PASCOE, 1866: 524 (type locality: Penang). —— AURIVILLIUS, 1912: 292 (catalogued). —— GRESSITT & RONDON, 1970: 135, fig. 23i (Central Laos). —— HÜDEPOHL, 1988: 412 (keyed).

*Distribution.* Malaysia (Penang), Laos.

### 7. *Euryarthrum dilatipenne* HOLZSCHUH, 2008

*Euryarthrum dilatipenne* HOLZSCHUH, 2008: 236 (type locality: Malaysia, Sabah, Mt. Trus-Madi).

*Distribution.* Malaysia (Borneo).

### 8. *Euryarthrum egenum* PASCOE, 1866

*Euryarthrum egenum* PASCOE, 1866: 525 (type locality: Penang). —— HÜDEPOHL, 1988: 413 (keyed).

*Distribution.* Malaysia (Penang).

### 9. *Euryarthrum elegans* HAYASHI, 1977

*Euryarthrum elegans* HAYASHI, 1977: 120 (type locality: Gap, Malaysia). —— HEFFERN, 2005: 19 (catalogued).

*Distribution.* Malaysia (Malay Peninsula, Borneo).

### 10. *Euryarthrum gibbulum* HOLZSCHUH, 2008

*Euryarthrum gibbulum* HOLZSCHUH, 2008: 234 (type locality: Malaysia, Sabah, Mt. Trus-Madi).

*Distribution.* Malaysia (Borneo).

### 11. ***Euryarthrum hastigerum*** HOLZSCHUH, 2008

*Euryarthrum hastigerum* HOLZSCHUH, 2008: 237 (type locality: Malaysia, Sabah, Crocker Range, Keningau-Kimanis).

*Distribution.* Malaysia (Borneo).

### 12. ***Euryarthrum interruptum*** PASCOE, 1866

*Euryarthrum interruptum* PASCOE, 1866: 524 (type locality: Penang). —— HÜDEPOHL, 1988: 413 (keyed).

*Distribution.* Malaysia (Penang).

### 13. ***Euryarthrum nodicolle*** PASCOE, 1866

*Euryarthrum nodicolle* PASCOE, 1866: 524 (type locality: Penang). —— HÜDEPOHL, 1988: 412 (keyed). —— HEFFERN, 2005: 19 (catalogued).

*Distribution.* Malaysia (Penang, Borneo).

### 14. ***Euryarthrum ohbayashii*** YOSHITAKE et NIISATO, *hoc opus*

*Distribution*. Indonesia (Kalimantan).

### 15. ***Euryarthrum pubiventre*** HOLZSCHUH, 2008

*Euryarthrum pubiventre* HOLZSCHUH, 2008: 232 (type locality: Malaysia, Borneo, Sabah, Mt. Trus-Madi).

*Distribution.* Malaysia (Borneo).

### 16. ***Euryarthrum rubati*** FUCHS, 1966

*Euryarthrum rubati* FUCHS, 1966: 21 (type locality: Djiring, Annam). —— HÜDEPOHL, 1988: 412 (keyed).

*Distribution.* Vietnam.

### 17. ***Euryarthrum rubricolle*** HOLZSCHUH, 1991

*Euryarthrum rubricolle* HOLZSCHUH, 1991: 43 (type locality: S. Thailand, Prachuap Khiri Khan).

*Distribution.* Thailand.

### 18. ***Euryarthrum takakuwai*** YOSHITAKE et NIISATO, *hoc opus*

*Distribution*. Indonesia (Kalimantan).

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We dedicate this paper to Drs. N. OHBAYASHI (Ehime University, Matsuyama, Japan) and M. TAKAKUWA (Kanagawa Prefectural Museum of Natural History, Odawara, Japan), who have greatly contributed to coleopterology as keen specialists on longicorn beetles. We thank Dr. F. KIMURA (Kashihara City Insectarium), Japan for his kind help during the course of this study.

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# A New Callidiine Genus and Species (Coleoptera, Cerambycidae) from Sakhalin Island, Russia

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**Abstract** A new genus and species of the tribe Callidiini from the Island of Sakhalin, Russia is described under the name *Paraxylocrius testaceus* gen. et sp. nov. The apically dilated pronotum of this new genus somewhat resembles the dorsal expansion of the cribrate prosternum of the genus *Semanotus* MULSANT spread in the Holarctic Region. Its broad, robust and more or less convex body with stout antennae and legs, and emarginate sides of elytra are similar to the species of the genus *Xylocrius* LECONTE, spread in the Nearctic.

## Introduction

An old cerambycid specimen preserved at the Severtzov Institute, Moscow, Russia was brought to my hand for taxonomic study through the courtesy of Dr. Mikhail L. DANILEVSKY. The specimen actually agrees with the members of the tribe Callidini as defined by MULSANT (1839, p. 38) of the subfamily Cerambycinae, but is not similar to any of the currently known genera of the tribe, about 30 in number (NIISATO, 2007). The callidiine in question has somewhat flattened brown body with cribrately punctured dorsal expansion of prosternum as in the members of *Semanotus* MULSANT (1839, p. 54) spread in the Holarctic Region, but its general appearance, especially the emarginate sides of elytra, reminds us of the genus *Xylocrius* LECONTE (1873, p. 172) spread in the Nearctic Region. In this paper, I am going to erect a new genus for this callidine which be described as a new species under the name *Paraxylocrius testaceus* gen. et sp. nov.

Before going into further details, I wish to express my heartfelt appreciation to Dr. Mikhail L. DANILEVSKY for his offer of the invaluable specimen used in the present study. Thanks are also due to Mr. Theodore L. CHILDERS for his critical reading of the original draft of this paper.

## Genus *Paraxylocrius* nov.

Type species: *Paraxylocrius testaceus* sp. nov.

Gender: Masculine.

Medium-sized callidiine of broad, robust and more or less convex body, with stout legs and antennae, generally covered with smooth and thin hairs.

Head rather long and parallel-sided, raised posteriad, distinctly narrower than

pronotum; frons distinctly declivous towards mid-line, not bordered at sides; clypeus trapezoidal, flattened; genae shallow, about half depth of lower eye-lobes, sub-parallel at sides; labrum strongly transverse, emarginate at apical margin; labium with mentum strongly transverse, terminal segment of labial palpus almost twice the length of the preceding segment, distinctly dilated in a fan-shape (at least in ♂); mandible thick and short, strongly bent inwards in apical third, with small but distinct inner tooth near middle; maxilla with ligula and lacinia hardly developed, palpus very long, terminal segment dilated as in labial palpus, though more weakly so in arcuate line, rounded at apical margin which has a short transverse appendicle; vertex hardly raised, though moderately raised towards antennal cavities; eyes small, deeply emarginate, widely separated both above and below. Antennae stout and moderate in length, attaining to the middle of elytra in ♂, hardly flattened in each segment, with scape and pedicel strongly thickened, the latter fairly long, segments 3 and 4 also thickened apicad, segments 5–9 more or less dilated apicad, terminal segment strongly bent inwards, inserted on the underside of segment 10 and completely fused at base.

Pronotum markedly divergent in apical third and constricted at base, widest before middle, narrower than elytra, widely truncate at apical margin and bisinuate at basal margin, with disc almost even, gently convex, smooth and glabrous near middle, though closely, coarsely and cribrately punctured on dorsal expansion of prosternum at sides. Scutellum long and narrow.

Elytra broad, less that 2.5 times as long as the humeral width, distinctly broadened posteriad, rounded at combined apices, disc slightly convex, strongly and thickly depressed along apical half or so of external margin, narrowly and deeply concave near bases, largely confluently rugose and almost glabrous on surface. Hind wing identical with that of *Callidium*.

Prosternum wholly raised and densely cribrately punctured before coxal cavities that are strongly dehiscent laterad and widely opened posteriad, with inter-coxal process short and triangular. Mesosternum at sides strongly produced forwards, with intercoxal process short and triangular, fairly apart from the anterior margin of metasternum, coxal cavities widely opened. Metasternum weakly convex. Abdomen broad and flattened, with anal ventrite strongly transverse and weakly emarginate at apical margin in ♂.

Legs stout and relatively long; femora more or less compressed, distinctly clavate; tarsi short and broad, with basal segment shorter than the following two segments combined.

Male genitalia of ordinary form as in that of most members of the Callidiini. Abdominal segment 8 distinctly transverse, with tergite transverse semicircular, sternite anchor-shaped. Median lobe broad, spindle-shaped from dorsal view, distinctly flattened and hardly arcuate in profile, broadly rounded at apex of dorsal plate, with endophallus without sclerotized structure, except for a pair of narrow crescent sclerites near the base. Tegmen with broad parameres that are rather shallowly dehiscent.

*Range*. Sakhalin, Russian Far East.

*Notes*. The true affinity of this new genus is uncertain, since there is no close relative that could be recognized among the genera of the Callidiini from the Holarctic Region. It may have some relationship in apicad dilated pronotum with dorsal expansion of cribrate prosternum to the genus *Semanotus* MULSANT spread in the Holarctic Region. The broad, robust and more or less convex body with stout antennae and legs, emarginate sides of elytra resembles those of the genus *Xylocrius* LECONTE spread in the Nearctic Region. Based on its general appearance this new genus could be interpreted as the intermediate form between these two genera. On the other hand, terminal segment of antenna may be the most highly specialized character of the new genus. It is completely fused with segments 10 and 11 at the ventral side and strongly bent inwards at apical part. The wing venation as well as male genital organ show quite ordinary pattern similar to those of the other genera of the tribe.

Fig. 1. *Paraxylocrius testaceus* sp. nov., holotype male from Sakhalin.

### *Paraxylocrius testaceus* sp. nov.

(Figs. 1–11)

Body length 12.5 mm (from apex of clypeus to elytral apices).

Colour brown to light brown except for black eyes, slightly paler on antennae, tibiae and tarsi, strongly shiny in general.

Male. Head voluminous throughout, though distinctly raised towards occiput, a little wider than the apical 3/5 to the maximum width of pronotum, sparsely scattered with small punctures and thin pale haired; frons half of the basal width, strongly arcuately emarginate on apical margin, with a very fine median groove extending to the apical margin to behind vertex, coarsely shallowly punctured, sparsely pale pubescent; genae half the depth of lower eye-lobes; eyes separated by 3/5 above or 4/5 below of the width of occiput. Antennae attaining to apical 2/5 of elytra, sparsely clothed with brownish pubescence; scape somewhat depressed, strongly dilated apicad, pedicel thickened apicad, 2/3 the length of scape, segment 5 the longest, segments 6–10 slightly decreasing in length, terminal segment arcuate and with a brief appendicle at apex.

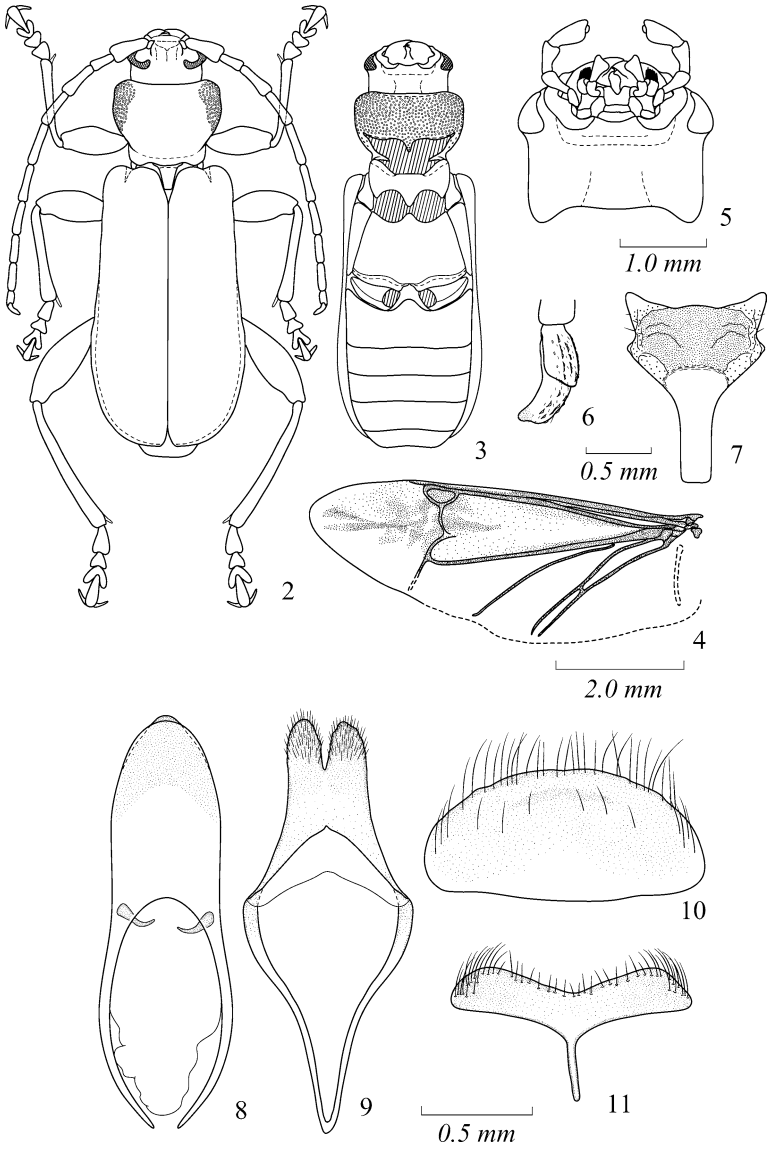
Pronotum wider than long, 0.85 times as long as the maximum width just before middle, a little narrower than the humeral width of elytra; sides distinctly dilated in short distance from apex, gently dilated in sinuate line just before middle, thence suddenly narrowed in arcuate line to basal sixth; disc almost even above, though gently raised at sides of posterior to middle, largely smooth and glabrous near middle, provided with a few punctures at sides behind middle, supplemented with the oblique areas at sides in apical 3/5 which are coarsely, closely and cribrately punctured, and sparsely pale pubescent. Scutellum elongate trapezoidal, smooth on surface.

Elytra 2.35 times as long as the humeral width, strongly ample posteriad, distinctly sinuate at bases, thickly depressed along external margin of apical 11/20; sides with humeri more or less produced forwards, almost straightly dilated to apical 2/5 of the widest point, thence arcuately rounded to apices which are bluntly angled at sutural corners; disc slightly convex, largely shallowly and confluently rugose throughout, very sparsely clothed with pale pubescence.

Mesosternum transversely convex near middle, closely provided with deep small punctures before coxal cavities. Meso- and metathoraces densely somewhat rugosely punctured, densely clothed with pale pubescence. Abdomen broad and short, 1.25 times as long as the basal width, subparallel, with anal ventrite 1/5 the length of the basal width, gently emarginate on apical margin.

Legs very stout and rather long, with hind femur almost reaching elytral apices, 1st hind tarsal segment a little shorter than the following two segments combined.

Male genitalia:– Tergite 8 sparsely clothed with rather long hairs along apical margin which is simply arcuate. Sternite 8 weakly oblique towards the middle of apical margin, densely clothed with medium-sized setae at sides. Median lobe with apical lobe of nearly equal length to median struts, subparallel and gently arcuate to apical 2/5, thence arcuately narrowed to apex which exposes the rounded apex of ventral plate in




Figs. 2–11. *Paraxylocrius testaceus* sp. nov., male from Sakhalin. —— 2, Body, dorsal view; 3, ditto (excluding antennae and legs), ventral view; 4, left hind wing; 5, head, ventral view; 6, terminal segment of antenna, lateral view; 7, mesonotum; 8, median lobe, dorsal view; 9, tegmen, dorsal view; 10, tergite 8, dorsal view; 11, sternite 8, ventral view.

dorsal view. Tegmen with parameres dehiscent in apical third measured along mid-line, roundly produced in each lobe with more or less uneven margin, rather densely clothed with short setae.

*Type specimen*. Holotype ♂, "Sakhalin" "Suprunenko leg." Without further detail. Preserved in Zoological Museum of Moscow University, Moscow, Russia.

*Distribution*. Sakhalin, Russian Far East.

*Notes*. The only available male specimen (holotype) of this new species is supplemented with very scarce collecting data. No further details, other than "Sakhalin" and the collector's name are provided, so it is very difficult to assess the exact data of the capture. Judging from the condition of the insect pin and its yellowish labels it is believed that the specimen is at least 50 years old.

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# *Xylotrechus* (*Kostiniclytus* subgen. n.) *medvedevi* sp. n. (Coleoptera, Cerambycidae) from Mongolia

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**Abstract** *Xylotrechus* (*Kostiniclytus* subgen. n.) with type species X. *zaisanicus* Plavilstshikov, 1940 is established for three species: *X zaisanicus* Plavilstshikov, 1940, *X. arnoldii* Kostin, 1974 and a newly described *X. medvedevi* sp. n. from Mongolia (Kobd aimak). The new species differs from *X.* (*K.*) *zaisanicus* and *X.* (*K.*) *arnoldii* by less transverse frons, large eyes, longer 3rd antennal segment and peculiar pronotal sculpture. Both species *X.* (*K.*) *zaisanicus* and *X.* (*K.*) *arnoldii* are redescribed and figured. The type locality for *X.* (*K.*) *arnoldii* is specified. Several new localities of *X.* (*K.*) *zaisanicus* are likewise mentioned.

## Introduction

The new species *Xylotrechus medvedevi* sp. n., belongs to a distinct group of very rare desert Central Asian species that develop in the roots of Chenopodiaceaeae. This group includes *Xylotrechus zaisanicus* Plavilstshikov, 1940 and *X. arnoldii* Kostin, 1974. A new subgenus, *Kostiniclytus* subgen. n. of the genus *Xylotrechus* Chevrolat is erected with the type species: *X. zaisanicus* Plavilstshikov, 1940. The new subgenus is characterized by pale male elytra covered with recumbent white pubescence with indistinct or totally absent stripes and marked sexual dimorphism. The original description of *X. zaisanicus* was based on a single male and since additional material has been discovered the species can be redescribed in more detail. The description of *X. arnoldii* was not quite adequate and also requires redescription.

## *Xylotrechus* (*Kostiniclytus* subgen. n.)

Type species: *Xylotrechus* (*Xylotrechus*) *zaisanicus* Plavilstshikov, 1940

Body small, not exceeding 13 mm in male, pale-brown to brown; prothorax darker, with more or less dense white pubescence; frons short, more or less transverse, with usually distinct "V"-shaped frontal carinae which can occasionally be reduced; eyes relatively small, distance between ventral eye lobes never shorter than the length between antennal insertions; prothorax in male very large, rounded laterally, with

convex pronotum; pronotum in male with small irregular punctation and a pair of central depressions, never roughly sculptured; elytra in male strongly tapering posteriorly, relatively short, without distinct pattern, white central transverse stripe and white oblique posterior stripe (if present) hardly discernible, often totally indistinct. Marked sexual dimorphism is believed to occur in all species. It is known to occur in several rather distant populations of *X. zaisanicus* that have black-brown female, parallel-sided elytra and regular pronotal punctation. Females of other species were not available.

New subgenus *Kostiniclytus* subgen. n. of the genus *Xylotrechus* can be separated from the nominotypical subgenus, as well as four other subgenera: *Xyloclytus* REITTER, 1913, *Rusticoclytus* VIVES, 1977, *Turanoclytus* SAMA, 1994 and *Ootora* NIISATO et WAKEJIMA, 2008 by the aforementioned characteristics.

*Range* (Fig. 9). This new subgenus occurs in deserts regions of Central Asia from Kazakhstan to Mongolia.

*Biology*. All species are found in desert landscapes. Their development is quite exceptional for the genus; beetles develop in roots of Chenopodiacea.

*Note.* The subgenus *Xylotrechus* (s. str.) is most likely not a natural taxon and should be divided in several new subgenera.

### *Xylotrechus* (*Kostiniclytus*) *zaisanicus* PLAVILSTSHIKOV, 1940

(Figs. 1–3 & 6)

*Xylotrechus* (s. str.) *zaisanicus* PLAVILSTSHIKOV, 1940, pp. 354, 717. – "near Takyrka in 50 km northwards Zaisan Lake".

*Xylotrechus zaisanicus:* KOSTIN, 1968a, p. 190 (Ili valley, Syr-Darja valley); 1968b, p. 207 (female, biology); 1973, pp. 176–177; 1974, p. 648; LOBANOV *et al*., 1982, p. 260.

*Xylotrechus arnoldii*: KADYRBEKOV & CHILDEBAEV, 2007, p. 219. – "Alakol lake valley".

*Type locality.* East Kazakhstan, Takyr env., 48° 10′ N, 84° 59′ E, according to the original description.

Body length (male): 7.2–11.0 mm, width (at humeri): 2.3–3.5 mm; body length (female): 9.0–12.5 mm, width: 2.8–3.5 mm. According to I. A. KOSTIN (1973) the length of adult can be up to 13 mm.

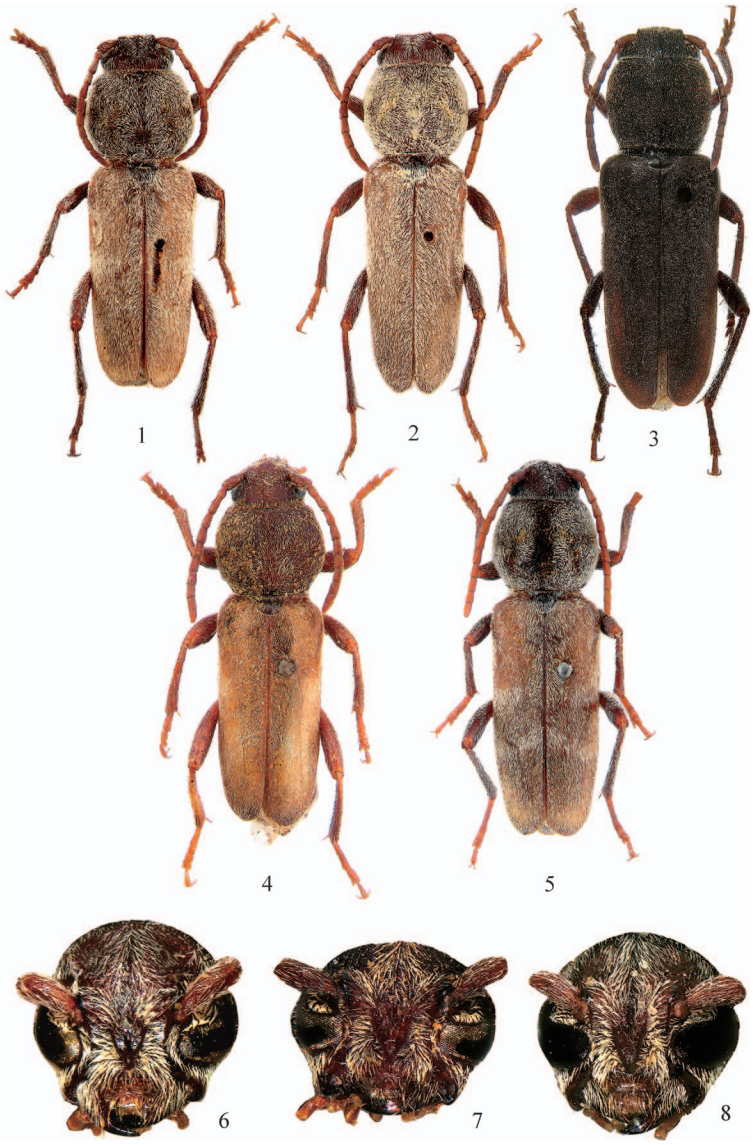
Body light-brown in male, dark-brown in female, prothorax usually a little darker; head in male with distinct vertex plates; frons transverse, with short eye carinae, converging downwards; frontal carinae very distinct, "V"-shaped, occasionally less pronounced with nearly parallel branches, alternatively only ventral part of frontal carinae distinct in form of a shining tubercle, sometimes frontal carinae nearly indistinct; eyes small, strongly distant ventrally, distance between ventral eye lobes more than length between antennal insertions; antennae short in male, in female surpassing pronotal base by two or three apical segments; 3rd antennal segment always shorter than 1st; male prothorax very large, sometimes wider than elytra, transverse, about 1.3 times shorter than medial width, with rounded sides, about 2.7 times shorter than elytra, evenly exposed, with very dense irregularly granulated sculpture and a pair of moder-

ately deep central cavities, covered with dense recumbent white pubescence, slightly denser along middle and central cavities, sometimes with small shining regularly punctuated area near posterior to middle; female prothorax smaller, from 2.8 to 3.0 times shorter than elytra; more elongated, about 1.2 times shorter than wide at middle, less rounded laterally; pronotum relatively flat, with small, very dense, regular punctation, slightly sparser medially, with dense short, semierect dark pubescence; male elytra strongly converging posteriorly, from 2.0 to 2.2 times longer than width at humeri, covered with rather dense (often concealing cuticle) white recumbent pubescence, sometimes forming scarcely pronounced median transverse and posterior oblique stripes; elytral cuticle never lightened under poor traces of pubescent stripes; elytral apices rounded; female elytra less tapering posteriorly, 2.1–2.3 times longer than wide, with fine slightly granulated irregular sculpture, covered with dense semierect short dark pubescence, without any traces of stripes; ventral side with dense recumbent pale pubescence and scattered erect setae; 1st segment of meta-tarsi a little longer than remaining segments combined; pygidium and postpygidium rounded; last abdominal sternite slightly emarginated in male, in female widely rounded, occasionally truncate or narrowly emarginated; last abdominal tergite truncate in female.

*Distribution* (Fig. 9: 1–6). This species occurs throughout deserts of south and east Kazakhstan: East Kazakhstan region, Takyr environs (type locality), 48°10′ N, 84°59′ E; Taldy-Kurgan region, Alakol nature reserve, about 46°24′ N, 81°00′ E; Almaty region, lower reach of Ily River, Bakanas environs, 44°50′ N, 76°11′ E; Almaty region, lower reach of Ily River, Karaturanga, 43°53′ N, 78°31′ E; Kzyl-Orda region, left bank of Syr-Darja River near Chiili, 43°59′ N, 66°28′ E; Chimkent region, Bugun environs, 42°42′ N, 69°00′ E.

*Biology*. Adults are found from May to July. According to A. I. KOSTIN (1968b) in Syr-Darja valley, the species is found in sand dunes and clay soils between them. Adults emerge from roots and basal parts of stems of *Eurotia ewersmanniana* from June to July. Larvae bore into roots under the surface level; pupation taking place inside the host plant, but often above the surface level. Each larva usually migrates for pupation from root to a separate twig. The life cycle is probably univoltine and according to KOSTIN (1973) this species develops also in other Chenopodiacea. I have preliminarily identified a series of larvae collected by myself from roots of *Anabasis* in south Kazakhstan as belonging to this species.

*Material examined.* Holotype, male (monotypy) with 3 labels: (1) "Typus" [red]; (2) "[Takyrka, 50 km to N from Zaisan, Lukjanovich, 30.VI.930]" [in Russian]; (3) "*Xylotrechus zaisanicus* Plav." – Zoological Museum of Moscow University; 2 males, 2 females: (1) "[Alma-Ata region, lower reach of Ily river, Bakanas, in *Haloxylon* forest, V. Parfentjev]" [in Russian]; (2) "[reared from roots of *Eurotis* (*ewersmanniana*), obtained VII. 1952, emerged 10. III. 1954]" [in Russian]; 2 males, with one more label: (3) "*Xylotrechus zaisanicus* Plav., A. Tsherepanov" – ZMM; 2 males, 3 females: "[S Kazakhstan, left bank of Syr-Darja river near Chiili, from *Eurotis,* 15. VI.–7. VII. 1964, Kostin & Badenko leg.]" [in Russian], males, with one more label: (2) "*Xylotrechus*




Figs. 1–8. Habitus and head of *Xylotrechus* (*Kostiniclytus* subgen. n.) species. —— 1, 6, *X*. (*K*.) *zaisanicus* holotype male; 2, ditto, male from Bakanas; 3, ditto, female from near Chiili; 4, 7, *X*. (*K*.) *arnoldii*, holotype male; 5, 8, *X*. (*K*.) *medvedevi* sp. n., holotype male; 1–5, habitus; 6–8, head, in frontal view.

*badenkoi* Kostin det." [not published] – author's collection; male: "[S Kazakhstan, low reach of Ili river, Karaturanga, from *Eurotis,* 23.V.1965, Kostin leg.]" [in Russian] – author's collection; 3 larvae, S Kazakhstan, Bugun environs, 42°42′ N, 69°00′ E, from roots of *Anabasis*, May, 1973, M. Danilevsky leg. – author's collection.

*Note.* Record of "*Xylotrechus arnoldii*" from Alakol nature reserve (KADYRBEKOV & CHILDEBAEV, 2007) after a single male is probably based on misidentified *X. zaisanicus*.

### *Xylotrechus* (*Kostiniclytus*) *arnoldii* KOSTIN, 1974

(Figs. 4 & 7)

*Xylotrechus arnoldii* KOSTIN, 1974: 647. – "foothills of Kokchetau Mt. Kokchetav region"; LOBANOV *et al*., 1982: 260.

*Type locality.* Central Kazakhstan, Akmola region, right bank of Tersakan River, about 40 km south-east Arkalyk, Kokshetau Mt., 50°05′ N, 62°28′ E – according to the holotype label.

The published locality of the type series was incorrect. I. A. KOSTIN confused Kokshetau Mt. from Tersakan River valley where L. V. ARNOLDI had collected insects in 1958, with much better known Kokchetau Ridge near Kokchetav City (53°00′ N; 70°09′ E), which is about 400 km north-east of the actual type locality. There exists a specimen (preserved in Zoological Museum, Sankt-Petersburg, Russia) of *Psilotarsus brachypterus* (GEBLER, 1830) labeled: "Akmolinsk region, Tersakan river valley near Kokshetau, 24.6.1957, L. Arnoldi".

Only the male holotype, has been available for this study. Body length: 7.5 mm, width (at humeri): 2.2 mm.

Body light-brown, prothorax a little darker; head with distinct vertex plates; frons transverse with short eye carinae converging downwards; frontal carinae distinct, "V"-shaped; eyes small, strongly distant ventrally, distance between ventral eye lobes longer than the length between antennal insertions; antennae short, surpassing pronotal base by two apical segments; 3rd antennal segment shorter than 1st; prothorax large, a little wider than elytra at humeri, transverse, about 1.2 times shorter than width at middle, with rounded sides, about 2.5 times shorter than elytra; pronotum evenly exposed, with very dense irregularly granulated micro sculpture, with a pair of distinct central depressions, covered with dense recumbent white pubescence mixed with yellowish setae, along middle and central depressions setae absent, elongated, shining, regularly punctuated area present near posterior to middle; elytra in male narrowed posteriorly, about 2.1 times longer than width at humeri, covered with scattered white recumbent setae, partly replaced with yellowish setae; elytral pubescence not concealing cuticle; posterior oblique white elytral stripe and white lateral spots near middle almost invisible; elytral cuticle under stripes somewhat lightened; elytral apices rounded; ventral side with sparse yellowish recumbent setae and scattered erect setae; 1st segment of meta-

tarsi about as long as the remaining segments combined; pygidium and postpygidium rounded; last abdominal sternite shallowly emarginated.

*Xylotrechus arnoldii* differs from *X. zaisanicus* chiefly in differing pubescence which is denser in *X. zaisanicus*. This peculiar character is evident not only on pronotum and elytra, but also on the ventral side and especially on the abdomen. Moreover, white setae of *X. arnoldii* are on all surfaces mixed with thinner yellowish setae. The white elytral design in *X. arnoldii* is more clearly pronounced than in any specimen of *X. zaisanicus.* The elytral cuticle in *X. zaisanicus* is never lightened under the traces of white elytral design. The shining pronotal area of *X. zaisanicus* is very small or totally absent. A single known male of *X. arnoldii* is of about the same size as the smallest specimens of *X. zaisanicus*.

*Distribution* (Fig. 9: 7). Known only from Central Kazakhstan, Akmola region, right bank of Tersakan River, about 40 km south-eastwards Arkalyk, Kokshetau Mt., 50°05′ N, 62°28′ E.

*Material examined.* Holotype (designated by author), male, with 3 labels: (1) "[Kokshetau Mt., Akmol. reg., L. Arnoldi, 3.6.1957]" [in Russian]; (2) "[in roots]" [in Russian]; (3) "Holotypus, *Xylotrechus arnoldii* Kostin" [red] – Zoological Museum, Sankt-Petersburg.

*Note.* According to the original description, the type series consists of 3 specimens, including two paratypes (females) from *Atriplex* roots from the same locality (20–VI–1958). However, the whereabouts of the other 2 specimens are unknown. Moreover, the original description contains a detailed morphological description only of the male and only the size of the holotype ("length – 8 mm, width: 2.5 mm") is mentioned. In the original description, there is only a single remark concerning females: "similar to males with the usual sexual differences"; this remark is considered rather dubious in the present paper. Females of this species should be similar to females of *X. zaisanicus* – dark-brown with dark pubescence.

The characters listed by A. I. KOSTIN (1974) that should separate *X. arnoldii* from *X. zaisanicus* seem to be somewhat unreliable, judging from the available specimens. Pronotal punctuation of *X. arnoldii* is not more prominent than that of *X. zaisanicus*; elytra of *X. arnoldii* are not parallel-sided; the relative lengths of the 1st segment of meta-tarsi or of 5th–6th antennal segments of *X. arnoldii* are not markedly shorter than those of *X. zaisanicus.* The relative lengths of antennal segments of small specimens of *X. zaisanicus* are much shorter than in large specimens.

### *Xylotrechus* (*Kostiniclytus*) *medvedevi* sp. n.

(Figs. 5 & 8)

*Type locality.* Mongolia, Kobd aimak, Elkhon, about 25 km southwards Altai somon, about 45°22′ N, 92°17′ E – according to MEDVEDEV's expedition and the holotype label (KERZHNER *et al.*, 1982).

Only the male holotype is available. Body length: 10.0 mm, width (at humeri): 3.0

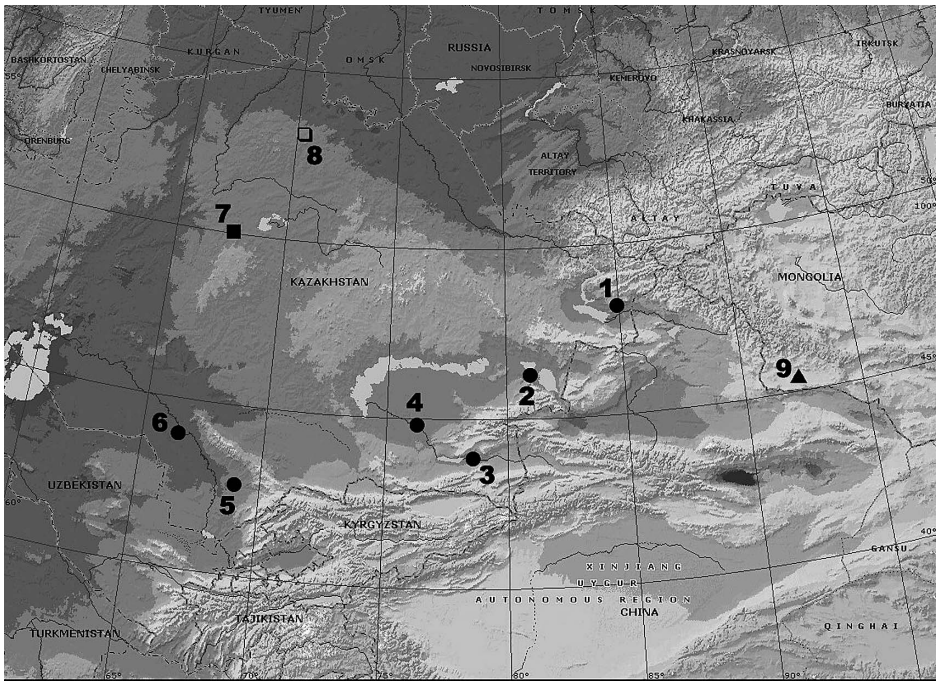



Fig. 9. Distribution of *Xylotrechus* (*Kostiniclytus* subgen. n.). —— 1–6, *X*. (*K*.) *zaisanicus*; 7, *X*. (*K*.) *arnoldii*; 9, *X*. (*K*.) *medvedevi* sp. n.; 1, Takyr env., type locality of *X. zaisanicus*; 2, Alakol nature reserve; 3, Karaturanga; 4, Bakanas; 5, Bugun; 6, Chiili; 7, Kokshetau Mt. in Tersakan River valley; 8, Kokchetau Ridge in Kokchetav region, incorrectly mentioned type locality of *X. arnoldii*; 9, Kobd aimak, Elkhon.

mm.

Body light-brown, prothorax dark-brown; head with distinct large vertex plates; frons elongated vertically, with short parallel eye carinae; frontal carinae distinct, "V"-shaped; eyes larger, distance between ventral eye lobes almost identical to that between antennal insertions; antennae short, surpassing pronotal base by two apical segments, each antennal segment more elongated; 3rd antennal segment a little longer than 1st; 3 rd and 4th antennal segments combined longer than the distance between dorsal margins of antennal insertions; prothorax large, a little narrower than elytra at humeri, transverse, about 1.2 times shorter than median width, rounded laterally, about 2.6 times shorter than elytra; pronotum evenly exposed, with very dense irregularly granulated micro sculpture, with a pair of distinct central depressions, with dense recumbent white pubescence; wide central shining stripe with short brownish setae, without white pubescence; male elytra narrowed posteriorly, about 2.2 times longer than width at humeri, with rather dense (concealing cuticle) white recumbent pubescence, which forms relatively distinct median transverse and posterior oblique stripes; elytral cuticle

a little lightened under stripes of setae; elytral apices rounded; ventral side with moderately dense white recumbent pubescence and scattered erect setae; 1st segment of meta tarsi about as long as the remaining segments combined; pygidium and postpygidium rounded; last abdominal sternite shallowly emarginated.

*Distribution* (Fig. 9: 9). Known only from Mongolia, Kobd aimak, Elkhon, about 25 km southwards Altai somon, about 45°22′ N, 92°17′ E.

*Material examined.* Holotype, male: "Mongolia, Kobd aimak, Elkhon, about 25 km southwards Altai, G. Medvedev, 23. VI. 980" – Zoological Museum, Sankt-Petersburg, Russia.

*Note.* This new species differs from other members of the subgenus by elongated frons with relatively parallel eye carinae; elongated antennal segments; eyes larger, with distance between ventral eyes lobes about the same as the distance between antennal insertions; extra pronotal sculpture with a wide, dark central longitudinal stripe. *Xylotrechus medvedevi* sp. n. somewhat resembles *X. zaisanicus* because of the identical type of dense white body pubescence, but differs from it by sparser abdominal pubescence, and more pronounced white elytral stripes with lightened cuticle underneath.

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# Taxonomic Notes on the Genus *Cyrtoclytus* (Coleoptera, Cerambycidae) from China and Indochina

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**Abstract** Four new species of the genus *Cyrtoclytus* GANGLBAUER are described under the names *C. elegantissimus* from Guizhou, SW. China, *C. ohbayashii* from Guangxi Zhuangzu Ziziqu, SW. China, *C. takakuwai* from N. Vietnam and *C. dalatensis* from S. Vietnam. *Cyrtoclytus agathus* HOLZSCHUH and *C. scapalis* HOLZSCHUH are additionally recorded from new localities and briefly redescribed herein. *Cyrtoclytus keiichii* NIISATO is newly synonimized with *C. yunamensis* (PIC).

## Introduction

The genus *Cyrtoclytus* GANGLBAUER was established based on a Palearctic species, *Callidium* (*Clytus*) *capra* GERMAR. It has a closer relationship to the monotypical genus *Brachyclytus* KRAATZ as well as to several members of the large genus *Clytus* LAICHRTING. A total of fifteen species of the genus have so far been described from the Oriental and Palearctic Regions (NIISATO, 2007), ten members of which are known from China and Indochina (GAHAN, 1906; GRESSITT, 1951; HOLZSCHUH, 1999, 2003; HUA & NIISATO, 1993; NIISATO, 1987, 1999; PIC, 1906, 1908, 1914).

As a result of our field survey and research at institutes, we were able to obtain some additional knowledge on the genus *Cyrtoclytus* from China and Indochina. In the present paper, four new species are described and one new synonym is proposed. In addition, new localities for two already known species are provided and the concerning

species briefly redescribed.

### *Cyrtoclytus elegantissimus* NIISATO et CHOU, sp. nov.

(Figs. 1, 9–11)

Body length 15.5 mm (from apical margin of clypeus to elytral apices).

Colour black in head and thoraces, brown in mouthparts except for black apices of mandibles, antennae and legs, generally dullish; elytra on about basal halves generally yellowish brown, with black maculation near scutellum and a triangular incomplete band at basal 3/20, dark brown on about apical 7/10, anterior margin strongly obliquely produced along elytral suture from basal half to 3/10, with a longitudinal infuscate area in middle of each disc near apical third; abdomen on basal ventrite blackish brown, gradually becoming reddish towards apex, anal ventrite reddish brown. Body clothed with brown pubescence, with rather sparse flying long light brown hairs, decorated with pubescence forming reddish yellow or lemon yellow maculae; head moderately with short pale hairs, with reddish yellow pubescence throughout, most prominence pubescence on frons and around eyes; antennae densely with pale brown pubescence on four basal segments, with a row of short light yellow hairs along undersides of segments 2–5; pronotum sparsely with light brown hairs, with reddish yellow pubescence along apical margin and lemon yellow ones along basal margin; scutellum densely with lemon yellow pubescence; elytra with pale brown to pale yellow pubescence, most dense on apical halves, rather sparsely endowed with flying long light brown hairs throughout, provided with following lemon yellow pubescent bands: 1) linear oblique incomplete band at basal fifth slightly thickened at external end, 2) broad oblique band behind middle, 3) apical band on apical tenth; ventral surface with dense lemon yellow pubescence at sides of mesosternum and mid coxae, along posterior margins of metasternum and hind coxae, on apical half of metepisternum, at sides of posterior margins of abdominal ventrites 1–4, especially wide on the basal two; legs sparsely with long erect light brown hairs.

Head including distinctly prominent eyes fairly large, distinctly wider than the apical width of pronotum, finely rugosely punctured; frons moderately dilated apicad, slightly longer than its basal width, depressed though slightly raised to middle, with an entire median groove divided into two linear costae on basal 3/10, coarsely shagreened; genae deep, as deep as lower eye lobes in frontal view; vertex narrowly, but distinctly

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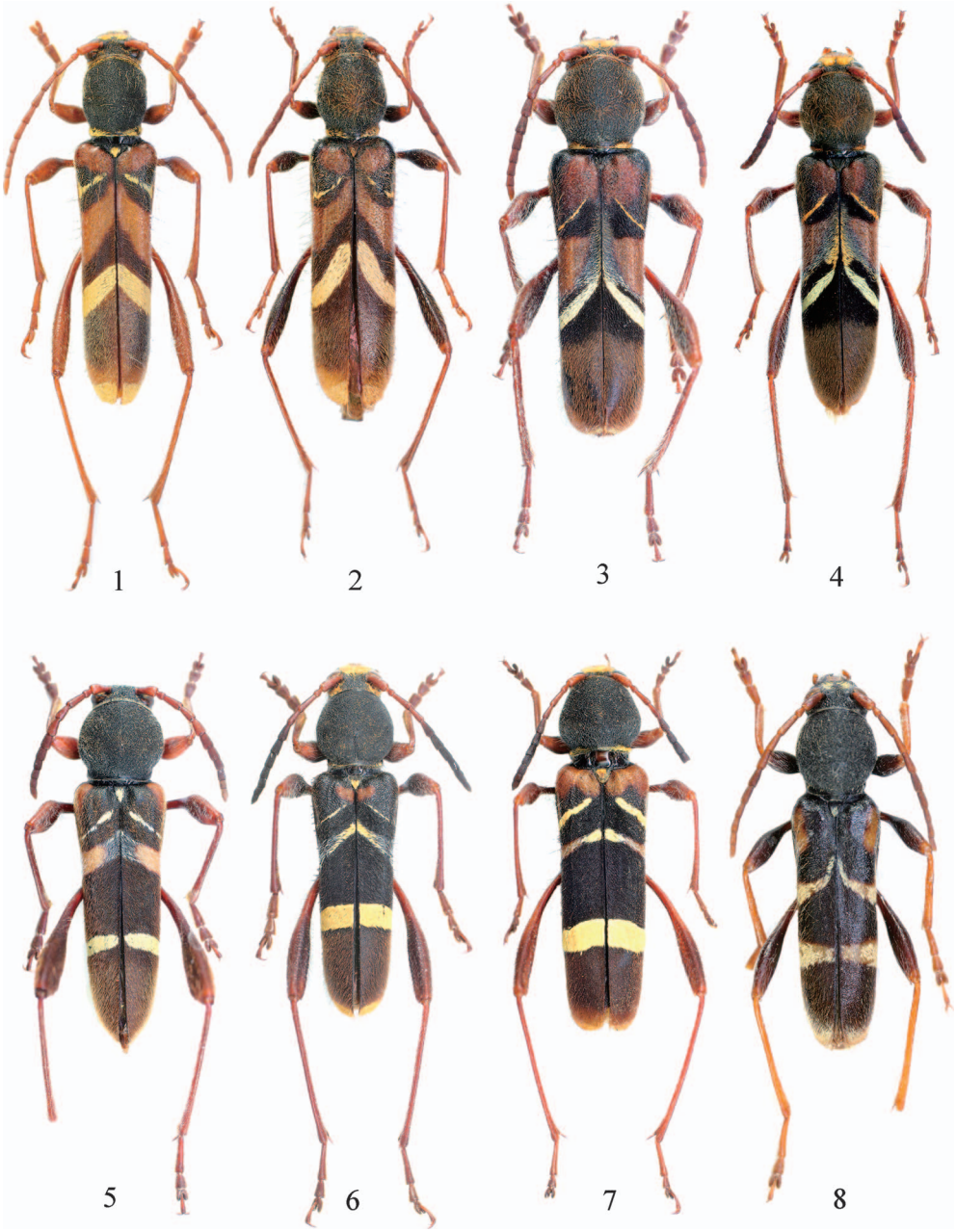
Figs. 1–8. Habitus of *Cyrtoclytus* species from China and Indochina. —— 1, *C. elegantissimus* NIISATO et CHOU, sp. nov., holotype ♂, from Fanjing Shan of Guizhou Prov., SW. China; 2, *C. agathus* HOLZSCHUH, ♀ from Yangjiagou of Shaanxi Prov., NW. China; 3, *C. ohbayashii* NIISATO et CHOU, sp. nov., holotype ♂, from Daoyao Shan of Guangxi Zhuangzu Ziziqu, SW. China; 4, same species, allotype ♀ from same locality; 5, *C. takakuwai* NIISATO et KUSAKABE, sp. nov., holotype ♂, Mt. Tamdao of Vinh Phu Prov., N. Vietnam; 6, *C. scapalis* HOLZSCHUH, ♂ from Phou (Mt.) Pan of Houaphang Prov., NE. Laos; 7, *C. yunamensis* PIC, ♀, from Wian Papao, NW. Thailand; 8, *C. dalatensis* NIISATO et KUSAKABE, sp. nov., holotype ♂, from Dalat Highland of Bao Lac Prov., S. Vietnam.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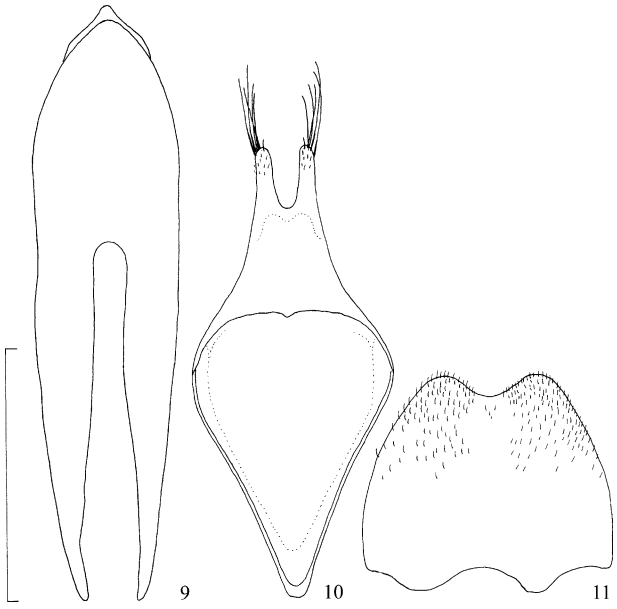



Figs. 9–11. Male genital organ of *Cyrtoclytus elegantissimus* NIISATO et CHOU, sp. nov., holotype ♂, from Fanjing Shan of Guizhou Prov., SW. China. —— 9, Median lobe in dorsal view; 10, tegmen in dorsal view; 11, tergite 8 in dorsal view. Scale 1 mm.

concave medially, rather distinctly raised towards antennal cavities. Antennae relatively slender, reaching basal third of elytra, hardly thickened in apical segments, with scape elongate quadrate, arcuate, dorsally depressed, as long as segment 3 which is not thickened apicad, segment 4 moderately dilated apicad and 0.85 time as long as the preceding, segment 5 distinctly dilated apicad and slightly shorter than the preceding and as long as segment 6, terminal segment not reduced, bluntly pointed at apex.

Pronotum long, strongly dilated apicad, 1.2 times as long as the maximum width at middle, 3/4 in width to elytral humeri; apex as wide as base; sides strongly divergent at a short distance from apex, gently divergent to middle then moderately narrowed in arcuate line to basal fifth, with arcuate basal collar in basal sixth; disc rather distinctly convex, distinctly arcuate from lateral view, highest just behind middle which is rather distinctly raised, surface finely rugosely reticulate. Scutellum narrow triangular, medium in size, less than 1/3 of elytral width.

Elytra long and slender, 3.2 times as long as width at humeri; sides with weakly prominent humeri, moderately convergent in a rather straight line to basal 2/5, gently arcuate to apical fifth then arcuately convergent to completely rounded apices; disc almost flattened, near scutellum very weakly raised, weakly declivous to scutellum near suture, closely covered with rather shallow punctures.

Ventral sides of thoraces with dense shallow and somewhat rugose punctures; prosternal process narrow, triangularly narrowed apicad. Abdomen gradually narrowed

apicad, punctured less dense than on thoraces; anal ventrite trapezoidal, apical margin truncate with very weak emargination at middle.

Legs long and slender, with hind femur gradually clavate in apical 3/5, almost reaching elytral apices, 1st hind tarsal segment slender, slightly dilated apicad, 1.4 times as long as the following two segments combined.

Male genital organs:– Tergite 8 slightly shorter than the basal width, gently arcuate on basal 4/7 then rather strongly narrowed to apex that is about half as wide as base, deeply emarginate. Median lobe 1/5 the length of elytra, short and broad, with dorsal plate on basal third parallel at sides then arcuately narrowed just behind apex, triangularly produced at the broad extremity, exposing acutely pointed apical part of ventral plate. Tegmen 4/5 the length of median lobe, with parameres dehiscent in apical third measured along midline, with each lobe very slender, gently dilated outward, provided with long setae near apical parts.

*Type specimen.* Holotype ♂, Fanjing Shan 1,500 m in alt., Jiangkou county, Guizhou Prov., SW. China, 15–VI–2001, W.-I CHOU leg. The holotype is preserved at the Institute of Zoology, Chinese Academy of Sciences, Beijing.

*Distribution.* SW. China (Guizhou).

*Notes.* This new species is remarkable in having the most elongated body and legs among the members of the genus, and is therefore easily recognized in its peculiar habitus. The new species is similar in elytra maculation to *C. agathus* from Gansu (HOLZSCHUH, 1999, p. 40, fig. 54) and *C. formosanus* from Taiwan (GRESSITT, 1933, p. 167) although it can be distinguished from these by the extremely long body with long slender antennae and legs, the apicad dilated pronotum and the two yellow oblique bands on elytra instead of the arcuate ones.

The holotype specimen was collected on the blossoms of a *Cornus kousa* subsp. *chinensis* (OSBORN) Q. T. XIANG (Cornaceae) at Fanjing Shan, 1,500 m in altitude.

## *Cyrtoclytus agathus* HOLZSCHUH, 1999

(Fig. 2)

*Cyrtoclytus agathus* HOLZSCHUH, 1999, FBVA-Berichte, (110), p. 40, fig. 54; type locality: China, Gansu prov., 70 km W from Wudu, 2,000–2,400 m.

This species has been carefully described and compared with *C. formosanus* by the original author. The single female specimen from Shanxi that we could examine fully agrees with the description of HOLZSCHUH, though differs from it in a few details, especially regarding the arrangement of the density of yellowish pubescence: 1) Occiput with a few scattered reddish yellow pubescence as opposed to dense, 2) pronotum near apical margin covered with thin reddish yellow pubescence only laterally, as opposed to densely bordered, 3) linear lemon yellow band at basal fifth of elytra more transversely arcuate, 4) broad oblique lemon yellow band near middle of elytra slightly is wider than the preceding dark brown discal band, as opposed to distinctly narrower in the holotype;

abdomen with lemon yellow pubescent band on basal three ventrite instead of four. Examined female is 13.8 mm in body length.

*Specimen examined.* 1♀, Yangjiagon, 1,300 m in alt., Yang county, Shanxi Prov., NW. China, 20–VI–2000, W.-I CHOU leg.

*Distribution.* NW. China: Gansu and Shaanxi (new record).

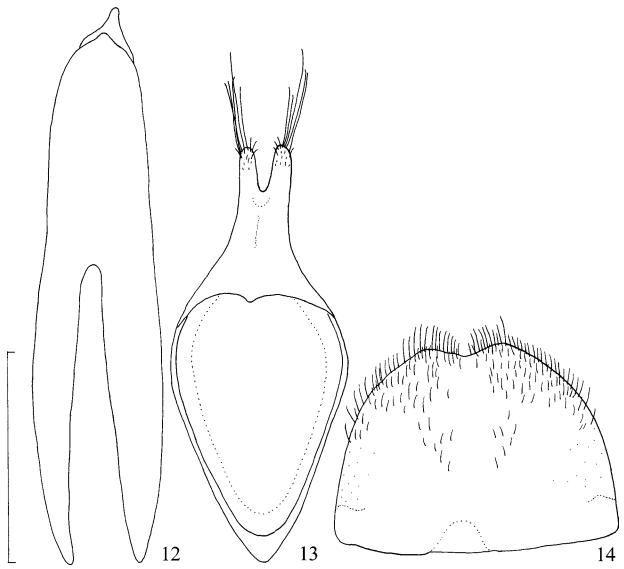
*Notes.* The single female specimen was collected on the blossoms of a *Tilia paucicostata* MAXIM (Tiliaceae) near Yangjiagon at 1,300 m altitude. This is the first record of this species from Shaanxi.

### ***Cyrtoclytus ohbayashii*** NIISATO et CHOU, sp. nov.

(Figs. 3–4, 12–14)

Body length 18.0 mm in ♂, 13.5 mm in ♀ (from apical margin of clypeus to elytral apex).

Colour black, antennae and legs brown, apical seven segments of antenna somewhat infuscate as well as sides of the swollen parts of femora, mouthparts except for black mandibles dull brown; elytra largely black, quadrate part of the approximate basal fifth brown, yellowish brown on right-angled triangular external stripe at a level between basal 3/10 and just behind middle which is truncate or more or less oblique at anterior margin and gently arcuate in long inner margin, and also slightly brownish near apices. Body densely clothed with brown pubescence, intermingled with moderate erect long




Figs. 12–14. Male genital organs of *Cyrtoclytus ohbayashii* NIISATO et CHOU, sp. nov., holotype ♂, from Daoyao Shan of Guangxi Zhuangzu Ziziqu, SW. China. —— 12, Median lobe in dorsal view; 13, tegmen in dorsal view; 14, tergite 8 in dorsal view. Scale 1 mm.

brown hairs, with reddish yellow or lemon yellow pubescence forming maculae; head with dense reddish yellow pubescence on frons and along under and inner sides of eyes; antennae densely with pale pubescence on apical seven segments, with a row of short brown hairs along undersides of segments 2–5; pronotum densely with long wavy brown hairs and with sparse erect hairs of identical colour, basal margin laterally with reddish yellow pubescence; scutellum sparsely with pale pubescence; elytra with brown pubescence and long erect brown hairs, provided with an arcuate linear band of reddish yellow pubescence at basal 2/9 and an strongly oblique narrow band of lemon yellow pubescence just behind middle, and with an indistinct arcuate band of sparse pale yellow pubescence (additionally with reddish pubescence in holotype ♂) between two yellow bands, supplemented with lemon yellow pubescence at apices in holotype ♂; ventral surface with dense lemon yellow pubescence at sides of mesosternum and along posterior margins of hind coxae and basal ventrite; legs densely with long erect brown hairs.

Head relatively voluminous including moderately prominent eyes, slightly wider than the apical width of pronotum, with close and dense punctures; frons slightly dilated apicad, slightly longer than its basal width, almost flattened, with a narrow median groove almost reaching both apex and base; genae rather deep, slightly shallower than lower eye lobes in frontal view; vertex gently concave at middle, very slightly raised towards antennal cavities. Antennae stout and short, attaining basal third in ♂ or fifth in ♀ of elytra, distinctly thickened in apical seven segments, with scape slightly dilated apicad, rather long, 1.25 times as long as segment 3 which is moderately thickened apicad and slightly depressed, segment 4 rather distinctly dilated apicad and 3/4 the length of the preceding and a little longer than segment 5, segment 6 as long as the preceding, terminal segment reduced and bluntly pointed.

Pronotum almost globular, as long as wide, widest at middle, 3/4 of the humeral width of elytra; apex a little narrower than base; sides gently divergent laterally to middle then strongly arcuate to basal collar; disc moderately convex, slightly arcuate in profile, highest at basal third, finely, closely punctured. Scutellum triangular, medium in size, 1/3 the width of elytron, shagreened on surface.

Elytra relatively long, moderately wide, 2.8 in ♂ or 2.9 in ♀ times as long as width at humeri; sides with moderately in ♂ or slightly in ♀ prominent humeri, rather distinctly convergent to basal 3/10, almost parallel to middle then arcuate and convergent to slightly rounded apices; disc rather distinctly raised around distinct concavities near scutellum, moderately convex near apical eighth, then suddenly declivous to apices, closely and somewhat coarsely punctured on surface.

Ventral sides of thoraces provided with dense fine shallow punctures; prosternal process rather narrow, distinctly narrowed apicad. Abdomen gradually slightly narrowed apicad, with punctuation more shallow than that of thoraces; anal ventrite slightly emarginate in ♂ or truncate near middle in ♀ at apical margin.

Legs rather long and stout, with hind femur rather distinctly clavate in apical 3/5, reaching apical seventh of elytra, 1st hind tarsal segment distinctly dilated apicad in ♂, slightly so in ♀, 1.5 times as long as the following two segments combined.

Male genital organs:– Tergite 8 transverse semicircular, 2/3 the length of the basal width, weakly emarginate at middle of apical margin. Median lobe nearly 1/4 the length of elytra, moderately in width, with dorsal plate gently emarginate near base, gently arcuate at a level between basal third and apical fifth, then arcuately strongly narrowed in arcuate line to bluntly angulate extremity, exposing acutely pointed apical part of ventral plate. Tegmen 4/5 the length of median lobe, with parameres dehiscent in apical third measured along midline, with each lobe rather slender, moderately dilated outwardly, provided with long setae near apical part.

*Type series.* Holotype ♂, Mt. Dayao Shan, 900 m in alt., Jiaxin Yaozu Zixixian, Guangxi Zhuangzu Ziziqu, 21–IV–2000, W.-I CHOU leg. Allotype ♀, same data as the holotype. The holotype is preserved at the Institute of Zoology, Chinese Academy of Sciences, Beijing, and the allotype in the private collection of W.-I CHOU, Taipei.

*Distribution.* SW. China: Guangxi Zhuangzu Ziziqu.

*Notes.* Among the known members of the genus, *C. kusamai* from Taiwan (NIISATO, 1988, p. 138, figs. 3–4, 8–10) is probably most reminiscent of *C. ohbayashii* sp. nov. regarding both external and genitalic features. This new species is thus considered as its sibling species from continental China. However, it can be easily distinguished from the Taiwanese species by shorter elytra with the different pattern of discal and pubescent maculation, of which the black discal band just before median yellow pubescent band is very narrow, a little less than the width of yellow band itself as opposed to about third of its width in *C. kusamai.*

Type series of this interesting new species was found on the blossoms of *Acer* sp. (Aceraceae) at Mt. Dayao Shan, 900 m in altitude.

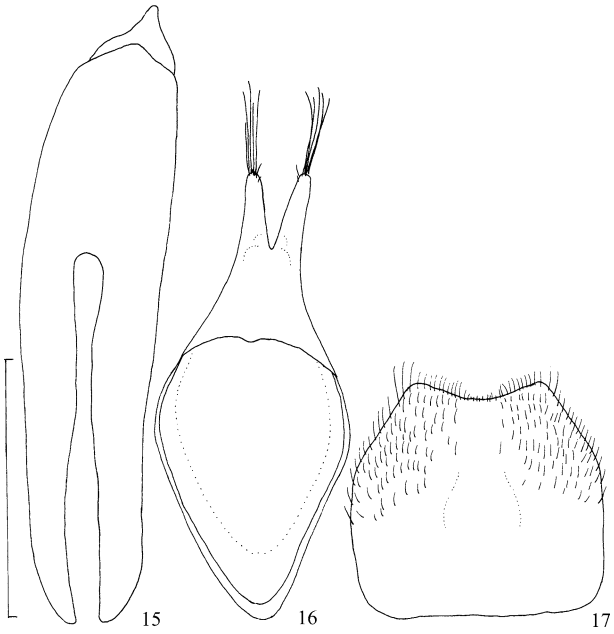
### *Cyrtoclytus takakuwai* NIISATO et KUSAKABE, sp. nov.

(Figs. 5, 15–17)

Body length 16.5 mm (from apical margin of clypeus to elytral apex).

Similar in many respects to *C. scapalis* HOLZSCHUH from the mountainous area of Laos, but body more robust, more brownish in general, pronotum more transverse and wider than long, hind femur markedly clavate in apical 2/5, transverse elytral band on apical 3/8 narrow, incomplete, clothed with light yellow pubescence as opposed to deep yellow one. Obviously different from *C. scapalis* regarding the configuration of male genital organs.

Colour black to brownish black, reddish brown in mouthparts except for black margin of mandible, antennae and legs, dullish in general; elytra brownish black, brown at humeri, provided with oblique incomplete pale yellow band on basal fourth which barely reaches sutural fourth on disc. Body clothed with light brown pubescence; head rather thinly with light yellow pubescence on frons; antennae with dense light brown minute pubescence on apical six segments, sparse rows of short light brown hairs along undersides of segments 2–5; pronotum densely with short light brown hairs, without long hairs; scutellum with light yellow pubescence on apical 3/5; elytra densely with




Figs. 15–17. Male genital organs of *Cyrtoclytus takakuwai* NIISATO et KUSAKABE, sp. nov., holotype ♂, Mt. Tamdao of Vinh Phu Prov., N. Vietnam. —— 15, Median lobe in dorsal view; 16, tegmen in dorsal view; 17, tergite 8 in dorsal view. Scale 1 mm.

recumbent light brown pubescence, especially dense on apical fourth behind light yellow pubescent band, long hairs like those of pronotum absent, decorated with following light yellow pubescent maculation: 1) linear arcuate band on basal seventh, 2) oblique broad band on basal fourth on discal band, 3) relatively narrow transverse band on apical 3/8 which is incomplete not reaching either external or sutural margin; ventral surface densely with pale long hairs, partly with dense light yellow pubescence at sides of mesosternum, posterior margins of metasternum, metepisternum and basal two ventrites; legs with femora covered by long recumbent pale hairs.

Head almost as in *C. scapalis*, though eyes larger, frons moderately emarginate at sides and provided with a median groove in basal 2/3, vertex moderately raised at sides. Antennae stouter than in *C. scapalis*, with broad medial segments. Pronotum more transverse than in *C. scapalis*, slightly wider than long as opposed to longer than wide in *C. scapalis*, widest just before middle, with apex slightly produced near middle, a little wider than base which is almost transversely truncate; disc evenly convex, highest just behind middle, without median longitudinal concavity before base, finely asperate throughout. Scutellum as in *C. scapalis.* Elytra 2.8 times as long as the humeral width, distinctly narrowed apicad. Ventral surface almost as in *C. scapalis.* Legs stouter, with hind femur markedly swollen in apical 2/5.

Male genital organs:– Tergite 8 twice the length of the basal width, parallel in basal

3/4 then distinctly narrowed to apical margin which is widely shallowly emarginate. Median lobe a little less than 1/4 the length of elytra, rather broad, with dorsal plate gently arcuately narrowed from apical half, distinctly so from apical fifth to apex which is bluntly angulate, exposing long apical part of ventral plate which is arcuate at sides and with bluntly produced extremity. Tegmen 7/10 the length of median lobe, with parameres dehiscent in apical halves measured along midline, with each lobe elongate and slightly narrowed apicad, rather distinctly dilated outward, provided with markedly long setae.

*Type specimen.* Holotype ♂, Mt. Tamdao, Vinh Phu Province, N. Vietnam, VI–2005, native collector leg. The holotype is preserved in the National Museum of Nature and Science, Tokyo.

*Notes.* Though similar in general appearance, this new species can clearly be distinguished from *C. scapalis* HOLZSCHUH from the mountainous area of Laos (HOLZSCHUH, p. 208, fig. 48) by the elytra with a discal pale yellow band on the basal fourth and the narrower and incomplete transverse light yellow band on apical 3/8. The configuration of male genital organ of this species is also different from *C. scapalis*; median lobe with long ventral plate which is distinctly exposed in dorsal view, and elongate and strongly outwardly dilated parameres with remarkably long setae at apices. Since the elytral maculation and the configuration of male genital organs are similar to *C. kusamai* NIISATO, this new species may be related to it. However, *C. kusamai* has its elytra with enlarged blackish brown area beyond the posterior light yellow bands and without the pale yellow discal band, and ventral plate of male genital organs shorter.

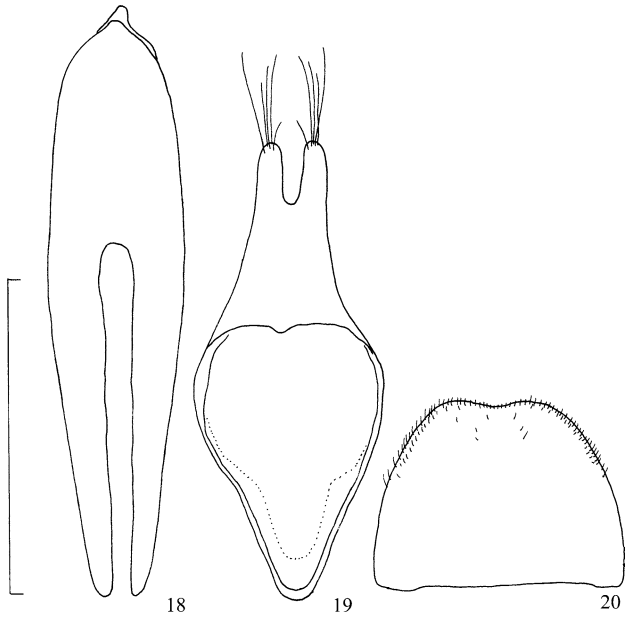
## *Cyrtoclytus scapalis* HOLZSCHUH, 2003

(Figs. 6, 18–20)

*Cyrtoclytus scapalis* HOLZSCHUH, 2003, Ent. Basil., **25**, p. 208, fig. 48; type locality: NE-Laos, Hua Phan prov., Ban Saleui, Phu Phan Mt., 20°15′N104°02′E, 1,500–2,000 m.

This species has carefully been described and it is not necessary to give additional account of the external morphology except for the following, newly observed intraspecific variations: Elytra usually brown at bases near scutellum though sometimes almost entirely black, almost always fringed with distinct apical band of yellow pubescence, though rarely sparse and indistinct, with oblique yellow pubescent band almost completely disappearing in the female; body length 10.0–18.0 mm (from apical margin of clypeus to elytral apex).

Male genital organs:– Tergite 8 3/4 the length of the basal width, more or less arcuately narrowed to apical margin which is slightly emarginate or almost transversely truncate. Median lobe nearly 1/4 the length of elytra, rather broad, with dorsal plate arcuately gently narrowed to apical half, then slightly emarginate to apical sixth and distinctly narrowed to apex which is bluntly angulate, exposing the pointed extremity of ventral plate. Tegmen 8/10 the length of median lobe, with parameres broad and short,




Figs. 18–20. Male genital organs of *Cyrtoclytus scapalis* HOLZSCHUH, ♂ from Phou (Mt.) Pan of Houaphang Prov., NE. Laos. —— 18, Median lobe in dorsal view; 19, tegmen in dorsal view; 20, tergite 8 in dorsal view. Scale 1 mm.

dehiscent in apical third to fourth measured along midline, with each lobe slightly narrowed apicad, almost parallel or gently dilated outward, provided with long setae.

*Specimens examined.* 1♀, Phou (=Mt.) Pan, 1,800–2,000 m in alt., Ban Saleui, Houaphan Prov., NE. Laos, 23–24–V–2001, H. WAKAHARA leg.; 3 ♂♂, 7 ♀♀, same locality as the preceding, 20～27–V–2002, H. WAKAHARA leg.; 2 ♀♀, same locality as the preceding, 11–IV–2004, T. NIISATO leg.; 6 ♂♂, 13 ♀♀, same locality as the preceding, 16–IV～15–V–2004; 4 ♀♀, same locality as the preceding, 2～10–V–2006; 1 ♂, 2 ♀♀, same locality as the preceding, 1～7–V–2007; 1 ♂, Phou Samsoun, 2,100 m in alt., Ban Muang, Xiengkhouang Prov., C. Laos, 13-IV-2008, H. WAKAHARA leg.

*Notes. Cyrtoclytus scapalis* has been described based on a single male specimen collected at Phou Pan of northeastern Laos. Recently, we were able to examine a series of specimens coming from the type locality as well as Phou Samsoun in central Laos. According to the field observations made by senior author, this clytine is usually found on dead trunks of an undetermined broadleaved tree, at approximately 1,800 m of altitude.

### *Cyrtoclytus yunamensis* (PIC, 1906)

(Fig. 7)

*Clytus yunamensis* PIC, 1906, Mat. Longic., **6**(1), p. 18; type locality: "Yu-nam".
*Cyrtoclytus yunamensis*: AURIVILLIUS, 1912, Coleopterm. Cat., **39**, p. 373. —— GRESSITT, 1951, Longicornia, **2**, p. 261.
*Cyrtoclytus keiichii* NIISATO, 1999, Elytra, Tokyo, **27**, p. 43, figs. 1a & 2; type locality: Waiang Papao, Chiang Rai, N. Thailand. **Syn. nov.**

*Specimens examined.* 1♀ (holotype of *C. yunamensis*, Muséum national d'Histoire naturelle, Paris), "Clytus yunamensis Pic" "yu nam" "Type" "Museum Paris Coll. M Pic" "HOLOTYPE (red label)"; 1 ♀ (holotype of *C. keiichii*, National Museum of Nature and Science, Tokyo), Waiang Papao, Chiang Rai, N. Thailand, 15–V–1995; 2 ♀♀, same locality as the preceding, 15–V–1995.

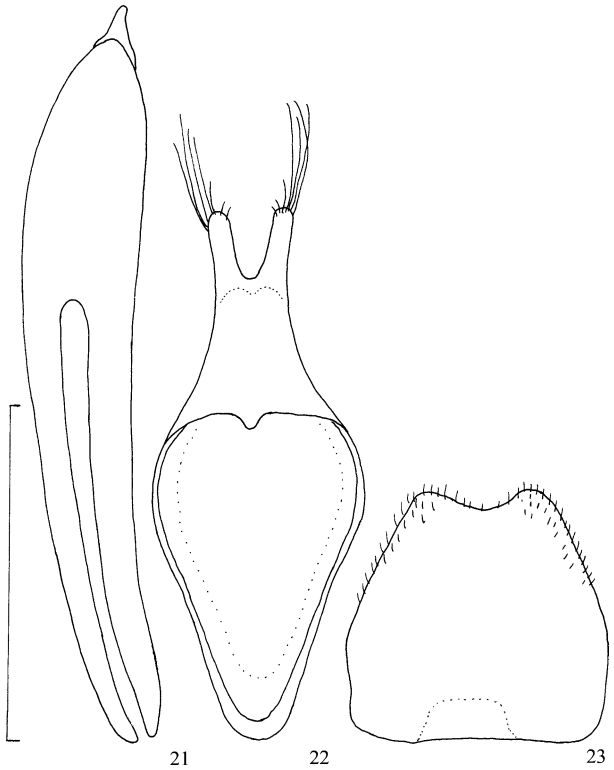
*Notes*. Elytral maculation of *C. yunamensis* is similar to *C. callizonus* from Myanmar (GAHAN, 1906, p., fig.) and to *C. scapalis* from Laos. It is therefore possible that these three allopatric species are sibling species. On the other hand, according to our recent examination, *C. keiichii* NIISATO described from northwestern Thailand, it corresponds with the type of *C. yunamensis* in almost all details, and thus should be regarded as its junior synonym.

### *Cyrtoclytus dalatensis* NIISATO et KUSAKABE, sp. nov.

(Figs. 8, 21–23)

Body length 10.5 mm (from apical margin of clypeus to elytral apex).

Colour black in head including mandibles and thoraces, yellowish brown in eyes, mouthparts, antennae and legs except for dark brown clavate parts of femora, dull in general; elytra dark brown, provided with following four light yellow maculae: 1) isolate stripe near humerus at a level between just behind base and basal eighth, 2) arcuate narrow band gradually broadened from basal eighth of suture to basal 3/8 near external margin, then strongly bent forwards and reaching to margin of basal eighth, 3) transverse band on apical third slightly broadened externally, 4) apical marginal band. Body clothed with long pale yellow hairs mostly on forehead, elytra and undersides of thoraces, decorated with dense lemon yellow maculation; head with dense lemon yellow pubescence on frons and along posterior margin of eyes; antennae densely with pale pubescence on apical seven segments, with row of short pale hairs along undersides of segments 2–5; pronotum sparsely with long black hairs, thinly with lemon yellow pubescence at sides near apical and basal margins; scutellum with dense lemon pubescence on apical 2/5; elytra densely with light brown recumbent pubescence and long flying pale yellow hairs, with dense light yellow pubescence on the same colored discal maculation except for humeral stripe; ventral surface with dense lemon yellow pubescence at sides of mesosternum and sides along posterior margins of ventrites 1–3; femora with recumbent long pale yellow hairs.




