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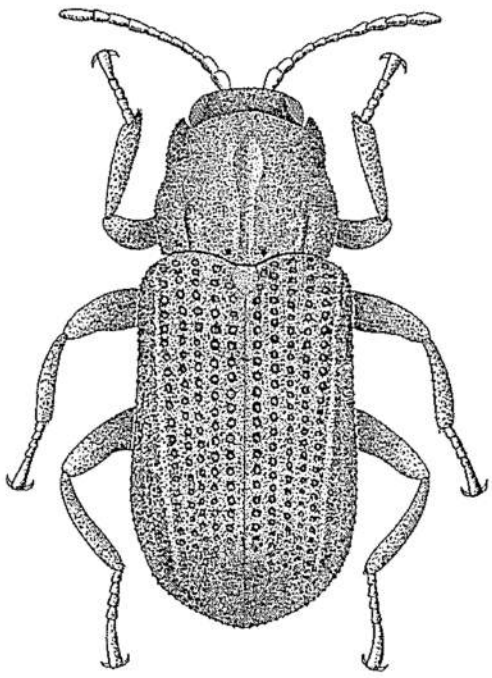
SATONIUS



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Special Bulletin
of the
Japanese Society of Coleopterology
No. 6
[Satonius]

This volume is dedicated to Professor Masataka SATÔ.
The subtitle "Satonius" is derived from a generic name in the family Torridincolidae named by Dr. S. ENDRÖDY-YOUNGA in 1997.

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Title page illustration:
Stenelmis hisamatsui M. SATÔ, 1960 (by Masataka SATÔ)

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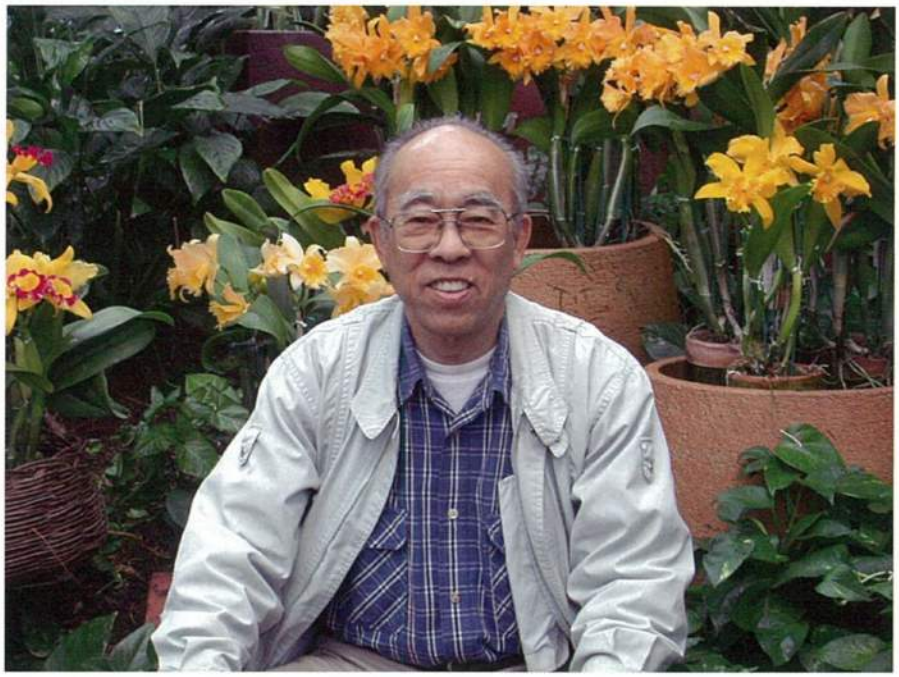

A Brief Biography of Masataka SATÔ

Nobuo OHBAYASHI

Masataka SATÔ was born in Furusato-machi, Nagoya, Japan on April 8, 1937 as the second child and the eldest son of the seven children to Mitsutarô and Toshiko SATÔ. In his early years in the elementary school, he enjoyed collecting lucanid and dynastid beetles like many boys of his age.

As he went on to high school, his interest in insects rapidly grew wider, and gradually focused on water beetles. Upon graduation, he entered the Nippon Welfare University in 1957, but driven by his continued passion for insects, he decided to leave the school and reentered the Faculty of Agriculture, Ehime University in 1959. The faculty staff of the Entomological Laboratory then were Tamotsu ISHIHARA (Professor), Tetsusaburô TACHIKAWA (Associate professor), Mutsuo MIYATAKE and Sadanari HISAMATSU (Assistant professors). Such papers as "A new genus and new species of Eucnemidae from Japan", "Notes on Japanese *Hydraena*", "Some aquatic beetles unrecorded from Shikoku, Japan", etc. which he published in his freshman year, indicate his energetic insect-driven activities to come to Ehime University and beyond.

In 1960, SATÔ made his first memorable trip to the Ryukyu Islands, which made

him a captive of subtropical insect diversity. Only a decade and half after the Second World War, this was more an expedition than a mere collecting trip. In the subsequent four expeditions in his university days, he visited almost all the islands of the Ryukyu Archipelago.

Having been graduated from Ehime University, SATÔ found a teaching job in Nagoya Jogakuin College, but soon moved to the Aichi Prefecture Institute of Public Health, and eventually settled down in Nagoya Women's University. Starting as a lecturer in 1967, he was promoted to an associate professor in 1971, and to a full professor in 1979. During 36 years of service till his retirement in March 2003, he held such prominent positions as director of the University Library, deans consecutively of the Faculty of Home Economics, Faculty of Literature, and Graduate School of Life Science, member of University Council and so on. Outside the campus, SATÔ also served socially as a councilor/executive editor of the Entomological Society of Japan, councilor/director of the Japanese Society of Coleopterology, councilor/vice director of the Japanese Society of Systematic Entomology, and so on. SATÔ has always been ecology-conscious and articulated of his views but also knows well how to compromise. As a result, he presided over various committees not only of the municipality, but also of the Ministry of Environment and Ministry of Land, Infrastructure and Transport of the National Government. Besides these activities, SATÔ published many entomological papers as shown in the list of his writing, and was awarded a doctorate degree from the Faculty of Science, Kyoto University in 1993 for a doctoral dissertation entitled "A Revisional Study on the Superfamily Dryopoidea (Coleoptera) of Japan".

Professor SATÔ has been an excellent supervisor not only for his students but also for any young entomologists of Japan and Taiwan. He offered any help whenever needed. SATÔ is an eternal boy who loves insects and insect lovers. He is always dreaming of adventurous trip abroad to meet new insects. His footprint is left in Thailand, the Philippines, Indonesia, Nepal, Malaysia, Taiwan, Russia, China, Vietnam, Laos, and others. On his trip, he collects all he can, even from killing bottles of his fellow entomologists! He studied these innumerable number of insects of his collection himself, but also offered them for study to many specialists world over.

In 1967 Masataka SATÔ married to Taeko YAMANAKA. He had been a good husband at home and brought up two sons and two daughters, but in 1991 his wife suffered from a brain hemorrhage which left her in paralysis on one entire side of her body. SATÔ nursed her hand and foot, and even took her to collecting trip to the Ryukyu Islands on a wheel chair. Unfortunately, however, he lost her in 1996, and a year after he also collapsed from an acute myocardial infraction just a week before his departure on an expedition to Mongolia. Fortunately, he recovered gradually and became well again, while his sons and daughters became independent and left home. He decided to get married for the second time and found a wonderful partner, Sumiko OHIWA, in 1999.

Professor SATÔ retired from Nagoya Women's University at the end of March 2003. From now on, he will enjoy his insect-life together with his newly-wed wife. We celebrate his retirement, wish him a good health, and expect his continued contributions to entomology.

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To My Indebted Figures

Masataka SATÔ

Dia Cuore Tokushige 306, Kamegahora 3–1404, Midoriku,
Nagoya, 458–0804 Japan

Born and brought up in Nagoya, it was in 1944, almost in the last stage of the Second World War, when I entered an elementary school. In order to escape from the increasing bombing, my family evacuated to rural areas so that I spent most of my elementary school days at Seki and Hashima, Gifu Prefecture. Eventually, I grew up as a country boy surrounded by hills and fields and became thoroughly familiar with an abundance of natural wonders. This experience in my boyhood worked favourably for my later careers.

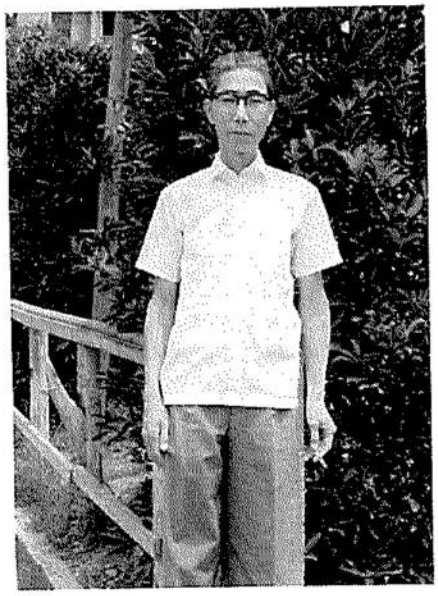
Reflecting the ongoing ethos of the militarism of the era, most children dreamt of becoming soldiers. However, my way of thinking was quite different from those of the others, or I might have already had something of a spirit of defiance, my utmost dream in future being to become a Doctor of Science. When I was almost finishing the school, we left the affluent natural surroundings for Nagoya again. The city, in the process of postwar rehabilitation, was still lying as a vast ruined field and the site for planned roads of 50-100 meter-wide was left as a prairie for children's playground.

I was gradually absorbed in the world of insects thanks to my parents' support and understanding, though our living was quite frugal. I was much inclined to collect something and the objects that continued to attract and stimulate my curiosity were the limitlessly diversified figures of insects.

Finally, I managed to become an entomologist. However, this is largely due to the fortunate encounters with many persons, especially teachers who have led and helped me with great benevolence and friends who have supported me as the so-called 'bad friends'. At my very retirement age, I would like to express my sincerest gratitude to my leading teachers by reminiscing about them.

I joined the Biology Club at Nagoya City Iseyama Middle School in 1950 and met Mr. M. FUJI who was a new teacher then. He was keen to study fossilology and taught me about it and took me to Mizunami where he collected fossils while I looked for insects. I think this experience led me to my collecting materials of dinosaurs as a hobby. Entering Nagoya City Kôyô High School in 1953, I took part in the Science Club under the guidance of Mr. T. ADACHI and Mr. M. NAKASHIMA concerning entomology but on the other hand, the scope of my activities began to extend towards the outer world. Acquainted with such colleagues as Dr. Toshibumi HOZUMI, Dr. Akira TAKAHASHI, Mr. Takashi ANDO, Mr. Yasuo TAKASAKI and Mr. Ichirô MATSUI at the meetings of the Nagoya Entomological Society drove me to further devotion to entomology. Then, I was given crucial opportunities of encountering two men which decided the direction of my life. One was Mr. Kazuo OHBAYASHI and the other was Mr. Shun-Ichi UÉNO.

Mr. OHBAYASHI was working at the Seki branch office of the Mainichi Shimbun. I often visited Seki where many relatives of my mother lived. To be honest, visiting my grandparents every holiday was an only excuse and my real purpose was to visit OHBAYASHI's place in order to enjoy insect-talks and insect chasing at Suhara, which was a good collecting site. I continued to visit Mr. OHBAYASHI to have a talk with him after he moved to the Nagoya Head Office. OHBAYASHI became, so to speak, another father and I asked for his advice on any occasion, in effect, his son, Nobuo, becoming my brother. When Nobuo was to go on to a university, totally away from his real intention, his educational destination had already been directed to the College of Agriculture, Ehime University, on the grounds that I was studying there under the supervision of Prof. ISHIHARA. Kazuo might have been stubborn but he aspired to realize his own long cherished dream of becoming an entomologist by sending his son to the path of that study.



The late K. OHBAYASHI in 1964 at Nagoya

It is a great pleasure that, at present, Nobuo is an excellent entomologist as a professor at his alma mater, making his father's dream true. As soon as I came back to Nagoya in 1973, Kazuo started to publish the "Bulletin of Japan Entomological Academy" in English, aiming to create a wider field of researches. This was another dream that he had long cherished, but his project was not so successful. I deeply regret that Kazuo passed away at the young age of 53 years due to cancer.

The fortunate encounter with Mr. S.-I. UÉNO took place on Mt. Ontake where I was engaged in a summer field research, an activity of the Science Club, as a first grader of the high school. As we walked down together, he told me whereabouts of *Potamonectes kanoi* KAMIYA which was just beginning to stimulate my interest. It goes without saying that, the very next day, I was happy to collect the tiny insect. Immediately I submitted my report to the column named "Mushi Pen" in Shin-Konchû and it was accepted. It is almost 50 years since then and constantly that he has been a great instructor for me. I owe him a limitless debt of gratitude. Especially, he kindly continued to help me with the reports in English, reading and correcting them with much intelligence and patience. At the same time, he provided me with many opportunities of field researches overseas and accompanied me to Southeast Asia on several occasions.

I was forced to spend one more extra year to prepare for the university entrance examination as the result of roaming about in the Chûbu mountain areas, chasing insects. Still, while I was the so-called "rônin" freshman, I ventured to travel around Shikoku in the summer, 1956 with Mr. Zen-ichirô NARUSE who was a student of the

Faculty of Agriculture, Mie University. At that time, I never dreamt that this field trip provided a second opportunity of my becoming an entomologist. On our way around Shikoku, I met Prof. Tamotsu ISHIHARA at Ehime University for the first time and offered a letter of introduction from Mr. K. OHBAYASHI who used to live in Onomichi in his boyhood and Prof. ISHIHARA who also lived nearby was one of his closest friends. He entertained the humble "rônin" with considerable kindness. In addition, I was able to meet Mr. Sadanari HISAMATSU and Mr. Mutsuo MIYATAKE both of whom were active as researchers of the Coleoptera. These experiences led me to make up my mind to sit for the entrance examination of Ehime University. Unfortunately, however, I had to wait for two more years due to familial circumstances before I finally secured a place in the University.

As a finishing touch of our trip, we visited Prof. Michio CHÛJÔ at the Faculty of Education, Kagawa University taking along a letter of introduction from Dr. Yûshirû MIWA who had taught entomology to Mr. Hajimu ICHIHASHI, one of the close friends of ours. Dr. MIWA, Director of Mie Prefectural Museum at that time, used to engage

Talking with the late Drs. Y. KUROSAWA and Y. MIWA in 1984 at Yunoyama Spa.

in coleopteran researches at the Agriculture Central Experimental Station in Taiwan while Prof. CHÛJÔ used to be a staff at Taiwan Imperial University. Naturally, the letter to Prof. CHÛJÔ from Dr. MIWA worked very effective so that we enjoyed very friendly welcome and I was destined to have Prof. CHÛJÔ's instruction in the coming student life.

I went to Matsuyama to sit for the entrance examination of Ehime University in 1959. Prof. ISHIHARA had suggested my seat in the class even before I was formally informed of the exam result. As I studied under his supervision on friendly terms, I became familiar with his personality, for instance, his impatience and his mischievousness. I recall now to my mind that I used to be an unprecedentedly strange student and that only Prof. ISHIHARA's deep consideration at the back stage allowed me

to spend the reckless student life. For example, I did not attend the classes very often, lingered about the entomological laboratory until late at night being absorbed in studies, consoled my hunger by taking crops away from the experimental farm, and frequently became a missing person by going off to the Ryukyus for insect collecting trips.

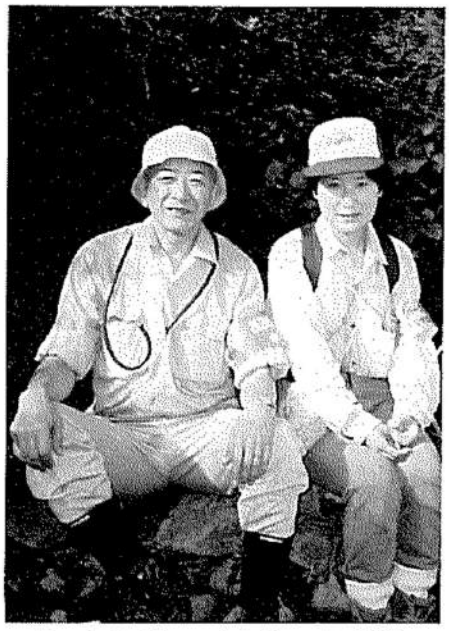
One year later, Mr. Yutaka ARITA joined me, a student who surpassed me in recklessness, and three years later, we received Mr. Nobuo OHBAYASHI. Perhaps, Prof. ISHIHARA was greatly embarrassed with these three strange guys. It is an unforgettable memory that he kept a very heart-warming and understanding watch on us

The late Emeritus Prof. T. ISHIHARA surrounded by his graduates in 1991 at Matsuyama.

who firmly shared enthusiasm for entomology. During this period, there were also excellent staff: Assoc. Prof. Tetsusaburo TACHIKAWA, Dr. Mutsuo MIYATAKE and Dr. Sadanari HISAMATSU. They gave us fruitful instructions even though they were sometimes embarrassed with our conduct. I was particularly helped with the rich entomological literature that Dr. HISAMATSU possessed.

In the four years of university life, I often came back to Nagoya, and on every trip, I dropped in Takamatsu on the way and visited Prof. CHŪJŌ. He welcomed me with warm hospitality as if I were a family member regardless of the odd time of my arrival and departure caused by the schedule of cheap night trains. After his retirement from Kagawa University, he worked for the Faculty of Agriculture, Meijô University, so that I was happy to be able to see him more often. At that period, it was quite difficult to make a research trip abroad but he managed to obtain a number of useful materials providing me with opportunities of co-researching. These tempted me to adventures in the south.

Having been graduated from the university I was adopted at Nagoya Jogakuin College (former Nagoya Women's University) by Prof. Masayoshi HIRO who was then engaged in ecological studies as an aquatic insect researcher. Eventually I have



Drs. S.-I. UÉNO and A. SAITO in 1990 at Hokkaido.