Figs. 21–23. Male genital organs of *Cyrtoclytus dalatensis* NIISATO et KUSAKABE, sp. nov., holotype ♂, from Dalat Highland of Bao Lac Prov., S. Vietnam. —— 21, Median lobe in dorsal view; 22, tegmen in dorsal view; 23, tergite 8 in dorsal view. Scale 1 mm.

Head not so voluminous including moderately prominent eyes, slightly wider than the apical width of pronotum, finely, but coarsely punctured; frons slightly dilated apicad, almost as long as the basal width, gently raised, with an indistinct median groove not reaching either or base; genae moderately narrowed and slightly deeper than lower eye lobes in frontal view; vertex flattened at middle, weakly raised towards antennal cavities. Antennae stout, relatively long, reaching to basal 3/8 of elytra, with scape quadrate, distinctly depressed above, as long as segment 3 which is more or less flattened gently dilated apicad, segments 4 and 5 equal in length moderately dilated apicad, segment 6 slightly shorter than the preceding, terminal segment slightly arcuate, bluntly pointed.

Pronotum globular, almost as long as wide, widest just before middle, a little narrower than the humeral width of elytra, with apex a little narrower than base; disc well convex, strongly arcuate in profile, highest at basal 5/12, faintly depressed along midline behind basal third, finely asperate on surface. Scutellum triangular, large, 2/5 the width of elytron, finely punctured on surface.

Elytra long and slender, 2.7 times as long as the humeral width; sides with less prominent humeri, moderately convergent to basal third, slightly narrowed in gently arcuate line to apices which are obliquely arcuately truncate and without any angles; disc strongly declivous in bases, deeply concave near suture behind scutellum, closely, finely punctured on surface.

Ventral sides of thoraces densely provided with fine shallow punctures, with prosternal process moderately narrow, slightly dilated near apex, mesosternal process. Abdomen simply narrowed apicad, more sparsely punctured than in thoraces, with anal ventrite gently arcuate at apical margin.

Legs relatively long, not so stout, with hind femur gradually clavate in apical half, barely reaching apical seventh of elytra, hind tarsal segment 1.25 times as long as the following two segments combined.

Male genital organs:– Tergite 8 almost as long as the length of the basal width, parallel-sided in basal 2/5 then distinctly narrowed to apical margin which is distinctly emarginate. Median lobe nearly a little less than 1/4 the length of elytra, very slender, with dorsal plate arcuate at sides in basal 3/5 then arcuately narrowed to simply produced apex, exposing short apical part of dorsal plate which is markedly pointed. Tegmen a little shorter than median lobe, with parameres dehiscent in apical 2/5 measured along midline, with each lobe rather elongate, gently narrowed apicad, strongly dilated outwards, provided with very long setae near apices.

*Type specimen.* Holotype ♂, Dalat Highland, Bao Lac Province, S. Vietnam, 20–VIII–2003, M. ITO leg. The holotype is preserved in the National Museum of Nature and Science, Tokyo.

*Notes. Cyrtoclytus matsumotoi* has been described based on a single female specimen collected from the central mountains in the Malay Peninsula (NIISATO, 1989. p. 88, fig. 1). *Cyrtoclytus dalatensis* sp. nov., despite the wide geographical gap separating the southeastern edge of Indocina and the Malay Peninsula, in many respects resembles *C. matsumotoi*. The new species may perhaps be considered as a geographical race of *C. matsumotoi*, though the true affinities of both taxa are uncertain until the male of the latter species is discovered for comparative examination of male characteristics including the genital organ. Judging from the external morphology, *C. dalatensis* can be readily separated from the Malayan species by shorter elytra, that are 2.7 times as long as the humeral width in contrast to about 3.0 times of those of *C. matsumotoi*, longer and slenderer antennae, and absence of yellow pubescence at occiput and pronotum.

According to the collector, M. ITO, the single male specimen of this interesting new species was collected at the peak of the Dalat Highland.

## Acknowledegements

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# Clytine Beetles of the Genus *Sclethrus* NEWMAN (Coleoptera, Cerambycidae)

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**Abstract** Clytine genus *Sclethrus* NEWMAN is revised. A total of nine species and three subspecies, including nine new taxa, are newly described or re-described based on both external and genitalic morphologies: *Sclethrus amoenus* (GORY) from southwest India, *S. newmani newmani* CHEVROLAT and *S. newmani macgregori* (SCHULTZE) from the Philippines, *S. stenocylindrus* FAIRMAIRE from Indochina and southwest China, *S. malayanus* sp. nov. from the Malay Peninsula, *S. sumatrensis sumatrensis* sp. nov. from Sumatra, *S. sumatrensis siberutus* ssp. nov. from Siberut Island west of Sumatra, *S. borneensis* sp. nov. from Borneo, *S. ohbayashii ohbayashii* sp. nov., *S. ohbayashii mamasanus* ssp. nov., *S. satoi satoi* sp. nov., *S. satoi masatakai* ssp. nov. and *S. mirabilis* sp. nov. from Sulawesi. A key to all species and subspecies is provided.

## Introduction

Members of the genus *Sclethrus* NEWMAN are medium to large-sized clytine beetles, well known in their general appearance as mimics of collyrine tiger beetles (SHELFORD, 1902). Adult beetles are usually found on the leaves or blossoms of the trees and freshly cut trunks of burned clearings. A total three members of the genus have so far been recorded; these are *S. stenocylindrus* FAIRMAIRE from Indochina and Southwest China, *S. amoenus* (GORY) from India, Malay Peninsula, Sumatra and Borneo, and *S. newmani* CHEVROLAT from the Philippines. *Sclethrus macgregori* (SCHULTZE), also from the Philippines, has previously been treated as a junior synonym of *S. newmani* (AURIVILLIUS, 1928; HÜDEPOHL, 1992). *Sclethrus amoenus*, the first described species of the genus has been sometimes considered to be widespread in almost the entire range of the genus, except for in the Philippines, that is the range of *S. newmani*, namely, only two species of the genus are recognized by the minimal expectation (GRESSITT &

RONDON, 1970).

During his lifetime the late Dr. Masataka SATÔ vigorously studied these interesting clytine beetles, and after his demise left us with a series of valuable specimens, as well as research data. We found them in his cabinet, preserved in the Entomological Laboratory of Ehime University, Matsuyama. We have resolved to take his study over and started to work according to the suggestions of Dr. Nobuo OHBAYASHI. Our present study could not have been completed without SATÔ's previous work.

In this paper, we revise the genus based on the series of numerous specimens from the collections preserved at the Ehime University as well as the private collections of our colleagues. We re-describe all previously known species, based on the newly collected material and their type series included in the research data of SATÔ, and describe nine new taxa including three subspecies, mainly from the Malay Peninsula, Sumatra, Borneo and Sulawesi.

We wish to kindly dedicate this paper Prof. Dr. Nobuo OHBAYASHI and Dr. Masatoshi TAKAKUWA on the occasion of their retirement from the Ehime University and the Kanagawa Prefectural Museum of Natural History, respectively.

## Historical Review

The genus *Sclethrus* was described by NEWMAN (1842) and so far, only three species have been recorded from Southeast Asia.

GORY (1833) first described *Ibidion amoenum* from Malabar, west coast of southern India. Later, NEWMAN (1842) treating the affiliation of the genus *Ibidion*, described a new genus *Sclethrus*, thus, *Ibidion amoenum* has been newly combined as *Sclethrus amoenus* and designated as the type species of the genus. However, the type species of *Sclethrus* is a misidentified specimen of *S. newmani* CHEVROLAT (1863), described later from Maldonado, Philippines. Therefore, thpe species now fixed (under Article 70.3 of the Code) as *S. newmani*, misidentified as *S. amoenus* in the original designation by NEWMAN (1842).

The genus *Sclethrus* has subsequently been re-described by WHITE (1855) and THOMSON (1860, 1864), the former author in particular re-described the species *S. amoenus*. The specimens used in the latter description were collected from the Philippines, and accordingly, they were not *S. amoenus* but rather *S. newmani*.

While CHEVROLAT (1863) described the above-mentioned new species *S. newmani*, from the Philippines, in the same paper he simultaneously re-described *S. amoenus*. Since the specimens of the re-description were also collected from the Philippines, the both described species are, most probably, identical. Thereafter, SCHULTZE (1920) established a new genus *Neocollyrodes*, with *N. macgregori* as the type species. This genus was, however, treated as a synonym of *Sclethrus* and its type species similarly a synonym of *S. newmani* by AURIVILLIUS (1928). In addition, AURIVILLIUS (1928) re-described the genus based on *S. amoenus* and *S. newmani*, added Sumatra as new locality for the former species and provided a key for these two species. Later, *N.*

*macgregori* has been distinguished from *S. newmani* by HÜDEPOHL (1992) under a new name *S. macgregori*.

LACORDAIRE (1869) re-described *Sclethrus* based on the type specimens of *Ibidion amoenum* from Malabar, India. This was the first survey observing genuine specimen of *I. amoenum* coming from the type locality after GORY's original description. At the same time, he examined some specimens in MNISZECH's collection from Malacca in the Malay Peninsula, and concluded that they also belong to *S. amoenus*. Further, PASCOE (1869) re-described the genus and *S. amoenus*, based on the specimens from Singapore and indicated India and the Philippine Islands as its localities. SHELFORD (1902) recorded *S. amoenus* on the account of specimens from Borneo. In the present paper we show that *Sclethrus* species originating from the three localities determined as *S. amoenus* by the above-mentioned authors belong to three different taxa.

FAIRMAIRE (1895) newly described *S. stenocylindrus* from Tonkin. GRESSITT (1940, 1951) recorded this species from Hainan Island, China, indicating Tonkin as its type locality. GRESSITT and RONDON (1970) considered this species as a synonym of *S. amoenus* and additionally recorded it from Laos. Besides, PU (1980) re-described the genus, observing the specimens of *S. stenocylindrus* from Hainan Island, Gangxi and Yunnan, China.

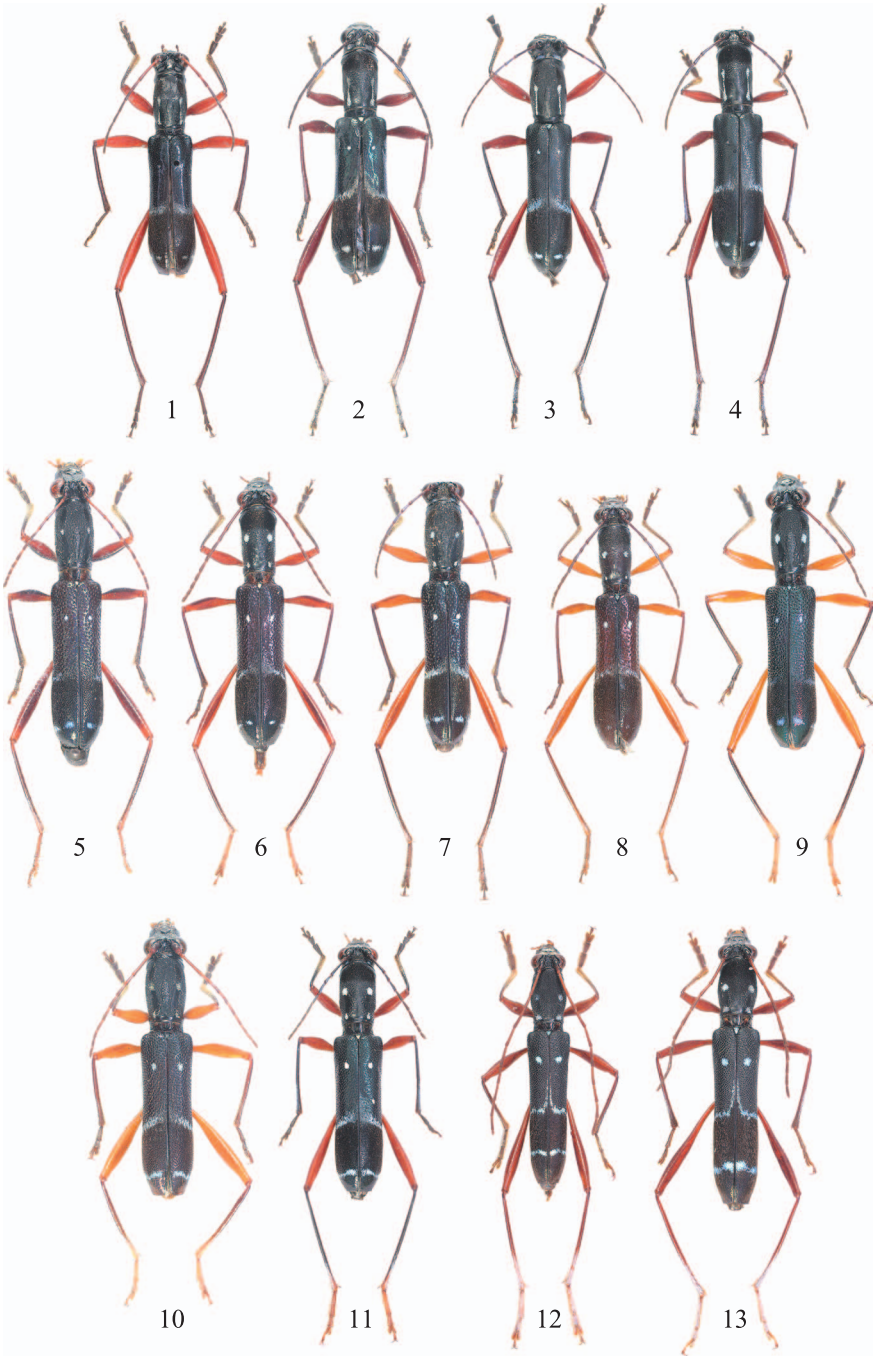
According to the above-mentioned studies, the genus *Sclethrus* is known from a wide distributional range covering southwest China including Hainan Island, Indochina, India, Malay Peninsula, Borneo, Sumatra and the Philippines. This genus hitherto included four species, *S. amoenus*, *S. newmani*, *S. macgregori* and *S. stenocylindrus*.

## Genus *Sclethrus* NEWMAN, 1842

*Sclethrus* NEWMAN, 1842, Entomol., (15): 247; type species: *Sclethrus newmani* CHEVROLAT, 1863. —— CHEVROLAT, 1863, Mem. Soc. Sci. Liége, **18**: 31. —— THOMSON, 1864, Syst. Ceramb.: 426. —— LACORDAIRE, 1869, Gen. Coleopt., **9**: 80. —— PASCOE, 1869, Trans. ent. Soc. Lond., (3) **3**: 618. —— AURIVILLIUS, 1928, Philip. J. Sci., **36**: 322. —— GRESSITT, 1940, Philip. J. Sci., **72**: 83. —— HÜDEPOHL, 1992, Entomofauna, **19**: 322.

*Neocollyrodes* SCHULTZE, 1920, Philip. J. Sci., **16**: 196; type species: *Neocollyrodes macgregori* SCHULTZE, 1920.

Medium to large clytine of elongate cylindrical body with considerably prominent eyes and closely inserted antennae, externally a few members somewhat similar to a collyrodesine tiger beetle. Color black with reddish legs (except for *S. satoi* which is almost uniformly black). Hairs and pubescence very short though partly dense, decorated with maculation of bluish-white or other pale-colored scaly pubescence on pronotum and elytra, with similar pubescence usually on head, scutellum, venter of meso- and metathoraces and abdomen; though head almost without the pubescence in ♀ (except for *S. satoi*); pronotum with a pair of pale pubescent stripes on basal half, which are usually divided into two pairs of spots or completely absent; elytra basically with three pale maculations: rounded or oblong spot at basal fifth, oblique band behind middle usually extending forwards along suture, and oblique at apical fifth; these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maculations can be enlarged or absent according to species.

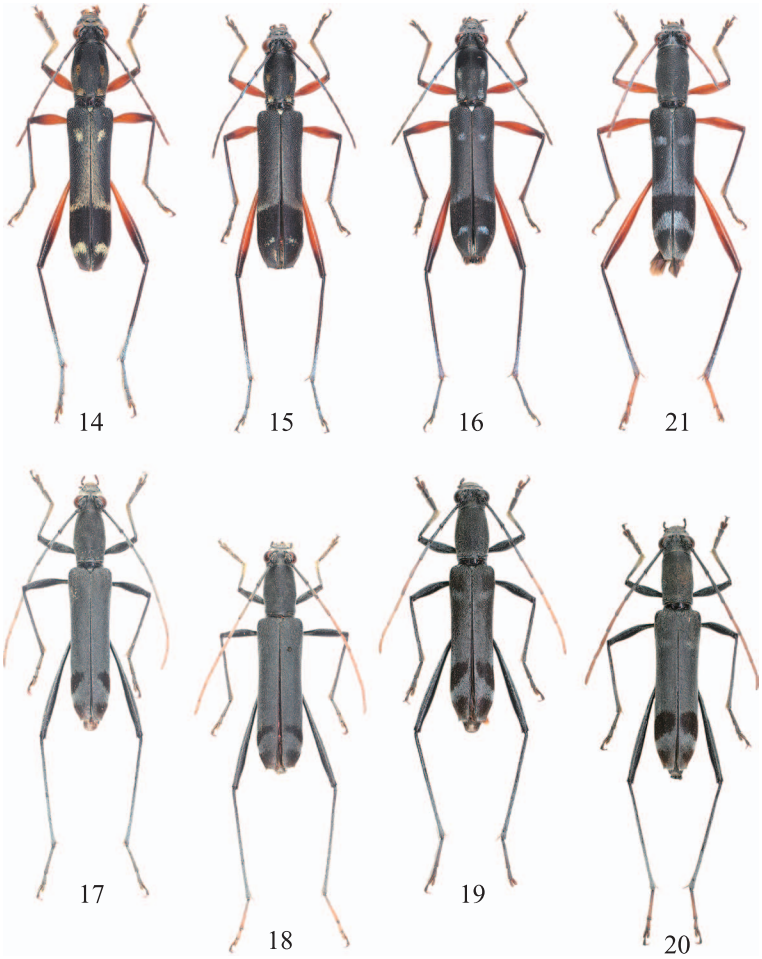
Head between large eyes markedly wider than pronotum, strongly declivous forwards; frons elongate trapezoidal, with distinct lateral margins, with a fine median carina which is raised and triangularly dilated in apical half; clypeus distinctly transverse, 1/3 the length of basal width, truncate at apical margin; mandibles short and broad, rather strongly hooked near apex, with slightly raised dent at apical third, more-less smooth, with short hairs on basal part; maxilla with rather weakly developed galea and lacinia, terminal segment of palpus elongate and weakly dilated apicad (even in ♂); vertex distinctly concave in middle, with rather approximate antennal cavities; genae very deep, though slightly shallower than lower eye-lobes; eyes large, almost completely circular, quite prominent, a little narrower than frons from frontal view. Antennae short to medium in length according to species, usually attaining the mid coxae in short form or surpassing the hind coxae in long form, filiform, usually with brief spine at apices of segments 3–4 (except for simple one in *S. amoenus* and *S. stenocylindrus*), scape stout and cylindrical, usually half the length of 3rd segment, apical eight segments more-less reduced.

Pronotum elongate barrel-shaped, usually 1.5–1.7 times as long as wide (except for that of *S. stenocylindrus* where it is 1.3–1.5 times long as wide), usually 2/5 (though in *S. ohbayashii*, *S. satoi* and *S. stenocylindrus* almost 3/10) the length of elytra, slightly narrower than the humeral width of elytra; sides arcuate in male, almost parallel or gently divergent apicad in female; disc arcuate in profile, strongly asperate, though smooth along apical and basal margins, usually with smooth stripes at sides on about basal half. Scutellum small, triangular.

Elytra elongate, more-less broadened posteriad; sides more-less prominent at humeri, gradually convergent to middle, slightly divergent from basal 2/5 to apical tenth, thence slightly arcuately convergent to apices, which have acute outer angles; disc convex especially in apical halves, moderately raised near scutellum, slightly impressed near suture just behind scutellum. Hind wing with vein Pc not reduced, attaining $1A_3+2A$, which form an ordinary H-shape.

Ventral surface largely punctured; prosternum distinctly emarginate near apical third in profile; metasternum convex, though flattened near middle; abdomen relatively

Figs. 1–13. Habitus of *Sclethrus* species from the Philippines, Borneo, Sumatra, Malay Peninsula and Indochina. —— 1, *S. newmani newmani* CHEVROLAT, ♂, from southern Leyte Is., Philippines; 2, ditto, ♀, from Quirino, C. Luzon, Philippines; 3, *S. newmani macgregori* (SCHULTZE), ♂, from Mt. Halcon, Mindoro Is., Philippines; 4, ditto, ♀ from the same locality; 5, *S. borneensis* sp. nov., holotype ♂, from Papagaran, Kalimantan, Indonesia (Borneo); 6, ditto, allotype ♀, from Crocker Range, Sabah, E. Malaysia (Borneo); 7, *S. sumatrensis sumatrensis* sp. nov., holotype ♂, from Padang, W. Sumatra, Indonesia; 8, ditto, allotype ♀ from the same locality; 9, *S. sumatrensis siberutus* ssp. nov., holotype ♂, from Bojakan, Mentawei, N. Siberut, Indonesia; 10, *S. malayanus* sp. nov., holotype ♂, from Cameron Highlands, Pahang, W. Malaysia (Malay Peninsula); 11, ditto, allotype ♀ from the same locality; 12, *S. stenocylindrus* FAIRMAIRE, ♂, from Mt. Phu-Pan, Ban Saleui, Houaphan, NE. Laos; 13, ditto, ♀ from the same locality.



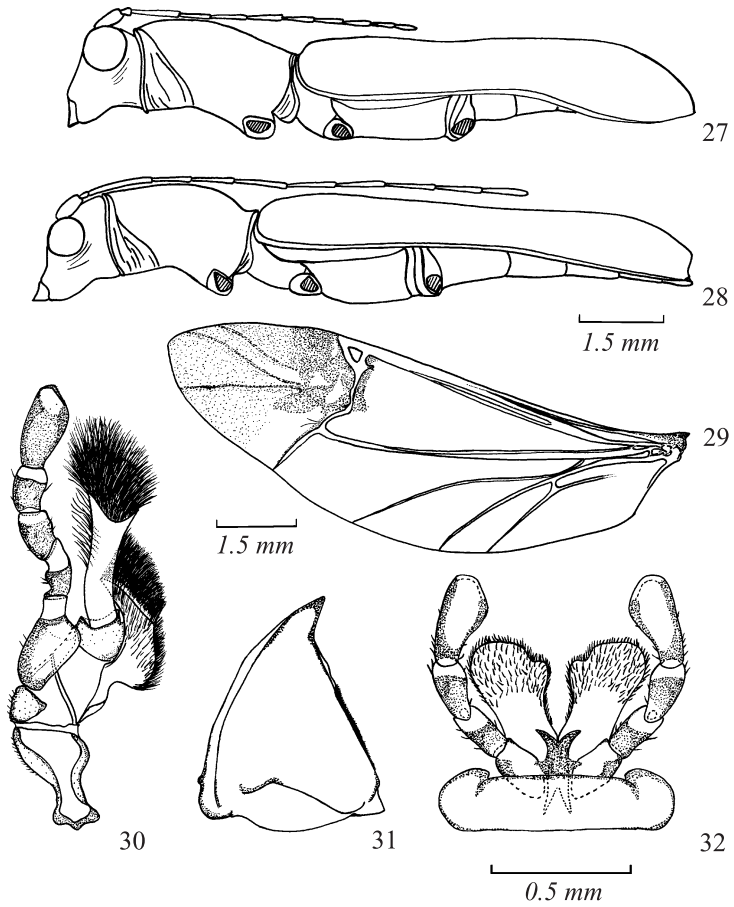

Figs. 14–21. Habitus of *Sclethrus* species from Sulawesi, Indonesia. —— 14, *S. ohbayashii ohbayashii* sp. nov., holotype ♂, from Mt. Lompobatang, S. Sulawesi (S. district), Indonesia; 15, ditto, allotype ♀ from the same locality; 16, *S. ohbayashii mamasanus* ssp. nov., holotype ♀, from Mamasa, S. Sulawesi (NW. district), Indonesia; 17, *S. satoi satoi* sp. nov., holotype ♂, from Puncak Dingin, C. Sulawesi, Indonesia; 18, ditto, allotype ♀ from the same locality; 19, *S. satoi masatakai* ssp. nov., holotype ♂, from Mamasa, S. Sulawesi (NW. district), Indonesia; 20, ditto, allotype ♀ from the same locality; 21, *S. mirabilis* sp. nov., holotype ♀, from Popayato, N. Sulawesi, Indonesia.

slender, with male anal ventrite distinctly concave (except for that of *S. malayanus* and *S. stenocylindrus*).

Legs medium to long in length; hind legs with femur exceeding elytral apices, tibia slender, baculiform, almost equal in length to femur, 1st segment of tarsus slightly shorter than twice the following two segments combined.


Figs. 22–26. Old collections of *Sclethrus* species preserved in the European museums, including the holotypes. —— 22, *S. amoenus* (GORY) (holotype of *Ibidion amoenum* GORY), from "Malabar", SW. India, (in Museum d'Histoire naturelle, Geneva, Switzerland); 23, *S. newmani* CHEVROLAT from the Philippines, misidentified as "*Ibidion amoenum* GORY by NEWMAN (1842) (in Natural History Museum, London, UK); 24, *S. newmani* CHEVROLAT (holotype), from "Maldonado", Philippines (in Muséum national d'Histoire naturelle, Paris, France); 25, *S. stenocylindrus* FAIRMAIRE (holotype), from "Tonkin" (in Muséum national d'Histoire naturelle, Paris, France); 26, *Sclethrus* sp. (aff. *S. borneensis* sp. nov.), from N. Palawan, Philippines (in National Naturhistorisch Museum, Leiden, The Netherlands).

Male genital organs rather large and distinctly elongate, 1/5 to 2/5 the length of elytra, basically similar to that of several species of *Demonax* THOMSON and its related genera. Tergite 8 usually elongate, distinctly or moderately longer than wide, concave or truncate at apical margin. Median lobe elongate, flattened in profile, ventral plate slightly longer than or almost as long as dorsal plate, gradually narrowed to apex, which is strongly pointed at the extremity; median struts slender, almost half the length of median lobe. Endophallus provided with an ear-shaped sclerite on apical half, and with minute or large spicules just behind Y-shaped sclerite. Tegmen markedly or moderately elongate; parameres usually divided in apical fifth to 2/5, (though in apical 2/3 in *S.*




Figs. 27–32. Body parts of *Sclethrus newmani macgregori* (SCHULTZE), from Mindanao Is., Philippines (27, 29–32) and *S. stenocylindrus* FAIRMAIRE, from Maetaeng, NE. Thailand (28). —— 27, 28, Body, lateral view; 29, left hind wing; 30, maxilla, ventral view; 31, mandible, dorsal view; 32, labium, ventral view.

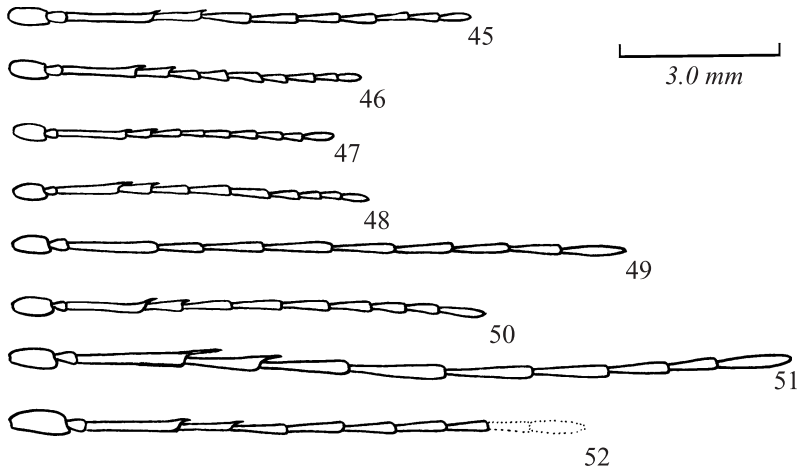
*stenocylindrus*), lobes rectangular, (except for in *S. stenocylindrus* which has them narrowly pointed), basal ridge usually strongly raised, with a few short setae near apex; ring part rather narrow or slightly wide.

*Distribution*. Southwest India, southwest China (Guangxi, Yunnan and Hainan), Indochina, Malay Peninsula, Sumatra, Siberut Islands, Borneo, Sulawesi and Philippines.

*Notes*. *Sclethrus* NEWMAN is a very peculiar clytine genus and somewhat similar in general appearance to a collyrodesine tiger beetle. Members of this genus have such unique characters as an almost glossy body with spots and bands of bluish-white scaly pubescence, strongly prominent eyes, asperate pronotal disc, distinctly emarginate


Figs. 33–44. Head of *Sclethrus* species, frontal view. —— 33, *S. newmani newmani* CHEVROLAT, ♂, from southern Leyte Is., Philippines; 34, ditto ♀, from Quirino, C. Luzon, Philippines; 35, *S. borneensis* sp. nov., holotype ♂, from Papagaran, Kalimantan, Indonesia (Borneo); 36, ditto, allotype ♀, from Crocker Range, Sabah, E. Malaysia (Borneo); 37, *S. stenocylindrus* FAIRMAIRE, ♂, from Mt. Phu-Pan, Ban Saleui, Houaphan, NE. Laos; 38, ditto, ♀ from the same locality; 39, *S. ohbayashii ohbayashii* sp. nov., holotype ♂, from Mt. Lompobatang, S. Sulawesi (S. district), Indonesia; 40, ditto, allotype ♀ from the same locality; 41, *S. ohbayashii mamasanus* ssp. nov., holotype ♀, from Mamasa, S. Sulawesi (NW. district), Indonesia; 42, *S. satoi satoi* sp. nov., holotype ♂, from Puncak Dingin, C. Sulawesi, Indonesia; 43, ditto, allotype ♀ from the same locality; 44, *S. mirabilis* sp. nov., holotype ♀, from Popayato, N. Sulawesi, Indonesia.

prosternum, concave apical margin of male anal ventrite. Judging from the structure of male genital organs this genus can be unambiguously separated from other members of the tribe Clytini. Endophallus of the median lobe is provided with an ear-shaped sclerite on apical half and with minute or large spicules just behind Y-shaped sclerite. This genus may have closer relationship with the genus *Demonax* THOMSON, despite the




Figs. 45–52. Antenna of *Sclethrus* species from the Philippines, Borneo, Sumatra, Malay Peninsula and Indochina. —— 45, *S. newmani newmani* CHEVROLAT, ♂, from southern Leyte Is., Philippines; 46, *S. borneensis* sp. nov., ♂, from Papagaran, Kalimantan, Indonesia (Borneo); 47, *S. sumatrensis sumatrensis* sp. nov., ♂, from Padang, W. Sumatra, Indonesia; 48, *S. malayanus* sp. nov., ♂, from Cameron Highlands, Pahang, W. Malaysia (Malay Peninsula); 49, *S. stenocylindrus* FAIRMAIRE, ♂, from Maetaeng, NE. Thailand; 50, *S. ohbayashii ohbayashii* sp. nov., ♂, from Mt. Lompobatang, S. Sulawesi (S. district); 51, *S. satoi satoi* sp. nov., ♂, from Puncak Dingin, C. Sulawesi; 52, *S. mirabilis* sp. nov., ♀, from Popayato, N. Sulawesi.

above-mentioned peculiarities. Members of the two genera usually share a combination of the following characters: elongate cylindrical body; elongate trapezoidal head, approximate antennal cavities and large circular eyes; antennae usually with brief spine at apices of segments 3–4; elongate barrel-shaped pronotum. Moreover, the structures of tegmen and sternite 8 of both genera are usually very similar.

Members of the genus *Sclethrus* can be divided into two morphological groups regarding the presence or absence of the terminal spines of antennal segments 3 and 4. Most members of this genus usually have their terminal spines as those of *Demonax*, though two exceptions can be found in *S. amoenus* and *S. stenocylindrus* that completely lack them. According to the previous study of the tribe Clytini, these antennal spines have been considered a very important character for the determination of the genera. Antennal spines are known as the unique character in *Demonax* and several related Asian genera as *Grammographus* CHEVROLAT, *Psilomerus* CHEVROLAT, *Clytosaurus* JORDAN and *Laodemonax* GRESSITT et RONDON. However, there is no doubt that these two morphological groups should be placed into a single genus. Most of all members of the genus *Sclethrus* share the autapomorphy on their endophalli of male genital organs (except for *S. amoenus* which is known only from a single female). Structure of endophallus is suggested as one of most important characters for determination of genera of Clytini in our recent study (HAN, unpublished). Ear-shaped sclerite and


Figs. 53–64. Pronotum of *Sclethrus* species, dorsal view. —— 53, *S. newmani newmani* CHEVROLAT, ♂, from southern Leyte Is., Philippines; 54, ditto ♀, from Quirino, C. Luzon, Philippines; 55, *S. borneensis* sp. nov., holotype ♂, from Papagaran, Kalimantan, Indonesia (Borneo); 56, ditto, allotype ♀, from Crocker Range, Sabah, E. Malaysia (Borneo); 57, *S. stenocylindrus* FAIRMAIRE, ♂, from Mt. Phu-Pan, Ban Saleui, Houaphan, NE. Laos; 58, ditto, ♀ from the same locality; 59, *S. ohbayashii ohbayashii* sp. nov., holotype ♂, from Mt. Lompobatang, S. Sulawesi (S. district), Indonesia; 60, ditto, allotype ♀ from the same locality; 61, *S. ohbayashii mamasanus* ssp. nov., holotype ♀, from Mamasa, S. Sulawesi (NW. district), Indonesia; 62, *S. satoi satoi* sp. nov., holotype ♂, from Puncak Dingin, C. Sulawesi, Indonesia; 63, ditto, allotype ♀ from the same locality; 64, *S. mirabilis* sp. nov., holotype ♀, from Popayato, N. Sulawesi, Indonesia.

spicules near Y-shaped sclerites on the endophallus are quite unique in the species of the genus. It is most probable that the antennal spines are not an important character for determining the genera of the Clytini as indicated by the previous authors.

*Sclethrus* shows distinct sexual dimorphism in several morphological characters. In the female of *S. newmani*, the type species of the genus, the structure of pronotum is quite different from that of the male; it is slenderer, though more distinctly dilated apicad, while in the male it is almost barrel-shaped, coarsely granulate on apical third of the disc, where it is indicated as a vague black band. Metasternum is almost glabrous, without dark golden hairs near middle, as it is in the male. Besides, female anal ventrite is simply arcuate on apical margin instead of deeply concave as that of male.

**Key to Species and Subspecies of the genus *Sclethrus* NEWMAN**

1(4) Antennae without any spines.

2(3) Body distinctly glossy; antennae very short, barely attaining mid coxae; pronotum almost 2/5 the length of elytra, with two pairs of bluish-white spots; elytra 3.3 times as long as the humeral width; legs bicolored light brown and black……*S. amoenus*

3(2) Body weakly glossy; antennae remarkably long, attaining hind coxae; pronotum almost 3/10 the length of elytra, with three pairs of bluish-white spots; elytra 3.3–3.6 times as long as the humeral width; legs entirely dark brown……*S. stenocylindrus*

4(1) Antenna with spines at each apex of segments 3 and 4.

5(16) Elytra clothed with few or without pubescence near suture just behind scutellum to apical 2/5.

6(13) Pronotum with two pairs of rounded pale spots; elytra clothed with long golden hairs.

7(8) Male anal ventrite almost truncate on apical margin……*S. malayanus* sp. nov.

8(7) Male anal ventrite distinctly concave on apical margin.

9(12) Elytra rather densely punctured, distances between punctures 1–1.5 times as wide as the diameter of puncture on basal 3/5 near suture; male anal ventrite concave in apical third.

10(11) Elytra strongly glossy ……*S. sumatrensis sumatrensis* sp. nov.

11(10) Elytra feebly glossy ……*S. sumatrensis siberutus* ssp. nov.

12(9) Elytra rather sparsely punctured, distances between punctures 1.5–2 times as wide as the diameter of puncture on basal 3/5 near suture; male anal ventrite concave near middle on apical 3/5……*S. borneensis* sp. nov.

13(6) Pronotum with a pair of pale stripes; elytra without long hairs on surface; male anal ventrite triangularly concave in apical third.

14(15) Elytra almost smooth, feebly finely punctured, distances between punctures 2–4 times as wide as the diameter of puncture on basal 3/5 near suture.……*S. newmani newmani*

15(14) Elytra coarsely, strongly and closely punctured, distances between punctures almost equal to the diameter of puncture on basal 3/5 near suture ·····*S. newmani macgregori*

16(5) Elytra densely clothed with pubescence near suture just behind scutellum to apical 2/5.

17(20) Pronotum with bluish-white spots or stripes; elytra with a pair of spots and two bluish-white scaly pubescent bands; male anal ventrite concave on apical fifth; legs bicolored dark brown and black.

18(19) Pronotum with two pairs of rounded bluish-white spots along longitudinal smooth stripes at sides ·····*S. ohbayashii ohbayashii* sp. nov.

19(18) Pronotum with a pair of bluish-white stripes, without longitudinal smooth stripes at sides·····*S. ohbayashii mamasanus* ssp. nov.

20(17) Pronotum without any bluish-white spot or stripe.

21(24) Antennae long, reaching the level of hind coxae even in female; pronotum densely clothed with dark grayish pubescence, visible discal punctuation occurring only near middle; elytra with two black spots on apical fourth; legs entirely black.

22(23) Elytra on basal 3/4 uniformly clothed with dark silvery pubescence; antennae, legs and ventral surface with pale gray, not bluish pubescence·····*S. satoi satoi* sp. nov.

23(22) Elytra with incomplete band of pale gray pubescence on basal sixth, external areas before and behind that pale band usually forming indistinct black stripes owing to sparse pubescence; antennae, legs and ventral surface with bluish pubescence ·····*S. satoi masatakai* ssp. nov.

24(21) Antennae short, barely surpassing the level of mid coxae even in female; pronotum sparsely clothed with short pubescence, discal punctuation entirely visible; elytra with a pair of spots and three oblique bands of bluish-white scaly pubescence; legs bicolored brown and black ·····*S. mirabilis* sp. nov.

## *Sclethrus newmani newmani* CHEVROLAT, 1863

(Figs. 1–2, 33–34, 45, 53–54, 65–71, 135)

*Sclethrus newmani* CHEVROLAT, 1863, Mem. Soc. Sci. Liége, **18**: 32, 284; type locality: Maldonado, Philippines. —— AURIVILLIUS, 1928, Philip. J. Sci., **36**: 322.

*Sclethrus amoenus*: NEWMAN, 1842, Entomol., (15): 247 [nec GORY, 1833]. —— WHITE, 1855, Cat. Coleopt. Brit. Mus., **8**: 242. —— PASCOE, 1869, Trans. ent., Soc. Lond., (3)**3**: 619. —— AURIVILLIUS, 1928, Philip. J. Sci., **36**: 323.

Body length 15.4–15.9 mm in ♂, 14.5–15.7 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color black, palpi, antennae and eyes partly brownish, strongly glossy; palpi brown; eyes, antennae and legs dark brown; legs dark reddish-brown, though femora light reddish-brown; elytra pitch-black with strongly bluish-green

tint.

Body sparsely clothed with light golden pubescence and similarly colored long hairs, partly with black pubescence, and densely with bluish-white to white pubescence, pubescence has pearly tinge in most parts (except for metasternum), sometimes paler in color and disappearing on head, pronotum, elytra, antennae, abdominal sternites and legs; head thinly covered with light golden pubescence, and with bluish-white scaly pubescence on frons, base of clypeus, around eyes and at sides of vertex; antennae densely covered with sky-blue scaly pubescence on segments 3–5; pronotum with light golden pubescence and sparsely clothed with similarly colored long hairs, with a pair of longitudinal stripes of sky-blue scaly pubescence on basal half, with a pair of oblong spots of velvety-black pubescence at sides of apical third in ♂ or entire area of identical pubescence on a level between just behind apex and apical 2/5 in ♀; scutellum with white scaly pubescence; elytra with long light golden hairs on basal 3/5, light golden hairs near apical margins, with maculation of bluish-white scaly pubescence as follows: 1) rounded spot on basal fifth, 2) rather narrow arcuate band on apical 2/5 fringing along anterior margin of black pubescent band at a level between apical 2/5 and tenth, 3) irregular sinuate band on apical tenth; prosternum with light golden hairs on apical half and densely covered with bluish-white pubescence on remaining basal surface, and rounded spots of bluish-white pubescence at sides of basal margin; mesosternum densely covered with bluish-white scaly pubescence in middle and basal sides; metasternum densely covered with light golden pubescence, with dark golden hairs near middle, sparsely clothed with white pubescence along the posterior margin; metepisternum densely clothed with white pubescence; abdomen sparsely clothed with light golden pubescence, usually fringed with bluish-white pubescence along the posterior margin of sternite 3 (disappearing in some specimens); legs sparsely covered with light golden hairs, with mid- and hind tibiae in about apical third with bluish-white scaly pubescence, hind tarsi with bluish-white scaly pubescence.

Head in both sexes 1.2–1.3 times as wide as the apical width of pronotum, partly punctured; frons almost as long as wide, moderately dilated apicad in arcuate line, depressed, though weakly raised along median carina, with rather large punctures; vertex slightly concave, with deep median groove, strongly raised towards antennal cavities, which are separated from each other by 3/5 the length of scape; genae 4/5 the depth of lower eye-lobes, with a few punctures in front or transversely furrowed below of lower eye-lobes; eyes markedly large and prominent, 4/5 the width of frons in frontal view. Antennae short, filiform, reaching basal third in ♂ or basal 3/10 in ♀ of elytra; scape stout and cylindrical, pedicel 2/5 the length of scape, segment 3 the longest, almost twice the length of scape, with an acute minute spine on inner side of apex, segment 4 also weakly dentate at apex, terminal segment oblong and blunt at the extremity.

Pronotum elongate and almost barrel-shaped, 1.6 times as long as wide in ♂ or 1.5–1.7 times in ♀, 2/5 the length of elytra, a little narrower than the humeral width of elytra; sides prominent in ♂ or distinctly divergent apicad in ♀ in a short distance from apex, slightly arcuate in ♂ or almost parallel in ♀ at a level between apical 3/10 and

basal fifth, with gently arcuate basal collar; disc strongly convex, raised near midline, strongly coarsely asperate on surface, smooth near basal and apical margins, with transverse furrows at sides near apex, with a pair of smooth longitudinal stripes and identical median one of basal half in ♂ or entirely smooth areas with sparse punctuation near middle in ♀. Scutellum small, triangular, 1/10 of the width between elytral humeri.

Elytra relatively short and broad, 3.3 times as long as the humeral width in ♂ or almost 3.0 times in ♀; sides rather distinctly prominent at humeri, gradually convergent to middle, slightly divergent from basal 2/5 to apical tenth, thence slightly arcuately convergent to apices which are arcuately truncate with small dent at inner and outer angles; disc almost flattened, slightly raised near scutellum, and impressed near suture just behind scutellum; surface almost smooth, feebly finely punctured, with distances between punctures 2–4 times as wide as the diameter of puncture on basal 3/5 near suture, and rather closely punctured at a level between apical 2/5 and tenth, though rather sparsely so in the apical rest.

Ventral surface punctured in most parts; prosternum distinctly emarginate near apical third in profile, strongly glossy and rugose on apical half, strongly asperate in the remaining surface, inter-coxal process very narrow; mesosternal process moderately wide; metasternum convex, flattened near middle; abdomen relatively slender, moderately punctured, anal ventrite triangularly concave in apical third in ♂ or slightly arcuate in ♀ at apical margin.

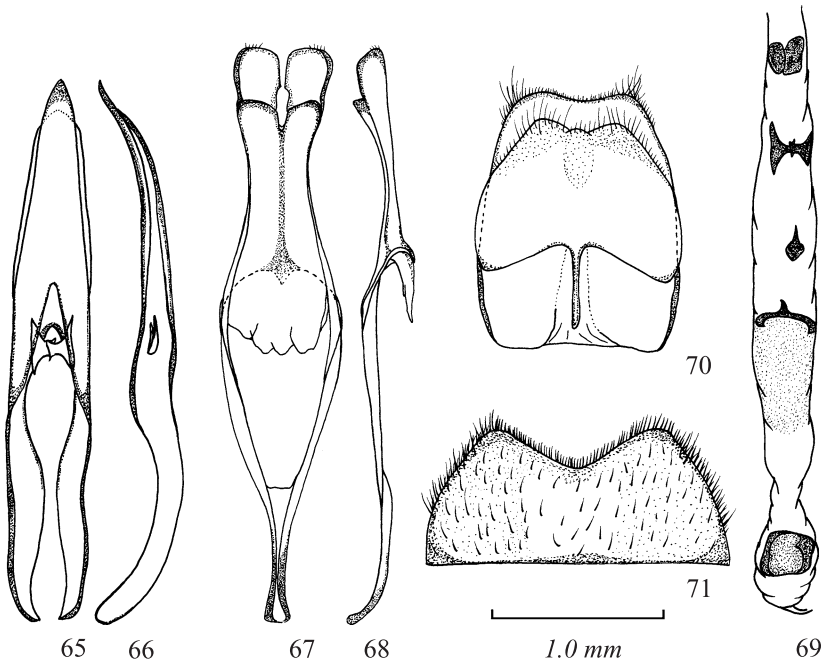
Legs relatively short, though hind femur markedly surpassing elytral apices.

Male genital organs small, median lobe nearly 1/5 the length of elytra. Tergite 8 relatively elongate, gradually narrowed in arcuate line to apex, slightly concave near middle of apical margin. Sternite 8 semicircular, distinctly narrowing to apex, which is concave at middle. Median lobe elongate and slender; dorsal plate relatively wider and a little shorter than ventral plate, distinctly narrowing to apex, which is rounded; ventral plate almost parallel-sided near base, strongly narrowing to apex, which is strongly pointed at the extremity, slightly reflex in profile; median struts slender, almost half the length of median lobe. Tegmen slightly longer than median lobe; parameres strongly elongate, a little less than half the length of tegmen, divided in apical 3/10, with lobes rectangular, with small dent at apical half of inner margin, gently arcuate at apical margins, which are provided with a few minute setae, basal ridge strongly raised. Endophallus densely provided with minute spicules behind Y-shaped sclerite at basal 3/5.

*Specimens examined*. 1 ♀, Rawis, Baseu, N. Samar Is., Philippines, 7–VI–1967, C. PLATEROS leg.; 1 ♂, Catmon, St. Bernard, S. Leyte Is., Philippines, 18–VI–1967, C. PLATEROS leg.; 1 ♀, same locality as the preceding, 19–VI–1967, C. PLATEROS leg.; 1 ♀, Mt. Makiling, Lagun, Luzon Is., Philippines, 11–V–1971, Fr. SCHOENIG leg.; 1 ♀, Quirino, C. Luzon, Philippines, V–2008.

*Distribution*. Philippines: Luzon, Samar and Leyte Islands.

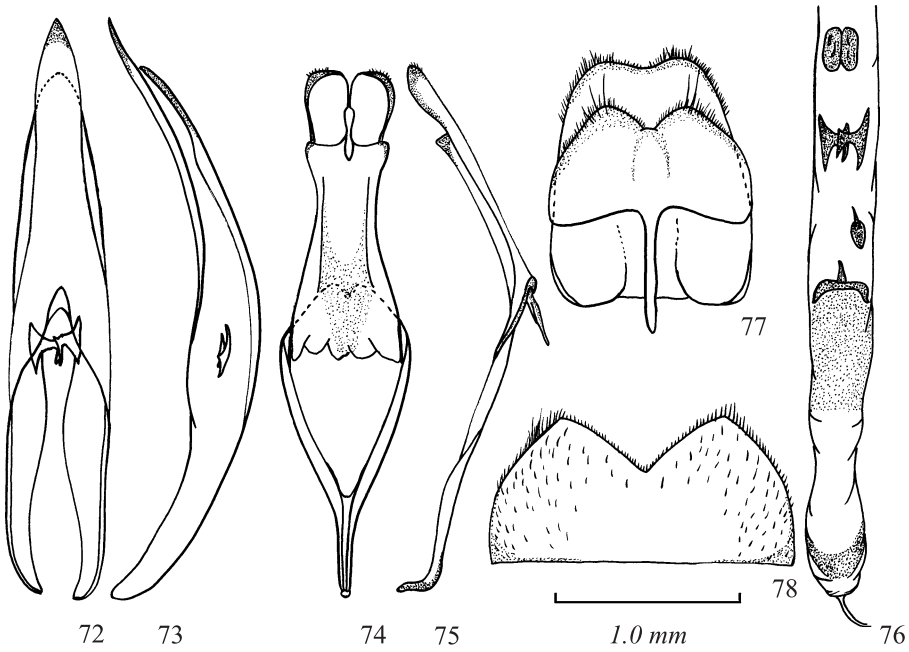
*Notes*. *Sclethrus newmani* CHEVROLAT is endemic to the Philippine Islands, and has so far been recorded from Luzon through Mindanao or Palawan. This species is




Figs. 65–71. Male genital organs and abdominal segments 7–8 of *Sclethrus newmani newmani* CHEVROLAT, ♂, from southern Leyte Is., Philippines. —— 65, Median lobe, ventral view; 66, ditto, lateral view; 67, tegmen, ventral view; 68, ditto, lateral view; 69, endophallus, ventral view; 70, tergite 8, ventral view; 71, anal ventrite, ventral view.

similar in external morphology to *S. amoenus* (GORY) from southwest India, and three allopatric species from Borneo, Sumatra and the Malay Peninsula described herein. It can be easily distinguished from these species by the lateral bluish-white stripe on the pronotum instead of three isolated spots, and sparse punctuation of elytra. However, *S. newmani* shares the elongate rectangular parameres of male genitalia with the two allopatric species from Borneo and Sumatra. These three species, including *S. newmani* can be regarded as a "species group" of the genus.

*Sclethrus newmani* shows a distinct geographical variation in the elytral punctuation. *Neocollyrodes macgregori* SCHULTZE has been described in an independent genus from Panay Island, Philippines. The Panay species has been treated as a junior synonym of *S. newmani* by the previous author (AURIVILLIUS, 1928), though it was once revised as an independent species mainly for the differences in elytral punctuation (HÜDEPOHL, 1992). According to our present examination, based on a large series of specimens, the *Sclethrus* species occurring through the Philippine Islands show two distinct geographical forms at least in the elytral punctuation, while they are constant regarding the characters of the male genital organs. We provisionally recognize them as two geographical races of *S. newmani*. The nominotypical subspecies, *S. newmani newmani*, has




Figs. 72–78. Male genital organs and abdominal segments 7–8 of *Sclethrus newmani macgregori* (SCHULTZE), ♂, from Mt. Halcon, Mindoro Is., Philippines. —— 72, Median lobe in ventral view; 73, ditto, lateral view; 74, tegmen, ventral view; 75, ditto, lateral view; 76, endophallus, ventral view; 77, tergite 8, ventral view; 78, anal ventrite, ventral view.

almost smooth elytra with sparse punctuation and is known to occur in eastern areas of the Philippines: Luzon, Samar and Leyte. *Sclethrus newmani macgregori* has densely and strongly punctured elytra and is known from western to southern areas of the Philippines.

### *Sclethrus newmani macgregori* (SCHULTZE, 1920)

(Figs. 3–4, 27, 29–32, 72–78, 136)

*Neocollyrodes macgregori* SCHULTZE, 1920, Philip. J. Sci., **16**: 196, pl. 1, fig. 5; type locality: Panay, Philippines.
*Sclethrus newmani*: AURIVILLIUS, 1928, Philip. J. Sci., **36**: 322.
*Sclethrus macgregori*: HÜDEPOHL, 1992, Entomofauna, (13): 322.

Body length 14.0–14.7 mm in ♂, 15.0–15.5 mm in ♀ (from apical margin of clypeus to elytral apices).

Identical in many respects with the nominotypical subspecies, but can easily be distinguished from it by the dense strong punctuation of the elytra (instead of the sparse punctuation in the nominotypical subspecies), with distances between punctures almost

equal to the punctures' diameter on basal 3/5 near suture.

*Specimens examined*. 1 ♀, Mindoro Is., Philippines, 3–V–1956, Fr. SCHOENIG leg.; 3 ♂♂, 3 ♀♀, Mt. Halcon, Mindoro Is., Philippines, V–2008; 1 ♀, Mt. Apo, Mindanao Is., Philippines, X–1976; 1 ♂, 15 km S. of Bislig, Mindanao Is., Philippines, 3–VII–1977, M. SATÔ leg.; 1 ♀, Surigao, N. Mindanao Is., Philippines, XII–1984, native collector leg.

*Distribution*. Philippines: Mindoro, Panay, Romblon, Negros and Mindanao Islands.

*Notes*. *Sclethrus newmani macgregori* (SCHULTZE) shows weak geographical variation in the elytral punctuation, especially around the elytral suture. For example, the population from Mindanao has dense and coarse punctuation of the elytra, while that of Mindoro has somewhat weaker punctuation. We could not directly examine the specimens from Panay, Romblon and Negros Islands in this study, and their geographical variation is not well understood. We provisionally include these populations to ssp. *macgregori*, in accordance with to the opinion expressed by HÜDEPOHL (1992).

### ***Sclethrus borneensis*** sp. nov.

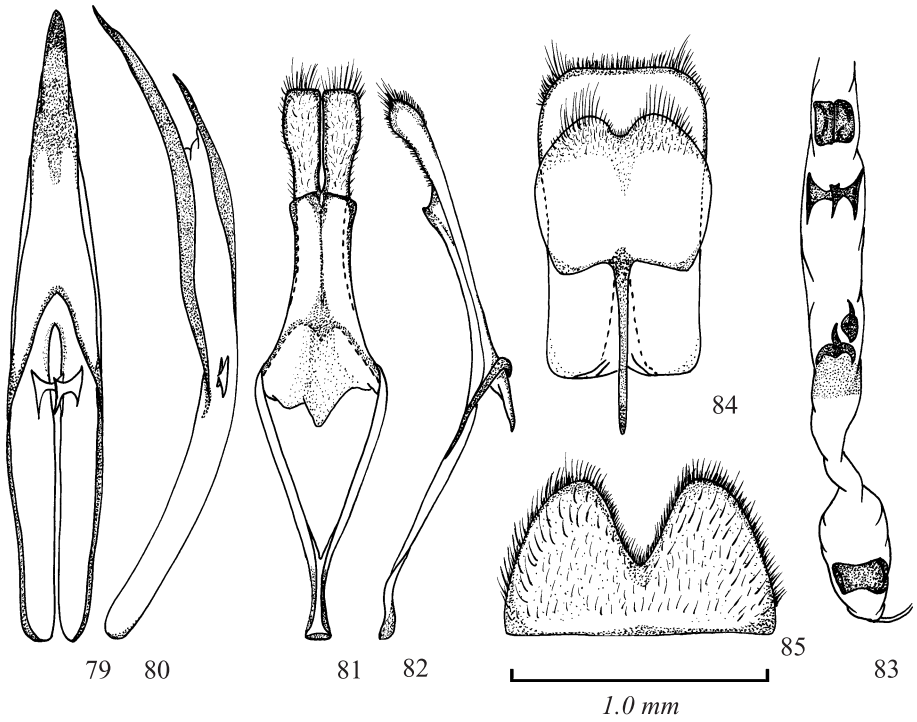
(Figs. 5–6, 35–36, 46, 55–56, 79–85, 137)

*Sclethrus amoenus*: SHELFORD, 1902, Proc. Zool. Soc. Lond., **2**: 248, pl. 19, fig. 11.

Body length 14.4–14.8 mm in ♂, 12.0–18.2 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color almost as in *S. newmani newmani*, though femora somewhat darker, elytra usually with purple or bluish-green tinge, depending on individuals. Hairs and pubescence similar to those of *S. n. newmani*, though the pubescence has pearly tinge in most parts (except for the head); antennae densely covered with sky-blue scaly pubescence on segments 3–6; pronotum with two pairs of rounded spots of bluish-white scaly pubescence at sides of middle and just before base; elytra with maculation of bluish-white scaly pubescence as follows: 1) rounded spot at basal fifth, 2) narrow oblique band in middle, almost reaching suture, 3) irregular rounded spots on apical tenth; legs with mid- and hind tibiae in about apical halves with bluish-white scaly pubescence.

Head almost as in *S. n. newmani*, though 1.2–1.4 times as wide as the apical width of pronotum in ♂; genae 2/5 the depth of lower eye-lobes; eyes 7/10 the width of frons from frontal view. Antennae almost as in *S. n. newmani*, though pedicel 1/3 the length of scape, segment 3 the longest and 1.7–1.8 times as long as scape, spine of segment 3 is 1/10 the length of the segment and 1.2–1.4 times as long as that of segment 4. Pronotum almost as in *S. n. newmani*, though slenderer and a little longer, 1.7–1.8 times as long as wide, 2/5 the length of elytra; discal smooth stripes more-less narrower than those of *S. n. newmani*. Elytra almost as in *S. n. newmani*, though slenderer and relatively elongate, 3.3–3.6 times as long as the humeral width; disc rather closely coarsely punctured, with distances between punctures 1.5–2.0 times as wide as the diameter of puncture on basal




Figs. 79–85. Male genital organs and abdominal segments 7–8 of *Sclethrus borneensis* sp. nov., from Trus Madi, Crocker Range, Sabah, N. Borneo, E. Malaysia. —— 79, Median lobe, ventral view; 80, ditto, lateral view; 81, tegmen, ventral view; 82, ditto, lateral view; 83, endophallus, ventral view; 84, tergite 8, ventral view; 85, anal ventrite, ventral view.

3/5 near suture, finely, closely and rather strongly punctured on the area between apical 2/5 and tenth, though rather sparsely so in the remaining apical surface. Ventral surface almost as in *S. n. newmani*, though anal ventrite in both sexes quite different, more deeply triangularly concave on apical 3/5 in ♂ or triangularly dented in middle in ♀. Legs as in *S. n. newmani*.

Male genital organs basically similar to that of *S. n. newmani*, though median lobe large and elongate, nearly 2/5 the length of elytra. Tergite 8 distinctly elongate, slightly dilated apicad in apical fourth, transversely truncate on apical margin. Sternite 8 rounded including apical margin, which is deeply concave in middle. Median lobe elongate and slender; dorsal plate almost equal in width to, or considerably shorter than ventral plate, strongly narrowed to weakly pointed apex; ventral plate strongly narrowed to pointed apex, reflex at apical 1/11 in profile; median struts slender, nearly half the length of median lobe. Tegmen shorter than median lobe; parameres elongate, nearly half the length of tegmen, divided in apical 3/7, lobes rectangular, though distinctly dilated to apex which is broadly truncate and with numerous short and medium-sized

setae, basal ridge strongly raised. Endophallus densely provided with minute spicules behind Y-shaped sclerite at basal 3/5.

*Type series*. Holotype ♂, Papagaran, S. Kalimantan, Indonesia, 23～30–X–2007, Y. YOKOI leg. Allotype ♀, 10.5 miles, Keningau, Kimanis Road, Crocker Range, Sabah, Borneo, E. Malaysia, 13–IV–1988, N. KOBAYASHI leg. Paratypes (2 ♂♂, 8 ♀♀): 1 ♀, Crocker Range, Keningau, Sabah, Borneo, Malaysia, 31–V–1980, S. NAGAI leg.; 1 ♀, Crocker Range, (alt. 900 m), 10 miles, NW. of Keningau, Borneo, E. Malaysia, 16–IV–1981, S. NAGAI leg.; 1 ♀, same locality and collector as the preceding, 14–XI–1981; 1 ♀, Crocker Range, (alt. 1,400 m), 16 miles, NW. of Keningau, Borneo, E. Malaysia, 13–XI–1982, S. NAGAI leg.; 1 ♀, Crocker Range, alt. 1,200 m, 21～25–III–1987, T. WAKEJIMA leg.; 1 ♂, 2 ♀♀, Bulkit Soeharto, Kalimantan, Timur, Indonesia, 15–X–1998, H. MAKIHARA leg.; 1 ♂, Trus Madi, Crocker Range, Sabah, N. Borneo, E. Malaysia, V–2002; 1 ♀, Papagaran, Barabai, S. Kalimantan, Indonesia, 23–X–2005, Y. YOKOI leg. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Borneo.

*Notes*. *Sclethrus borneensis* sp. nov. is strikingly similar to newly described species *S. sumatrensis* sp. nov., but can be distinguished from it by more deeply concave anal ventrite in the male, slenderer median lobe of the male genitalia and its ventral plate is distinctly shorter than the dorsal one. This new species is widely distributed through northern to southern areas of the island.

We examined the picture of a specimen (Fig. 26) collected from Palawan Island, (westernmost island of the Philippines), preserved at the National Naturhistorisch Museum, Leiden, The Netherlands. This specimen is externally very similar to *S. borneensis* sp. nov., though the elytral punctuation in *S. borneensis* is slightly denser. Without actual examination of the specimen it is uncertain whether the Palawan population of *Sclethrus* should be treated as a geographical race of *S. borneensis* sp. nov. or whether it represents an independent species.

### ***Sclethrus sumatrensis sumatrensis*** sp. nov.

(Figs. 7–8, 47, 86–92, 138)

Body length 11.5–14.6 mm in ♂, 12.3–16.3 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color almost as in *S. borneensis* though femora light brown. Hairs and pubescence almost as in *S. borneensis*, though abdomen fringed with bluish-white pubescence along the posterior margins of sternites 3 and 4, legs sparsely clothed with light golden hairs, with mid- and hind tibiae on about apical halves with bluish-white scaly pubescence, hind tarsi usually scattered with a few scaly pubescence.

Head as in *S. borneensis*. Antennae with segment 3 1.7–1.9 times as long as scape, segments 3 and 4 with distinctly acute spine on inner-side of each apex, spine of segment 3 is 1/10 the length of the segment itself and 1.0–2.0 times as long as that of segment 4.

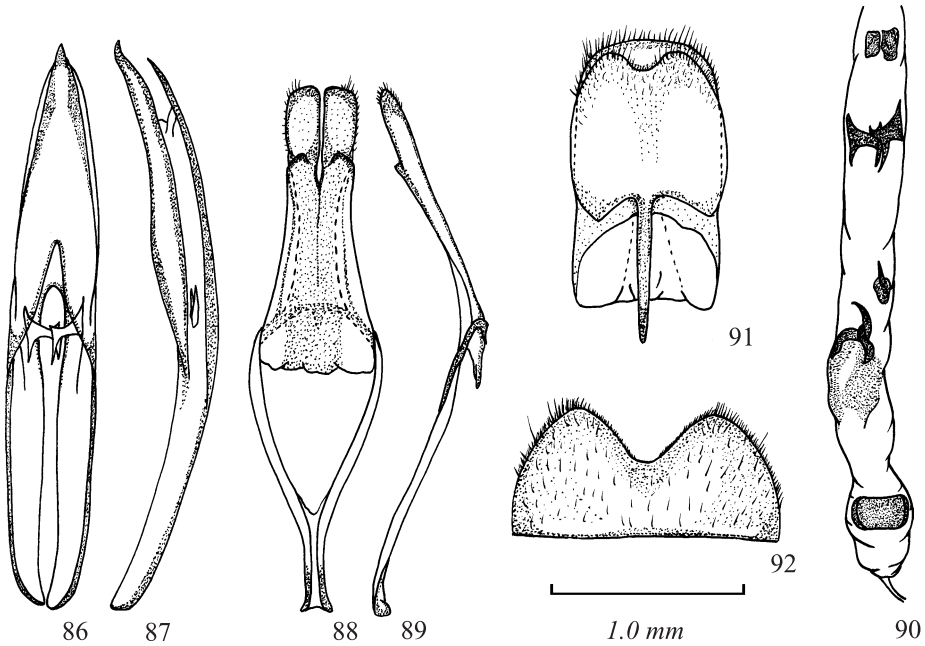
Pronotum almost as in *S. borneensis*. Elytra rather densely punctured, distances between punctures 1.0–1.5 times as wide as the diameter of puncture on basal 3/5 near suture. Anal ventrite triangularly concave on apical third, though not as deeply as that of *S. borneensis* in ♂, slightly arcuate in ♀.

Male genital organs basically similar to those of *S. borneensis*, though differing from it in several details. Tergite 8 almost parallel-sided in apical 3/5, gently arcuate on apical margin. Sternite 8 elongate ovate, distinctly emarginate near middle of apical margin. Median lobe not as elongate as in *S. borneensis*, moderately wide, dorsal plate slightly shorter than ventral plate; ventral plate reflex at short extremity in profile. Tegmen with parameres divided on apical 4/9, lobes arcuate at external sides, slightly oblique on apical margins, which are provided with a few long short setae. Endophallus densely provided with minute spicules behind Y-shaped sclerite on basal 7/10.

*Type series*. Holotype ♂, Padang, W. Sumatra, Indonesia, V–1994, native collector leg. Allotype ♀, same data as the holotype. Paratypes (69 ♂♂, 23 ♀♀): 1 ♀, Ache, N. Sumatra, Indonesia, I–1984, native collector leg.; 1 ♂, Bandar Baru, N. Sumatra, Indonesia, 1–V–1988, S. SAITO leg.; 44 ♂♂, 6 ♀♀, same data as the holotype; 2 ♂♂, Mt. Singgalang, W. Sumatra, Indonesia, V–1995, native collector leg.; 1 ♂, 1 ♀, P. D. Pariaman, W. Sumatra, Indonesia, X–1996, native collector leg.; 1 ♀, Simantung, W. Sumatra, Indonesia, X–1996, native collector leg.; 1 ♂, Harau Valley, W. Sumatra, Indonesia, V–1999, native collector leg.; 2 ♂♂, Harau Valley, (700 m in alt.), W. Sumatra, Indonesia, VI～VII–2004, native collector leg.; 1 ♀, Harau Valley, (500～800 m in alt.), W. Sumatra, Indonesia, III～VI–2005; 1 ♂, 1 ♀, Sungai Gelam, 25 m in alt., Jambi, S. Sumatra, Indonesia, 2–II–2006, H. TAKIZAWA leg.; 5 ♂♂, 4 ♀♀, Harau Valley, (600 m in alt.) ca 20 km N of Payakumbuh W. Sumatra, Indonesia, IV–2007, St. JÁKL leg.; 2 ♂♂, same locality and collector as the preceding, VIII–2007; 4 ♂♂, 3 ♀♀, same locality and collector as the preceding, but 600～800 m in alt., VII–2007; 4 ♂♂, 2 ♀♀, same locality and collector as the preceding, but 600～800 m in alt., IX–2007; 2 ♂♂, 1 ♀, Riau Prov., Road to Dumai, Duri Env., (0～100 m in alt.) 20 km N of Payakumbuh, E. Sumatra, Indonesia, I–2007, St. JÁKL leg.; 2 ♀♀, Belitung Is., W. Sumatra, Indonesia, IV–1996, native collector leg. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: Sumatra (main island) and Belitung Is.

*Notes*. Three allopatric species, *S. borneensis* sp. nov. from Borneo, *S. newmani* CHEVROLAT from the Philippines and the present new species may form a "species group" since they share many similar structures of their external and genitalic morphologies. *Sclethrus sumatrensis* sp. nov. can be distinguished from the two similar species by sparser punctuation of the elytral surface, more shallowly concave apical margin of the male anal ventrite and wider median lobe of the male genital organs, as well as the elongate and almost rectangular parameres with distinctly raised basal ridges.




Figs. 86–92. Male genital organs and abdominal segments 7–8 of *Sclethrus sumatrensis sumatrensis* sp. nov., from Padang, W. Sumatra, Indonesia. —— 86, Median lobe, ventral view; 87, ditto, lateral view; 88, tegmen, ventral view; 89, ditto, lateral view; 90, endophallus, ventral view; 91, tergite 8, ventral view; 92, anal ventrite, ventral view.

### ***Sclethrus sumatrensis siberutus*** ssp. nov.

(Figs. 9, 93–99)

Body length 16.0 mm in ♂ (from apical margin of clypeus to elytral apices).

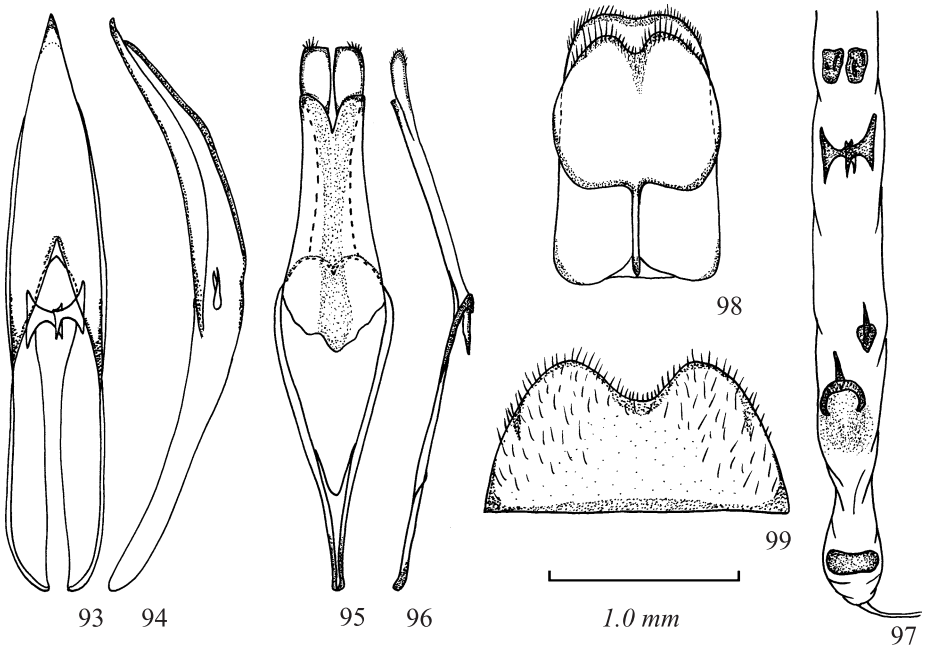
M a l e. Very similar in body coloration and structure to the nominotypical subspecies from the main island of Sumatra and Belitung Is., but markedly different from the it in the elytral structure which is distinctly dull on its surface and more strongly punctured, and also the sternite 8 is slightly concave in middle of apical margin instead of the truncate apical margin in the nominotypical subspecies.

F e m a l e. Unknown.

*Type specimen*. Holotype ♂, Bojakan, N. Siberut, Mentawei, Indonesia, X～XI–2004, native collector leg. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: Siberut Island.

*Notes*. Although these two forms differ in their external morphologies, their male genitalia are almost identical.




Figs. 93–99. Male genital organs and abdominal segments 7–8 of *Sclethrus sumatrensis siberutus* ssp. nov., from Bojakan, Mentawei, N. Siberut, Indonesia. —— 93, Median lobe, ventral view; 94, ditto, lateral view; 95, tegmen, ventral view; 96, ditto, lateral view; 97, endophallus, ventral view; 98, tergite 8, ventral view; 99, anal ventrite, ventral view.

### ***Sclethrus malayanus*** sp. nov.

(Figs. 10–11, 48, 100–106, 139)

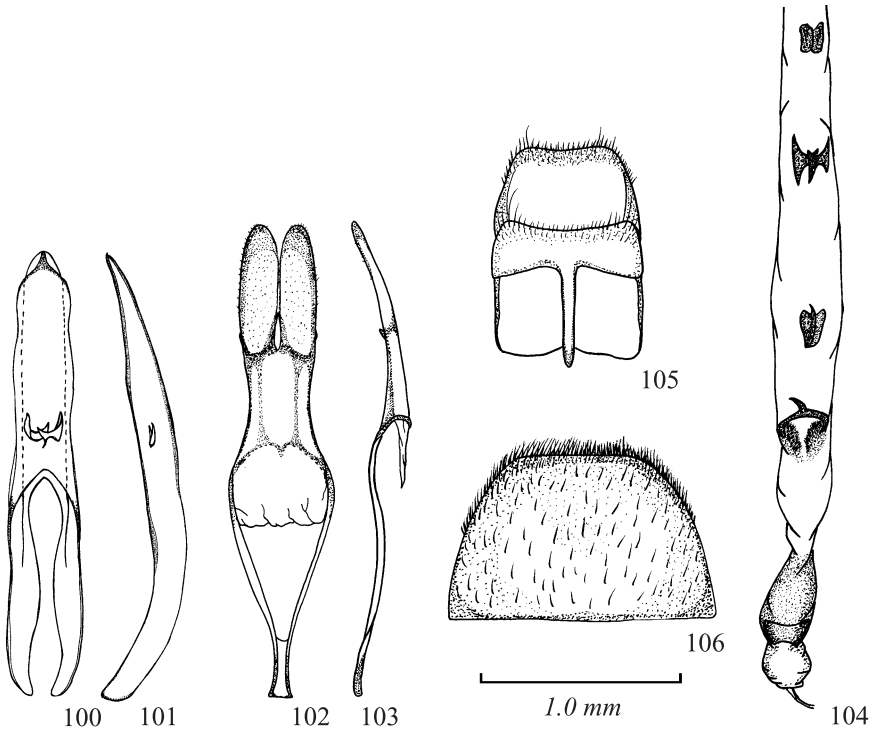
*Sclethrus amoenus*: PASCOE, 1869, Trans. Ent., Soc. London, (3)**3**: 619 (partim).

Body length 9.7–15.5 mm in ♂, 12.0–19.0 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Externally similar to *S. borneensis* and barely differing from it, however, the structure of its genital organ is very different.

Color almost as in *S. borneensis*. Hairs and pubescence almost as in *S. borneensis*, though elytra rather moderately clothed with long light golden hairs on basal 3/5.

Head including antennae almost as in *S. borneensis*. Pronotum shorter than that of *S. borneensis*, 1.7–1.8 times as long as wide. Elytra as in *S. borneensis*, though 3.2–3.4 times as long as the humeral width and more closely punctured; distances between punctures equal in width to, or a little less than the diameter of puncture near middle. Anal ventrite not similar to that of *S. borneensis*, almost truncate on apical margin in ♂ or medially triangularly produced in ♀. Legs relatively short, hind femora slightly exceeding elytral apices.




Figs. 100–106. Male genital organs and abdominal segments 7–8 of *Sclethrus malayanus* sp. nov., from Cameron Highlands, Pahang, W. Malaysia (Malay Peninsula). —— 100, Median lobe, ventral view; 101, ditto, lateral view; 102, tegmen, ventral view; 103, ditto, lateral view; 104, endophallus, ventral view; 105, tergite 8, ventral view; 106, anal ventrite, ventral view.