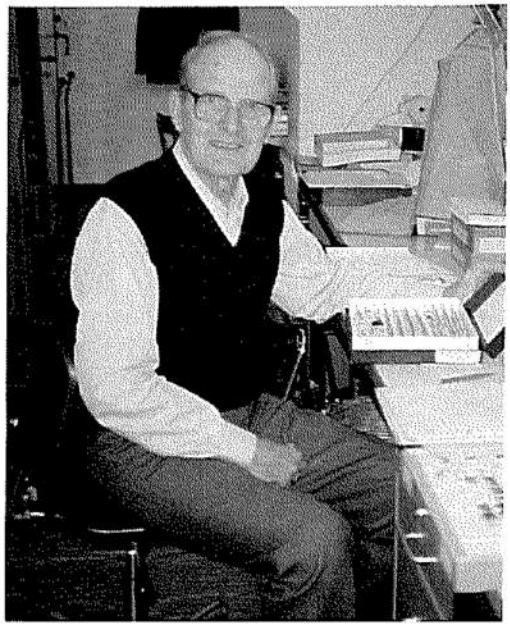
worked for this university for 38 years since then under the benevolent guidance of Prof. HIRO.

As the scope of coleopteran studies was extended, colleagues sharing the specialty also multiplied and I was helped with much more expertise. While I was a student, I sometimes visited Mr. Katsura MORIMOTO, Mr. Shinsaku KIMOTO and Mr. Hiroyuki KAMIYA (SASAJI), who were studying Coleoptera in the post-graduate course of Kyushu University. I forced my way to Mr. MORIMOTO's lodging and asked for his instruction. Dr. Keizo YASUMATSU was the Professor of Entomology then and Dr. Terunobu HIDAKA was his assistant. Later, Dr. HIDAKA entered at the Ministry of Agriculture and was eventually staying in Thailand for a long period. While he was in Thailand, I had several opportunities of traveling the country so that I was able to meet him very often (more often than when we were in Japan), being entertained with much kindness and care.

As for the colleagues in my home region, Dr. Hitoo ÔHIRA at Aichi Gakugei University gave me personal instruction. There was hardly any thing worth noting as regards the entomology in Tôkai region. Only Prof. Kazuo KAMIYA at Aichi Gakugei University possessed numerous literature of considerable importance and I was able to look into them through Dr. ÔHIRA who was then an assistant of Prof. KAMIYA.

Meanwhile, Dr. S.-I. UÉNO obtained a seat in the National Science Museum (Nat. Hist.), Tokyo, when he was graduated from Kyoto University. Besides, two other research colleagues joined the staff of the Museum. They were Dr. Yoshihiko KUROSAWA who had taught me before and Dr. Masaaki TOMOKUNI who had been my junior at Ehime University. Naturally, I visited the Museum more often and was always allowed to join them when they went abroad for field researches. The more the opportunities of going to Tokyo increased, the deeper our friendship became, with Mr. Sizumu NOMURA (Tôhô Gakuen) and Dr. Yasuaki WATANABE (Tokyo University of Agriculture) who were my thoughtful seniors and were attached to the Museum.

Dr. KUROSAWA used to be so close to Mr. K. OHBAYASHI that he was particularly considerate to me. There are not so many people who can be credited with being "Mushikichi (insect addicts) " in Japanese, but Dr. KUROSAWA should be the first to be mentioned. He was also interested in tiny insects even though he was especially fond of beautiful ones. It was Dr. KUROSAWA that discovered Torridincolidae for the first time in Japan and allowed me to describe it. I named it "*Delevea kurosawai*" (Kurosawa-tsubu-mizumushi) but later, making this the type species, Dr. S. ENDRÖDY-YOUNGA established a new genus named *Satonius*. I feel sorry that the name related



The late Dr. W. WITTMER in 1997 at Basel.

to me preceded KUROSAWA's study, eventually. I would also like to express my deep gratitude to Dr. Kintaro BABA who used to call himself "Mushikichi" for his unforgettable kindness.

On the other hand, I owe much kindness and support to researchers abroad, whom I am going to describe just briefly. Mr. Hugh B. LEECH at the California Academy of Science, who used to be called "Curators' Curator", was very mild in personality and kindly sent me a number of literature and specimens not available in Japan. Dr. Walter WITTMER at the Naturhistorisches Museum Basel, used to be an especially close friend and he taught me the method of cantharid studies from the very basics. I was allowed to examine his type series freely while staying at his home in Basel and Prague. Dr. Michel BRANCUCCI, the successor of Dr. WITTMER, specializing in dytiscid beetles, was also very kind. Dr. Paul J. SPANGLER at the Smithsonian Institution, specializing in the same groups as mine, warmly allowed to study abundant materials. Dr. John T. POLHEMUS in Colorado, a researcher of the Hemiptera, was a cheerful person. We kept close contact as we studied the same aquatic things. Sharing the high zealousness for insects, he took me to the Rockies twice. In addition, when I visited him in the winter, he took me to Florissant to collect insect fossils, knowing that I was a fossil lover. He continued his research while working in NASA, and after his retirement, he is enjoying traveling through Southeast Asia freely collecting insects. Dr. Manfred A. JÄCH at the Naturhistorisches Museum in Wien, concentrating on hydraenid studies, is determined to make the Museum the center of aquatic beetles. I had the honor to study in his laboratory for a month in 2000.

I noted my memories of my honorable teachers and friends briefly but there are also many persons about whom I was unable to write. I wish to express my heartfelt thanks for their support today when I have reached my retirement age safely. I would like to close this note of gratitude with my sincerest acknowledgement to the people I met and my deceased parents, Mitsutarô and Toshiko SATÔ, as well as to my deceased wife Taeko, who supported me not only in keeping the household and bringing up four children but also in helping my studies, and Sumiko who is supporting me with everything at home and in the outside as well. But for their invariable help, I could not have completed my life in the entomology.

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A Checklist of Publications by Masataka SATÔ 1952 – 2002

Masataka SATÔ

This checklist consists of my entomological researches and its related works during the period from 1952 to 2002. Newspaper articles, mimeographic copies in the earlier period, short notes on the studies published in Nagoya Women's University, summaries of lectures made in entomological meetings and anonymous notes are omitted. Articles written in Japanese are given new English titles.

1952

1. *Amida tricolor* HAROLD collected on Azakura-yama, Seki City. *Shin-Konchû, Tokyo*, **5** (2): 39. (In Japanese.)
アミダテントウ関市安桜山にて採集. 新昆虫, **5** (2): 39.

1953

2. Three dytiscid beetles from Mt. Ontake. *Shin-Konchû, Tokyo*, **6** (3): 43. (In Japanese.)
御嶽産のゲンゴロウ3種. 新昆虫, **6** (3): 43.

1954

3. A collecting trip to the Ohdaigahara Mountains. *Chûkai-Sokuhô, Tokyo*, (33): 7. (In Japanese.)
大台ケ原山系の採集. 蟲界速報, (33): 7.
4. Butterflies of Higashiyama Park, Nagoya. *Tankyû* (Nagoya-shiritsu Kôyô High School, Science Club), (3): 40–49. (In Japanese.)
東山公園に分布せる蝶類. 探究 (名古屋市立向陽高等学校科学クラブ), (3): 40–49.

1955

5. Note on *Neohirasea japonica* DE HAAN. *Trans. ent. Soc. Chûbu, Okazaki*, (7): 25. (In Japanese.)
Neohirasea japonica DE HAAN (トゲナナフシ)に就いて. 中部昆虫同好会会報, (7): 25.
6. Note on *Nepa hoffmanni* ESAKI. *Trans. ent. Soc. Chûbu, Okazaki*, (7): 25. (In Japanese.)
Nepa hoffmani ESAKI に就いて. 中部昆虫同好会会報, (7): 25.
7. *Erebia* of the Chûou Alps. *Kakôchô, Nagoya ent. Soc.*, **7**: 9–12. (In Japanese.)
中央アルプスの*Erebia*. 佳香蝶 (名古屋昆虫同好会), **7**: 9–12.
8. Butterflies of Higashiyama Park, Nagoya (Additional note). *Tankyû* (Nagoya-shiritsu Kôyô High School, Science Club), (4): 18–20. (In Japanese.)
東山公園に分布せる蝶類 (追補). 探究 (名古屋市立向陽高等学校科学クラブ), (4): 18–20.
9. Collecting report (of insects) of Owase and Ohdaigahara. *Tankyû* (Nagoya-shiritsu Kôyô High School, Science Club), (4): 39–40. (In Japanese.)
尾鷲・大台ケ原採集報告. 探究 (名古屋市立向陽高等学校科学クラブ), (4): 39–40.

10. [Extract] *Erebia* of the Chûou Alps. *Shin-Konchû, Tokyo*, **8** (5): 45. (In Japanese.)
[抄録] 中央アルプスの*Erebia*. 新昆虫, **8** (5): 45.

1956

11. The beetles collected on the pine-wood, mainly in the Tôkai provinces. *Ins. Ecol., Tokyo*, **5** (13): 165–173. (In Japanese.) [Coauthored with T. HOZUMI and Z. NARUSE.]
松材に集まる甲虫類 –東海地方を主とした–. 生態昆虫, **5** (13): 165–173. [穂積俊文, 成瀬善一郎と共著.]
12. The hydrophilid-beetles of Kawarada, Yokkaichi City (Preliminary report). *Tankyû* (Nagoya-shiritsu Kôyô High School, Science Club), (5): 20–22. (In Japanese.)
四日市市河原田のガムシ相 (予報). 探究 (名古屋市立向陽高等学校科学クラブ), (5): 20–22.

1957

13. The coleopterous fauna of Nagoya, I (A checklist of literature concerning the Coleoptera of Nagoya). *Trans. ent. Soc. Chûbu, Okazaki*, (11): 39–43. (In Japanese.) [Coauthored with Z. NARUSE.]
名古屋甲虫誌 I (名古屋市産甲虫分布に関する文献目録). 中部昆虫同好会会報, (11): 39–43. [成瀬善一郎と共著.]
14. The coleopterous fauna of Tôkai, 3. *Kakôchô, Nagoya ent. Soc.*, **9**: 1–10. (In Japanese.) [Coauthored with T. HOZUMI.]
東海甲虫誌 3. 佳香蝶 (名古屋昆虫同好会), **9**: 1–10. [穂積俊文と共著.]
15. New locality of *Neptosternus niponensis* KAMIYA. *Hirakura, Mie ent. Soc.*, (8): 5–6. (In Japanese.)
Neptosternus niponensis KAMIYA の新産地. ひらくら (三重昆虫同談話会), (8): 5–6.

1958

16. Some interesting beetles of Tôkai District. *Kakôchô, Nagoya ent. Soc.*, **9**: 1–2, 1 pl. (In Japanese.) [Coauthored with H. ICHIHASHI *et al.*]
東海地方の興味ある甲虫. 佳香蝶 (名古屋昆虫同好会), **9**: 1–2. [市橋甫ほかと共著.]
17. Notes on the habitat of Hydrophilidae, I. *Kakôchô, Nagoya ent. Soc.*, **9**: 21–22. (In Japanese.)
ガムシ科の生活場所に就いての覚書 (I). 佳香蝶, **9**: 21–22.
18. Note on the tribe Mordellini from Tôkai District. *Kakôchô, Nagoya ent. Soc.*, **9**: 37–38. (In Japanese.)
東海地方産ハナノミ族覚書. 佳香蝶, **9**: 37–38.
19. Notes on some beetles from Mt. Yatsugatake, (1). *Kakôchô, Nagoya ent. Soc.*, **10**: 19–22. (In Japanese.)
八ケ岳産甲虫小録 (1). 佳香蝶, **10**: 19–22.
20. On the distribution of *Hyphydrus (Nipponhydrus) flavomaculatus* KAMIYA, with the descriptions of two new forms (Col. Dytiscidae). *Ent. Rev. Japan, Osaka*, **9**: 13–14. (In Japanese, with English summary.)
キボシケシゲンゴロウの分布と2新型について. 昆虫学評論, **9**: 13–14.
21. Seashore hydrophilid beetles of Aichi and Mie Prefectures. *Hirakura, Mie ent. Soc.*, (19): 83–84. (In Japanese.)
愛知, 三重両県の海浜産ガムシ類. ひらくら (三重昆虫同談話会), (19): 83–84.

1959

22. Notes on Japanese *Hydraena* (Coleoptera: Limnebiidae). *Trans. Shikoku ent. Soc., Matsuyama*, **6**: 62–64.
23. Some aquatic beetles unrecorded from Shikoku, Japan. *Trans. Shikoku ent. Soc., Matsuyama*, **6**: 64.
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Contributed Papers

Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 37–40, May 25, 2003

A New Spider of the Genus *Coelotes* (Araneae, Agelenidae) from Gifu Prefecture, Central Japan

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Abstract A new spider of the genus *Coelotes* is described from Central Japan, and dedicated to Dr. Masataka SATÔ under the name *Coelotes satoi*. Its affinity is not certain, though it is isolated by the absence of the paired projections on the epigynum.

In this paper, I am going to describe a new species of the genus *Coelotes*, which is characterized by the presence of many hairs on nearly whole the thoracic region and the absence of the paired projections on the epigynum. This new species is recorded from Kanagawa, Yamanashi, Nagano, Shizuoka, Gifu and Aichi Prefectures, Central Japan. It is a great pleasure for me to dedicate this paper to Dr. Masataka SATÔ for commemorating his retirement from Nagoya Women's University.

Before going further, I wish to express my hearty thanks to Dr. Shun-Ichi UÉNO, for his constant guidance and for reading through the original manuscript of this paper. Special thanks are also due to Messrs. Osamu TOMINAGA, Kohjiro KATSURA, Takehiko ONO and Satoshi KOUGATA for their offering valuable specimens used in this study. My deep thanks are also expressed to Mr. Yasunosuke CHIKUNI, Nagano Prefecture for his valuable advice and materials.

Coelotes satoi NISHIKAWA, sp. nov.

[Japanese name: Chûbu-yachigumo]

(Figs. 1–5)

Coelotes sp. A: CHIKUNI, 1989, Pictor. Encycl. Spiders Japan, pp. 234–235, fig. 24 (on p. 103).

F e m a l e (holotype). Total length 9.0 mm; cephalothorax 3.9 mm long, 2.4 mm wide; abdomen 5.2 mm long, 3.8 mm wide. Ratio of the width to the length of cephalothorax 0.62; ratio of the width of head to that of thorax 0.75; ratio of the width of eye area to that of head 0.57. Order of eyes in diameter, AME $<$ PME $\leqq$ PLE = ALE. Thoracic region with many hairs except for a small posterior portion. Retromargin with four teeth. Legs with ring flecks. Ventral spines on legs: tibiae I–IV 2–2–2. Dorsal spines on femora: I 1–1–2 (pr 2), II 1–2–3, III 1–3–3, IV 1–2–3. Epigynum wider than long, hexagonal in outline, and lacking in paired projections.

Color:— Legs with grayish ring flecks on each femur. Abdomen with many

irregular gray spots on dorsum and with five yellowish paired flecks; venter light yellowish gray with some small irregular gray flecks.

Male (allotype). Total length 7.7 mm; cephalothorax 3.7 mm long, 2.2 mm wide; abdomen 4.0 mm long, 2.5 mm wide. Similar in coloration and structure to the female. Palpal embolic conductor spatulate and apically bent. Tibia with two small projections.

Type series. Holotype (♀) and Allotype (♂); southwestern side of Mt. Ena-san, 840 m alt., Okunodaira, Nakatsugawa-shi, Gifu Prefecture, 2–XII–1993, Y. NISHIKAWA leg. Paratypes: 1♂, Mimayano, 700 m alt., Gero-chô, Mashita-gun, Gifu Prefecture, 24–X–1999, Y. NISHIKAWA leg.; 1♀, Wakamiya-jinja, Yunoshima, Gero-chô, Mashita-gun, Gifu Prefecture, 3–XI–1974, Y. NISHIKAWA leg.; 3♀, 2♂, Fukatani, 550–580 m alt., Gero-chô, Mashita-gun, Gifu Prefecture, 25–X–1999, Y. NISHIKAWA leg.; 1♀, 1♂, Futawatari, 780–850 m alt., Kashimo-mura, Ena-gun, Gifu Prefecture, 25–X–1999, Y. NISHIKAWA leg.; 1♀, 1♂, Yokokawa-tani, 570 m alt., Fukuoka-chô, Ena-gun, Gifu Prefecture, 24–X–1999, Y. NISHIKAWA leg.; 1♀, 1♂, Nyûdô-zaka, 280 m alt., Ooi-chô, Ena-shi, Gifu Prefecture, 24–X–1999, Y. NISHIKAWA leg.; 1♀, north of Marukusa, 400 m alt., Akechi-chô, Ena-gun, Gifu Prefecture, 10–X–1980, O. TOMINAGA leg.