Male genital organs medium in size, median lobe nearly 3/10 the length of elytra. Tergite 8 relatively elongate, slightly arcuate at sides, gently emarginate on apical margin. Sternite 8 transverse quadrate, slightly emarginate on apical margin. Median lobe moderately elongate and slender; dorsal plate narrower and little shorter than ventral plate, almost parallel at sides, bluntly rounded on apex; ventral plate distinctly sinuate at sides, rounded on apex, with acutely pointed extremity; median struts slender, nearly half the length of median lobe. Tegmen slightly longer than median lobe; parameres elongate and elliptical, a little longer than half the length of tegmen, divided in apical half, with lobes elongate oblong, margin completely rounded, with few minute setae, basal ridge weakly raised. Endophallus densely provided with large spinous spicules behind Y-shaped sclerite on basal 7/10.

*Type series*. Holotype ♂, Cameron Highlands, Pahang, W. Malaysia, V～VII–1985, native collector leg. Allotype ♀, same data as the holotype. Paratypes (22 ♂♂, 8 ♀♀): 7 ♂♂, 1 ♀, same data as the holotype; 4 ♂♂, 1 ♀, same locality as the preceding, III～IV–1985; 3 ♂♂, 1 ♀, same locality as the preceding, 27–III–1978, Y. KIYOYAMA

leg.; 1 ♂, same locality as the preceding, 1–V–1985; 1 ♂, same locality as the preceding, V～VI–1985; 1 ♂, same locality as the preceding, III–1986; 4 ♂♂, 3 ♀♀, Tanah Rata, Cameron Highlands, W. Malaysia, 30–IV–1992, native collector leg.: 1 ♂, 19 mile, Cameron Highlands, (alt. ca 650 m), Pahang, W. Malaysia, 29–III–2008, N. OHBAYASHI leg.; 1 ♀, same locality as the preceding, 2007～2008, native collector leg.; 1 ♀, Ulu Gonbak, W. Malaysia (no further data). Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Malaysia: Malay Peninsula.

*Notes*. *Sclethrus malayanus* sp. nov. is strikingly similar in the external morphology and the pubescent maculation to *S. borneensis* sp. nov. and *S. sumatrensis sumatrensis* sp. nov., but clearly separable from the latter two by closely strongly punctured elytra, truncate apical margin of anal ventrite even in the male. This new species can be surely differentiated from the two similar species by the structures of male genital organs. Median lobe with ventral plate has sinuate sides and acutely pointed extremity; parameres have elongate oblong lobes.

Large series of specimens of this new species have been collected mainly from Cameron Highlands, central mountains of the Malay Peninsula; except for a single specimen from Ulu Gonbak Forest Reserve, near the southeast coast of the peninsula.

## *Sclethrus amoenus* (GORY, 1833)

(Fig. 22)

*Ibidion amoenum* GORY, 1833, Mag. Zool., **3**, Ins. pl. 58; type locality: Malabar, India.
*Sclethrus amoenus* PASCOE, 1869, Trans. ent., Soc. London, (3)**3**: 619 (partim).

*Original description*. "cylindrico, violaceo, thorace quatuor punctis, elytris duobus punctis fasciis duabusque cyaneis argentatis.

Long 19 millim, larg 4 mill.

Corps cylindrique, front aplati, tête triangulaire, yeux très gros; corselet cylindrique, trés allongé; écusson petit, triangulaire; élytres paralléles, carrés à leur base, légèrement tronqués à leur extrémité.

Entièrement violacé sur le corselet; quatre petits points sur chaque élytre, un point placé à hauteur des secondes pattes; deux lignes transversales, la première vers les deux tiers de leur longueur et la deuxième presque à leur extrémité. Tous ces points et lignes bleu argenté; sur le corselet et prés de la tête, une bande transversale noir velouté. Élytres, depuis la première ligne jusqu' à I'extrémité, noir velouté. Cuisses ferrugineuses; pattes noiràtres; tarses fauves. Sur le métathorax et le premier segment de l'abdomen, une ligne bleu argenté.

Cet insecte vient de la côte de Malabar, et fait partie de la collection de M. Melly."

*Distribution*. Southwest India (Malabar).

*Notes*. *Sclethrus amoenus* (GORY) was originally described in the genus *Ibidion* THOMSON based on a single specimen collected from Malabar, southwest India. Based

on the external similarities, previous authors usually considered this species to be widespread, occurring in Indochina, Malay Peninsula, Borneo and the Philippines.

The late Dr. Masataka SATÔ examined the holotype of *S. amoenus* preserved at the Museum d'Histoire Naturelle, Geneva, Switzerland, and left his private notes and photographs of the holotype as well as its data labels in a cabinet file. We were able to examine his research data, and they are shown on Fig. 22. According to SATÔ's notes and the original description by GORY, *S. amoenus* is doubtlessly an independent species endemic to southwest India, and at least according to our present knowledge it can be discriminated from all other species of the genus. Although *S. amoenus* is actually similar in external morphology to *S. malayanus* sp. nov. and *S. borneensis* sp. nov., its antennal segments are simple and without any spines.

### ***Sclethrus ohbayashii ohbayashii*** sp. nov.

(Figs. 14–15, 39–40, 50, 59–60, 107–113, 141)

Body length 17.2–21.0 mm in ♂, 19.0–20.5 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color black, palpi, eyes and antennae except for brighter apical segments partly brownish, feebly glossy; legs black, with reddish-brown femora except for blackish apical parts; elytra matted grayish-black, though on apical 2/5 pitch-black.

Body sparsely clothed with light golden pubescence and identically colored long hairs, partly with short black setae, densely covered with bluish-white to white pubescence, pubescence has pearly tinge in most parts except for metathorax, sometimes paler in color and disappearing on head, elytra, antennae, abdominal sternites and legs; head sparsely covered with light golden pubescence, with bluish-white scaly pubescence on frons, base of clypeus, around eyes and at sides of vertex in ♂ or almost without scaly pubescence even in frons in ♀; antennae on segments 3–5 rather sparsely clothed with sky-blue scaly pubescence; pronotum with light golden long hairs and pubescence, with two pairs of rounded spots of bluish-white scaly pubescence medio-laterally and just before base, with a pair of oblong spots of velvety-black pubescence on apical third in ♂ or entirely covered with identical pubescence on apical 2/5 in ♀; scutellum with white scaly pubescence; elytra sparsely covered with long light golden hairs on basal 3/5, densely covered with short black pubescence at a level between apical 2/5 and apical tenth, sparsely so on the remaining apical surface, with light golden hairs near apical margins, with maculation of bluish-white scaly pubescence as follows: 1) oblique spot on basal sixth (though disappearing in 1 ♂ and 3 ♀♀ paratypes), 2) narrow oblique band at apical 2/5 extending forwards along sutural margin just behind scutellum, 3) incomplete short band at apical seventh; prosternum sparsely clothed with light golden hairs on apical half and densely covered with bluish-white pubescence on the remaining part of prosternal base, with rounded spot of bluish-white pubescence at sides near basal margin; mesosternum densely covered with bluish-white scaly pubescence near middle

and at sides of basal margin; metasternum densely covered with light golden pubescence, with dark golden hairs near middle, sparsely clothed with white pubescence along the posterior margin; metepisternum densely covered with bluish-white pubescence; abdomen densely covered with light golden pubescence, with bluish-white pubescence on all ventrites in ♂ or on ventrites 1–2 and 5 in ♀, though the scaly pubescence sometimes disappears; legs sparsely clothed with light golden hairs, with mid- and hind tibiae on about apical halves with bluish-white scaly pubescence, hind tarsi densely covered with bluish-white scaly pubescence.

Head in both sexes 1.2–1.3 times as wide as the apical width of pronotum, rather closely punctured, somewhat rugosely so on posterior part; frons a little longer than basal width, moderately dilated apicad in arcuate line, with distinctly raised median carina; clypeus gently convex, gently emarginate on apical margin; vertex slightly concave, strongly raised towards antennal cavities which are separated from each other by 3/5 the length of scape; genae 3/5 the depth of lower eye-lobes, coarsely punctured; eyes 2/3 the width of frons in frontal view. Antennae rather short, filiform, reaching basal 2/5 in ♂ or 3/10 in ♀ of elytra; scape stout and cylindrical, pedicel 1/4 the length of scape, segment 3 the longest and 1.9–2.0 times as long as scape, segments 3 and 4 with strongly acute spine on inner-side of apices, spine of segment 3 1/9 the length of the segment itself and 1.2–1.7 times as long as that of segment 4, segment 5 also with very feeble spine, reduced to a brief dent in ♂, terminal segment oblong and blunt at the extremity.

Pronotum elongate barrel-shaped, 1.5–1.6 times as long as wide, 3/10 the length of elytra, a little narrower than the humeral width of elytra; sides well rounded in ♂ or distinctly divergent apicad in ♀ in a short distance from apex, rather moderately arcuate in ♂ or slightly convergent basad in gently arcuate line in ♀, widest in middle in ♂ or just behind apex in ♀, basal collar gently arcuate in ♂ or gently dilated basad in ♀; disc rather convex, rather distinctly raised near midline, strongly asperate on surface, though smooth along apical and basal margins, with a pair of smooth stripes on longitudinal parts between the pale pubescent spots in middle and just before base, and supplemented with a pair of approximate smooth spots in ♂ or entirely oblong smooth area in ♀ in middle near base. Scutellum small, triangular, 1/10 the width of elytral humeri.

Elytra relatively elongate, almost 3.3 times as long as humeral width; sides strongly prominent at humeri, gradually convergent medially, slightly divergent from basal 3/5 to apical tenth, thence slightly arcuately convergent to apices which have blunt triangular inner and outer angles; disc almost flattened, moderately raised near scutellum, slightly impressed near suture just behind scutellum; surface strongly coarsely punctured on basal 3/5, finely, closely and rather strongly punctured on area between apical 2/5 and tenth, though rather sparsely so on the remaining apical area.

Ventral surface punctured on most parts; prosternum glossy and rugose on apical half, strongly asperate on the remaining surface; inter-coxal process very narrow; mesosternal process moderately wide; metasternum convex, flattened near middle; abdomen slender, moderately punctured, apical margin of anal ventrite arcuately

concave on apical fifth in ♂ or slightly arcuate in ♀.

Legs relatively short; hind legs rather elongate, femora distinctly exceeding elytral apices, weakly gradually dilated in apical 2/3.

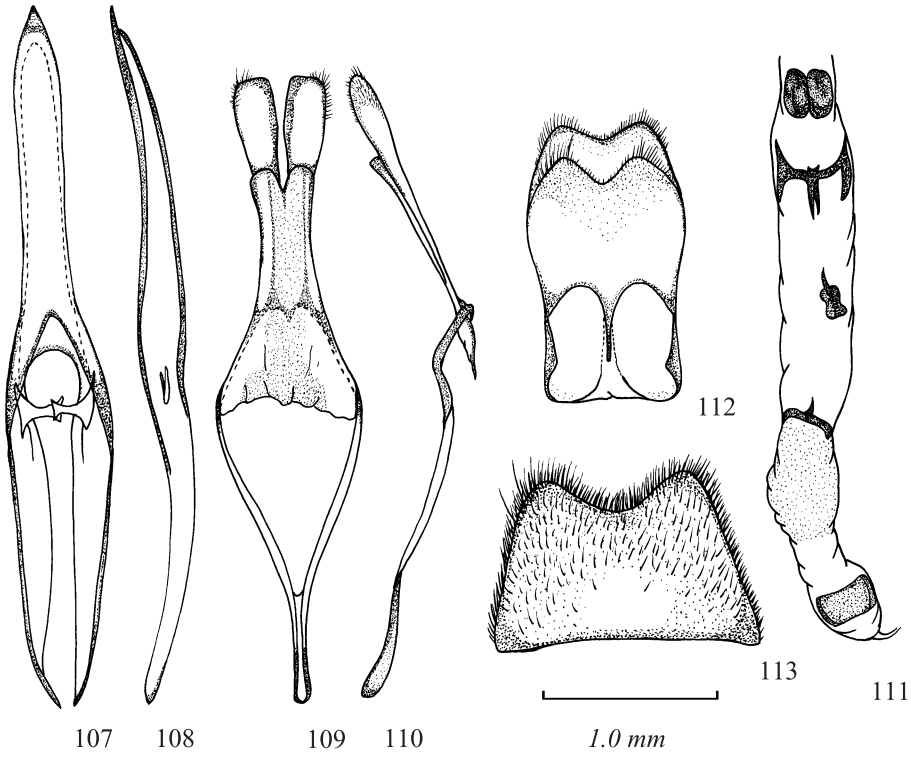
Male genital organs large, median lobe nearly 2/5 the length of elytra. Tergite 8 distinctly elongate, thickened apicad, sides parallel on basal 2/5, arcuately divergent to apical third, thence convergent to apex that is widely triangularly emarginate. Sternite 8 longer than wide, deeply triangularly concave in middle of apical margin. Median lobe remarkably elongate and slender; dorsal plate narrower and slightly shorter than ventral plate, almost parallel at sides, bluntly pointed at apex; ventral plate with sides almost parallel in basal half, slightly divergent to apical fourth, strongly pointed at the extremity; median struts slender, nearly half the length of median lobe. Tegmen slightly shorter than median lobe; parameres elongate, a little shorter than half the length of tegmen, moderately dilated apicad, divided in apical half, lobes rectangular, slightly dilated apicad, apical margin truncate, with a few medium-sized setae and numerous short ones, basal ridge distinctly raised. Endophallus sparsely provided with minute spicules behind Y-shaped sclerite at basal 4/5.

*Type series*. Holotype ♂, Mt. Lompobatang, Sulawesi Selatan, Sulawesi, Indonesia, 21～26–XII–1999, M. SATÔ leg. Allotype ♀, Mt. Lompobatang, Sulawesi Selatan, Sulawesi, Indonesia, 21～26–XII–1999, N. OHBAYASHI leg. Paratypes (3 ♂♂, 4 ♀♀): 1 ♀, Pulpul, S. Sulawesi, Indonesia, I–1989; 1 ♀, Mt. Lompobatang, Sulawesi Selatan, S. Sulawesi, Indonesia, 2–I–1997, W. SUZUKI leg.; 1 ♂, 1 ♀, same data as the allotype; 1 ♂, Puncak Palopo, Sulawesi, Indonesia, 2～5–I–2003, Y. YOKOI leg.; 1 ♂, Mt. Lompobattang, S. Sulawesi, 28–II–2007, native collector leg.; 1 ♀, Puncak Palopo, 25 km W from Palopo, S. Sulawesi Indonesia, X–2008, native collector leg. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: South Sulawesi.

*Notes*. Three species and two subspecies of the genus *Sclethrus* are firstly recorded from the island of Sulawesi, Indonesia, east of the Wallace line. They are easily recognized from other members of the genus by the features of their external morphologies, *e.g.* devoid of gloss on body surface especially the black parts. These three species from Sulawesi are probably allopatric on the island and their localities are as follows: *S. ohbayashii ohbayashii* sp. nov. is known from South Sulawesi, *S. o. mamasanus* ssp. nov. and *S. satoi masatakai* ssp. nov. are known from northwestern district of South Sulawesi, *S. satoi satoi* sp. nov. is known from central Sulawesi and *S. mirabilis* sp. nov. is known from north Sulawesi. Although all these species from Sulawesi doubtlessly represent independent species, they may be related with the three allopatric species from the neighboring islands: *S. newmani* CHEVROLAT from the Philippines, *S. sumatrensis* sp. nov. from Sumatra and *S. borneensis* sp. nov. from Borneo, especially regarding the structure of male genital organs. Despite their differences in external morphologies true affinities between these allopatric species may be rather close.

*Sclethrus ohbayashii ohbayashii* sp. nov. from South Sulawesi has unique characters




Figs. 107–113. Male genital organs and abdominal segments 7–8 of *Sclethrus ohbayashii ohbayashii* sp. nov., from Mt. Lompobatang, S. Sulawesi (S. district), Indonesia. —— 107, Median lobe, ventral view; 108, ditto, lateral view; 109, tegmen, ventral view; 110, ditto, lateral view; 111, endophallus, ventral view; 112, tergite 8, ventral view; 113, anal ventrite, ventral view.

that separate it from other members of the genus as follows: 1) pronotum with two bluish spots; 2) elytra with bluish-white pubescent band along suture behind scutellum; 3) male genitalia with elongate median lobe, ventral plate almost parallel-sided.

### ***Sclethrus ohbayashii mamasanus*** ssp. nov.

(Figs. 16, 41, 61, 142)

Body length (in ♀) 19.7–21.8 mm (from apical margin of clypeus to elytral apices).

F e m a l e. Basically in many respects similar including the structure of male genital organs to the nominotypical subspecies, *S. o. ohbayashii*, but differing from it by the presence of a pair of arcuate bluish-white stripes between middle and base of pronotum instead of two pairs of spots as in *S. o. ohbayashii*; lacking a pair of longitudinal smooth stripes on basal half of pronotum and the bluish-white scaly pubescence along posterior margins of all ventrites.

M a l e. Unknown.

*Type series*. Holotype ♀, Salubassi, Sumarorong, Mamasa, S. Sulawesi, Indonesia, 24～26–XII–2006, S. SAITO leg. Paratypes (3 ♀♀): 2 ♀♀, Mamasa, S. Sulawesi, Indonesia, VII–2005, native collector leg.; 1 ♀, same data as the holotype. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: northwest district of South Sulawesi.

*Notes*. Though described as a local race of the preceding species, *S. ohbayashii mamasanus* ssp. nov. is quite different from the nominotypical race in the arrangement of pubescent maculation and the absence of smooth discal stripes on the pronotum. Unfortunately, we were unable to examine any male specimen. The true affinities of both populations will be revealed when a male specimen from Mamasa, type locality of this new subspecies, is captured.

Mamasa is a mountainous area of northwestern district of South Sulawesi. The locality is only 60 km from Puncak Palopo which is one of the nearest localities of the nominotypical subspecies. Mamasa is also the type locality of the geographical race of the newly described *S. satoi* will be described in the latter pages.

### ***Sclethrus satoi satoi*** sp. nov.

(Figs. 17–18, 42–43, 51, 62–63, 114–120, 143)

Body length 14.7–16.4 mm in ♂, 13.9–19.0 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color largely black, almost devoid of gloss, eyes brown, palpi dark brown, antennae bicolored: basal five segments black, apical six segments pale yellowish-brown; elytra grayish-black; hind tarsus in female pale yellowish-brown.

Body with dark silvery pubescence, sparsely clothed with golden pubescence and identically colored long hairs, partly clothed with short black pubescence; head densely covered with dark silvery pubescence; antennae on basal four segments sparsely covered with dark silvery pubescence, segments 5–7 densely covered with light silvery pubescence; pronotum densely covered with dark silvery pubescence, without long hairs; scutellum sparsely clothed with dark silvery pubescence; elytra densely covered with dark silvery pubescence, with two bands of black pubescence on apical part, of which an oblique band on apical 3/10 reaches just before suture, and an irregular band on apical tenth; prosternum sparsely clothed with long light silvery hairs on apical third and densely covered with dark silvery pubescence on the remaining basal surface; mesosternum, metasternum, metepisternum and abdomen densely covered with dark silvery pubescence; anal ventrite along apical margin covered with pale golden pubescence; legs sparsely clothed with dark silvery pubescence, on apical 2/3 of fore tibia densely covered with golden pubescence, on mid- and hind tibiae densely covered with white pubescence.

Head in ♂ 1.2–1.3 times or 1.3–1.4 times in ♀ as wide as the apical width of pronotum, closely coarsely punctured; frons subtrapezoidal, weakly dilated apicad, 1.4

times as long as its basal width, flattened, with a median costa moderately raised apicad; vertex flattened or weakly concave between antennal cavities that are separated from each other by half the length of scape; genae a little shallower than the depth of lower eye-lobes from frontal view, punctured on surface; eyes quite prominent, 3/5 the width of frons from frontal view. Antennae very long and filiform, reaching apical 2/9 in ♂ or apical third in ♀ of elytra; scape quadrate, with coarse punctures, segment 3 the longest, about twice the length of scape, with strongly acute spine at each inner-side of apex which is 1/10 the length of the segment, and 1.5–2.0 times as long as that of segment 4, though reduced as a brief dent depending on individuals, terminal segment gently arcuate and blunt at the extremity.

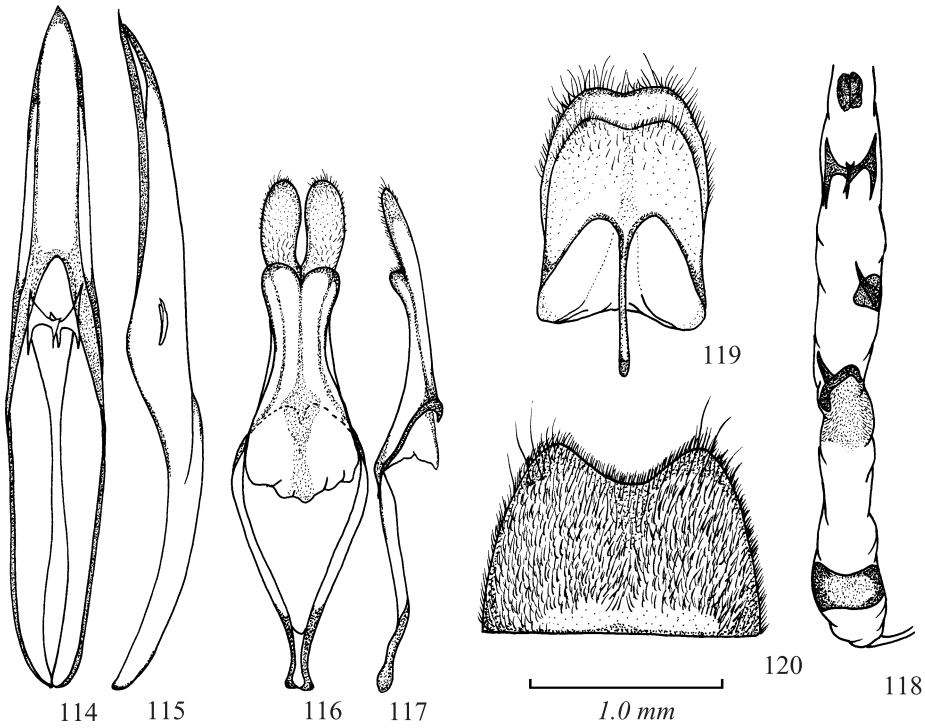
Pronotum elongate barrel-shaped, distinctly constricted apicad in ♂ but hardly so in ♀, nearly 1.4–1.5 times as long as wide in both sexes, 1/3–3/10 the length of elytra, 3/4 of the humeral width of elytra; sides gradually divergent in arcuate line in ♂ or gently divergent in ♀ to just behind middle, which is the widest, thence slightly in ♂ or moderately in ♀ convergent in arcuate line to base; disc slightly raised to basal 5/12 thence rather strongly declivous to base, finely asperate throughout, with coarse granules near the highest area behind middle, without smooth stripes. Scutellum small, rounded triangular, 3/20 the width of elytral humeri.

Elytra relatively elongate, 3.3–3.5 times as long as the humeral width in ♂ or 3.6–3.7 times in ♀; sides hardly prominent at humeri, gradually arcuately convergent medially, slightly divergent to apical 2/7 thence arcuately convergent to apices which have rather acute outer angles projecting outward; disc almost flattened, slightly raised near scutellum, slightly impressed near suture just behind scutellum; surface closely coarsely punctured on basal 4/5, more finely closely so on the area between apical fifth and ninth, though rather sparsely so in the apical rest.

Ventral surface closely finely punctured on most parts; prosternum distinctly emarginate near apical third in profile, inter-coxal process narrow, triangularly dilated on apex; anal ventrite deeply emarginate on apical fourth in ♂ or gently arcuate in ♀.

Legs long; hind legs rather elongate, with femora distinctly exceeding elytral apices, weakly gradually dilated in apical 2/3.

Male genital organs large, median lobe nearly 2/5 the length of elytra. Tergite 8 slightly elongate, arcuate at sides, almost rounded at apical margin with slight emargination near the middle. Sternite 8 similar to tergite, slightly emarginate at apical margin. Median lobe moderately elongate and slender; dorsal plate wider and a little shorter than ventral plate, sides gradually convergent in straight line to apex, and weakly pointed at apex; ventral plate with sides almost parallel, strongly narrowed from apical seventh to acutely pointed extremity; median struts slender, nearly 3/5 the length of median lobe. Tegmen distinctly shorter than median lobe; parameres more or less elongate, nearly half the length of tegmen, divided in apical third, lobes strongly arcuate on external margins, arcuately emarginate on inner margins, completely rounded at apices, with numerous short setae, basal ridge distinctly raised and rounded. Endophallus densely provided with minute and large spicules behind Y-shaped sclerite at basal




Figs. 114–120. Male genital organs and abdominal segments 7–8 of *Sclethrus satoi satoi* sp. nov., from Puncak Dingin, C. Sulawesi, Indonesia. —— 114, Median lobe, ventral view; 115, ditto, lateral view; 116, tegmen, ventral view; 117, ditto, lateral view; 118, endophallus, ventral view; 119, tergite 8, ventral view; 120, anal ventrite, ventral view.

7/10.

*Type series*. Holotype ♂, Puncak Dingin, C. Sulawesi, Indonesia, 16–X–1985, S. NAGAI leg. Allotype ♀, same locality and collector as the holotype, 17–XI–1985. Paratypes (3 ♀♀): 1 ♀, Puncak, Dingin, 2,400 m Palu, C. Sulawesi, Indonesia, 8–V–1985, T. YOSHIDA leg.; 1 ♀, same data as the holotype; 1 ♀, same data as the allotype. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: Central Sulawesi.

*Notes*. *Sclethrus satoi* sp. nov. is a remarkable new species discovered from Central Sulawesi, and very different from other species occurring on the island. It can easily be distinguished from other members of the genus by the dark silvery pubescent body devoid of any scaly pubescence on the pronotum, almost entirely grayish elytra with two apical black pubescent bands, and long antennae attaining the apical fourth of elytra, even in the female.

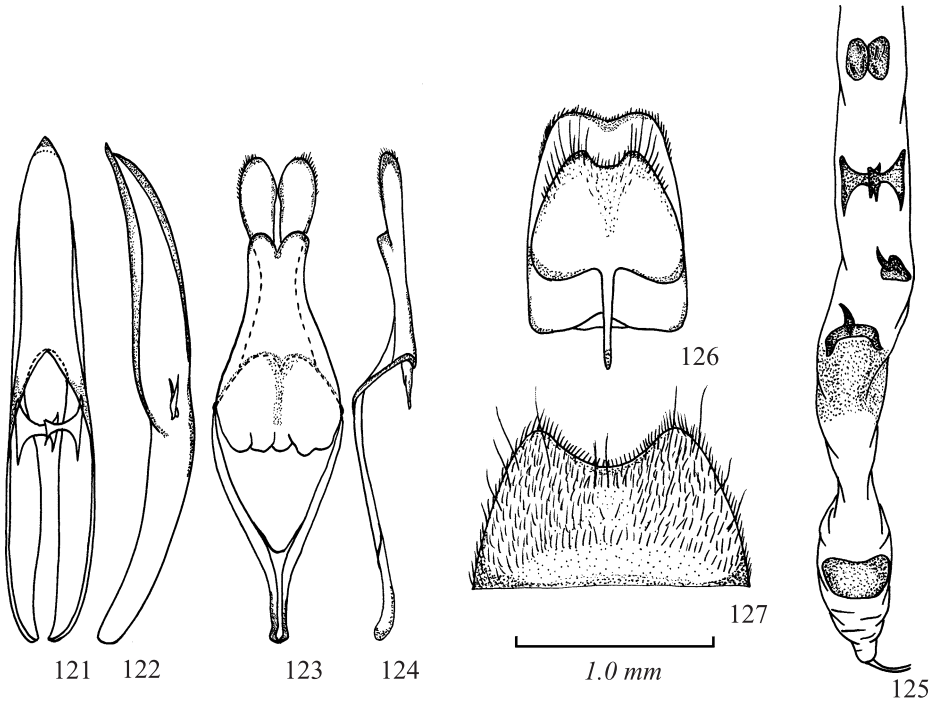
***Sclethrus satoi masatakai*** ssp. nov.

(Figs. 19–20, 121–127, 144)

Body length 13.5 mm in ♂, 13.2–17.5 mm in ♀ (from apical margin of clypeus to elytral apices).

Identical in almost all respects with the nominotypical subspecies from Puncak Dingin of C. Sulawesi, but can be distinguished from it by the arrangement of body pubescence: 1) pubescence bluish-gray in color, sky-blue on antennae, ventral surfaces and legs (in ♀ more bluish than in ♂); 2) pronotum more sparsely pubescent than that of *S. s. satoi*; 3) elytra with two black pubescent bands on apical third broader in average, incomplete band of pale gray pubescence at basal sixth, external areas before and behind that pale band usually forming indistinct black stripes owing to sparse pubescence.

*Type series*. Holotype ♂, Sumarorong, Mamasa, S. Sulawesi (NW. district), 12～16–XII–2008, BAKULEI leg. Allotype ♀, same data as the holotype. Paratypes: 2 ♀♀, same data as the holotype. Holotype is preserved in the collection of the Entomological




Figs. 121–127. Male genital organs and abdominal segments 7–8 of *Sclethrus satoi masatakai* ssp. nov., from Mamasa, S. Sulawesi (NW. district). —— 121, Median lobe, ventral view; 122, ditto, lateral view; 123, tegmen, ventral view; 124, ditto, lateral view; 125, endophallus, ventral view; 126, tergite 8, ventral view; 127, anal ventrite, ventral view.

Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: northwest district of south Sulawesi.

*Notes*. There is evidently a slight difference between two local populations of *S. satoi* sp. nov regarding the male genital organ. Median lobe of *S. s. masatakai* ssp. nov. is somewhat broader than that of *S. s. satoi* sp. nov. Parameres of *S. s. masatakai* are divided in apical 2/5 instead of apical third like those of *S. s. satoi*.

### ***Sclethrus mirabilis*** sp. nov.

(Figs. 21, 44, 52, 64, 145)

Body length 16.6 mm in ♀ (from apical margin of clypeus to elytral apices).

F e m a l e. Color black, partly light brown, feebly glossy in general; eyes and palpi dark brown; antennae with scape and pedicel brownish-black, segments 3–5 brown, remaining apical surface light yellowish-brown (wanting on apical two segments in holotype); elytra matted black, though pitch-black on apical 2/5; legs blackish-brown, femora except for infuscate basal parts.

Body sparsely clothed with light golden pubescence and identically colored long hairs, partly with short black setae, and densely covered with bluish-white to white pubescence; head sparsely covered with light golden pubescence, and with bluish-white scaly pubescence on frons, clypeus, labrum, around eyes and at sides of vertex; antennae rather sparsely clothed with bluish-white scaly pubescence on segments 2–6; pronotum with light golden pubescence and sparsely covered with identically colored long hairs, with bluish-white scaly pubescence along basal margin; scutellum with bluish-white scaly pubescence; elytra sparsely clothed with long light golden hairs on basal 3/5, densely covered with short black pubescence on the area between apical 2/5 and tenth, and more sparsely clothed with identical pubescence on the remaining apical surface, and also with a few light golden hairs near apical margins, with maculation of bluish-white scaly pubescence as follows: 1) transverse semicircular spot on basal fifth, 2) transverse band with oblique anterior margin just behind middle narrowly extending forwards along suture to just behind scutellum, 3) arcuate band on apical third distinctly broadening towards suture, 4) apical band on apical tenth near suture; prosternum sparsely clothed with light golden hairs on apical half and densely covered with bluish-white pubescence on remaining basal surface; mesosternum densely covered with bluish-white scaly pubescence in middle and basal sides; metasternum densely covered with white pubescence, and densely clothed with white scaly pubescence along the posterior margin; metepisternum densely covered with bluish-white pubescence; abdomen sparsely clothed with light golden hairs, fringed with bluish-white pubescence along basal margins of all ventrites, though the pubescent fringes are sometimes disappearing; legs with light golden pubescence, especially dense on apical halves of fore and mid tibiae, mid- and hind tibiae on about apical halves with bluish-white scaly pubescence.

Head 1.2 times as wide as the apical width of pronotum, rugosely coarsely punctured, glossy in general; frons slightly dilated apicad, little longer than wide, with

distinctly raised median carina, coarsely rugosely punctured; clypeus smooth, 1/3 the length of basal width; vertex deeply concave in middle, markedly raised to antennal cavities that are separated from each other by 3/5 the length of scape; genae 4/5 the length of lower eye-lobes, sparsely punctured; eyes large, almost completely circular, considerably prominent, 3/5 the width of frons from frontal view. Antennae medium in length, attaining basal 2/5 of elytra at segment 9, filiform; scape stout and cylindrical, pedicel 3/10 the length of scape, segment 3 the longest and 1.7 times as long as scape, segments 3 and 4 with acute spine at each inner-side of apex, spine of segment 3 is 1/10 the length of the segment and 1.5 times as long as that of segment 4.

Pronotum elongate and cylindrical, 1.6 times as long as wide, 2/5 the length of elytra, a little narrower than the humeral width of elytra; sides well rounded at a short distance from apex, gradually divergent to just before middle of the widest point, thence convergent in moderately arcuate line to basal sixth, with subparallel basal collar; disc arcuately convex in profile, slightly raised along median line, strongly asperate throughout, though smooth narrow margins of apex and base. Scutellum small, triangular, 1/10 the width of elytral humeri.

Elytra relatively elongate, 3.3 times as long as the humeral width; sides moderately prominent at humeri, slightly convergent to basal 2/5, slightly emarginate at level between apical and basal 2/5, thence arcuately divergent to apical fifth and convergent to apices which have rather acute brief outer dents; disc dorsally almost flattened, moderately raised near scutellum, slightly depressed near suture just behind scutellum; surface densely, strongly and coarsely punctured on basal 3/5, more densely but finely so at level between apical 2/5 and fifth, though sparsely punctured on remaining apical surface.

Ventral surface punctured in most parts; prosternum distinctly glossy and rugose on apical half, strongly asperate on remaining surface, inter-coxal process very narrow; mesosternal process moderately wide; metasternum convex, flattened near middle; abdomen slender, moderately punctured, anal ventrite slightly arcuate on apical margin.

Legs relatively short, hind legs relatively elongate; hind femur distinctly exceeding elytral apices, weakly gradually dilated in apical 2/3.

M a l e. Unknown.

*Type specimen*. Holotype ♀, Popayato, N. Sulawesi, Indonesia, XII–2005, native collector leg. Holotype is preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan.

*Distribution*. Indonesia: North Sulawesi.

*Notes*. *Sclethrus mirabilis* sp. nov. is a very peculiar species in its coloration, and can easily be distinguished from most of members of the genus by its uniformly pubescent pronotum without any maculation and three oblique bluish-white stripes on elytra. This species may have closer relationship with *S. satoi* from Central and northwest areas of South Sulawesi, despite their quite different facies. These two species share their uniformly granulate-punctured pronotum without any pubescent maculation and smooth stripes. These are the only two characteristics shared by the two species.

This remarkable new species is known so far only from the type female collected from Popayato of northern Sulawesi.

### *Sclethrus stenocylindrus* FAIRMAIRE, 1895

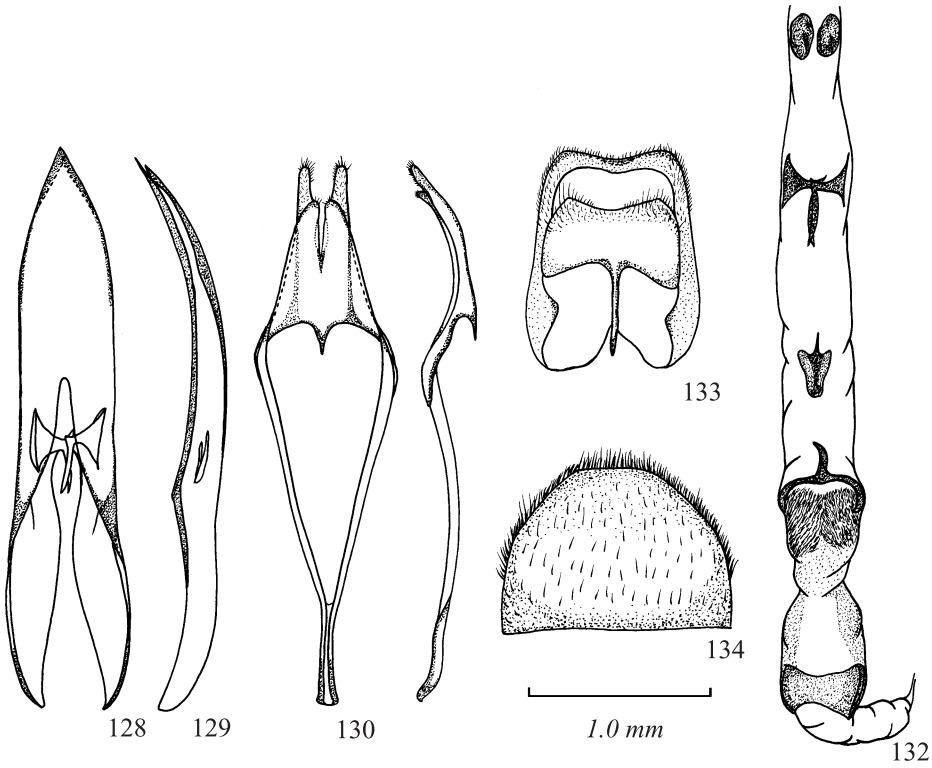
(Figs. 12–13, 28, 37–38, 49, 128–134, 140)

*Sclethrus stenocylindrus* FAIRMAIRE, 1895, Ann. Soc. Ent. Belg., **39**: 184; type locality: Tonkin. —— GRESSITT, 1940, Philip. J. Sci., **72**: 83, pl. 1, fig. 7. —— GRESSITT, 1951, Longicornia, **2**: 308. —— PU, 1980, Econ. Ins. Faun. China, **19**: 56, pl. 5, fig. 73.
*Sclethrus amoenus*: GRESSITT & RONDON, 1970, Pacific. Ins. Mon., **24**: 279.

Body length 13.7–16.6 mm in ♂, 13.2–19.7 mm in ♀ (from apical margin of clypeus to elytral apices).

M a l e and f e m a l e. Color black, partly brownish, feebly glossy; eyes, antennae, palpi and legs brown, scape infuscate; elytra matted black, apical halves pitch-black.

Body sparsely clothed with light golden pubescence and identically colored long hairs, partly with short black pubescence, and densely covered with bluish-white to white pubescence, pubescence has pearly tinge on most parts, except for metathorax and legs, sometime paler in color and disappearing on head, elytra, antennae, abdominal sternites and legs; head sparsely clothed with light golden pubescence, and with bluish-white scaly pubescence on frons and clypeus, around eyes and at sides of vertex; antennae usually with a few sky-blue scaly pubescence on segments 3 and 4; pronotum with light golden pubescence and sparsely clothed with identically colored long hairs, though dense velvety black pubescence present on apical third in ♀, with a pair of bluish-white pubescent spots at sides near apex, two pairs of rounded spots of scaly pubescence of identical color at sides of middle and just before base; scutellum with white scaly pubescence; elytra sparsely covered with long light golden hairs on basal half, densely covered with short black setae arising from punctures on the area between apical half and fifth, sparsely clothed with identical setae on remaining apical surface, and also with light golden hairs near apical margins, with maculation of bluish-white scaly pubescence as follows: 1) rounded spot on basal fifth, 2) narrow oblique band on basal half, extending forward along sutural margin just behind the basal spot, 3) sinuate band on apical fifth; prosternum sparsely clothed with long light golden hairs on apical half and densely covered with white pubescence on remaining basal surface; mesosternum densely covered with bluish-white scaly pubescence in middle and sides near base; metasternum densely covered with light golden pubescence, in ♂ with dark golden hairs near middle, sparsely clothed with white pubescence along posterior margin; metepisternum densely covered with bluish-white pubescence; abdomen densely covered with light golden pubescence, fringed with bluish-white pubescence along the posterior margin of all sternites and on anal tergite, though the pubescent fringes sometimes disappearing; legs sparsely clothed with light golden hairs, with mid- and hind tibiae on about apical third with bluish-white scaly pubescence, hind tarsi densely covered with bluish-white scaly pubescence.




Figs. 128–134. Male genital organs and abdominal segments 7–8 of *Sclethrus stenocylindrus* FAIRMAIRE, from Mt. Phu-Pan, Ban Saleui, Houapan, NE. Laos. —— 128, Median lobe, ventral view; 129, ditto, lateral view; 130, tegmen, ventral view; 131, ditto, lateral view; 132, endophallus, ventral view; 133, tergite 8, ventral view; 134, anal ventrite, ventral view.

Head 1.1–1.2 times as wide as the apical width of pronotum, partly punctured, glossy in general; frons almost quadrate, flattened, slightly raised along lateral margins; clypeus smooth, 1/3 the length of basal width; vertex slightly concave, rugose and densely asperate, strongly raised towards antennal cavities that are separated from each other by 3/5 the length of scape; genae 3/5 the depth of lower eye-lobes, rugose with fine punctures on surface; eyes 4/5 the width of frons in frontal view. Antennae long and filiform, reaching apical third in ♂ or apical half in ♀ of elytra; scape stout and cylindrical, pedicel 2/5 the length of scape, segment 3 the longest, 2.1–2.3 times as long as scape, terminal segment elongate oblong, blunt at the extremity.

Pronotum elongate barrel-shaped, about 1.3–1.5 times as long as wide, 3/10 the length of elytra, little narrower than the humeral width of elytra; sides in ♂ moderately or in ♀ weakly arcuate, widest at middle, rounded in ♂ or distinctly divergent apicad in ♀ at a short distance from apex, slightly arcuately divergent basad on basal collar; disc arcuate in profile, strongly asperate on surface, though smooth on apical and basal

margins, with a pair of smooth stripes on longitudinal parts between the bluish pubescent spots in middle and just before base. Scutellum small, isosceles triangular, 1/10 the width of elytral humeri.

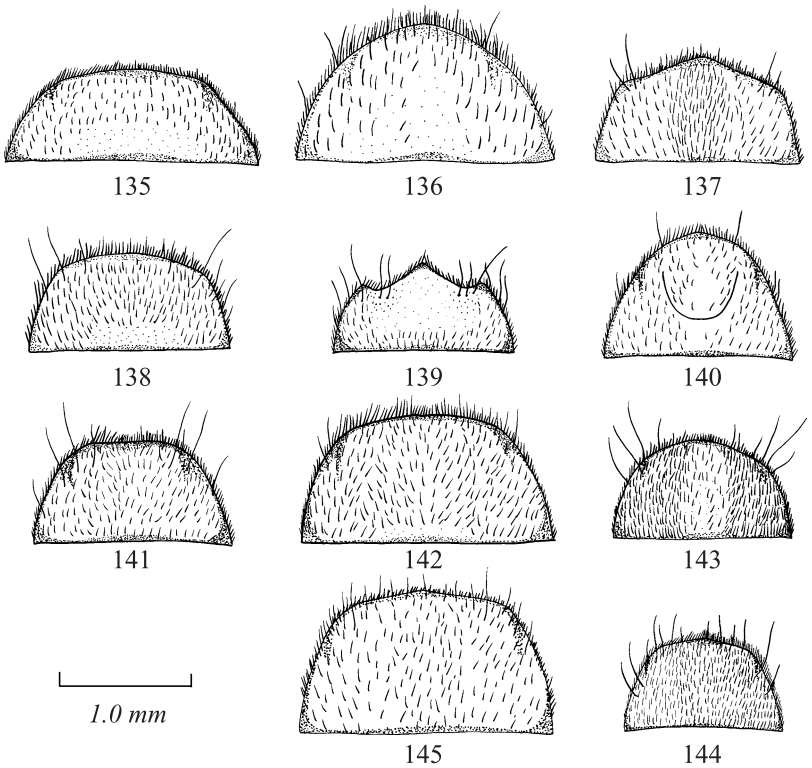
Elytra elongate and slender, 3.3–3.6 times as long as the humeral width; sides strongly prominent at humeri, gradually convergent medially, slightly divergent from basal half to apical fifth, thence slightly arcuately convergent to apices which have weakly acute external angles; disc almost flattened, moderately raised near scutellum, slightly impressed near suture just behind scutellum; surface strongly coarsely punctured on basal half, finely, closely and rather strongly punctured on an area between apical half and fifth, though rather sparsely so on remaining apical surface.

Ventral surface punctured on most parts; prosternum distinctly emarginate near apical third in profile, strongly glossy and rugose on apical half, strongly asperate on remaining surface, inter-coxal process very narrow; mesosternal process moderately wide; metasternum convex, though flattened near middle; abdomen relatively slender, moderately punctured, anal ventrite arcuate on apical margin in both sexes.

Legs relatively short; hind femora distinctly exceeding elytral apices, weakly gradually dilated in apical 2/3.

Male genital organs medium in size, median lobe nearly 3/10 the length of elytra. Tergite 8 more or less elongate, almost quadrate, slightly narrowed to apex on apical half, apical margin weakly emarginate. Sternite 8 transverse, almost quadrate, apical margin slightly emarginate. Median lobe wide and rather elongate; dorsal plate almost equal in width to or a little shorter than ventral plate; sides of ventral plate parallel in basal 7/10 thence distinctly convergent to apex which is strongly pointed at the extremity; median struts rather slender, nearly half the length of median lobe. Tegmen a little shorter than median lobe; parameres distinctly narrowed apicad, 3/10 the length of tegmen, divided in apical 2/3, lobes approximate on basal 3/5, narrow and distinctly separated outwards in apical 2/5, with narrowly rounded apices which are with a few medium-sized setae and numerous short ones, basal ridge distinctly raised. Endophallus densely provided with large well sclerotized spinous spicules behind Y-shaped sclerite on basal 7/10.

*Specimens examined*. [N. Vietnam (30 ♂♂, 30 ♀♀)] 8 ♀♀, Mt. Tam Dao, Vinh Phu, N. Vietnam, 20～21–V–1993, H. KARUBE leg.; 1 ♂, 1 ♀, same locality and collector, but 7–V–1994; 2 ♀♀, same locality and collector, but 26–V–1999; 1 ♂, 1 ♀, same locality, but 1～5–V–1994, T. NIISATO leg.; 2 ♀♀, same locality and collector, but 1～7–V–1994; 1 ♀, Mt. Tam Dao, N. Vietnam, 22–IX–1994, M. SATÔ leg.; 1 ♀, same locality and collector, but 19–V–1995; 13 ♂♂, 4 ♀♀, same locality and collector, but 20–V–1995; 10 ♂♂, 2 ♀♀, same locality, but 1～7–V–1996, Y. ARITA leg.: 1 ♀, same locality, but 2～6–VI–1994, native collector leg.; 1 ♀, same locality, but 15～30–V–1998; 1 ♂, same locality, but V–2007, native collector leg.; 1 ♂, 2 ♀♀, Mt. Pia Oac, Cao Bang, N. Vietnam, 22～27–V–1993, T. NIISATO leg.; 2 ♂♂, 3 ♀♀, same locality, but 19～22–V–1999, native collector leg.; 1 ♂, 1 ♀, Deo Pha Din, Son La, N. Vietnam, 5–V–1995, M. OWADA leg. [Thailand (3 ♂♂, 5 ♀♀)] 1 ♀, Doi Suthep, near Chengmai, Thailand,




Figs. 135–145. Female anal ventrite of *Sclethrus* species. —— 135, *S. newmani newmani* CHEVROLAT, from Quirino, C. Luzon, Philippines; 136, *S. newmani macgregori* (SCHULTZE), from Mt. Halcon, Mindoro Is., Philippines; 137, *S. borneensis* sp. nov., from Crocker Range, Sabah, E. Malaysia (Borneo); 138, *S. sumatrensis sumatrensis* sp. nov., from Padang, W. Sumatra, Indonesia; 139, *S. malayanus* sp. nov., from Cameron Highlands, Pahang, W. Malaysia; 140, *S. stenocylindrus* FAIRMAIRE, from Mt. Phu-Pan, Ban Saleui, Houaphan, NE. Laos; 141, *S. ohbayashii ohbayashii* sp. nov., from Mt. Lompobatang, S. Sulawesi (S. district), Indonesia; 142, *S. ohbayashii mamasanus* ssp. nov., from Mamasa, S. Sulawesi (NW. district), Indonesia; 143, *S. satoi satoi* sp. nov., from Puncak Dingin, C. Sulawesi, Indonesia; 144, *S. satoi masatakai* ssp. nov., from Mamasa, S. Sulawesi (NW. district), Indonesia; 145, *S. mirabilis* sp. nov., from Popayato, N. Sulawesi, Indonesia.

25–V–1978, K. & H. AKIYAMA leg.; 1 ♀, same locality and collector, but 29–V–1978; 1 ♀, same locality and collector, but 3–VI–1978; 1 ♀, Doi Pui, N. Thailand, 14–V–1980, T. SENOH leg.; 1 ♀, Meo, N. Thailand, 26–VI–1983, T. SENOH leg.; 2 ♂♂, Maetaeng, Chiangmai, NE. Thailand, 2–VI–1991, native collector leg.; 1 ♂, same locality, but 25–V–1992, local collector leg. [Laos (6 ♂♂, 10 ♀♀)] 1 ♀, Mt. Phu-Pan, (alt. 1,750 m), Ban Saleui, Houapan, NE. Laos, 28–IV～2–V–2002, M. SATÔ leg.; 1 ♀, same locality and collector, but 5–V–2002; 2 ♂♂, same locality and collector, but 16～20–V–2004; 1 ♂, same locality, but altitude 1,700～1,800 m, 10–IV–2004, T. NIISATO leg.; 1 ♀, same

locality, but altitude 1,500～1,800 m, 21–V–2004, T. TSURU leg.; 1 ♀, same locality, but 21–V–2004; 2 ♂♂, 4 ♀♀, same locality, but altitude 1,500～1,800 m, 25–VI～1–VII–2004; 1 ♀, same locality, but altitude 1,600～1,900 m, 12～21–V–2005; 1 ♂, Phou Samsoum, (alt. 1,200～1,700 m), Xiengkhouang, C. Laos, IV–2006, native collector leg; 1 ♀, Ban Sui, (alt. 1,250 m), 50 km W. From Phongsawang, Xiengkhouang, C. Laos, 12–V–2007, T. MIZUSAWA leg. [Myanmar] 1 ♀, Taunggyi, Shan State, 5～23–VI–2008, native collector leg. [China (4 ♂♂, 2 ♀♀)] 1 ♂, 1 ♀, Mt. Jianfengling, Hainan Is., China, 20～28–VII–2004, native collector leg.; 1 ♀, Jin-Ji-Liang Lin Chang, Ding An, Hainan Is., China, 10～20–VI–2007, native collector leg.; 3 ♂♂, no data label but actually in China.

*Distribution*. Indochina: Vietnam, Laos, Thailand and Myanmar; China: Guangxi, Yunnan and Hainan Island.

*Notes*. *Sclethrus stenocylindrus* is endemic to Indochina and its neighboring territories and has so far been recorded from Vietnam, Laos, Thailand, Myanmar and southwest China, including Hainan Island. The simple antenna without any spines makes this species similar to *S. amoenus* (GORY), but it differs from it in two critical details: longer antennae and weaker gloss of the elytra. This species can also be distinguished from other members of the genus by its simple antenna and unique conformation of the male genital organ.

## Discussion

After the re-examination of the specimens belonging to the genus *Sclethrus* NEWMAN, we herein describe six new species and three new subspecies, adding these taxa to the three hitherto known species of the genus. This genus can be considered as a coherent, self-contained entity on account of the typical common external characteristics and the structural similarity of the sclerites of endophallus of the male genital organ. It can be, nevertheless, subdivided into distinct groups as follows:

The first group is composed of three species; *S. newmani* CHEVROLAT, type species of the genus from the Philippines, *S. borneensis* sp. nov., widely distributed in Borneo and *S. sumatrensis* sp. nov., occurring in Sumatra. They share similar external, as well as internal characteristics. In particular, the structure of male genital organ of these three species is similar: ventral plate of median lobe is obviously longer than the dorsal plate; Y-shaped sclerites of endophallus are provided with small, dense spinous spicules on the posterior part; anal ventrite of male is broad and its apex is clearly emarginate in the middle. It is assumed that these species, originally sympatric in distribution, later became geographically isolated from each other, resulting in separate evolutions until they became established and distributed as distinct species.

The second group consists of only one species, *S. malayanus* sp. nov. from the Malay Peninsula. The external characteristics of this species are quite similar to those of *S. borneensis* sp. nov. and *S. sumatrensis* sp. nov. On the other hand, its genital organs differs from that of the both species, inasmuch the apex of anal ventrite is arcuate and

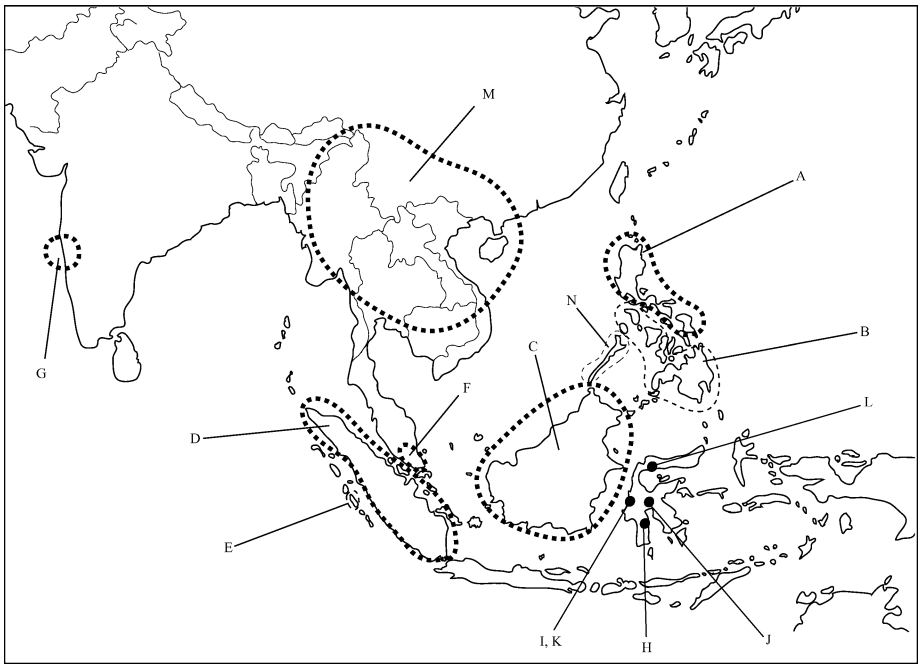



Fig. 146. Distribution of *Sclethrus* species. —— A, *S. newmani newmani* CHEVLORAT; B, *S. newmani macgregori* (SCHULTZE); C, *S. borneensis* sp. nov.; D, *S. sumatrensis sumatrensis* sp. nov.; E, *S. sumatrensis siberutus* ssp. nov.; F, *S. malayanus* sp. nov.; G, *S. amoenus* (GORY); H, *S. ohbayashii ohbayashii* sp. nov.; I, *S. ohbayashii mamasanus* ssp. nov.; J, *S. satoi satoi* sp. nov.; K, *S. satoi masatakai* ssp. nov.; L, *S. mirabilis* sp. nov.; M, *S. stenocylindrus* FAIRMAIRE; N, *Sclethrus* sp. (aff. *S. borneensis* sp. nov.).

not emarginate in male, bluntly dented in middle in female. Since the anal ventrite of *S. borneensis* sp. nov. is also bluntly dented in middle in female, it is probably more closely related to *S. borneensis* sp. nov. However, the male genital organs of this species have characteristics distinctly different from all the other species, having its median lobe with sharply produced apex as well as unusually elongated parameres of tegmen. Concerning the structure of the endophallus, it can be distinguished by the presence of moderately large, dense spinous spicules on the posterior part of Y-shaped sclerite, even though these are in their external morphology rather similar to those of *S. borneensis* sp. nov. or *S. sumatrensis* sp. nov. Considering the characteristics of male genital organs above all, this species is considered to have evolved and developed in a relatively earlier age as a distinct species, even though its external characteristics bear certain resemblance to those of the species distributed in adjacent areas.

The third group includes *S. ohbayashii* sp. nov., *S. satoi* sp. nov. and *S. mirabilis* sp. nov., all three from Sulawesi. These species lack a glossy body surface and thus can be easily distinguished from the species distributed in other regions (with the exception of

*S. sumatrensis siberutus* ssp. nov. from Siberut Island). Although they all occur in Sulawesi, their differences as distinct species are quite obvious with dissimilar external characteristics and male genital organs. Notwithstanding this fact, they share similar structures of tegmen and spinous spicules on the posterior part of Y-shaped sclerite with groups of species from the Philippines, Borneo and Sumatra, indicating some relationship with these groups. As this group evolved into different species in accordance with various geographical regions of Sulawesi itself, further new species are expected to be found by future explorations.

The last member of the subdivision is *S. stenocylindrus* FAIRMAIRE, which is widely distributed in an extensive region from Indochina to southwest China. This species is provided with external as well as internal characteristics peculiar within the genus. Its sexual dimorphism is rather weak as far as the externals are concerned. In addition, antennae lack spines. In particular, the median lobe of male genital organs is broad and the parameres of tegmen are narrowly produced. This species shares some similarities with *S. malayanus* sp. nov. which is distributed in the geographical neighbourhood, inasmuch apical edge of anal ventrite is not deeply emarginate and the Y-shaped sclerite is provided with large spinous spicules on the posterior part in male. However, dissimilar characteristics outweigh such similarities. We have nevertheless included this species in the genus, since structure of the sclerites of endophallus is similar to that of the other members of the genus. Even though *S. stenocylindrus* is widely distributed in Indochina and Southwest China, it has apparently not evolved in the direction of additional independent species, since no variation can be recognized among the geographical groups. Thus, we can conclude that the genus itself has vigorously evolved into different species in the island region, whereas it has remained extremely stable in the continental region.

Incidentally, *S. amoenus* (GORY), which is known only from the type specimen from southwestern India, also belongs to the group of species lacking spines on antennal segments. It resembles *S. borneensis* sp. nov. and *S. sumatrensis* sp. nov. or rather *S. malayanus* sp. nov. at a first glance. It is considered, however, to be more closely related to *S. stenocylindrus* that similarly lacks spines on antennae.

It is expected that more new species and subspecies will be added into this genus after thorough explorations in various geographical regions are carried out in the future.

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# A New Genus and Species of the Tribe Mesosini (Coleoptera, Cerambycidae, Lamiinae) from Laos
## [Studies on Asian Mesosini, II]

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**Abstract** *Pseudoclyzomedus ohbayashii* gen. et sp. nov. (Cerambycidae, Coleoptera) from Laos is described. The host-plant of this species is believed to be *Pinus* sp.

## Introduction

The lamiine tribe Mesosini THOMSON, 1860 consists of more than 50 genera distributed throughout the world. The centre of its distribution lies in the Oriental Region, with many species present also in the Holarctic and Afrotropical Regions. Neotropical and Australian Regions share only few species.

BREUNING (1938–1940) first revised the tribe Mesosini. Latter on, he published the world catalogue of the subfamily Lamiinae and recognized 443 species in 56 genera of the tribe Mesosini (BREUNING, 1959).

BREUNING later, in his series of "Contribution à la connaissance des Lamiens du Laos" (1962–1968) studied the Lamiinae of Laos, based mainly on the collection of Mr. J. A. RONDON, and described 2 new genera and added 20 new species of Mesosini. In the "Cerambycid-beetles of Laos", RONDON and BREUNING (1970) recorded 66 species in 23 genera from Laos. It has been the last contribution to the knowledge of the Mesosini of Laos until now.

Starting from 2000, I have conducted several expeditions into the mountainous areas of Laos with colleagues, and brought back a large amount of cerambycid beetles. Among these collections, I have found an interesting mesosine species. After its close examination I came to the conclusion that this is an undescribed species belonging to an undescribed genus.

For the observation of the endophallus of the male genitalia, the structure and the appendages were directly observed under a transmitted light without reversing the sac. For the terms of the structures of endophallus, reader should be referred to YAMASAKO and OHBAYASHI (2007); however, they made some erroneous statements regarding the direction of the positional relation. The "apical area of the endophallus" should be corrected into "basal area of the endophallus". In addition, I introduce a new term: "micro spicules", which are distributed between crescent-like scrolites and large spicules

area.

### *Pseudoclyzomedus* gen. nov.

Type species: *Pseudoclyzomedus ohbayashii* YAMASAKO, sp. nov.

Description. Body ovoid. Eye subdivided; lower lobe slightly longer than wide. Antennal tubercles hardly elevated. Antenna rather slender; scape elongate and not distinctly thickened apicad, with a cicatrix on the apex; third segment almost as long as scape and distinctly longer than fourth. Pronotum smooth, lacking both discal tubercles and lateral projections. Apex of prosternal process rounded, not truncate from lateral view. Apex of mesosternal process nearly vertically truncate from lateral view. Elytra without basal tubercles; disc uniformly clothed with minute pubescence and lacking long suberect setae.

Endophallus with areas of micro, large and small spicules. Large spicules area consists of unidentate spicules which are nearly uniformly scattered; interval between the large spicules area and small spicules area relatively wide, though small spicules area is narrowly extended towards the area of large spicules; small spicules area moderate in width; extremity provided with a rod-like screlites, diverticulum and a single duct.

*Notes.* The present new genus shares some superficial similarities with the genus *Anagelasta* (PIC, 1925, p. 31), but distinctly differs from it by the elongate lower eye lobe and very long antennae. It is most similar to the genus *Clyzomedus* (PASCOE, 1864, pp. 96, 115) in general characteristics, but distinguishable from it by the structure of pronotum, which is smooth and lacking both discal tubercles and lateral projections.

*Etymology*. The generic name refers to its similar appearance with the genus *Clyzomedus*.

### *Pseudoclyzomedus ohbayashii* sp. nov.

(Figs. 1–2)

M a l e. Length 8.0–11.0 mm, width 3.3–4.0 mm. Body black, evenly covered with dark brown pubescence. Head mingled with brindled yellowish white pubescence, and with two narrow dark brown bands on occiput. Antenna with scape scattered several spots of white pubescence; each basal part of third to tenth segments annulated by white pubescence. Pronotum with brindled yellowish white pubescence; narrowly covered with yellowish white pubescence along posterior margin. Scutellum covered with yellowish light brown pubescence. Elytra scattered small patches consisting of yellowish white pubescence which is forming a distinct zigzag band on apical third, and an indistinct one near apex. Legs with femora and tibiae covered with white pubescence and sparsely intermixed with black patches; first and second tarsal segments covered with white pubescence.

Body rather short and rotund in shape. Head slightly narrower than pronotum, uniformly micro-sculptured with few punctures; eye weakly prominent, lower lobe as

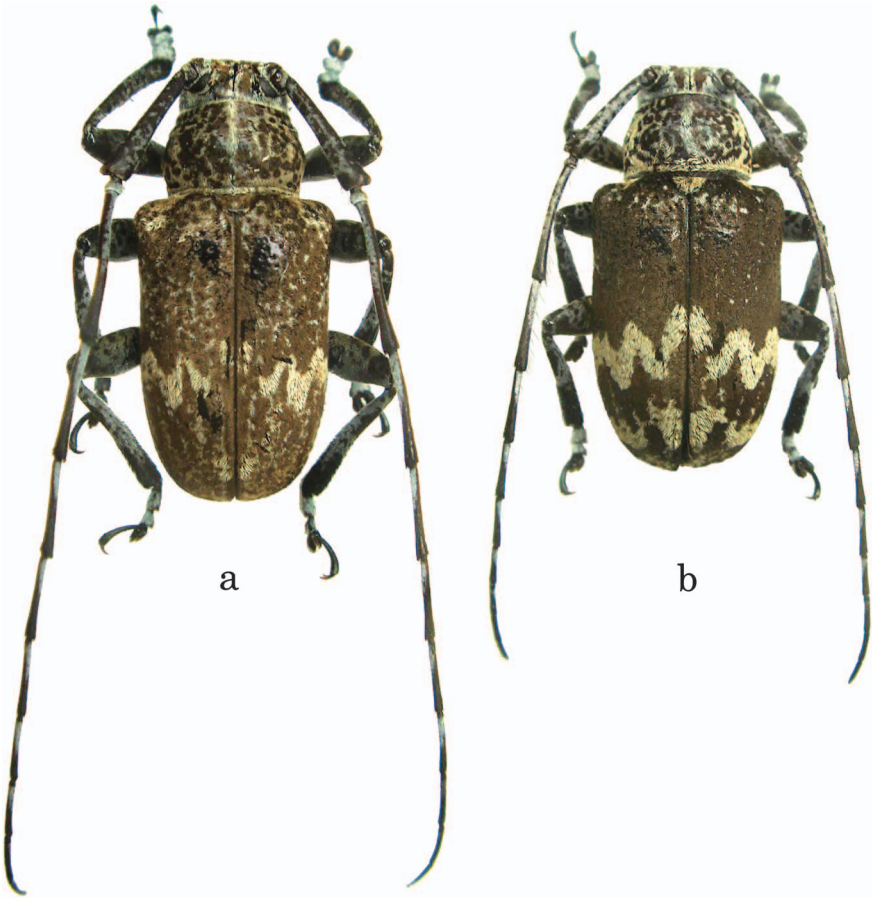


Fig. 1. *Pseudoclyzomedus ohbayashii* gen. et sp. nov.; —— a, Holotype ♂; b, paratype ♀.

long as wide; gena about 1.2 times as long as lower lobe of an eye.

Antenna long and slender, about 1.9 times as long as body, surpassing elytral apices at middle of fifth segment; last segment slightly curved and tapering apicad.

Pronotum evenly convex, lacking both discal tubercles and lateral projections, widest near middle, strongly constricted towards base and apex; about 1.6 times as wide as long (=nearly 1/4 of the elytral length), distinctly narrower than the width of elytral humeri; base about 1.2 times as wide as apex; disc moderately punctured.

Scutellum lingulate in shape with a slight emargination at apex.

Mesosternal process with small antero-ventral projection.

Elytra rather short and broad, on basal 2/3 parallel-sided, thence arcuately narrowed to apices, which have sub-quadrate inner angles; about 1.6 times as long as width at humeri; humeri slightly expanded laterad, with sub-quadrate angles; disc without

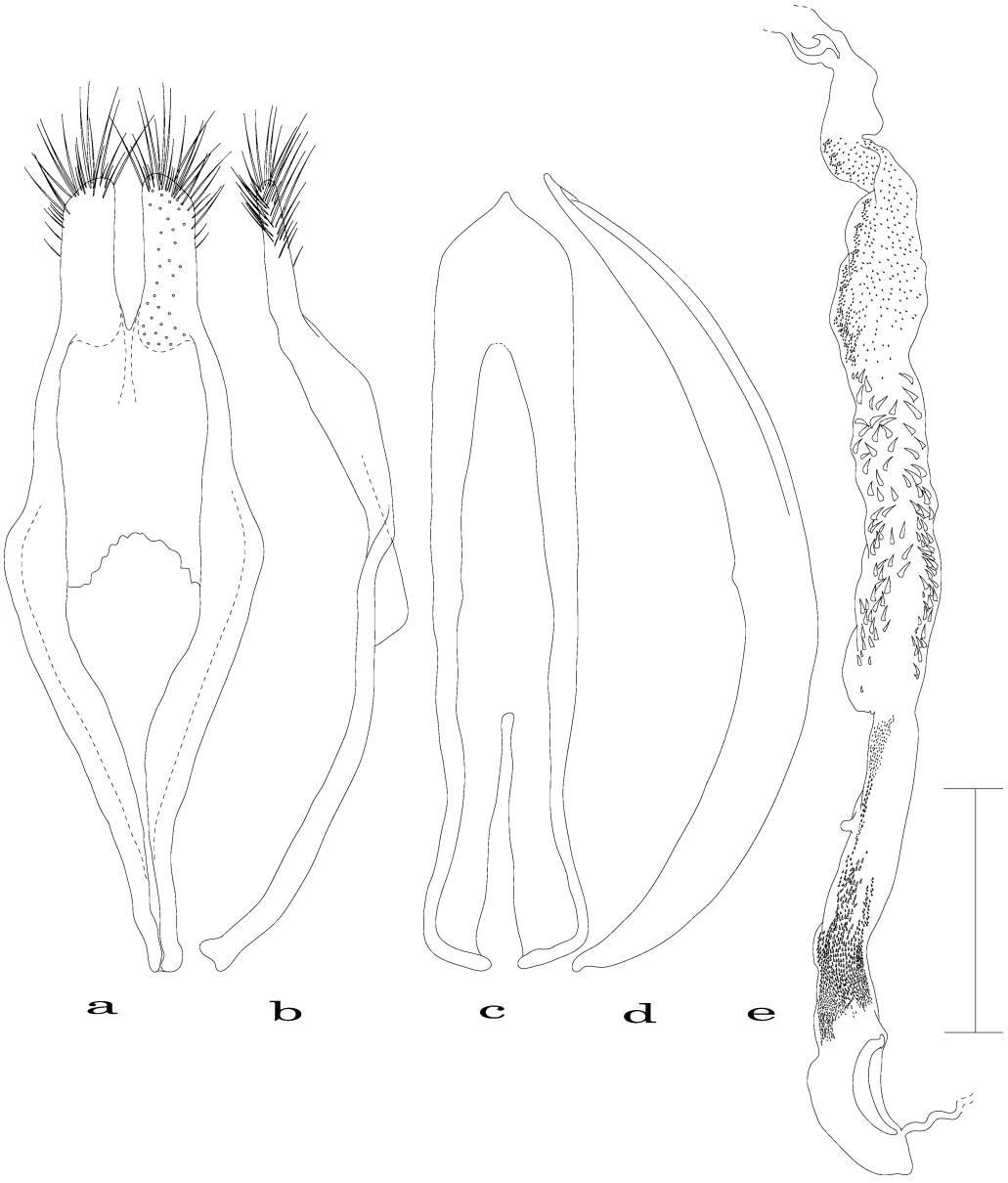


Fig. 2. Male genital organ of *Pseudoclyzomedus ohbayashii* gen. et sp. nov.; —— a, Tegmen, ventral view; b, ditto, lateral view; c, median lobe, ventral view; d, ditto, lateral view; e, endophallus. Scale 1 mm.

basal bosses, moderately punctured on basal half, punctures becoming minute and sparse apically.

Legs rather long; mesotibia lacking sulcus; protibia of male longer than that of female; tarsus with combined length of basal three segments about 1.3 times as long as tarsal claw.

Male genitalia: – Tegmen from lateral view moderately curved, from ventral view rather slender, rhombic and widest just before middle; ringed part expanded laterad at before middle, thence arcuately narrowed basad; lateral lobes rather short, about one-fifth of the total length of tegmen, with each lobe on basal 2/3 nearly parallel-sided, thence obliquely narrowed to apex which has narrowly rounded inner angle; two kinds of apical setae present: long and thick ones concentrated near apex, rather short and thin ones arising chiefly from outer sides of apical half.

Median lobe from lateral view weakly curved; apex acuminate from ventral view; median struts dehiscent from basal third.

Endophallus rather long; large spicules distributed only on dorsal side and arranged into two irregular lines; ventral side between areas of large and small spicules provided with minute spicules that extend from small spicules area; extremity provided with short discolored rod-like sclerites, weakly developed diverticulum, and a single duct connected near the apical part of rod-like sclerites.

F e m a l e. Length 11.0 mm, width 4.8 mm. Similar in general appearance to male, but differing in the following characters: body darker in color; zigzag elytral bands more clearly defined, apical one very distinct; antenna about 1.5 times as long as body, surpassing elytral apices at the apex of fifth segment; pronotum on basal half nearly parallel-sided, base 1.36 times as wide as apex; elytra wider than in male, about 1.5 times as long as wide; legs moderate in length, protibia shorter than that of male, combined length of basal three tarsal segments 1.1 times as long as tarsal claw.

*Type series.* Holotype ♂, near Ban Nhaboun, alt. ca 1,400 m, Xieng Khouang Prov., Laos, 18–V–2008, J. YAMASAKO leg. Paratypes: 1 ♀, Ban Saleui, alt. ca 1,400 m, Houa Phan Prov., Laos, 6–V–2002, N. OHBAYASHI leg.; 1 ♂, Mt. Phu Pan, alt. 1,337–1,858 m, 19–21–V–2004, Y. YOKOI leg.; 1 ♂, 1 ♀, near Ban Nhaboun, alt. ca 1,400 m, Xieng Khouang Prov., 12–V–2008, Y. YOKOI leg.; 1 ♂, same locality and date, S. FUKADA leg.; 1 ♀, same locality, 18–V–2008, J. YAMASAKO leg.; 1 ♂, Mt. Phou Samsoum, alt. ca 1,700–1,800 m, Xieng Khouang Prov., 13–V–2008, J. YAMASAKO leg.

The type series, including the holotype are deposited at the Entomological Laboratory, Faculty of Agriculture, Ehime University, Japan.

*Distribution*. Central and northeastern Laos.

*Ecology*. In our field observation at near Ban Nhaboun, central Laos, five specimens of this new mesosine were found on dead branches of *Pinus* sp. in a slash-and-burn field. A single specimen was also found on a dead *Pinus* sp. at Mt. Phou Samsoum. Other examined specimens, from Ban Saleui and Mt. Phou Pan in northeastern Laos may also be associated with pine trees as there were many pine trees around their collecting sites. It is very likely that the host plant of this new mesosine is a species of

*Pinus*.

*Notes*. Elytral markings of this new species give it quite unique appearance. Since the fauna of Laos is very related to other neighboring countries, I can expect that more species of this newly described, pine-dwelling genus shall be found in the future.

*Etymology*. The specific epithet is dedicated to Prof. Nobuo OHBAYASHI in commemorating his retirement from Ehime University.

## Acknowledgments

I wish to express my sincere thanks to Drs. Nobuo OHBAYASHI, Masahiro SAKAI and Tatsuya NIISATO, for their kind guidance and constant encouragement. I am also much obliged to Drs. Kiyoshi ANDO, Kiyohiko IKEDA, Junichiro KANTO, Kenji KOHIYAMA, Hiroaki KOJIMA, Takashi KURIHARA and Takeshi YORO, Messrs. Shinichi FUKADA, Yusuke MINOSHIMA, Tatsuo MIYAMOTO, Takashi MIZUSAWA, Hideko NAKAMURA, Norio NAKAMURA, Toshihide NAKASATO and Yaheita YOKOI in collecting materials and submitting their private collections for this study. My special appreciations are due to Mr. Hiroyuki WAKAHARA and Mrs. Sonephet PHONSAVANH (residents of Vientiane, Laos) for their kindness and cooperation during my long stay in the country.

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———— 1965 c. Contribution à la connaissance des Lamiens du Laos, (Col. Céramb.) 13ème Partie. *Ibid.*, **14**: 31–62, 40 figs.

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*Spec. Bull. Jpn. Soc. Coleopterol.*, *Tokyo*, (7): 289–295, May 25, 2009

# A New Species of *Mesosa* (*Perimesosa*) from South Korea and Identity of *Mesosa* (*Saimia*) *amakusae* BREUNING, 1964 (Coleoptera, Cerambycidae, Lamiinae)

**[Studies on Asian Mesosini, III]**

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**Abstract** A new lamiine species *Mesosa* (*Perimesosa*) *hyunchaei* sp. nov. is described from South Korea. In addition, *Mesosa* (*Saimia*) *amakusae* BREUNING, 1964 is regarded as a junior synonym of *Mesosa* (*Aplocnemia*) *longipennis* BATES, 1873.

## Introduction

We had a chance to examine interesting Korean specimens belonging to the subgenus *Perimesosa* of the genus *Mesosa*. It is very similar to *Mesosa* (*Perimesosa*) *hirsuta* BATES, 1884, but after close examination, we came to a conclusion that it is new to science. Here we describe it as a new species of *Mesosa* subgenus *Perimesosa*.

In addition, we would like to address the status of *Mesosa* (*Saimia*) *amakusae* that has been hitherto treated as a "species incertae sedis" (HAYASHI, 1984; KUSAMA & TAKAKUWA, 1984; OHBAYASHI & NIISATO, 2007). It was first described by BREUNING (1964) based on a single male specimen. The type locality of this species was indicated as "Amakusa, Japon". Since its description, there were no further records of this species from Japan. Recently we were able to examine photographs of the type specimen preserved in the Naturhistorisches Museum, Basel, Switzerland through the courtesy of Dr. Yuichi OKUSHIMA who visited the museum in 2009. Judging from these photographs, *M.* (*S.*) *amakusae* should be regarded as a junior synonym of *Mesosa* (*Aplocnemia*) *longipennis* BATES, 1873.

Before going into details, we wish to express our hearty thanks to Professor Dr.

Nobuo OHBAYASHI for his constant guidance during the course of our study. We wish to express our great appreciation to Dr. Yuichi OKUSHIMA of Kurashiki Museum of Natural History, Kurashiki, Japan and Dr. Eva SPRECHER-UEBERSAX of Naturhistorisches Museum, Basel, Switzerland for the trouble of taking the photographs of the type specimen of *Mesosa* (*Saimia*) *amakusae*. Furthermore, we would like to thank to Messrs. Hyun Chae KIM, Sang Kyun KOH and Dr. Tatsuya NIISATO who kindly offered us the valuable Korean specimens.

## *Mesosa* (*Perimesosa*) *hyunchaei* YAMASAKO et HASEGAWA, sp. nov.

[Korean name: Nambang Kedashi Hanurso]

(Figs. 1 & 2)

*Male*. Length 11.0–16.0 mm, width 3.8–6.0 mm. Body black, evenly covered with dark grayish-brown pubescence and sparsely intermixed long suberect black setae; head and pronotum with scattered patches of light yellowish-brown pubescence; pronotum with a pair of indistinct longitudinal black bands; elytra provided with three transverse bands consisting of white and light yellowish-brown pubescence of which the one near base is indistinct, middle one is wide and distinct, and apical one is narrow and zigzag; antennal scape with intermixed whitish-gray pubescence; basal parts of third to last antennal segments annulated by white pubescence; legs: femora with intermixed white and light yellowish-brown pubescence; tibiae with annularly intermixed light yellowish-brown pubescence.

Body rather long and oblong in shape. Head slightly narrower than pronotum, uniformly micro-sculptured with punctures which are rather large and somewhat sparsely arranged; eyes subdivided and weakly prominent, lower eye lobe slightly longer than wide, nearly as long as gena below it.

Antennal tubercles elevated. Antenna thick and moderate in length, about 1.5 times as long as body, surpassing elytral apices in middle of the seventh segment; scape rather short, distinctly thickened apicad, with a cicatrix on the apex; third segment distinctly longer than scape and fourth segment; last antennal segment almost straightly tapering apicad.

Pronotum evenly convex, widest near middle, narrowed towards base and apex, about 1.3 times as wide as long, distinctly narrower than the width of elytral humeri, provided with three discal tubercles and indistinct projections on both sides; base of pronotum about 0.6 times as wide as elytral width at humeri; disc moderately punctured.

Scutellum lingulate in shape. Prosternal process with rounded apex, not truncate from lateral view. Mesosternal process with small antero-ventral projection; apex nearly vertically truncate from lateral view.

Elytra rather long, about 1.9 times as long as width at humeri, ca 3.5 times as long as pronotal length, on basal 3/4 parallel-sided, thence arcuately narrowed to subquadrate inner angles; humeri subquadrate and slightly expanded laterad; basal area of

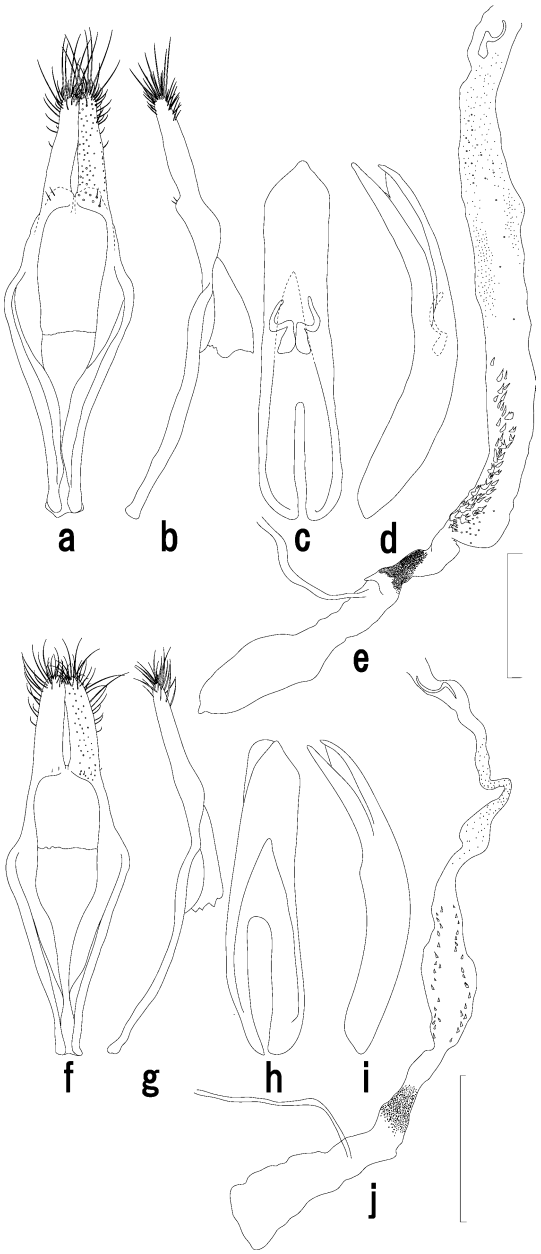


Fig. 1. Male genitalia of *Mesosa* (*Perimesosa*) spp. —— a–e, *Mesosa* (*Perimesosa*) *hyunchaei* sp. nov.; f–j, *Mesosa* (*Perimesosa*) *hirsuta* BATES (Korea). —— a, f, Tegmen, ventral view; b, g, ditto, lateral view; c, h, median lobe, ventral view; d, i, ditto, lateral view; e, j, endophallus. Scale 1 mm.

disc slightly elevated, not forming tubercles, with moderate punctures on basal half, thence punctures getting smaller apicad.

Legs moderate in length; mesotibia lacking sulcus.

*Male genitalia*. Tegmen lightly curved from lateral view, rhombic-shaped and widest just before middle from ventral view; ringed part laterally expanded before middle, thence arcuately narrowed basad; lateral lobes moderate in length, about one-fifth of the total length of tegmen, forming a prominent ridge from lateral view with several short and thin setae near base; each lobe on basal half nearly parallel-sided, thence arcuately narrowed toward rounded apex, with two kinds of setae: one long, thick and concentrated near apex, another rather short and thin, arising mainly from outsides of apical half.

Median lobe weakly curved from lateral view; apex roundly acuminated from ventral view; median struts dehiscent on basal third.

Endophallus (for terminology see YAMASAKO & OHBAYASHI, 2007; YAMASAKO, 2009) moderate in length, with areas of micro, large and small spicules; large spicules on dorsal side arranged into two irregular lines, which are uni-dentate in apical area, thence increasing multi-dentate spicules appear toward basal area; small spicules area moderate in width; extremity with developed diverticulum, a single duct connected near the apical part of diverticulum, with a triangular bursiform appendage near the duct.

*Female*. Length 16.0 mm, width 6.0 mm. Almost identical to male in general appearance.

*Type series.* Holotype: ♂, Miryang, Kyông-Sang-Nam-Do, Miryang-Shi, Korea, 20–VI–2002 emg., H.-C. KIM leg. Allotype: ♀, Munsan, Kyông-Sang-Nam-Do, Chinju-Shi, Korea, 17–VIII–2001, H.-C. KIM leg. Paratypes: 1 ♂, Son-Cheon, Jeon-Nam, Korea, 13–VI–1997, S.-M. LEE coll.; 1 ♂, Munsan-p, Chinju-Shi, Kyngsangnam-Do, Korea, 18–VI–2002, H.-C. KIM leg.; 1 ♂, 1 ♀, Mt. Pulmosan, Ch'ang-Won-Shi, Kyngsangnam-Do, Korea, 13–VII–2002, H.-C. KIM leg.

Holotype and allotype are deposited in National Museum of Nature and Science, Tokyo, Japan. Paratypes are separately preserved in the Entomological Laboratory, Faculty of Agriculture, Ehime University, Matsuyama, Japan, Mr. KIM's private collection, Seoul, Korea and Mr. KOH's one, Tokyo, Japan.

*Biology.* According to the information of Mr. KIM, some specimen were collected on the lethal tree of *Celtis* sp. (Ulmaceae). Generally speaking, most of mesosine species are euryphagous, and besides, *Mesosa hirsuta* also is known a euryphagous species. Therefore, *Celtis* sp. seems to be one of the host plants of this new species.

*Etymology*. The specific epithet is dedicated to Mr. Hyun Chae KIM who collected this interesting species.

*Distribution*. South Korea.

*Notes*. Up to now, 16 species belonging to the subgenus *Perimesosa* have been described. This new species definitely belongs to this subgenus by the presence of long suberect elytral setae, and it is very similar in general appearance to *Mesosa* (*Perimesosa*) *hirsuta* distributed in Japan, Korea and Far East Russia. However, it can be distin-

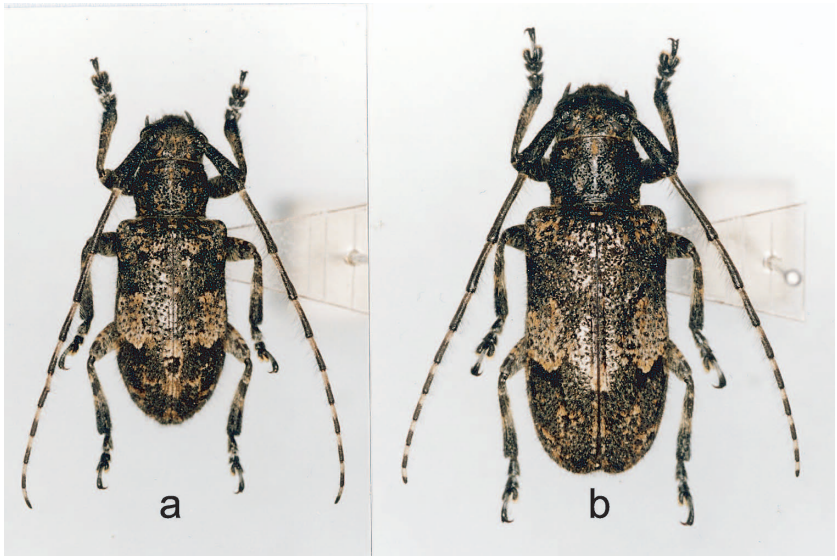


Fig. 2. Habitus of *Mesosa* (*Perimesosa*) *hyunchaei* YAMASAKO et HASEGAWA, sp. nov. —— a, Holotype ♂; b, allotype ♀.

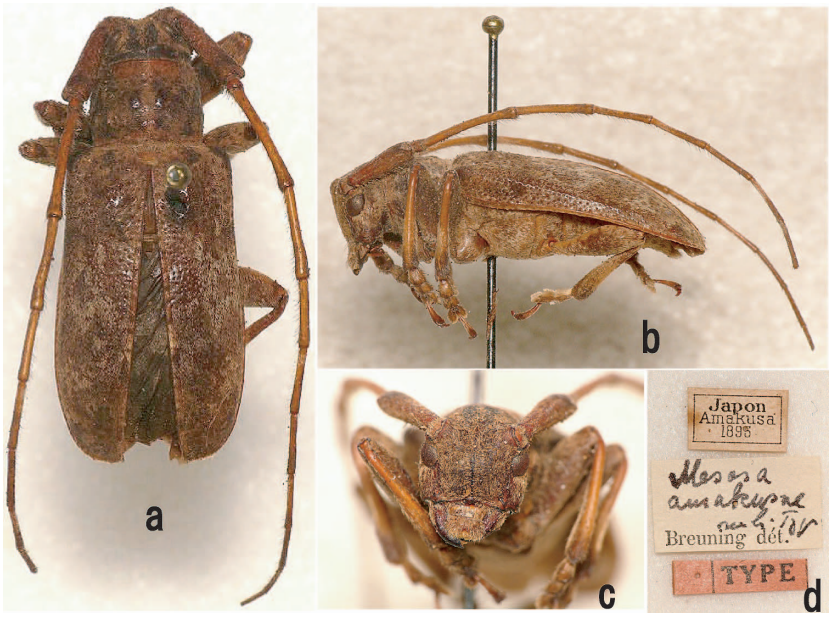


Fig. 3. *Mesosa* (*Saimia*) *amakusae* BREUNING, holotype. —— a, Dorsal view; b, lateral view; c, frontal view; d, labels.

guished by dark elytral color, and different structure of endophallus as shown in Fig. 1.

This species has been collected from restricted area in South Korea and it is likely that it is locally distributed.

### *Mesosa* (*Aplocnemia*) *longipennis* BATES, 1873

(Fig. 3)

*Mesosa longipennis* BATES, 1873, 313. —— MATSUSHITA, 1933, 341, 343.
*Mesosa* (*Aphelocnemia* [sic]) *longipennis*: BREUNING, 1939, 406.
*Mesosa longipennis* var. *subobliterata* PIC, 1901, 62.
*Mesosa* (*Saimia*) *amakusae* BREUNING, 1964, 91. —— HAYASHI, 1984, 84. —— KUSAMA & TAKAKUWA, 1984, 548.—— OHBAYASHI & NIISATO, 2007, 680. **Syn. nov.**

*Notes*. *Mesosa* (*Aplocnemia*) *longipennis* BATES, 1873 is one of the common mesosine species in Japan, and it shows several kinds of individual variation, especially on elytral markings. Judging from the photographs of the type specimen of *Mesosa* (*Saimia*) *amakusae* BREUNING, 1964, and the distinguishable characteristics described by BREUNING (1964), this specimen is included in the range of individual variation of *M.* (*A.*) *longipennis*. The type locality, "Amakusa" is supposed to be Amakusa Isls., Kumamoto Pref., Kyushu, Japan. We could not examine any specimens from this locality, but all the specimens from nearby area (such as Nagasaki Pref. or other places of Kumamoto Pref.) belong to *M.* (*A.*) *longipennis*. As a result, *M.* (*S.*) *amakusae* should be regarded as a junior synonym of *M.* (*A.*) *longipennis*.

*Type specimen examined.* Photographs of the holotype of *Mesosa* (*Saimia*) *amakusae* BREUNING, 1964 (housed in Naturhistorisches Museum, Basel, Switzerland): "Amakusa/Japon/1895" [white label printed]; "Mesosa/amakusae/mihi type/Breuning det." [white label printed]; "TYPE" [red label printed].

*Mesosa* (*Aplocnemia*) *longipennis* BATES, 1873: 1 ♀ (Type: Natural History Museum, London), "Japan./G. Lewis/1910–320." [white label printed]; "Mesosa/longipennins/BATES" [white label printed]; "Type" [round label printed, red-margined].

*Another specimens examined*. 1 ♂, 1 ♀, Iso, Kagoshima, Kagoshima Pref., 14–VI–1949, S. HISAMATSU leg.; 1 ♀, Cape Ashizuri, SW Shikoku, 25～26–VI–1967, M. MIYATAKE; 1 ♂, Hirado-Shi, Nagasaki Pref., 1–VI–1968, S. MASUDA leg.; 1 ♀, Kyomachi Spa, Miyazaki Pref., Kyusyu, 15–VI–1972, S. HISAMATSU leg.; 1 ♂, Nogi, Nishinoomote, Tanegashima Is., 10–VII–1974, S. HISAMATSU leg.; 1 ♀, Todoroki-kyo-nr., Mt. Taradake, Nagasaki Pref., 9–VII–1991, M. KAWANABE leg.; 1 ♂, Mt. Konpirasan, Nagasaki-Shi, Nagasaki Pref., 11–VII–1991, M. KAWANABE leg.; 1 ♀, Komenono, Matsuyama City, Ehime, Japan, 8–VIII–1996, M. MINO leg.; 1 ♂, 1 ♀, Nagata, Is. Yakushima, IX–2002, ex Larvae, beetles emerged VI–2003, N. OHBAYASHI leg.; 1 ♂, Ookawamine, Yanadani-mura, Ehime, Japan, 27–VII–2003, J. YAMASAKO leg.; 1 ♂, Uchinomaki-rindo, Tashiro-fumoto, Kinko Town, alt. ca. 500～700 m, 27–V–2007, ex prepupa, collected under the bark of a dead tree, beetle emerged on 20–VI–2007, T. KURIHARA leg.

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*Spec. Bull. Jpn. Soc. Coleopterol.*, *Tokyo*, (7): 297–307, May 25, 2009

# Molecular Phylogeny and Variations in Elytra Surface Structures at the Distributional Boundary of *Mesechthistatus binodosus* and *M. furciferus* (Coleoptera, Cerambycidae)

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**Abstract** The distributional boundary of *Mesechthistatus binodosus* and *M. furciferus* runs across Myôkô Sasagamine of the Myôkô Mountains where morphological variants of *M. binodosus* occur in the vicinity of the *M. furciferus* area. The molecular phylogenetic analysis on these longicorn beetles from the Myôkô Sasagamine area by mitochondrial COI gene sequences suggests that introgressive hybridization has occurred. Surface structures of elytra of *M. binodosus* from the Myôkô Sasagamine area could be classified into three types: normal variant, black-spotted variant and spotless phenotypes. SEM observation revealed that each elytron in the variant *M. binodosus* that bears black pillar-shaped setae similar to the setae of *M. furciferus* bears a black spot.

## Introduction

The genus *Mesechthistatus* BREUNING, 1950 includes four species distinguished by external morphology and distributional patterns: *M. binodosus* (WATERHOUSE), *M. furciferus* (BATES), *M. taniguchii* (SEKI, 1944), and *M. fujisanus* HAYASHI, 1957. These four species are endemic to Japan, and are known only from Honshu and Sado Islands with parapatric distributions. Beetles belonging to the genus *Mesechthistatus* have atrophied hind-wings and are incapable of flying.

The *Mesechthistatus* species were collected by beating dead leaves in autumn and their distributional patterns were rigorously investigated in 1970's (for details see TAKAKUWA, 1987). The distributional patterns of *M. binodosus* and *M. furciferus* were during this process gradually demarcated. The distribution of these two species includes

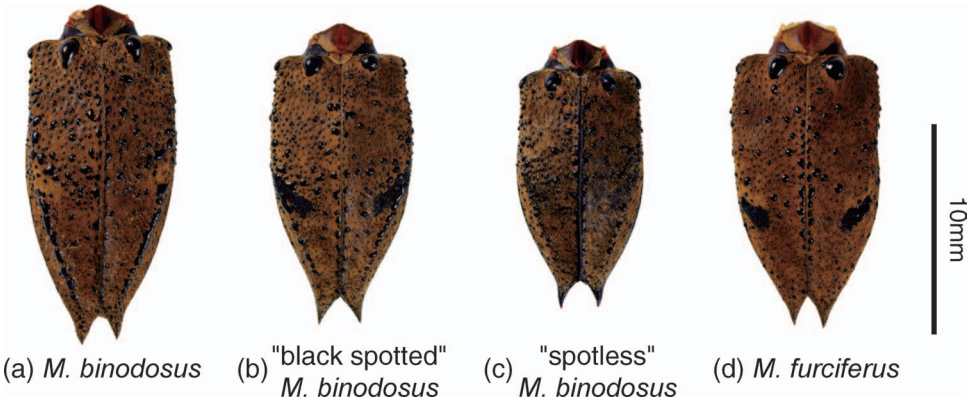


Fig. 1. Photographs of *Mesechthistatus* female specimens collected at Myôkô Sasagamine. —— (a), *M. binodosus*; (b), "black spotted" *M. binodosus*; (c), "spotless" *M. binodosus*; (d), *M. furciferus*

an area around the Myôkô Mountains in the northern part of the Fossa Magna (e.g. TAKAKUWA, 1987, 1988; YAMAYA & SHIMADA, 1993).

Each elytron of *M. binodosus* has a pale white spot in the middle (Fig. 1a). However, morphologically prossecing a *M. binodosus* feature, some specimens had a conspicuous black spot on each elytron, even though they were collected from the *M. binodosus* distributional area that juxtaposes the *M. furciferus* area in the Myôkô Sasagamine (YAMAYA *et al*., 1986) (Fig. 1b). At first, the "black spotted *M. binodosus*" was considered a product of hybridization between *M. binodosus* and *M. furciferus*, because the "black spotted *M. binodosus*" had the black spot characteristic to *M. furciferus*, and was found only in the vicinity of the distributional boundary. However, the morphological features of elytra bear no differences between the "black spotted *M. binodosus*"and the "normal *M. binodosus*" other than the conspicuous black spot. Recently, specimens of the "spotless *M. binodosus*" were collected in the Myôkô Sasagamine (Fig. 1c). If these "black spotted *M. binodosus*"and "spotless *M. binodosus*" were derived simply from hybridization between *M. binodosus* and *M. furciferus*, the morphological features of elytra would have intermediate characters between *M. binodosus* and *M. furciferus*.

This paper investigates these variants collected in the Myôkô Sasagamine area, based both on molecular phylogenetic analysis that was carried out using 1144 bp partial sequence of cytochrome oxidase subunit I (COI) gene and on the surface structures of elytra of "normal *M. binodosus*", "black spotted *M. binodosus*" and *M. furciferus*. To explain these data, we propose a morphogenesis model for "black spotted *M. binodosus*" in a developmental biological framework.

Table 1. The specimens analyzed in this study.

| Species and Specimen no. in Map | Isolate Code | Locality | DDBJ/EMBL/GenBank Accession number | Phenotype |
|---|---|---|---|---|
| *Mesechthistatus binodosus* | | | | |
| 1 | BINnby | 1♂, Nanbayama-rindô, Myôkô-shi, Niigata Pref., 23–IX–2001, H. Nakamine leg. | AB278272 | normal |
| 2 | BINsas1 | 1♀, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278276 | normal |
| 3 | BINsas2 | 1♀, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278277 | black spot |
| 4 | BINsas3 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278278 | normal |
| 5 | BINsas4 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278279 | normal |
| 6 | BINsas5 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278280 | normal |
| 7 | BINsas6 | 1♀, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278281 | spotless |
| 8 | BINsas7 | 1♀, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278282 | normal |
| 9 | BINsas8 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278283 | spotless |
| 10 | BINsas9 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278284 | normal |
| *M. furciferus* | | | | |
| 11 | FURsgk | 1♂, Shigekura-rindô, Myôkô-shi, Niigata Pref., 23–IX–2001, H. Nakamine leg. | AB278317 | normal |
| 12 | FURsas1 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278319 | normal |
| 13 | FURsas2 | 1♂, Mt. Sasagamine, Myôkô-shi, Niigata Pref., 18–IX–1999, M. Tôyama leg. | AB278320 | normal |
| 14 | FURoom | 1♂, Ômigawa, Otari-mura, Nagano Pref., 9–X–2000, H. Nakamine leg. | AB278351 | normal |
| 15 | FURamk | 1♂, Amakazari campsite, Otari-mura, Nagano Pref., 9–X–2001, H. Nakamine leg. | AB278353 | normal |
| 16 | FURmso | 1♂, Mushio, Otari-mura, Nagano Pref., 30–IX–2001, M. Tôyama leg. | AB278359 | normal |
| 17 | FURoys | 1♂, Oyasawa, Otari-mura, Nagano Pref., 23–IX–2001, S. Tsuyuki leg. | AB278363 | normal |
| 18 | FURoks | 1♀, Okususobana, Nagano-shi, Nagano Pref., 12–X–2000, S. Saitô leg. | | |
| Out group | | | | |
| *Parechthistatus gibber* | | 1♀, Mt. Shibi, Satsuma-chô, Kagoshima Pref., 20–IX–2001, K. Mori leg. | AB278550 | normal |
| *Hayashiechthistatus inexpectus* | | 1♂, Yakushima Is., Yakushima-chô, Kagoshima Pref., 14–IX–2002, N. Ohbayashi leg. | AB278551 | normal |

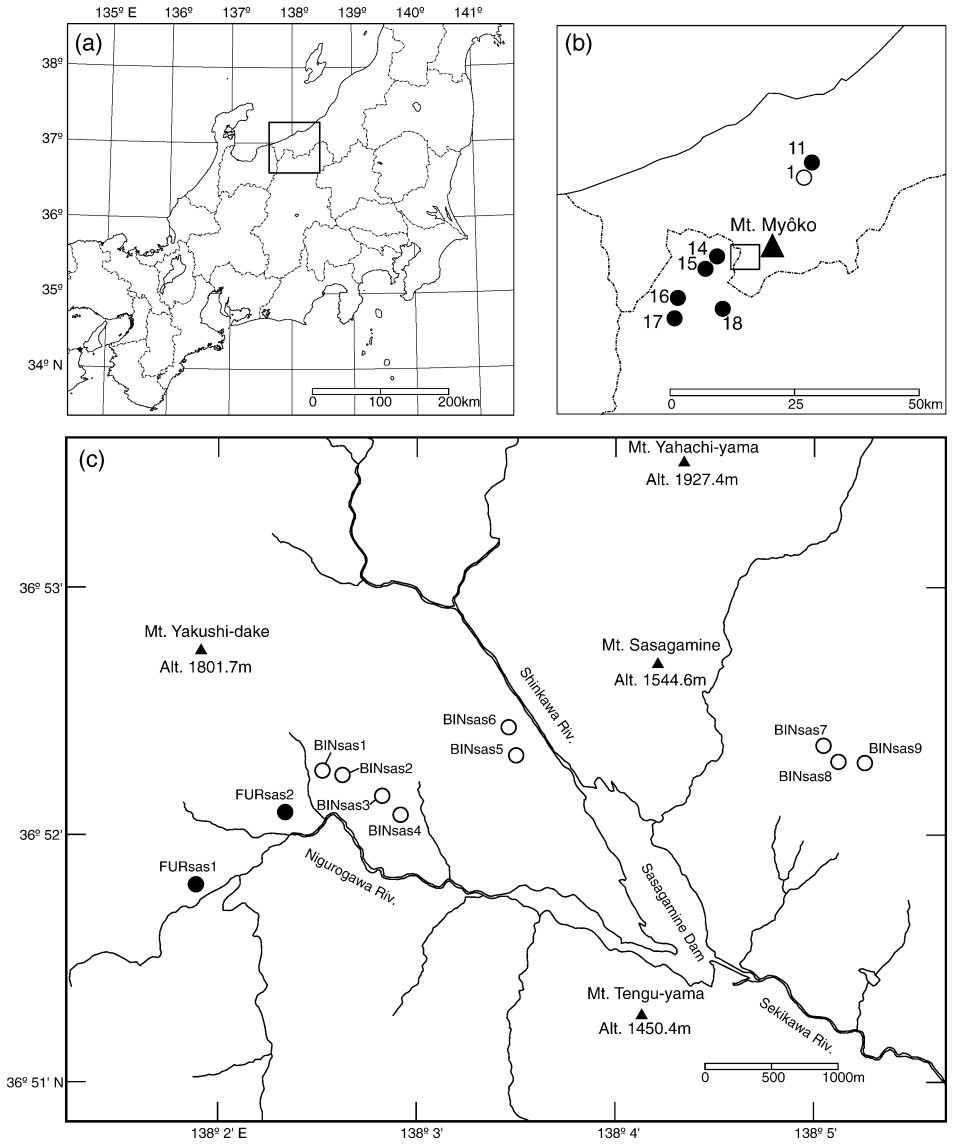


Fig. 2. Study areas and specimens collected. —— (a), Wide area map of the study area (open square frame corresponds to (b)); (b), map of the Myôkô mountains area (open square frame corresponds to (c)); (c), map of the Myôkô Sasagamine area. Locality numbers correspond to the number in Table 1.

## Materials and Methods

*Samples for molecular phylogeny and sequence analysis of DNA*

The specimens of *Mesechthistatus binodosus* and *M. furciferus* analyzed for species diagnosis in this study are listed in Table 1 and the localities where they were collected are shown in Figure 2. The beetles were immediately fixed in 95–99.5% ethanol and preserved in the same solution until use.

Total DNA was extracted from a mixture of cephalic and thoracic muscles by using a GenElute™ Mammalian Genomic DNA Miniprep Kit (Sigma-Aldrich, Inc.). Each DNA sample was finally dissolved in 200 $\mu$l elution buffer. The fragment of DNA encoding mitochondrial cytochrome oxidase subunit I (COI) was amplified from the total DNA solution by the polymerase chain reaction (PCR) with a primer pair as follows: KobCI1.2 (5′-TAA GAA GAA TTG TAG AAA ATG G-3′) and YhzCI2.2 (5′-TGT AGC GAT TTC TAA AAA AAGG-3′). PCR was carried out in a 25 $\mu$l reaction mixture containing 1 X PCR buffer for KOD-Plus-(TOYOBO), 0.2 mM of each dNTP, 2 mM of $MgSO_4$, 0.5 unit of KOD-Plus-DNA Polymerase (TOYOBO), 0.3 $\mu$M of each primer and 1 $\mu$l of template DNA solution. The amplification protocol was 25 cycles of denaturation at 94℃ for 15 sec, annealing at 50℃ for 30 sec, and extension at 68℃ for 40 sec in a PCR Thermal Cycler (Applied Biosystems). The PCR product was purified using by a GenElute™ PCR Clean-Up Kit (Sigma-Aldrich, Inc.). Direct sequencing of the partial COI gene fragment was performed by using a BigDye® Terminator Cycle Sequencing Kit (Applied Biosystems) with primers KobCI1.2 and Yhz2.2. A partial sequence of the COI gene was determined by the ABI PRISM® 310 Genetic Analyzer or ABI PRISM® 3100 Genetic Analyzer (Applied Biosystems).

*Phylogenetic analysis*

All data were analyzed with PAUP* version 4.0b10 (Swofford, 2002), and the phylogenetic tree was constructed according to the neighbor-joining (NJ) method (Saitou & Nei, 1987). The NJ analysis was conducted based on the evolutionary distance (D) computed according to Kimura's two-parameter method (Kimura, 1980), and the tree was based on 1000 bootstrap replicates (Felsenstein, 1985). Although some authors have pointed out problems with constructing the genealogical tree by using NJ (e.g. Farris *et al*., 1996), we used the simple and easy NJ method because the purpose of this study was to examine the similarity between the sequences.

*Scanning electron microscope (SEM) observation*

The specimens were washed with ultrasonic washer before observations without metal coating. The surface structures of elytra were observed with scanning electron microscope (VE-7800; Keyence, Osaka, Japan) at the Osaka Museum of Natural History (OMNH).

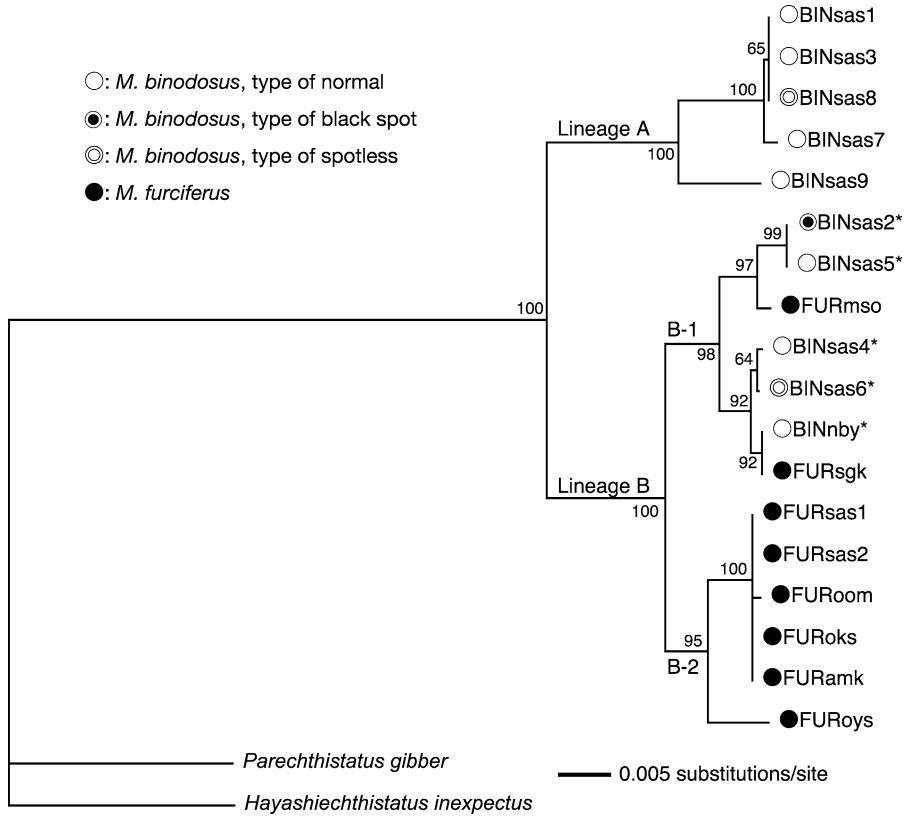


Fig. 3. Neighbor-joining tree based on the mitochondrial COI gene sequences. The bootstrap value was indicated at each node (when $>$ 50%). Asterisk indicates introgressive specimens.

## Results and Discussions

*Mitochondrial gene genealogy*

Figure 3 shows the neighbor-joining tree of the mitochondrial COI gene of *Mesechthistatus binodosus* and *M. furciferus* collected from Myôkô Sasagamine and its vicinity. The monophyletic lineage A contained only *M. binodosus*. However, the lineage B was not monophyletic but a complex. NAKAMINE and TAKEDA (2008) have already revealed that the 19 individuals of *M. binodosus* for a wider distributional range were shown as monophyletic by mitochondrial gene genealogy. Therefore, it is possible to assume that the lineage B containing the mitochondrial haplotype of *M. binodosus* is derived from introgressive hybridizations but not from ancestral polymorphism.

Interestingly, sub-lineage B-1 consists of specimens derived from introgression (BINsas2, 4, 5 and 6), FURmso (Mushio, Otari-mura, Nagano Pref.) and FURsgk (Shigekura-rindô, Myôkô-shi, Niigata Pref.). However, the specimens in the vicinity of

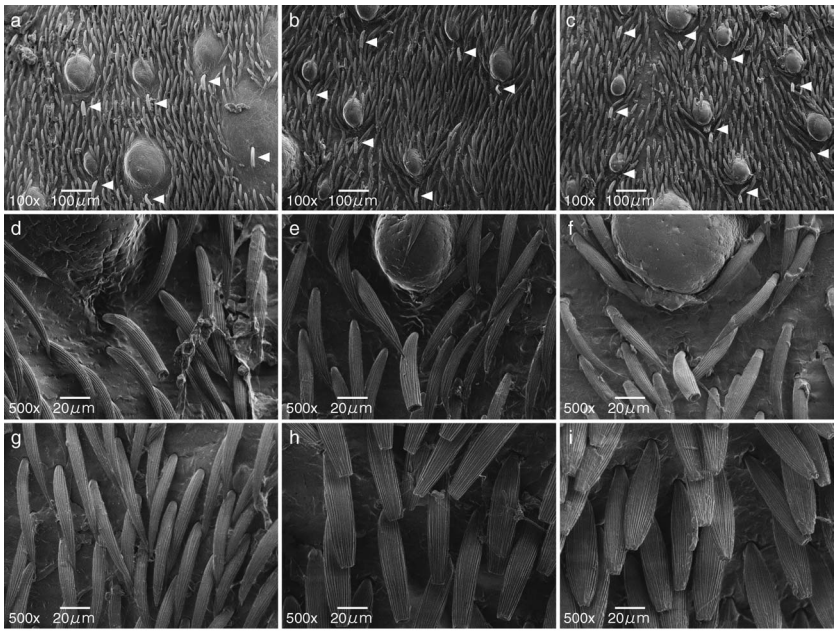


Fig. 4. Photographs with scanning electron microscope of *Mesechthistatus* specimens collected at Myôkô Sasagamine. —— (a), (d), (g), *M. binodosus*; (b), (e), (h), "black spotted" *M. binodosus*; (c), (f), (i), *M. furciferus*; (a), (b), (c), surface structures of elytron (black pillar-shaped setae grew in companion with granules in the apical side of each elytron (arrow heads)); (d), (e), (f), enlarged images of black pillar-shaped setae beside a granule; (g), enlarged image of pale white spot on elytron of *M. binodosus*; (h), enlarged image of black spot on elytron of *M. binodosus*; (i), enlarged image of black spot on elytron of *M. furciferus*.

the *M. furciferus* distributional boundary in the Myôkô Sasagamine (FURsas1 and 2) were included in the sub-lineage B-2. These results suggest that introgressive hybridization between *M. binodosus* and *M. furciferus* occurred in the past, however, it does not take place frequently at present in the vicinity of distributional boundary in the Myôkô Sasagamine.

*Morphology of elytra*

Figure 4 shows the surface structures of the elytra of the "normal *M. binodosus*", "black spotted *M. binodosus*" and *M. furciferus*. These species and the "black spotted *M. binodosus*" share a common structure as follows: each elytron is covered with auburn or yellowish brown pubescence, except of the spot (Fig. 4) and black pillar-shaped setae grow in companion to granule on the apical side of each elytron in many cases (Fig. 4 a, b, c, arrow head). The diagonal pale white spot on each elytron of *M. binodosus* is covered with the same type of auburn or yellowish brown pubescence (Fig. 4g), and the

marked black spots at the bend of each elytron of *M. furciferus* are structured with black pillar-shaped setae (Fig. 4h). The diagonal marked black spots on each elytron of "black spotted *M. binodosus*" are structured with black pillar-shaped setae (Fig. 4h).

*How did the morphogenesis of "black spotted M. binodosus" and "spotless M. binodosus" develop?*

In recent years, evolutionary and developmental biology has progressed remarkably. With many insects, the knowledge of molecular bases of morphogenesis has rapidly built up. Hereinafter, we propose a hypothesis or model for the morphogenesis of "black spotted *M. binodosus*" and "spotless *M. binodosus*" based on so far accumulated knowledge of pattern formation and gene regulation in insects.

Several gene expressions and regulations participate on eyespot formation in the butterfly wing (for details see the review of BELDADE & BRAKEFIELD, 2002). For example, CARROLL *et al*. (1994) discovered that '*Distal-less* gene' is expressed at a focus of eyespot on imaginal disc of butterfly wing (*Precis coenia*, Lepidoptera: Nymphalidae). The region of spots on elytra might be determined by some gene expressions also in the *Mesechthistatus* species. Another important knowledge is a study of gene expression regulation. For example, '*yellow* gene' which causes melanization in *Drosophila* has the plural enhancer region corresponding to a part of the body (e.g. WITTKOPP *et al*., 2002; PRUD'HOMME *et al*., 2006). The '*yellow* gene' is expressed in the wing and abdomen of the *Drosophila* species that has an enhancer expressing in the wing and abdomen, while other *Drosophila* species has only an enhancer expressed in the wing. The '*yellow* gene' is expressed only in the wing.

Figure 5 shows a simple model for morphogenesis of *M. binodosus*, *M. furciferus* and variant types of *M. binodosus*, based on the analogy derived from these insects. It assumes that *M. binodosus*, *M. urciferus* and variant types of *M. binodosus* have a hypothetical '*P* gene' that regulates the differentiation to form black pillar-shaped setae and they have a common enhancer (closed square) for '*P* gene' with expression at position to side of granule, because they have in common the black pillar-shaped setae growing with granule (Fig. 4). Furthermore, *M. furciferus* and "black spotted *M. binodosus*" have been hypothesized to have another enhancer region for '*P* gene' with expression at black spots on elytra (closed circle). The '*S* gene', another hypothetical gene, is expressed at the spot region in primordial elytra of *M. binodosus*, *M. furciferus* and the variant type of *M. binodosus*. Next, it is assumed that the '*W* gene', also hypothetical, is expressed at the spot region in *M. binodosus*. This '*W* gene' has the function to make the pubescence be positively differentiated to pale white, or inhibit pigmentation of pubescence. As a result, the pale white spots are formed on elytra of *M. binodosus* (Fig. 5a). The '*B* gene' is supposed to express itself at the spot region in *M. furciferus*. This '*B* gene' has the function to make the enhancer switch on and causes the '*P* gene' expression at the spot region. Finally, the black pillar-shaped setae are structured at the spot region of the elytra (Fig. 5b). The morphogenesis of the "black spotted *M. binodosus*" can possibly be explained by the same mechanisms. Then what

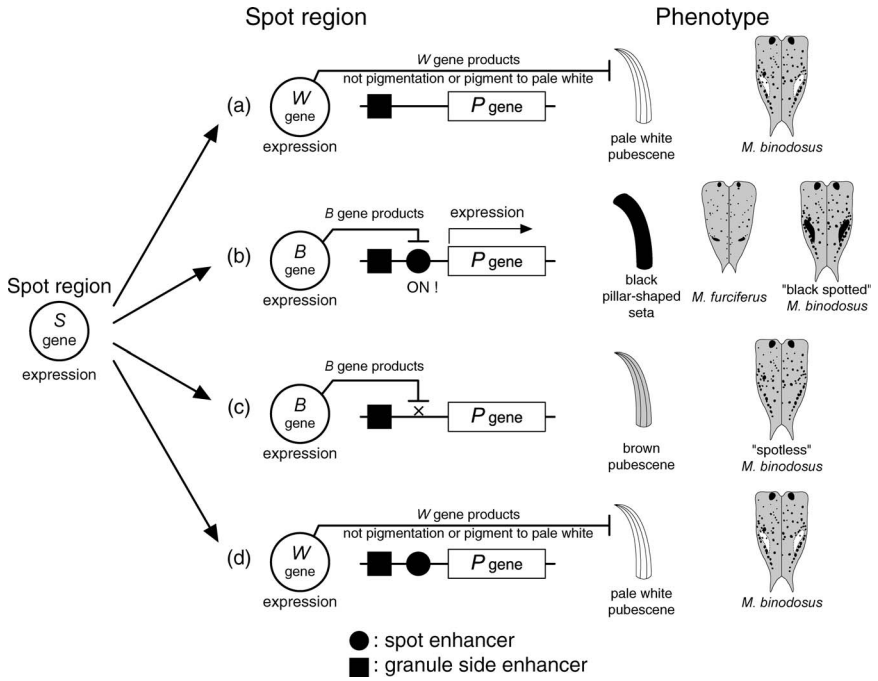


Fig. 5. Schematic diagrams of the simple morphogenetic model of *Mesechthistatus binodosus*, *M. furciferus* and strange types of *M. binodosus* (see text for details).

morphogenetic mechanism determines the "spotless *M. binodosus*"? It may be produced by a combination of '*P* gene' without "spot enhancer" and the '*B* gene' expression in the spot region. Since there is no '*W* gene' expression, the pale white spot is not formed on elytra (Fig. 5c).

In the recent years, an interesting result has been obtained from a mating experiment between a "spotless *M. binodosus*" male and a female of the 'normal phenotype', collected from the Myôkô Sasagamine. Four of six imagoes had the black spot (Mr. Y. MATSUMOTO & Dr. M. TAKAKUWA, pers. com., unpublished). This result suggests that the normal phenotype of *M. binodosus* has the gene that regulates the black spot formation. It is thought that the female specimen used for this mating experiment had the '*W* gene' and '*P* gene' with "spot enhancer" (Fig. 5d, closed circle). In this combination, phenotype should be normal *M. binodosus*, because it is without the '*B* gene' that turns on spot enhancer of the '*P* gene'. Furthermore, this model can be used to explain that the "black spotted *M. binodosus*" develops by the crossing between normal phenotype of *M. binodosus* (d type in Fig. 5) and the "spotless *M. binodosus*" (c type in Fig. 5).

It is hoped here that the molecular developmental approach will clarify the morphogenesis of *Mesechthistastus* species in the near future. Furthermore, we want to

reveal the evolution and speciation of the Japanese Phrissomini with the technique of evolutionary and developmental biology.

## Acknowledgements

We sincerely congratulate Drs. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, Odawara and Nobuo OHBAYASHI of the Entomological Laboratory, Ehime University, Matsuyama to their retirement. From these two eminent Japanese coleopterologists we were able to learn about various things: distribution, taxonomy and ecological features of the Japanese Phrissomini. Our study could have never been concluded without their instructions. Furthermore, Dr. TAKAKUWA instigated the participants of the "Kobuyahazu summit" to attend the meeting for researching and investigating to Phrissomini in Japan. H. NAKAMINE has learned very much and still harbors a lot of pleasant memories from this meeting.

We wish to express a sincere appreciation for this occasion to have taken place. Our heartily thanks are also due to Dr. Nobuo OHBAYASHI and Messrs. Syûsei SAITÔ, Masao TÔYAMA and Shigeo TSUYUKI whose tended specimens were used in this study. Similarly, we thank Mr. Rikio MATSUMOTO of the Osaka Museum of Natural History (OMNH), for the possibility to make scanning electron microscope photographs. Special thanks are also due to Mr. Yûichi MATSUMOTO for interpreting the results of crossing experiment of *Mesechthistatus* species.

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# Phylogenetic Analysis of the Lamiine Genus *Anoplophora* and its Relatives (Coleoptera, Cerambycidae) Based on the Mitochondrial COI Gene

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**Abstract** The phylogenetic relationships of the lamiine genus *Anoplophora* and its relatives have been analyzed on the basis of the mitochondrial cytochrome oxidase subunit I (COI) gene sequences of 114 specimens representing 13 species of *Anoplophora,* two species of *Dolichoprosopus* and one species each of *Monochamus*, *Calloplophora* and *Pseudonemophas.* The two species, *Apriona germari* and *Batocera celebiana* are also analyzed as outgroup for phylogenetic analysis. The results show that the specimens analyzed, excepting *Calloplophora* and *Pseudonemophas*, are separated into six lineages within a short time. Four lineages (Lineage 1–4) include only the species of *Anoplophora,* and the *Dolichoprosopus* species also form an independent lineage (Lineage 5), but the last one (Lineage 6) consists of the species of two genera, *Anoplophora* and *Monochamus.* The *Calloplophora* and *Pseudonemophas* species form basal lineages are largely separated from the above-mentioned six lineages. The Lineage 1 further divided into two sub-lineages and some groups. On the basis of these results, the origin of the *Anoplophora* species distributed in the Japanese Islands is discussed.

## Introduction

In spite of the fact that the lamiine genus *Anoplophora* includes many economically important species attacking several kinds of fruit trees and also roadside trees, their taxonomic status has not been settled for a long time. In 2002, however, LINGAFELTER and HOEBEKE published an important world revision of the genus *Anoplophora*. It was an excellent work and almost all of the taxonomic problems seemed clarified. On the other hand, their conception of the generic and species ranges seems to be rather wide, and we cannot agree completely with their opinion in some aspects. In this study, we

used mitochondrial DNA sequences, a more objective tool, to elucidate the phylogenetic relationships of the lamiine genus *Anoplophora* and its allied genera. Although we were unable to make complete sampling, essential samples including the type species, *A. stanleyana* and various local specimens from the Japanese Islands were included in this study. We obtained certain conclusion about the genus *Anoplophora* with some relative genera, and would like to discuss the result hereinafter.

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## Materials and Methods

1. Specimens examined.

Almost all the specimens examined were newly collected for the purpose of DNA analysis. Collected specimens were immediately dipped and killed in 99.9% ethanol and stored until use. Most of the collecting localities are plotted in the map of Fig. 1. Symbols in the brackets of the specimens examined show the sample numbers in Fig. 2. The nucleotide sequence data reported in this paper have appeared in the DDBJ, EMBL and GenBank nucleotide sequence databases with the accession numbers AB439136–AB 439205, AB448738 and AB448739.

### 1. *Anoplophora chinensis* (FORSTER, 1771)

*Cerambyx chinensis* FORSTER, 1771, Nov. Spec. Ins., p. 39; type area: China.

*Distribution*. China, Indochina (?).

*Specimens examined*. [00-17c], [00-17d]: Botanical garden, Shanghai, China, 17. VII. 2000, N. OHBAYASHI; [02-05]: Wuyishan, Fujian, China, 30. V. 2002, N. OHBAYASHI.

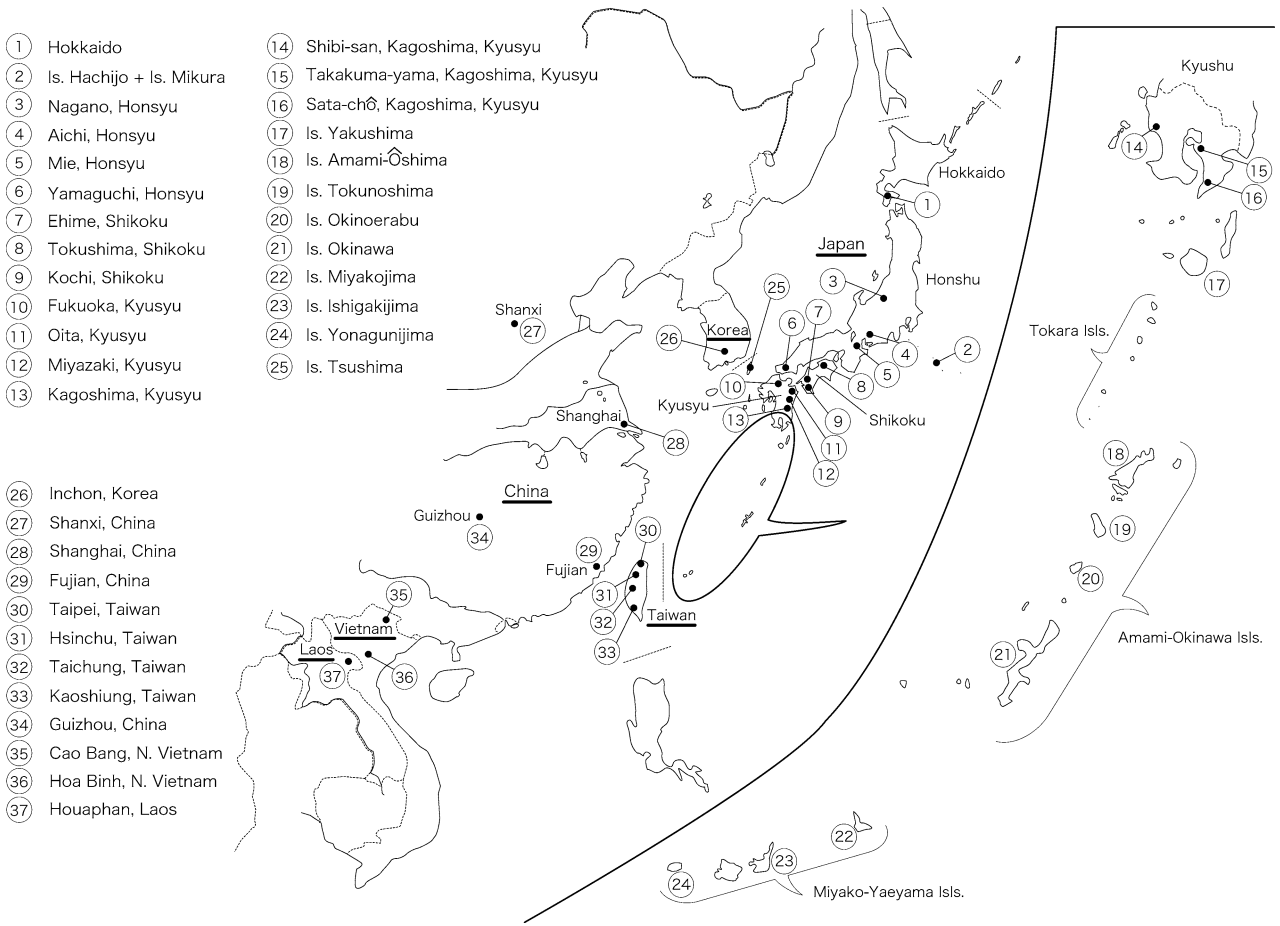


Fig. 1. Map showing the localities of the specimens examined.

### 2. *Anoplophora malasiaca* (THOMSON, 1865)

*Calloplophora malasiaca* THOMSON, 1865, Syst. Ceramb., p. 553; type area: Malasia? (Malas).

*Distribution*. Japan (Hokkaido, Honshu, Shikoku, Izu Isls., Is. Tsushima, Is. Yakushima, Is. Amami-ôshima, Is. Okinawa), Korea, China (?), Malaysia (?).

*Specimens examined*. [01-03a]: Esashi-chô, Hokkaido, Jpn., 28. VII. 2001, Y. KAMITE; [01-03b]: Kaminokuni-chô, Hokkaido, Jpn., 28. VII. 2001, Y. KAMITE; [01-02a], [01-02b]: Is. Hachijô-jima, Tokyo, Jpn., 22. VII. 2001, K. NAGATA; [02-03]: Is. Mikura-jima, Tokyo, Jpn., 26. V. 2002, N. OHSHIGE; [01-05a], [01-05b]: Komagane-shi, Nagano Pref., Jpn., 9. VIII. 2001, Y. NOTSU; [00-27c]: Kasugai-shi, Aichi Pref., Jpn., 22. VI. 2000, Y. ARITA: [00-27d]: Kasugai-shi, Aichi Pref., Jpn., 7. VII. 2000, Y. ARITA; [00-27f]: Nagakute-chô, Aichi Pref., Jpn., 18. VII. 2000, Y. UTSUNOMIYA; [00-27a]: Matsusaka-shi, Mie Pref., Jpn., 14. VII. 2000, Y. UTSUNOMIYA; [00-27b]: Matsusaka-shi, Mie Pref., Jpn., 20. VI. 2000, Y. UTSUNOMIYA; [00-27e]: Sakauchi-river, Matsusaka-shi, Mie Pref., Jpn., 13. VII. 2000, Y. UTSUNOMIYA; [00-17k], [00-17l]: Hôjô-shi, Ehime-Pref., Jpn., VII. 2000, K. YAMAWAKI; [00-m2]: Hôjô-shi, Ehime Pref., Jpn., 18. VII. 2000, K. YAMAWAKI; [00-m1]: Matsuyama-shi, Ehime Pref., Jpn., 4. VII. 2000, H. ISHIKAWA; [00-17n]: Tokushima-shi, Tokushima Pref., Jpn., 6. VII. 2000, J. OGAWA; [00-17o]: Muroto-shi, Kôchi Pref., Jpn., 6. VII. 2000, J. OGAWA; [02-01]: Toyoura-chô, Shimonoseki-shi, Yamaguchi Pref., Jpn., 3. VII. 2002, Y. UTSUNOMIYA; [03-m1]: Mt. Seburi, Sawara-ku, Fukuoka Pref., Jpn., 22. VIII. 2003, Y. UTSUNOMIYA; [04-m2]: Tsukahara, Yufuin-chô, Ôita Pref., Jpn., 11. VII. 2004, Y. UTSUNOMIYA; [01-6]: Takanabe, Miyazaki Pref., Jpn., 22. VIII. 2001, M. YAMAGUCHI; [01-04b], [01-04a]: Kagoshima-shi, Kagoshima Pref., Jpn., 28. VII. 2001, K. MORI; [04-m1]: Shibushi-chô, Kagoshima Pref., Jpn., 27. VII. 2004, Y. UTSUNOMIYA; [02-02]: Sata-chô, Kanzoku-gun, Kagoshima Pref., Jpn., 8. VIII. 2002, K. MORI; [02-04]: Onoaida, Is. Yakushima, Jpn., 14. IX. 2002, N. OHBAYASHI; [00-07e], [00-07f], [00-g1], [00-g2], [00-g3], [00-g4], [00-g5], [00-g6], [00-g7]: Ôgimi-son, Is. Okinawa, Jpn., 2. VI. 2000, N. OHBAYASHI; [00-17 g], [00-17h]: Is. Tsushima, Nagasaki Pref., Jpn., 12. VII. 2000, Y. SUGIURA; [04-m3]: Tanohama, Is. Tsushima, Nagasaki Pref., Jpn., 11. VII. 2004, M. KIMURA; [01-01]: Inchoen, Korea, 11. VII. 2001, Y. ARITA.

### 3. *Anoplophora macularia* (THOMSON, 1865)

*Calloplophora macularia* THOMSON, 1865, Syst. Ceramb., p. 553; type area: China.

*Distribution*. Japan (Is. Ishigaki-jima, Is. Miyako-jima, Is. Okinawa), Taiwan, China (?).

*Specimens examined*. [00-07a], [00-07b], [00-t1], [00-t2], [00-t3], [00-t4]: Chinen-son, Is. Okinawa, Jpn., 6. VI. 2000, N. OHBAYASHI; [00-07c], [00-07d]: Gushikawa-shi, Is. Okinawa, Jpn., 1. VI. 2000, N. OHBAYASHI; [00-t5], [00-t6], [00-t7], [00-t8]: Gushikawa-shi, Is. Okinawa, Jpn., 6. VI. 2000, N. OHBAYASHI; [00-t9], [00-t10]:

Nago-shi, Is. Okinawa, Jpn., 1. VI. 2000, N. OHBAYASHI; [01-10a], [01-10b]: Hirara-shi, Is. Miyako-jima, Jpn., 15. VII. 2001, N. OHSHIGE; [01-11a]: Yonehara, Is. Ishigaki-jima, Jpn., 28. VI. 2001, N. OHSHIGE; [01-11b]: Mt. Omoto-dake, Is. Ishigaki-jima, Jpn., 5. VI. 2001, N. SUGIMOTO; [00-27g]: Lushan Spa, Nantou County, Taiwan, 3. VII. 2000, S. INADA; [00-27h]: Tengzi, Kaoshiung County, Taiwan, 8. VIII. 2000, M. SATÔ; [02-06], [02-07], [02-08]: Shin Peitou, Taipei County, Taiwan, 23. VI. 2002, N. OHBAYASHI; [02-09]: Mt. Pahsienshan, Taichung County, Taiwan, 29. VI. 2002, N. OHBAYASHI; [02-10]: Smangus, Hsinchu County, Taiwan, 23. VI. 2002, C.-L. LI.

### 4. *Anoplophora ryukyensis* BREUNING et OHBAYASHI, 1964

*Anoplophora oshimana* subsp. *ryukyensis* BREUNING et OHBAYASHI, 1964, Bull. Japan ent. Acad., **1**: 15; type locality: Is. Yonaguni, Japan.

*Distribution*. Japan (Is. Yonaguni-jima).

*Specimens examined*. [00-07i]: Is. Yonaguni-jima, Jpn., 31. V. 2000, M. KIMURA; [01-12b], [01-12a]: Mt. Urabe-dake, Is. Yonaguni-jima, Jpn., 10. VI. 2001, Y. KIMURA.

### 5. *Anoplophora oshimana oshimana* (FAIRMAIRE, 1895)

*Melanauster oshimanus* FAIRMAIRE, 1895, Bull. Soc. ent. Fr., **1895**: 390; type locality: Is. Oshima, Ryukyu, Japan.

*Distribution*. Japan (Is. Amami-ôshima, Is. Uke-jima, Is. Okinoerabu, Is. Okinawa).

*Specimens examined*. [00-17i], [00-17j]: Is. Amami-ôshima, Jpn., 30. VI. 2000, M. KIMURA; [01-07a], [01-07b]: Akatsuchi-yama, Is. Amami-ôshima, Jpn., 18. VI. 2001, M. SATÔ; [01–09a], [01-09b]: Ôyama, Is. Okinoerabu, Jpn., 27. VI. 2001, N. OHSHIGE; [00-07g], [00-07h], [00-o1], [00-o2], [00-o3], [00-o4], [00-o5], [00-o6], [00-o7]: Nago-shi, Is. Okinawa, Jpn., 1. VI. 2000, N. OHBAYASHI.

### 6. *Anoplophora oshimana tokunoshimana* SAMUELSON, 1965

*Anoplophora malasiaca tokunoshimana* SAMUELSON, 1965, Pacif. Ins., **7**: 89, fig. 1; type locality: Tokunoshima Is., Ryukyu, Japan.

*Distribution*. Japan (Is. Tokunoshima).

*Specimens examined*. [01-08a], [01-08b]: Boma, Is. Tokunoshima, Jpn., 20. VI. 2001, N. OHBAYASHI.

### 7. *Anoplophora davidis* (FAIRMAIRE, 1886)

*Melanauster davidis* FAIRMAIRE, 1886, Annls. Soc. ent. France, (6), **6**: 355; type locality: Lou-tse Kiang, China.

*Distribution*. Indochina, China (?).

*Specimen examined*. [99-7b]: Ban Xa Lenh (890 m), Xa Pa Co, Huyen Mai Chau, Hoa Binh Prov., North Vietnam, 8. VI. 1999, A. SAITO.

### 8. ***Anoplophora glabripennis*** (MOTSCHULSKY, 1853)

*Cerosterna glabripennis* MOTSCHULSKY, 1853, Etud. ent., **2**: 48; type area: North China.

*Distribution*. China, Korea, North America, Europe.

*Specimens examined*. [00-17a], [00-17b]: Botanical garden, Shanghai, China, 12. VII. 2000, N. OHBAYASHI; [00-17e], [00-17f]: Taiyuan, Shanxi, China, 30. VI. 2000, L-Z. LI.

### 9. ***Anoplophora elegans*** (GAHAN, 1888)

*Cyriocrates elegans* GAHAN, 1888, Ann. Mag. nat. Hist., (6), **2**: 450; type locality: Ruby Mines District, Upper Myanmar.

*Distribution*. Indochina, China.

*Specimens examined*. [02-14]: Mt. Phu Pan, Houaphan Prov., Laos, V, 2001, H. WAKAHARA; [02-15]: Xiangkhoang, Xiangkhoang Prov., Laos, V, 2001, H. WAKAHARA.

### 10. ***Anoplophora stanleyana*** HOPE, 1839

*Anoplophora stanleyana* HOPE, 1839, Proc. linnean. Soc. London., **1**: 43; type locality: Assam, India.

*Distribution*. India, Bhutan, Indochina, China.

*Specimen examined*. [08-2]: Mt. Fanjingshan, Tongren city, Guizhou, China. 15～28. IV. 2008, Native collector.

### 11. ***Anoplophora beryllina*** (HOPE, 1840)

*Monochamus beryllinus* HOPE, 1840, Proc. linn. Soc., London, **1**: 79; type locality: Assam, India.

*Distribution*. India, Indochina, China.

*Specimens examined*. [02-12]: Mt. Phu Pan, Houaphan, Laos, 2. V. 2002, H. WAKAHARA; [02-13]: Mt. Phu Pan, Houaphan, Laos, 29. IV. 2002, N. OHBAYASHI. [99-9h]: Mt. Pia Oac (1,250–1,500 m), Cao Bang Prov., North Vietnam, 23～27. V. 1999, A. SAITO.

### 12. ***Anoplophora lurida*** (PASCOE, 1856)

*Monochamus luridus* PASCOE, 1856, Trans. ent. Soc., London, (2), **4**: 47; type area: North China.

*Distribution*. Taiwan, China?

*Specimen examined*. [02-11]: Mt. Anmashan, Taichung, Taiwan, 26. VI. 2002, N. OHBAYASHI.

### 13. ***Anoplophora granata*** HOLZSCHUH, 1993

*Anoplophora granata* HOLZSCHUH, 1993, FBBA, Wien, **75**: 48; type locality: Chiang Mai, North Thailand.

*Distribution*. Indochina.

*Specimen examined*. [02-16]: Mt. Phu Pan, Houaphan, Laos, V. 2001, H. WAKAHARA.

### 14. ***Calloplophora sollii*** (HOPE, 1839)

*Oplophora sollii* HOPE, 1839, Proc. linn. Soc., London, **1**: 42; type locality: Assam, India.

*Distribution*. India, Indochina.

*Specimen examined*. [02-17]: Mt. Phu Pan, Houaphan Prov., Laos, 29. IV. 2002, N. OHBAYASHI.

### 15. ***Dolichoprosopus yokoyamai*** (GRESSITT, 1937)

*Monochamus yokoyamai* GRESSITT, 1937, Kontyû, Tokyo, **11**: 149; type locality: Niigata Pref., Japan.

*Distribution*. Japan (Honshu, Shikoku, Kyushu).

*Specimens examined*. [y-4]: Mt. Shibisan, Izumi-gun, Kagoshima Pref., Jpn., 15. VIII. 2004, S. SAMESHIMA; [y-6]: Mt. Seburi, Sawara-ku, Fukuoka Pref., Jpn., 7. VIII. 2004, N. OHBAYASHI.

### 16. ***Dolichoprosopus sameshimai*** N. OHBAYASHI, 2001

*Dolichoprosopus sameshimai* N. OHBAYASHI, 2001, Jpn. J. syst. Ent., **7**: 265; type locality: Mt. Hoyoshi-dake, Kôyama-chô, Kagoshima Pref. Japan.

*Distribution*. Japan (Kagoshima Pref.).

*Specimens examined*. [02-19]: Ôura, Sata-chô, Kagoshima Pref., Jpn., 9. VIII. 2002, K. MORI; [02-20]: Mt. Takakuma-yama, Tarumizu-shi, Kagoshima Pref., Jpn., 24. VIII. 2002, K. MORI; [y-2]: Summit of Mt. Takakuma-yama, Tarumizu-shi, Kagoshima Pref., Jpn., 28. VII. 2004, S. SAMESHIMA; [y-3]: Foot of Mt. Takakuma-yama, Tarumizu-shi, Kagoshima Pref., Jpn., 28. VII. 2004, S. SAMESHIMA; [y-5]: Sugiyama-dani, Sata-chô, Kagoshima Pref., Jpn., 13. VIII. 2004, S. SAMESHIMA.

### 17. ***Monochamus guerryi*** PIC, 1902

*Monochamus guerryi* PIC, 1902, Échange, **18**: 121; type area: Yunnan, China.

*Distribution*. Indochina, China.

*Specimen examined*. [02-18]: Mt. Phu Pan, Houaphan Prov., Laos, 2. V. 2002, H. WAKAHARA.

### 18. ***Pseudonemophas versteegii*** (RITSEMA, 1881)

*Monochamus versteegii* RITSEMA, 1881, Not. Leyd. Mus., **3**: 155; type locality: Sumatra, Indonesia.

*Distribution*. India, Indochina, China, Malaysia, Indonesia.

*Specimen examined*. [08-1]: 19 miles point, Pahang, Malaysia, 2. IV. 2008, N. OHBAYASHI.

### 19. ***Batocera celebiana*** THOMSON, 1858

*Batocera celebiana* THOMSON, 1858, Arch. Ent., **1**: 453, pl. 20, fig. 1; type area: Celebes, Indonesia.

*Distribution*. Indonesia (Celebes, Moluccas, Java, Sangihe).

*Specimen examined*. [00-07j]: Kolaka, SE. Celebes, Indonesia, 31. XII. 1999, A. SAITO.

### 20. ***Apriona germari*** HOPE, 1831

*Apriona germari* HOPE, 1831, Gray, Zool. Misc., **1**: 28; type area: India.

*Distribution*. India, Indochina, Nepal, China.

*Specimen examined*. [00-17m]: Shanghai, China, 30. VI. 2000, L-Z. LI.

2. DNA extraction, PCR and sequencing

Isolation of DNA: Total DNA was extracted from thoracic muscle (10–25 mg) of a single individual specimen by using the QIAamp DNA Mini Kit (QIAGEN), and finally dissolved in 200 $\mu$l elution buffer. Altogether, 114 specimens from Japan, Taiwan, China, Vietnam, Laos, Malaysia and Indonesia were analyzed.

PCR amplification and DNA sequencing: The total DNA was used as a template for amplification of the mitochondrial cytochrome oxidase subunit I (COI) gene by the Polymerase Chain Reaction (PCR) (SAIKI *et al.*, 1988). About 1,000 bp 5′-region sequence of the COI gene was amplified by the forward primer SKCOI-7 (5′-CGC TCT AGA ACT AGT GGA TCA CAN AYC AYA ARG AYA TYG GNA C-3′) and the reverse primer KSCOI-2 (5′-TCG AGG TCG ACG GTA TCA CRT ART GRA ART GNG CNA CNA CRT ART A-3′) (KIM *et al.*, 2003). The underlined sequences of the two PCR primers were used for sequencing. PCR amplification was carried out in a 50 $\mu$l reaction mixture containing 2 $\mu$l of the total DNA solution, 5 $\mu$l of 10X *Ex Taq* buffer (TaKaRa), 4 $\mu$l of dNTP mixture (2.5 mM each), 2.5 $\mu$l of each primer (10 pmol/$\mu$l), and 2.5 U of *Ex Taq* polymerase (TaKaRa). PCR was performed for 50 cycles of denaturation at 94°C for 30 sec, primer annealing at 50°C for 1 min, and extension at 70°C for 2 min. The final single cycle was performed under the same conditions but with

an extension step at 70°C for 7 min. The PCR product was purified with QIAquick PCR Purification kit (QIAGEN).

Direct sequencing was performed with an automated ABI PRISM 310 Genetic Analyzer (Applied Biosystems) using the dideoxy chain-termination method (SANGER *et al.*, 1977). The reaction mixture for cycle sequencing consisted of 5–20 ng of template DNA, 3.2 pmol of sequencing primer, 4 $\mu$l of BigDye Terminator Mix and 2 $\mu$l of 5X BigDye Sequencing Buffer (Applied Biosystems), and distilled water to a total volume of 20 $\mu$l. The cycle-sequencing conditions were 25 cycles at 96°C for 10 sec, 50°C for 5 sec, and 60°C for 4 min, followed by an indefinite hold at 4°C. The DNA products were cleaned with Centri-Sep spin columns (Applied Biosystems). Mostly, the two sequencing primers (underlined parts of the PCR primers) were sufficient to read the DNA fragment of the COI gene.

3. Phylogenetic Analysis

The sequences were aligned and compared by using the multiple-alignment program CLUSTAL W (THOMPSON *et al.*, 1994) and DNASIS, version 3.7 (Hitachi software Engineering, Japan). The evolutionary distances (D) were computed by KIMURA's (1980) two-parameter method, and the phylogenetic trees were constructed by the neighbor-joining (NJ) method (SAITOU & NEI, 1987). All of these processes were performed with the DNA sequence analysis package PAUP (SWOFFORD, 2001). Bootstrap analysis was performed for the trees based on 1000 re-samplings. The COI sequences of *Batocera and Apriona* species were used as the out-groups.

## Results

1006 bp sequences of the COI gene were finally used for construction of the phylogenetic tree. Neither deletions nor insertions were required for multiple alignment. The G+C contents of the COI gene sequences from the specimens analyzed in this study were nearly constant (~32%). NJ-phylogenetic tree of the specimens analyzed is shown in Fig. 2–a & b. *Apriona germari* and *Batocera celebiana* were used for out-group. The species of the lamiine genus *Anoplophora* and its allied genera analyzed in this study, excluding *Calloplophora sollii* and *Pseudonemophas versteegii*, constitute six major lineages, the *malasiaca* species-group (Lineage 1), *A. glabripennis* (Lineage 2), *A. elegans* (Lineage 3), *A. stanleyana* (Lineage 4), *Dolichoprosopus* spp. (Lineage 5) and the complex lineage (Lineage 6) which consists of *A. beryllina*, *A. lurida*, *A. granata* and *Monochamus guerryi*. Of these six lineages, the Lineage 6 is likely to be the basal lineage to other five lineages, and the Lineages 1–4 seem to be rather closely related to each other. However, the divergence order of the lineages was supported without high bootstrap values, and thus these lineages might be radiated within a short time. *Calloplophora sollii* and *Pseudonemophas versteegii* were separately placed outside of the above-mentioned six lineages, and formed independent lineages from the species of the genera *Anoplophora*, *Dolichoprosopus* and *Monochamus*.

The *malasiaca* species-group is divided into two sub-lineages. The Sub-lineage A includes *A. davidis* from North Vietnam, *A. chinensis* from China and A. *malasiaca* from Japan and Korea, and the Sub-lineage B includes *A. oshimana* from the Amami-Okinawa Isls., *A. ryukyensis* from Yonaguni Is. and *A. macularia* from Taiwan and the Ryûkyû Archipelago of Japan. Here we provisionally named them the north element for former and the south element for latter. The origin (ancestral species) of the north element is considered to be *A. davidis* of North Vietnam, then *A. chinensis* and *A. malasiaca* speciated from *A. davidis*. *A. malasiaca* is further separated into two groups, of which one is distributed on Hokkaido, Honshu, Shikoku and Korea through Is. Tsushima, and the other is distributed on Kyushu, Is. Yakushima and Is. Okinawa, Japan.

The south element of the *malasiaca* species-group consists of *A. oshimana* (including two subspecies) and *A. macularia*+*A. ryukyensis*, which are clearly separated from each other. The former does not show the geographical separation among islands, but the latter consists of two distinct clusters, *A. ryukyensis* of Is. Yonaguni and *A. macularia* of Taiwan (including recently invaded population of the Ryûkyû Archipelago).