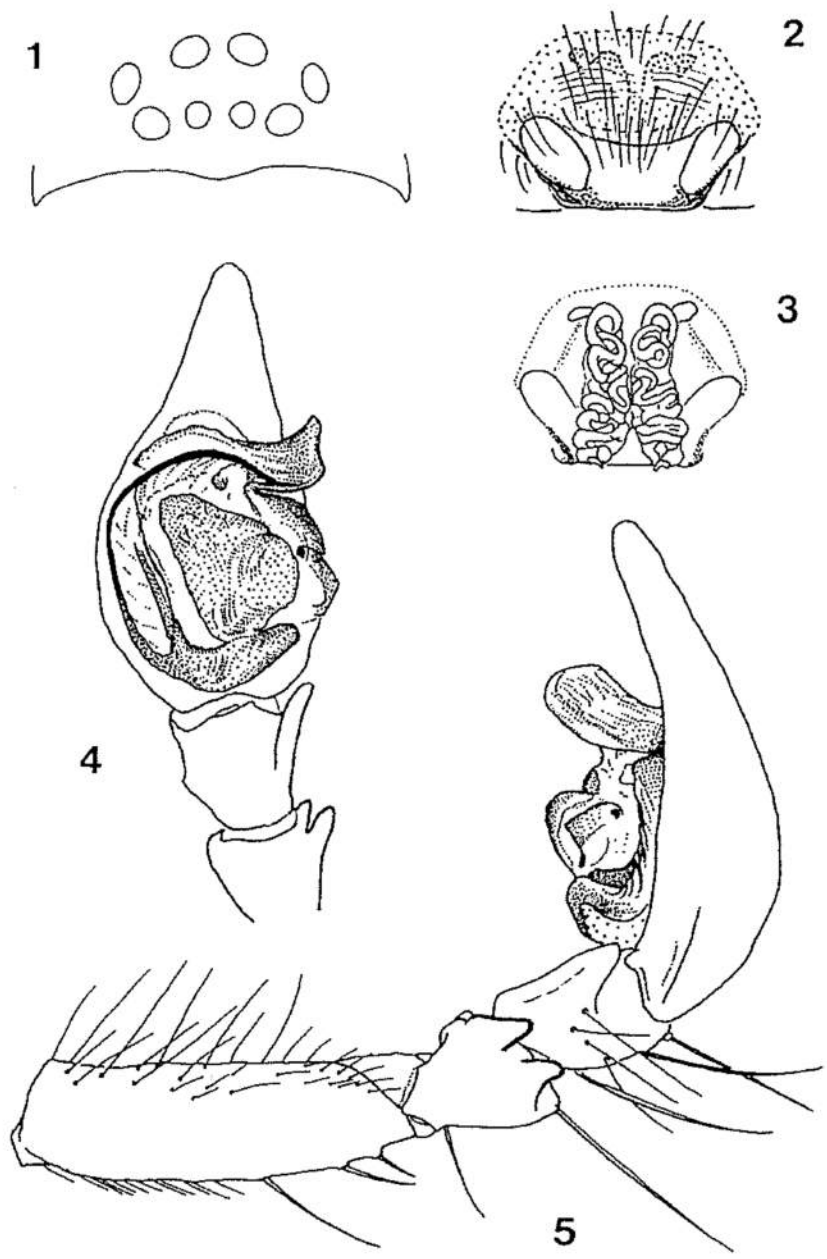
The holotype and allotype are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Other specimens examined. 1♀, Miyanoshita, 500 m alt., Hakone-machi, Ashigarashimo-gun, Kanagawa Prefecture, 3–X–1980, Y. NISHIKAWA leg.; 2♀, environs of Fuji-fûketsu Cave, Kamikuishiki-mura, Nishiyatsushiro-gun, Yamanashi Prefecture, 22–VIII–1972, T. ONO & Y. NISHIKAWA leg.; 1♀, Sasama-shimo, 440 m alt., Shimada-shi, Shizuoka Prefecture, 29–XI–1993, S. KOUGATA leg.; 1♀, Susado, 700 m alt., Horogane-mura, Minamiazumi-gun, Nagano Prefecture, 23–IX–1975, Y. CHIKUNI leg.; 1♀, east of Mt. Ikeyama, 960 m alt., Komagane-Kôgen, Komagane-shi, Nagano Prefecture, 24–VII–1986, Y. NISHIKAWA leg.; 1♀, Hirayu, Kamitakara-mura, Yoshiki-gun, Gifu Prefecture, 5–V–1974, O. TOMINAGA leg.; 1♂, Shin-hirayu-onsen, Hitoegane, Kamitakara-mura, Yoshiki-gun, Gifu Prefecture, 17–III–2002, Y. NISHIKAWA leg.; 1♀, Machinami, 640 m alt., Nyûkawa-mura, Ohno-gun, Gifu Prefecture, 3–V–1973, K. KATSURA leg.;1♂, Kamihirose, Kokufu-chô, Yoshiki-gun, Gifu Prefecture, 4–V–1973, O. TOMINAGA & K. KATSURA leg.; 1♀, Aioi, 300 m alt., Hachiman-chô, Gujô-gun, Gifu Prefecture, 10–XI–1974, O. TOMINAGA leg.; 1♀, Tsurumi, 240 m alt., Fujihashi-mura, Ibi-gun, Gifu Prefecture, 30–X–1992, Y. NISHIKAWA leg.; 1♀, east of the Togoshi-tôge, 260 m alt., Mt. Sanage-yama, Fujioka-mura, Nishikamo-gun, Aichi Prefecture, 10–X–1980, O. TOMINAGA leg.; 1♀, Jôkôji, 170–200 m alt., Jôkôji-chô, Seto-shi, Aichi Prefecture, 18–XI–1973, Y. NISHIKAWA leg.

Notes. This is a peculiar new species, whose true affinity is uncertain. The absence of the paired projections on its epigynum is particularly strange. The male palp of this new species resembles that of *Coelotes yodoensis* NISHIKAWA, 1977, but it is easily distinguished from the latter by the different shape of the embolic conductor.

This species is dedicated to Dr. Masataka SATÔ for commemorating his retirement from Nagoya Women's University.

Distribution. Honshu, Central Japan (Kanagawa, Yamanashi, Nagano, Shizuoka, Gifu and Aichi Prefectures).



Figs. 1–5. *Coelotes satoi* NISHIKAWA, sp. nov., from Mt. Ena-san. —— 1, Eye area of female, frontal view; 2, epigynum, ventral view; 3, female genitalia, dorsal view; 4, male palp, ventral view; 5, same, retrolateral view.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 41–49, May 25, 2003

The Scutacarid Mites of Japan

XII. Two New *Archidispus* Associated with Stenolophine Carabid Beetles

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Abstract Two new species of scutacarid mites, *Archidispus undulatus* and *A. masatakai* spp. nov. are described from Japan based on phoretic females found on the cervical membrane between head and prothorax or intersegmental membrane between pro- and mesothorax of some species of carabid beetles belonging to the subtribe Stenolophina of the tribe Harpalini. They are distinguished from the known congeners mainly by the peculiar shape of certain modified setae on the coxisternal plates and, in *A. masatakai*, also by somewhat separated, caudal setae ps_1 and ps_2. The non-phoretic female, male and larva are unknown.

Thirty-five named species of the genus *Archidispus* have been known from Japan, but more than twenty species of the genus still remain unnamed. Two of them are described and illustrated herein on the basis of phoretic females found on some species of carabid beetles belonging to the subtribe Stenolophina of the tribe Harpalini.

The terminology of the body structures and the setal notation mainly follow those of LINDQUIST (1986). All measurements are given in micrometers (μm). The RCC3 index (ratio of length (or distance) of any structure to the mutual distance of anterior coxal condyles III×100) (KUROSA, 1989) is used for the convenience of description. The mutual distance of anterior coxal condyles III is measured between the apicalmost points of coxal (coxi-trochanteral) condyles most clearly defined near the lateral margins of coxisternal plates III in ventral view, which are generally not true apices of the condyles because they are, under normal conditions, only obscurely visible on a somewhat lower level. Lengths of legs are measured along the longitudinal axis of each leg from the basalmost point of femur (legs I– III) or trochanter (leg IV) to the apicalmost point of tibiotarsus or tarsus excluding claw(s) and empodium. Frequently in mounted specimens, setae are bent, slanted or obscured (especially in setae with extremely fine tips) and legs I are bent ventrad, which makes their measurements difficult. In any case, possibly unreliable measurements and those representing evidently aberrant values are excluded from the calculation of RCC3 indices; consequently their sample numbers vary with individual structure.

The present paper is dedicated to Prof. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University. I wish to express my gratitude to the late Mr. Yoshio YANO, Messrs. Takashi OKUMURA (Yokohama-shi) and Takanobu TAKAHASHI (Saga-shi) for supplying with the material used in this study.

Archidispus undulatus KUROSA, sp. nov.

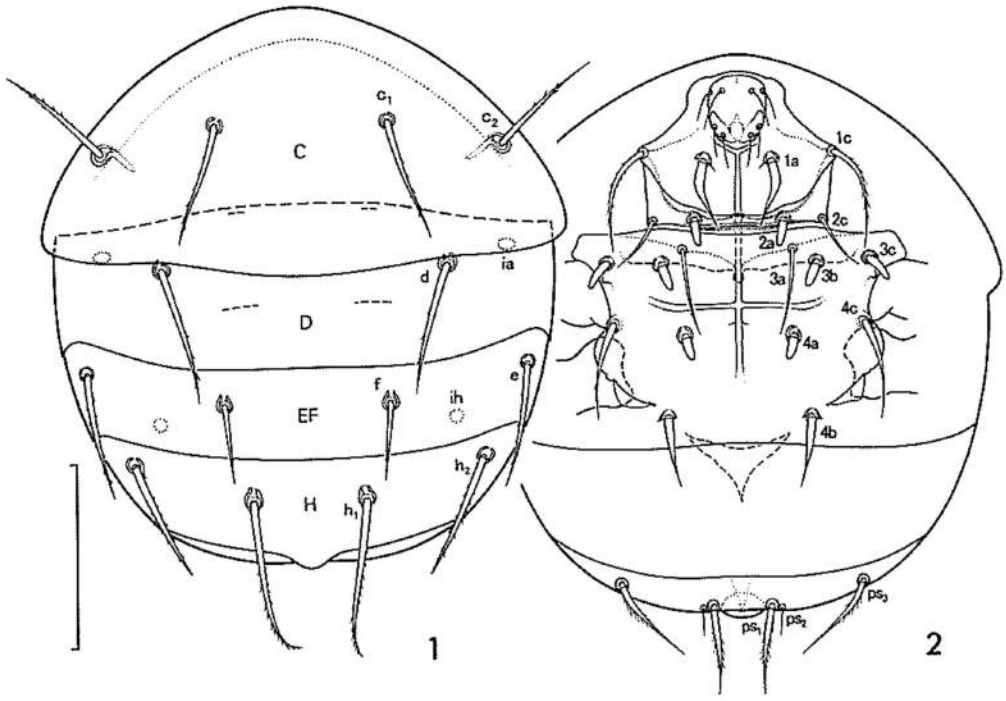
(Figs. 1–3, 6)

Archidispus sp. No. 9: KUROSA, 1977, pp. 387–388, fig. III–C.

Phoretic female. Cuticle moderately sclerotized. Body length (length of idiosoma) 123–165; body width (width of opisthosomal plate C) 116–148; mutual distance of anterior coxal condyles 65–78 (mean 73.4±S.D. 2.95, n=20).

Dorsum (Fig. 1). Free margin of plate C narrow, with radial striations barely visible. Dorsal setae of opisthosoma generally medium in length, rather attenuate, distinctly barbed except for *f*; c_1, c_2, and *e* subequal in length; *d* and h_2 slightly longer; *f* much shorter and thinner, seemingly glabrous; h_1 a little longer than *d* and h_2, usually strongly curved in distal portion; h_1, h_2 and (sometimes also) *e* weakly tapered; c_1 located anterior to c_2; marginal thickening of basal pore for c_2 with a 5–8 long, posteromesal protrusion; *d* moderately spaced from each other; ratio of mutual distance *d–d/f–f* 1.60–1.93; length ratio of h_1 to *f* 1.90–2.24. The order in length of dorsal idiosomal setae: $h_1 > d \cong h_2 \geqq e \geqq c_1 \geqq c_2 > f$. Two pairs of cupules, *ia* and *ih*, present.

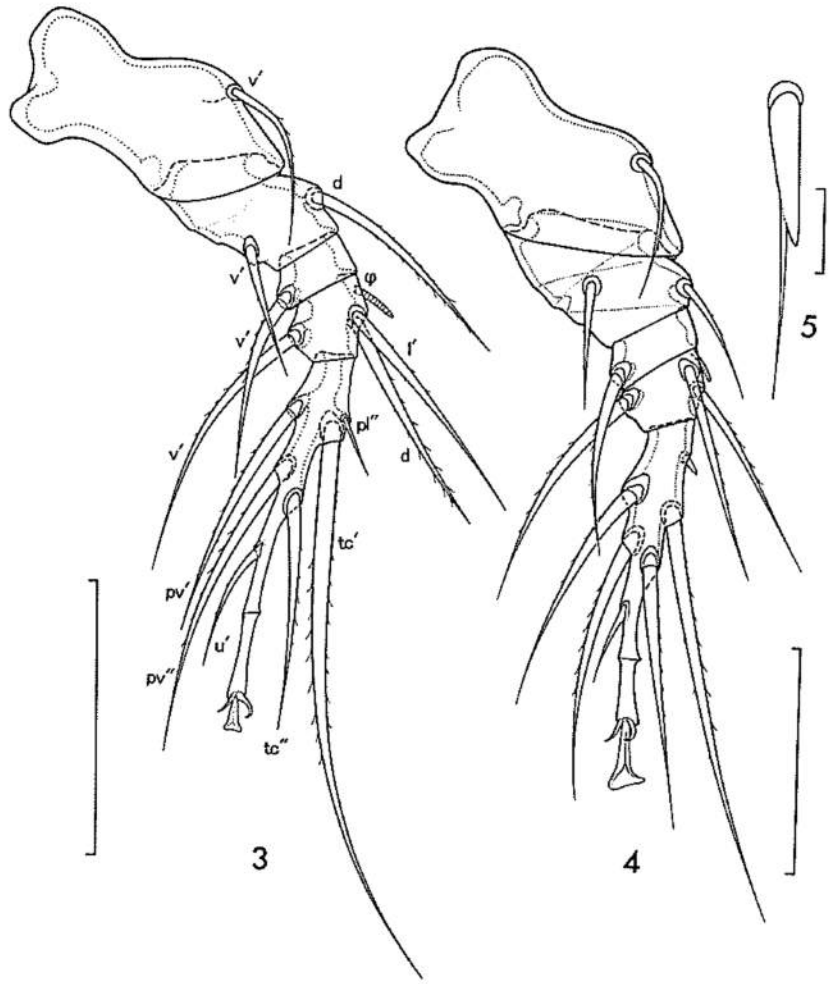
Venter (Figs. 2, 6). Gnathosomal capsule medium in size. Anterior and posterior coxisternal plates moderately wide relative to body width. Apodemes generally well developed except for apodeme 2, which is attenuate and more or less irregularly curved, sometimes markedly undulate; just behind apodeme 2, its accessory thickening is visible on a slightly lower level, which is always characteristically undulate; secondary transverse apodeme (CROSS, 1965) individually variable in shape; in many cases it is nearly horizontal except for somewhat oblique lateral portions, always more or less thickened between insertions for setae *2a*, crossing prosternal apodeme at a level a short distance posterior to the posteriormost point of apodeme 2; apodemes 4 nearly straight and horizontal, extending about 2/3 way to ventral margins of coxal foramina III. Posterior genital sclerite triangular, usually wider than long. Coxal setae generally short; *1a* inserted some distance posterior to posteriormost point of camerostome (= circumgnathosomal foramen of CROSS, 1965) and moderately apart from prosternal apodeme, distinctly widened and gently incurved in proximal 3/5, then rather rapidly attenuating distad, reaching secondary transverse apodeme, glabrous; a short, fine, linear thickening running posteromesad from mesal side of marginal thickening of basal pore for *1a* is faintly visible; *2a*, *3b*, *3c* and *4a* modified, short-fusiform with rounded apex, subequal in size, glabrous; *2a*, *3b* and *3c* widest in basal half in ventral view, *4a* widest near the middle; *3c* weakly incurved; *2a* located much apart from *2c*, marginal thickening of the basal pore adjoining to secondary transverse apodeme; *2c* much shorter than *1c*; *3a* located fairly apart from midline, attenuate, almost imperceptibly barbed, fine distally, apex barely reaching base of *4a*; *3b* a short distance posterior to, and somewhat laterad of *3a*; ratio of mutual distance *3b–3b/3a–3a* 1.25–1.42; *4a* some distance posterior to apodeme 4; *4b* relatively short, distinctly thickened in proximal portion, rapidly attenuating distad, rather spine-like; *4c* also distinctly thickened proximally, gradually attenuating distad, usually incurved.



Figs. 1–2. *Archidispus undulatus* sp. nov., phoretic female. —— 1, Dorsal aspect; 2, ventral aspect. Scale: 50 μm.

Caudal (pseudanal) setae ps_1 and ps_3 rather short, subequal in length, distinctly barbed except for distal portion; ps_2 fine, about half as long as ps_1; ps_3 somewhat thinner than ps_1.

Legs. Leg I moderately long: femoral seta *d* foliate, elongated distally; tibiotarsus slightly wider than genu; pinnaculum (= Tastborstensockel of KARAFIAT, 1959) 11–12 in length; solenidion φ_1 elongate-fusiform, φ_2 and ω_1 rod-like, slightly attenuating distad, ω_2 slender, attenuating distad, extending beyond apex of pinnaculum; the order in length of solenidia in some examples: ω_2 (11.5–12.0)>ω_1 (9.5–11.0)>φ_1 (8.0–9.0)>φ_2 (7.5–8.0). Legs II and III rather long and slender; tibial solenidion φ fusiform, 6–7 in length; tarsal solenidion ω 8–9 in length; two claws subequal in size, rather small; empodium irregularly trapezoidal with stalk. Leg IV (Fig. 3) much longer than legs II and III; tarsus moderately elongated; length ratio of pretarsus to tarsus 0.28–0.33; proximal portion of tarsus strongly widened from base to insertions for setae *pv´* and *tc´*; femoral seta *d* much longer than femoral *v´*, rather weakly tapered, extending beyond base of tarsus; tibial solenidion φ 7–11 in length; tibial seta *d* inserted only slightly distad of tibial *l´*, subequal in length to the latter and femoral *d*, weakly tapered, not fine distally; tarsal seta *pl˝* inserted close to base of *tc´*, 7–11 in length; *tc´* extremely long; *u´* fairly long (length 16–19), extending beyond middle of pretarsus; two claws subequal in size, only slightly smaller than



Figs. 3–5. *Archidispus* spp. nov., phoretic female. —— 3, *A. undulatus*; 4–5, *A. masatakai*. —— 3–4, Left leg IV, ventral aspect; 5, seta *d* on tibia II. Scales: 40 μm for Fig. 3; 30 μm for Fig. 4; 5 μm for Fig. 5.

those on legs II and III; empodium stalked.