We tentatively calculated the divergence time between the lineages assuming that a 0.01 *D* (KIMURA's two parameter distance) unit of the COI gene sequence corresponds to about 2.7 million years (Myr), which is estimated from the data of Cychrini ground beetles (SU *et al.*, 2004). As shown in Fig. 2, the divergence of the lamiine genus *Anoplophora* including its two allied genera, *Monochamus* and *Dolichoprosopus* started about 27 million years ago (Mya) between the Lineage 6 and the others, and the four lineages (Lineage 1–4) seemed to radiate within a short time about 22 Mya. The separation between the two sub-lineages took place about 9.5 Mya, and that between *Anoplophora chinensis* and *An. malasiaca* was culcalated to occur about 4.5 Mya. However, these divergence times calculated in this study seems to be rather older than the traditional view. We have no any evidence at present to confirm whether the evolutionary rate of COI gene of carabid ground beetles is same to that of the Lamiine genus *Anoplophora* and its relatives or not, thus the calculation of the divergence time may be only a speculation.

## Discussion

One of the purposes of this paper is to know the phylogenetic position and relationships of the *chinensis* group of *Anoplophora* based on molecular analysis, a rather objective tool that is completely different from the traditional method based on morphology. Another purpose of this paper is to point out the problems and contradictions of previous system, but not to propose a new taxonomic system.

The *chinensis* species-group included in the Lineage 1 is a well-defined group characterized by the following features: Body black; underside of body, entire part of first and second antennal segments, basal part of third to tenth in male or third to eleventh of female antennal segments, and legs furnished with fine bluish white pubes-

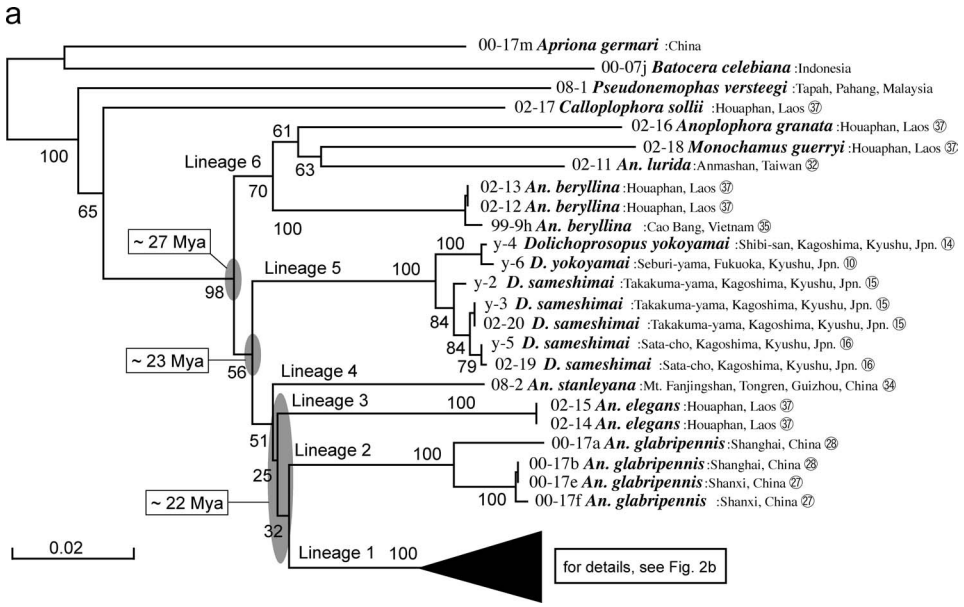


Fig. 2a. NJ-phylogenetic tree of the specimens of the lamiine genus *Anoplophora* and its relatives analyzed. Symbol on the top of scientific name shows the sample number. The circled-number in the end of each specimen name is locality number that corresponds to that shown in Fig. 1. The divergence time is shown at some branching points.

cence; a pair of pronotal maculation (sometimes lacking) and several elytral maculations consisting of white, bluish white or yellowish thick recumbent hairs, and the scutellum covered with the same kind of hairs; head with inferior eye lobe 1.5 times as deep as gena below it; antenna ca 1.7 to 2.0 times as long as body length in male and about 1.2 times in female; pronotum constricted in font and base, provided with a distinct tubercles at the center in front of basal constriction and a pair of well pointed spines on lateral sides; elytra almost parallel-sided in female and slightly narrowed posteriad in male, and then gently rounded to almost right angled sutural apices; elytral disc moderately scattered shallow punctures from which long or moderate-sized suberect black hairs arise, with basal area distinctly covered with node-like granules.

For the classification of the *chinensis* species-group, there are different ideas. LINGAFELTER and HOEBEKE (2002) synonymized *A. malasiaca* with *A. chinensis*, and also *A. oshimana*, *A. oshimana tokunoshimana* and *A. oshimana ryukyensis* with *A. macularia*. On the other hand, N. OHBAYASHI (1992), and MAKIHARA (2007) regarded them as independent species or subspecies, respectively. Here we tentatively distinguish seven species and a subspecies, *A. davidis* (FAIRMAIRE), *A. chinensis* (FORSTER), *A. malasiaca* (THOMSON), *A. macularia* (THOMSON), *A. oshimana* (FAIRMAIRE), *A. oshimana tokunoshimana* SAMUELSON, *A. ryukyensis* BREUNING et

OHBAYASHI and *A. ogasawaraensis* MAKIHARA in this species-group. These seven species basically show allopatric distribution.

Though *A. ogasawaraensis* was not available for our analysis, the result of molecular phylogenetic analysis seems to support the independence of each species. OHBAYASHI (2001) reported sympatric distribution of three *Anoplophora* species, *A. oshimana*, *A. macularia* and *A. malasiaca* on Okinawa Island of the Ryûkyû Archipelago, and the latter two species were suggested to be recent invaders. According to the DNA phylogenetic analysis of these three species collected on Okinawa Island, the independence of each species was also supported in spite of four specimens found ([00-o3], [00-o5], [00-g6], [00-07h]) which probably originated from hybridization between *A. oshimana* and *A. malasiaca*.

*Anoplophora chinensis* from Shanghai and Fujian, China was clearly clustered with *A. malasiaca* as the sister groups as seen in the Sub-lineage A. However, the separation between the two specimens of *A. chinensis* was rather deep, even older than that between the Shanghai specimen of *A. chinensis* and *A. malasiaca*, suggesting that there are at least two strains in *A. chinensis*, although they cannot be distinguished from each other morphologically. Perhaps, these are two geographical lineages, but we need to analyze more samples to confirm this presumption. This result also implies that *A. malasiaca* might speciate from the Shanghai strain of *A. chinensis* with some rapid morphological changes. *Anoplophora malasiaca* seems to be separated into two geographical groups, the southern group and the northern group, though they are also difficult to distinguish from each other morphologically. The southern group is distributed in Kyushu, Yakushima Island and Okinawa Island, and the northern group is widely distributed in Hokkaido, Honshu, Shikoku and Is. Tsushima. Interestingly, the specimen from Korea was certainly clustered into the northern groups though the Korean Peninsula is geographically separated from Japan, but it does not form a sister group to all Japanese specimens. Additionally, no difference was found in the DNA sequences between the *A. malasiaca* specimens from Korea and Tsushima Island, Japan. These facts indicate that *A. malasiaca* originated from *A. chinensis* in the Asian continent and immigrated into the Japanese Archipelago through the Korean Peninsula at least twice in the past time, probably by some artificial reasons, for example in association with the introduction of citrus trees.

Three *Anoplophora* species are clustered in the Sub-lineage B. *Anoplophora macularia* and *A. ryukyensis* are closely related to each other and *A. oshimana* is their sister group, suggesting that *A. ryukyensis* was separated from *A. macularia.* Because no continental species (Chinese species) was found to cluster into the Sub-lineage B in this analysis, it is difficult to presume the origin of the species in this sub-lineage. However, based on the result that *A. oshimana* and *A. macularia* are rather deeply separated from each other, it could be speculated that the ancestor of these two species had been distributed in continental China, and severally spread their distribution into Taiwan and the Amami-Okinawa Islands of Japan. In fact it is well known that the fauna of Amami-Okinawa Islands includes several species, whose affinity is not to Taiwan but

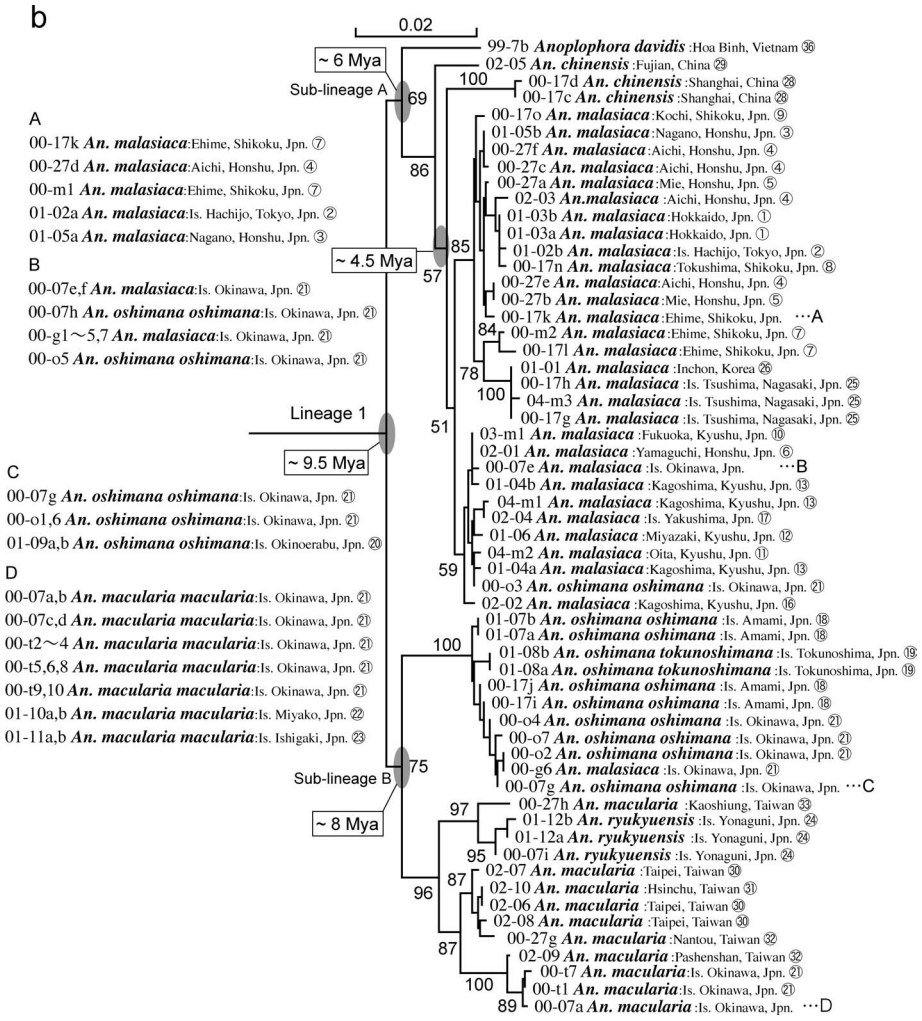


Fig. 2b. NJ-phylogenetic tree of the specimens clustered in the Lineage 1 of Fig. 2a. For details, see Fig. 2a.

directly to South China or Indochina.

*Anoplophora oshimana* complex distributed in Amami-Okinawa Islands is now separated into two subspecies by the slight morphological characteristics, but there are no clear differences of DNA among the populations of Amami-ôshima Is., Okinoerabu Is., Tokunoshima Is. and Okinawa Is. This species is abundant in Amami-ôshima Is., but the populations of other islands are rather small, respectively. The population of Okinoerabu Is. is considered to be introduced from Amami-ôshima in the 1970s (pers.

comm. from MAKIHARA). *Anoplophora oshimana tokunoshimana* was described in 1965 based on the specimens collected in 1963. The record of this species from Okinawa Island is uncertain, but after 1950 at the earliest. According to these facts, there is a possibility that the native place of *A. oshimana* should be restricted to Amami-ôshima Is. and other populations in the Amami-Okinawa Islands could be established by expansion of its distribution in the 20th century.

*Anoplophora macularia* group including *A. ryukyensis* is rather complicated. Our result basically supports the separation of the two morphological species, *A. ryukyensis* and *A. macularia*, except one specimen (00-27h) of *A. macularia* from Taiwan, which is phylogenetically independent from other specimens of the same species and clearly clustered with *A. ryukyensis*. The phylogenetic relationships of these two species can be interpreted as follows. Two lineages of *A. macularia*, which may be geographically separated, existed in Taiwan, one of the two lineages invaded Yonaguni Is., Japan, and speciation has taken place with rapid morphological changes, and the other one was introduced into Okinawa Is., Miyako Is. and Ishigaki Is. of the Ryukyu Islands in recent years. OHBAYASHI (2001) also suggested the recent immigration of *A. macularia* from Taiwan to the Ryukyu Archipelago on the basis of morphological viewpoint. Further analyses for additional samples of *A. macularia* from Taiwan are necessary to confirm the present results because only one specimen (00-27h) was found to cluster with *A. ryukyensis* lineage.

The Lineage 2 consists of only one species, *A. glabripennis*. We were unable to examine sufficient samples of this species, but at least two sub-lineages were recognized even from the same population in Shanghai, China. This species attacks more than ten genera of deciduous trees, and causes heavy damages especially on popular, maple and willow. Previously it was separated into two species, *A. glabripennis* and *A. nobilis* GANGLBAUER, but LINGAFELTER and HOEBEKE (2002) synonymized the latter with the former. ISONO *et al.* (1999) suggested that the two species (*A. glabripennis* and *A. nobilis*) rapidly spread their distribution by afforestation project in China and seemed to be mixed especially in Northwest China. To understand whether there are two distinct species or not, it will be expected to conduct further DNA analysis of specimens from various areas.

The Lineage 3 consists of a single species, *A. elegans*, which was once placed in the subgenus *Cyriocrates* of the genus *Anoplophora*. The Lineage 4 also consists of a single species, *A. stanleyana*, which is the type species of the genus *Anoplophora*. The Lineage 5 includes two Japanese species of the genus *Dolichoprosopus*, *D. yokoyamai* and *D. sameshimai*. These two species showed very close DNA sequences and could not be separated from each other on the phylogenetic tree. *Dolichoprosopus yokoyamai* is widely distributed throughout Japan up to 800 m in altitude and its host is limited to *Fagus crenata*. On the other hand, *D. sameshimai* is only distributed in the low altitude range of the southernmost of Kyushu Island, and its host is restricted to *Lithocarpus edulis*. These facts suggest that recent speciation with rapid morphological changes have occurred from *D. yokoyamai* to *D. sameshimai* presumably due to the host switching.

The type species of this genus, *D. maculatus* RITSEMA=*D. lethalis* (PASCOE) is distributed in Indonesia, which is far apart from the distributional ranges of the Japanese species, so that it seems necessary to make an additional analysis of other species including the type species to clarify the phylogenetic position and relationships of this genus.

The Lineage 6 includes three *Anoplophora* species (*A. granata*, *A. lurida* and *A. beryllina*) and one *Monochamus* species (*M. guerryi*). In other words, the three *Anoplophora* species have a common origin with the species of different genus, but are widely separated from other species of the same genus. As the result, their generic status should be comprehensively reviewed in the future together with the Japanese *Dolichoprosopus* species.

*Pseudonemophas versteegi* was first described as a species of the genus *Monochamus*, and it has been placed in the genus *Anoplophora* since BREUNING (1943), then LINGAFELTER and HOEBEKE (2002) transferred it to the genus *Pseudonemophas*. According to our result, it is reasonable to place this species out of *Anoplophora*. On the other hand, *Calloplophora sollii* was first described as a species of the genus *Oplophora*, but THOMSON (1864) replaced it to the *Calloplophora* because of preoccupied name. LINGAFELTER and HOEBEKE (2002) once synonymized *Calloplophora* with *Anoplophora*, but our result supports that this species also should be placed out of the genus *Anoplophora*.

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# Note on *Anoplophora wusheana* CHANG from Taiwan (Coleoptera, Cerambycidae, Lamiinae)

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**Abstract** *Anoplophora wusheana* CHANG is redescribed and illustrated based on the holotype and additional specimens.

*Anoplophora wusheana* was first described from Taiwan by CHANG in 1960 on the basis of a single female specimen. LINGAFELTER and HOEBEKE (2002), in their revisional work of the genus *Anoplophora* treated it as "species incertae sedis" since the type specimen has disappeared. However, T. NIISATO, when visiting the Taiwan Agricultural Research Institute, Taichung, in 1986 re-discovered and examined the holotype of this species and took its photograph. Recently, several Taiwanese entomologists captured specimens that closely match the type specimen. W.-I CHOU has also collected this species on the trunk of *Acer serrulatum* HAYATA at Taoyuan County. After the close examination of these specimens, it became apparent that it surely is a good species, and herein we would like to record its original description again, together with some additional description.

## *Anoplophora wusheana* CHANG, 1960

(Figs. 1–10)

*Anoplophora wusheana* CHANG, 1960: 2, plate 1, fig. 2.
*Anoplophora wusheana* (incertae sedis): LINGAFELTER & HOEBEKE, 2002, 142.
*Anoplophora* (*Anoplophora*) *davidis*: YU, NARA & CHU, 2002: 111, pl. 20, figs. 5a & 5b. —— CHOU, 2004 & 2008: 284, figs. (nec FAIRMAIRE).

*Original description.*

"2. G5–0154' M–541' *Anoplophora wusheana* sp. nov. Plate I, fig. 2.

Female: Moderately large, broad, slightly narrowed posteriorly. Shiny black, with purplish tinge; clothed with areas of purplish-white, bluish-white or pale-white pubescence: bottom of frons, edges of genae and upper surfaces of femora and tibiae sparsely clothed with this pale-white pubescence; great portion of metasternum and upper portion of tarsi densely clothed with bluish-white pubescence; ventral surface of abdomen, except the first segment of middle portion densely clothed with bluish-white pubescence; six oblong areas on each elytra densely clothed with purplish white pubescence.

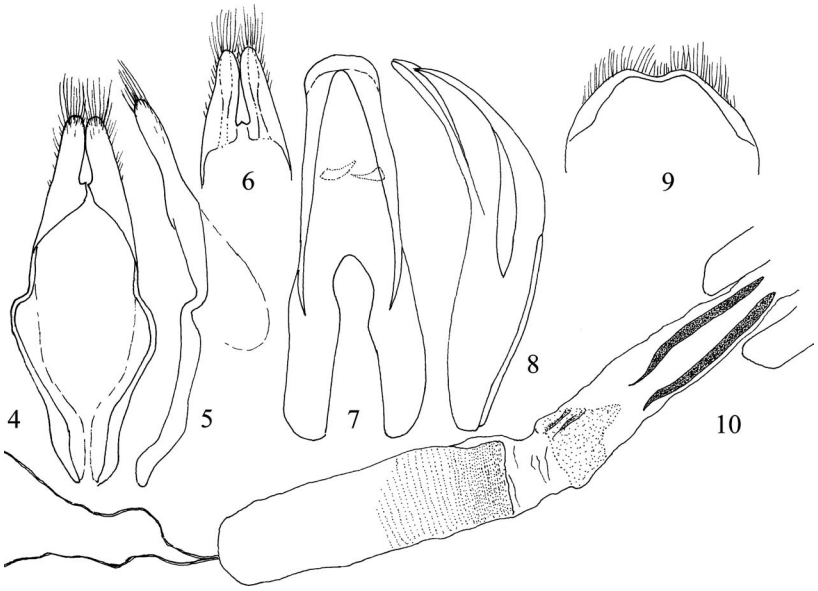
Head impressed along median line, which extends from the bottom of frons to the post margin of occiput, densely concave between antennal insertions; median part of frons, occiput and genae glabrous, shiny black; antennae nearly one and one-fifth as long as body, rather slender, entirely black tinged with brown, the third segment the longest, nearly one and one half as long as the fourth, fifth much shorter than fourth, sixth and seventh gradually shorter, last four segments nearly equal; prothorax transverse with lateral tubercles strong, acute, directed slightly at apices, disc glabrous, shiny black swollen behind center, slightly convex at middle sides; scutellum triangular, vertical in front; elytra much broader than prothorax, densely nodosed at base, with a basal swelling on inner two-third of each, non-pubescent portions on dorsal surface shiny black, glabrous, with very tiny hairs and indistinct punctures on anterior sides. Length 31 mm; breadth 11 mm.

Holotype: Female, Wu-she, alt. 1200 meters, Pu-li, Nan-tao, Central Taiwan, July 24,1958, Collected by Mr. Yu, an insect Collector, was given to the author by Mr. W. S. Chen, a butterfly collector of Taiwan.

This new species can be distinctly separated from all its allied species, such as *A. chinensis* (Forster) from China mainland, *A. macularia* (Thomson) from Taiwan, *A. glabripennis* (Motschulsky) from North China, and *A. macrospilus* (Gahan), *A. pirouleti similis* (Gahan) from Hainan Island, by the following characters:

Coloration darker, non-pubescent portions shiny black tinged with purplish; pubescent portions purplish-white or pale -white. Antennae rather slender, with unicolor of black tinged with brown, lacking white pubescence either on bases and apices or bases only of segments. Pubescent areas on elytral discs, larger, oblong in shape; smaller in number, about six on each; purplish in color, etc."


Figs. 1–3. Habitus of *Anoplophora wusheana* CHANG. —— 1, Male specimen from Anma-shan; 2, female specimen from Taoyuan County; 3, holotype, female.




Figs. 4–10. Male genitalia of *Anoplophora wusheana* CHANG. —— 4, Tegmen, dorsal view; 5, ditto, lateral view; 6, ditto, apical half, ventral view; 7, median lobe, dorsal view; 8, ditto, lateral view; 9, eighth abdominal sternite, ventral view; 10, endophalus, ventral view.

*Additional description.* Elytra densely and uniformly clothed with thick suberect bristle-like hairs of moderate lengths; each elytron provided with four or five maculations of irregular transverse narrow bands consisting of bluish white pubescence, usually asymmetrically arranged on left and right elytron. Ventral surface rather uniformly clothed with minute bluish-white pubescence, except for middle of mitasternum.

M a l e. Body length 25.0–28.0 mm, width at humeri 8.7–11.1 mm. Antenna 1.6 times as long as body length; relative lengths of antennal segments as follows:– 45 : 10 : 90 : 70 : 58 : 51 : 49 : 45 : 40 : 36 : 50. Concavity between antennal insertions deeper than that of female.

Male genitalia:– Eighth abdominal tergite with apical margin shallowly emarginate in middle. Tegmen a little shorter than median lobe; lateral lobes 1/4 as long as the entire length of tegmen, straightly convergent apicad; each lobe on apical part provided with many long setae and a few short setae laterally; ringed part once swollen and geniculated near basal third, thence converging basad. Median lobe robust, with widely rounded apex in dorsal view, thick and strongly curved in lateral profile; median struts about half as long as the length of median lobe. Endophallus from median orifice of median lobe to the base of a pair of ejaculatory ducts more than twice as long as median lobe, with crescent-like sclerites at apical third of median lobe, and with a pair of rod-like armatures just behind median lobe.

F e m a l e. Body length 25.5–31.3 mm, width at humeri 9.2–11.1 mm. Relative lengths of antennal segments as follows:– 45 : 10 : 77 : 60 : 50 : 47 : 42 : 40 : 34 : 30 : 39.

*Additional specimens examined*. 1 ♂, Anma Shan, Taichung Hsien, C. Taiwan, 20～30–VI–1996, local collector leg.; 1 ♂, same locality, 7–VII–1999, Y.-C. LIN leg.; 1 ♀, same locality, 11–VII–1999, Y.-C. LIN leg.; 1 ♂, Shilen, Taoyuan Hsien, alt. 1,000 m, collected from *Acer serrulatum* HAYATA, 22–VII–2006, W.-I CHOU leg.; 1 ♀, same locality, 25–VI–2006, W.-I CHOU leg.; 1 ♀, same locality, 31–VII–2006, W.-I CHOU leg.

*Notes*. This species is quite unique in the genus *Anoplophora* and can be characterized by its unicolored antennal segments, glabrous pronotum and dense bristle-like hairs on the elytra. YU, NARA and CHU (2002) illustrated this species as *Anoplophora davidis* (FAIRMAIRE), and CHOU (2004, 2008) followed them. But in *A. davidis*, basal half of each antennal segment is with bluish white annulation, pronotum with a pair of maculation of bluish pubescence, and elytral suberect hairs are sparser, shorter and thinner than those of *A. wusheana*.

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# Larvae of the Genus *Acalolepta* PASCOE (Coleoptera, Cerambycidae) from Japan

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**Abstract** Larvae of three Japanese species of the agniine genus *Acalolepta* PASCOE, *viz. A. iwahashii*, *A. sublusca boehmeriavora* and *A. boninensis* are described for the first time, and their taxonomic status is discussed. Larvae of *A. fraudatrix fraudatrix*, *A. luxuriosa luxuriosa*, *A. kusamai*, *A. sejuncta sejuncta* and *A. degener* are redescribed. Key to all known larvae of Japanese species including *A. permutans paucipunctatus* is given. Structure of the surface of pronotal shield and locomotory ampulla, shape of head and ventral sclerite are found to diagnostic characters among the *Acalolepta* larvae.

## Introduction

Out of the 17 Japanese species of the genus *Acalolepta* PASCOE, the larval morphology of six species, *A. fraudatrix*, *A. luxuriosa*, *A. permutans paucipunctatus*, *A. kusamai*, *A. sejuncta* and *A. degener*, has already been studied (KOJIMA & NAKAMURA, 1992; TSHEREPANOV, 1983; NAKAMURA & KOJIMA, 1981). Recently, I was able to examine the morphology of larvae of eight species of this genus including three unknown species. I received these larvae courtesy of some of my colleagues; some larvae I collected myself. In this paper, I describe larvae of *A. iwahashii*, *A. sublusca* and *A. boninensis* for the first time. In addition, larvae of *A. fraudatrix fraudatrix*, *A. luxuriosa luxuriosa*, *A. kusamai*, *A. sejuncta sejuncta* and *A. degener* are herein redescribed, and the review of the diagnostic characters of the *Acalolepta* larvae is provided.

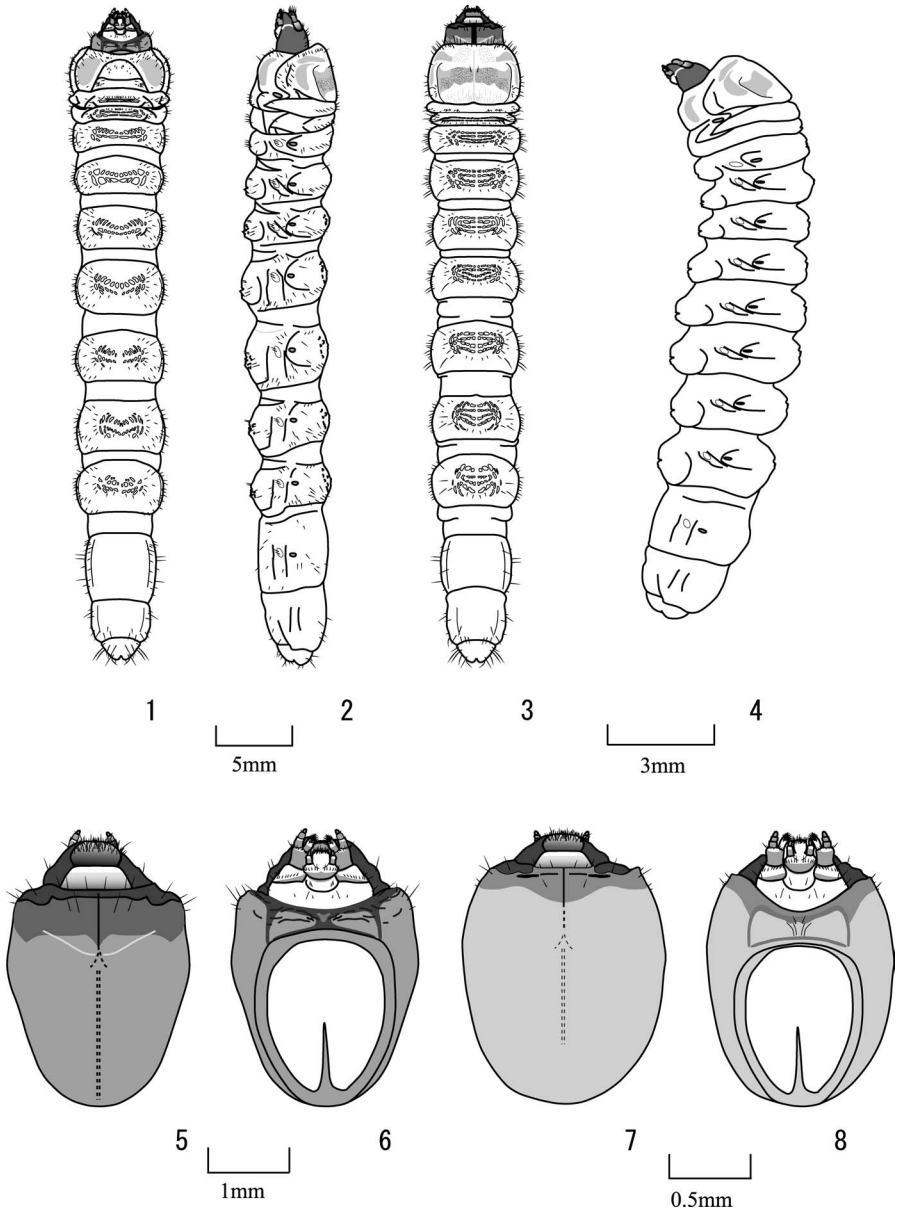
Seventeen species of the Japanese *Acalolepta* were divided into eight 'species groups' according to their adult morphology (MAKIHARA, 1992 a); seven groups except for *A. ferriei* group are recognized, based on their larval morphology.

## Genus *Acalolepta* PASCOE, 1858

TSHEREPANOV, 1983, Usachi Sevenoi Azii, **4**: 122.

*Larva*. Body elongate, cylindrical, sparsely provided with short ferruginous setae throughout, not bent ventrad except for *A. degener*.

Head retracted into prothorax more than by basal half. Cranium elongate (width/length ca. 0.75 to ca. 0.85), tapering posteriad, widest between anterior third to middle,




Figs. 1–8. Larvae of *Acalolepta fraudatrix frandatrix* (1–3, 5–6) and *A. degener* (4, 7–8). —— 1, Habitus, ventral view; 2, 4, ditto, lateral view; 3, ditto, dorsal view; 5, 7, head, dorsal view; 6, 8, ditto, ventral view.

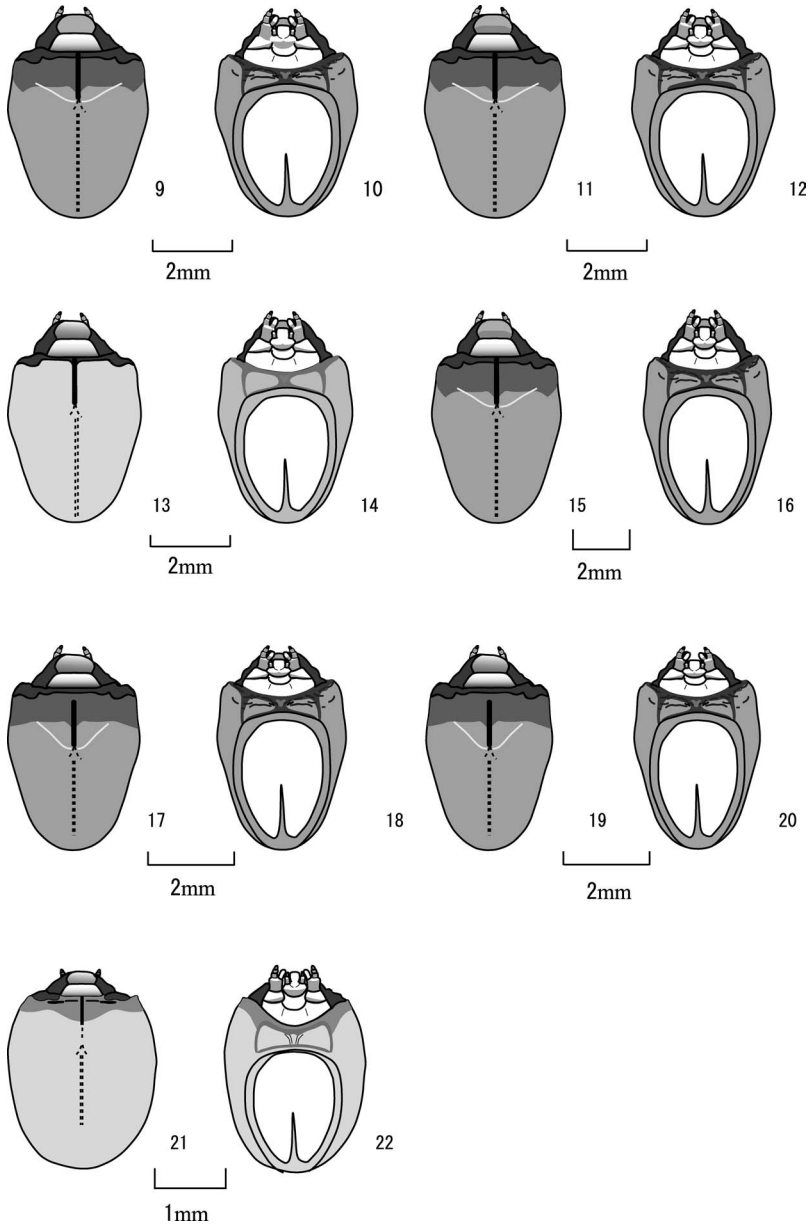
depressed, with anterior area more screlotized. Three pairs of epistomal setae present. Occipital foramen oval. Frons almost smooth, flattened at anterior margin with several long setae. Frontal lines either posteriorly discernible or not discernible at all. Medial frontal line distinct, blackish brown. Epicranium almost smooth, pigmented. Gena provided with a few long genal setae. Total length of mouth parts/length of cranium ca. 0.3 to 0.4.

Ventral sclerite oblong, concave at frontal margin, width/length ca. 2.5 to 5.0. Hypostoma oblong, strongly sclerotized along posterior margin, rugose or smooth, blackish brown to yellowish brown; hypostomal lines blackish brown to brown, complete and slightly arcuate, parallel to each other or dilated posteriorly. Gula raised, brown to yellowish brown; gular lines dilated anteriorly, blackish brown to yellowish brown.

Clypeus trapezoidal, wider than long, with pigmented basal area. Labrum semicircular, provided with numerous setae on anterior half, pigmented though anterior setose area slightly paler. Antennae very short, more or less projected. Mandible strongly pointed at apical part, glabrous, provided with a few setae on outer margin.

Submentum almost fused with connecting lobe, very weakly pigmented, provided with a pair of short setae. Connecting maxillary lobe and cardo also fused, likewise very weakly pigmented, provided with a few short setae. Stipes provided with several setae on basal area arranged in transverse lines, pigmented along frontal and basal margins; frontal pigmentation narrow; basal one triangular. Maxillary palpiger pigmented; frontal transverse setose area paler. Less than basal half of mala pigmented, frontally with setose whitish area. Maxillary palpus three-segmented, exceeding to a level of mala; first segment as long as wide or longer, provided with several setae at sides near front, with pigmentation of apical half stronger than on basal half; second segment shorter than first, longer than wide or square-shaped, provided with a few setae at sides near apex, pigmented though paler in apical area; third segment shorter than, or as long as second, conical, slightly longer than wide, pigmented. Mentum oblong, white, though pigmented near frontal margin, provided with a few pairs of distinct basal setae. Labial palpiger fused with prementum, pigmented in basal half, provided with setae on frontal half. Labial palpi with first segment longer than wide, largely pigmented beyond basal half; second segment shorter than first, conical to cylindrical, longer than wide, entirely pigmented. Ligula almost square-shaped, white, densely covered with short setae in frontal area.

Prothorax wider than long, rounded laterally. Apical half of pronotum with a band of pigmentation, interrupted by median impression, provided with a row of setae along marginal areas; anterior and postero-lateral margins with setae dense. Pronotal shield pigmented, with or without sclerotized spinules, sometimes microgranulate, rugose to smooth, sparsely furnished with short setae; medial impressed white line distinct; lateral furrows and sub-lateral impressions along pronotal shield distinctly impressed; alar lobe dorsally pigmented, with sparse setae, and with or without convex setose area near posterior margins. Epipleurum, episternum and lateropresternum fused, with a pair of lateral pigmented area, with sparse setae, distinctly separated from mediopresternum;




Figs. 9–22. Larvae of *Acalelepta fraudatrix fraudatrix* (9–10), *A. iwahashii* (11–12), *A. sublusca boehmeriavora* (13–14), *A. luxuriosa luxuriosa* (15–16), *A. sejuncta sejuncta* (17–18), *A. boninensis* (19–20) and *A. degener* (21–22). —— 9, 11, 13, 15, 17, 19, 21, Head, dorsal view; 10, 12, 14, 16, 18, 20, 22, ditto, ventral view. (Setae are omitted in Figs. 9–22.)

mediopresternum with a few setae, posteriorly with or without area of sclerotized spinules; prothoracic coxosternum and sternellar fold fused, laterally sparsely clothed with short setae, with or without area of sclerotized spinules along anterior margin.

Meso- and metathoraces sparsely provided with short setae; thoracic ambulatory ampullae recognized on dorsal side of metathoracic sternum and ventral sides of meso- and metathoracic sterna, dorsal ampulla with granules in two transverse rows and a transverse impression, ventral ampulla of mesothorax with a transverse impression, hardly granulate, ventral ampulla of metathorax with granules arranged in two transverse rows and a transverse impression, slightly granulate, each ampulla micro-asperate on surface, each spine sometimes pigmented, basisternum of meso- and metathoraces with a row of setae. Mesothoracic spiracle reddish yellow, nearly twice as high as wide. Legs absent.

Abdomen gradually tapering posteriad, sparsely provided with long ferruginous setae. Abdominal ambulatory ampullae on dorsal and ventral sides of segments 1–7 convex; dorsal ampullae double-ringed with a medial impression; ventral ampulla forming a transverse impression and two transverse rows; ampullae microasperate on surface; spines usually pigmented. Spiracles of the first abdominal segment two-thirds in length, compared to those of mesothorax, almost 1.2 times as long as those of other abdominal segments. Pleural discs of first to eighth segments developed, provided with a few (usually two) setae on each disc. Anal segment distinctly separated from ninth segment. Anus triradiate, with lower ray almost as long as lateral ones.

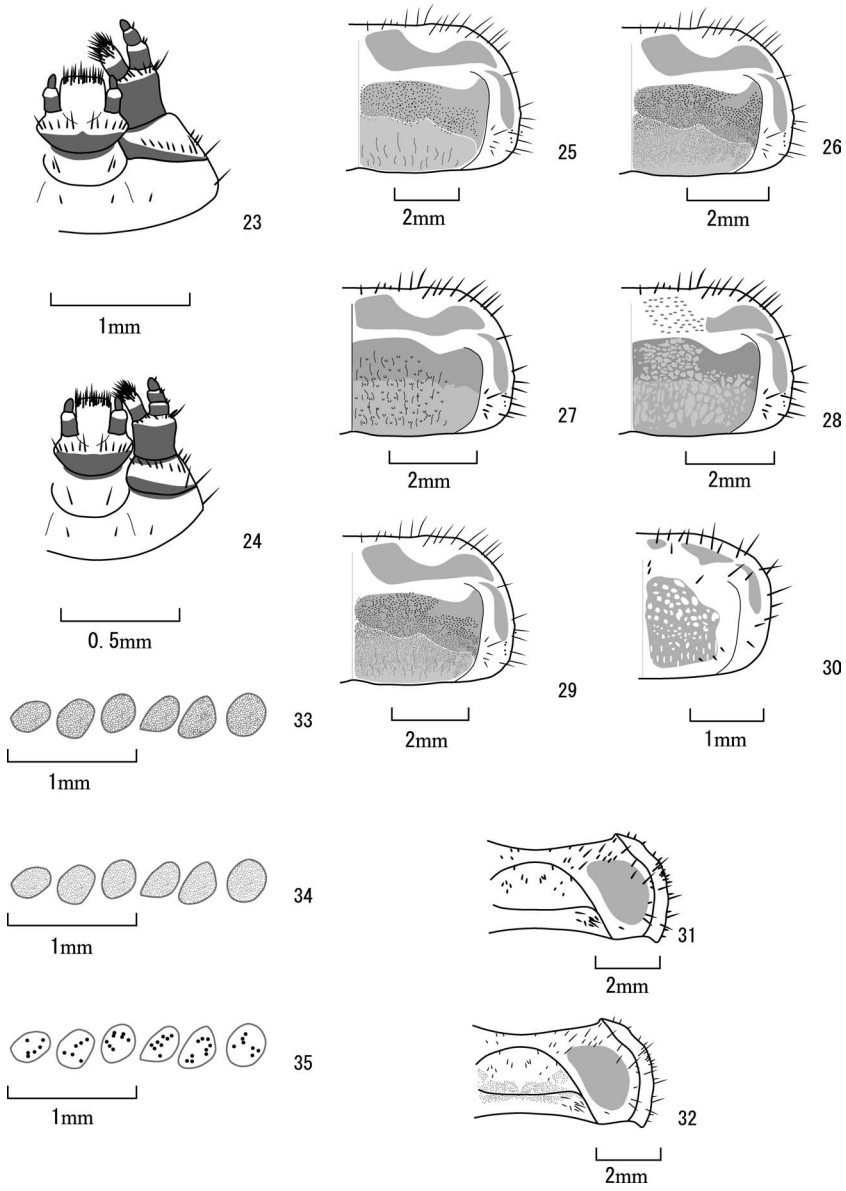
*Notes*. Larvae of the genus *Acalolepta* are distinguishable from the other members of the tribe Lamiini by the triradiate anal pore and shorter lower ray of anal pore in comparison with the lateral rays. These characters were already pointed out by TSHEREPANOV (1983).

### *Acalolepta fraudatrix fraudatrix* (BATES, 1873)

(Figs. 1–3, 5–6, 9–10, 23, 25, 31 & 33)

KOJIMA, 1931, Jl. Coll. Agric., **11**: 297.
KOJIMA, 1956, Mem. Fac. Agri. Kochi Univ., (6): 42, 12 pl.

*Larva*. Body straight, not bent ventrad. Cranuim widest near anterior third, gently tapering posteriad, elongate (width/length ca. 0.85), blackish brown in dorsal side of anterior fourth, epicranium light brown. Frontal lines white, posteriorly discernible. Ventral sclerite oblong, slightly concave; hypostoma slightly rugose, brown though blackish brown at circumference, with sclerotized posterior margin weakly narrowed outwardly; hypostomal lines parallel to each other, blackish brown; gula brown, with blackish brown gular line. Ratio of total length of mouth parts to the length of cranium ca. 0.4. Maxillary palpus with first and second segments longer than wide respectively; third segment shorter than second. Pronotum anteriorly with a band of almost even pigmentation; pronotal shield posteriad sparsely rugose, almost devoid of setae, pigmen-




Figs. 23–35. Larval appendage of *Acalolepta fraudatrix fraudatrix* (23, 25, 31, 33), *A. sublusca boehmeriavora* (26, 32, 34), *A. luxuriosa luxuriosa* (27), *A. kusamai* (28, 35), *A. sejuncta sejuncta* (29) and *A. degener* (24, 30). —— 23–24, Left mouth parts, ventral view; 25–30, right pronotum, dorsal view; 31–32, left prothorax, ventral view; 33–35, dorsal locomotory ampulla of abdominal segment 4 (anterior row), dorsal view.

tation of anterior half stronger than on posterior half, anterior area with numerous sclerotized granules, not micro-granulate; alar lobe with convex (sometimes feebly sclerotized) setose area near posterior margins; mediopraesternum, fused area of prothoracic coxosternum and sternellar fold without sclerotized spinules. Ambulatory ampullae microasperate with slightly pigmented spines.

Largest examined specimen 40 mm in length.

*Specimens examined*. 1 ex., Nishi-usuzuka, Fujinomiya, Shizuoka Pref., host plants undetermined, 1–XI–1990, M. TAKEDA leg.; 5 exs., Masutomi, Sutama-chô, Yamanashi Pref., host plants undetermined, 2–IV–1993, M. TAKEDA leg.; 1 ex., Mt. Hotaka-yama, Katashina-mura, Gunma Pref., host plants undetermined, 9–VI–1993, M. TAKEDA leg.; 2 exs., Kawanoridani, Nippara, Okutama-machi, Tokyo Met., host plants undetermined, 9–II–1992, M. TAKEDA leg.; 2 exs., near Tsurutanuma, Utsunomiya, Tochigi Pref., from *Cornus controversa* (Cornaceae), 18–XI–1990, M. TAKEDA leg.; 2 exs., Hikagezawa, Hachiôji, Tokyo Met., 11–II–1991, M. TAKEDA leg.

*Biology*. Larvae of this species are polyphagous, and found in many kinds of deceased broad-leaved and coniferous trees (TAKEDA, 2007).

### *Acalolepta iwahashii* MAKIHARA, 1992

(Figs. 11 & 12)

*Larva*. Most similar to *A. fraudatrix*, though having sclerotized posterior margin of hypostoma abruptly narrowing outwardly.

Largest examined specimen 40 mm in length.

*Specimens examined*. 3exs., F1, Mt. Omoto-dake, Is. Ishigaki-jima, Okinawa Pref., bred from *Mallotus japonicus* (Euphorbiaceae), larvae fixed on VIII–1992, Y. MATSUMOTO leg.

*Biology*. *Mallotus japonicus* (Euphorbiaceae) and *Euscaphis japonica* (Staphyleaceae) have already been reported as the host plants of this species (TAKEDA, 2007). Larvae bore in the living wood.

### *Acalolepta sublusca boehmeriavora* MAKIHARA, 1992

(Figs. 13, 14, 26, 32 & 34)

*Larva*. Body straight, not bent ventrad. Cranium widest near anterior third, gently tapering posteriad, slender than that of *A. fraudatrix* (width/length ca. 0.80), blackish brown near anterior margin; epicranium yellowish brown. Frontal lines almost indiscernible. Ventral sclerite oblong, not so strongly concave; hypostoma smooth, yellowish brown except for brown circumference, with sclerotized area near posterior margin gradually narrowing laterad; hypostomal lines slightly rounded, brown; gula brown; gular line brown. Ratio of total length of mouth parts length of cranium ca. 0.4; maxillary palpus with first and second segments longer than wide; third segment shorter than second. Pronotum anteriorly with a band of pigmentation, pigmentation almost

even; pronotal shield moderately smooth, almost devoid of setae, almost entirely covered with numerous sclerotized granules on surface; granules becoming larger in size anteriorly, area of sclerotized granules laterally extends forwards; alar lobe near posterior margin with convex, occasionally feebly sclerotized setose; mediopraesternum posteriorly with sclerotized granules; fused area of prothoracic coxosternum and sternellar fold anteriorly with sclerotized granules. Ambulatory ampullae microasperate, provided with microasperate and almost unpigmented spines.

Largest examined specimen 36 mm in length.

*Specimens examined*. 1 ex., Kabira, Is. Ishigaki-jima, Okinawa Pref., from *Boehmeria nivea* ssp. *nipononivea* (Urticaceae), 14–XI–1991, Y. MATSUMOTO leg.; 1 ex., idem, but II–1994, Y. MATSUMOTO leg.

*Biology*. This species is herbivorous and feeds solely on the living stems of *Boehmeria nivea* ssp. *nipononivea* (Urticaceae) (TAKEDA, 2007).

## *Acalolepta luxuriosa luxuriosa* (BATES, 1873)

(Figs. 15, 16 & 27)

KOJIMA, 1931, Jl. Coll. Agric., **11**: 294, text-fig. 10.
KOJIMA, 1956, Mem. Fac. Agri. Kochi Univ., (6): 42, 13 pl.
TSHEREPANOV, 1983, Usachi Severnoi Azii, **4**: 124, fig. 62.

*Larva*. Body straight, not bent ventrad. Cranium widest near anterior third, gently tapering posteriad, slenderer than in *A. fraudatrix* (width/length ca. 0.75), dorsally anterior fourth blackish brown, epicranium yellowish brown. Frontal lines white, posteriorly discernible. Ventral sclerite oblong, slightly concave though concavity shallower than in other *Acalolepta* species; hypostoma slightly rugose, brown (circumference blackish brown), with sclerotized area of posterior margin gradually narrowing laterad; hypostomal lines parallel, blackish brown; gula brown, with blackish brown gular line. Ratio of total length of mouth parts to the length of cranium ca. 0.4; maxillary palpus with first and second segments longer than wide; third segment shorter than second. Pronotum anteriorly with a band of pigmentation, evenly pigmented; pronotal shield rugose, almost devoid of setae, almost entirely pigmented on surface, pigmentation is weaker on anterior half, microgranulate, with numerous minute concave spots; alar lobe near posterior margin with convex, occasionally feebly sclerotized setose area; mediopraesternum, fused area of prothoracic coxosternum and sternellar fold without sclerotized spinules. Ambulatory ampullae microasperate, with each spine slightly pigmented.

Largest examined specimen 46 mm in length.

*Specimens examined*. 3 exs., Kuzubezawa, Kawai-mura, Iwate Pref., from *Aesculus turbinate* (Hippocastanaceae), 1–VII–1991, M. TAKEDA leg.; 3 exs., Mt. Ooyama, Tanzawa Mts., Kanagawa Pref., host plants undetermined, V–1995, T. KINOSHITA leg.

*Biology*. Although larvae of this species have been reported to be strongly

associated with the prickly shrubs of the Araliaceae family (TSHEREPANOV, 1983; MAKIHARA, 2007), more than ten species of broadleaved trees and one coniferous species (*Abies sachalinensis*) are known as the host plants (TAKEDA, 2007).

### *Acalolepta permutans paucipunctatus* (GRESSITT, 1938)

NAKAMURA & KOJIMA, 1981, Kontyû, Tokyo, **49**: 161, fig. 5.

*Larva*. I was not able to examine the larva of this species. However, based on the two Taiwanese specimens, NAKAMURA and KOJIMA (1981) gave the following description.

Similar to *A. luxuriosa* but discriminated from it by the following points: Head slightly narrowed posteriad; hypostoma smooth, without transverse furrows; pleural tubercles with a pair of sclerotized pits bearing short and long hairs. From *A. fraudatrix* differs by the absence of the posterior micro-spiculate area of pronotum.

*Biology*. *Pittosporum lutchuense* and *Pittosporum tobira* (Pittosporaceae), *Aralia elata*, *Kalopanax pictus* var. *lutchuensis* and *Schefflera octophylla* (Araliaceae) have been hitherto reported as host plants of this species in Japan (TAKEDA, 2007). *Ficus microcarpa* (Moraceae) has likewise been recorded as its host plant in Taiwan by NAKAMURA and KOJIMA (1981). Larvae of this species are strongly associated with the prickly shrubs of the Araliaceae and the Pittosporaceae at least in Japan (MAKIHARA, 2007).

### *Acalolepta kusamai* HAYASHI, 1969

(Figs. 28 & 35)

KOJIMA & NAKAMURA, 1992, Illust. Guide Identific. Longic. Beetl. Jpn., 313, 4A, 4B, 4C, 4D.

*Larva*. Body straight, not bent ventrad. Cranium widest near anterior third, gently tapering posteriad, slenderer than in *A. fraudatrix* (width/length ca. 0.75), anterior fourth dorsally blackish brown, epicranium yellowish brown. Frontal lines white, posteriorly discernible. Ventral sclerite oblong, moderately concave; hypostoma slightly rugose, brown, circumference blackish brown, with sclerotized area of posterior margin gradually narrowing outwardly; hypostomal lines parallel, blackish brown; gula brown, with blackish brown gular line. Ratio of total length of mouth parts to the length of cranium ca. 0.4; maxillary palpus with first and second segments longer than wide; third segment shorter than second segment. Pronotum anteriorly with a band of pigmentation, thinly pigmented only on the inside; pronotal shield almost devoid of setae, anterior half strongly pigmented, provided with close irregular reticulations almost on the entire surface; alar lobe near posterior margin occasionally with feebly sclerotized convex setose area; mediopraesternum, fused area of prothoracic coxosternum and sternellar fold without sclerotized spinules. Ambulatory ampullae microasperate, sparsely scattered with strongly pigmented spines.

Largest examined specimen 40 mm in length.

*Specimens examined*. 3 exs., Hisagi, Zushi, Kanagawa Pref., from *Sambucus racemosa* ssp. *sieboldiana* (Caprifoliaceae), 6–V–1992, M. TAKEDA leg.

*Biology*. *Sambucus racemosa* ssp. *sieboldiana* and *Clerodendrum trichotomum* (Verbenaceae) have already been reported as host plants of this species (TAKEDA, 2007). Larvae of this species are strongly associated with the living trunks of *S. racemosa* ssp. *sieboldiana*.

### *Acalolepta sejuncta sejuncta* (BATES, 1873)

(Figs. 17, 18 & 29)

KOJIMA, 1956. Mem. Fac. Agri. Kochi Univ., (6): 43, pl. 13.
TSHEREPANOV, 1983, Usachi Severnoi Azii, **4**: 130, fig. 66.

*Larva*. Body straight, not bent ventrad. Cranium widest near anterior third, abruptly tapering near posterior margin, slenderer than in *A. fraudatrix* (width/length ca. 0.78), anterior fourth dorsally blackish brown, epicranium light brown. Frontal lines white, posteriorly discernible. Ventral sclerite oblong, moderately concave; hypostoma slightly rugose, brown (circumference blackish brown), with sclerotized area of posterior margin gradually narrowing outwardly; hypostomal lines parallel, blackish brown; gula brown, with blackish brown gular line. Mouth parts short (length of total mouth parts/length of cranium ca. 0.3); maxillary palpus with first and second segments longer than wide; third segment shorter than second. Pronotum anteriorly with a band of pigmentation, very weakly pigmented only on the inside; pronotal shield sparsely rugose posteriad, almost devoid of setae, almost entirely covered with numerous sclerotized granules, granules anteriorly larger; posterior margin of alar lobe with occasionally feebly sclerotized convex setose area; mediopraesternum, fused area of prothoracic coxosternum and sternellar fold without sclerotized spinules. Ambulatory ampullae microasperate, with slightly pigmented spines.

Largest examined specimen 28 mm in length.

*Specimens examined*. 1 ex., Jyôgashima, Miura, Kanagawa Pref., host plants undetermined, 27–I–1992, M. TAKEDA leg.; 2 exs., Kawanoridani, Nippara, Okutama-machi, Tokyo Met., host plants undetermined, 26–VI–1992, M. TAKEDA leg.; 1 ex., Oohito-machi, Shizuoka Pref., from *Cycas revolute* (Cycadaceae), 14–XII–1990, M. TAKEDA leg.

*Biology*. Polyphagous species feeding on many different freshly deceased broad-leaved as well as coniferous trees (TAKEDA, 2007).

### *Acalolepta boninensis* HAYASHI, 1971

(Figs. 19 & 20)

*Larva*. Most similar to *A. sejuncta*, differing from it only by slenderer cranium

(width/length ca. 0.75).

Largest examined specimen 26 mm in length.

*Specimens examined*. 2 exs., Mt. Tsutsuji-yama, Chichi-jima Is., Ogasawara Iss., from *Zanthoxylum boninshimae* (Rutaceae), 7–XI–1994, M. TAKEDA leg.

*Biology*. *Trema orientalis* (Ulmaceae), *Zanthoxylum boninshimae* (Rutaceae), *Hibiscus glaber* (Malvaceae) and *Fatsia oligocarpella* (Araliaceae) have all been recorded as host plants (TAKEDA, 2007).

### *Acalolepta degener* (BATES, 1873)

(Figs. 4, 7–8, 21–22, 24 & 30)

TSHEREPANOV, 1983, Usachi Severnoi Azii, **4**: 138, fig. 72.

*Larva*. Body slightly bent ventrad. Cranium oval (width/length ca. 0.85), widest near middle, anterior margin laterally blackish brown, anterior fifth dorsally yellowish brown, epicranium almost entirely white. Frontal lines almost indiscernible. Ventral sclerite strongly concave; hypostoma yellowish brown; circumference brown; hypostomal lines brown, basally dilated; gula and gular line yellowish brown. Mouth parts short (length of total mouth parts/length of cranium ca. 0.3); maxillary palpus with first and second segments almost square-shaped; third segment as long as second. Pronotum with pigmented band behind anterior margin divided into several maculae; pronotal shield moderately smooth, closely and irregularly reticulate except for the pigmented circumference which is scattered with a few setae; alar lobe without setose area. Mediopraesternum, fused area of prothoracic coxosternum and sternellar fold without sclerotized spinules. Ambulatory ampullae microasperate, with slightly pigmented spines.

Largest examined specimen 15 mm in length.

*Specimens examined*. 8 exs., Oshitate-chô, Fuchu, Tokyo Met., from *Artemisia japonica* (Compositae), 20–XII–2007, M. TAKEDA leg.

*Biology*. Larvae of this species are known to be strongly associated with the herbs of the Compositae family. *Artemisia japonica* and *A. princeps* have already recorded as host plants of this species in Japan (TAKEDA, 2007). TSHEREPANOV (1983) has reported from the Russian Far East (Ussurijskiy and Primorskiy kray) another host plant, *A. laciniata*.

*Notes*. This species is quite different from the other members of the genus by ovate cranium.

## Discussion

MAKIHARA (1992) in his revisional study based on the adult morphology divided the Japanese *Acalolepta* species into following eight 'species-groups':

1) The '*Luxuriosa* species-group': *A. luxuriosa* (BATES), *A. kuniyoshii* (HAYASHI), *A.*

*permutans* (PASCOE) and *A. boninensis* HAYASHI.

2) The '*Fraudatrix* species-group': *A. hachijoensis* (GRESSITT), *A. fraudatrix* (BATES) and *A. oshimana* (BREUNING).
3) The '*Iwahashii* species-group': *A. iwahashii* MAKIHARA.
4) The '*Sublusca* species-group': *A. sublusca* (THOMSON).
5) The '*Kusamai* species-group': *A. kusamai* HAYASHI and *A. ginkgovora* MAKIHARA.
6) The '*Sejuncta* species-group': *A. sejuncta* (BATES) and *A. amamiana* (HAYASHI).
7) The '*Ferriei* species-group': *A. ferriei* (BREUNING).
8) The '*Degener* species-group': *A. degener* (BATES) and *A. nishimurai* MAKIHARA.

In his revision, MAKIHARA included *A. boninensis* in the '*Luxuriosa* species-group' mainly owing to its living tree-feeding habits and its strong association with Araliaceae plants (something that is shared with other members of this group). However, according to the present study, *A. boninensis* is most similar to *A. sejuncta*, regarding larval morphology. In addition, there is no doubt that *A. boninensis* is polyphagous, just as the '*Sejuncta* species-group', inasmuch *Trema orientalis* (Ulmaceae), *Zanthoxylum boninshimae* (Rutaceae), *Hibiscus glaber* (Malvaceae) and *Fatsia oligocarpella* (Araliaceae) have all been recorded as host plants of this species (TAKEDA, 2007). This species should therefore be placed in the '*Sejuncta* species-group'.

MAKIHARA (1992) also proposed the '*Iwahashii* species-group' consisting of a single species based on alternately white and brown antennal segments in both sexes, as well as chocolate brown elytral pubescence. However, according to the present study the larval characteristics of *A. iwahashii* are most similar to those of *A. fraudatrix*. Therefore, *A. iwahashii* should not constitute an independent 'species-group', but should be instead included in the '*Fradatrix* species-group'.

## Provisional Key to the Species of Japanese *Acalolepta* Larvae

1(10) Pronotal shield with numerous large sclerotized granules.
2( 5) Pronotal shield with large sclerotized granules on anterior area.
3( 4) Sclerotized posterior margin of hypostoma gradually narrowing outwardly (Fig. 10) ……*A. fraudatrix*
4( 3) Sclerotized posterior margin of hypostoma abruptly narrowing outwardly (Fig. 12) ……*A. iwahashii*
5( 2) Large sclerotized granules of pronotal shield cover almost on entire surface.
6( 9) Pronotal shield with sclerotized granules, laterally not extending forward (Figs. 25 & 29); mediopraesternum, fused area of prothoracic coxosternum and sternellar fold posteriorly without sclerotized granules (Fig. 31).
7( 8) Width/length of cranium ca. 0.78 (Figs. 17, 18) ……*A. sejuncta*
8( 7) Width/length of cranium ca. 0.75 (Figs. 19, 20) ……*A. boninensis*
9( 6) Pronotal shield with sclerotized granules laterally extending forward (Fig. 26); mediopraesternum, fused area of prothoracic coxosternum and sternellar fold posteriorly with sclerotized granules (Fig. 32) ……*A. sublusca*

10( 1) Pronotal shield without large sclerotized spinules.
11(16) Cranium widest near anterior third, gently tapering posteriad, posteriorly with frontal lines white, discernible.
12(15) Pronotal shield rugose (Fig. 27).
13(14) Hypostoma more or less rugose, with transverse furrows. ……*A. luxuriosa*
14(13) Hypostoma smooth, without transverse furrows ……*A. permutans*
15(12) Pronotal shield irregularly reticulate (Fig. 28) ……*A. kusamai*
16(11) Cranium oval (Figs. 21 & 22), with frontal lines almost indiscernible (Fig. 21) ……*A. degener*

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# A New Acanthocine Genus, *Nobuosciades* (Coleoptera, Cerambycidae, Lamiinae) Endemic to the Northern Micronesia

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**Abstract** A new genus *Nobuosciades* nov. is established based on species *Exocentrus bioculatus* MATSUMURA et MATSUSHITA, 1933 from the Ogasawara Islands, Japan. *Phlaeopsis lanata* (N. OHBAYASHI, 1984) and *P. meridianus* (OHBAYASHI, 1941) are transferred to this new genus. *Sciadella* (*Sciadella*) *iwojimana* GRESSITT, 1956 is newly synonymized with *Nobuosciades bioculatus* (MATSUMURA et MATSUSHITA, 1933). All the known species belonging to the new genus are redescribed with the illustrations of their important characters. A key to the species of the genus is provided.

## Introduction

Three species of the genus *Phlaeopsis* BLANCHARD, 1853, *P. bioculata* (MATSUMURA et MATSUSHITA, 1933) and *P. lanata* (N. OHBAYASHI, 1976) both from the Ogasawara Islands, and *P. iwojimana* (GRESSITT, 1956) from Iwô-jima Island, have hitherto been recorded from Japan.

*Phlaeopsis bioculata* was first described as *Exocentrus bioculatus* by MATSUMURA and MATSUSHITA (1933b). Later, GRESSITT (1956) in his revised study of the Micronesian Cerambycidae transferred *E. bioculatus* to the genus *Sciadella* (*Sciadella*) AURIVILLIUS, 1913, and described an additional new species, *S.* (*S.*) *iwojimana*. BREUNING (1963) transferred *Pseudocidnu*s BREUNING, 1957 to a subgenus of the genus *Miaenia* PASCOE, 1864 from the genus *Aegonides* PASCOE, 1864 and moved *Sciadella bioculata* to this subgenus, but transferred *Sciadella* (*S.*) *iwojimana* to the genus *Miaenia* s. str. In the very same year, HAYASHI (1963) transferred *Sciadella* (*Sciadella*) *bioculata* to the genus *Phlaeopsis* BLANCHARD, 1853. BREUNING (1978) later revised the Asia-Australian members of the tribe Acanthocinini and substantially changed the classification of the tribe. He downgraded genus *Miaenia* to a subgenus of the genus *Sciades* PASCOE, 1864 and included there *M. iwojimana*. N. OHBAYASHI (1976) described a new species, *Miaenia* (*Pseudocidnus*) *lanata*, which he later (1984) transferred to the genus *Phlaeopsis* together with *M.* (*P.*) *iwojimana.* As explained above, these species were constantly moved from one genus into another without a proper phylogenetic analysis of the tribe.

The genus *Phlaeopsis* was erected by BLANCHARD in 1853 based on a species

*Phlaeopsis pubescence* BLANCHARD, 1853 from the Solomon Islands. Five species of this genus have hitherto been described from the Solomon Islands, Samoa and Fiji, as well as four additional species from the Ogasawara Islands and the Mariana Islands.

Through the courtesy of many entomologists, especially Mr. Haruki KARUBE of the Kanagawa Prefectural Museum of Natural History, Japan, I had recently an opportunity to examine numerous series of specimens of this genus coming from various islands of the Ogasawara Islands archipelago and Kazan-rettô (Volcano) Islands, Japan. Furthermore, I was able to examine the detailed photographs of the type series (holotype, allotype, and one paratype) of *Sciadella* (*Sciadella*) *iwojimana* that are being preserved at the Field Museum, Chicago, USA. As a result it became clear that *S.* (*S.*) *iwojimana* GRESSITT, 1956 is a junior synonym of *Exocentrus bioculatus* MATSUMURA et MATSUSHITA, 1933, and that it is not a member of the genus *Phlaeopsis* as defined by BREUNING (1978). It is likewise not similar to the type species of the genus, *Phlaeopsis pubescence* BLANCHARD, 1853 judging from a photograph. In the present paper I erect a new genus, *Nobuosciades* for the species *Exocentrus bioculatus* MATSUMURA et MATSUSHITA, 1933, and transfer two species *Miaenia* (*Pseudocidnus*) *lanata* N. OHBAYASHI, 1976 and *Exocentrus meridiana* OHBAYASHI, 1941 to this new genus. Both species are herein likewise redescribed and illustrations of the important characters are provided.

Abbreviations used in the measurements are as follows; IEL: — length of the inferior eye lobe measured from lateral or sub-lateral view; GL: length of gena, measured from lateral or sub-lateral view; PL: length of pronotum; PW: maximal width of pronotum; PB: basal width of pronotum; EL: length of elytra; EW: width of elytra across humeri; TL: total length of body, from tip of head to elytral apices; M: arithmetic mean.

## Genus *Nobuosciades* HASEGAWA, gen. nov.

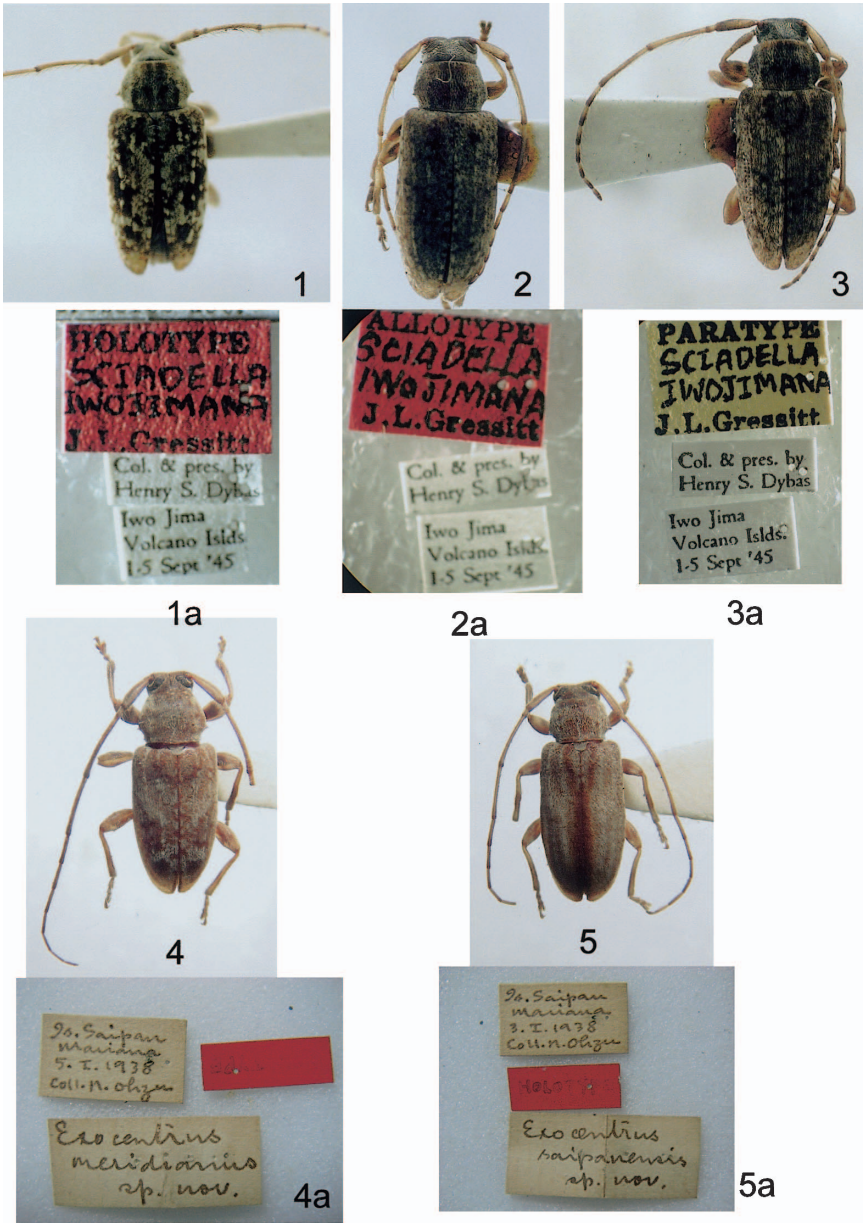
[Japanese name: Futatsume-keshi-kamikiri-zoku]

Type species: *Exocentrus bioculatus* MATSUMURA et MATSUSHITA, 1933.

Body moderately flat; head narrower than pronotum; vertex shallowly concave; eyes considerably large, not divided, emarginate, with each lobe, widely connected. Antennae rather slender, 1.2–1.5 times (male) or 1.0–1.2 times (female) as long as body, provided beneath with erect setae on 1st to 8th segments; 1st segment shorter than 3rd, that itself is longer than 4th; 3rd and 4th segments very long, their combined length longer than one-third of the entire antenna; 5th to 11th segments distinctly abbreviated.

Pronotum transverse, provided with small spines at sides behind middle; disc almost flattened. Prosternum and metasternum almost flattened though widely depressed near middle of the latter, densely provided with long silky erect hairs; prosternal process as wide as mesosternal process, and also same as mesocoxal cavity at its narrowest width; procoxal cavities closed behind; mesocoxal cavities closed to epimeron.

Elytra 2.5–3.0 times as long as the width of humeri which are fully developed; basal




Figs. 1–5. Type specimens of *Nobuosciades* species. —— 1–3, Type series of *Sciadella iwojimana* GRESSITT, 1956 (1, holotype, 2, allotype and 3, paratype); 4, holotype of *Exocentrus meridinanus* OHBAYASHI, 1941; 5, holotype of *Exocentrus saipanensis* OHBAYASHI, 1941.

callosities not developed, without spines or setae at tips; oblique depressions behind scutellum shallow.

Legs short; femora moderately clavate on apical halves; fore and mid tibiae almost equal in length to femora; hind tibia shorter than femur; fore tibia with a weak oblique groove slanting from basal half to apex on ventral side; mid tibia with the same, but rather shallow groove slanting from apical 3/7 to 2/7 on dorsal side; mid and hind tibiae with two short spurs; hind tarsus short, not cylindrical; 1st segment shorter than the following two segments combined.

Abdomen broad and short, last ventrite semicircular, rounded or sub-truncate in male or truncate in female at apical margin.

Male genitalia:– Median lobe arcuate or weakly curved in profile; median struts accounts for 1/3 to 1/2 of the entire length of median lobe. Endophallus 1.5 to 2.0 times as long as median lobe, with crescent-like sclerites in middle and narrow rod-like sclerites near apex. Tegmen nearly equal to, or a little shorter than median lobe; lateral lobes moderate in length, with 10–15 setae near apical part; roof narrow; ringed part converging, weakly geniculated at the widest part.

*Etymology*. Patronymic, dedicated to Professor Dr. Nobuo OHBAYASHI in commemorating his retirement from Ehime University.

*Notes*. All three species of *Nobuosciades* gen. nov. have hitherto been included in genus *Phlaeopsis* BLANCHARD, 1853. This genus is known to occur in Samoa, Fiji and the Solomon Islands and it is characterized by elongate body, and ratio of the 3rd and 4th antennal segments which are equal in male or the former is slightly longer than the latter in female (BREUNING, 1977). The present new genus is rather similar to genus *Micronesiella* GRESSITT, 1956 from Caroline and Mariana Islands by the following characters: Body more or less robust and flattened; antennae with 3rd and 4th segments very long, 5th to 11th segments distinctly abbreviated; prosternum and metasternum almost flattened, with long silky erect hairs; prosternal process and mesosternal process wide. This new genus differs from the genus *Micronesiella* GRESSITT, 1956 by thicker antennae, the 3rd antennal segment is longer than 4th, distinctly longer lateral lobes of tegmen, and narrow rod-like sclerites on the endophallus. It also somewhat resembles genus *Boninella* GRESSITT, 1956 but differs from it by more slender antennae, fully developed elytral humeri and well developed hind wing.