RCC3 indices (n=20–10). Body length 191–213, body width 179–194. Length and mutual distance (in parentheses) of opisthosomal and coxal setae: c_1 45–50 (63–65), c_2 44–48 (145–150), *d* 49–54 (102–106), *e* 47–55 (158–165), *f* 28–36 (53–66), h_1 59–67 (40–43), h_2 50–54 (115–132), ps_1 31–35 (20–23), ps_2 14–16 (27–35), ps_3 32–36 (83–89), *1a* 25–28 (23–26), *1c* 35–38 (66–71), *2a* 9–11 (31–35), *2c* 20–26 (61–64), *3a* 31–36 (40–42), *3b* 10–12 (56–59), *3c* 10–11 (94–97), *4a* 9–10 (36–40), *4b* 24–27 (50–55), *4c* 27–32 (90–93). Length of legs (including some segments and some setae of leg IV): leg I 60–65, leg II 85–96, leg III 107–117, leg IV

153–168 (tarsus 51–55, pretarsus 15–18, Fe-*d* 44–47, Fe-*v*′ 26–29, Ti-*d* 46–50, Ti-*l*′ 47–52, Ta-*tc*′ 106–119).

Non-phoretic female, male and larva. Unknown.

Host. All the specimens examined, 93 phoretic females in total, were collected from the carabid beetles, *Stenolophus* (*Egadroma*) *difficilis* (HOPE), *S.* (*Egadroma*) *quinquepustulatus* (WIEDEMANN), *S.* (*Stenolophus*) *propinquus* MORAWITZ and *S.* (*Stenolophus*) *iridicolor* REDTENBACHER, all belonging to the type genus of the subtribe Stenolophina of the tribe Harpalini. They were found invariably attached to the intersegmental membrane between pro- and mesothorax of the host insects. The largest number of mites per host was 12 (on *S. difficilis*).

Type material. Holotype ♀: Tajima-ga-hara by Riv. Arakawa, Urawa-shi, Saitama Pref., Japan, ex *S. difficilis*, 1–IX–1971, K. KUROSA leg. Paratypes: 9♀♀, same data as the holotype; 2♀♀, same data as the holotype but ex *S. propinquus*; 1♀, Riv. Tonegawa by Toride-shi, Ibaraki Pref., ex *S. difficilis*, 2–IX–1971, K. KUROSA leg.; 11♀♀, same data as the preceding but 17–IX–1972; 1♀, same data as the preceding but ex *S. iridicolor*; 1♀, Maesato, Ishigaki-jima Is., Okinawa Pref., ex *S. quinquepustulatus*, 8–IX–1975, T. TAKAHASHI leg.

In addition to 66 non-type specimens with the same data as the type series, the following was examined: 1♀, same data as the holotype but ex *S. iridicolor*.

Type depository. The holotype is deposited in the collection of the National

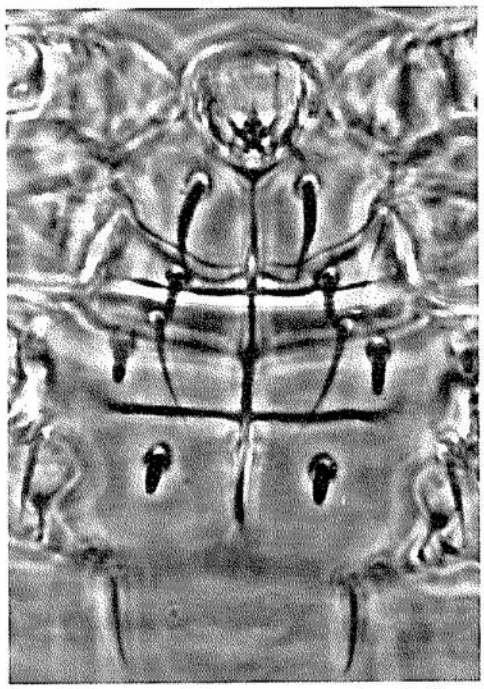


Fig. 6. Photomicrograph of *Archidispus undulatus* sp. nov., phoretic female; gnathosoma, coxisternal plates and a part of opisthosomal venter. Slightly modified from KUROSA, 1977.

Science Museum (Nat. Hist.), Tokyo (NSMT), Japan. Several paratypes are distributed to the following museums or institutes: Institut für Zoologie, Universität Graz, Graz, Austria; Institute royal des Sciences naturelles de Belgique, Brussels, Belgium; Canadian National Collection, Ottawa, Canada; Zoologisches Museum der Universität Hamburg, Hamburg, Germany; National Museum of Natural History, Budapest, Hungary; Nikita Botanical Gardens, Yalta, Ukraine; National Museum of Natural History, Washington, D. C., USA. The remaining paratypes are now retained in my collection, but will be deposited in NSMT later.

Distribution. Japan (Honshu and Ryukyus).

Etymology. The specific name of the new species refers to the remarkable undulation of the accessory thickening of secondary transverse apodeme.

Remarks. The phoretic female of this species is readily distinguished from those of the known congeners by the following features: 1) accessory thickening of apodeme 2 just behind it and, sometimes also, apodeme 2 itself are markedly undulate, 2) coxal setae *2a*, *3b*, *3c* and *4a* are exceedingly modified into a short spindle-shape. Among the known members of the genus, *Archidispus pterostichi* RACK, 1973, from the Netherlands, most closely resembles the present new species, especially in the arrangement and relative lengths of opisthosomal dorsal setae, and the shape of coxal setae *1a*, *3b* and *4a*. However, it is quite different in the complete absence of secondary transverse apodeme, the position and/or shape of coxal setae *1a*, *2a*, *3a*, *3b* and *3c*, and so forth.

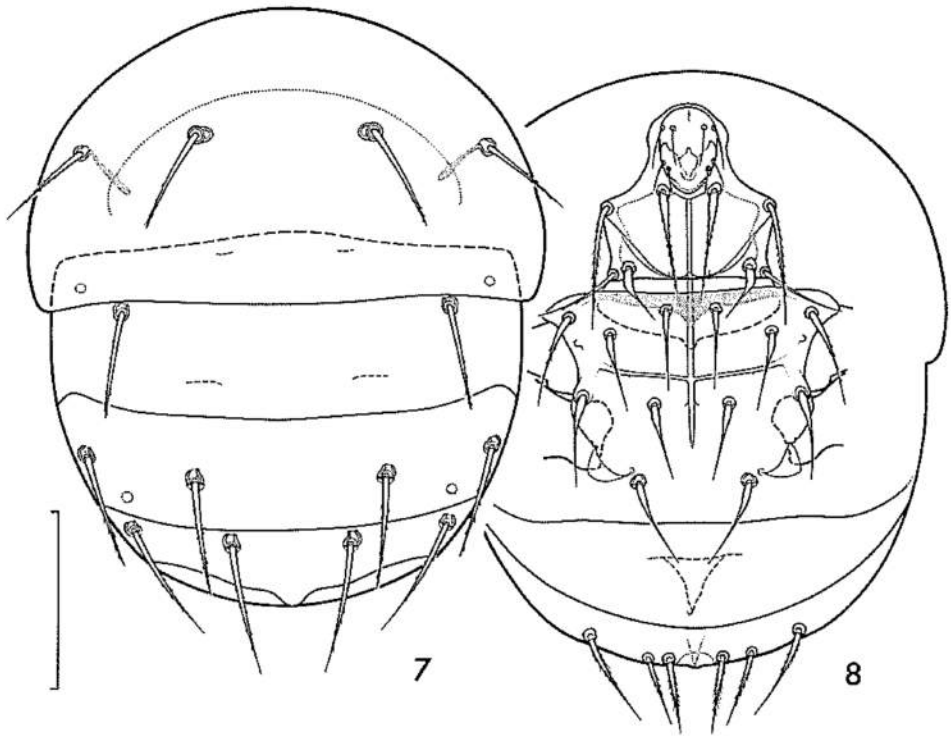
Archidispus masatakai KUROSA, sp. nov.

(Figs. 4–5, 7–8)

Phoretic female. Cuticle rather well sclerotized. Body length (length of idiosoma) 152–172, body width (width of opisthosomal plate C) 134–154; mutual distance of anterior coxal condyles III 61–69 (mean 65.4±2.48; n=20).

Dorsum (Fig. 7). Free margin of plate C wide, with radial striations clearly visible. Dorsal setae of opisthosoma generally rather short and attenuate, not very different in length from each other, weakly barbed; marginal thickening of basal pore for c_1 with an indistinct, irregularly semicircular, accessory sclerite mesally; c_2 located nearly on a level with, or somewhat posterior to c_1; marginal thickening of basal pore for c_2 with a distinct, fairly long (14–16), posteromesal protrusion; *d* considerably lateral in position; ratio of mutual distance *d*–*d*/*f*–*f* 1.72–1.87; h_1 and h_2 fine distally; length ratio of h_1 to *f* 1.04–1.15. The order in length of opisthosomal dorsal setae: $h_1 \geqq h_2 \geqq e \equiv f \geqq d \geqq c_1 \geqq c_2$. Two pairs of cupules, *ia* and *ih*, present, both barely visible.

Venter (Fig. 8). Gnathosomal capsule medium in size. Anterior and posterior coxisternal plates relatively narrow for body width. Apodemes well developed; apodemes 2 usually conjointly forming semicircular arch, with some minute, forwardly directed projections on their anterior side (not shown in Fig. 8); secondary transverse apodeme nearly straight and horizontal, touching apodemes 2 medially;



Figs. 7–8. *Archidispus masatakai* sp. nov., phoretic female. —— 7, Dorsal aspect; 8, ventral aspect. Scale: 50 μm.

apodemes 3 well-marked; apodemes 4 slightly proclinate, more or less weakened laterally, merging into thickenings by coxal foramina III. Posterior genital sclerite triangular, usually somewhat narrower than long. Coxal setae generally medium in length, very fine in distal portion; *1a*, *1c*, *2c* and *3c* more or less barbed; other setae seemingly glabrous; *1a* inserted on a level with posteriormost point of camerostome and close to apodeme 1, distinctly thickened basally, rapidly attenuating distad, the apex extending well beyond secondary transverse apodeme; *2a* close by, and (usually) slightly anterior to *2c*, short, distinctly thickened and strongly incurved in proximal half, attenuated in distal half, the transition from thick to thin portions abrupt; *3a*, *3b*, *3c*, *4a*, *4b* and *4c* also thickened in basal portion, attenuated in distal half or thereabout, the transition from thick to thin portions not abrupt, the thickened portion usually weakly incurved except for *3a* and *4a*; *3c*, *4b* and *4c* a little longer than *3a*, *3b* and *4a*; *3a* located comparatively close to midline; *3b* some distance posterior to *3a*; ratio of mutual distance *3b–3b/3a–3a* 2.93–3.16; *4a* some distance posterior to apodeme 4. Caudal setae rather short, with distinct barbs; ps_1 located some distance apart from, and subequal in length to ps_2; ps_3 slightly longer than ps_1.

Legs. Generally short and thick. Leg I: tibiotarsus a little wider than genu;

pinnaculum short (8–9 in length); solenidion φ_1 strongly clavate, φ_2 elongate rod-like, ω_1 stout, finger-shaped, ω_2 small, rod-like; the order in length of solenidia in some examples: ω_1 (10.5–11.5)>φ_2 (9.0–9.5)≧φ_1 (8.0–9.0)>ω_2 (ca. 6.0). Legs II and III: tibial solenidion φ 7–8 in length; tarsal solenidion ω stout, 9–11 in length; tibial seta *d* and tarsal seta *tc´* (Fig. 5) forked, one of two branches short and spine-like, the other attenuate and much elongated, length from setal base to apex of longer branch 15–21; two claws medium in size, subequal; empodium fairly large, irregularly trapezoidal with short stalk. Leg IV (Fig. 4): tarsus weakly elongated; proximal portion of tarsus not strongly widened from base to insertions of setae *pv´* and *tc´*; pretarsus relatively short; length ratio of pretarsus to tarsus 0.20–0.27; femoral seta *d* short, nearly as long as, or slightly shorter than femoral *v´*, not reaching base of tarsus; tibial setae *d* inserted some distance distad of, and subequal in length to tibial *l´*, much longer than femoral *d*, both femoral and tibial *d* tapering distad to very fine apex like most other leg IV setae; solenidion φ ca. 4–5 in length, usually difficult to observe; tarsal seta *pl´´* inserted at a distance from *tc´*, small (length 2.5–3.0), spine-like; *u´* medium in length (9–12); two claws moderate in size, subequal to each other; empodium relatively large, stalked.

RCC3 indices (n=20–10). Body length 234–272, body width 216–236. Length and mutual distance (in parentheses) of opisthosomal and coxal setae: c_1 44–47 (76–81), c_2 38–44 (181–186), *d* 46–48 (137–142), *e* 47–53 (164–178), *f* 49–53 (73–84), h_1 53–59 (46–53), h_2 51–56 (124–139), ps_1 30–34 (23–25), ps_2 28–34 (42–45), ps_3 39–42 (83–92), *1a* 44–47 (21–23), *1c* 52–59 (70–73), *2a* 25–29 (52–54), *2c* 31–39 (66–68), *3a* 34–37 (21–23), *3b* 31–37 (66–70), *3c* 38–42 (104–109), *4a* 33–36 (31–34), *4b* 38–42 (45–48), *4c* 39–44 (90–96). Length of legs (including some segments and some setae of leg IV): leg I 62–71, leg II 97–110, leg III 105–119, leg IV 137–149 (tarsus 46–53, pretarsus 10–14, Fe-*d* 25–28, Fe-*v´* 25–30, Ti-*d* 41–45, Ti-*l´* 39–46, Ta-*tc´* 84–92).

Non-phoretic female, male and larva. Unknown.

Host. All the specimens examined, 127 phoretic females in total, were collected from the carabid beetles, *Anoplogenius cyanescens* (HOPE), *Stenolophus* (*Egadroma*) *difficilis* (HOPE) and *Acupalpus* (*Palcuapus*) *inornatus* BATES, all belonging to the subtribe Stenolophina of the tribe Harpalini. They were found attached to the cervical membrane between head and prothorax of the host insects with the exception of one example from the intersegmental membrane between pro- and mesothorax of *S. difficilis*. The largest number of mites per host was 40 (on *A. cyanescens*).

Type material. Holotype ♀: Shimo-Sasame by Riv. Arakawa, Toda-shi, Saitama Pref., Japan, ex *Acupalpus inornatus*, 29–IX–1967, K. KUROSA leg. Paratypes: 3♀♀, same data as the holotype; 3♀♀, Tajima-ga-hara by Riv. Arakawa, Urawa-shi, Saitama Pref., ex *S. difficilis* , 1–IX–1971, K. KUROSA leg.; 12♀♀, Misono, Itabashi-ku, Tokyo, ex *A. inornatus*, 5–IX–1967, K. KUROSA leg.; 21♀♀, Kita-Kogane, Matsudo-shi, Chiba Pref., ex *A. cyanescens*, 1–XII–1975, T. OKUMURA leg.; 1♀, Lake Ogura-ike, Uji-shi, Kyoto Pref., ex *A. inornatus*, 19–III–1940, Y. YANO leg.

In addition to about 80 non-type specimens with the same data as the type series, the followings were examined: 3♀♀, Narimasu, Itabashi-ku, Tokyo, ex *A. inornatus*,

7–IX–1958, K. KUROSA leg.

Type depository. The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo (NSMT), Japan. Depositories of the paratypes are the same as those of the preceding species.

Distribution. Japan (Honshu).

Etymology. This species is named in honor of Prof. Masataka SATÔ of Nagoya Women's University, who is an old friend of mine and eminent coleopterologist of our country.

Remarks. The phoretic female of the new species is readily distinguished from those of all the known congeners by having the caudal setae ps_1 and ps_2 located at some distance from each other, and that tibial seta *d* and tarsal seta *tc´* on legs II and III are characteristically forked. Among the known members of the genus, *Archidispus bembidii* (KARAFIAT, 1959) bears closest resemblance to the present new species, but it is widely different from the latter in the following respects besides above-mentioned features: 1) coxal setae all simple, not especially thickened; 2) secondary transverse apodeme poorly developed or entirely lacking. These two species cannot be so closely related.

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Origins of Two *Apotomopterus* Ground Beetles, *A. sauteri* and *A. masuzoi* (Coleoptera, Carabidae) from Taiwan as Deduced from Mitochondrial ND5 Gene Sequences[1)]

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Abstract Two *Apotomopterus* species, *A. sauteri* and *A. masuzoi*, have been known from Is. Taiwan. *Apotomopterus masuzoi* is endemic to Taiwan, inhabiting only the high mountainous areas. On the other hand, *A. sauteri* is widely distributed not only in Taiwan, but also in the Chinese Continent. A phylogenetic tree using mitochondrial ND5 gene sequence shows that *A. masuzoi* emerged ca. 35 million years ago (MYA) with the other three *Apotomopterus* lineages, to one of which *A. sauteri* belongs. The results imply that *A. masuzoi* as well as *A. sauteri* originated in the ancient Chinese Continent, and not in Taiwan. Phylogeny of the division Spinulati (*Apotomopterus*) based on mitochondrial ND5 gene sequences is also discussed.

Introduction

Two *Apotomopterus* ground beetles (division Spinulati) have been known from Is. Taiwan. One is *A. sauteri* which is widely distributed throughout Is. Taiwan as well as the Chinese Continent. The other one is *A. masuzoi* which is endemic to Taiwan. The latter species, which gives the *Leptocarabus*-like appearance at the first

1) The nucleotide sequences data reported in this paper will appear in the DDBJ, EMBL, and GenBank nucleotide sequence databases with the accession numbers shown in Table 1.

glance, has been found only in the high mountains of central Taiwan. Because of several morphological characters distinct from other *Apotomopterus* species, the subgenus *Taiwanocarabus* was established to accept *A. masuzoi* (IMURA & SATÔ, 1989).

The origin of *A. masuzoi* has been merely under speculation. One possibility would be that *A. masuzoi* branched off from *A. sauteri* within Is. Taiwan with accompanied morphological transformation (see IMURA, 2002). Another possibility would be that *A. masuzoi* constitutes a distinct lineage, whose origin is independent of that of *A. sauteri*. In the present paper, the mitochondrial ND5 gene has been sequenced and incorporated into a phylogenetic tree of the known *Apotomopterus* species (KIM *et al.*, 1999).