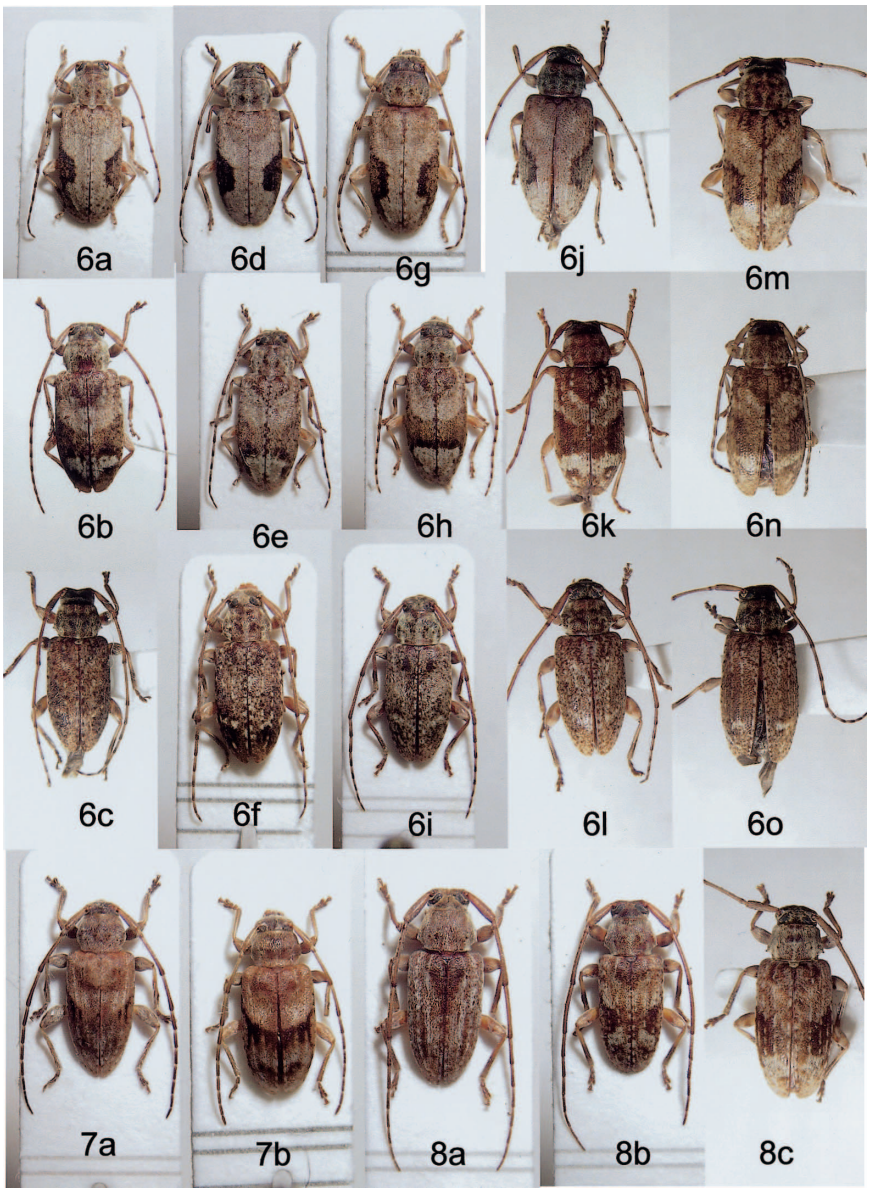
The present new genus includes following three species spread through a rather wide area stretching from the southern part of the Izu Islands, the Ogasawara Islands, the Volcano Islands, Japan and the Mariana Islands.

### *Nobuosciades bioculatus* (MATSUMURA et MATSUSHITA, 1933), comb. nov.

[Japanese name: Futatsume-keshi-kamikiri]

(Figs. 1–3, 6, 9, 12, 15)

*Exocentrus bioculatus* MATSUMURA et MATSUSHITA, 1933b, Ins. matsum., **7**: 108; type locality: Japan, Bonins, Japan.




Figs. 6–8. Habitus of *Nobuosciades* spp. —— 6, *N. bioculatus* (MATSUMURA et MATSUSHITA, 1933) (a, b, c, specimens from Muko-jima Is.; d, e, f, specimens from Chichi-jima Is.; g, h, i, specimens from Haha-jima Is.; j, k, l, specimens from Kitaiwô-tô Is.; m, n, o, specimens from Minamiiwô-tô Is.); 7, *N. lanatus* (N. OHBAYASHI, 1976)(a, male; b, female); 8, *N. meridianus* (OHBAYASHI, 1941)(a, b, male; c, female).

*Sciadella* (*Sciadella*) *bioculata*: GRESSITT, 1956, Ins. Micronesia, **17**: 158, 161.
*Aegochidnus* (*Pseudocidnus*) *bioculatus*: BREUNING, 1957, Zool. Meded., **35**: 122.
*Miaena* [sic!] (*Pseudocidnus*) *bioculatus*: BREUNING, 1963, Cat. Lam. Monde, (7): 529.
*Miaenia* (*Pseudocidnus*) *bioculatus*: N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 3, figs. 1A–1E.
*Phloeopsis* (*Phloeopsis*) [sic!] *bioculata*: HAYASHI, 1963, Ins. matsum., **25**: 135.
*Phloeopsis* [sic!] *bioculata*: BREUNING, 1978, Mitt., zool. Mus. Berl., **56**: 6–7; N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 507–508, pl. 87, figs. 603, 603 a–d.
? *Exocentrus Sawadai* KANO, 1930, Bull. biogeogr. Soc. Japan, **1**: 242; type locality: Bonin Isls. (nom. nud.).
*Sciadella* (*Sciadella*) *iwojimana* GRESSITT, 1956, Ins. Micronesia, **17**: 158, 162–163, fig. 27; type locality: Iwojima, Japan. **Syn. nov**.

M a l e. Length (from tip of head to elytral apices) 4.38–7.56 mm (M=5.96 mm). Width (maximum width of elytra) 1.69–2.44 mm (M=2.29 mm).

Body moderately flattened. Color blackish brown to reddish brown; head black; antenna mostly light reddish brown, with blackish band behind middle of scape, apical margins of 2nd to 4th segments and apical halves of 5th to the last segments blackish; pronotum mostly blackish brown, with reddish brown basal and apical margins; elytra reddish brown; legs light reddish brown, with a blackish band at the middle of each femur and apical third of each tibia; each apical half of 1st to 3rd tarsal segments blackish.

Body densely clothed with pale grayish, yellowish brown or golden and black pubescence, forming exceeding variable markings on pronotum and elytra (Fig. 6).

Head narrower than pronotum, sparsely punctured; vertex distinctly concave; frons transverse, about half as long as wide, provided with following long setae: a pair of setae approximate at inside of inferior eye lobe, 5–6 setae arranged in a transverse row at apical margin, and 3–4 setae on genae; eyes oval, considerably large, with inferior eye lobe distinctly longer than gena, IEL/GL=1.75–2.25 (M=2.0); antennae relatively long and stout, exceeding elytral apices at middle or apex of 7th segment; 1st to 8th segments moderately provided with erect setae beneath; 1st segment rather stout, about 0.62 times as long as 3rd; combined lengths of 3rd and 4th segments account for about 40% of the entire length of antenna; apex of last segment roundly pointed; relative lengths of segments as follows: 4.2 : 1.0 : 6.8 : 6.0 : 2.6 : 2.4 : 2.4 : 1.8 : 1.8 : 1.6 : 1.4.

Pronotum large and well expanded, moderately constricted at base; PL/PB=0.79–0.89 (M=0.83), PL/PW=0.68–0.74 (M=0.71), EW/PB=1.47–1.62 (M=1.53); sides strongly arcuate, widest behind middle, each with a small spine at basal fourth which is pointed laterad; disc densely punctuate, feebly convex at middle, transversely and shallowly depressed at apical fourth and basal margin.

Elytra rather long, EL/EW=1.71–1.93 (M=1.88), EL/PL=3.28–3.71 (M=3.48), EL/TL=0.69–0.71 (M=0.70), on basal third parallel-sided, then roundly attenuate towards rounded apices, moderately punctured with sub-regular rows; basal callosities and oblique depression weak and shallow.

Legs moderate in length; femora moderately swollen; tibiae densely provided with rather long, sub-erect setae at apical halves.

Male genitalia:– Median lobe about half as long as the length of abdomen, its sides

almost parallel at middle, thence gently convergent toward pointed apex, moderately arcuate in profile; median struts account for about a half of the entire length of median lobe; ventral plate slightly longer than dorsal plate, on basal 5/6 parallel-sided, thence roundly attenuate towards slightly roundly projected apex from dorsal view; apex of dorsal plate moderately or rather narrowly rounded. Endopallus about 1.5 times as long as median lobe; rod-like sclerites about 0.2 times as long as median lobe. Tegmen slender, almost as long as median lobe; lateral lobes long and slender, account for almost one-third of entire length of tegmen, on basal 3/4 sub-parallel, thence bluntly rounded; with 10 to 15 dense setae at apical part of each lobe.

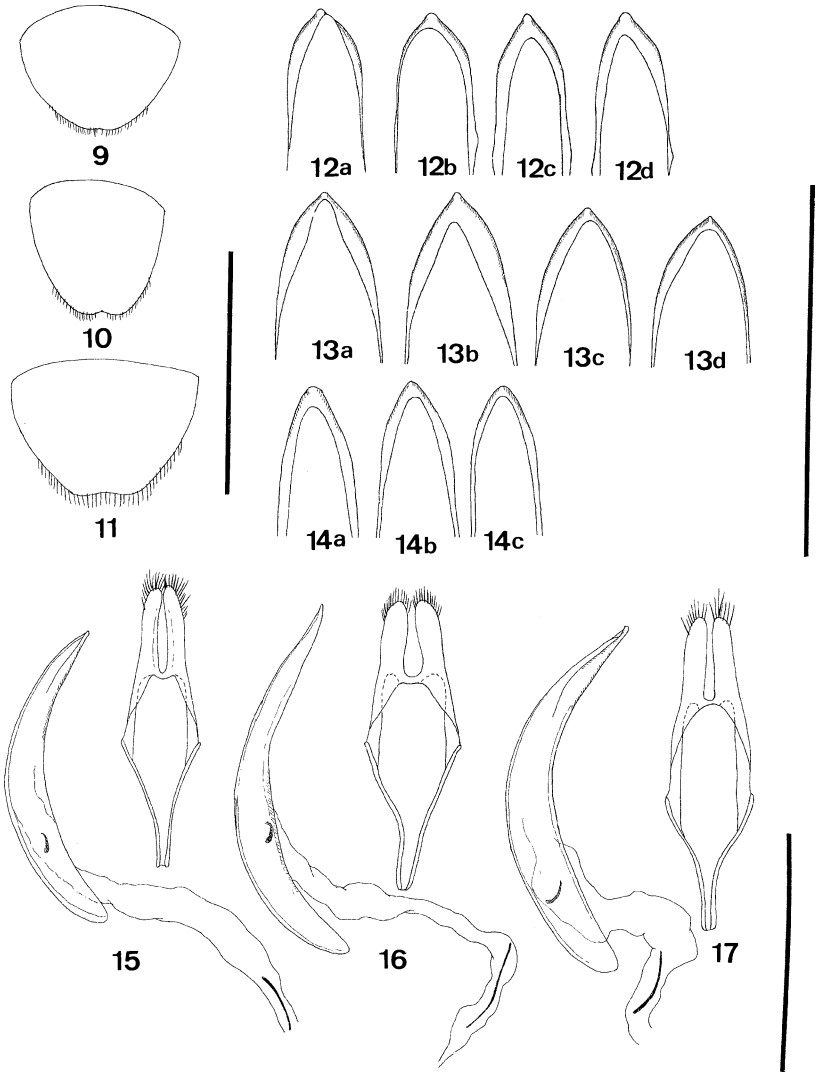
F e m a l e. Length (from tip of head to elytral apices) 4.75–7.63 mm (M＝6.19 mm). Width (maximum width of elytra) 1.5–2.94 mm (M＝2.29 mm).

Almost identical in general appearance to male, but differing from it in the following morphological characters: Antenna short, exceeding elytral apex at mid-length or at apex of 10th segment; pronotum rather short and cylindrical; apex of last ventrite truncate.

The ratio of body parts: IEL/GL 1.50–2.17 (M＝1.90), PL/PB 0.76–0.86 (M＝0.84), PL/PW 0.68–0.75 (M＝0.72), EW/PB 1.30–1.62 (M＝1.46), EL/PL 3.44–3.83 (M＝3.54), EL/EW 1.86–2.25 (M＝2.05), EL/TL 0.71–0.72 (M＝0.71).

*Specimens examined.* [Muko-jima Is.] 15 exs., 9–VI–2003, H. KARUBE leg.; 4 exs., 26–VI–2003, H. KARUBE leg.; 1 ex., 19–X–2002, H. KARUBE leg. [Nakôdo-jima Is.] 17 exs., 25–IX–2003, H. KARUBE leg. [Otôto-jima Is.] 2 exs., 20–VI–2003, H. KARUBE leg.; 1 ex., between Kurohama and Ichinotani, 16–VI–2003, H. KARUBE leg.; 2 exs., between Shikanohama and Hirone, 17–VI–2003, H. KARUBE leg.; 1 ex., between Kurohama and Chubu, 21–X–2002, H. KARUBE leg. [Chichi-jima Is.] 98 exs., 3～5–V–1974, N. OHBAYASHI leg.; 3 exs., 24–V–1974, M. IGA leg.; 1 ex., 5–V–1974, Y. HORI leg.; 2 exs., 4–V–1974, H. YAMADA leg.; 31 exs., Yoake-dôro, 24, 26–X–2002, H. KARUBE leg. [Haha-jima Is.] 107 exs., 16～18–V–1984, M. HASEGAWA leg.; 19 exs., Funamidai, 28–VI–1987, M. NISHIMURA leg.; 30 exs., Okimura, 16–VI–1992, N. OHBAYASHI leg.; 1 ex., Chibusa-yama, 15–VI–1992, N. OHBAYASHI leg.; 10 exs., Nishiura～Kitamura, 12–III–1991, K. ESAKI leg.; 16 exs., Okimura～Kuwanokiyama, 27–XI–1977, M. TOMOKUNI leg.; 1 ex., Kuwanokiyama～Sekimon, 29–XI–1977, M. TOMOKUNI leg.; 2 exs., Kuwanokiyama～Kitamura, 30–XI–1977, M. TOMOKUNI leg.; 3 exs., Kuwanoki-yama, 10–III–1991, K. ESAKI leg. [Mukou-shima Is.] 6 exs., 12–VI–2003, H. KARUBE leg. [Ane-jima Is.] 5 exs., VI–2003, H. KARUBE leg. [Kitaiwô-tô Is.] 23 exs., 23–VI–2003, H. KARUBE leg.; 2 exs., Ishinomura, 20–VI–2001, H. KARUBE leg.; 10 exs., ditto, 23–VI–2003, K. SHOJI leg.; 16 exs., ditto, 21～23–VI–2003, K. WATANABE leg.; 1 ex., Nishimura, 22–VI–2001, H. KARUBE leg. [Iwô-tô Is.] 1 ex., 17–XI–1989, K. MASUMOTO leg.; 1 ex., 25～26–X–1990, M. IGA leg. [Minamiiwô-tô Is.] 10 exs., 22～25–VI–2007, H. KARUBE leg.

*Distribution*. Izu Tori-shima Is., Ogasawara Islands (Muko-jima Is., Nakôdo-jima Is., Otôto-jima Is., Ani-jima Is., Nishi-jima Is., Chichi-jima Is., Haha-jima Is., Mukou-shima Is., Ane-jima Is. and Omoto-jima Is.) and Volcano Islands (Kitaiwô-tô Is., Iwô-tô




Figs. 9–17. Male genitalia and 8th abdominal tergite of *Nobuosciades* spp. —— 9, 12, 15, *N. bioculatus* (MATSUMURA et MATSUSHITA, 1933) (12a, Haha-jima Is.; 12b, c, Kitaiwô-tô Is.; 12d, Minamiiwô-tô Is.); 10, 13, 16, *N. lanatus* (N. OHBAYASHI, 1976) (13a, Chichi-jima Is.; 13b, Haha-jima Is.; 13c, Kitaiwô-tô Is.; 13d, Minamiiwô-tô Is.); 11, 14, 17, *N. meridianus* (OHBAYASHI, 1941) (14a, 14b, Mariana Islands: Sarigan Is.; 14c, Alamagan Is.); 9–11, 8th abdominal tergite; 12–14, apex of median lobe in dorsal view; 15–17, male genitalia (left: median lobe from lateral view; right: tegmen from dorsal view.) (Scale 1.0 mm.)

Is. and Minamiiwô-tô Is.).

*Biology*. Adults were collected by beating method from dead branches of various plants. According to TAKEDA (2007), following species have been known as the host plants: *Pinus luchuensis*, *Trema orientalis*, *Ficus microcarpa*, *Morus australis*, *M. bombycis*, *M. kagayamae*, *Machilus thunbergii*, *Rhaphiolepis wrightiana*, *Acacia confuse*, *Leucaena leucocephala*, *Zanthoxylum boninshimae*, *Fatsia oligocarpella*, *Ardisia sieboldii*, *Trachelospermum asiaticum* var. *intermedium*.

*Notes*. GRESSITT (1956) described *Sciadella* (*Sciadella*) *iwojimana* from Iwô Island of the Volcano Islands, Japan. He distinguished this new species from *S. bioculata* (MATSUMURA et MATSUSHITA, 1933) by the following characters: fewer elytral puncture-rows; elytra broader basally; prothorax more evenly produced laterally and the spine directed more at right angles with the body axis, paler elytra, less distinctly banded with dark, more finely mottled and without subapical eye-spot. I re-examined those characters in comparison with a large series of specimens collected from various areas from the Ogasawara Islands and the Volcano Islands including Iwô Island compared them with photographs of the type series of *Sciadella* (*Sciadella*) *iwojimana* (holotype, allotype and 1 paratype) that are preserved at the Field Museum, Chicago, USA. I came to a conclusion that the morphological characteristics of *S. iwojimana* as suggested by GRESSITT (1956) can be accounted for the individual variation within *N. bioculatus*. Additionally, I compared the genitalia of specimens from the Ogasawara Islands and the Volcano Islands (Fig. 12) and found no differences among them. Thus, *Sciadella iwojimana* is a junior synonym of *Nobuosciades bioculatus*.

### *Nobuosciades lanatus* (N. OHBAYASHI, 1976), comb. nov.

[Japanese name: Kezune-keshi-kamikiri]

(Figs. 7, 10, 13, 16)

*Miaenia* (*Pseudocidnus*) *lanata* N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 4, figs. 2A–2E; type locality: Japan, Ogasawara Is, Chichi-jima.

*Phloeopsis* [sic!] *lanata*: N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 507, pl. 87, figs. 602, 602 a–c.

M a l e. Length (from tip of head to elytral apices) 5.25–6.44 mm (M＝5.73 mm). Width (maximum width of elytra) 1.88–2.50 mm (M＝2.14 mm).

Body moderately flattened. Color blackish brown to reddish brown; head black; antenna dark reddish brown, basal margins of each segment light amber-colored; pronotum blackish brown with reddish brown basal and apical margins; elytra reddish brown; leg reddish brown except for femora, apical half of tibiae and tarsi that are blackish brown.

Body densely clothed with pale grayish, yellowish brown or golden and black pubescence; black pubescence forming a crescent shaped marking at the middle of each elytron.

Head narrower than pronotum, sparsely punctured; vertex shallowly concave; frons

Table 1. Measurements of the species of *Nobuosciades* spp. (arithmetic mean ±SD).

| species | *N. bioculatus* | | *N. lanatus* | | *N. meridianus* | |
|---|---|---|---|---|---|---|
| | ♂(n=10) | ♀(n=10) | ♂(n=7) | ♀(n=8) | ♂(n=6) | ♀(n=3) |
| Length (mm) | 5.96±0.92 | 6.19±0.97 | 5.73±0.44 | 5.23±0.73 | 6.38±1.24 | 6.44±0.22 |
| Width (mm) | 2.29±0.42 | 2.29±0.44 | 2.14±0.21 | 1.97±0.31 | 2.43±0.47 | 2.42±0.13 |
| IEL/GL | 2.00±0.13 | 1.90±0.22 | 1.39±0.13 | 1.44±0.14 | 1.71±0.25 | 1.79±0.38 |
| PL/PB | 0.83±0.03 | 0.84±0.03 | 0.87±0.07 | 0.86±0.04 | 0.88±0.02 | 0.81±0.05 |
| PL/PW | 0.71±0.02 | 0.72±0.02 | 0.72±0.05 | 0.75±0.03 | 0.70±0.03 | 0.68±0.03 |
| EW/PB | 1.53±0.05 | 1.46±0.10 | 1.62±0.06 | 1.65±0.04 | 1.63±0.06 | 1.59±0.02 |
| EL/PL | 3.48±0.11 | 3.54±0.13 | 3.45±0.23 | 3.54±0.15 | 3.26±0.16 | 3.78±0.12 |
| EL/EW | 1.88±0.08 | 2.05±0.17 | 1.84±0.06 | 1.85±0.06 | 1.77±0.05 | 1.92±0.06 |
| EL/TL | 0.70±0.01 | 0.71±0.01 | 0.70±0.01 | 0.71±0.01 | 0.67±0.02 | 0.72±0.01 |

transverse, about half as long as wide, with following setae: 1–2 long ones and 5–6 short ones at margin of inferior eye lobe, several long ones arranged in a transverse row at the apical margin, and more than 10 long ones on genae; eyes oval, rather small, with inferior eye-lobe longer than gena, IEL/GL 1.10–1.50 (M=1.39); antennae slenderer and relatively shorter than in *N. bioculatus*, exceeding elytral apices at apex of 8th segment or base of 9th segment; 1st to 8th segments densely provided with erect hairs beneath; 1st about 0.68 times as long as 3rd; combined length of 3rd and 4th account for about 37.5 % of the entire length of antenna; apex of last segment roundly pointed; relative lengths of segments as follows: 3.5 : 1.0 : 5.2 : 4.8 : 22 : 2.0 : 2.0 : 1.7 : 1.5 : 1.5 : 1.3.

Pronotum rather small and long, strongly constricted at base; PL/PB 0.76–0.96 (M=0.86), PL/PW 0.67–0.79 (M=0.72), EW/PB 1.52–1.67 (M=1.62); sides strongly arcuate, widest behind middle, each with a vestigial spine at basal fourth (sometimes effaced); disc densely punctuate, weakly convex at middle, transversely depressed at apical fourth and basal margin.

Elytra long, EL/EW=1.80–1.97 (M=1.84), EL/PL=3.13–3.81 (M=3.45), EL/TL=0.69–0.73 (M=0.70), moderately punctured in subregular rows; sides gently narrowed towards narrowly rounded apices; basal callosities on disc moderately developed; oblique depression behind scutellum distinct and broad, reaching to apical third.

Legs moderate in length; femora strongly swollen; tibia densely clothed with short sub-erect setae and with long erect silky hairs borne on outer side of foretibiae and inner side of mid- and hind tibiae.

Male genitalia:– Median lobe slender, long, about 0.71 times as long as abdominal length; arcuately curved on basal third, thence gently convergent towards pointed apex from lateral view; median struts accounts for 5/11 of the entire length of median lobe; ventral plate slightly longer than dorsal plate, parallel-sided on basal 3/4, thence slightly roundly attenuate toward bluntly pointed apex from dorsal view; dorsal plate narrowly rounded or bluntly pointed at apex. Endophallus about 1.8 times as long as median lobe; rod-like sclerites relatively long, about 0.25 times as long as median lobe. Tegmen

robust, little shorter than median lobe; lateral lobes broad and short, about 0.25 times as long as the entire length of tegmen, sub-parallel-sided on basal 2/3, thence widely rounded; with 10 to 15 rather short dense setae at apical part of each lobe.

F e m a l e. Length (from tip of head to elytral apices) 4.31–6.06 mm (M＝5.23 mm). Width (maximum width of elytra) 1.56–2.31 mm (M＝1.97 mm).

In general appearance almost identical to male, differing from it in the following morphological characters: Antennae short, exceeding elytral apices at 10th or the last segment; elytra rather short; apex of last ventrite truncate.

The ratio of body parts: IEL/GL＝1.13–1.50 (M＝1.44), PL/PB＝0.81–0.94 (M＝0.86), PL/PW＝0.68–0.79 (M＝0.75), EW/PB＝1.56–1.67 (M＝1.65), EL/PL＝3.37–3.77 (M＝3.53), EL/EW＝1.80–1.96 (M＝1.85), EL/TL＝0.70–0.73 (M＝0.71).

*Specimens examined*. [Muko-jima Is.] 1 ex., 22–X–2002, H. KARUBE leg.; [Chichi-jima Is.] 3 exs. (paratypes), 5–V–1974, N. OHBAYASHI leg.; 1 ex. (paratype), 24–V–1974, M. IGA leg.; 2 exs., Mt. Yoakeyama, host plants were collected on 6–I–1996 and emerged during IV～V–1996, H. KAMEZAWA leg.; 3 exs., Mt. Chûôsan, 9–X–1977, M. TOMOKUNI leg. [Haha-jima Is.] 7 exs., 17～18–V–1984, M. HASEGAWA leg.; 3 exs., Okimura～Kuwanokiyama, 27–XI–1977, M. TOMOKUNI leg.; 1 ex., Kuwanokiyama～Sekimon, 29–XI–1977, M. TOMOKUNI leg.; 1 ex., Hyôgidaira, 4–VI–1973, H. FUJITA leg.; 2 exs., ditto, 29–VI–1974, H. FUJITA leg.; 1 ex., ditto, 2–VI–1975, H. FUJITA leg. [Kitaiwô-tô Is.] 2 exs., Ishinomura, 21–VI– 2003, H. KARUBE leg.; [Minamiiwô-tô Is.] 7 exs., 21～25–VI–2007, H. KARUBE leg.

*Distribution*. Ogasawara Islands (Muko-jima Is., Chichi-jima Is. Ani-jima Is. and Haha-jima Is.) and Volcano Islands (Kitaiwô-tô Is. and Minamiiwô-tô Is.).

*Host plant.* Unknown.

*Biology*. Adults were caught by beating the dead branches.

*Differential diagnosis*. This species is somewhat similar to *N. bioculatus*, but can be easily distinguished from it by the long silky hairs on each tibia.

### ***Nobuosciades meridianus*** (OHBAYASHI, 1941), comb. nov.

(Figs. 4–5, 8, 11, 14, 17)

*Exocentrus meridianus* OHBAYASHI, 1941, Tenthredo, **3**: 227; type locality: Northern Mariana Islands, Saipan Is.

*Sciadella* (*Sciadella*) *meridiana*: GRESSITT, 1956, Ins. Micronesia, **17**: 163.

*Miaena* (*Miaena*) [sic!] *meridiana*: BREUNING, 1963, Cat. Lam. Monde, (7): 527.

*Sciades* (*Miaenia*) *meridianus*: BREUNING, 1977, Mitt. Zool. Mus. Berlin, **53**(2): 252.

*Phloeopsis* [sic!] *meridiana*: A. SAITO, 1994, Nat. Hist. Res., Special Issue, (1): 227.

*Exocentrus saipanensis* OHBAYASHI, 1941, Tenthredo, **3**: 228; type locality: Marianas Islands, Saipan Is.

*Nonymoides swezeyi* GRESSITT, 1942, B. P. Bishop Mus., Bull., **172**: 61; type locality: Mariana Islands, Guam Is.

M a l e. Length (from tip of head to elytral apices) 4.38–7.56 mm (M＝6.38 mm). Width (maximum width of elytra) 1.69–2.44 mm (M＝2.42 mm).

Body moderately flattened, with feeble lustre. Color light brown to reddish brown; head dark reddish brown; antenna mostly light brown; scape with indistinct blackish band at apical third; each apical margin of 2nd to 4th and each apical half of 5th to the last antennal segments blackish; pronotum and elytra reddish brown; legs mostly light brown with a indistinct blackish band on the middle of each femur and apical third of each tibia; each apical half of 1st to 3rd tarsal segments somewhat blackish.

Body densely clothed with pale grayish, golden and black pubescence which often forms variable markings on elytra.

Head relatively long, moderately punctured; vertex almost flat; frons transverse, about 0.6 times as long as wide, with following long setae: 2–3 on inside of inferior eye lobe, 5–6 arranged in a transverse row at the apical margin, 3–4 on genae; eyes oval, considerably large, inferior eye lobe distinctly longer than gena, IEL/GL＝1.5–2.2 (M ＝1.7); antennae long and slender, about 1.5 times as long as body, exceeding elytral apices at middle or at apex of the 6th segment; 1st to 8th segments moderately provided with erect setae beneath; 1st about 0.6 times as long as 3rd; combined length of 3rd and 4th accounts for about 38% of the entire length of antenna; apex of last segment roundly pointed; relative lengths of segments as follows: 6.3 : 1.0 : 10.7 : 9.3 : 4.7 : 4.2 : 3.8 : 3.5 : 3.2 : 2.8 : 2.5.

Pronotum large and well expanded, strongly constricted at base; PL/PB＝0.85–0.91 (M＝0.88), PL/PW＝0.69–0.75 (M＝0.70), EW/PB＝1.53–1.70 (M＝1.62); sides strongly arcuate, widest at basal third, each with a distinct spine at basal fourth; spine obliquely directed backwards; disc densely punctuate, shallowly and transversely depressed at apical fourth, widely and strongly depressed at basal third.

Elytra rather short, EL/EW＝1.74–1.89 (M＝1.77), EL/PL＝3.07–3.54 (M＝3.26), EL/TL＝0.67–0.73 (M＝0.67), sub-parallel-sided on basal half, thence somewhat arcuately attenuate towards rounded apices, distinct and strongly punctured with sub-regular rows; basal callosities and oblique depression behind scutellum distinct and deep.

Legs moderate in length; femora rather weakly swollen; with rather long dense sub-erect setae at apical half of each tibia.

Male genitalia:– Median lobe about half as long as the length of abdomen; sub-parallel-sided on basal half, thence gently narrowed toward pointed apex, from lateral view rather strongly arcuate; median struts accounts for about 1/2 of the entire length of median lobe; ventral plate longer than dorsal plate, parallel-sided on basal 4/5, thence strongly attenuate towards bluntly pointed apex from dorsal view; apex of dorsal plate narrowly rounded. Endophallus about 1.5 times as long as median lobe; rod-like sclerites about 0.16 times as long as median lobe. Tegmen slender, almost as long as median lobe; lateral lobes long and slender, almost 0.25 as long as the entire length of tegmen, parallel-sided on basal 3/4; outer side roundly arcuate towards rounded apex, which is densely provided with rather long setae.

F e m a l e. Length (from tip of head to elytral apices) 6.31–6.69 mm (M＝6.43 mm). Width (maximum width of elytra) 2.3–2.56 mm (M＝2.41 mm).

In general appearance almost identical to male, differing from it in the following morphological characters: antennae short, exceeding elytral apices at middle or at apex of the 7th segment; elytra more oval; apex of last ventrite truncate with a depression.

Ratio of body parts: IEL/GL 1.38–2.11 (M＝1.79), PL/PB 0.77–0.90 (M＝0.81), PL/PW 0.65–0.71 (M＝0.68), EW/PB 1.58–1.61 (M＝1.59), EL/PL 3.65–3.89 (M＝3.78), EL/EW 1.85–1.95 (M＝1.92), EL/TL 0.71–0.73 (M＝0.72).

*Specimens examined*. 1 ♂ (holotype), Mariana Islands, Saipan, 5–I–1938, N. OHZU leg.; 1 ex. (holotype of *Exocentrus saipanensis*), same locality as the holotype, 3–I–1938, N. OHZU leg.; 1 ex., Anatahan Is., 11–V–1992, S. MIYANO leg. (CBM-ZI-33310); 6 exs., Sarigan Is., 15～16–V–1992, S. MIYANO leg. (CBM-ZI-33311～33316); 1 ex., Alamagan Is., 19–V–1992, S. MIYANO leg. (CBM-ZI-33317); 1 ex., East Is. of Maug Is., 4–VI–1992, S. MIYANO leg. (CBM-ZI-33318)

*Distribution.* Mariana Islands (East Is. of Maug Pagan, Alamagan, Sarigan, Anatahan, Saipan, Tinian, Aginguan, Rota and Guam).

*Differential diagnosis*. This species is similar to *N. bioculatus*, but differs from it in the following features: Body more broad; antenna longer, about 1.5 times as long as body in male; lateral spines of pronotum obliquely directed backwards.

## Key to Species of the Genus *Nobuosciades*

1. Elytral depressions distinct; each tibia with long silky hairs; lateral spine of pronotum vestigial and sometimes effected ……*N. lanatus* (N. OHBAYASHI), comb. nov.
— Elytral depression indistinct; each tibia without long silky hairs ……2
2. Lateral spine of pronotum pointed sideward; antenna short, exceeding elytral apices at 7th segment (♂) or 10th segment (♀); ventral plate of male genitalia projected at apex……*N. bioculatus* (MATSUMURA et MATSUSHITA), comb. nov.
— Lateral spine of pronotum obliquely pointed backwards; antenna long, exceeding elytral apices at 6th segment (♂) or 7th segment (♀); ventral plate of male genitalia bluntly pointed at apex.……*N. meridianus* (OHBAYASHI), comb. nov.

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# A Revisional Study of the Genus *Boninella* GRESSITT (Coleoptera, Cerambycidae, Lamiinae)

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**Abstract** The genus *Boninella* belonging to the tribe Acanthocinini is revised. Eight species including three new species: *B. karubei* sp. nov., *B. takakuwai* sp. nov., *B. kamezawai* sp. nov., and one new subspecies, *B. satoi masatakai* subsp. nov., from the Ogasawara Islands, Japan, are recognized. All of them are described or redescribed with illustrations of the important characters. A key to the species is provided.

## Introduction

In a series of the "Micronesian Insects", GRESSITT (1956) revised the family Cerambycidae and established a new genus *Boninella*, on the basis of *B. degenerata* from Chichi-jima Island, Ogasawara Islands, Japan. Twenty years later, N. OHBAYASHI (1976) studied the Acanthocinini of Chichi-jima Island and listed seven species belonging to the tribe, including five new species: *Miaenia* (*Pseudocidnus*) *lanata*, *M.* (*P.*) *hirsuta*, *M.* (*P.*) *satoi*, *M.* (*P.*) *anoplos* and *Boninella igai* from Chichi-jima Island. He later (1984) transferred *M.* (*P.*) *hirsuta*, *M.* (*P.*) *satoi* and *M.* (*P.*) *anoplos* to the genus *Boninella.* Thus, the genus *Boninella* hosted five species at that time.

Many of small insects inhabiting the Chichi-jima and Haha-jima Islands of the Ogasawara archipelago are suffering from the predation pressure by green anole (*Anolis carolinensis* VOIGT, 1832). This lizard is native to North America and has been introduced to the Ogasawara Islands in 1960's. According to the recent reports (KARUBE & SUDA, 2004), most of the *Boninella* species have already disappeared from these two islands. It is hoped here that detailed studies like the present one which deals with endemic cerambycid genus *Boninella* will call for urgent attention to the biodiversity conservationof the Ogasawara Islands.

Since OHBAYASHI (1976) published his paper, there have been many specimens of *Boninella* amassed by various entomologists, and we had the opportunity to examine large series of these beetles coming from the Ogasawara archipelago. This includes a large collection that has been put together by the explorations of the Kanagawa Prefectural Museum of Natural History from the island chain of Muko-jima Isls., Chichi-jima Isls. and Haha-jima Isls. After the careful examination of these specimens we recognized among them three new species and one new subspecies, belonging to the genus *Boninella*, and we describe them herein.

The abbreviations used in the present paper are as follows: IEL: length of the inferior eye lobe, measured from lateral or sub-lateral view; GL: length of gena, measured from lateral or sub-lateral view; PL: length of pronotum; PW: maximal width of pronotum; PB: width of pronotal base; EL: length of elytra; EW: maximal width of elytra; TL: total length of body, measured from tip of head to elytral apices; M: arithmetic mean.

The holotypes designated in this paper are deposited in the collections of the following institutes referred in the text by the following abbreviations.

KPMNH: Kanagawa Prefectural Museum of Natural History, Odawara, Japan

EUMJ: Entomological Laboratory, Faculty of Agriculture, Ehime University, Matsuyama, Japan

Paratypes are preserved in the collections of Kanagawa Prefectural Museum of Natural History, Entomological Laboratory, Faculty of Agriculture, Ehime University, Toyohashi Museum of Natural History, Toyohashi and private collections of Hiroshi MAKIHARA, Tsukuba, Hiromu KAMEZAWA, Tokyo, and the authors.

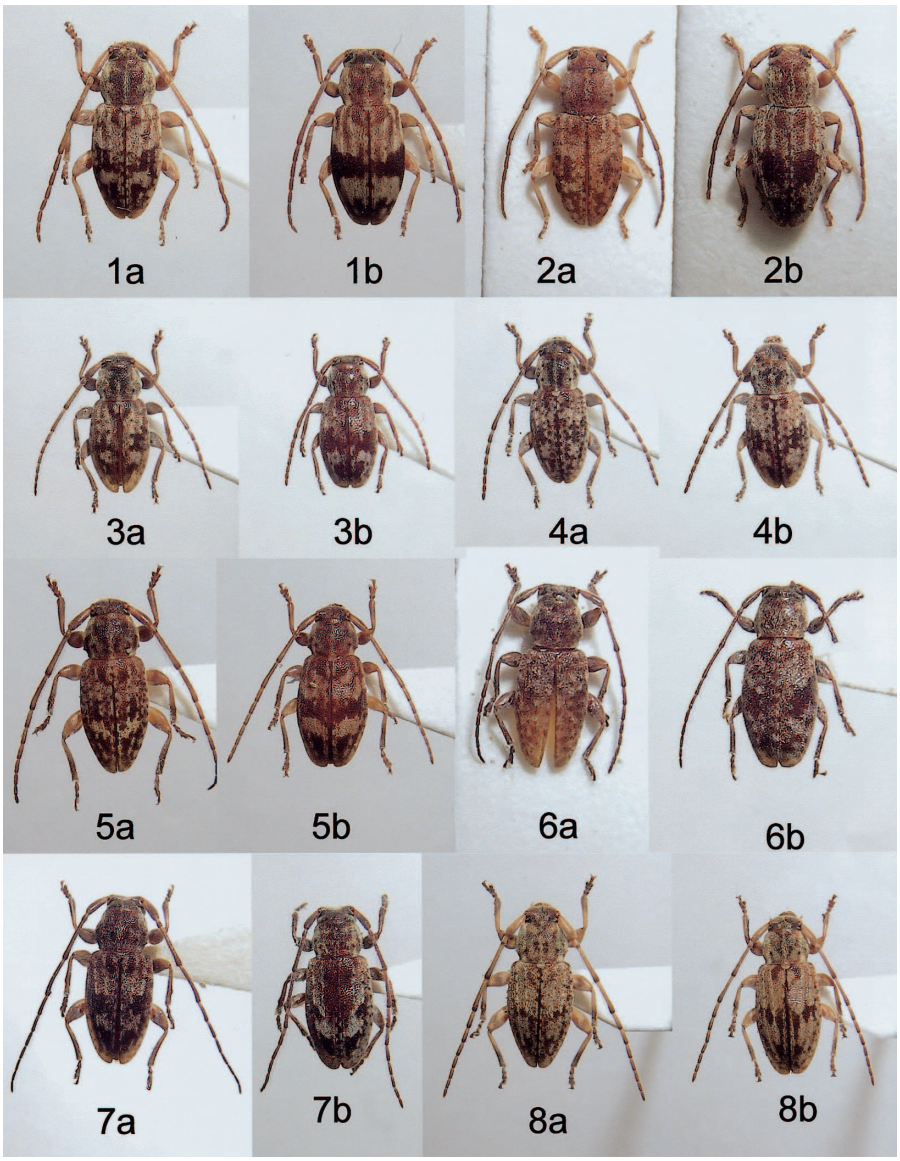
Before going into details, we wish to express our special thanks to Dr. Tatsuya NIISATO of Bioindicator Co., Ltd., Tokyo for his kind guidance and encouragement in various ways, and also for the critical reading of the original manuscript of this paper. Thanks are also due to Messrs. Haruki KARUBE of Kanagawa Prefecture Museum of Natural History, Hiromu KAMEZAWA of Tokyo, and Hiroshi MAKIHARA of Forestry and Forest Products Research Institute, Tsukuba for their kind support and useful information concerning the host plants.

## Genus ***Boninella*** GRESSITT, 1956

[Japanese name: Ogasawara-kamikiri-zoku]

*Boninella* GRESSITT, 1956, Ins. Micronesia, **17**: 182, fig. 33d; type species: *Boninella degenerata* GRESSITT, 1956. —— N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 1.

Body moderately flattened; head slightly narrower than pronotum; vertex shallowly concave; frons usually with short setae throughout and with following long setae: 2–3 setae along inferior eye lobe, 8–10 arranged in a transverse row at apical margin and several ones on genae; eyes considerably large, not divided, emarginate with each lobe widely connected; antennae thick, 1.0–1.5 times as long as body (male), or 0.9–1.2 time




Figs. 1–8. Habitus of *Boninella* spp. —— 1, *B. degenerata* GRESSITT; 2, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 3, *B. igai* N. OHBAYASHI; 4, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 5, *B. satoi satoi* (N. OHBAYASHI); 6, *B. hirsuta* (N. OHBAYASHI); 7, *B. anoplos* (N. OHBAYASHI); 8, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov. —— a, Male; b, female.

as long as body (female); densely provided with erect setae beneath; scape shorter than 3rd, 3rd segment longer than 4th; 3rd and 4th segments very long, their combined length accounts for more than 1/3 of the entire antennal length; each of 5th to 11th segments distinctly abbreviated .

Pronotum transverse, without lateral spines, or with a vestigial small spine mediolaterally; disc almost flattened. Prosternum and metasternum almost flattened; sparsely covered with rather short silky erect hairs; prosternal process as wide as mesosternal process, their widths are almost identical to the width of the mesocoxal cavity at its narrowest part; procoxal cavities closed behind; mesocoxal cavities closed to epimeron; metasternum with wide semicircular depression. Elytra oval, humeri effaced, without basal callosities; hind wing vestigial. Legs short, apical half of each femur moderately clavate; fore- and mid-tibiae nearly equal in length to femora, hind-tibiae shorter than femora; oblique grooves of mid-tibiae rather shallowly slanting from apical third to near apex on dorsal sides; hind-tarsi short, not cylindrical, 1st segment shorter than the following two combined.

Abdomen broad and short, 3rd abdominal sternite broader than the following three sternites combined; last ventrite semicircular with rounded apex (male), or weakly truncate (female).

Male genitalia: – Median lobe arcuate or weakly curved from lateral view; median struts accounts for 1/3 to 1/2 of the entire length of median lobe. Endophallus 1.5 to 2.0 times as long as median lobe, with crescent-like sclerites in middle, and with narrow, rod-like sclerites near apex. Tegmen nearly equal or a little shorter than median lobe; lateral lobes accounts for 1/3 to 1/4 of the entire length of tegmen, with 10–15 setae at apical part of each lobe, at times densely covered with short setae; roof narrow; ringed part converging, weakly geniculated at its widest portion.

*Differential diagnosis.* This genus is endemic to the Ogasawara Islands. It is very similar to the genus *Nobuosciades* HASEGAWA, 2009 (in press) by the following characters that are present in both genera: Body flattened; antenna with 3rd and 4th segments very long; combined length of 3rd and 4th segments accounts for more than 1/3 of the entire length of antenna; 5th to 11th antennal segments distinctly abbreviated; prosternum and metasternum flattened; sparsely covered with silky erect hairs; pro- and mesosternal processes distinctly wide; endophallus of male genitalia with narrow rod-like sclerites near apex. *Boninella* can be distinguished from *Nobuosciades* by the following characters: Antennae thick; elytra oval with effaced humeri, basal callosities absent; hind wing vestigial, degenerated in various degrees. Eight species and one subspecies of *Boninella* are herein recognized.

## *Boninella degenerata* GRESSITT, 1956

[Japanese name: Ogasawara-kamikiri]

(Figs. 1, 9, 17, 25, 33, 42)

*Boninella degenerata* GRESSITT, 1956, Ins. Micronesia, **17**: 182, fig. 33d; type locality: Chichi-jima Is., Bonin Isls., Japan. —— KUSAMA *et al*. (part), 1974, Rep. Fac. Sci., Shizuoka Univ., **8**: 130. —— N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 509, pl. 87, figs. 604, 604a–604f. —— MAKIHARA, 2007, Longic. Beetl. Japan: 649, pl. 72, fig. 16.

Male. Length (from tip of head to elytral apices) 3.09–4.32 mm (M=3.67 mm). Width (maximal width of elytra) 1.16–1.76 mm (M=1.51 mm).

Color dark brown to light reddish brown; head dark reddish brown; antenna light reddish brown, apical half of scape and apical margins of 2nd to the last segments blackish; pronotum mostly dark reddish brown, except for light reddish brown basal and apical margins; elytra reddish brown; legs mostly light reddish brown, but middle of femora, tibiae and apical half of 1st to 3rd tarsal segments blackish.

Body densely clothed with buffy, whitish buffy, reddish brown and black pubescence; buffy and whitish pubescence often forming 2 to 3 whitish interrupted longitudinal stripes on each elytron, and a pair of large whitish maculation at apical fourth of elytra; sometimes a pair of large maculation is formed due to the absence of the buffy pubescence with sparse black short pubescence at apical third.

Head circular from frontal view, moderately punctured; vertex shallowly concave; frons rounded square, weakly convex, moderately provided with short setae throughout; genae not dilated, almost as long as inferior eye lobe; IEL/GL 0.90–1.13 (M=1.01); antennae moderate in length, apex of 9th segment exceeding the elytral apex; scape about 0.77 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 37% of the entire antennal length; apex of last segment bluntly pointed; relative lengths of each segment as follows: 4.1 : 1.0 : 5.4 : 5.1 : 2.6 : 2.3 : 2.0 : 1.8 : 1.6 : 1.5 : 1.4.

Pronotum rather small, its length almost equals its width at base, widest at middle, without lateral spines; PL/PB=0.89–1.04 (M=0.98), PL/PW=0.79–0.85 (M=0.80), EW/PB=1.37–1.71 (M=1.59); sides gently arcuate; disc slightly convex, densely punctuate, weakly depressed at apical fourth and basal margin.

Elytra rather long, widest at basal half to basal 3/5; without sub-erect setae; EL/EW=1.48–1.68 (M=1.59), EL/PL=2.42–2.71 (M=2.54), EL/TL=0.62–0.66 (M=0.64); sides with humeri almost effaced, feebly arcuate from elytral humeri to basal 3/5, thence rather strongly narrowed to rounded apices; disc moderately depressed at basal fourth, with distinct punctures that are sub-arranged in about 16 rows at the broadest part of each elytron. Hind wings account for approximately 4/5 of the elytral length.

Legs moderate in length; femora moderately swollen; tibia moderately covered with evenly short, bristle-like setae.

Abdomen with 3rd to 6th sternites densely punctured throughout, last ventrite almost semi-circular, rather sparsely punctured at basal half; 8th tergite tongue-shaped with widely rounded apex.

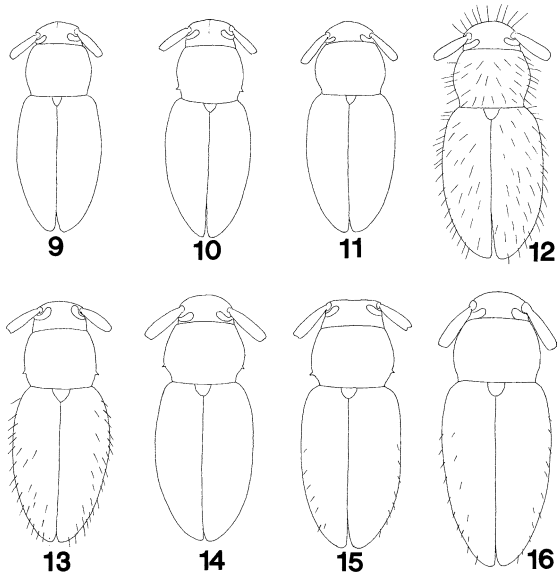
Male genitalia: – Median lobe relatively long, about half the length of abdomen; basal half parallel-sided, thence rather strongly narrowed towards pointed apex, moderately arcuate from lateral view; median struts accounts for about 2/5 of the entire length of median lobe; ventral plate slightly longer than dorsal plate, parallel-sided on basal 3/4, thence roundly attenuate toward pointed apex from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites narrow, about 0.2 times the length of median lobe. Tegmen broad, shorter than median lobe; lateral lobes broad and short, about 0.25 times as long as the entire length of tegmen, sides gently narrowed towards rounded apices that are provided with 8 to 12 setae.

F e m a l e. Length (from tip of head to elytral apices) 3.32–5.20 mm (M＝4.00 mm). Width (maximal width of elytra) 1.36–1.68 mm (M＝1.64 mm).

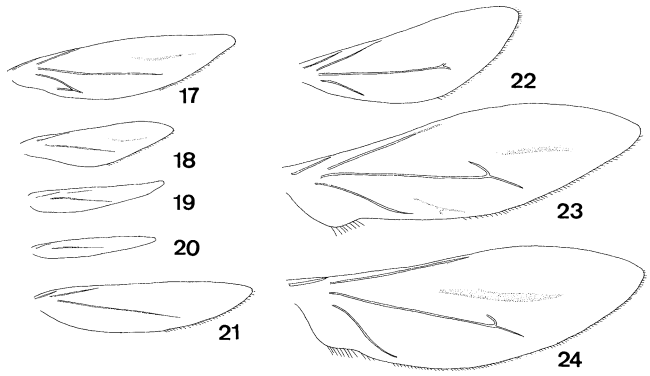
In general appearance almost identical to male, differing from it in the following morphological characters: Elytra often with broad transverse band in middle; antennae short, apex of 10th segment exceeding elytral apices; pronotum slightly shorter than the basal width; last ventrite truncate at apex.

Ratio of body parts: IEL/GL＝1.00–1.29 (M＝1.04), PL/PB＝0.88–1.00 (M＝0.93), PL/PW＝0.74–0.81 (M＝0.78), EW/PB＝1.50–1.67 (M＝1.61), EL/PL＝2.67–2.95 (M＝2.79), EL/EW＝1.52–1.68 (M＝1.61), EL/TL＝0.64–0.68 (M＝0.66).

*Specimens examined.* [Chichi-jima Is.] 45 exs., 3～5–V–1974, N. OHBAYASHI leg.; 2 exs., 4–V–1974, Y. HORI leg.; 7 exs., 9～11–V–1974, Y. HORI leg.; 1 ex., VII–1972, M. IGA leg.; 6 exs., Mikazuki-yama, 21–VI–1987, M. NISHIMURA leg.; 86 exs., ditto, 1～2–V–1996, H. KAMEZAWA leg.; 1 ex., Mt. Chûôsan, 9–XII–1977, M. TOMOKUNI leg.; 1 ex., Tsutsuji-yama, 8–XII–1977, M. TOMOKUNI leg.; 4 exs., east of Mt. Mikazuki-yama, 6–IX–1997, H. KAMEZAWA leg.; 3 exs., Kominato, 13–IX–1997, H. KAMEZAWA leg.; 4 exs., Mt. Yoake-yama, host plants were collected on 6–I–1996 and emerged during 1～11–IV–1996, H. KAMEZAWA leg.; 6 exs., entrance of Tatsumidani, Kitafukurosawa, 4–V–1996, H. KAMEZAWA leg. [Ani-jima Is.] 5 exs., Takinoura, 10–IX–1997, H. KAMEZAWA leg. [Nishi-jima Is.] 1 ex., 25–VI–2003, H. KARUBE leg. [Haha-jima Is.] 17 exs., 16～17–V–1984, M. HASEGAWA leg.; 2 exs., 20～21–X–1982, H. MAKIHARA leg.; 2 exs., 1～8–VII–1986, M. MAKIHARA leg.; 4 exs., 5～7–V–1991 (emerg.), K. ESAKI leg.; 3 exs., 19–V–1991 (emerg.), K. ESAKI leg.; 3 exs., 6–VI–1991 (emerg.), K. ESAKI leg.; 1 ex., Kuwanoki-yama, 24–VI–1976, H. FUJITA leg.; 3 exs., ditto, 10–III–1991, K. ESAKI leg.; 3 exs., ditto, 25–VI–1987, M. NISHIMURA leg.; 1 ex., Nishiura–Kitamura, 12–III–1991, K. ESAKI leg.; 3 exs., Okimura, 21–VI–1976, H. FUJITA leg.; 14 exs., ditto, 16–VI–1992, N. OHBAYASHI leg.; 3 exs., Chibusa-yama, 15–VI–1992, N. OHBAYASHI leg.; 12 exs., Funamidai, 23–VI–1987, M. NISHIMURA leg.; 21 exs., near Funamidai, 23–VI–1987, H. AKIYAMA leg.; 3 exs., Hyôgidaira, 3–VI–1973, H. FUJITA leg.; 1 ex., ditto, 29–VI–1974, H. FUJITA leg.; 2 exs., Okimura–Kuwanoki-yama, 27–XI–1977, M. TOMOKUNI leg.; 1 ex., Kitamura–Kuwanoki-yama, 1–XII–1977, M. TOMOKUNI leg.; 32 exs., Hyôgidaira–Nakanodaira, 27–IV–1996, H. KAMEZAWA leg.; 3 exs., Kensaki-yama, 28–IV–1996, H. KAMEZAWA leg.; 14 exs., Nakanodaira, 27–IV–1996, H. KAMEZAWA leg.; 12 exs., ditto, host plants collected on 27–IV–1996 and




Figs. 9–16. Dorsal habitus of *Boninella* spp., showing the setae or hairs on body. —— 9, *B. degenerata* GRESSITT; 10, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 11, *B. igai* N. OHBAYASHI; 12, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 13, *B. hirsuta* (N. OHBAYASHI); 14, *B. satoi satoi* (N. OHBAYASHI); 15, *B. anoplos* (N. OHBAYASHI); 16, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov.




Figs. 9–24. Hind wings of *Boninella* spp. —— 17, *B. degenerata* GRESSITT; 18, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 19, *B. igai* N. OHBAYASHI; 20, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 21, *B. hirsuta* (N. OHBAYASHI); 22, *B. satoi satoi* (N. OHBAYASHI); 23, *B. anoplos* (N. OHBAYASHI); 24, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov.

emerged during 15–VII～24–VIII–1996, H. KAMEZAWA leg.; 3 exs., Kensaki-yama, host plants were collected on 4～5–VI–1996, and emerged on 27–VII–1996, H. KAMEZAWA leg.; 3 exs., Igumadani, 29–IV–1996, H. KAMEZAWA leg.; 7 exs., Koumoridani, 29–IV–1996, H. KAMEZAWA leg.; 3 exs., Nishinoura, 29–IV–1996, H. KAMEZAWA leg.; 2 exs., Kuwanoki-yama, 29–IV–1996, H. KAMEZAWA leg.; 2 exs., Sakaigatake–Kuwanoki-yama, 20～21–VI–2001, M. TAKAKUWA leg. [Ane-jima Is.] 2 exs., 15–VI–2003, H. KARUBE leg. [Mukou-shima Is.] 1 ex., 12–VI–2003, H. KARUBE leg.

*Distribution.* Japan, Ogasawara Islands (Ani-jima Is., Nishi-jima Is., Chichi-jima Is., Haha-jima Is., Mukou-shima Is. and Ane-jima Is.).

*Biology.* Adults were caught by beating the dead branches of various plants.

*Host plant.* According to TAKEDA (2007), following species have been recorded as the host plants: [Pinaceae] *Pinus luchuensis,* [Ulmaceae] *Celtis boninensis, Trema orientalis,* [Moraceae] *Morus australis,* [Rosaceae] *Rhaphiolepis wrightiana*, [Leguminosae] *Leucaena leucocephala.* Additionally, following two species were recorded: [Lauraceae] *Cinnamomum pseudo-pedunculatum*, [Araliaceae] *Fatsia oligocarpella.*

### ***Boninella karubei*** HASEGAWA et N. OHBAYASHI, sp. nov.

[Japanese name: Mukojima-ogasawara-kamikiri]

(Figs. 2, 10, 18, 26, 34, 43)

*Boninella degenerata*: KUSAMA *et al.* (part), 1974, Rep. Fac. Sci., Shizuoka Univ., **8**: 130. —— N. OHBAYASHI (part), 1976, Bull. Japan ent. Acad., **10**: 8. (nec GRESSITT, 1956).

*Boninella hirsuta*: KARUBE *et al.*, 2004, Res. Rep. Kanagawa prefect. Mus. Nat. Hist., (12): 79. (nec N. OHBAYASHI, 1976).

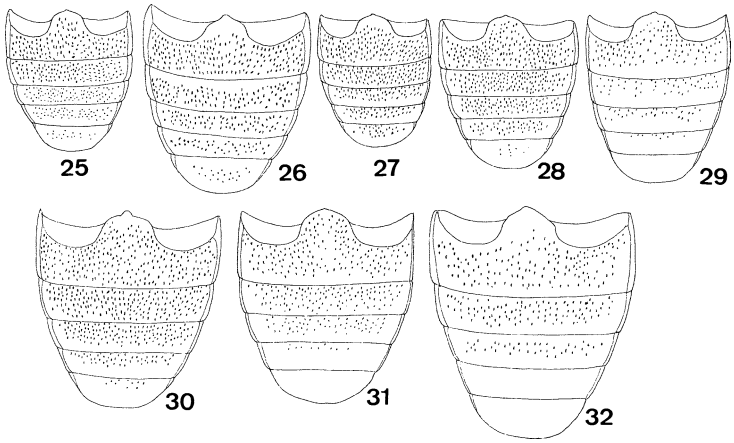
*Boninella satoi*: KARUBE *et al.*, 2004, Res. Rep. Kanagawa prefect. Mus. Nat. Hist., (12): 79. (nec N. OHBAYASHI, 1976).

M a l e. Length (from tip of head to elytral apices) 3.00–4.44 mm (M＝3.60 mm). Width (maximal width of elytra) 1.20–1.72 mm (M＝1.41 mm).

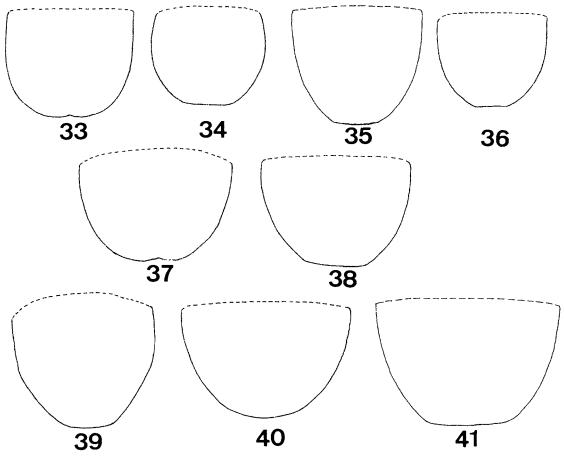
Color reddish brown to light brown; head reddish brown; antenna light brown, apical margins of scape to 4th segments and apical halves of 5th to the last segments somewhat darkened; pronotum and elytra reddish brown; legs mostly light brown; middle of femora, tibiae and apical halves of 1st to 3rd tarsal segments blackish.

Body densely clothed with buffy, whitish buffy, reddish brown and black pubescence as in *B. degenerata*; head densely clothed with buffy pubescence, except for occiput that is sparsely so; pronotum densely clothed with intermingled buffy and whitish pubescence, often with a pair of blackish semicircular maculation formed by lacking the pubescence with sparse black short pubescence at middle of disc. Elytra densely clothed with light buffy and whitish intermingled pubescence like that on pronotum, with some small black patches or spots formed by black pubescence.

Head rather large, circular from frontal view, moderately punctured; setae on frons distinctly sparse; genae slightly shorter or identical in length to the inferior eye lobe;




Figs. 25–32. Male abdominal sternites of *Boninella* spp., showing punctures. —— 25, *B. degenerata* GRESSITT; 26, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 27, *B. igai* N. OHBAYASHI; 28, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 29, *B. hirsuta* (N. OHBAYASHI); 30, *B. satoi satoi* (N. OHBAYASHI); 31, *B. anoplos* (N. OHBAYASHI); 32, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov.




Figs. 33–41. Male 8th abdominal tergite of *Boninella* spp. —— 33, *B. degenerata* GRESSITT; 34, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 35, *B. igai* N. OHBAYASHI; 36, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 37, *B. satoi masatakai* HASEGAWA et N. OHBAYASHI, subsp. nov.; 38, *B. satoi satoi* (N. OHBAYASHI); 39, *B. hirsuta* (N. OHBAYASHI); 40, *B. anoplos* (N. OHBAYASHI); 41, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov. Scale: 1 mm.

IEL/GL＝1.00–1.14 (M＝1.05); antennae slightly shorter than those of *B. degenerata*, 10th segment exceeding elytral apices; scape, about 0.66 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 38% of the entire antennal length; apex of last segment bluntly pointed; relative lengths of each segment as follows: 3.6 : 1.0 : 5.5 : 4.8 : 2.3 : 2.1 : 1.9 : 1.6 : 1.5 : 1.4 : 1.1.

Pronotum relatively long, almost same as long as basal width, sides rather strongly arcuate, widest at middle, with a distinct spine at basal fourth laterally; PL/PB＝0.91–1.08 (M＝1.01), PL/PW＝0.76–0.88 (M＝0.80), EW/PB＝1.43–1.65 (M＝1.56); disc slightly convex, weakly depressed on apical fourth and basal margin, densely punctuate. Elytra long, widest at middle; without sub-erect setae; EL/EW＝1.53–1.91 (M＝1.63), EL/PL＝2.39–2.63 (M＝2.52), EL/TL＝0.62–0.67 (M＝0.64); sides with humeri almost effaced, nearly straightly dilated from elytral humeri to basal 2/5, thence arcuate to sub-truncate or rounded apices; disc moderately depressed at basal fourth, with distinct punctures that are sub-arranged in about 16 rows at the broadest part of each elytron. Hind wings about 0.75 times as long as elytra. Legs in their morphological characteristics almost identical to those of *B. degenerata.* Abdomen with 3rd to 6th sternites densely punctured throughout, last ventrite almost semicircular, rather sparsely punctured except for marginal area; 8th tergite tongue-shaped with weakly truncate apex.

Male genitalia: – Similar to that of *B. degenerata.* Median lobe thicker, about half the abdominal length, weakly curved near middle in profile; from lateral view, parallel-sided on basal 2/3, thence gently convergent towards pointed apex; median struts accounts for about 1/2 of the entire length of median lobe; ventral plate slightly longer than dorsal plate, basal 3/4 parallel-sided, thence roundly attenuate toward bluntly pointed apex from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites narrow, about 0.33 times the length of median lobe. Tegmen broad, slightly shorter than median lobe; lateral lobes about 0.33 times as long as the entire length of tegmen, sides gently convergent towards rounded apices that are provided with 10 to 15 setae.

F e m a l e. Length (from tip of head to elytral apices) 3.28–4.56 mm (M＝3.75 mm). Width (maximal width of elytra) 1.36–1.92 mm (M＝1.57 mm).

In general appearance almost identical to male, differing from it in the following morphological characters: Elytra often with broad transverse band in middle resembling that of *B. degenerata*; antennae short, barely longer than body; pronotum slightly shorter in length than its basal width; elytra more oval, sides gently arcuate throughout; last ventrite truncate at apex.

Ratio of body parts: IEL/GL＝1.00–1.25 (M＝1.07), PL/PB＝0.84–1.00 (M＝0.90), PL/PW＝0.70–0.80 (M＝0.76), EW/PB＝1.50–1.75 (M＝1.63), EL/PL＝2.60–3.38 (M＝2.86), EL/EW＝1.49–1.74 (M＝1.58), EL/TL＝0.63–0.69 (M＝0.66).

*Type series.* Holotype: ♂, Nakoudo-jima Is., Ogasawara Isls., Japan, host plants ware collected on 25–IX–2003 and emerged in 2004, H. KARUBE leg. [KPMNH]. Paratypes: 31 exs., same data as holotype; 8 exs., Nakoudo-jima Is., Ogasawara Isls., 25–

IX–2003, H. KARUBE leg. (collected from dead branch of *Trema orientalis*); 2 exs., ditto, A. OZONO leg.; 1 ex., ditto, 9–VI–2003, H. KARUBE leg.; 2 exs., Muko-jima Is., Ogasawara Isls., Japan, 22–V–1974, M. IGA leg.; 1 ex., ditto, 9–VI–2003, H. KARUBE leg.

*Distribution.* Japan, Ogasawara Islands (Muko-jima Is. and Nakoudo-jima Is.).

*Host plant.* *Trema orientalis* (L.) BLUME, Ulmaceae.

*Differential diagnosis.* This new species is very similar to *B. degenerata*, but differs from it in the following characteristics: Pronotum with a distinct spine laterally; male genitalia with thicker median lobe, curved at middle, apical half not strongly narrowed from lateral view.

*Etymology.* The specific epithet of this new species is dedicated to Mr. Haruki KARUBE of Kanagawa Prefectural Museum of Natural History. He is one of the most prominent activists for the nature conservation and biodiversity preservation of the Ogasawara Islands, and offered us numerous valuable materials used in this study.

## ***Boninella igai*** N. OHBAYASHI, 1976

[Japanese name: Hime-ogasawara-kamikiri]

(Figs. 3, 11, 19, 27, 35, 44)

*Boninella igai* N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 8, figs. 6A–6E; type locality: Chichi-jima Is., Ogasawara Islands, Japan. —— N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 509, pl. 87, figs. 605, 605a–b. —— MAKIHARA, 2007, Longic. Beetl. Japan: 649, pl. 72, fig. 17.

M a l e. Length (from tip of head to elytral apices) 2.80–3.32 mm (M＝2.97 mm). Width (maximal width of elytra) 1.20–1.40 mm (M＝1.26 mm).

Color reddish to blackish brown; head blackish brown; apical halves of each antennal segments blackish; pronotum mostly blackish brown, basal and apical margins reddish brown; elytra blackish brown; legs mostly reddish brown; apical 2/3 of each femur, apical half of tibiae blackish.

Body densely clothed with white and brown pubescence, of which former often forming indistinct stripes and patches on pronotum and elytra.

Head relatively large, oblong from frontal view, coarsely punctured; vertex shallowly concave; frons transverse, weakly convex, sparsely provided with short setae throughout; genae not dilated, almost identical in length as the inferior eye lobe; IEL/GL＝1.00–1.17 (M＝1.03); antennae barely longer than body, 10th or the last segment exceeding elytral apices; scape about 0.68 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 37% of the entire antennal length; apex of the last segment bluntly pointed; relative lengths of each segment as follows: 3.3 : 1.0 : 4.8 : 4.0 : 2.1 : 1.8 : 1.6 : 1.5 : 1.4 : 1.3 : 1.1.

Pronotum large, strongly arcuate laterally, widest at middle, without lateral spine; PL/PB＝1.00–1.06 (M＝1.04), PL/PW＝0.75–0.83 (M＝0.81), EW/PB＝1.59–1.82 (M＝1.74); disc slightly convex, weakly depressed at apical fourth and basal margin,

rather coarsely punctuate throughout. Elytra elongate oval, widest at middle, without sub-erect setae; EL/EW＝1.49–1.55 (M＝1.53), EL/PL＝2.26–2.71 (M＝2.55), EL/TL＝0.63–0.66 (M＝0.65); sides with humeri completely effaced, gently arcuate throughout, apices broadly rounded; disc slightly depressed at basal fourth, with distinct punctures which are sub-arranged in about 13 rows at the broadest part of each elytron. Hind wings markedly vestigial, 0.6 to 0.5 times as long as elytra. Legs rather long, femora moderately swollen; tibiae densely provided with rather long and even bristle-like setae. Abdomen densely punctured throughout, last ventrite almost semicircular; 8th tergite tongue-shaped with truncate apex.

Male genitalia: – Median lobe moderately thick, about half as long as abdominal length, basal 2/3 parallel-sided, thence gently narrowed towards bluntly pointed apex, rather strongly curved in middle from lateral view; median struts accounts for about 1/2 of the entire length of median lobe; ventral plate slightly longer than dorsal plate, sub-parallel-sided near apex, thence rather strongly attenuate towards pointed extremity from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites narrow and relatively long, about 0.33 times the length of median lobe. Tegmen slender, nearly equal to median lobe in length; lateral lobes long and narrow, about 0.33 times as long as the entire length of tegmen, sub-parallel-sided near narrowly rounded apex, sparsely provided with short setae throughout, apical part of each lobe with dense long setae.

F e m a l e. Length (from tip of head to elytral apices) 2.80–3.42 mm (M＝3.16 mm). Width (maximal width of elytra) 1.24–1.44 mm (M＝1.35 mm).

In general appearance almost identical to male, differing from it in the following morphological characters: Elytra often with broad transverse band in middle; antennae shorter, just reaching elytral apex; pronotum slightly shorter in length than its basal width; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝1.00–1.13 (M＝1.05), PL/PB＝0.92–1.00 (M＝0.95), PL/PW＝0.73–0.81 (M＝0.78), EW/PB＝1.67–1.82 (M＝1.74), EL/PL＝2.67–3.09 (M＝2.93), EL/EW＝1.55–1.69 (M＝1.61), EL/TL＝0.67–0.70 (M＝0.69).

*Specimens examined.* [Chichi-jima Is.] 1 ♂ (holotype), “Chichi-jima”, 4–V–1974, N. OHBAYASHI leg. [EUMJ]; 5 exs. (paratypes), “Chichi-jima”, 3～5–V–1974, N. OHBAYASHI leg.; 1ex. (paratype), ditto, 9–V–1974, Y. HORI leg.; 1 ex., Yoake-yama–Hatsuneura, 7–XII–1977, M. TOMOKUNI leg.; 1 ex., Tsutsuji-yama, 8–XII–1977, M. TOMOKUNI leg.; 3 exs., east of Mt. Shigureyama, 150–200 m alt., 2–V–1996, H. KAMEZAWA leg.

*Distribution.* Japan, Ogasawara Islands (Chichi-jima Is.).

*Host plant.* Unknown.

*Biology.* Adults were collected by beating the dead branches of *Rhaphiolepis wrightiana* (Rosaceae).

*Notes.* KARUBE *et al.* (2004) recorded this species from Mukou-shima Is. belonging to Haha-jima island-group. According to our study this record was, however, a misidentified specimen belonging to the next species.

## *Boninella takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.

[Japanese name: Kebuka-ogasawara-kamikiri]

(Figs. 4, 12, 20, 28, 36, 45)

*Boninella igai*: KARUBE *et al.*, 2004. Res. Rep. Kanagawa prefect. Mus. Nat. Hist., (12): 79. (Mukou-shima Is.) (nec N. OHBAYASHI, 1976).

M a l e. Length (from tip of head to elytral apices) 2.88–3.64 mm (M=3.24 mm). Width (maximal width of elytra) 1.20–1.52 mm (M=1.36 mm).

Color dark reddish brown to black; head black; antenna mostly reddish brown, basal margins of each segment light brown; pronotum mostly blackish brown, basal and apical margins reddish brown; elytra blackish brown; legs mostly reddish brown, apical 2/3 of each femur, apical half of tibiae blackish.

Body densely clothed with white and black pubescence; head rather sparsely clothed with white pubescence; pronotum densely clothed with white pubescence, at times with three indistinct stripes consisting of white pubescence, of which the narrow one runs along median line and another runs laterally; elytra densely clothed with white pubescence, with some black patches or spots formed by black pubescence.

Head relatively large, oblong from frontal view, coarsely punctured; vertex shallowly concave; frons transverse, weakly convex, with long and rather dense silky hairs throughout; inferior eye lobe relatively narrow; genae not dilated, almost identical in length to the inferior eye lobe; IEL/GL=1.00–1.14 (M=1.05); antennae barely longer than body, 10th or the last segment exceeding elytral apices; scape about 0.67 times as long as 3rd; combined lengths of 3rd and 4th segments account for about 39% of the entire length of antenna; apex of the last segment bluntly pointed; relative lengths of each segment as follows: 3.6 : 1.0 : 5.4 : 4.6 : 2.3 : 1.9 : 1.8 : 1.5 : 1.4 : 1.3 : 1.2.

Pronotum large, without lateral spine; moderately clothed with long silky erect hair throughout; strongly arcuate at lateral side, widest at middle, PL/PB=0.96–1.06 (M=1.01), PL/PW=0.77–0.83 (M=0.80), EW/PB=1.58–1.88 (M=1.72); disc weakly depressed at apical fourth and basal margin, rather coarsely punctuate throughout. Elytra oval, flattened, widest at middle; moderately clothed with long silky erect hairs as those of pronotum; EL/EW=1.50–1.60 (M=1.55), EL/PL=2.55–2.82 (M=2.65), EL/TL=0.64–0.67 (M=0.65); sides with elytral humeri completely effaced, gently arcuate throughout, apices sub-truncated; disc slightly depressed at basal fourth, with rather weak punctures that are sub-arranged in 13 to 15 rows at the broadest part of each elytron. Hind wings markedly vestigial and narrow, about half as long as elytra. Legs rather slender; femora moderately swollen; tibia densely provided with rather long and even bristle-like setae. Abdomen with 3rd to 5th sternites densely punctured throughout, punctuation of 6th sternite sparser than those of 3rd to 5th; last ventrite semicircular, with rounded apex, sparsely punctured in middle; 8th tergite strongly arcuate at sides, widely truncate at apex.

Male genitalia: – Median lobe relatively long, about 0.6 times as long as abdominal

length, strongly depressed at apical third; median struts accounts for about 1/2 of the entire length of median lobe, weakly curved on basal third from lateral view; ventral plate almost as long as dorsal plate, sub-parallel-sided near apex, thence somewhat roundly attenuate towards bluntly pointed apex from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites rather long, about 0.33 times the length of median lobe. Tegmen short and slender, about 0.8 times as long as median lobe; lateral lobes narrow, about 0.33 times as long as the entire length of tegmen, sub-parallel sided on basal 3/4, thence gently narrowed towards rounded apices that are densely provided with long setae.

F e m a l e. Length (from tip of head to elytral apices) 2.68–4.08 mm (M＝3.26 mm). Width (maximal width of elytra) 1.20–1.72 mm (M＝1.37 mm).

Almost identical in general appearance to male, but differing from it in the following morphological characters: Body somewhat slender, elytra often with broad transverse band in middle; antennae shorter, just reaching elytral apices; pronotum slightly shorter than its basal width; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝1.00–1.33 (M＝1.14), PL/PB＝0.84–1.00 (M＝0.92), PL/PW＝0.75–0.82 (M＝0.78), EW/PB＝1.54–1.89 (M＝1.67), EL/PL＝2.72–3.11 (M＝2.90), EL/EW＝1.56–1.65 (M＝1.59), EL/TL＝0.65–0.68 (M＝0.67).

*Type series.* Holotype: ♂, Haha-jima Is., Ogasawara Islands, Japan, 17–V–1984, M. HASEGAWA leg. [EUMJ]. Paratypes: 8 exs., same data as holotype; 4 exs., same locality as holotype, 16～18–V–1984, H. MAKIHARA leg.; 2 exs., Hyôgidaira, Haha-jima Is., 2–VI–1975, H. FUJITA leg.; 1 ex., Mt. Chibusa-yama, Haha-jima Is., 24–VI–1986, K. MORIMOTO leg.; 7 exs., Mt. Kensaki-yama, Haha-jima Is., 28–IV–1996, H. KAMEZAWA leg.; 13 exs., ditto, 30–IV–1996, H. KAMEZAWA leg.; 14 exs., Nakanodaira, Haha-jima Is., 27–IV–1996, H. KAMEZAWA leg.; 5 exs., ditto, host plants ware collected on 27–IV–1996 and emerged during 24–XI～24–XII–1996, H. KAMEZAWA leg.; 10 exs., Nishi-noura, Haha-jima Is., 29–IV–1996, H. KAMEZAWA leg.; 3 exs., Kuwanoki-yama, 29–IV–1996, H. KAMEZAWA leg.; 2 exs., Mukou-shima Is., 12–VI–2003, H. KARUBE leg.

*Distribution.* Japan, Ogasawara Islands (Haha-jima Is. and Mukou-shima Is.).

*Hostplant. Rhaphiolepis wrightiana* [Rosaceae].

*Biology.* Adults were collected by beating the dead branches of *Rhaphiolepis wrightiana* [Rosaceae].

*Differential diagnosis.* This new species is strikingly similar to *B. igai* from Chichi-jima Is., by the voluminous and rounded pronotum, white and black pubescence on dorsal surface, markedly vestigial hind wing, narrow lateral lobes of tegmen resembling those of *B. igai*. However, this new species can be easily distinguished from all the other *Boninella* species (including *B. igai*) by the dense long silky hairs on dorsal body surface.

*Etymology.* The specific epithet of this new species is dedicated to Dr. Masatoshi TAKAKUWA in commemorating his retirement from Kanagawa Prefectural Museum of Natural History.

## *Boninella satoi satoi* (N. OHBAYASHI, 1976)

[Japanese name: Satô-ogasawara-kamikiri]

(Figs. 5, 14, 22, 30, 38, 46)

*Miaenia* (*Pseudocidnus*) *satoi* N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 5, figs. 4A–4E; type locality: Chichi-jima Is., Ogasawara Islands.

*Boninella satoi*: N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 509, pl. 87, figs. 607, 607a. —— MAKIHARA, 2007, Longic. Beetl. Japan: 649, pl. 72, fig. 19.

M a l e. Length (from tip of head to elytral apices) 3.76–5.36 mm (M＝4.76 mm). Width (maximal width of elytra) 1.52–2.20 mm (M＝1.87 mm).

Color reddish brown to blackish brown; head dark reddish brown; antenna dark reddish brown, basal margins of each segment light brown; pronotum mostly blackish brown; basal and apical margins reddish brown; elytra dark reddish brown; legs mostly reddish brown, apical 2/3 of each femur and apical half of each tibia blackish.

Body densely clothed with buffy and black pubescence; head with dense buffy pubescence, except for occiput that is clothed only with sparse pubescence; pronotum with dense buffy pubescence, except for mottled pubescence on disc; elytra with buffy mottled pubescence, often forming 4–5 buffy interrupted longitudinal stripes or large buffy oblong maculation on apical third, with some black patches or spots of black pubescence.

Head small in contrast with well expanded pronotum, rectangular from frontal view, covered with sparse distinct punctuation; vertex shallowly concave; frons transverse weakly convex, sparsely covered with short setae; inferior eye lobe relatively large; genae slightly shorter, or almost as long as the inferior eye lobe, with several long setae; IEL/GL＝1.00–1.29 (M＝1.09); antennae stout and long, with apex of 8th segment exceeding elytral apex; scape about 0.68 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 37% of the entire antennal length; apex of last segment bluntly pointed; relative lengths of each segment as follows: 4.1 : 1.0 : 6.0 : 5.0 : 2.5 : 2.3 : 2.1 : 1.9 : 1.8 : 1.5 : 1.4.

Pronotum large, well expanded, strongly constricted at base, widest at basal 2/5, strongly arcuate laterally, with small spine at lateral basal fifth; PL/PB＝0.88–1.03 (M＝0.95), PL/PW＝0.73–0.86 (M＝0.78), EW/PB＝1.42–1.53 (M＝1.48); disc almost flattened except for weakly depressed apical fourth and basal margin, with dense strong punctuation throughout. Elytra long, widest at middle, without sub-erect setae; EL/EW＝1.55–1.68 (M＝1.63), EL/PL＝2.40–2.70 (M＝2.55), EL/TL＝0.63–0.66 (M＝0.64); sides with elytral humeri almost effaced, gently arcuate throughout, narrowly rounded at apices; disc rather strongly depressed on basal fourth, strongly closely punctured as sub-arranged about 16 rows at the broadest part of each elytron. Hind wings about 0.8 times as long as the elytra. Legs relatively long; femora moderately swollen; tibiae with dense, rather long and even bristle-like setae. Abdomen with 3rd to 6th sternites covered with very dense even punctuation; last ventrite semi-circular, rounded at apex, sparsely punctured near base; 8th tergite gently arcuate at sides, widely

truncate at apex.

Male genitalia: – Median lobe thick, about half as long as abdominal length, gently narrowed towards pointed apex, basal third weakly curved from lateral view; median struts accounts for about 2/5 of the entire length of median lobe; ventral plate longer than dorsal plate, sub-parallel-sided on basal 3/4, thence slightly roundly attenuate towards acutely projected apex from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites narrow and arcuate, about 0.25 times the length of median lobe. Tegmen slender, almost as long as median lobe; lateral lobes about 0.25 times as long as the entire length of tegmen, sub-parallel-sided on basal 3/4, thence widely rounded; with 10–15 dense long setae on apical part of each lobe.

F e m a l e. Length (from tip of head to elytral apices) 4.32–4.80 mm (M＝4.51 mm). Width (maximal width of elytra) 1.80–1.96 mm (M＝1.88 mm).

Almost identical in general appearance to male, but differing from it in the following morphological characters: Body more oval, elytra often forming a broad transverse band in middle; antennae short, apex of 9th segment exceeding elytral apex; elytral apex broadly rounded; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝1.00–1.25 (M＝1.12), PL/PB＝0.86–0.96 (M＝0.90), PL/PW＝0.75–0.79 (M＝0.77), EW/PB＝1.55–1.71 (M＝1.61), EL/PL＝2.70–3.04 (M＝2.88), EL/EW＝1.56–1.65 (M＝1.61), EL/TL＝0.66–0.69 (M＝0.67).

*Specimens examined.* [Chichi-jima Is.] 1 ♂ (holotype), "Chichi-jima", 4–V–1974, N. OHBAYASHI leg. [EUMJ]; 3 exs. (paratypes), same data as the holotype, 4～5–V–1974, N. OHBAYASHI leg.; 1 ex., "Chichi-jima", 19–VI–1981, K. SHIMIZU leg.; 6 exs., east of Mt. Shigure-yama, 2–V–1996, H. KAMEZAWA leg.; 19 exs., east of Mt. Mikazuki-yama, 1～2–V–1996, H. KAMEZAWA leg.; 114 exs., Mt. Tennoura-yama–Tatusumidani, host plants were collected on 7–I–1996 and emerged during 22–I～2–VII–1996, H. KAMEZAWA leg. [Ani-jima Is.] 1 ex., Ani-jima Is., 21–VI–1996, H. MAKIHARA leg.; 3 exs., ditto, host plants were collected on 21–VI–1996 and emerged in VIII–1996, H. MAKIHARA leg.

*Distribution.* Japan, Ogasawara Islands (Chichi-jima Is. and Ani-jima Is.).

*Biology.* Adults were caught by beating the dead branches of the host plants.

*Host plant.* According to TAKEDA (2007), the following species were recorded as the host plants: [Pinaceae] *Pinus luchuensis*, [Moraceae] *Morus australis*, [Lauraceae] *Cinnamomum pseudo-pedunculatum.* An additional host plant species was discovered: [Leguminosae] *Leucaena leucocephala.*

*Notes.* KARUBE *et al.* (2004) recorded this species from Muko-jima Is. and Nakoudo-jima Is., but after re-examination of his specimens, we came to the conclusion that they were misidentified specimens of *B. karubei* sp. nov.

### *Boninella satoi masatakai* HASEGAWA et N. OHBAYASHI, subsp. nov.

(Figs. 37, 47)

This subspecies is established based on the population from Haha-jima Island that

differs from the nominotypical subspecies as follows: Lateral spine of pronotum vestigial, sometimes effaced; apex of male 8th abdominal tergite truncate with slight notch in middle (Fig. 37); median lobe of male genitalia thicker, arcuate from lateral view, apical part of ventral plate wider, more roundly attenuate; ringed part of tegmen thicker and shorter (Fig. 47).

Ratio of body parts. Male: Length (from tip of head to elytral apices) 3.32–4.52 mm (M＝3.87 mm); width (maximal width of elytra) 1.32–1.80 mm (M＝1.53 mm); IEL/GL＝1.00–1.29 (M＝1.14), PL/PB＝0.88–1.00 (M＝0.95), PL/PW＝0.74–0.84 (M＝0.80), EW/PB＝1.36–1.57 (M＝1.49), EL/PL＝2.48–2.80 (M＝2.60), EL/EW ＝1.60–1.72 (M＝1.67), EL/TL＝0.64–0.67 (M＝0.66); female: Length (from tip of head to elytral apices) 3.04–4.52 mm (M＝3.94 mm); width (maximal width of elytra) 1.32–1.96 mm (M＝1.72 mm); IEL/GL＝0.80–1.22 (M＝0.98), PL/PB＝0.81–0.92 (M＝0.86), PL/PW＝0.59–0.79 (M＝0.73), EW/PB＝1.56–1.73 (M＝1.63), EL/PL＝ 2.78–3.20 (M＝3.01), EL/EW＝1.52–1.64 (M＝1.58), EL/TL＝0.68–0.71 (M＝0.69)

*Type series.* Holotype: ♂, Nakanodaira, Haha-jima Is., 27–IV–1996, H. KAMEZAWA leg. [EUMJ]. Paratypes: 2 ♂♂, 2 ♀♀, same data as the holotype; 4 ♂♂, 6 ♀♀, ditto, host plants were collected on 27–IV–1996 and emerged during 18–VI～7–IX–1996, H. KAMEZAWA leg.; 1 ♂, Mt. Kensaki-yama, Haha-jima Is., 28–IV–1996, H. KAMEZAWA leg.; 1 ♀, same locality, 3–I–1996, H. KAMEZAWA leg.; 30 ♂♂, 17 ♀♀, same locality, host plants were collected on 4～5–I–1996 and emerged during 18–II～ 21–V–1996, H. KAMEZAWA leg.; 7 ♂♂, 7 ♀♀, Mt. Kuwanoki-yama, host plants were collected on 2–I–1996 and emerged during 15–III～14–V–1996, H. KAMEZAWA leg.; 1 ♂, Hyôgidaira, Haha-jima Is., 2–VI–1975, H. FUJITA leg.; 1 ♂, 1 ♀, "Haha-jima", 21–IV–1991 emerg., K. ESAKI leg.

*Distribution.* Japan, Ogasawara Islands (Haha-jima Is.).

*Host plant. Cinnamomum pseudo-pedunculatum.*

*Etymology.* This sub-specific epithet is dedicated to the late Prof. Dr. Masataka SATÔ for the memory of his great contribution to the entomology. The specific epithet was also dedicated to his family name.

## ***Boninella hirsuta*** (N. OHBAYASHI, 1976)

[Japanese name: Arage-ogasawara-kamikiri]

(Figs. 6, 13, 21, 29, 39, 48)

*Miaenia* (*Pseudocidnus*) *hirsuta* N. OHBAYASHI, 1976, Bull. Japan ent. Acad., **10**: 4, figs. 3A–3E; type locality: Chichi-jima Is., Ogasawara Islands, Japan.

*Boninella hirsuta*: N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 509, pl. 87, figs. 606, 606 a–d. —— MAKIHARA, 2007, Longic. Beetl. Japan: 649, pl. 72, fig. 18.

M a l e. Length (from tip of head to elytral apices) 2.96–4.16 mm (M＝3.61 mm). Width (maximal width of elytra) 1.16–1.56 mm (M＝1.40 mm).

Color reddish brown to black, strongly shiny; head black; antenna reddish brown, apical halves of each segment darkened; pronotum and elytra dark reddish brown; legs

mostly reddish brown, apical 2/3 of each femur, apical halves of tibiae blackish.

Body densely clothed with buffy and black pubescence; head densely clothed with buffy pubescence except for occiput which is with sparse pubescence; pronotum with dense buffy pubescence except for disc which is mottled; elytra mottled with intermingled buffy and black pubescence.

Head relatively large in contrast with not expanded pronotum, rounded square from frontal view, coarsely punctured; vertex shallowly concave; frons rather densely provided with relatively long setae throughout; inferior eye lobe relatively large; genae almost as long as the inferior eye lobe, densely provided with long setae; IEL/GL = 1.00–1.25 (M = 1.05); antennae rather slender, apex of 8th segment exceeding elytral apex; scape about 0.58 times as long as 3rd segment; combined length of 3rd and 4th segments accounts for about 39% of the entire antennal length; apex of last segment bluntly pointed; relative lengths of each segment as follows: 2.6 : 1.0 : 4.5 : 4.0 : 1.9 : 1.7 : 1.5 : 1.4 : 1.2 : 1.1 : 1.0.

Pronotum not expanded, moderately constricted at base, widest at middle, weakly arcuate at sides, laterally with small spine at basal fifth; PL/PB = 0.90–1.08 (M = 1.00), PL/PW = 0.78–0.90 (M = 0.84), EW/PB = 1.45–1.65 (M = 1.53); disc rather distinctly depressed at apical fourth, rather sparsely clothed with distinct punctuation. Elytra slender, widest in middle; with oblique erect bristle-like setae on the entire surface; EL/EW = 1.60–1.76 (M = 1.66), EL/PL = 2.44–2.67 (M = 2.55), EL/TL = 0.63–0.65 (M = 0.64); sides with elytral humeri completely effaced, slightly arcuate to narrowly sub-truncate apices; disc rather strongly depressed on basal fourth, about 16 sub-arranged rows of moderate punctures exist on the broadest part of each elytron. Hind wings about 0.75 times the elytral length. Legs moderate in length with femora rather strongly swollen; tibiae with moderate bristle-like setae of even length. Abdomen with 3rd to 5th sternites rather sparsely punctured except for apical margins of 4th and 5th sternites; 6th and the last ventrite without puncture except for the marginal area of 6th sternite; last ventrite sub-truncate; 8th tergite subparallel-sided at basal third, thence strongly narrowed to sub-truncate apex.

Male genitalia: – Median lobe slender, about half as long as abdominal length, gently narrowed from middle to apical third, thence strongly narrowed towards bluntly pointed apex, moderately arcuate in lateral profile; median struts accounts for about 3/8 of the entire length of median lobe; ventral plate slightly longer than dorsal plate, sub-parallel-sided near apex, thence strongly and straightly attenuate towards sharply pointed apex from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites rather thick, about 0.29 times the length of median lobe. Tegmen slender, slightly shorter than median lobe; lateral lobes long and slender, about 0.25 times as long as the entire length of tegmen, on basal 3/4 parallel-sided, thence widely rounded; with dense short setae throughout, and with dense long setae at apical part of each lobe.

F e m a l e. Length (from tip of head to elytral apices) 3.88–3.92 mm (M = 3.90 mm). Width (maximal width of elytra) 1.56–1.64 mm (M = 1.60 mm).

Almost identical in general appearance to male, but differing from it in the

following morphological characters: elytra often forming a broad oblique transverse band in middle; antennae short, just reaching the elytral apex; elytral apex more broadly sub-truncate; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝1.00, PL/PB＝0.85–0.88 (M＝0.86), PL/PW＝0.76–0.78 (M＝0.77), EW/PB＝1.58–1.63 (M＝1.60), EL/PL＝3.05–3.10 (M＝3.07), EL/EW＝1.63–1.67 (M＝1.65), EL/TL＝0.67–0.68 (M＝0.68).

*Specimens examined.* [Chichi-jima Is.] 1 ♂ (holotype), "Chichi-jima", Ogasawara Islands, Japan, 4–V–1974, N. OHBAYASHI leg. [EUMJ]; 7 exs. (paratypes), "Chichi-jima" 3～4–V–1974, N. OHBAYASHI leg.; 1 ex. (paratype), ditto, 4–V–1974, Y. HORI leg.; 2exs., Mt. Chûôzan, 25–I–1980, C. OKUMA leg.

*Distribution.* Japan, Ogasawara Islands (Chichi-jima Is.).

*Host plant.* Unknown.

*Notes.* KARUBE *et al.* (2004) recorded this species from Nakoudo-jima Is., but after re-examination of his specimens we came to the conclusion that they were misidentified specimens of *B. karubei* sp. nov.

### *Boninella anoplos* (N. OHBAYASHI, 1976)

[Japanese name: Kezune-ogasawara-kamikiri]

(Figs. 7, 15, 23, 31, 40, 49)

*Miaenia* (*Pseudocidnus*) *anoplos* N. OHBAYASHI, 1976, Bull. Japan ent. Acad., 10: 6, figs. 5A–5E; type locality: Chichi-jima Is., Ogasawara Islands, Japan.

*Boninella anoplos*: N. OHBAYASHI, 1984, Longic. Beetl. Japan Col.: 510, pl. 87, figs. 608, 608a–d. —— MAKIHARA, 2007, Longic. Beetl. Japan: 649, pl. 72, fig. 20.

M a l e. Length (from tip of head to elytral apices) 3.68–5.40 mm (M＝4.40 mm). Width (maximal width of elytra) 1.28–2.08 mm (M＝1.72 mm).

Color dark reddish brown to blackish brown, strongly shiny; head dark reddish brown; antenna dark reddish brown, basal half of scape and basal margins of 2nd to the last segments light brown; pronotum mostly blackish brown, with somewhat reddish basal and apical margins; elytra reddish brown; legs mostly blackish brown, basal third of femora and tibiae light brown.

Body densely clothed with buffy, whitish buffy and black pubescence; head densely clothed with buffy pubescence; occiput with sparse pubescence; pronotum and elytra with intermingled dense buffy and whitish buffy pubescence, the whitish buffy pubescence often forming small whitish patches and interrupted longitudinal stripes; elytra sometimes forming two broad black transverse bands by due to the absent buffy pubescence, of which the oblique one is lying on from basal third to 3/5, and another one on basal 4/5.

Head relatively large, rectangular from frontal view, with moderate distinct punctures; vertex shallowly concave; frons almost square, weakly convex, with sparse short setae on the entire surface; inferior eye lobe relatively large; genae almost as long as the inferior eye lobe; IEL/GL＝0.90－1.13 (M＝1.01); antennae long and slender, 7th or

8th segment exceeding elytral apex; scape about 0.68 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 37% of the entire antennal length; apex of the last segment bluntly pointed; relative lengths of each segment as follows: 3.9 : 1.0 : 5.7 : 5.5 : 2.6 : 2.4 : 2.1 : 1.9 : 1.8 : 1.6 : 1.5.

Pronotum large and well expanded, rather strongly constricted at base, widest at middle, strongly arcuate at sides, laterally with a small spine at basal fourth; PL/PB＝0.94–1.05 (M＝1.00), PL/PW＝0.77–0.88 (M＝0.81), EW/PB＝1.47–1.70 (M＝1.53); disc weakly convex, with a deep and broad horseshoe-shaped depression on apical fourth, with distinct dense punctuation covering the entire surface. Elytra short (in contrast with the large pronotum), widest at middle; very sparsely clothed with short sub-erect bristle-like setae at sides of apical half; EL/EW＝1.61–1.76 (M＝1.66), EL/PL＝2.47–2.65 (M＝2.56), EL/TL＝0.6–0.66 (M＝0.65); elytral sides with rounded humeri, slightly arcuate to narrowly rounded apices; disc deeply and broadly depressed at basal fourth, with 13 distinct sub-arranged rows of distinct punctures at the broadest part of each elytron. Hind wings slightly shorter, or as long as elytra. Legs relatively long; femora moderately swollen; tibiae with dense sub-long blackish bristle-like setae intermingled with a few whitish long hairs. Abdomen with 3rd to 5th sternites rather densely punctured, except for lateral margins of 4th and 5th sternites; 6th and last ventrite amost impunctate, except for the basal area of 6th sternite; last ventrite with rounded apex; 8th tergite gently arcuate at sides, sub-truncate at apex.

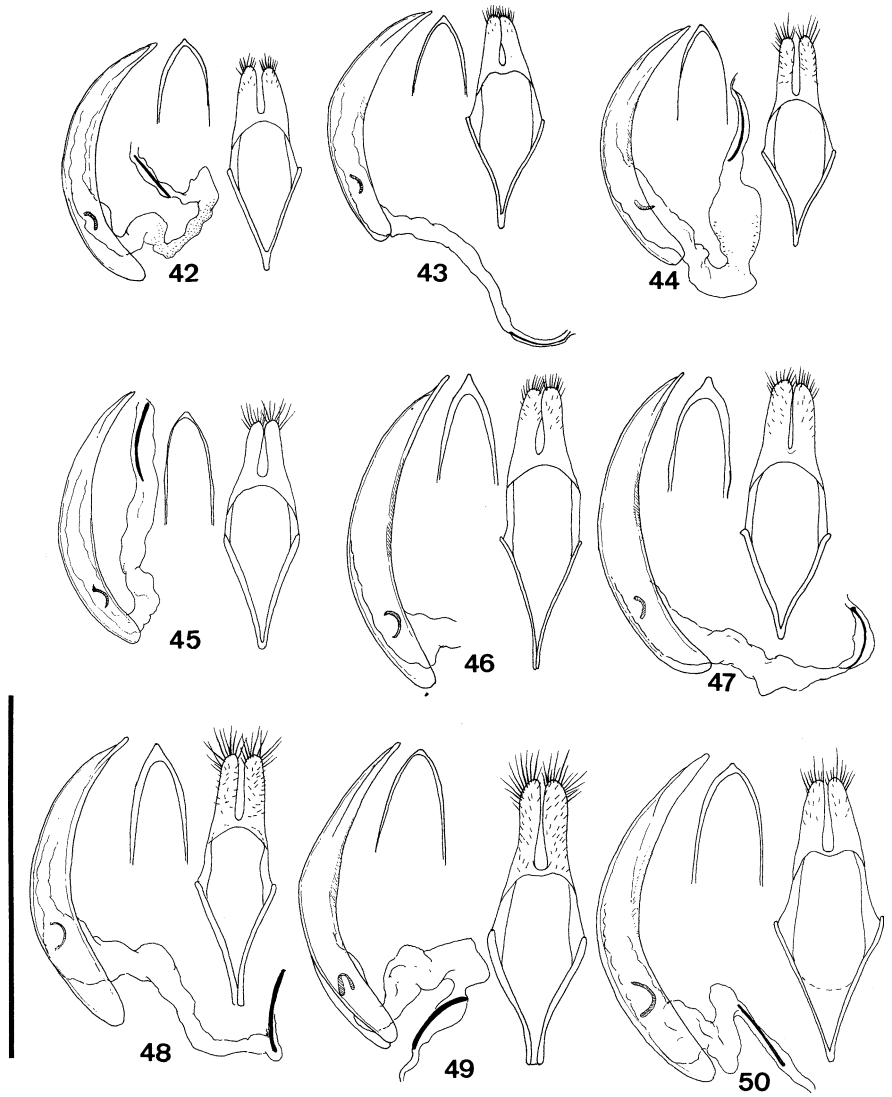
Male genitalia: – Median lobe slender, about 0.4 times as long as abdominal length, basal half parallel-sided, strongly narrowed towards bluntly pointed apex, rather strongly curved in middle from lateral view; median struts accounts for about 1/2 of the entire length of median lobe; ventral plate longer than dorsal plate, subparallel-sided near apex, thence slightly roundly attenuate towards pointed extremity from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites relatively thick, slightly arcuate, about 0.25 times the length of median lobe. Shape of tegmen strikingly similar to *B. hirsuta*, almost as long as median lobe; lateral lobes long and slender, about 0.33 times as long as the entire length of tegmen, sub-parallel-sided on basal 3/4, thence widely rounded, with sparse short setae on the entire surface, and with dense long setae at apical part of each lobe.

F e m a l e. Length (from tip of head to elytral apices) 4.40–5.88 mm (M＝5.03 mm). Width (maximal width of elytra) 1.88–2.48 mm (M＝2.13 mm).

Almost identical in general appearance to male, but differing from it in the following morphological characters: Elytral black band more or less distinct; antennae short, apex of 8th or 9th segment exceeding elytral apex; pronotum shorter; elytral apex more broadly rounded; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝0.90–1.10 (M＝1.02), PL/PB＝0.85–0.96 (M＝0.90), PL/PW＝0.68–0.78 (M＝0.73), EW/PB＝1.57–1.74 (M＝1.68), EL/PL＝2.75–3.30 (M＝3.02), EL/EW＝1.51–1.65 (M＝1.61), EL/TL＝0.68–0.69 (M＝0.68).

*Specimens examined.* [Chichi-jima Is.] Holotype, ♂, "Chichi-jima", Ogasawara Islands, Japan, 4–V–1974, N. OHBAYASHI leg. [EUMJ]; 17 paratypes, ditto, 3～5–V–




Figs. 42–50. Male genitalia of *Boninella* spp. —— 42, *B. degenerata* GRESSITT; 43, *B. karubei* HASEGAWA et N. OHBAYASHI, sp. nov.; 44, *B. igai* N. OHBAYASHI; 45, *B. takakuwai* HASEGAWA et N. OHBAYASHI, sp. nov.; 46, *B. satoi satoi* (N. OHBAYASHI); 47, *B. satoi masatakai* HASEGAWA et N. OHBAYASHI, subsp. nov.; 48, *B. hirsuta* (N. OHBAYASHI); 49, *B. anoplos* (N. OHBAYASHI); 50, *B. kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov. [Left: median lobe from lateral view; center: apex of median lobe from dorsal view; right: tegmen from ventral view.] Scale: 1 mm.

1974, N. OHBAYASHI leg.; 1 paratype, ditto, 10–V–1974, Y. HORI leg.

*Distribution.* Japan, Ogasawara Islands (Chichi-jima Is.).

*Host plant.* Unknown.

### *Boninella kamezawai* HASEGAWA et N. OHBAYASHI, sp. nov.

[Japanese name: Kamezawa-ogasawara-kamikiri]

(Figs. 8, 16, 24, 32, 41, 50)

M a l e. Length (from tip of head to elytral apices) 4.00–6.36 mm (M＝5.18 mm). Width (maximal width of elytra) 1.48–2.52 mm (M＝2.05 mm).

Color yellowish brown to reddish brown, moderately shiny; head dark reddish brown; antenna reddish brown, basal 2/3 of scape, basal half of 2nd segment, basal 3/4 of 3rd segment and basal margins of 4th to the last segments yellowish brown; pronotum mostly blackish brown with yellowish basal and apical margins; elytra light brown; legs mostly yellowish brown; apical halves of each tibia and tarsus blackish brown, each femur with blackish maculation on apical third.

Body densely clothed with buffy, whitish buffy and black pubescence; head with dense buffy pubescence; pronotum and elytra with intermingled dense buffy and whitish buffy pubescence, the latter pubescence often forming indistinct longitudinal stripes on elytra.

Head relatively small, oblong from frontal view, with sparse distinct punctures; vertex shallowly concave; frons rectangular, weakly convex, with dense short setae on the entire surface; inferior eye lobe relatively small; genae slightly shorter, or almost as long as the inferior eye lobe; IEL/GL＝0.90–1.20 (M＝1.05); antennae stout and long; 8th segment exceeding elytral apex; scape about 0.69 times as long as 3rd; combined length of 3rd and 4th segments accounts for about 36% of the entire antennal length; apex of the last segment bluntly pointed; relative lengths of each segment as follows: 3.4 : 1.0 : 4.9 : 4.5 : 2.3 : 2.1 : 1.8 : 1.7 : 1.5 : 1.4 : 1.3.

Pronotum large, well expanded, moderately constricted at base, widest at basal third, strongly arcuate laterally, usually devoid of spine (though sometimes a small one appears at basal fourth laterally); PL/PB＝0.89–0.97 (M＝0.92), PL/PW＝0.76–0.81 (M＝0.79), EW/PB＝1.43–1.64 (M＝1.52); disc slightly convex, with a distinct broad horseshoe-shaped depression on apical fourth, distinctly densely punctuated on the entire surface. Elytra similar to *B. anoplos*, widest at middle; sparsely clothed with short sub-erect bristle-like setae on lateral margins; EL/EW＝1.57–1.76 (M＝1.66), EL/PL ＝2.59–2.84 (M＝2.74), EL/TL＝0.65–0.67 (M＝0.66); sides with rounded humeri, weakly arcuate to narrowly rounded apices; disc rather strongly and broadly depressed on basal fourth, 13 distinct sub-arranged rows of distinct dense punctures at the broadest part of each elytron. Hind wings about 0.86 times as long as elytra. Legs relatively long and slender; femora moderately swollen; tibiae with rather dense even blackish and whitish bristle-like setae. Abdomen almost same as that of *B. anoplos*; 3rd

Table 1. Measurements of the species of *Boninella* spp. (arithmetic mean±SD)

| species | *B. degenelata* | *B. karubei* | *B. igai* | *B. takakuwai* | *B. satoi satoi* | *B. satoi masatakai* | *B. hirsuta* | *B. anoplos* | *B. kamezawai* |
|---|---|---|---|---|---|---|---|---|---|
| ♂ | (n=10) | (n=10) | (n=5) | (n=3) | (n=8) | (n=7) | (n=5) | (n=10) | (n=10) |
| Length (mm) | 3.67±0.51 | 3.60±0.48 | 2.97±0.20 | 3.24±0.38 | 4.76±0.51 | 3.87±0.49 | 3.61±0.51 | 4.40±0.64 | 5.18±0.66 |
| Width (mm) | 1.51±0.20 | 1.41±0.18 | 1.26±0.08 | 1.36±0.16 | 1.87±0.20 | 1.53±0.20 | 1.4 ±0.20 | 1.72±0.28 | 2.05±0.29 |
| IGL/GL | 1.03±0.06 | 1.05±0.07 | 1.03±0.07 | 1.05±0.08 | 1.09±0.11 | 1.14±0.11 | 1.05±0.11 | 1.01±0.08 | 1.05±0.08 |
| PL/PB | 0.98±0.05 | 1.01±0.06 | 1.04±0.02 | 1.01±0.05 | 0.95±0.06 | 0.95±0.05 | 1.00±0.06 | 1.00±0.04 | 0.92±0.03 |
| PL/PW | 0.80±0.03 | 0.80±0.04 | 0.81±0.03 | 0.80±0.03 | 0.78±0.04 | 0.80±0.04 | 0.84±0.04 | 0.81±0.03 | 0.79±0.01 |
| EW/PB | 1.59±0.10 | 1.56±0.08 | 1.74±0.09 | 1.72±0.15 | 1.48±0.04 | 1.49±0.07 | 1.53±0.08 | 1.53±0.07 | 1.52±0.06 |
| EL/PL | 2.54±0.09 | 2.52±0.12 | 2.55±0.18 | 2.65±0.15 | 2.55±0.11 | 2.60±0.10 | 2.55±0.10 | 2.56±0.06 | 2.74±0.09 |
| EL/EW | 1.57±0.06 | 1.63±0.11 | 1.53±0.03 | 1.55±0.05 | 1.63±0.04 | 1.67±0.05 | 1.66±0.07 | 1.66±0.05 | 1.66±0.05 |
| EL/TL | 0.64±0.01 | 0.64±0.02 | 0.65±0.01 | 0.65±0.01 | 0.64±0.01 | 0.66±0.01 | 0.64±0.01 | 0.65±0.01 | 0.66±0.01 |
| ♀ | (n=10) | (n=10) | (n=4) | (n=10) | (n=5) | (n=10) | (n=2) | (n=6) | (n=10) |
| Length (mm) | 4.00±0.63 | 3.80±0.50 | 3.16±0.27 | 3.26±0.45 | 4.51±0.23 | 3.94±0.47 | 3.90±0.03 | 5.03±0.66 | 5.21±0.52 |
| Width (mm) | 1.64±0.27 | 1.57±0.23 | 1.35±0.09 | 1.37±0.20 | 1.88±0.07 | 1.72±0.20 | 1.60±0.06 | 2.13±0.24 | 2.15±0.25 |
| IGL/GL | 1.04±0.09 | 1.07±0.09 | 1.05±0.06 | 1.14±0.15 | 1.12±0.13 | 0.98±0.13 | 1.00±0 | 1.02±0.09 | 1.03±0.06 |
| PL/PB | 0.93±0.04 | 0.90±0.06 | 0.95±0.03 | 0.92±0.06 | 0.90±0.04 | 0.86±0.04 | 0.86±0.02 | 0.90±0.05 | 0.87±0.03 |
| PL/PW | 0.78±0.78 | 0.76±0.03 | 0.78±0.04 | 0.78±0.03 | 0.77±0.02 | 0.73±0.06 | 0.77±0.01 | 0.73±0.04 | 0.75±0.02 |
| EW/PB | 1.61±0.05 | 1.63±0.09 | 1.74±0.07 | 1.67±0.12 | 1.61±0.06 | 1.63±0.05 | 1.60±0.03 | 1.68±0.06 | 1.58±0.05 |
| EL/PL | 2.79±0.10 | 2.86±0.22 | 2.93±0.18 | 2.90±0.12 | 2.88±0.13 | 3.01±0.14 | 3.07±0.04 | 3.02±0.19 | 2.97±0.06 |
| EL/EW | 1.61±0.05 | 1.58±0.07 | 1.61±0.07 | 1.59±0.06 | 1.61±0.03 | 1.58±0.04 | 1.65±0.02 | 1.61±0.06 | 1.65±0.06 |
| EL/TL | 0.66±0.01 | 0.66±0.02 | 0.69±0.01 | 0.67±0.01 | 0.67±0.01 | 0.69±0.01 | 0.68±0.01 | 0.68±0.01 | 0.68±0.01 |

to 5th sternites moderately punctured on the entire surface; 6th and last ventrite impunctate; last ventrite narrower than that of *B. anoplos*, truncate at apex.

Male genitalia: – Median lobe relatively thick, about half as long as abdominal length, basal half parallel-sided, thence rather strongly narrowed towards narrowly rounded apex, rather strongly curved in middle from lateral view; median struts accounts for about half of the entire length of median lobe; ventral plate longer than dorsal plate, sub-parallel-sided near apex, thence slightly roundly attenuate towards projected extremity from dorsal view. Endophallus about twice as long as median lobe; rod-like sclerites relatively thick, about 0.25 times the length of median lobe. Tegmen broad, almost as long as median lobe; lateral lobes short, about 0.25 times as long as the entire length of tegmen, sides gently narrowed towards rounded apices that are densely provided with long setae.

F e m a l e. Length (from tip of head to elytral apices) 4.56–6.52 mm (M＝5.21 mm). Width (maximal width of elytra) 1.88–2.76 mm (M＝2.15 mm).

Almost identical in general appearance to male, but differing from it in the following morphological characters: body more strongly oval; black elytral band more or less distinct; antennae short, 9th segment exceeding elytral apex; pronotum shorter; elytral apex more broadly rounded; apex of last ventrite truncate.

Ratio of body parts: IEL/GL＝0.91–1.09 (M＝1.09), PL/PB＝0.83–0.91 (M＝0.87), PL/PW＝0.71–0.78 (M＝0.75), EW/PB＝1.47–1.64 (M＝1.58), EL/PL＝2.89–3.08 (M＝2.97), EL/EW＝1.52–1.73 (M＝1.65), EL/TL＝0.67– 0.69 (M＝0.68).

*Type series.* Holotype: ♂, Mt. Choki-yama (Mt. Chibusa-yama), 150～200 m alt., Haha-jima Is., Ogasawara Isls., host plants were collected on 28–IV–1996 and emerged in 16–V–1996, H. KAMEZAWA leg. [EUMJ]. Paratypes: 63 ♂♂, 62 ♀♀, same data as the holotype but emerged out during 1–V～1–VI–1996; 5 ♂♂, 3 ♀♀, same locality as the holotype, 28–IV–1996, H. KAMEZAWA leg.; 2 ♂♂, same locality as the holotype, adults in pupal cell, 1–I–1996, H. KAMEZAWA leg.; 3 ♂♂, 1 ♀, Mt. Kuwanoki-yama, Haha-jima Is., Ogasawara Isls., 2–I–1996, H. KAMEZAWA leg.; 45 ♂♂, 42 ♀♀, same locality, host plants were collected on 2–I–1996 and emerged during 25–II～14–VI–1996, H. KAMEZAWA leg.; 1 ♀, same locality, 5–VII–1976, M. TAKAKUWA leg.; 1 ♂, Mt. Kensaki-yama, 28–IV–1996, H. KAMEZAWA leg.; 1 ♂, Tamagawa Dam, Mt. Chibusa-yama, Haha-jima Is., Ogasawara Isls., 3–VII–1995, H. MAKIHARA leg.; 1 ♂, "Haha-jima", Ogasawara Isls., 16～18–V–1984, H. MAKIHARA leg.; 1 ♂, Mokou-shima Is., Haha-jima group, Ogasawara Isls., 12–VI–2003, H. KARUBE leg.

*Distribution.* Japan, Ogasawara Islands (Haha-jima Is. and Mukou-shima Is.).

*Host plant.* A kind of vine (family and species undeterminable).

*Differential diagnosis.* This new species is strikingly similar to *B. anoplos* by the following characters that are being shared between the two species: Elytra with strong and broad depression on basal fourth of disc, with sparse short setae on lateral margins; last ventrite impunctate; apical half of median lobe of male genitalia strongly narrowed towards apex from lateral view. It can be easily distinguished from *B. anoplos* by the following morphological characteristics: Pronotum without spine laterally; tibiae with-

out long whitish hairs; median lobe of male genitalia thicker, apical part of ventral plate rounded with projected extremity; tegmen thick, lateral lobes distinctly shorter.

*Etymology.* The specific epithet of this species is dedicated to Mr. Hiromu KAMEZAWA of Tokyo, Japan. He is the first discoverer of this new species and gave us the opportunity to study his collection as well as many important advices.

## Key to the Species of the Genus *Boninella*

1. Elytra with oblique erect bristle-like setae or long silky hairs ·····2
— Elytra without erect bristle-like setae or long silky hairs ·····5
2. Body densely clothed with long erect silky hairs ·····*B. takakuwai* sp. nov.
— Elytra moderately or sparsely clothed with short oblique erect bristle-like setae ·· ·····3
3. Pronotum with a small spine on lateral basal fourth ·····4
— Pronotum without such spine ·····*B. kamezawai* sp. nov.
4. Elytra throughout moderately clothed with short oblique erect bristle-like setae; tibiae only with bristle-like setae of even length ····· ·····*B. hirsuta* (N. OHBAYASHI, 1976)
— Elytra sparsely clothed with short oblique erect bristle-like setae near lateral margins; tibiae with dense blackish bristle-like setae intermingled with a few whitish long hairs ·····*B. anoplos* (N. OHBAYASHI, 1976)
5. Pronotum with a small spine laterally ·····6
— Pronotum without spine ·····7
6. Pronotum widest at basal 2/5, with a small spine on lateral basal fifth····· ·····*B. satoi* (N. OHBAYASHI, 1976)
— Pronotum widest at middle, with a distinct spine on lateral basal fourth ····· ·····*B. karubei* sp. nov.
7. Body usually with mixed buffy, whitish buffy, reddish brown and black pubescence; antennae rather long, apex of 9th segment in ♂, or 10th segment in ♀ exceeding elytral apices; lateral lobes of male genitalia broad and short, about 1/4 the entire length of tegmen ·····*B. degenerata* GRESSITT, 1956
— Body with dense white and brown pubescence; antennae rather short, apex of 10th or 11th segments exceeding elytral apices in ♂, or 11th segment just reaches elytral apex in ♀; lateral lobes of male genitalia long and narrow, about 1/3 the entire length of tegmen ·····*B. igai* N. OHBAYASHI, 1976

## Discussion

The Ogasawara Archipelago consists of three island chains from north to south: Muko-jima Isls., Chichi-jima Isls. and Haha-jima Isls. The genus *Boninella* that is endemic to the archipelago consists of 8 species and one subspecies, and is a good example of diverse speciation on the tiny oceanic islands. There are four species

Table 2. Host plant of *Boninella* spp.

| Host plant Family | species | *B. degenerata* | *B. karubei* | *B. igai* | *B. takakuwai* | *B. satoi* | *B. kamezawai* |
|---|---|---|---|---|---|---|---|
| Pinaceae | *Pinus luchuensis* | ○ | | | | ○ | |
| Ulmaceae | *Celtis boninensis* | ○ | | | | | |
| | *Trema orientalis* | ○ | ○ | | | | |
| Moraceae | *Morus australis* | ○ | | | | ○ | |
| Lauraceae | *Cinnamomum pseudo-pedunculatum* | ○ | | | | ○ | |
| Rosaceae | *Rhaphiolepis wrightiana* | ○ | | ○ | ○ | | |
| Leguminosae | *Leucaena leucocephala* | ○ | | | | ○ | |
| Araliaceae | *Fatsia oligocarpella* | ○ | | | | | |
| Fam. Indet. | a kind of viny plant | | | | | | ○ |

※*Boninella hirsuta* and *B. anoplos* are host plant unknown.

Teble 3. Distribution, host plants and the degree of hind wing degeneration of *Boninella* spp.

| Degree of hind wing degeneration | Muko-jima Isls. | Chichi-jima Isls. | Haha-jima Isls. |
|---|---|---|---|
| Low | | *B. anoplos* (N. Ohbayashi) Host: unknown | *B. kamezawai* sp. nov. Host: a kind of viny plant |
| | | *B. satoi satoi* (N. Ohbayashi) Host: mainly Lauraceae | *B. satoi masatakai* subsp. nov. Host: mainly Lauraceae |
| | *B. karubei* sp. nov. Host: Ulmaceae | *B. degenerata* Gressitt Host: many kinds (euryphagous) | |
| | | *B. hirsuta* (N. Ohbayashi) Host: Unknown | |
| | | *B. igai* N. Ohbayashi Host: Rosaceae | *B. takakuwai* sp. nov. Host: Rosaceae |
| High | | | |

recorded from Haha-jima Isls. and five from Chichi-jima Isls. *Boninella degenerata* and *B. satoi* are common on Chichi-jima and Haha-jima Isls. *Boninella satoi* is in the archipelago present in two subspecies. *Boninella karubei* is known only from Muko-jima Isls.

N. OHBAYASHI (1988) stated that there are no records of relatives to the genus *Boninella* in Southeast Asia or Micronesia. However, this genus shares numerous similar morphological characteristics with the recently described genus *Nobuosciades* HASEGAWA (in press), that is distributed in the Ogasawara and the Mariana Isls. This fact suggests that both genera probably speciated from the common ancestral origin. N. OHBAYASHI (1988) likewise proposed two hypotheses regarding the speciation of the genus *Boninella.* Firstly he pointed out the gradual changes in the degree of hind wing degeneration of each species and suggested that there probably existed a habitat to supply the ancestral origin and that while it reached the Ogasawara Islands during several colonisation events, the original ancestor became extinct in the native habitat. Secondly, he hypothesized the sympatric speciation within Ogasawara Isls.

Two new species, *B. kamezawai* sp. nov. and *B. takakuwai* sp. nov., described from Haha-jima Is., are similar to *B. anoplos* and *B. igai* distributed in Chichi-jima Is., respectively. Degree of hind wing degeneration of these two species is also similar. *Boninella karubei* sp. nov., newly described from Muko-jima Isls. is very similar to *B. degenerata* and the degree of hind wing degeneration is likewise almost the same. It became apparent thus, that the species with gradual hind wing degeneration are distributed in parallel among Muko-jima Isls., Chichi-jima Isls. and Haha-jima Isls. However, *B. degenerata* which has strongly degenerated hind wings is common on both Chichi-jima and Haha-jima Isls., and no geographical variations are recognized. On the other hand, most species (except for *B. degenerata*, which is an euryphagous species), tend to depend on host plants that are very different from each other. Distribution, host plants and degree of hind wing degeneration of each species are summarized in Table 3.

According to TAKAHASHI (1995) or SHIMIZU (1998), the Ogasawara Archipelago presumably constituted a continuous mass of huge islands since the Tertiary Era of Cenozoic. They assume it to have reduced its size into the present archipelago via subsidence and erosion. Considering the geographical history of islands, as well as the ecology and morphology of the studied species leads us to presuppose that the ancestor reached the archipelago by flight or was carried in driftwood with the sea currents, and consequently underwent sympatric speciation while seeking for various niches switching between the hosts. Later, more substantial speciation took place through the geographical isolation among the islands, finally forming the present fauna. However, only *B. degenerata* obtaining euryphagous character increased the population density and enlarged the extent of habitat as the dominant species, with more opportunities of moving between Chichi-jima Isls. and Haha-jima Isls. with driftwood. Perhaps these conditions eliminated the geographical variation between islands.

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# Taxonomic Notes on *Glenea pseudoscalaris* (FAIRMAIRE, 1895) (Coleoptera, Cerambycidae, Lamiinae)

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**Abstract** *Glenea* (s. str.) *miwai monticola* GRESSITT, 1951 (with its replacement name, *G.* (*G.*) *miwai* m. *gressitti* BREUNING, 1956) is a junior synonym of *G. pseudoscalaris* (FAIRMAIRE, 1895). *Glenea miwai* MITONO, 1943 is considered a subspecies of *G. pseudoscalaris* (FAIRMAIRE, 1895).

## Introduction

FAIRMAIRE (1895) described *Saperda pseudoscalaris* from Langson of Tonkin, North Vietnam, based on a single female specimen. For decades there were no more specimens available for study and few literature sources mentioned this species. When MITONO (1943) described *Glenea miwai* and GRESSITT (1951) described *Glenea* (s. str.) *miwai monticola*, they didn't compare their new taxa with *Saperda pseudoscalaris*.

Our recent study on the genus *Glenea* showed that *Glenea* (s. str.) *miwai monticola* GRESSITT, 1951 and *Saperda pseudoscalaris* FAIRMAIRE, 1895 are conspecific. According to the International Code of Zoological Nomenclature (4th ed.), *G.* (*G.*) *miwai monticola* GRESSITT, 1951 (with its replacement name, *G.* (*G.*) *miwai* m. *gressitti* BREUNING, 1956) is considered as a junior synonym of *S. pseudoscalaris* FAIRMAIRE, 1895. Besides, *G. miwai* MITONO, 1943 is herein a subspecies of *G. pseudoscalaris* (FAIRMAIRE, 1895).

Terminology in description of male terminalia follows EHARA (1954).

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## Abbreviations of Specimens' Depository

Collections and institutions or museums shown in the text are abbreviated as follows:
CCCC: Collection of Chang-chin CHEN, Taipei, Taiwan
CCH: Collection of Carolus HOLZSCHUH, Villach, Austria
CWIC: Collection of Wen-I CHOU, Taipei, Taiwan
IZAS: Institute of Zoology, Chinese Academy of Sciences, Beijing, China
MNHN: Muséum National d'Histoire Naturelle, Paris, France
NMB: Naturhistorisches Museum, Basel, Switzerland (Museum Frey, Tutzing)
SYSU: Sun-Yat-sen University, Guangzhou, China
TARI: Taiwan Agriculture Research Institute, Taichung, Taiwan

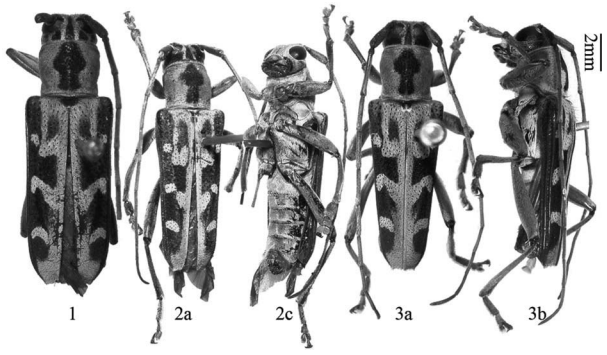
### *Glenea pseudoscalaris pseudoscalaris* (FAIRMAIRE, 1895)

[Chinese name: 腹脊并脊天牛]

(Figs. 1–6)

*Saperda pseudoscalaris* FAIRMAIRE, 1895, Ann. Soc. Ent. Belg., **39**: 186 (Vietnam: Tonkin). [MNHN].
*Glenea* (*Glenea*) *miwai monticola* GRESSITT, 1951, Longicornis, **2**: 576 (China: Guangdong). [SYSU]. **Syn. nov.**
*Glenea* (*Glenea*) *pseudoscalaris*: BREUNING, 1956, Ent. Arb. Mus. Frey, **7**(2): 692.
*Glenea* (*Glenea*) *miwai* m. *gressitti* BREUNING, 1956, Ent. Arb. Mus. Frey, **7**(2): 725. [Replacement name for *Glenea* (*Glenea*) *miwai monticola* GRESSITT, 1951 (*nec* AURIVILLIUS, 1920)]. **Syn. nov.**

*First description of terminalia*. Male terminalia (Figs. 4a–c): Tegmen about 3.3 mm in length; lateral lobes somewhat stout, each about 1.1 mm long and 0.3 mm wide, apex with a few and very short setae; basal piece membranous; median lobe plus median struts moderately curved, slightly longer than tegmen (35 : 33); median struts about half of



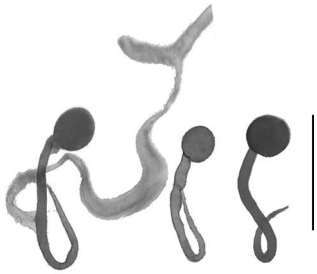

Figs. 1–3. Habitus of *Glenea pseudoscalaris pseudoscalaris* (FAIRMAIRE) (a, dorsal view; b, lateral view; c, latero-ventral view). —— 1, holotype female from Vietnam; 2, holotype of *G. miwai monticola* GRESSITT, male from Guangdong; 3, male from Guangxi.

whole median lobe in length; dorsal plate much shorter than ventral plate; apex of ventral plate not sharply pointed; internal sac more than twice the median lobe plus median struts in length, with 4 pieces of basal armature and 3 sub-equal rods, each rod shorter than tegmen (7 : 11). Tergite VIII (Fig. 5) with broadly produced apex, densely furnished with short and fine setae. Ventrite IX sub-equal to ringed part of tegmen in length. Female terminalia (Fig. 6): Spermathecal capsule composed of an apical orb and a stalk, stalk strongly curved, about six times of apical orb in length. Spermathecal duct longer than spermathecal capsule, middle part expanded. Tignum slightly shorter than abdomen; 6.7 mm for an adult with a 7.2 mm abdomen (from ventral view).

*Diagnosis*. Differs from *G. plagiata* GARDNER, 1930 (Figs. 8 & 11) by more developed black pronotal marking, narrower sutural pubescent stripes and not so obliquely truncated elytral apex. These two species are most probably closely related, as their spermathecae seem to be very similar as well. Unfortunately, male of *G. plagiata* GARDNER has not been available to the authors; all 39 specimens deposited in MNHN collected in India are females.

*Remarks*. This is a rare species. After FAIRMAIRE's description (1895), it has only been mentioned by few authors because of its scarcity. Before 1956, it has even been combined in the genus *Saperda*. It was perhaps for this reason that MITONO (1943) and GRESSITT (1951) didn't compare their new taxa with FAIRMAIRE's species. Although BREUNING (1956) transferred this species to the genus *Glenea*, and found the subspecific


Figs. 4–5. Terminalia of *Glenea pseudoscalaris pseudoscalaris* (FAIRMAIRE). —— 4, Male genitalia (a, dorsal view; b, lateral view; c, ventral view); 5, tergite VIII and ventrites VIII & IX, ventral view. Scale 1 mm.



6 7 8

Figs. 6–8. Spermathecal capsule of *Glenea* species. —— 6, *G. pseudoscalaris pseudoscalaris* (FAIRMAIRE); 7, *G. pseudoscalaris miwai* MITONO; 8, *G. plagiata* GARDNER. Scale 1 mm.

epithet '*monticola*' by GRESSITT being already pre-occupied, he didn't discover the conspecific relationship.

According to our recent study of the type specimens, *G.* (*G.*) *miwai monticola* GRESSITT, 1951 (with its replacement name, *G.* (*G.*) *miwai* m. gressitti BREUNING, 1956) is considered as a junior synonym of *S. pseudoscalaris* FAIRMAIRE, 1895. Besides, *G. miwai* MITOMO, 1943 is herein a subspecies of *G. pseudoscalaris* (FAIRMAIRE, 1895).

*Distribution*. China: Guangdong, Guangxi, Guizhou; Vietnam.

*Type specimens examined*. Holotype, female, Vietnam, Tonkin, Langson (MNHN, ex Coll. Léon FAIRMAIRE, 1906). Holotype of *G. miwai monticola* GRESSITT, male, S. China, Kwangtung, Kukiang Distr., Lung-tau Shan, 29–VI–1947, leg. W. T. TSANG (SYSU, ex Lingnan Nat. Hist. Mus.).

*Additional specimens examined*. China: Guangxi: 1 male, Longzhou, Mt. Daqingshan, alt. 360 m, 22–IV–1963, WANG Shuyong leg. (IZAS). Guizhou: 1 female, Ceheng, Weinan, alt. 800～950 m, 23～27–V–1979, DU Shaoku leg. (IZAS). Vietnam: 1 female, Tonkin, Langson (NMB, ex–Coll. FREY).

### *Glenea pseudoscalaris miwai* MITONO, 1943

[Chinese name: 白毛腹脊并脊天牛]

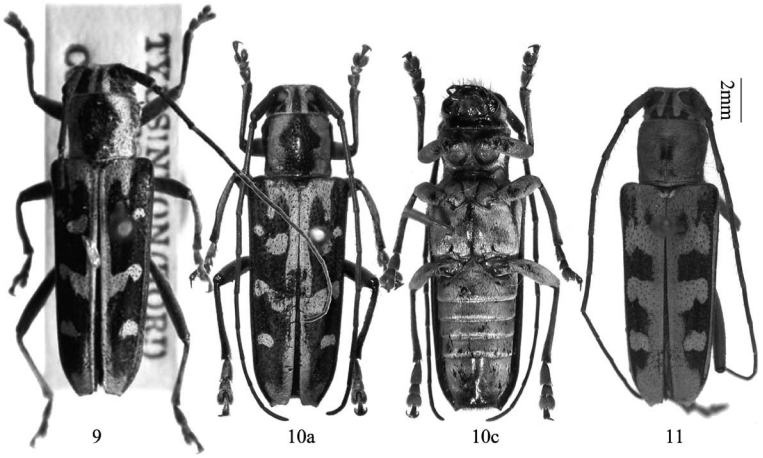
(Figs. 7, 9, 10)

*Glenea miwai* MITONO, 1943, Trans. Nat. Hist. Soc. Taiwan, **33**: 585, fig. 3 (Taiwan). [TARI].
*Glenea* (*Glenea*) *miwai miwai*: GRESSITT, 1951, Longicornia, **2**: 576.

*Remarks*. This endemic Taiwanese subspecies differs from *G. pseudoscalaris pseudoscalaris* (FAIRMAIRE) from mainland China and Vietnam by lighter colour of its pubescence, wider black pronotal marking reaching apex and base.

*Distribution*. Taiwan.

*Type specimen examined*. Holotype, female, Taiwan (Formosa), Taichung Hsien, Meiyuan (Baibara), 4～7–VII–1939, leg. Yushiro MIWA (examined on a photograph).




Figs. 9–11. Habitus of *Glenea pseudoscalaris miwai* MITONO (9–10) and *G. plagiata* GARDNER (11). —— 9, Holotype female from Taiwan; 10, female from Taiwan (a, dorsal view; c, ventral view); 11, 'Type' female from India.

[TARI].

*Additional specimens examined*. Taiwan: 1 female, Formosa, Kaohsiung Hsien, Laopi, 16–V–1981, KEZUKA leg. (CCH); 1 female, Taoyuan Hsien, Sankuang-Sulo, 16 ～18–VII–1978, T. SHIMOMURA leg. (CCH); 1 female, Taoyuan county, Balingqiao, alt. 600 m, 5–VIII–2004, leg. W.-I CHOU (CWIC); 1 female Xinzhu county, Jianshixiang, 23–VI–1993, Z. CHEN leg. (CCCC).

## Acknowledgements

We are grateful to Dr. Olivier MONTREUIL (MNHN), Dr. Wen-I CHOU (De-Lin Institute of Technology, Taiwan), Mrs. Isabelle ZÜRCHER-PFANDER, Dr. Eva SPRECHER-ÜBERESAX and Dr. Michel BRANCUCCI (NMB) for providing access to the collections and loan of specimens. Special thanks to Dr. Carolus HOLZSCHUH (Villach, Austria), Mr. Gérard TAVAKILIAN (IRD du Laboratoire d'Entomologie du MNHN, Paris, France) and Dr. Siqin GE, Ms. Ganyan YANG (IZAS) for their kind help in various ways. We wish to express our heartfelt thanks to Prof. Dr. Nobuo OHBAYASHI (Ehime University, Japan) and Dr. Tatsuya NIISATO (Tokyo, Japan), for improving and accepting this manuscript.

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# Review of the Genus *Oberea* from Continental Asia (Coleoptera, Cerambycidae) Part I: *Nigriceps* Species-group

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**Abstract** The '*nigriceps* species-group' proposed for *Oberea nigriceps* (WHITE, 1844) and its relatives that are characterized by the black head and the absence of the furrow or depression on outer part of the mandible is revised. This species-group contains currently ten species. *Oberea latipennis* GRESSITT, 1939, *O. lama* GRESSITT, 1942, *O. distinctipennis* PIC, 1902 and *O. diversimembris* PIC, 1923, which were previously placed in subspecific or infrasubspecific rank are considered as independent species. *Oberea satoi* sp. nov. and *O. ohbayashii* sp. nov. are newly described.

## Introduction

During my taxonomic studies on the genus *Oberea* DEJEAN, 1835 from Asia I have already revised the species of this genus from Taiwan (13 species in total) (KURIHARA & OHBAYASHI, 2006, 2007). This paper is the first in the series in the review of *Oberea* fauna from continental Asia. Herein I treat the species with black head and absence of the furrow or depression on outer area of mandible. These species are here tentatively named as the '*nigriceps* species-group' containing *O. nigriceps* (WHITE, 1844) and its very similar. Although the '*nigriceps* species-group' in this paper totals 10 species taxa, it is possible that it may contain more species. The type materials of several species were not available for this study, as well as there is not sufficient information regarding some other species.

Two monographic books: "Longicorn beetles of China" (GRESSITT, 1951) and "Longicornes du Laos" (RONDON & BREUNING, 1970), which treated 77 and 20 oberean species, respectively, are the two most important works for the *Oberea* fauna of continental Asia. In between these two important monographs were published, BREUNING (1960–1962) revised the members of the genus worldwide, and several of the previously described species were downgraded to infrasubspecific rank, based on rather simple characters such as the body coloration, length of hind femora, relative lengths of antennae, and so on. These species will need to be re-examined in the future to decide on their taxonomic status.

All holotypes described in this paper will be deposited in the collection of the Entomological Laboratory, Faculty of Agriculture, Ehime University, Matsuyama, Japan (EUMJ). Another abbreviations of the collections of the institutes used in this

paper are as follows: BMNH (Natural History Museum, London), BPBM (Bernice P. Bishop Museum, Honolulu, Hawaii), IZCAS (Institute of Zoology, Chinese Academy of Sciences, Beijing), LNHSM (Lingnan Natural History Survey and Museum, Guanzhou), MNHN (Muséum d'Histoire naturelle et de Prehistoire, Chartres, Paris), CTK (private collection of Takashi KURIHARA, Ehime), CTN (private collection of Tatsuya NIISATO, Tokyo), CNO (private collection of Nobuo OHBAYASHI, Kanagawa) and CJY (private collection of Junsuke YAMASAKO, Ehime).

I would like to dedicate this paper to Professor Nobuo OHBAYASHI on the occasion of his retirement from the Ehime University. My study of Cerambycidae was promoted exceptionally by his devoted leadership and excellent guidance as my supervisor.

I wish to express my hearty thanks to Dr. Tatsuya NIISATO (Bioindicator Co. Ltd., Tokyo) for his critical reading of the manuscript. Also, I wish to express my hearty thanks to the following researchers for their kind help in various ways: the late Drs. Masataka SATÔ and Yoshiaki KOMIYA, Messrs. Hiroshi MAKIHARA (Tsukuba), Hiroshi WAKAHARA (Vientiane), Junsuke YAMASAKO (Ehime University, Matsuyama), Takashi MIZUSAWA (Kanagawa), Shinichi NAKAMURA (Kanagawa), Drs. Eduard VIVES (Museu de Zoologia de Barcelona), Denis KEITH (Museum d'Histoire naturelle et de Prehistoire, Chartres, Paris), Michiaki HASEGAWA (Toyohashi Museum of Natural History, Aichi), Kiyoshi ANDÔ (Osaka), Masatoshi TAKAKUWA (Kanagawa Prefectural Museum of Natural History, Odawara), Masahiro SAKAI (Ehime University, Matsuyama) and Miss. Mei-Ying LIN (Chinese Academy of Sciences, Beijing).

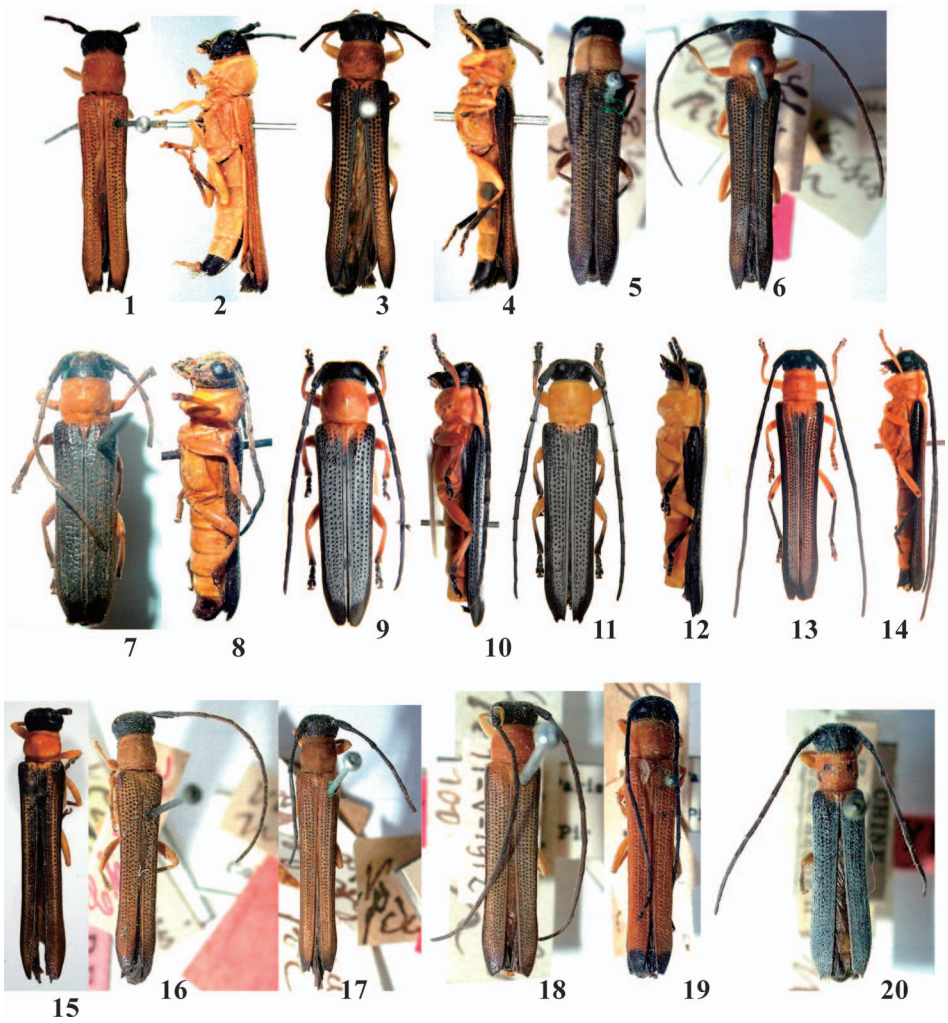
## Taxonomy

### *Oberea nigriceps* (WHITE, 1844)

(Figs. 1–2, 21–27)

*Saperda* (*Isoscelis*) *nigriceps* WHITE, 1844: 425 (Type locality: Hong Kong).
*Oberea nigriceps*: GRESSITT, 1939a: 99, 105; 1940a: 214, pl. 6, fig. 12; 1951: 586, 598. —— CHIANG, 1951: 85. —— HUA *et al*., 1993: 169, 302, pl. 23, figs. 386a–d.
*Oberea nigriceps* (part): BREUNING, 1960: 40; 1962: 181; 1967: 820.
*Oberea sylvia* PASCOE, 1858: 261 (Type area: North China). —— GRESSITT, 1942b: 37; 1951, 587, 601. —— BREUNING, 1962: 181 (syn. of *O. nigriceps*).
*Oberea binhana* PIC, 1923: 11 (Type locality: Hoa Binh, Tonkin).
*Oberea nigriceps* v. *binhana*: BREUNING, 1960: 39; 1962: 182.
*Oberea nigriceps* m. *binhana*: BREUNING, 1967: 821.
*Oberea nigriceps* v. *nigromaculicollis* BREUNING, 1960: 35 (unavailable name); 1962: 183.
*Oberea nigriceps* m. *nigromaculicollis*: BREUNING, 1967: 821.

*Male*. Length 18.0–19.1 mm, width at elytral humeri 3.7–3.9 mm. Body large, 4.9 times as long as wide; color orange-brown; head, mandibles, labrum, antennae, apices of elytra, apical two-thirds of seventh abdominal sternite, and major part of seventh and eighth abdominal tergites black; legs with mid and hind tibiae black or darkened at




Figs. 1–20. Habitus of *Oberea* spp.——1–2, *O. nigriceps* (syntype in BMNH); 3–4, *O. walkeri* (syntype in BMNH); 5, *O. atroanalis* (syntype in MNHN); 6, *O. bicoloritarsis* (syntype in MNHN); 7–8, *O. latipennis* (holotype in LNHSM); 9–10, *O. latipennis*, male; 11–12, *O. satoi* sp. nov. (holotype in EUMJ); 13–14, *O. ohbayashii* sp. nov. (holotype in EUMJ); 15, *O. lama* (holotype in USNM); 16, *O. distinctipennis* (syntype in MNHN); 17, *O. thibetana* (syntype in MNHN); 18, *O. diversimembris* (syntype in MNHN); 19, *O. yunnana* (syntype in MNHN); 20, *O. notata* (syntype in MNHN).

apical half except for ventral surface of mid-tibia; apical third of fore-tibia often black dorsally.

Entire surface rather densely furnished with pale yellowish-brown pubescence, intermixed with similarly colored erect or suberect long feeble hairs. Antennae densely

clothed with appressed orange-brown pubescence, except for ventral surface of first to fifth (or sixth) segments, that are furnished with pale pubescence; first to sixth segments sparsely fringed with long brown hairs beneath; labrum along apical margin with 8 long pale brown setae. Outer area of mandibles sparsely clothed with very short pubescence, intermixed with 5 to 6 suberect long hairs. Elytral pubescence on outer halves infuscate except for humeri and apices.

Head wider than pronotum, with moderately sized punctures intermixed with shallow minute punctures; vertex shallowly depressed. Labrum obtrapezoidal, apical angles rounded, sparsely punctured, glossy. Inferior eye lobe 3.0 times as deep as gena below it. Antenna almost reaching elytral apex; third antennal segment distinctly longer than first and fourth, respectively; relative lengths of segments from base to apex:– 4.1 : 1.0 : 5.0 : 4.6 : 4.0 : 3.9 : 3.7 : 3.5 : 3.4 : 3.1 : 3.3.

Pronotum distinctly wider than long, widest near middle, densely covered with micropunctures intermixed with large punctures; disc strongly convex; apical margin narrower than basal; transverse depression along apical margin faint, basal one shallow. Metasternum and metepisternum rather densely covered with micropunctures, sparsely intermixed with moderately sized punctures except for the middle of metasternum. Scutellum obtrapezoidal, emargination at apex shallow.

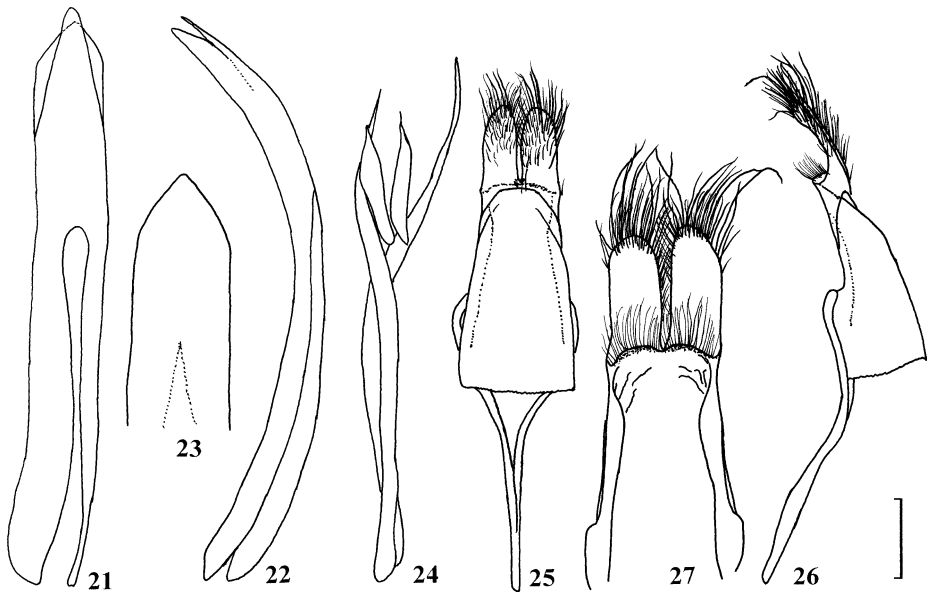
Elytra 1.2 times as wide as pronotum, widest across humeri, 3.7–3.8 times as long as wide, slightly narrowed to apical sixth, thence rounded to obliquely and shallowly emarginate apex with obtuse external and sutural angles. Each elytron with eight rows of large deep punctures that decrease in number of rows into six toward the middle; punctures becoming smaller toward apex and jumbled on apical seventh.

Abdominal sternites densely covered with shallow minute punctures, laterally sparsely intermixed with small punctures; seventh sternite with deep triangular concavity at apical two-thirds, apical margin tri-sinuate; apical margin of seventh tergite slightly emarginate.

Hind leg with femur distinctly surpassing apical margin of third abdominal sternite; tibia 1.8 times as long as tarsus. Relative lengths of hind tarsal segments: 1.80–2.00 : 1.00 : 1.40–1.61 : 2.05–2.33.

Male genitalia as figured (Figs. 21–27). Apex of eighth tergite arcuate. Median lobe about 1.2 times as long as the length of tegmen; dorsal plate as long as ventral; apex of ventral plate triangular; extreme base of endophallus with two pairs of sclerites, of which the larger pair is very long and slender baculiform, 4.3 times as long as the smaller pair; the smaller pair rather short and broad. Tegmen with lateral lobes slightly separated; each lateral lobe parallel-sided with rounded apex; apical two-thirds of dorsal surface and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobes ventrally with arcuate ridge that is densely furnished with fine and very long hairs.

*Female*. Length 18.7–19.9 mm, width at elytral humeri 4.0–4.3 mm. Body larger and wider than in male, 4.5–4.7 times as long as wide. Inferior eye lobe 2.1–2.2 times as deep as gena below it. Seventh abdominal sternite with distinct triangular depression




Figs. 21–27. Male genitalia of *Oberea nigriceps* (WHITE). —— 21, Median lobe in dorsal view; 22, ditto in lateral view; 23, ditto in ventral view; 24, sclerites in endophallus in dorsal view; 25, tegmen in dorsal view; 26, ditto in lateral view; 27, lateral lobes in ventral view. Scale: 0.6 mm for 21, 22, 25, 26; 0.4 mm for 23, 24, 27.

at apical half with a median slight notch on truncate apical margin.

*Specimens examined*. **[China]**: 1 ♂, Hong Kong, China, J. BOWRING leg. (syntype of *Oberea nigriceps* in BMNH); 1 ♀, Mt. Taimoushan, Hong Kong, 7–VI–1986, N. OHBAYASHI leg. (CNO); 1 ♀, Taipinshan, Hainan Is., 17–IV–1986, J. OHKUMA leg. (CNO). **[Vietnam]**: 2 ♂♂, 2 ♀♀, Tam Dao, 930 m, Vinh Phu Prov., 1～7–V–1996, Y. ARITA leg. (CNO); 1 ♀, same locality, 27～29–V–1996, native collector (CTK).

*Distribution*. China (Hong Kong and Hainan) and Vietnam.

*Host plant*. Unknown.

*Notes*. *Oberea nigriceps* was first described as a member of the subgenus *Isosceles* of the genus *Saperda* FABRICIUS, 1775 from Hong Kong (WHITE, 1844). BREUNING (1960–1962) placed the following taxa as junior synonyms or varieties of *O. nigriceps*: *O. sylvia* PASCOE, 1858, *O. diversimembris* PIC, 1923, *O. binhana* PIC, 1923, *O. bicoloritarsis* PIC, 1923, *O. thibetana* PIC, 1916, *O. bicoloritarsis* v. *subparallela* PIC, 1928, *O. distinctipennis* PIC, 1902, *O. distinctipennis* ssp. *lateriventris* GRESSITT, 1939, *O. changi* GRESSITT, 1942. Of these, *O. diversimembris* and *O. distinctipennis*, judging from the photographus of the type specimens, should be considered as valid independent species. Also, *O. thibetana* and *O. distinctipennis lateriventris*, judging from the photograph of their type specimens, should be regarded as junior synonyms of *O. distinctipennis*

because their external morphology with the latter.

On the other hand, *O. bicoloritarsis* is somewhat similar to *O. walkeri* regarding the body proportions, strong swellings at pronotal sides and antennal length. Only elytral color, usually a highly variable individual taxonomic character, has been used to distinguish *O. bicoloritarsis* from *O. walkeri*. On the other hand, *O. bicoloritarsis* can be easily distinguished from *O. nigriceps* by its swollen pronotal sides and long antennae. As a result, *O. bicoloritarsis* is not a variety of *O. nigriceps*, but instead should be synonymized with *O. walkeri*. Judging from the original description of *O. changi*, it almost completely agrees with *O. walkeri* regarding the coloration, body proportions of length to width, feature of pronotum, shape of elytral apex. Thus, *O. changi* is not a variety of *O. nigriceps*, but a junior synonym of *O. walkeri*.