Materials and Methods

The specimens of *Apotomopterus masuzoi* were kindly collected by Professor Masataka SATÔ in the course of his trip to Taiwan in July 2002 on Mt. Anma Shan 2,230 m alt., Taichung Hsien, central Taiwan (the type locality of this species). The species newly added in this paper to the previous tree by KIM *et al.* (1999) were shown in Table 1. It should be noted that this species was first discovered by Prof. SATÔ and some other entomologists, and Prof. SATÔ described it as a new species as belonging to a new subgenus under the co-authorship with IMURA in 1989. The ND5 gene sequence (1,069 bp) analysis and construction of a phylogenetic tree by the NJ-method with bootstrap test were the same as described previously (Su *et al.*, 1998). The dating was done assuming that a 0.01 D (Kimura's 2-parameter distance) unit corresponds to 3.6 million years for the carabid ND5 gene according to Su *et al.* (1998, 2001).

Table 1. Localities of the *Apotomopterus* specimens analyzed in this study.

Species name	Specimen No.	Locality	DDBJ/EMBL/GenBank Accession No.
A. pretenes	28	China, Hubei, Hefeng, Taiping, Fenshuiling, 1,320m	AB092786
A. pretenes	29, 30	China, Hubei, Xianfeng, Baiyan, 900m	AB092786
A. pretenes	31	China, Hubei, Xianfeng, Huangjindong, Dashaba, Gaodongzi, 700m	AB092786
A. pretenes	32	China, Hubei, Lichuan, Maoba, Bajiao, 730–800m	AB092786
A. pretenes	33	China, Hubei, Lichuan, Yuanbao, Hongchun, 1,350m	AB092786
A. infirmior	34	China, Hubei, Hefeng, Taiping, Fenshuiling, 1,320m	AB092787
A. infirmior	35	China, Hunan, Longshan, Da-an, Liangshuijing, 780–800m	AB092788
A. masuzoi	36	Taiwan, Mt. Anma-shan	AB092789
A. masuzoi	37	Taiwan, Mt. Anma-shan	AB092790
A. ascendens	38	China, Sichuan, Mt. Xilingxue-shan	AB092791

The specimen number follows that reported previously (KIM *et al.*, 1999).

Results and Discussion

Origins of *A. sauteri* and *A. masuzoi*

In the previous paper, KIM *et al.* (1999) have shown that the genus *Apotomopterus* is monophyletic and is composed of three lineages that radiated about 35 MYA (million years ago). One of the Taiwanese species, *A. sauteri*, belongs to the first lineage defined by KIM *et al.* (1999), forming a clear sublineage separated from the other sublineages of *A. sauteri* from mainland China (Fig. 1). The phylogenetic position as examined with ND5 gene sequence has shown that *A. masuzoi* is phylogenetically quite remote from *A. sauteri*. It constitutes an independent (the 4th) lineage different from the other three *Apotomopterus* lineages, suggesting that the origin of *A. masuzoi* is old (Fig. 1; see below).

The geohistorical studies suggest that Is. Taiwan split from the Chinese Continent 30–20 MYA. The phylogenetic analysis shows that *A. sauteri* radiated into at least three populations (sublineages) in the Chinese Continent about 22 MYA (KIM *et al.*, 1999). One of them having inhabited the ancient Taiwan region was isolated upon split of Taiwan from the Chinese Continent 30–20 MYA. On the other hand, *A. masuzoi* emerged much more anciently than *A. sauteri*. The origin of *A. masuzoi* can be traced back to the time of the radiation of the other three lineages of *Apotomopterus* in the Chinese Continent about 35 MYA (Fig. 1). Because *A. masuzoi* is strictly endemic to the high mountains of Is. Taiwan, the proto-*A. masuzoi* would have inhabited the ancient Taiwan region in the Chinese Continent and the present-day *A. masuzoi* would be the relict of it, and it was isolated in Is. Taiwan upon separation from mainland China.

From the discussion above, *A. masuzoi* is biogeographically an important species that was established in the ancient Chinese Continent, and not in Is. Taiwan.

Phylogeny of the Division Spinulati (*Apotomopterus*)

In our previous paper, KIM *et al.* (1999) presented a phylogenetic tree based on the ND5 gene sequences from 19 taxa of the genus *Apotomopterus*. The main conclusions from the results are that the taxa studied are divided into three lineages and their distribution ranges are more or less geographically linked but overlap considerably. One more lineage, to which *A. masuzoi* belongs, has been added as above.

Three more additional species of *Apotomopterus* collected by Y. IMURA and T. KISHIMOTO in June 2000 in the western edge of Hubei, China, and one by M. OKAMOTO and Y. NAGAHATA in June 2002 in central Sichuan, China have recently become available for sequencing the ND5 gene. They are composed of *A. infirmior* (two specimens), *A. protenes* (six specimens), and *A. ascendens* (one specimen). The localities of these specimens are shown in Table 1. The phylogenetic analyses using ND5 gene sequences show that these three species belong to different lineages, respectively (Fig. 1). *Apotomopterus infirmior* belongs to the lineage 3 of KIM *et al.*

(1999), together with *A. laoshanicus*, *A. cyanipennis*, *A. iris*, *A. arrowi*, *A. clermontianus*, and *A. maolanensis*. The sequence difference between the two *A. infirmior* specimens is only 0.28%, and that between *A. infirmior* and *A. laoshanicus* is 0.74%, suggesting that diversification of these two species is a very recent event.

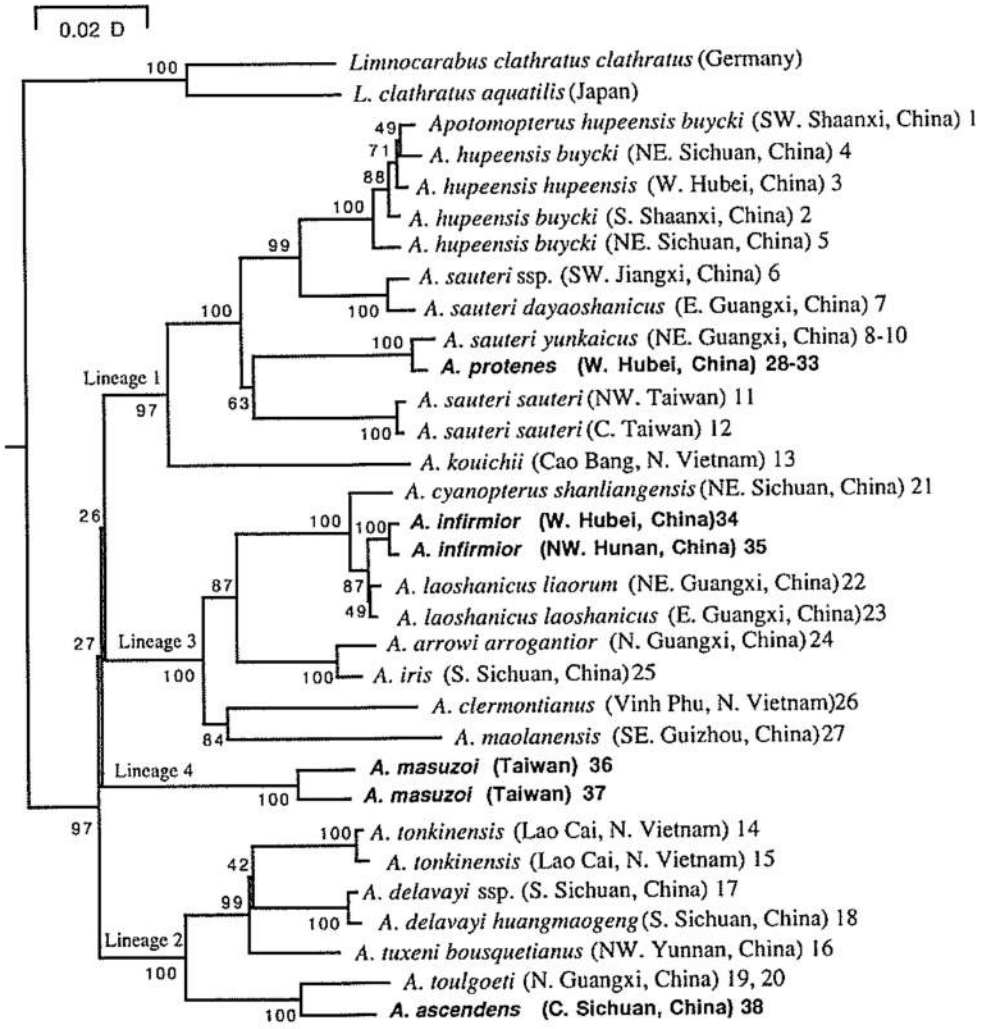

Fig. 1. Phylogenetic NJ-tree of the mitochondrial ND5 gene of the division Spinulati (*Apotomopterus*). This tree is based on that presented by Kim *et al.* (1999), with additions of *A. masuzoi* and some other species (see Table 1), the sequences of which have not yet been reported (see Appendix). They are *A. protenes*, *A. infirmior*, and *A. ascendens*. The number in each branching point indicates the bootstrap percentage. The lineage designation and specimen number are according to Kim *et al.* (1999), and the specimens (indicated in bold type) analyzed in this study are numbered from 28 to 38, which correspond to those in Table 1. The tree was outgroup-rooted using the ND5 gene of *Limnocarabus clathratus* and *L. maacki aquatilis* (division Lepidospinulati).

Morphologically, they can be considered as distinct species in spite of the small differences in the ND5 sequences. Incidentally, the sequence difference between the lineages that have been examined is about 10%, corresponding to the distance about 35 MYA as described above.

Apotomopterus protenes belongs to the lineage 1 of KIM *et al.* (1999) together with *A. sauteri, A. hupeensis* and *A. kouichii. Apotomopterus sauteri* was radiated into three sublineages about 22 MYA, from two of which *A. protenes* and *A. hupeensis* branched off, respectively (Fig. 1). The sequences of the six *A. protenes* specimens are identical, and reveal only 0.65% difference from those of *A. sauteri yunkaicus* from Guangxi. Although we conventionally regard them as "two species" here, IMURA (2000) already pointed out that these two "species" are very similar in morphology including the shape of the male genital organ. The result by morphology is consistent to that of molecular phylogeny, and therefore they may be considered to be conspecific. A recent tendency of the taxonomy of *Apotomopterus* is to split the local forms into many species or subspecies according to a small morphological difference. They, at least some of them, should be reconsidered in the light of molecular phylogeny as well as more sophisticated morphology.

Apotomopterus ascendens belongs to the lineage 2 together with other four species, *A. tonkinensis, A. delavayi, A. tuxeni* and *A. toulgoeti,* and mostly related to *A. toulgoeti* with 2.87% sequence difference.

Although the distribution ranges of the three lineages (excluding the *A. masuzoi* lineage) overlap considerably, their main habitats may be roughly divided as follows. The species belonging to the lineage 1 are distributed in central through southeastern China including North Vietnam and Taiwan. The members of the lineage 2 seem to be the inhabitants of southwestern China and Vietnam. The distribution range of the lineage 3 species is mid to southern China and North Vietnam. As already noted (KIM *et al.*, 1999), *A. kouichii* apparently belongs to the lineage 1 with a deep branching point from the other members of this lineage, inhabiting North Vietnam that is far from the known distribution range of the lineage 1 species. This suggests that *A. kouichii* separated from the other species in an early stage of the *Apotomopterus* diversification, followed by migration to the present habitat.

Acknowledgements

We are much grateful to Professors Masataka SATÔ and Nobuo OHBAYASHI, who generously collected the specimens of *Apotomopterus masuzoi* upon our request. Special thanks are also due to Dr. Junji ITOIGAWA, Professor Emer., Nagoya University for the geohistory of Taiwan and the Chinese Continent, and Dr. Toshio KISHIMOTO and Mr. Yoshiyuki NAGAHATA for their expert collaboration during their trips to China. This work was supported in part by a Grant-in-Aid for Scientific Research (B) (No. 13575013) from the Japan Society for the Promotion of Science.

It is our great pleasure to dedicate this paper to Professor Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

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Records of Carabina (Coleoptera, Carabidae) from China, with Description of a New Subspecies and Notes on *Apotomopterus maolanensis*

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Abstract Four species of the subtribe Carabina are recorded from Hubei, Chongqing Shi and Guizhou of China. A new subspecies of *Apotomopterus longeantennatus* is described under the name *A. l. satoi*. Notes on *Apotomopterus maolanensis* are given on some additionally obtained specimens including the female.

Late in the spring of 2002, the two Japanese entomologists, Shun-Ichi UÉNO and Toshio KISHIMOTO made a collecting trip to China. Their main purpose was to explore limestone caves to find eyeless trechine beetles, but they also collected a short series of the species belonging to the subtribe Carabina from Shennongjia of West Hubei, Fengjie Xian of Chongqing Shi and Libo Xian of Southeast Guizhou. In this paper, I am going to record all the four species obtained through the expedition. Of these, *Apotomopterus longeantennatus* collected from Fengjie Xian is readily discriminated from all the hitherto known races of the same species, and is described as a new subspecies under the name dedicated to Professor Masataka SATÔ to commemorate his retirement from Nagoya Women's University.

For the management of the supraspecific categories in the subtribe Carabina, I will follow the classificatory system proposed by myself (IMURA, 2002).

I am grateful to Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo) for submitting the specimens to me for study and revising the manuscript of this paper. Thanks are also due to Dr. Toshio KISHIMOTO (Japan Wildlife Research Center, Tokyo) for his kind cooperation.

1. *Apotomopterus longeantennatus satoi* IMURA, subsp. nov.

(Figs. 1, 2, 5)

Length: 23.4–26.0 mm (including mandibles). Entirely black and not strongly shiny. Most closely allied to subsp. *yongshan* KLEINFELD described from Yongshan on the Wulian Shan Mountains stretching between South Sichuan and Northwest Yunnan, but differs from that race in having longer antennae, slenderer pronotum with the widest part situated a little more posteriorly, less strongly rugoso-scabrous pronotal disc, more effaced shoulders, and a little less frequently interrupted primary intervals of the elytra. From subsp. *longetarsatus* CAVAZZUTI, known so far only from a

single female collected from Lou Shan Guan of North Guizhou, the new race is distinguished by smaller size, a little slenderer pronotum with the hind angles a little less strongly protruded posteriad, more effaced shoulders, smaller primary foveoles not invading the adjacent tertiary intervals, and shallower preapical emargination of the female elytra. Readily discriminated from the remaining five subspecies (nominotypical *longeantennatus* HAUSER, *acosmos* CAVAZZUTI, *acorep* LASSALLE et PRUNIER, *antaiensis* DEUVE, and *leigongensis* DEUVE), all bearing the heterodynamic elytral sculpture, by having the homodynamically sculptured elytra as well as differently shaped pronotum, aedeagal apex and spinula.

Type series. Holotype: ♂, Shiruguan [石乳关], 1,750m in altitude, Xinglong Zhen [兴隆镇] of Fengjie Xian [奉节县], in Chongqing Shi [重庆市], Southwest China, 15～16–V–2002, T. KISHIMOTO leg., in coll. Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 1♂, 2♀♀, same data as for the holotype; 3♀♀, Yinchang Cun [银厂村], 1,690 m in altitude, Longqiao Xiang [龙桥乡], Xinglong Zhen, of Fengjie Xian, in Chongqing Shi, Southwest China, 8～15–V–2002, T. KISHIMOTO leg., in coll. Y. IMURA.

2. *Apotomopterus maolanensis* (IMURA, ZHOU et SU, 1999)

(Fig. 3)

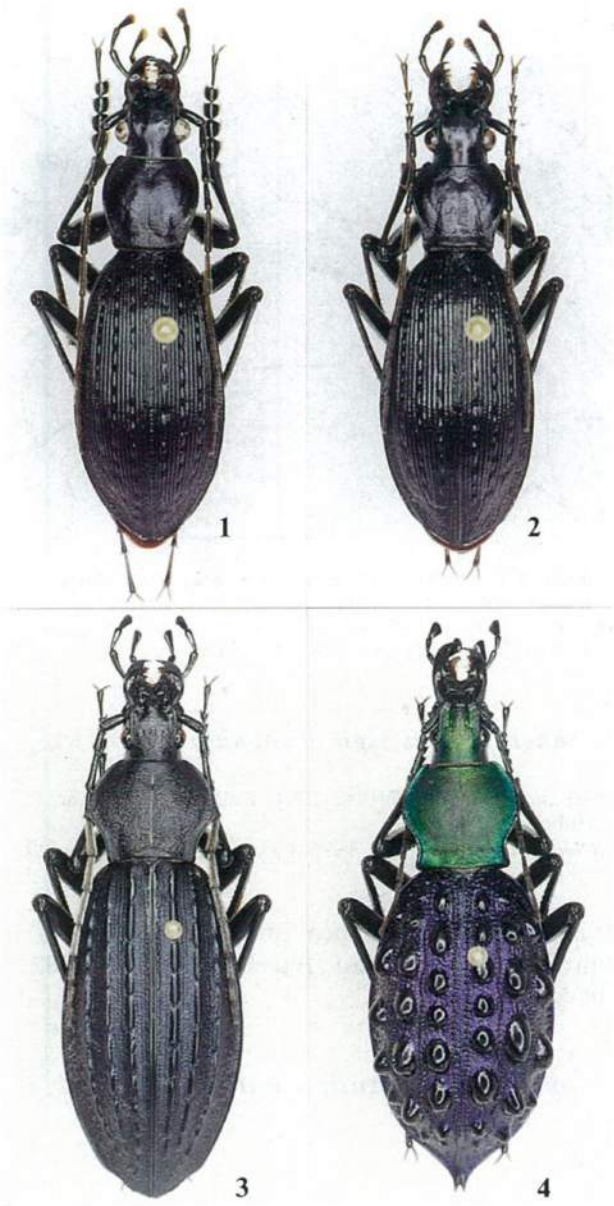
Carabus (Apotomopterus) maolanensis IMURA, ZHOU et SU, 1999 (published on November 13), Elytra, Tokyo, **27**, p. 652, figs. 1 & 5; type locality: Yaogu in the Maolan Nature Reserve of Libo Xian, southeastern Guizhou, South China.