## ***Oberea walkeri*** GAHAN, 1894

(Figs. 3–6, 28–34)

*Oberea walkeri* GAHAN, 1894: 487 (Type locality: Hong Kong). —— GRESSITT, 1939a: 107; 1940b: 197; 1942 b: 37; 1951: 587, 603. —— CHANG, 1951: 87. —— BREUNING, 1960: 37; 1962: 183; 1967: 821. —— HUA *et al*., 1993: 170, 303, pl. 24, figs. 388a, 388b. —— PU, 1997: 830.
*Oberea atroanalis* FAIRMAIRE, 1895: 189 (Type area: Tonkin).
*Oberea walkeri* v. *atroanalis*: BREUNING, 1960: 38; 1962: 184.
*Oberea walkeri* m. *atroanalis*: BREUNING, 1967: 821.
*Oberea bicoloritarsis* PIC, 1923: 11 (Type area: China). —— GRESSITT, 1942b: 37; 1951: 586, 593. **Syn. nov**.
*Oberea nigriceps* v. *bicoloritarsis* BREUNING, 1960: 40; 1962: 182.
*Oberea nigriceps* m. *bicoloritarsis*: BREUNING, 1967: 821.
*Oberea robustior* PIC, 1923: 12 (Type area: China). —— GRESSITT, 1942a: 10; 1942b: 37; 1951: 587, 599.
*Oberea walkeri* v. *robustior*: BREUNING, 1960: 38; 1962: 185.
*Oberea walkeri* m. *robustior*: BREUNING, 1967: 821.
*Oberea changi* GRESSITT, 1942a: 5 (Type locality: Lingkuwan, Sikang, China); 1942b: 37; 1951: 588, 593. **Syn. nov**.
*Oberea nigriceps* v. *changi*: BREUNING, 1960: 39; 1962: 183.
*Oberea nigriceps* m. *changi*: BREUNING, 1967: 821.
*Oberea walkeri* v. *atrosternalis* BREUNING, 1960: 38 (unavailable name); 1962: 184.
*Oberea walkeri* m. *atrosternalis*: BREUNING, 1967: 821.
*Oberea walkeri* v. *nigrobasicollis* BREUNING, 1960: 38 (unavailable name); 1962: 184.
*Oberea walkeri* m. *nigrobasicollis*: BREUNING, 1967: 821.
*Oberea walkeri* v. *sikkimensis* BREUNING, 1960: 38 (unavailable name); 1962: 185.
*Oberea walkeri* m. *sikkimensis*: BREUNING, 1967: 821.

*Male*. Length 15.3–18.3 mm, width at elytral humeri 3.1–3.6 mm. Body moderate in size, similar to *O. nigriceps*, 4.8–5.0 times as long as wide. Color orange-brown, except for following black parts: head, mandibles, labrum, antennae, major part of hind tibiae, tarsi, seventh abdominal sternite, seventh abdominal tergite except for base, and eighth tergite; dorsum of fore and mid tibiae often blackish-brown to brown on apical half; elytra generally blackish-brown to black except for basal margins.

Entire surface densely furnished with pale yellowish-brown pubescence, sparsely intermixed with similarly colored erect or suberect feeble hairs; head sparsely furnished

with long, suberect blackish-brown hairs (instead of pale yellowish brown ones); occiput and black integument of seventh abdominal sternite with robust blackish-brown pubescence. Antennae densely clothed with appressed brown pubescence, except for ventral surface of first to fourth or fifth segments that are provided with paler one; first to fifth segments sparsely fringed with long whitish and pale brown hairs beneath. Labrum usually with 8 long pale brown setae along apical margin. Outer area of mandibles sparsely clothed with short fine pubescence, intermixed with a few long hairs. Elytral pubescence at apices and along narrow areas of external margins infuscate, remaining areas with pale yellowish pubescence.

Head slightly wider than pronotum, moderately provided with medium sized punctures and intermixed with dense shallow minute punctures; vertex distinctly depressed. Labrum transverse square with gently rounded apical margin, with a weak transverse carina near apex; disc between base and carina dull and densely punctured; remaining area finely punctured. Inferior eye lobe 2.5–2.6 times as deep as gena below it. Antenna near base of last segment surpassing elytral apex; third distinctly longer than first, as long as fourth; relative lengths of segments from base to apex:– 5.3 : 1.0 : 5.8 : 5.8 : 5.4 : 5.3 : 5.1 : 4.7 : 4.6 : 4.4 : 4.6.

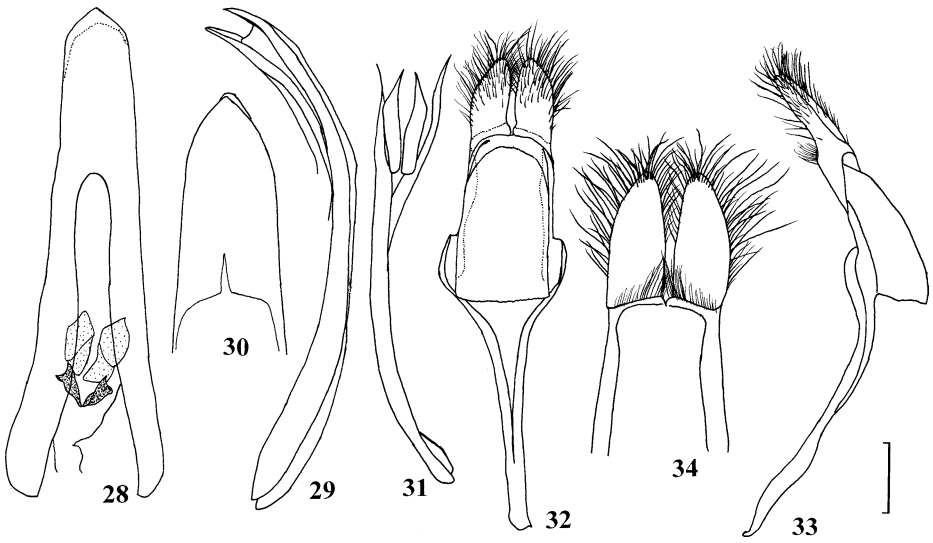
Pronotum transverse, laterally with light swellings, 1.2 times as wide as long, widest at middle, with almost punctures almost identical to those of head; disc strongly convex; apical margin distinctly narrower than basal; transverse depressions along apical margin deep, basal one slightly shallower than apical one. Scutellum lingulate.

Elytra 1.2 times as wide as pronotum, widest across humeri, 3.7–3.9 times as long as wide, narrowed to apical fifth, thence strongly rounded to obliquely and shallowly emarginate apex with triangularly toothed external and sutural angles. Each elytron with seven or eight rows of rather large punctures that decrease in number of rows into six towards the middle; punctures decrease in size towards apex and jumbled on apical seventh.

Seventh abdominal sternite with a deep elongate semi-oval concavity at apical four-fifths, with a broad and shallow triangular notch at middle of truncate apical margin; at apical margin of seventh tergite truncate.

Hind leg with femur exceeding the middle of fourth abdominal sternite; tibia 2.05 times as long as tarsus. Relative lengths of hind tarsal segments:– 1.80–2.00 : 1.00 : 1.30–1.44 : 2.00–2.22.

Male genitalia as figured (Figs. 28–34). Apex of eighth tergite shallowly emarginate. Median lobe 1.1 times as long as tegmen; dorsal plate almost as long as ventral plate; apical area of ventral plate triangular with blunt extremity; extreme base of endophallus with two pairs of sclerites, the larger pair of which is very long and slender baculiform, 4.1 times as long as the smaller pair. Tegmen with lateral lobes slightly separated; each lateral lobe obliquely truncate at outer margin near apex; apical two-thirds of dorsal surface and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobes on ventral side with transverse ridge; ridge densely furnished with fine long hairs, gradually shortened outwardly.




Figs. 28–34. Male genitalia of *Oberea walkeri* GAHAN. —— 28, Median lobe in dorsal view; 29, ditto in lateral view; 30, ditto in ventral view; 31, sclerites in endophallus in dorsal view; 32, tegmen in dorsal view; 33, ditto in lateral view; 34, lateral lobes in ventral view. Scale: 0.6 mm for 28, 29, 32, 33; 0.4 mm for 30, 31, 34.

*Female*. Length 14.6–20.4 mm, width at elytral humeri 3.6–4.2 mm. Body wider than that of male, 4.7–4.9 times as long as wide. Inferior eye lobe 1.9–2.0 times as deep as gena below it. Antenna shorter than in male, reaching elytral apex at the apex of last segment. Seventh abdominal sternite with faint depression at apical third with a trapezoidal emargination of moderate depth at apical margin.

*Specimens examined*. **[China]**: 1 ♂, Hong Kong, WALKER Coll. (syntype of *O. walkeri* in BMNH); 1 ♂, Kuling, 12–VII–1936, O. PIEL coll. (IZCAS); 1 ♀, Chusan, Chekiang, 24–VI–1931, O. PIEL coll. (IZCAS); 1 ♂, Emei Shan, 580 m, Sichuan, 24–VI–1955, T.-J. HUANG leg. (IZCAS); 1 ♂, Vicinities of Carlton Hotel, New Kowloon, Hong Kong, 27–IV–1969, S. HISAMATSU leg. (EUMJ); 1 ♂, Mt. Taimoushan, Hong Kong, 5–VI–1986, N. OHBAYASHI leg. (CNO); 1 ♂, Wuyishan, Tongmu, Fujiang Prov., 28–V–2002, N. OHBAYASHI leg. (CNO); 14 ♂♂, 5 ♀♀, Mt, Wuzhi Shan, Wuzhishan City, Hainan Is., 5～20–VI–2004, native collector (CTK); 2 ♂♂, 6 ♀♀, Mt. Jianfengling, San Ya City, Hainan Prov., Hainan Is., 18～24–VI–2006, native collector (CTK); 2 ♀♀, same locality, 1～11–VIII–2007, native collector (CTK); 2 ♀♀, Meng La, Yunnan Prov., 2～10–VIII–2005, native collector (CTK); 6 ♂♂, 2 ♀♀, Mt. Ailao Shan, Xinping, Yunnan Prov., 21–IV～5–V–2006, native collector (CTK); 1 ♀, same locality but 1～11–V–2006, native collector (CTK). **[Vietnam]**: 1 ♀, Lang Song, Tonkin (syntype of *O. atroanalis* in MNHN); 1 ♀, Sapa, Lao Cai Prov., 27～31–V–1996; 1 ♀, Tamdao, 930 m, Vinh Phu Prov., 1～7–V–1996, Y. ARITA leg. (CNO); 1 ♀,

same locality, 27～29–V–1996, native collector (CTK). **[Laos]**: 1 ♀, Phu Pan, alt. 1,500～1,700 m, Houaphan Prov., 30–IV–2002, N. OHBAYASHI leg. (CNO); 4 ♂♂, 1 ♀, same locality, 25–V–2002, H. WAKAHARA coll. (CNO); 1 ♀, same locality and collector, 27–V–2002 (CNO); 1 ♀, same locality and collector, 13–V–2003 (CNO); 1 ♂, same locality, alt. 1,750 m, 16～20–V–2004, M. SATÔ leg. (CNO); 1 ♂, 3 ♀♀, same locality, alt. 1,500～1,800 m, N20°11′/E104°01′ (CTN); 1 ♀, same locality, alt. 1,400～1,600 m, 21–V–2005, T. KURIHARA leg. (CTK); 2 ♂♂, Ban Saleui, alt. ca. 1,400 m, Houaphan Prov., 5–V–2002, N. OHBAYASHI leg. (CNO); 1 ♀, same locality, alt. 1,300～1,600 m, 19–V–2005, T. KURIHARA leg. (CTK); 2 ♂♂, Phu Samsoun, Xieng Khouang Prov., IV～VI–2006, H. WAKAHARA coll. (CNO). **[Myanmar]**: 1 ♂, 1 ♀, Mong Hkok, Shan Highland, 20～27–VI–2006, native collector (CTK).

*Distribution*. China (Zhejiang, Jiangxi, Sichuan, Henan, Fujian, Hong Kong, Hainan, Guangdoung, Guangxi, Yunnan, Guizhou and Tibet), Vietnam, Laos and Myanmar.

*Host plant*. *Sassafras tzumu* (HEMSLEY) HEMSLEY (Lauraceae) (HUA, 2002).

*Variations*. Coloration of elytra and ventral surface can occur in the following modifications: Elytral disc except for apices occasionally orange-brown except for apices; metasternum sometimes partly black; third abdominal sternites yellowish-brown, sometimes black laterally, fourth and fifth abdominal sternites often changing from yellowish-brown to black; black area of last abdominal sternite of female generally narrower than in that of male, though third to sixth (as well as base of the last) sternites generally yellowish-brown.

*Notes*. Following species were synonymized with, or downgraded to the varieties of *O. walkeri* by BREUNING (1960–1962): *O. atroanalis* FAIRMAIRE, 1895, *O. latipennis* GRESSITT, 1939, *O. lama* GRESSITT, 1942, and *O. robustior* PIC, 1923. Of these, *O. latipennis* and *O. lama* will be acknowledged as independent species and redescribed in the following lines.

## ***Oberea latipennis*** GRESSITT, 1939, stat. rev.

(Figs. 7–10, 35–41)

*Oberea latipenne* GRESSITT, 1939a: 104, pl. 3, fig. 9 (Type locality: Taam-yuen-tung, Lien District, N. Kwangtung Prov., S. China).
*Oberea latipennis*: GRESSITT, 1942b: 37; 1951: 587, 597.
*Oberea walkeri* v. *latipennis*: BREUNING, 1960: 37; 1962: 184.
*Oberea walkeri* f. *latipennis*: BREUNING, 1967: 821.

*Male*. Length 18.8 mm, width at elytral humeri 4.2 mm. Body large, rather thick, 4.5 times as long as wide. Color yellowish-brown to orange-brown, except for following parts that are black: head, mandibles, labrum, antennae, apices of tibia, and tarsi; elytra black, light yellowish-brown near scutellum and along external margin, short distance from bases.

Body densely furnished with pale yellowish pubescence, sparsely intermixed with

identical erect or suberect long feeble hairs; occiput and seventh abdominal sternite except for basal fourth with blackish-brown pubescence; head intermixed with long blackish hairs, that are dense on genae, occiput and around eyes. Elytral pubescence on major part of disc whitish, except on apical eighth and narrow lateral areas that are infuscate. Antennae moderately clothed with appressed dark brown pubescence, except for major parts of first to third antennal segments, apical half of ventral surface and annulations of extreme bases at third to fifth antennal segments which are clothed with whitish pubescence; first to fourth segments densely fringed with long blackish hairs beneath. Labrum with 8 long yellowish brown setae along apical margin. Outer area of mandibles densely furnished with short pubescence, intermixed with several hairs of moderate length.

Head 1.1 times as wide as pronotum, with moderately sized punctures, densely intermixed with shallow minute punctures; genae with fine transverse rugae; vertex hardly depressed. Labrum square-shaped sides and apex slightly arcuate, hardly shining, sparsely covered with fine punctures. Inferior eye lobe 1.6 times as deep as gena below it. Antenna short, reaching apical eighth of elytra; third antennal segment distinctly longer than first and fourth segments, respectively; relative lengths of segments from base to apex:– 3.4 : 1.0 : 3.9 : 3.4 : 3.1 : 2.9 : 2.8 : 2.5 : 2.2 : 1.9 : 2.4.

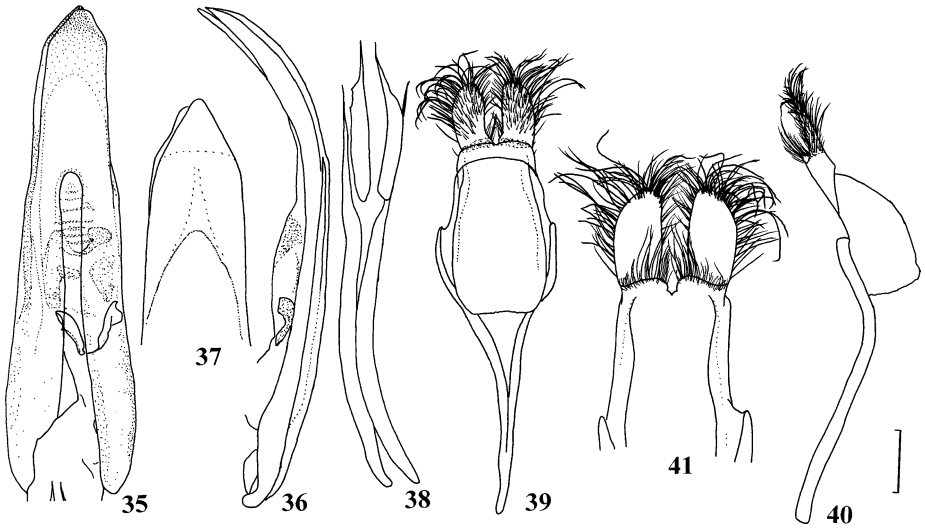
Pronotum 1.1 times as wide as long, widest at middle; disc with punctures almost identical to those of head, gently convex, with a pair of small smooth and shining median swellings; sides weakly swollen; apical margin distinctly narrower than basal; transverse depression along apical margin indistinct; basal one shallow. Mesepisternum densely covered with large punctures; metepisternum with sparse scattered small punctures, intermixed with dense micropunctures often fused to each other, except for the narrow outside area becoming rugose; metasternum densely clothed with micropunctures, sparsely intermixed with small punctures laterally. Scutellum transverse obtrapezoidal, with shallow emargination at apex.

Elytra distinctly wider than prothorax, 1.2 times as wide as long, widest across humeri, 3.4 times as long as wide, hardly narrowed to apical eighth, thence rounded towards obliquely and narrowly truncate apex; both angles rounded. Each elytron with seven rows of moderately sized punctures that decrease in number of rows into six towards basal two-fifths; punctures decrease in size from base to apex, jumbled on apical fourth.

Abdominal sternites densely covered with micropunctures sparsely intermixed with small punctures that are moderately scattered at sides of third and fourth abdominal sternites; seventh sternite with shallow triangular depression in middle of apical three-fifths, apical margin deeply emarginate; sides forming triangular lobes that are directed downwards; seventh tergite with apical margin slightly protruded in triangular shape.

Hind leg with femur reaching middle of fourth abdominal sternite; tibia 1.8 times as long as tarsus. Relative lengths of hind tarsal segments:– 2.09–2.10 : 1.00 : 1.60–1.73 : 2.18–2.20.

Male genitalia as figured (Figs. 35–41). Apex of eighth tergite slightly emarginate.




Figs. 35–41. Male genitalia of *Oberea latipennis* GRESSITT. —— 35, Median lobe in dorsal view; 36, ditto in lateral view; 37, ditto in ventral view; 38, sclerites in endophallus in dorsal view; 39, tegmen in dorsal view; 40, ditto in lateral view; 41, lateral lobes in ventral view. Scale: 0.6 mm for 35, 36, 39, 40; 0.4 mm for 37, 38, 41.

Median lobe about 1.2 times as long as the length of tegmen; dorsal plate slightly shorter than ventral; apex of ventral plate triangular; extreme base of endophallus with two pairs of sclerites, of which the larger pair is very long and slender baculiform, 2.5 times as long as the smaller pair. Tegmen with lateral lobes distinctly separated; each lateral lobe rounded at the apex with gently curved outer and straight inner margins; dorsal surface except for narrow base and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobe ventrally with an oblique ridge; ridge densely furnished with fine and very long hairs that are becoming shorter outwards.

*Female*. Length 19.1–20.5 mm, width at elytral humeri 3.4–4.1 mm. Body larger and wider than in male, 4.3–4.4 times as long as wide. Inferior eye lobe 1.2 times as deep as gena below it. Transverse rugae of genae sparser than in male. Antennae shorter than in male, reaching apical fifth of elytra. Seventh abdominal sternite gently convex on apical half, apical margin triangularly emarginate.

*Specimens examined*. **[China]**: 1 ♀, Taam-yuen-tung, Lien District, N. Kwangtung Prov., S. China, 25–V–1934, F.-K. TO leg. (holotype in LNHSM). **[Laos]**: 1 ♀, Phu-Pan, Houaphan Prov., 22–IV–2002, H. WAKAHARA coll. (CNO); 1 ♂, 3 ♀♀, Nong Het, Xiang Khoang Prov., 16～18–VI–2005, J. YAMASAKO leg. (CTK).

*Distribution*. China (Guangdong) and Laos (new record).

*Variations*. Coloration of the examined Laotian specimens differs from the holotype from South China as follows: Apical nine segments of antennae black (as opposed to

reddish-brown to dark brown); elytral base orange-brown (as opposed to black). However, the specimens from both localities agree with the holotype from South China regarding the fundamental morphological characteristics. Differences regarding color of the cuticle are probably intra-specific or geographical variations of the species.

*Notes*. This species was first described by GRESSITT (1939a) based on a specimen from China, but it was latter downgraded to a variety of *O. walkeri* by BREUNING (1960–1962). Judging from the photographs of the type specimens of *O. latipennis* and *O. walkeri*, it is easy to distinguish both species by the body proportions and antennal length. *Oberea latipennis* can also be easily distinguished from *O. walkeri* by the structure of male genitalia: shape of lateral lobes and the length of large sclerites of the endophallus. Therefore, *O. latipennis* should be given a rank of an independent species.

This species is very similar to *O. komiyai* KURIHARA et N. OHBAYASHI, 2006 from Taiwan, but can be distinguished from the it by the thicker body and the form of lateral lobes of male genitalia.

### ***Oberea satoi*** sp. nov.

(Figs. 11–12, 42–48)

*Male*. Length 16.9 mm, width at elytral humeri 3.6 mm. Body large and thick, 4.7 times as long as wide. Color light orange-brown, except for the following black parts; head, mandibles, labrum, antennae, elytra except for basal margins, dorsum of apical half of fore tibiae, apical half of mid and hind tibiae, all tarsi, seventh abdominal sternite, seventh abdominal tergite except for narrow base; palpi dark brown.

Body rather densely furnished with pale yellowish-brown pubescence on yellowish integument, intermixed with identically colored erect long feeble hairs. Head with frons densely furnished with short pale white pubescence, moderately intermixed with erect or suberect long blackish hairs at genae and around eyes. Labrum with 16 long pale brown setae along apical margin. Outer area of mandibles sparsely covered with very short pubescence, intermixed with sparse long blackish-brown hairs. Antennae with appressed pubescence that is pale white from first to basal half of fourth antennal segments, from apical half of fourth to the last segments infuscate; first to sixth segments rather densely fringed with long blackish hairs beneath. Elytra with whitish pubescence, infuscate at sides and apices. Seventh abdominal sternite and tergite densely furnished with short blackish pubescence, intermixed with erect or suberect long hairs of identical color.

Head as wide as pronotum, with moderately sized punctures that are large and dense at vertex, intermixed with shallow minute punctures that are along basal margin and at middle of frons rather sparse; vertex slightly depressed. Labrum in a form of an inverted trapezoid, with gently arcuate apex, 1.7 times as wide as long, with transverse fine rugose micropunctures, otherwise smooth and shining. Mandibles weakly shining and dorsally densely covered with fine punctures. Inferior eye lobe 1.5 times as deep as gena below it. Antenna short, reaching apical eighth of elytra; third antennal segment distinctly longer than first and fourth, respectively; relative lengths of segments from

base to apex:– 4.2 : 1.0 : 4.8 : 3.9 : 3.6 : 3.5 : 3.4 : 3.1 : 3.1 : 2.7 : 2.8.

Pronotum slightly wider than long, with distinct constriction along apical margin, punctured more densely than head; disc distinctly convex; apical margin slightly narrower than basal; transverse depression along basal margin obsolete. Sternum provided with moderately dense micropunctures, sparsely intermixed with moderately sized punctures, except for middle area of metasternum. Scutellum lingulate.

Elytra 1.2 times as wide as prothorax, widest across humeri, 3.5 times as long as wide, slightly narrowed apicad; apex strongly emarginate with sharply angulated outer angle and triangularly pointed inner tip. Each elytron with seven rows of rather small punctures which decrease in number of rows into six at the middle and their size diminishing towards apex and jumbled on apical fourth.

Abdominal sternites uniformly and densely clothed with micropunctures, laterally sparsely intermixed with small punctures; seventh sternite on apical three-fourths strongly concave, shallowly emarginate in trapezoidal form at apex, with a small and circular notch in middle; apical margin of seventh tergite gently rounded, with broad and relatively shallow emargination in middle.

Hind leg with femur reaching near the middle of fourth abdominal sternite; tibia 1.7 times as long as tarsus. Relative lengths of hind tarsal segments:– 1.91–2.00 : 1.00 : 1.29–1.44 : 1.81–1.90.

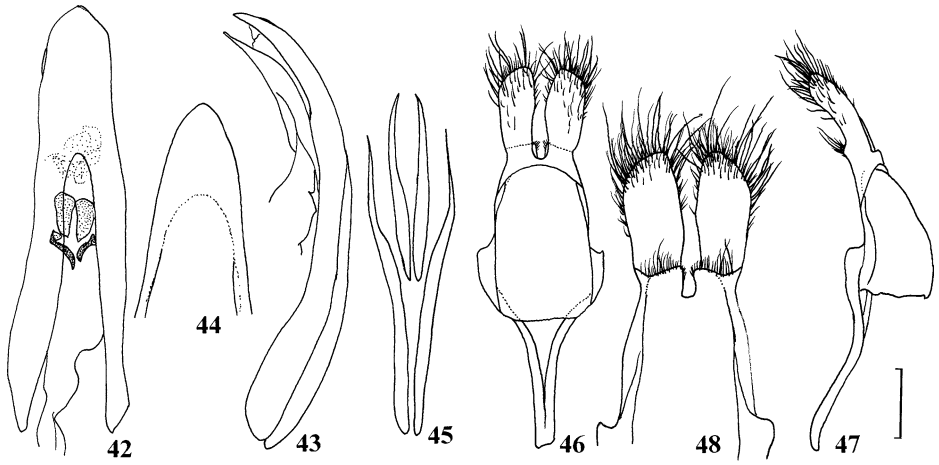
Male genitalia as figured (Figs. 42–48). Apex of eighth tergite distinctly emarginate. Median lobe 1.1 times as long as the length of tegmen; dorsal plate slightly longer than ventral; apex of ventral plate rounded; extreme base of endophallus with two pairs of sclerites, of which the larger pair is long and slender baculiform, 1.5 times as long as the smaller pair. Tegmen with lateral lobes distinctly separated; each lateral lobe stout, parallel-sided, obliquely truncate at apex; dorsal surface except for inner half of basal half and narrow apex of ventral surface densely furnished with long hairs; base of lateral lobe ventrally with a transverse ridge, densely furnished with fine long hairs.

*Female*. Length 17.6–19.7 mm, width at elytral humeri 3.7–4.3 mm. Body form almost as in male. Antenna shorter than in male, reaching apical sixth of elytra. Inferior eye lobe 1.2 times as deep as gena below it. Abdomen with seventh sternite with shallow triangular depression on apical half; middle of apical margin shallowly emarginate obtuse triangular shape.

*Type series*. Holotype ♂, Ban Phou Yang, East of Phou Khun 15 km, Luang Phabang Prov., Laos, alt. ca. 1,300 m, N19°28′/E102°30′, 2–VI–2008, J. YAMASAKO leg. Allotype ♀, Phu Pan, alt. ca. 1,750 m, Houaphan Prov. Laos, 16～20–V–2004, M. SATÔ leg. Paratype: 1 ♀, Muang La, Oudom Xay Prov., Laos, 10～30–VI–2004, native collector (CTK).

*Distribution*. Laos.

*Etymology*. The specific epithet is dedicated to the late Dr. Masataka SATÔ who kindly offered me not only the allotype of this new species but also several specimens of the '*nigriceps* species-group', as well as provided me with important suggestions for this study during his life-time.




Figs. 42–48. Male genitalia of *Oberea satoi* sp. nov. —— 42, Median lobe in dorsal view; 43, ditto in lateral view; 44, ditto in ventral view; 45, sclerites in endophallus in dorsal view; 46, tegmen in dorsal view; 47, ditto in lateral view; 48, lateral lobes in ventral view. Scale: 0.6 mm for 42, 43, 46, 47; 0.4 mm for 44, 45, 48.

*Notes*. This new species is strikingly similar to *O. latipennis* GRESSITT, but can be distinguished from it by the following characters: pronotum laterally almost straight (as opposed to weakly swollen); elytral apices strongly emarginate (as opposed to narrowly truncate); apical margin of seventh abdominal sternite of female shallowly emarginate in obtuse triangular form (as opposed to triangularly emarginate).

### ***Oberea ohbayashii*** sp. nov.

(Figs. 13–14, 49–55)

*Male*. Length 16.3–16.7 mm, width at elytral humeri 3.0–3.2 mm. Body moderate in size, 5.3–5.4 times as long as wide. Color yellowish-brown, except for the following black parts: head, mandibles, labrum, antennae, hind tibiae and first segments of tarsus and seventh abdominal tergite; blackish to darkened area of abdominal sternites as follows: lateral apical half of third, fourth and fifth except for the middle area along apical margin, and apical two-thirds of seventh; elytral disc except for narrow black sides and apices and narrow yellowish-brown bases blackish brown; extreme apex of hind femora black (holotype) or yellowish-brown (remaining types); fore- and mid tibiae blackish-brown on dorsum of apical half; tarsi except for hind first segment darkened.

Body moderately furnished with pale yellowish-brown pubescence, slightly intermixed with identically colored erect or suberect long feeble hairs, pronotum with rather dense hairs; long feeble hairs of head not yellowish but blackish-brown. Antennae

uniformly densely clothed with appressed blackish-brown pubescence; first to sixth segments sparsely fringed with long brown hairs beneath. Labrum with 5–8 long pale yellow setae along apical margin. Outer area of mandibles sparsely covered with very short pubescence intermixed with one or two long hairs. Surface anteriad to genae with whitish pubescence. Elytral pubescence pale yellowish-brown on inner halves of disc, outer halves infuscate.

Head slightly wider than pronotum, moderately covered with moderately sized punctures, intermixed with dense shallow minute punctures; vertex deeply depressed. Labrum square-shaped, apical angles rounded, feebly shining and sparsely punctured. Inferior eye lobe developed, 2.8–3.0 times as deep as gena below it. Antenna surpassing elytral apex at the apex of tenth segment; third antennal segment distinctly longer than first, slightly longer than fourth; relative lengths of segments from base to apex:– 4.5 : 1.0 : 5.9 : 5.8 : 5.2 : 5.3 : 5.1 : 4.9 : 4.7 : 4.2 : 4.5.

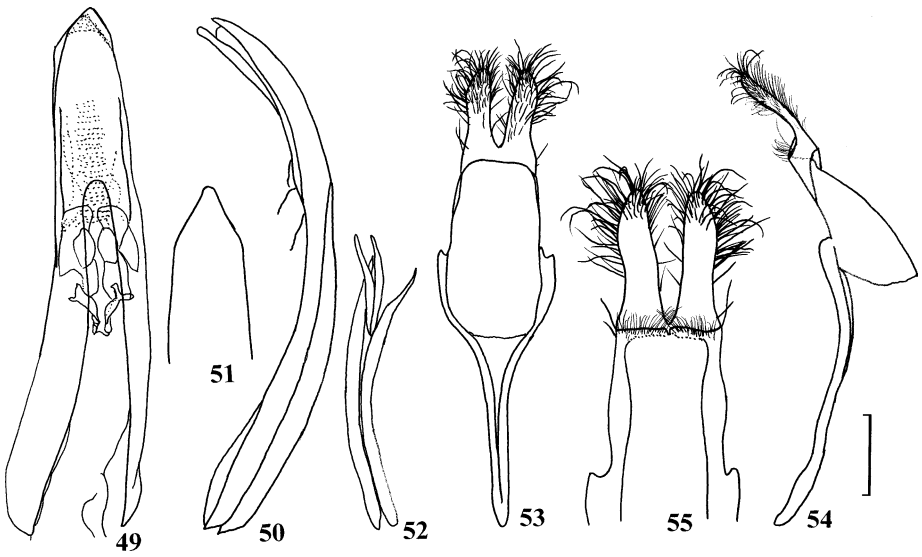
Pronotum 1.1 times as wide as long, widest near middle, sparsely scattered with moderately sized punctures; interspaces among punctures densely covered with micropunctures; disc strongly convex; apical margin distinctly narrower than basal; transverse depressions along apical and basal margins distinct; apical depression deeper than basal one. Sternum densely provided with evenly dense micropunctures, sparsely intermixed with moderately sized punctures on sides of metasternum and metepisternum. Scutellum obtrapezoidal, emargination at apex shallow.

Elytra 1.3–1.4 times as wide as prothorax, widest across humeri, 5.3–5.4 times as long as wide, slightly narrowed apicad with slight swellings on apical sixth; apices lightly emarginate, with rather blunt external and sutural angles. Each elytron with eight rows of moderately sized punctures, that decrease in number of rows into six toward basal third; punctures becoming smaller apicad and jumbled on apical fourth.

Abdominal sternites very densely covered with micropunctures, sparsely intermixed with small punctures laterally; seventh sternite with triangular depression at apical two-thirds, with a large triangular notch in middle of truncate apical margin; apical margin of seventh tergite weakly rounded.

Hind leg with femur reaching middle of fourth abdominal sternite; tibia 2.1 times as long as tarsus. Relative lengths on hind tarsal segments:– 2.22–2.38 : 1.00 : 1.33–1.38 : 2.11–2.19.

Male genitalia as figured (Figs. 49–55). Apex of eighth tergite truncate. Median lobe 1.1 times as long as the length of tegmen; dorsal plate slightly shorter than ventral; apex of ventral plate semi-triangularly shaped from ventral view; extreme base of endophallus with two pairs of sclerites, of which the larger pair is long and slender baculiform, 2.6 times as long as the smaller pair; smaller pair slender, rod-like shaped. Tegmen with lateral lobes rather long, moderately separated; lateral lobe parallel-sided with rounded apex, of which outside of apical half is arcuately and obliquely truncate; dorsal surface except for basal area and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobe ventrally with a transverse ridge that is densely furnished with fine long hairs.




Figs. 49–55. Male genitalia of *Oberea ohbayashii* sp. nov. —— 49, Median lobe in dorsal view; 50, ditto in lateral view; 51, ditto in ventral view; 52, sclerites in endophallus in dorsal view; 53, tegmen in dorsal view; 54, ditto in lateral view; 55, lateral lobes in ventral view. Scale: 0.6 mm for 49, 50, 53, 54; 0.4 mm for 51, 52, 55.

*Female*. Length 15.9 mm. Width at elytral humeri 3.0 mm. Fourth and fifth abdominal sternites yellowish-brown. Inferior eye lobes 2.4 times as long as gena below it. Relative lengths of tarsal segments:– 2.13 : 1.00 : 1.25 : 1.94. Seventh abdominal sternite with shallow triangular depression on apical half, hardly emarginate on apical margin.

*Type series.* Holotype ♂, Mt. Phu-Pan, Houaphan Prov., Laos, alt. ca 1,700～1,800 m, 17～20–VI–2003, N. OHBAYASHI leg. Allotype ♀, same locality and collector as the holotype, 28～30–III–2005. Paratype: 1 ♂, Mt. Phu-Pan, Houaphan Prov., Laos, 27–V–2002, H. WAKAHARA leg. (CTK).

*Distribution*. Laos.

*Host plant*. Unknown.

*Etymology*. Specific epithet of this species is dedicated to Dr. Nobuo OHBAYASHI who kindly offered me his enormous series of specimens including this new species, as well as his continuous encouragements and guidance during my studies of Cerambycidae.

*Notes*. This new species is similar to the next species, *O. lama* GRESSITT, but can easily be distinguished from it by longer antennae and different structures of male genitalia.

## *Oberea lama* GRESSITT, 1942, stat. rev.

(Figs. 15, 56–62)

*Oberea lama* GRESSITT, 1942a: 5, text-fig. 2 (Type locality: Tibet, China); 1942b: 37; 1951: 587, 597.
*Oberea walkeri* v. *lama*: BREUNING, 1960: 38; 1962: 185.
*Oberea walkeri* m. *lama*: BREUNING, 1967: 821.

*Male*. Length 14.3–17.0 mm, width at elytral humeri 2.5–3.2 mm. Body moderate in size, 5.3–5.6 times as long as wide. Color yellowish-brown, except for the following black parts: head, mandibles, labrum, antennae, sides and apices of elytra, apical half of tibia, seventh abdominal tergite, and seventh abdominal sternite except for extreme base; palpi and tarsi darkened; elytral disc largely brown.

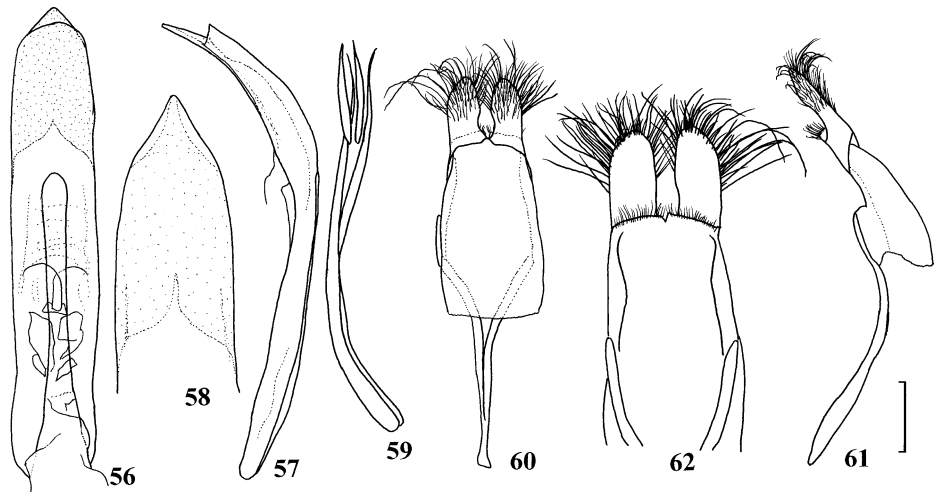
Body moderately furnished with pale yellowish-brown pubescence, sparsely intermixed with identically colored erect or suberect long feeble hairs; long feeble hairs of head not yellowish but blackish-brown; pronotum sometimes medially intermixed with black pubescence; pubescence on outer half of elytra infuscate. Antennae densely clothed with appressed blackish brown pubescence on dorsal surface; ventral surface furnished with pale yellow pubescence; first to seventh segments sparsely fringed with erect or suberect blackish-brown hairs beneath; apices of third to tenth segments with one or two long hairs. Labrum usually with 8 long pale yellow setae along apical margin. Outer area of mandibles sparsely clothed with pubescence, intermixed with a few black long hairs.

Head slightly wider than pronotum, densely covered with moderately sized punctures, densely intermixed with shallow minute punctures; vertex shallowly depressed. Labrum transverse, sides arcuate and gently roundedon apical margin; disc slightly shining, sparsely punctured. Inferior eye lobe developed, 2.6–2.7 times as deep as gena below it. Antenna surpassing elytral apex near middle of last segment; third antennal segment the longest, distinctly longer than first; relative lengths of segments from base to apex:– 4.5 : 1.0 : 6.1 : 5.7 : 5.2 : 4.9 : 5.0 : 4.6 : 4.3 : 4.1 : 4.6.

Pronotum transverse, 1.3 times as wide as long, widest near middle, with moderately sized punctures, densely intermixed with shallow minute punctures; disc distinctly convex; apical margin distinctly narrower than basal; transverse depressions along apical and basal margins shallow. Sternum except for prosternum and outer margin of metepisternum densely covered with micropunctures; metasternum densely intermixed with large punctures that are larger than those of head.

Elytra about 1.2 times as wide as pronotum, widest across humeri, 4.3–4.5 times as long as wide, gently narrowed to apical sixth, thence rounded to narrowly obliquely truncate apex with blunt sutural angle; outer angle rounded. Each elytron with seven lows of large punctures that decrease in number of rows into six towards basal third; punctures decrease in size apicad and jumbled on apical fifth.

Abdominal sternites densely covered with micropunctures, intermixed with large punctures on sides of each sternite; large punctures decrease in size and number from third to seventh; seventh sternite with deep half-egged concavity on apical half, widely




Figs. 56–62. Male genitalia of *Oberea lama* GRESSITT. —— 56, Median lobe in dorsal view; 57, ditto in lateral view; 58, ditto in ventral view; 59, sclerites in endophallus in dorsal view; 60, tegmen in dorsal view; 61, ditto in lateral view; 62, lateral lobes in ventral view. Scale: 0.6 mm for 56, 57, 60, 61; 0.4 mm for 58, 59, 62.

and deeply triangularly emarginate at apical margin; seventh tergite truncate at apex.

Hind leg with femur reaching the middle of fourth abdominal sternite; tibia 1.9 times as long as tarsus. Relative lengths of hind tarsal segments:– 1.80–1.90 : 1.00 : 1.20–1.38 : 1.75–1.80.

Male genitalia as figured (Figs. 56–62). Apex of eighth tergites truncate. Median lobe 1.2 times as long as tegmen; dorsal plate with triangular apex, distinctly shorter than ventral plate; extreme base of endophallus with two clearly separated pairs of sclerites, of which the larger pair is long and slender baculiform, 3.7 times as long as the smaller pair which is slender rod-like shaped. Tegmen with lateral lobes moderately elongate, separated; lateral lobe with outer apical margin evenly truncate with blunt extremity; dorsal surface of apical two-thirds and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobe on ventral side with a transverse ridge that is densely furnished with uniform long fine hairs.

*Female*. Length 16.7–17.1 mm. Width at elytral humeri 3.1–3.2 mm. Inferior eye lobe 1.8 times as deep as gena below it. Antenna slightly shorter than in male, apex of last segment reaching elytral apices. Seventh abdominal sternite narrowly and shallowly concave, wedge-shaped at apical third; apical margin gently emarginate.

*Type specimen examined.* **[China]**: 1 ♂, Tibet (holotype, AMNH).

*Additional specimens examined*. **[Laos]**: 2 ♂♂, 2 ♀♀, Phu-Pan, alt. 1,500～1,800 m, N20°11′/E104°01′, Houaphan Prov., 10–V–2002 (CTN); 1 ♂, same locality, 22–V–2002, H. WAKAHARA coll. (CTK).

*Distribution*. China (Tibet) and Laos (new record).

*Variations*. According to the original description of *O. lama* GRESSITT, the coloration of abdominal sternites is blackish brown or sometimes dusky on fourth, fifth and apical half of third. On the other hand, examined specimens coming from the mountainous region of Laos are uniformly orange brown in color on their ventral surface of third to sixth abdominal sternites.

*Notes*. This species was first described by GRESSITT (1942a) based on a specimen from China, but later it was downgraded to a variety of *O. walkeri* by BREUNING (1960–1962). *Oberea lama* is distinguished from *O. walkeri* by the following characters: body distinctly slender, 5.3–5.6 times as long as wide (as opposed to 4.7–5.0 times); transverse depressions of pronotum distinct; outer angle of elytral apex rounded (as opposed to distinctly angulate); tegmen with lateral lobes short and distinctly separated, endophallus with baculiform sclerites slenderer than those of *O. walkeri*.

### ***Oberea distinctipennis*** PIC, 1902, stat. rev.

(Figs. 16–17, 63–69)

*Oberea distinctipennis* PIC, 1902: 2 (Type area: China).
*Oberea distinctipennis distinctipennis*: GRESSITT, 1942b: 38; 1951: 589, 594.
*Oberea nigriceps* v. *distinctipennis*: BREUNING, 1960: 39; 1962: 183.
*Oberea nigriceps* m. *distinctipennis*: BREUNING, 1967: 821.
*Oberea thibetana* PIC, 1916: 16 (Type area: Thibet). —— GRESSITT, 1942b: 38; 1951: 589, 602.
*Oberea nigriceps* v. *thibetana*: BREUNING, 1960: 39; 1962: 183.
*Oberea nigriceps* m. *thibetana*: BREUNING, 1967: 821.
*Oberea bicoloritarsis* v. *subparallela* PIC, 1928: 23 (Type area: Tonkin).
*Oberea distinctipennis lateriventris* GRESSITT, 1939a (Type locality: Yao Shan, Lien District, N. Kwangtung Prov., S. China); 1942b: 38; 1942c: 214; 1951: 589, 594. —— CHIANG, 1951: 85.

*Male*. Length 16.2–16.7 mm, width at elytral humeri 2.8–2.9 mm. Body moderate in size, very slender, 5.8–5.9 times as long as wide. Color orange-brown, except for the following black parts: head except near base, mandibles, labrum, apical two-thirds of seventh abdominal sternite, and seventh abdominal tergite except for base; antenna generally black, third to last segments at basal four-fifths sometimes blackish-brown; lateral sides and apices of elytra black to blackish-brown, except near humeri; hind tibia blackish-brown, except for base.

Body densely furnished with yellowish-brown pubescence, sparsely intermixed with erect or suberect long feeble hairs; occiput with blackish-brown pubescence, sparsely intermixed with long dark-brown hairs; black integument area of seventh abdominal sternite with long, dark-brown hairs; outer halves of elytral disc except for humeri with infuscate pubescence. Antennae densely clothed with appressed blackish-brown pubescence dorsally and pale yellow ones ventrally; first to sixth or seventh segments sparsely fringed with long brown hairs beneath. Labrum along apical margin usually with 12 to 16 long pale yellow setae. Outer area of mandibles sparsely with short fine pubescence, intermixed with a few long hairs.

Head distinctly wider than pronotum, minutely punctured with scattered moderately sized punctures on disc; vertex distinctly depressed. Labrum obtrapezoidal, apical angles rounded, surface matt, finely punctured. Inferior eye lobe 2.8–2.9 times as deep as gena below it. Antenna almost reaching elytral apex; third antennal segment the longest, distinctly longer than first; relative lengths of segments from base to apex:– 4.1 : 1.0 : 4.8 : 4.4 : 4.4 : 4.4 : 4.4 : 4.1 : 3.9 : 3.7 : 4.6.

Pronotum almost as long as wide, widest near middle, sparsely scattered with moderately sized punctures; interspaces with dense micropunctures; disc weakly convex; apical margin slightly narrower than basal; transverse depressions along apical and basal margins very shallow, distinct. Scutellum lingulate, emargination at apex rather deep.

Elytra 1.2 times as wide as pronotum, widest across humeri, 4.5 times as long as wide, sides distinctly convergent to apices; weak swellings near apical sixth; apex obliquely truncate with triangular outer angle and distinctly projected spinous sutural angle. Each elytron with seven or eight rows of large deep punctures that decrease in number of rows into six towards basal fourth; punctures becoming smaller apicad and jumbled on apical third.

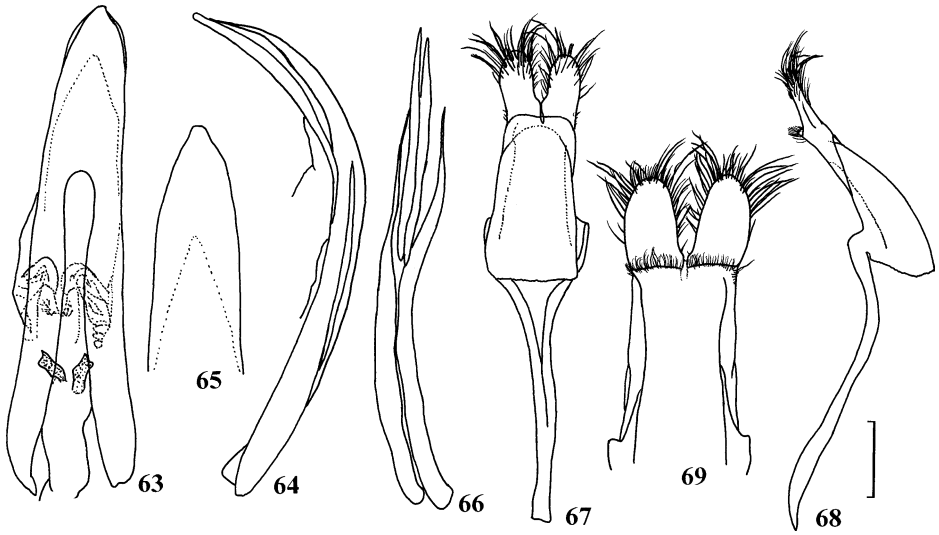
Seventh abdominal sternite with shallow and triangular depression at apical two-thirds, apical margin penta-sinuation; seventh tergite almost straightly truncate at apical margin.

Hind leg with femur distinctly exceeding apical margin of third abdominal sternite; tibia 2.1 times as long as tarsus. Relative lengths of hind tarsal segments:– 2.12–2.13 : 1.00 : 1.29–1.41 : 2.06–2.24.

Male genitalia as figured (Figs. 63–69). Median lobe 1.1 times as long as the length of tegmen; dorsal plate distinctly shorter than ventral; apex of ventral plate triangular; extreme base of endophallus with two pairs of sclerites, of which the larger pair is very long and slender baculiform, 1.7 times as long as the smaller pair; smaller pair very slender, rod-like shaped. Tegmen with lateral lobes gradually separated apicad; each lateral lobe rather short with rounded apex; apical half of dorsal surface and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobe ventrally with a transverse ridge that is densely furnished with hairs of moderate length.

*Female*. Length 16.4–19.2 mm, width at elytral humeri 2.9–3.3 mm. Body somewhat larger and wider than male, 5.6–5.8 times as long as wide. Pronotum distinctly wider than long. Inferior eye lobe about 2.5 times as deep as gena below it. Antennal length identical to male. Seventh abdominal sternite with distinct narrow triangular depression on apical half, gently shallowly emarginate at apical margin.

*Specimens examined*. **[China]**: 1 ♂, Emei Shan, Sichuan Prov., 28–VI–1955, HUANG & JIN leg. (CTK); 1 ♂, Mt. Wuyi Shan, Fujian Prov., 4～21–VII–2006, native collector (CTK); 1 ♀, Mt. Wuzhi Shan, Wuzhishan City, Hainan Is., 5～20–VI–2004, native collector (CTK); 1 ♂, Mt. Jianfengling, San Ya City, Hainan Is., 18～24–VI–2006, native collector (CTK); 1 ♀, Xiachayu, Chayu, Tibet, 22～28–VI–2006, native collector (CTK). **[Vietnam]**: 1 ♀, Tam Dao, Vinh Phu Prov., 27–VII～2–VIII–1992, N. OHBAYASHI leg. (CNO); 1 ♂, same locality, 20～23–V–1995, M. SATÔ leg. (CNO);




Figs. 63–69. Male genitalia of *Oberea distinctipennis* PIC. —— 63, Median lobe in dorsal view; 64, ditto in lateral view; 65, ditto in ventral view; 66, sclerites in endophallus in dorsal view; 67, tegmen in dorsal view; 68, ditto in lateral view; 69, lateral lobes in ventral view. Scale: 0.6 mm for 63, 64, 67, 68; 0.4 mm for 65, 66, 69.

1 ♀, same locality, 27～29–V–1996 (CTK). **[Laos]**: 1 ♀, Muang La, Oudom Xay Prov., 10～30–VI–2004, native collector (CTK); 1 ♀, Phu Samsoun, Xien Khouang Prov. IV～VI–2006, H. WAKAHARA coll. (CNO); 2 ♂♂, Ban Phadkhad, Nong Het, alt. 1,200～1,400 m, Xiengkhouang Prov., 20–V–2004 (CTN).

*Distribution*. China (Fujian, Sichuan, Hainan and Tibet), Vietnam and Laos.

*Host plant*. Unknown.

*Notes*. *Oberea distinctipennis* was first described by PIC (1902) from China, but downgraded to a variety of *O. nigriceps* (WHITE) by BREUNING (1960–1962). *Oberea distinctipennis* can be easily distinguished from the authentic specimens of *O. nigriceps*, which was collected from the type locality and compared with the photograph of the type specimen. It differs from *O. nigriceps* by the following characters: body slenderer, 5.6–5.9 times as long as wide (as opposed to 4.4–4.9 times); labrum with 12 to 16 long setae arranged in a transverse row near apical margin (as opposed to 8 setae); male genitalia with a small pair of sclerites remarkably long; tegmen with lateral lobes short, hairs on ridge of the ventral side short.

*Oberea thibetana* PIC has also been downgraded to a variety of *O. nigriceps* (WHITE) by BREUNING (1960–1962). However, this species should be a junior synonym of *O. distinctipennis*, since judging from the photograph of the type specimen of *O. thibetana*, no difference except for the coloration of elytral humeri can be observed.

### *Oberea diversimembris* PIC, 1923, stat. rev.

(Figs. 18, 70–76)

*Oberea diversimembris* PIC, 1923: 11 (Type area: China). —— GRESSITT, 1942b: 37; 1951: 586, 594.
*Oberea nigriceps*: BREUNING, 1960: 40; 1962: 181. (nec WHITE, 1844, part).

*Male*. Length 14.8–16.9 mm, width at elytral humeri 2.7–3.2 mm. Body moderately sized, slender, 5.4–5.5 times as long as wide. Color orange-brown, except for the following black parts: head except near base, mandibles, labrum, antennae, sides and apices of elytra, apical three-fourths of seventh abdominal sternite, and seventh abdominal tergite except for base. Elytral disc orange-brown, partly darkened near middle and black in apical areas.

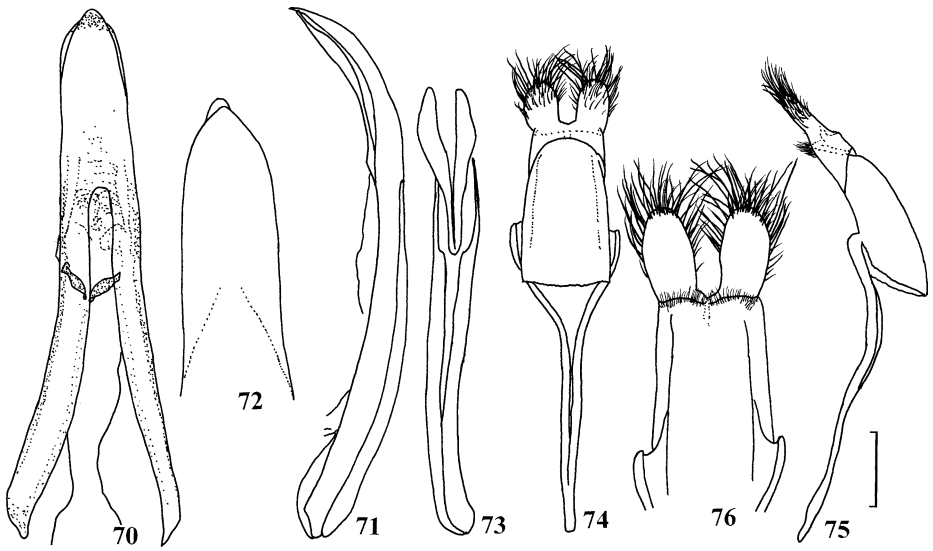
Body rather densely furnished with yellowish-brown pubescence, sparsely intermixed with erect or suberect long feeble hairs. Occiput with blackish-brown pubescence, intermixed with long dark brown hairs; black integument area of seventh abdominal sternite with long, dark brown hairs. Antennae densely clothed with appressed blackish-brown pubescence dorsally and pale yellow ones ventrally; ventral pubescence becomes indistinct from apical half of fourth to the last segments; first to sixth or seventh antennal segments sparsely fringed with long brown hairs beneath. Labrum usually with 12 to 16 long pale yellow setae along apical margin. Outer area of mandible with dense pubescence intermixed with long hairs. Elytral pubescence yellowish-brown on inner halves, outer halves except for humeri infuscate.

Head slightly wider than pronotum, moderately sized dense punctures, intermixed with shallow micropunctures; vertex slightly depressed. Labrum shining, sides arcuate, apical margin lightly emarginate, sparsely covered with fine punctures. Inferior eye lobe 3.1–3.2 times as deep as gena below it. Antenna almost reaching elytral apex; third antennal segment the longest, distinctly longer than first; relative lengths of segments from base to apex:– 3.8 : 1.0 : 4.9 : 4.3 : 4.2 : 4.1 : 4.0 : 3.7 : 3.6 : 3.2 : 3.6.

Pronotum distinctly transverse, widest near the middle, punctuation similar to that of head, but punctures more or less smaller; disc weakly convex; apical margin slightly narrower than basal margin; transverse depressions along apical and basal margins weak. Metepisternum and sides of metasternum rather densely covered with micropunctures, sparsely intermixed with moderately sized punctures. Scutellum lingulate, with rather deep emargination at apex.

Elytra about 1.2 times as wide as pronotum, widest across humeri, 4.2–4.3 times as long as wide, weakly narrowed to apical fourth, thence rounded to obliquely truncate apex with triangular outer angle and triangularly projected sutural angle. Each elytron with seven or eight rows of large deep punctures that decrease in number into six towards basal fourth; punctures decrease in size apicad and jumbled on apical fourth.

Abdominal sternites densely clothed with micropunctures, sparsely intermixed with small punctures laterally; seventh sternite with distinct and triangular depression on apical two-thirds, apical margin penta-sinuation; seventh tergite almost straightly truncate.




Figs. 70–76. Male genitalia of *Oberea diversimembris* PIC. —— 70, Median lobe in dorsal view; 71, ditto in lateral view; 72, ditto in ventral view; 73, sclerites in endophallus in dorsal view; 74, tegmen in dorsal view; 75, ditto in lateral view; 76, lateral lobes in ventral view. Scale: 0.6 mm for 70, 71, 74, 75; 0.4 mm for 72, 73, 76.

Hind leg with femur reaching the middle of fourth abdominal sternite; tibia 2.0 times as long as tarsus. Relative lengths of hind tarsal segments:– 2.00–2.13 : 1.00 : 1.25–1.43 : 1.93–2.06.

Male genitalia as figured (Figs. 70–76). Apex of eighth tergite shallowly emarginate. Median lobe 1.2 times as long as tegmen; dorsal plate slightly longer than ventral; apex of ventral plate triangular; extreme base of endophallus with two pairs of sclerites, of which the larger pair is very long and slender baculiform, 2.3 times as long as the smaller pair; smaller pair rather broad, fused at base. Tegmen with lateral lobes separated apicad; each lateral lobe rather short, gently arcuate with rounded apex; apical half of dorsal surface and extreme apex of ventral surface densely furnished with long hairs; base of lateral lobe ventrally with a transverse ridge that is densely furnished with hairs of moderate length.

*Female*. Length 15.8–17.3 mm, width at elytral humeri 3.0–3.3 mm. Body somewhat larger and slightly wider than in male, 5.2–5.4 times as long as wide. Inferior eye lobe 1.9–2.0 times as long as gena below it. Antennal length slightly shorter than in male. Seventh abdominal sternite with deep triangular depression on apical half, gently emarginate at apical margin.

*Specimens examined*. **[China]**: 1 ♀, Chine, 11–V–1912 (syntype of *O. diversimembris* in MNHN); 1 ♂, Chekiang, 9–VI–1931, O. PIEL coll. (CTK); 1 ♂, same locality and collector, 11–VI–1931 (CTK); 2 ♀♀, Xiachayu, Dzayul, Nyingtri, Tibet, 1～28–

VII–2004, native collector (CTK). **[Vietnam]**: 1 ♀, Sapa City, Lao Cai Prov., 23～25–V–1995 (CTK); 1 ♀, Tam Dao, 930 m, Vinh Phu Prov., 1～7–V–1996, Y. ARITA leg. (CNO). **[Laos]**: 1 ♂, 3 ♀♀, Muang La, Oudom Xay Prov., 10～30–VI–2004, native collector (CTK); 1 ♀, Phu-Pan, alt. 1,500～1,700 m, Houaphan Prov., 30–IV–2002, N. OHBAYASHI leg. (CNO); 1 ♂, same locality, 27–V–2002, H. WAKAHARA coll. (CNO); 1 ♂, same locality, 1,600～1,900 m, 12–IV～11–V–2005, H. WAKAHARA coll. (CNO). **[Myanmar]**: 1 ♀, Mong Hkok, Shan Highland, 20～27–VI–2006, native collector (CTK).

*Distribution*. China (Zhejiang and Tibet), Vietnam, Laos and Myanmar.

*Host plant*. Unknown.

*Notes*. This species was first described by PIC (1923) based on the specimen from China, but later synonymized with *O. nigriceps* (WHITE) by BREUNING (1960–1962). However, judging from its wide elytra as observed from the photograph of the type specimen this species deserves a status of a valid independent species. In addition, these two species are clearly distinguished from each other by the shape of lateral lobes and the length of small sclerites of the endophallus of male genitalia.

This species is very similar to the Taiwanese species, *O. flavipennis* KURIHARA et N. OHBAYASHI, 2007, by the structure of sclerites of the endophallus of male genitalia. But it can be separated from the latter by the proportions of the body that is wide and short.

## *Oberea yunnana* PIC, 1926

(Figs. 19, 77–83)

*Oberea yunnana* PIC, 1926: 10 (Type locality: Yunnan). —— GRESSITT, 1942b: 37; 1951: 597, 603. —— BREUNING, 1960: 37; 1962: 190; 1967: 821.

*Male*. Body large, slender, 5.6 times as long as wide; length at elytral humeri 20.0 mm, width 3.6 mm. Color orange-brown except for the following black parts: head, mandibles, labrum, antennae, apical ninth of elytra, apical two-thirds of seventh abdominal sternite, seventh and eighth abdominal tergites; tarsi blackish brown.

Entire surface rather densely furnished with yellowish-brown pubescence, legs and basal areas of elytra sparsely intermixed with erect or suberect long feeble hairs of identical color; elytral flanks with narrow areas of infuscate pubescence, apical black integument uniformly furnished with blackish pubescence. Antennae except for narrow ventral areas of third and fourth segments densely clothed with appressed brown pubescence; first to sixth segments sparsely fringed with semi-long brown hairs beneath; apex of first to ninth segments with one or two very long feeble hairs, respectively. Labrum along apical margin with 8 pale brown setae. Outer area of mandibles sparsely furnished with short pubescence, intermixed with several long hairs. Outer area near base of metepisternum without pubescence.

Head as wide as pronotum, densely covered with moderately sized punctures, intermixed with shallow minute punctures that are occasionally fused or transversely

rugose; median longitudinal furrow of frons from the middle to clypeal suture evanescent; vertex distinctly depressed. Labrum square-shaped, apical margin rounded, except for narrow area along base and apex finely punctured. Inferior eye lobe 1.8 times as deep as genae below it. Antenna distinctly shorter than body, reaching apical eighth of elytra; third antennal segment the longest, distinctly longer than first; relative lengths of segments from base to apex:– 3.1 : 1.0 : 5.0 : 4.3 : 3.5 : 3.4 : 3.3 : 3.1 : 2.9 : 2.5 : 2.8.

Pronotum transverse, gently swollen laterad, widest near middle, punctuation as dense as that of head; transverse depressions along apical and basal margins obsolete. Sternum rather densely provided with micropunctures; sides of metasternum and metepisternum sparsely intermixed with moderate-sized punctures. Scutellum transverse obtrapezoidal, apex sub-truncate.

Elytra 1.2 times as wide as prothorax, widest across humeri, 4.4 times as long as wide, slightly narrowed to apical fifth, thence slightly rounded to weakly emarginate apex with obtuse angles. Each elytron with seven rows of large and deep punctures which decrease in number of rows into six towards middle; punctures diminish in size apicad, on apical fifth jumbled.

Abdominal sternites densely covered with micropunctures, laterally sparsely intermixed with small punctures; apical half of seventh sternite with shallow triangular depression, apical margin with shallow arcuate emargination.

Hind legs with femora reaching the middle of fourth abdominal sternite; tibiae 2.0 times as long as tarsi. Relative lengths of hind tarsal segments:– 2.00–2.08 : 1.00 : 1.58–1.64 : 2.25–2.27.

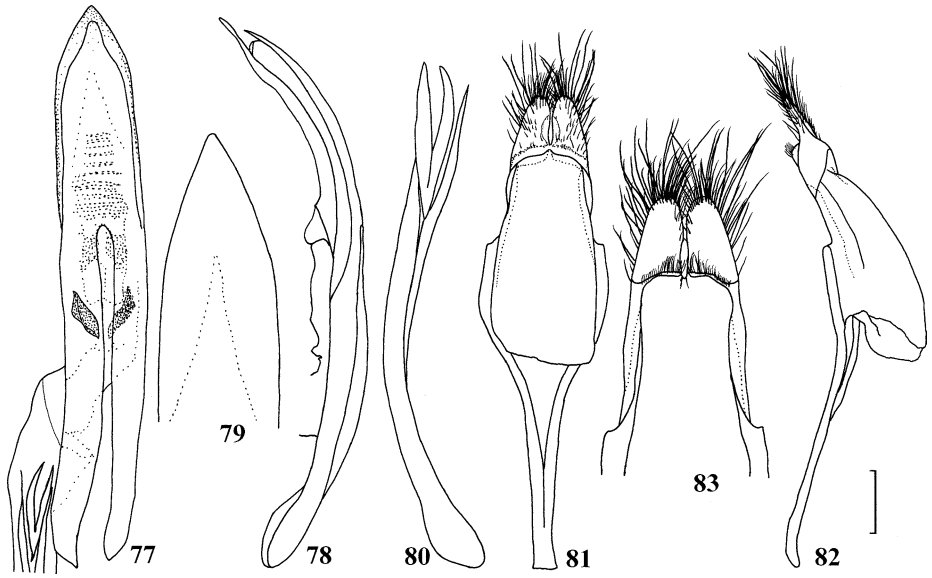
Male genitalia as figured (Figs. 77–83). Apical margin of eighth tergite shallowly emarginate near middle. Median lobe 1.2 times as long as tegmen; dorsal plate distinctly shorter than ventral; apex of ventral plate projected; two pairs of sclerites on extreme base of endophallus very long and slender baculiform, of which the larger pair is 3.0 times as long as the smaller pair. Tegmen with each lateral lobe directly narrowed to rounded apex; apex of ventral, and dorsal plates except for middle inner half densely furnished with long hairs; ventrally base of lateral lobe with a transverse ridge inner half of which is furnished with long and fine hairs; hairs decrease in length outwardly.

*Female*. Length 22.7–23.3 mm, width at elytral humeri 4.2–4.3 mm. Body larger and wider than in male, 5.4–5.5 times as long as wide. Elytral pubescence laterally not infuscate. Inferior eye lobe 1.2–1.3 times as deep as gena below it. Antenna shorter than in male, reaching apical third of elytra. Seventh abdominal sternite except for basal margin black; apical margin shallowly triangularly emarginate.

*Specimens examined*. **[China]**: 1 ♀, Nanling, Shaoguan, Guangdong, 19～22–VII–2005, M. TAKAKUWA leg. (CTK). **[Laos]**: 1 ♀, Phu-Pan, Houaphan Prov., 27–IV–2001, H. WAKAHARA coll. (CNO); 1 ♀, same locality and collector, 5–V–2002 (CNO). **[Myanmar]**: 1 ♂, Mong Hkok, Shan Highland, 20～27–VI–2006, native collector (CTK).

*Distribution*. China (Guangdong and Yunnan), Laos and Myanmar (new record).

*Host plant*. Unknown.




Figs. 77–83. Male genitalia of *Oberea yunnana* PIC. —— 77, Median lobe in dorsal view; 78, ditto in lateral view; 79, ditto in ventral view; 80, sclerites in endophallus in dorsal view; 81, tegmen in dorsal view; 82, ditto in lateral view; 83, lateral lobes in ventral view. Scale: 0.6 mm for 77, 78, 81, 82; 0.4 mm for 79, 80, 83.

*Notes*. *Oberea yunnana* is most similar to *O. ohbayashii* sp. nov. from Laos or to *O. reductesignata* PIC, 1916 from Taiwan. However, it can easily be distinguished from these two species by the larger body and very short antennae.

Despite the fact, that neither a voucher specimen nor a photograph of *O. atroantennalis* BREUNING, 1960 has been made available to me, judging from the original description of BREUNING (1960–1962) can also resemble *O. yunnana*. According to BREUNING's description, *O. yunnana* can be separated from *O. atroantennalis* by the following characters: apical ninth of elytra clearly black (as opposed to darkened); gena devoid of small reddish macula.

## *Oberea notata* PIC, 1936

(Figs. 20, 84–90)

*Oberea notata* PIC, 1936: 24 (Type locality: Shanghai, China). —— GRESSITT, 1942b: 36; 1951; 586, 599. —— BREUNING, 1960: 37; 1962: 196; 1967: 822. —— PU, 1980: 120, pl. 12, fig. 169.
*Oberea notata* v. *rufoantennata* BREUNING, 1960: 37 (unavailable name); 1962: 196.
*Oberea notata* m. *rufoantennata*: BREUNING, 1967: 822.
*Oberea notata* v. *kwangtungensis* BREUNING, 1960: 37 (unavailable name); 1962: 197.
*Oberea notata* m. *kwangtungensis*: BREUNING, 1967: 822.

*Male*. Length 13.5 mm, width at elytral humeri 2.4 mm. Body rather small, 5.5 times as long as wide. Color light yellowish-brown except for the following black parts; head, mandibles, labrum, antennae, scutellum, elytra except for the extreme bases, mesosternum, metasternum, metepisternum and hind tibiae; pronotum with four black maculae; third and fourth abdominal sternites with a pair of black maculae at sides of basal half; tarsi, dorsum of fore and mid tibiae reddish-brown.

Head, sternum and elytra with whitish pubescence, moderately intermixed with identically colored erect or suberect long feeble hairs. Antennae with appressed yellowish-brown pubescence dorsally and whitish one ventrally; first to fifth segments sparsely fringed with long brown hairs beneath. Abdomen with pale yellowish-brown pubescence. Labrum with 8 long pale yellow setae along apical margin. Outer area of mandibles densely covered with moderately long pubescence, intermixed with a few long hairs.

Head 1.2 times as long as pronotum, densely covered with moderately sized punctures, intermixed with shallow minute punctures; vertex shallowly depressed. Labrum obtrapezoidal, apical angles rounded, shining, sparsely punctured near base. Inferior eye lobe 2.6 times as deep as gena below it. Antenna short, reaching apical seventh of elytra; third antennal segment the longest, distinctly longer than first and fourth; relative lengths of segments from base to apex:– 4.3 : 1.0 : 5.0 : 4.3 : 3.9 : 3.6 : 3.5 : 3.2 : 3.0 : 2.5 : 2.6.

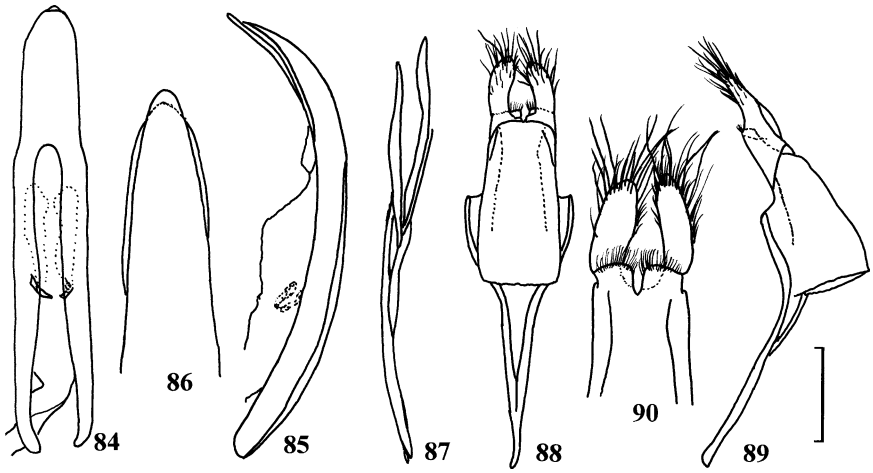
Pronotum almost square-shaped, sides swollen laterad, widest near middle, densely covered with micropunctures, sparsely intermixed with punctures that are distinctly larger than those of head; disc gently convex, with three discal swellings to be deposed a transverse row in middle and lacking punctures; apical margin slightly wider than basal; transverse depressions along apical and basal margins indistinct. Sternum sparsely covered with moderately sized punctures, intermixed with shallow minute punctures. Scutellum quadrangular.

Elytra 1.2 times as wide as pronotum, widest across humeri, 4.2 times as long as wide, on basal five-sixths parallel-sided, thence rounded to obliquely emarginate apex with triangular angles. Each elytron with eight rows of large deep punctures that decrease in number of rows into six towards basal third; punctures decrease in size and depth apicad, jumbled on apical two-fifths.

Abdominal sternites densely covered with micropunctures, intermixed with moderate-sized punctures laterad; punctures of third and fourth abdominal sternites large and dense, of the fifth to seventh sternites very small and sparse; seventh sternite on apical three-fourths with deep half-egg shape concavity, apical margin tri-sinuation; apical margin of seventh tergite truncate.

Hind legs with femur distinctly surpassing apical margin of fourth abdominal sternite; tibia 2.0 times as long as tarsus. Relative lengths of hind tarsal segments:– 1.70 : 1.00 : 1.15 : 1.80.

Male genitalia as figured (Figs. 84–90). Apical margin of eighth tergite truncate. Median lobe 1.1 times as long as the length of tegmen; apex of dorsal plate distinctly




Figs. 84–90. Male genitalia of *Oberea notata* PIC. —— 84, Median lobe in dorsal view; 85, ditto in lateral view; 86, ditto in ventral view; 87, sclerites in endophallus in dorsal view; 88, tegmen in dorsal view; 89, ditto in lateral view; 90, lateral lobes in ventral view. Scale: 0.6 mm for 84, 85, 88, 89; 0.4 mm for 86, 87, 90.

shorter than ventral; extreme base of endophallus with two pairs of sclerites, of which the larger pair is long and slender baculiform, 1.8 times as long as the smaller pair; smaller pair also baculiform. Tegmen with lateral lobes widely separated; each lateral lobe slender with rounded apex; apical half of dorsal surface and apical narrow part of ventral surface sparsely furnished with long hairs; base of lateral lobe ventrally with transverse ridge that is moderately furnished with fine hairs.

*Female*. Length 12.7 mm, width at elytral humeri 2.5 mm. Body wider than in male, 5.2 times as long as wide. Antenna reaching elytral apical sixth. Seventh abdominal sternite with deep depression on apical third, with shallow triangular emargination at apical margin. Relative lengths of hind tarsal segments:– 1.80 : 1.00 : 1.20 : 1.80.

*Specimens examined*. **[China]**: 1 ♂, 1 ♀, Emei Shan, 550～750 m, Baoguoshi, Sichuan Prov., 22–VI–1957, Y.-C. LU leg. (CTK).

*Distribution*. China (Jiangsu, Zhejiang, Sichuan and Guangdong).

*Host plant*. Unknown.

*Notes*. This species is by the structure of sclerites in the endophallus of male genitalia very similar to the Taiwanese species, *O. shimomurai* KURIHARA et N. OHBAYASHI, 2007. It, however, differs from it by the slenderer body, rather stout appendages, male genitalia with strongly curved median lobe and tegmen from lateral view, and elongate v-shaped small pair of sclerites of endophallus.

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