Carabus (Apotomopterus) liboicus DEUVE et TIAN, 1999 (published on November 22), Rev. fr. Ent., (N.S.), **21**, p. 132, figs. 1 & 4; type locality: Chine, Guizhou méridional, Libo Xian, Réserve naturelle nationale de Maolan, 500 mètres.

Additional description of male. Length (including mandibles): 40.0–42.2 mm. Endophallic structure, which was not mentioned in the original description, is very closely allied to that of *A. breuningianus* LE MOULT as expected. In *A. maolanensis*, however, the basal lateral lobes are a little less strongly inflated on both sides and the prepraeputial lobes are a little shorter and less strongly pointed at the tips.

Description of female. Length (including mandibles): 43.6–44.7 mm. External features closely resemble those of *A. breuningianus* as in the male, and both the species are hardly distinguishable by the external morphology alone, though the preapical emargination of the elytra in *A. maolanensis* is a little more remarkable than in *A. breuningianus*.

Specimens examined. 1♂, Dongdao [董到], Yaogu Cun [尧古村], of Yongkang Xiang [永康乡], in Libo Xian [荔波县], South Guizhou, 27～28–V–2002, T. KISHIMOTO leg.; 1♂, 1♀, Liangzaixin [梁在心], 740 m in altitude [this is the exact type locality of both *C. maolanensis* and *C. liboicus*], Weng'ang Xiang [翁昂乡] in Libo Xian, South Guizhou, 20–V–2002, S. UÉNO leg.; 1♂, 2♀♀, same locality, 20～27–V–2002, S. UÉNO & T. KISHIMOTO leg., all preserved in coll. Y. IMURA.



Figs. 1–4. —— 1–2, *Apotomopterus longeantennatus satoi* subsp. nov. (1, ♂, holotype; 2, ♀, paratype; from Shiruguan in Fengjie Xian of Chongqing Shi); 3, *A. maolanensis* (♀, from Liangzaixin in Libo Xian of Southeast Guizhou); 4, *Coptolabrus pustulifer mirificus* (♀, from Shiruguan in Fengjie Xian of Chongqing Shi).

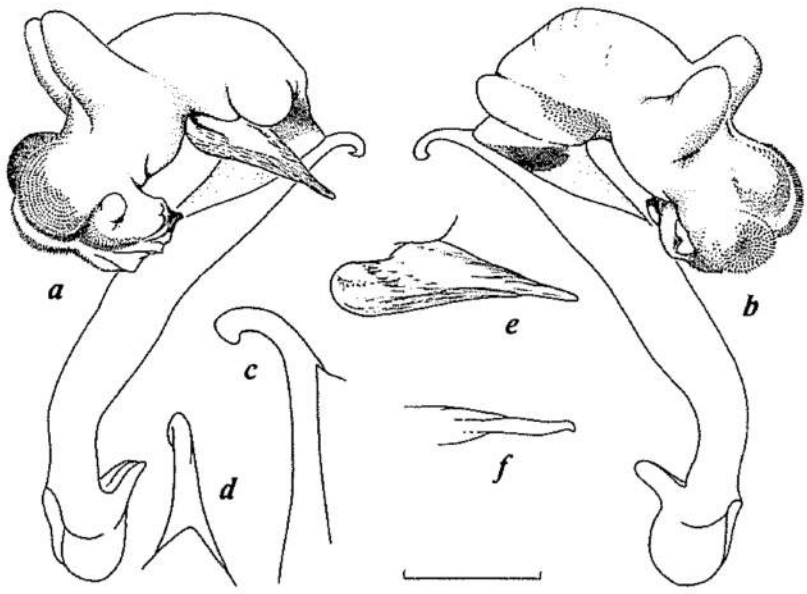


Fig. 5. Male genital organ of *Apotomopterus longeantennatus satoi* subsp. nov. —— a, Aedeagus with fully everted endophallus in left lateral view; b, ditto in right lateral view; c, apical part of aedeagus in right lateral view; d, ditto in dorsal view; e, spinula in dorsal view; f, ditto in lateral view. Scale: 2 mm for a & b, 1.5 mm for e & f, 1 mm for c & d.

3. ***Archaeocarabus vigil ohshimaorum*** (DEUVE, 1991)

Carabus (*Ohomopterus*) *ohshimaorum*: DEUVE, 1991, Bull. Soc. Sci. Nat, (69), p. 3, fig. 7; type locality: Chine, Hubei, Shennongjia.

Carabus (s. str.) *vigil ohshimaorum*: IMURA, 1996, Gekkan-Mushi, Tokyo, (299), p. 10, fig. 7 (pl. 1 in p. 2) & 19 (p. 11).

Specimen examined. 1♀, Guanmen Shan [关门山], 1,270 m in altitude, in Shennongjia Linqu [神农架林区], West Hubei, 11～13-V-2002, S. UÉNO & T. KISHIMOTO leg., in coll. Y. IMURA.

4. ***Coptolabrus pustulifer mirificus*** KRAATZ, 1894

(Fig. 4)

Coptolabrus pustulifer var. *mirificus*: KRAATZ, 1894, Dt. ent. Z., **1894**, p. 140; type locality: Chang Yang near Ichang (=Yichang, Southwest Hubei).

Specimens examined. 2♀♀ (39.8–43.1 mm in length including mandibles), Shiruguan, 1,750 m in altitude, of Xinglong Zhen in Fengjie Xian, Chongqing Shi,

Southwest China, 15～16–V–2002, T. KISHIMOTO leg., in coll. Y. IMURA.

Notes. The two specimens examined well agree in the external morphology with subsp. *mirificus* described by KRAATZ (1894) based on a single specimen recorded by BATES (1889) from "the richly-wooded hilly district of Chang Yang, at elevations of from 4,000 to 6,000 feet above the sea-level" near Ichang (=Yichang) of Southwest Hubei, though the dorsal colour is rather unusual for the species; the head and pronotum are metallic green or greenish coppery and the elytra are purple or dark purplish green. At Shiruguan, this remarkable *Coptolabrus* is sympatric with *Apotomopterus longeantennatus satoi* nov.

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Two New Cave Trechines of the Group of *Ishikawatrechus ishikawai* (Coleoptera, Trechinae)

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Abstract Two new cave trechines of the group of *Ishikawatrechus ishikawai* are described from the central part of the Island of Shikoku under the names *I. satoi* and *I. saxatilis*. They are closely related to each other and are related to *I. uozumii* (S. UÉNO), but the three species are strikingly different in the configuration of the male genitalia. The localities of the new species mark the northern periphery of the distributional range of the *ishikawai* group.

This paper is dedicated to Masataka SATÔ, a good friend of mine for well more than forty years, on the occasion of his retirement from Nagoya Women's University, at which he has been a professor of biology.

SATÔ is an eminent coleopterologist specializing in aquatic groups and has immensely contributed to the progress of the Japanese coleopterology. He is deeply interested in living things and has a very wide knowledge of wildlife, above all beetles. We have made collecting trips together to many parts of Japan and also to many Asian countries, including the Russian Far East, Taiwan, mainland China, the Philippines, Vietnam, Laos, Thailand and the Himalayas. He has always been a good partner on those trips, and helped my investigations in various ways. In the last decade or two, he served as a councilor of entomological societies and as a member of various commissions, mostly of the Ministry of Environment of the Japanese Government. Here again, he proved himself competent for debating on delicate subjects. In short, no one can expect a better partner than SATÔ.

Since SATÔ graduated from Ehime University at Matsuyama in the Island of Shikoku, he is naturally familiar with the nature of that island. I am therefore going to name a remarkable new species of the trechine genus *Ishikawatrechus* in honour of SATÔ, who has had a deep interest in the cave fauna and has investigated many caves by himself. This new species was found in a small limestone cave lying on the right side of the Yoshino-gawa Valley in the central part of the island. It belongs to the *ishikawai* group hitherto known in central Shikoku from only two species, *I. ishikawai* (S. UÉNO) (1951, p. 86, pl. 4, fig. D, 1957, pp. 195, 206, fig. 23) and *I. uozumii* (S. UÉNO) (1951, p. 87, pl. 4, fig. C, 1957, pp. 195, 204, fig. 22). At this opportunity, I will also describe a close relative of the new species under the name *I. saxatilis*, which was discovered in two neighbouring caves a little more than 5 km distant to the south by west from the type cave of *I. satoi*. *Ishikawatrechus satoi* and *I.*

saxatilis are so unusually rare that no specimens were taken alive. A few specimens each of the two species were caught by baited traps one by one, as will be delineated later. The abbreviations used herein are the same as those explained in previous papers of mine.

Before going further, I wish to express my deep indebtedness to Dr. and Mrs. Kazuo ISHIKAWA and Dr. Shinzaburo SONE, without whose enthusiastic investigations, neither of the two new species has been brought to light.

Ishikawatrechus satoi S. UÉNO, sp. nov.

[Japanese name: Nôji-mekura-chibigomimushi]

(Figs. 1–3)

Length: 4.50–5.05 mm (from apical margin of clypeus to apices of elytra).

Belonging to the *ishikawai* group and related to *I. uozumii* (S. UÉNO) from Shiroiwa-dô Cave, but the genae are convex, at the posterior parts in particular, the elytra are a little narrower and more elongate on an average, with more prominent humeral tubercles and proximally more reduced prehumeral borders, and the pubescence on the sternites is reduced. Strikingly different from *I. uozumii* and all the other known congeners in the peculiarly slender profile of the aedeagus.

Body relatively elongate with relatively narrow prothorax and elytra; surface pubescent though hairs are scanty on head and sternites. Colour reddish brown, shiny; palpi, scape and apical antennomeres, venter of hind body, and legs yellowish brown.

Head fairly large, about as wide as or a little wider than long, widest before the level of posterior pair of supraorbital pores, and much more gradually narrowed anteriad than posteriad; dorsum depressed, frons and supraorbital areas rather feebly convex and glabrous; frontal furrows distinct though not particularly deep, widely divergent in front and behind; vertex with a few hairs at the anterior part; microsculpture distinct, mostly consisting of fine transverse meshes; genae rather strongly convex at the posterior parts and rather densely covered with fairly long hairs; neck very wide, neck constriction distinct at the sides; mandibles falcate and fairly stout; mental tooth porrect and bifid; antennae long but fairly stout, reaching five-ninths from the base of each elytron, segment 2 the shortest, four-sevenths as long as segment 3, which is the longest and about 3.5 times as long as wide, segments 4–10 gradually decreasing in length towards apex, terminal segment about as long as segment 7.

Pronotum elongated subcordate, wider than head, about as wide as long, widest at about four-fifths from base, and more gradually, and almost straightly, narrowed posteriad than anteriad; PW/HW 1.39–1.43 (M 1.40), PW/PL 0.94–1.03 (M 0.99), PW/PA 1.35–1.37 (M 1.36), PW/PB 1.41–1.49 (M 1.44); sides sharply reflexed in anterior third and in basal area but narrowly bordered at middle, strongly arcuate in apical third, either straight or very slightly emarginate at middle, deeply sinuate at about basal sixth to fifth, and then divergent towards hind angles, which are acute and postero-laterally protrudent; posterior pair of marginal setae distant from hind

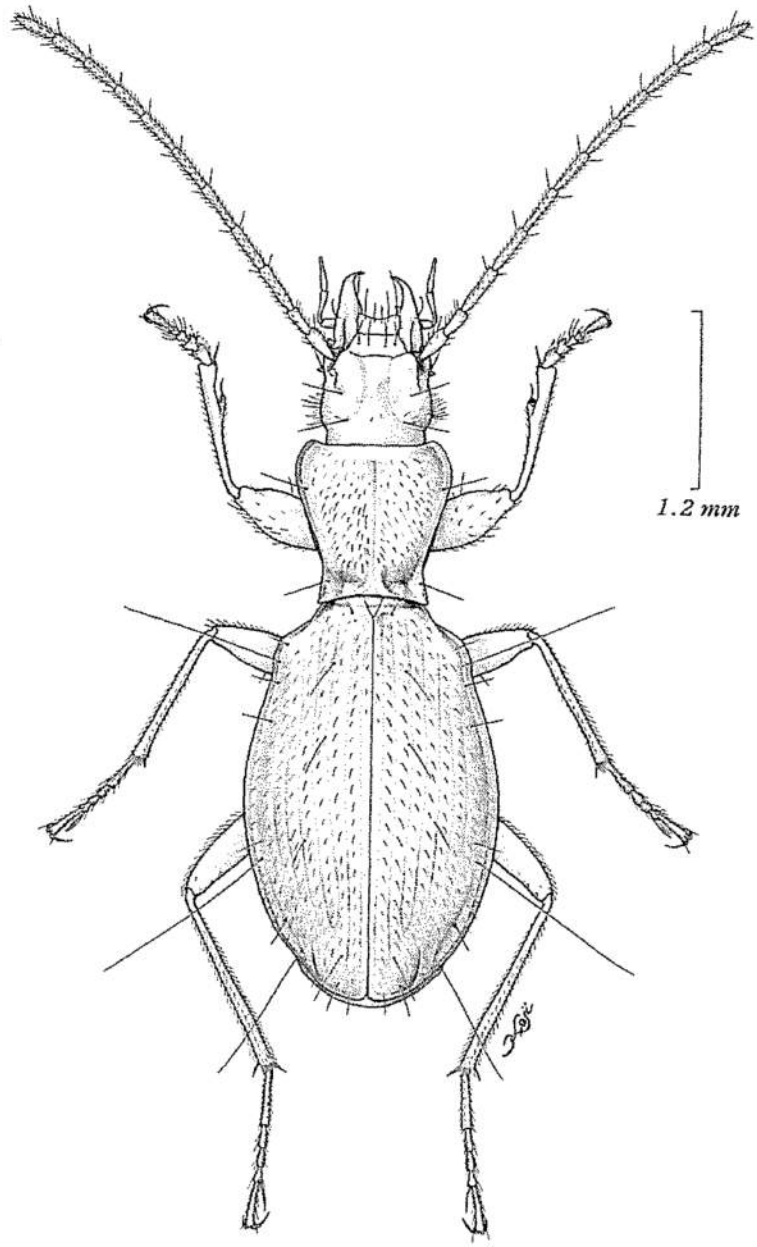


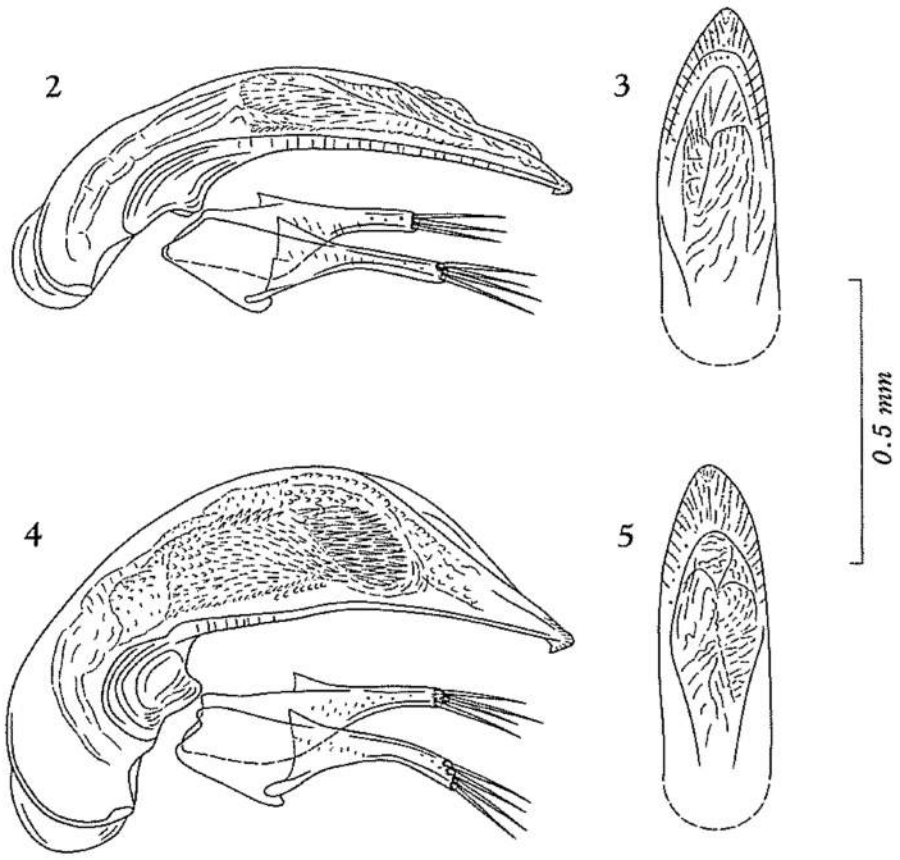
Fig. 1. *Ishikawatrechus satoi* S. UÉNO, sp. nov., ♂, from Nôji-no-ana Cave at Nôji in Tosa-chô.

angles; apex either straight or slightly emarginate, a little wider than base, PB/PA 0.92–0.97 (M 0.95), with front angles obtuse though more or less produced forwards; base nearly straight at middle, posteriorly oblique on each side inside hind angle; dorsum gently convex, rather steep at the antero-lateral parts, rather densely covered with suberect hairs; median line deeply impressed, widened in basal area, and almost reaching base; apical transverse impression vague though indicated by longitudinal wrinkles; basal transverse impression mal-defined, largely contained in basal foveae, which are large, deep, and smooth at the bottom; no postangular carinae; basal area fairly wide at middle but narrowed laterad; microsculpture formed by fine transverse lines, though partially obliterated. Lateral expansion of propleura narrowly visible from above.

Elytra elongated ovate, much wider than prothorax, longer than wide in a similar proportion, widest at about middle, and equally narrowed towards bases and apices; EW/PW 1.60–1.68 (M 1.65), EL/PL 2.58–2.68 (M 2.63), EL/EW 1.55–1.63 (M 1.60); shoulders distinctly tuberculate, prehumeral borders short, not so oblique, inwardly arcuate, and diminishing proximally though almost reaching the base of stria 5; sides moderately bordered throughout, shallowly but distinctly emarginate behind humeral tubercles, moderately arcuate at middle, less so behind, and conjointly rounded or rather subtruncate at apices, each with a slight preapical emargination; dorsum gently convex on the disc though steeply declivous in marginal areas, apical declivity short and steep, basal depression obvious, delimited on each side by a prominent basal carina formed by the basal portion of interval 5; microsculpture consisting of fine transverse lines though partially obliterated; striae superficial though entire, indistinctly crenulate, 1–3 deepened in basal depression, 8 deeply impressed behind the middle set of marginal umbilicate pores; scutellar striole short, apical striole deep, feebly curved anteriad, and directed either to stria 5 or to stria 7; intervals flat, each bearing an irregular longitudinal row of suberect hairs; apical carina obtuse though distinct; stria 3 with two setiferous dorsal pores at about 1/7 and 1/3 from base, respectively; preapical pore located at the apical anastomosis of striae 2 and 3 behind the level of the terminus of apical striole, and evidently more distant from apex than from suture; stria 5 with a single setiferous dorsal pore at about 3/5 from base; marginal umbilicate pores usual for a member of *Ishikawatrechus*.

Ventral surface smooth, sparsely pubescent on prosternum and posterior parts of visible sternites 3–5, the hairs sometimes reduced on sternites; anal sternite bisetose in ♂. Legs fairly slender but not particularly long; protibiae straight and gradually dilated towards apices; tarsi fairly thin, tarsomere 1 about as long as tarsomeres 2–4 combined in both meso- and metatarsi; in ♂, protarsomeres 1 and 2 widely dilated, stoutly produced inwards at apices, and furnished beneath with adhesive appendages.

Male genital organ rather lightly sclerotized, similar in basic conformation to those of the other members of the *ishikawai* group but unique in the slender profile due to flattened aedeagus. Aedeagus fully one-third as long as elytra, depressed, evidently lower than wide, gently curved ventrad in proximal two-fifths but only very slightly arcuate behind middle, with elongate basal part bearing a fairly large sagittal aileron; basal orifice not large, with the sides not deeply emarginate; viewed laterally, apical part gradually tapered to narrow terminal portion, which is blunt at the



Figs. 2–5. Male genitalia of *Ishikawatrechus* spp.; left lateral view (2, 4), and apical part of aedeagus, dorso-apical view (3, 5). —— 2–3. *I. satoi* S. UÉNO, sp. nov., from Nôji-no-ana Cave at Nôji in Tosa-chô. —— 4–5. *I. saxatilis* S. UÉNO, sp. nov., from Nishiishiwara-no-ana Cave at Nishi-ishiwara of Jizôji in Tosa-chô.

extremity and bears a small ventral hook; viewed dorsally, apical part elongated subtriangular with blunt tip; ventral margin lightly emarginate before middle in profile but only very slightly so behind there. Inner sac devoid of copulatory piece and sclerotized teeth-patches, though largely scaly and bearing hardly sclerotized aciculae at the left side and near apical orifice. Styles broad in proximal halves and very slender at the straight apical parts, left style longer than the right and with reduced ventral apophysis, each bearing three or four thin setae at the apex.

Female unknown.

Type series. Holotype: ♂, 9–V–1986, K. & Y. ISHIKAWA leg. (found in a baited trap set by K. & Y. ISHIKAWA on 12–III–1986). Paratypes: 1♂, 9–V–1986, K. & Y. ISHIKAWA leg. (found in a baited trap set by K. & Y. ISHIKAWA on 12–III–1986); 1♂, 8–X–1986, K. ISHIKAWA leg. (found in a baited trap set by K. & Y. ISHIKAWA

on 9–V–1986). All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Nôji-no-ana, 730 m in altitude, at Nôji of Tosa-chô in Kôchi Prefecture, central Shikoku, Southwest Japan.

Notes. Though similar to *I. uozumii* in external morphology, this new species is remarkably different from it in the configuration of the male genital organ, above all in the flattened aedeagus. In this peculiarity, it is also different definitely from the other species of the same species-group, *I. ishikawai*, *I. intermedius* S. UÉNO (1957, pp. 195, 203, figs. 16, 18, 21), *I. ochii* S. UÉNO (1996, p. 2, figs. 1–3) and *I. subtilis* S. UÉNO (1957, pp. 195, 208, figs. 17, 19, 24).

This interesting species has so far been known from a very small limestone cave 13.7 km distant to the north by west from Shiroiwa-dô Cave, the type locality of *I. uozumii*. The cave is poorly known to speleologists and is not recorded in KAWASAWA and others' account of the caves of Kôchi Prefecture (cf. KAWASAWA *et al.*, 1991). Its location is only 3.9 km south of the main course of the Yoshino-gawa River in a beeline, and marks the northern periphery of the distributional range of the *ishikawai* group. I once went to the village of Nôji for investigating the fauna of the cave, the existence of which was informed by a farmer, but was unable to locate the entrance to it. Its small opening was found out later by the painstaking searches of ISHIKAWA, who failed in taking any interesting cave animals there but set baited traps at the bottom of the inclined passage less than 20 m long. Two months later, two specimens of an *Ishikawatrechus* were caught in the traps, and five months still later, one more specimen of the same species was taken by a renewed trap. No more specimens have been obtained since then, and therefore the three specimens of the type series are the only material of *I. satoi* now at our hands.

Ishikawatrechus saxatilis S. UÉNO, sp. nov.

[Japanese name: Jizôji-mekura-chibigomimushi]

(Figs. 4–5)

Length: 4.45–5.00 mm (from apical margin of clypeus to apices of elytra).

Externally very similar to *I. satoi*, only differing from it in minor details of the humeral parts of elytra, but incredibly different in the configuration of male genitalia, as will be described later.

Body form and coloration as in *I. satoi*. Head and prothorax also as in *I. satoi*, though the genae are a little less convex at the posterior parts in the holotype and the prothorax is usually somewhat wider; antennae reaching basal four-sevenths of elytra; basal transverse impression of pronotum more clearly marked than in *I. satoi*, continuing laterally into basal foveae; PW/HW 1.39–1.48 (M 1.43), PW/PL 0.97–1.24 (M 1.08), PW/PA 1.36–1.39 (M 1.38), PW/PB 1.42–1.46 (M 1.44), PB/PA 0.94–0.97 (M 0.96). Elytra as in *I. satoi*, but the prehumeral borders are a little more oblique, less arcuate inwards, and not reaching the base of stria 5; apical striole either

joining or directed to stria 5, not to stria 7; EW/PW 1.59–1.69 (M 1.60), EL/PL 2.52–2.66 (M 2.59), EL/EW 1.54–1.64 (M 1.59).

Male genital organ small and rather lightly sclerotized, strikingly different in configuration from that of *I. satoi* and to a lesser degree from that of *I. uozumii*. Aedeagus about three-tenths as long as elytra, obviously higher than wide at middle, and strongly curved ventrad at the basal part, with the dorsal margin semicircularly rounded in profile; basal part fairly elongate, with small basal orifice, whose sides are shallowly emarginate; sagittal aileron fairly large; viewed laterally, apical part rather rapidly tapered to fairly thick apical lobe, which is blunt at the extremity and bears a distinct ventral hook; viewed dorsally, apical lobe slightly inclined to the right, with blunt extremity; ventral margin slightly emarginate behind middle in profile. Inner sac largely scaly though the scales are hardly or only poorly sclerotized, with an oval patch of poorly sclerotized aciculae at the left side and a large oblong sheet of mal-sclerotized scales before it, the subapical part of the latter bearing small mal-sclerotized teeth; copulatory piece and sclerotized teeth-patches absent. Styles as in *I. satoi*; apical parts slender, each bearing four thin setae at the apex.

Type series. Holotype: ♂, 25–I–1981, S. SONE leg. (found in a baited trap set by S. SONE on 16–X–1980). Allotype: ♀, 14–X–1979, S. SONE leg. (found in a baited trap set by S. SONE & A. ISHIDA on 24–VI–1979). Paratype: 1♀, 4–IX–1980, S. SONE leg. (found in a baited trap set by S. SONE on 21–IV–1980). All deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Type locality. Limestone cave called Nishiishiwara-no-ana, 390 m in altitude, at Nishiishiwara of Jizôji in Tosa-chô, Kôchi Prefecture, central Shikoku, Southwest Japan.

Further specimen examined. 1♂ (teneral), Minéishiwara-no-ana Cave, 610 m alt., Minéishiwara, Jizôji, Tosa-chô, Kôchi Pref., 4–IX–1980, S. SONE leg. (found in a baited trap set by S. SONE on 21–IV–1980) (NSMT).

Notes. As was described above, this new species is so closely similar to *I. satoi* that it cannot be confidently distinguished from the latter at the species level in external morphology alone. However, the striking genitalic difference between them is an unquestionable proof of their specific independency.

Ishikawatrechus saxatilis has been known from two small limestone caves lying on either side of a tributary of the Jizôji-gawa that empties into the Yoshino-gawa River. Nishiishiwara-no-ana Cave, the type locality, lies on the right side just above the water, 5.3 km distant to the south by west from Nôji-no-ana Cave and 8.3 km distant to the north by east from Shiroiwa-dô Cave. It extends horizontally for only 18 m, but the innermost 6 m are shaded by a large block of rock fallen from the ceiling. All the known topotypical specimens of *I. saxatilis* were caught one by one by baited traps set in this section of the cave, which is less than 50 cm wide at the widest point. A sketch map of this cave was shown by KAWASAWA and HIRAKE (in KAWASAWA *et al.*, 1991, p. 66, fig. 61), but under the erroneous name "Anagami-no-ana" as was already pointed out in a previous paper of mine (cf. UÉNO, 1999, pp. 11–12).

Minéishiwara-no-ana Cave, a second locality of *I. saxatilis*, is still smaller than

the type cave. Its entrance is vertical, opening on the other side of the valley about 220 m above the river. From the bottom of the –2 m entrance drop, a 2 m passage continues horizontally. The trechine beetle was caught only once on September 4, 1980 by one of the baited traps at the innermost of the horizontal section nearly five months after the setting. This specimen is not fully mature, but accords well with the specimens of the type series. Standard ratios of its body parts are: PW/HW 1.49, PW/PL 1.05, PW/PA 1.44, PW/PB 1.44, PB/PA 1.00, EW/PW 1.60, EL/PL 2.63, EL/EW 1.57.

The specific name of this new species is derived from its locality name, "ishi-wara", which means a stone field in Japanese. Thus, "Nishiishiwara-no-ana" means the cave at the western stone field and "Minéishiwara-no-ana" means the cave at the higher stone field.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 71–78, May 25, 2003

Two New *Synuchus* (Coleoptera, Carabidae) from Ishigaki-jima Island, Southwest Japan

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Abstract Two new carabid species belonging to the genus *Synuchus* are described from Ishigaki-jima Island, Southwest Japan. One of them, named *Synuchus* (*Synuchus*) *satoi*, is related to *S.* (*S.*) *taiwanus* HABU. The other species, named *S.* (*S.*) *ishigakiensis*, are related to *S.* (*S.*) *dulcigradus* (BATES).

As a whole, the taxonomy of the genus *Synuchus* from Japan seems well worked out (HABU, 1978 a). However, there still remains a wide blank in our knowledge concerning the taxonomy of the genus from the subtropical islands of Southwest Japan.

Recently, we were able to examine many undetermined specimens of the genus collected by the second author and friends of ours from Ishigaki-jima Is., Southwest Japan. In this paper, we will describe them under the names *S.* (*S.*) *satoi* and *S.* (*S.*) *ishigakiensis*. We dedicate this paper dealing with the species of *Synuchus* to Professor Masataka SATÔ to commemorate his retirement from Nagoya Women's University at the end of March 2003. Though he is a great specialist of water beetles, he loves all beetles inclusive of carabids, particularly those from Southwest Japan.

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

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Synuchus (*Synuchus*) *satoi* MORITA et TOYODA, sp. nov.

[Japanese name : Satô-tsuyahirata-gomimushi]

(Figs. 1–8)

Diagnosis. Small species; hind wings reduced; terminal segment of labial palpus cylindrical (not dilated); postangular seta present; antennal segment II with a short seta and a minute seta on each side; elytral apices separately rounded; elytral microsculpture composed of polygonal meshes; apical and subapical pores ordinary in position; aedeagus bent; ventral side of aedeagus deeply concave in basal half and moderately convex in apical half; viewed laterally, apical half of aedeagus rather wide, but abruptly narrowed at the apical part; right paramere moderately bent.

Description. L: 6.7–7.3 mm. Small species. Colour black; ventral side dark brown to brown; margins of pronotum brown; mouth parts and appendages reddish brown.

Head weakly convex above; PW/HW 1.56–1.59 (M 1.58) in 4♂♂; frontal furrows very shallow; lateral grooves straight, becoming narrower and shallower posteriad, and reaching the post-eye level; eyes weakly convex; clypeal suture fine; two pair of supraorbital setae long, thick and lying on lines parallel to each other; anterior supraorbital setae situated a little before the mid-eye level; posterior ones situated just at the post-eye level; genae very short and oblique; mentum tooth bifid and rounded at the tips; neck wide; antennae rather slender, and reaching basal 1/4 of elytra; antennal segment II with a short seta and a minute seta on each side; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI ≒ 1 : 0.58 : 1.10 : 1.12 : 1.11 : 1.12 : 1.32 in 4 ♂♂; terminal segment of labial palpus cylindrical and widest at about middle (not dilated); terminal segment of maxillary palpus widest at about middle and truncated at the tip; microsculpture composed of polygonal meshes; labrum transverse, and with almost straight apical margin.

Pronotum rather convex and narrow, widest at basal 3/5 and narrowed towards apices than towards bases; PW/PL 1.18–1.23 (M 1.21), PW/PA 1.59–1.64 (M 1.62), PW/PB 1.29–1.36 (M 1.34), PA/PB 0.83–0.85 (M 0.83) in 4♂♂; apical margin weakly emarginate, bordered at the sides and vaguely so at the middle; reflexed sides very narrow at apical parts, becoming wider posteriad, and merging into basal foveae on each side; base almost straight throughout, or almost so at middle and roundly oblique on each side, and bordered at the sides; apical angles weakly produced and rounded at the tips, hind ones rounded, and with a seta on each side; anterior marginal setae located at basal 3/5 on each side; basal foveae wide, shallow, and weakly rugose; median line very fine and not reaching the two margins; basal part with short and irregular wrinkles at the middle; anterior transverse impression shallow at median part, but vanished at the sides; basal transverse impression vanished; microsculpture composed of wide or transverse meshes on the disc, and of strongly impressed isodiametric meshes on the reflexed sides and basal foveae.

Elytra elongate; WL/EL ca. 0.32; EW/PW 1.21–1.37 (M 1.29), EL/EW 1.54–1.61 (M 1.57) in 4♂♂; basal borders strongly arcuate and joining scutellar striole on each side; sides weakly arcuate throughout; inner plica indistinct; apices separately rounded; striae impunctate and normal; intervals moderately convex and impunctate; interval III with two dorsal pores adjoining stria 2 at basal 1/3–3/8 and 11/20–13/20,

respectively, but they are weaker than basal pore; marginal series of umbilicate pores 13–16 in number; basal pore rather weak and situated at the basal anastomosis of striae 1 and 2; scutellar striole rather long, and free at the apical end; microsculpture composed of polygonal meshes; apical pore very weak and situated at the ordinary position, subapical ones weak and situated at the ordinary position.

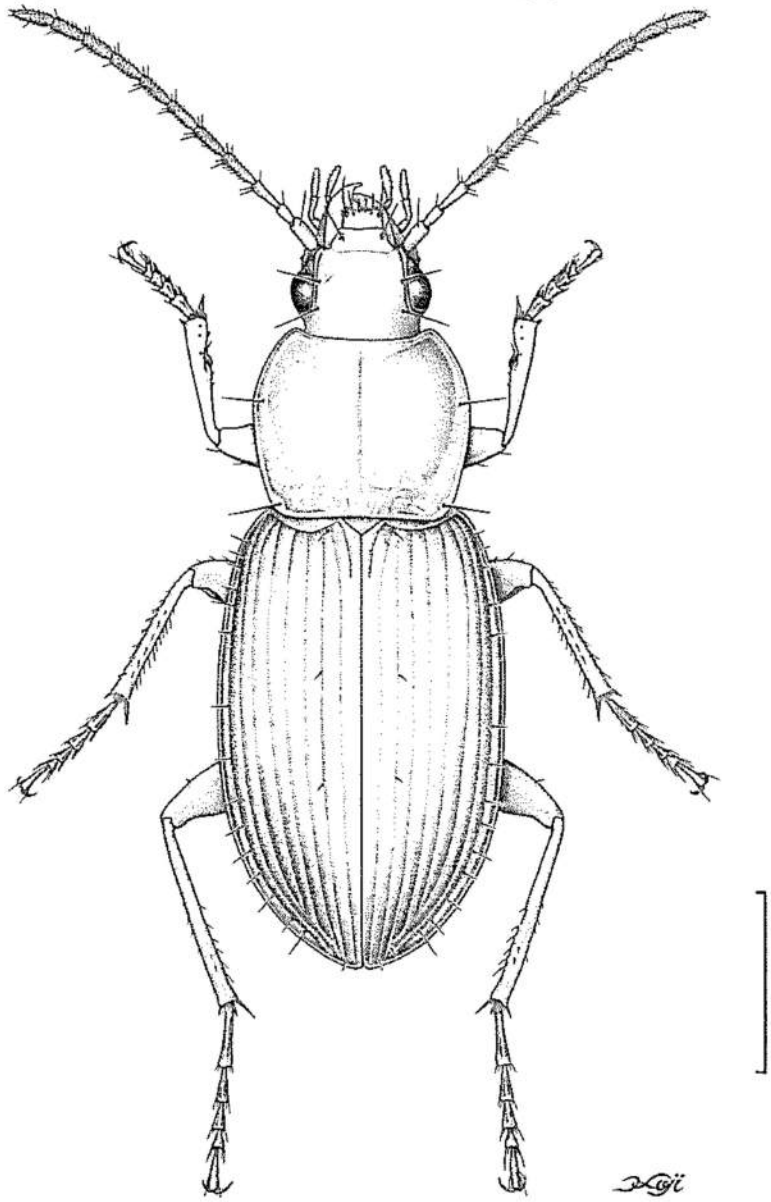
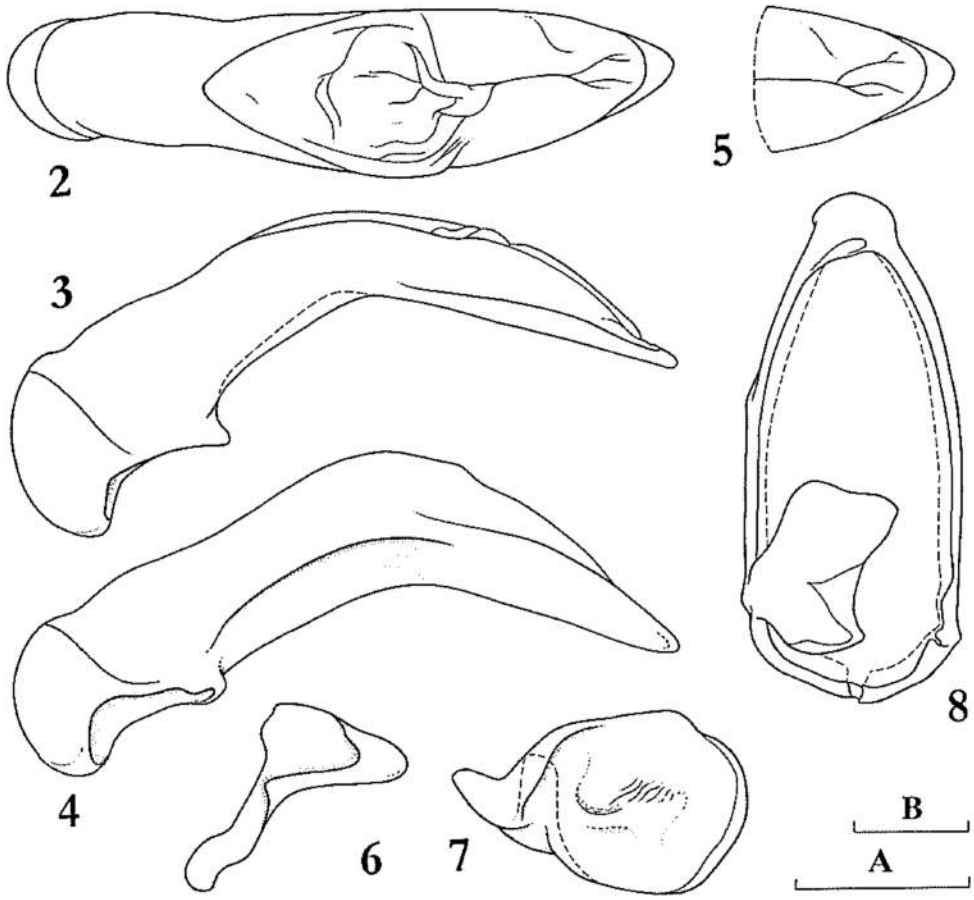


Fig. 1. *Synuchus* (*Synuchus*) *satoi* MORITA et TOYODA, sp. nov., from Mt. Omoto-dake. Scale: 2 mm.



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

Ventral side impunctate, but the sternites II and III bear irregular and vague wrinkles; anal sternite (VII) with a pair of setae, and clearly bordered.

Legs slender; metatrochanter short, wide and with rounded apex; ML/FL 0.38–0.42 (M 0.40) in 4♂♂; metacoxae each with two weak setae; TL/HW 1.28–1.30 (M 1.29) in 2♂♂; relative lengths of segments of metatarsi as follows:— I : II : III : IV : V ≒ 1 : 0.56 : 0.49 : 0.29 : 0.71 in 3 ♂♂; segments 1–3 of mesotarsus bisulcate; segments 1–3 of metatarsus bisulcate, though the inner sulci are sometimes rudimentary or disappear; claw segment of metatarsus with a pair of long setae on dorso-lateral sides of subapical part, a pair of minute setae on apical part, and several long setae on ventro-lateral side; claw serrate inside.

Genital segment elongate and with a short handle in ventral view. Aedeagus elongate and bent at about middle; basal half of ventral side deeply concave and

forming ridges at the sides; apical half of ventral side moderately convex; viewed laterally, apical half rather wide, but abruptly narrowed at the apical part; apex rather wide and moderately rounded in dorsal view. Right paramere moderately bent and with simply rounded apex; left one wide.

Type series. Holotype: ♂, 14–IV–2001, M. MURAMATSU leg. (NSMT). Paratypes: 1♂, 2–V–1998, K. TOYODA leg.; 1♂, 2–V–1999, K. TOYODA & S. ARAI leg.; 3♂♂, 10–III–2000, T. KURIHARA leg.; 1♂, 13–IV–2001, M. MURAMATSU leg.; 1♂, 14–IV–2001, M. MURAMATSU leg.

Type locality. Mt. Omoto-dake, Ishigaki-jima Is., Southwest Japan.

Notes. When the specimens used in this study were brought in by friends of ours, serious difficulties were experienced in sorting them out. The difference in width of the handle of the genital segment can be divided into two groups: one is a very narrow form and the other is a wide one. The aedeagi of all the specimens were examined, and no significant variation was noted. Though they are not uniform in shape, we regarded them as a single species for the time being. There still remain undetermined female specimens and teneral ones in our collection. Incidentally, the holotype of this species has a very narrow handle.

For comparison with the specimens from Mt. Omoto-dake, we examined the holotype of *Synuchus* (*S.*) *shibatai* HABU (1978 a, p. 346) known from Amami-Ôshima Is., and paratypes of *S.* (*S.*) *taiwanus* HABU (1978 b, p. 43) known from Taiwan. After direct comparative study, it has become evident that this new species is really similar to *S.* (*S.*) *taiwanus* in both external and genitalic features. It is, however, distinguished from the Taiwanese species by the following points: 1) smaller and narrower body, 2) more convex pronotum, 3) different shape of pronotum (less strongly arcuate sides, more strongly reflexed sides, and rather smooth basal foveae), 4) thicker antennae, 5) relative lengths of segments of metatarsi V/I ≒ 0.68–0.75 (M 0.71) in 3♂♂ [0.65, 0.66 in 2 ♂♂ of *S.* (*S.*) *taiwanus*], and 6) more strongly bent aedeagus with slenderer basal lobe.

From the holotype of *S.* (*S.*) *shibatai*, the present new species may easily be distinguished by its smaller size, the less arcuate sides of pronotum near the hind angles, and the coarser microsculpture on the elytra.

The ratios of body parts in four males of this new species with a very narrow handle of genital segment were shown in the descriptive part. Those of the remaining four males have the following ratios:— PW/HW 1.56–1.66 (M 1.60), PW/PL 1.18–1.22 (M 1.19), PW/PA 1.55–1.62 (M 1.59), PW/PB 1.28–1.35 (M 1.32), PA/PB 0.79–0.87 (M 0.83), EW/PW 1.28–1.39 (M 1.34), EL/EW 1.51–1.68 (M 1.58), TL/HW 1.27–1.38 (M 1.32).

Synuchus* (*Synuchus*) *ishigakiensis MORITA et TOYODA, sp. nov.

[Japanese name: Ishigaki-tsuyahirata-gomimushi]

(Figs. 9–15)

Diagnosis. Medium-sized; body wide; hind wings reduced; terminal segment of labial palpus cylindrical (not dilated); postangular seta present; elytral apices separate-

ly rounded; aedeagus strongly bent; viewed laterally, apical half of aedeagus abruptly narrowed at the apical part.

Description. L: 8.8–9.6 mm. Body robust and medium-sized. Colour as in the preceding species. Head weakly convex above; frontal furrows obsolete; PW/HW 1.55–1.61 (M 1.59) in 3♂♂; lateral grooves weakly arcuate inwards in anterior halves, becoming shallower and reaching the post-eye level on each side; eyes moderately convex; clypeal suture fine; anterior supraorbital pores situated at apical third of eyes on each side; posterior ones situated a little before the post-eye level; genae oblique and 1/5 as long as eyes on each side; mentum tooth bifid and rounded at the tips; neck wide; antennae short and robust; segment II with a short seta on each side; relative lengths of antennal segments as follows:— I : II : III : IV : V : VI : XI ≒ 1 : 0.52 : 1.06 : 1.09 : 1.10 : 1.09 : 1.19 in 2♂♂; terminal segment of labial palpus cylindrical and widest at about middle (not dilated); terminal segment of maxillary palpus widest at about middle and truncated at the tip (not dilated); microsculpture clearly impressed and composed of isodiametric meshes.

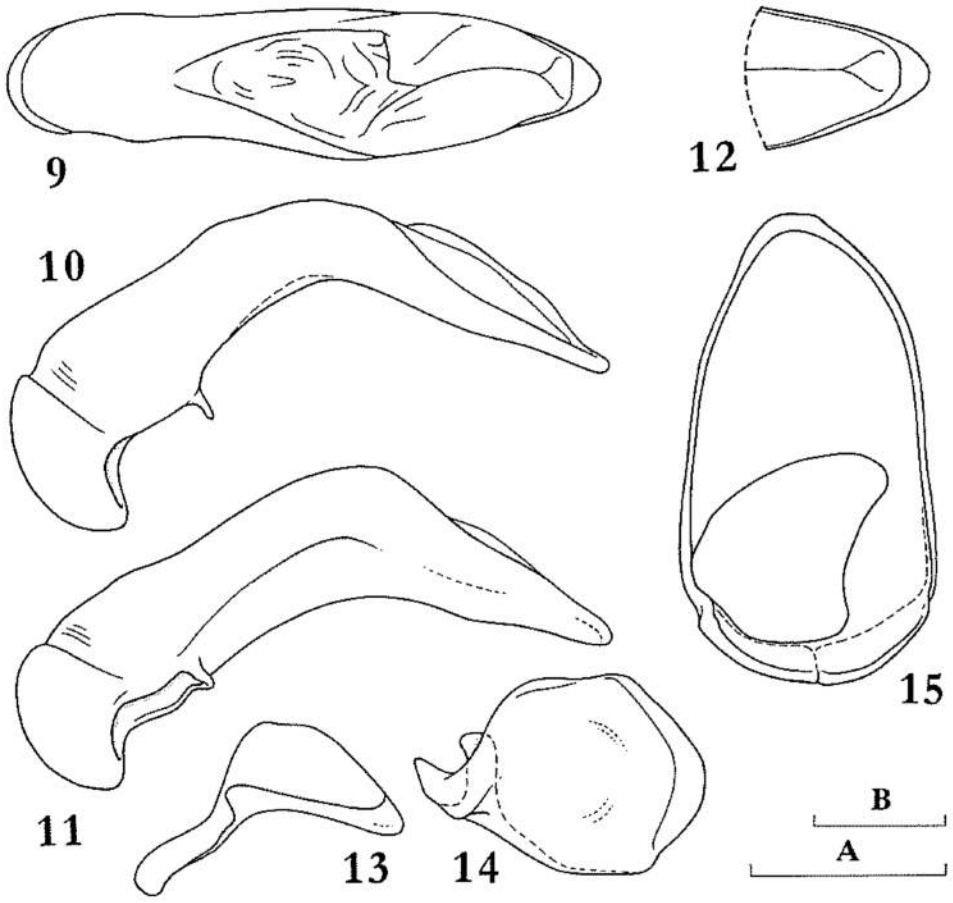
Pronotum rather large and widest at about middle or a little before the middle; apical margin weakly emarginate and not bordered at the middle; sides moderately arcuate throughout; PW/PL 1.22–1.26 (M 1.24), PW/PA 1.59–1.61 (M 1.60), PW/PB 1.33–1.35 (M 1.34), PA/PB 0.83–0.84 (M 0.83) in 3♂♂; reflexed sides narrow at apical parts, becoming wider posteriad, and merging into basal foveae on each side; base almost straight at middle, and arcuately produced posteriad and clearly bordered at the sides; apical angles weakly produced and rounded at the tips, hind ones widely rounded, and with a seta on each side; anterior marginal setae situated a little before the widest part; basal foveae wide, very shallow, and rugose; median line very fine and extending to a little before the apex and base; microsculpture composed of wide meshes on the disc, and of strongly impressed isodiametric meshes on the reflexed sides and basal foveae.

Elytra elongated oval; hind wings reduced, WL/EL 0.34–0.39 in 2♂♂ and 1♀; basal borders strongly arcuate and joining scutellar striole on each side; EW/PW 1.30–1.40 (M 1.35), EL/EW 1.50–1.58 (M 1.55) in 3♂♂; sides weakly arcuate throughout; apices narrowly produced and separately rounded; striae smooth; intervals moderately convex, and very sparsely and microscopically punctate; two dorsal pores very weak and on interval III adjoining stria 2 at basal 3/11–7/20 and 3/5–7/10, respectively; marginal series composed of 16–17 pores; basal pore situated at the proximal part of stria 1; apical pore very weak and situated at the ordinary position; subapical pore weak and situated at the ordinary position; scutellar striole situated on interval I, long, and free at the apical end; microsculpture clearly impressed and composed of polygonal meshes.

Ventral side impunctate; anal sternite (VII) narrowly and strongly produced posteriad.

Legs slender; metatrochanter short and with rounded apex; ML/FL 0.42–0.44 (M 0.43), TL/HW 1.31–1.34 (M 1.33) in 3♂♂; segments 1–3 of mesotarsus bisulcate; segments 1–4 of metatarsus bisulcate, but the sulci on segment 4 are sometimes rudimentary or disappear; claw segment of metatarsus with a pair of long setae on dorso-lateral sides of subapical part, and several long setae on ventro-lateral side; claw serrate inside.

Genital segment rather wide, and with a handle which is very short and wide.



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

Aedeagus elongate, strongly bent a little before the middle; basal lobe short and strongly bent in lateral view; ventral side concave in basal half and forming ridge at the sides, and convex in apical half; viewed dorsally, apical lobe short and simply rounded at the tip. Right paramere small and with wide apical part; left one broad.

Apical styli in ♀ as in *S.* (*S.*) *dulcigradus*, but spines are slenderer.

Type series. Holotype: ♂, 14–IV–2001, M. MURAMATSU leg. (NSMT). Paratypes: 1♂, 1♀, 10–III–2000, T. KURIHARA leg.; 1♂, 1♀, 14–IV–2001, M. MURAMATSU leg.

Type locality. Mt. Omoto-dake, Ishigaki-jima Is., Southwest Japan.

Notes. This new species can be easily distinguished from *S.* (*S.*) *dulcigradus*

(BATES) (1873, p. 273) by the shape of elytral apices and the bent aedeagus.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 79–86, May 25, 2003

Notes on Species of the Harpaline Subtribe Anisodactylina (Coleoptera, Carabidae) from China

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Abstract Two new species of the harpaline subtribe Anisodactylina are described under the names, *Chydaeus* (*Chydaeus*) *satoi* from Yunnan, and *Anisodactylus* (*Anisodactylus*) *emarginatus* from Shaanxi and Sichuan. Also the new locality records of *Chydaeus* (*Chydaeus*) *bedeli* (TSCHITSCHÉRINE) are given.

Many species of the subtribe Hrapalina were known from China. In particular, many species of the genus *Trichotichnus* have been newly found for several years. On the contrary, the species of the Anisodactylina from China are not so large in number. Five species of the genus *Chydaeus*, three species of the genus *Anisodactylus*, one species of the genus *Harpalomimetes*, two species of the genus *Gnathaphanus*, and one species of the genus *Pseudognathaphanus* were known. Recently I had an opportunity to examine specimens of the Anisodactylina, and found several new species among them.

In this paper, I am going to describe two new species of the Anisodactylina under the names *Chydaeus satoi* from Yunnan and *Anisodactylus* (*Anisodactylus*) *emarginatus* from Shaanxi and Sichuan. The former species is very closely related in external characteristics to *Chydaeus convexus* N. ITO, but the aedeagi are easily distinguishable from each other, and the microsculpture of the female elytra is quite different.

Anisodactylus emarginatus is somewhat similar in facies to the species of the *Harpalomimetes*, but I have concluded that the species belongs to the genus *Anisodactylus*, as mentioned in the description.

I wish to express my hearty thanks to Drs. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo and Yûki IMURA, Yokohama for their kindly offering invaluable material. Concerning the measurement of the body, see the author's former paper. I employ the abbreviation of depositories as follows. NSMT: the National Science Museum (Nat. Hist.), Tokyo. OMNH: the Osaka Museum of Natural History, Osaka. NIc: the author's collection.

The species name, *Chydaeus satoi*, is dedicated to Dr. Masataka SATÔ who is an excellent coleopterist and has greatly contributed to development of the coleopteran taxonomy in Japan, especially on the study of aquatic beetles. I hope that he could more vigorously work on the coleopterological field after retirement of Nagoya Women's University.

Chydaeus (Chydaeus) bedeli (TSCHITSCHÉRINE, 1897)

Acrogeniodon bedeli TSCHITSCHÉRINE, 1897, Abeille, Paris, **29**: 66 (Mou-Pin).
Chydaeus bedeli: ANDREWES, 1924, Mission BABAULT l'Inde, Carabidae, 29.

Specimens examined. 2♂♂, 2♀♀, Doi Inthanon, Chiang Mai, Thailand, 26–IV–1992, N. ITO leg.; 10♂♂, 3♀♀, Meili, Hengduan Mts., 3,700 m, 28°06′N, 96°52′E, Yunnan, China, 10~13–VII–1996, O. SEMELA leg.; 1♂, 1♀, 15 km NW Muli (Bowa), mixed forest, 27°56′N, 101°19′E, S. Sichuan, China, 30–VI–1998, Jaroslav TURNA leg.

Distribution. Himalaya; Tibet; China: Sichuan, Yunnan (new record); Thailand (new record).

Remarks. In Thailand, this species dwells with *Chydaeus doiinthanonensis* N. ITO at the same point on the summit of Mt. Doi Inthanon. These are completely sympatrical. The previous records of the species were widely isolated in Nepal and China (Sichuan). The present discovery fills in the blank region. Perhaps the species may be distributed continuously in northern mountainous regions of the Indochinese Peninsula.

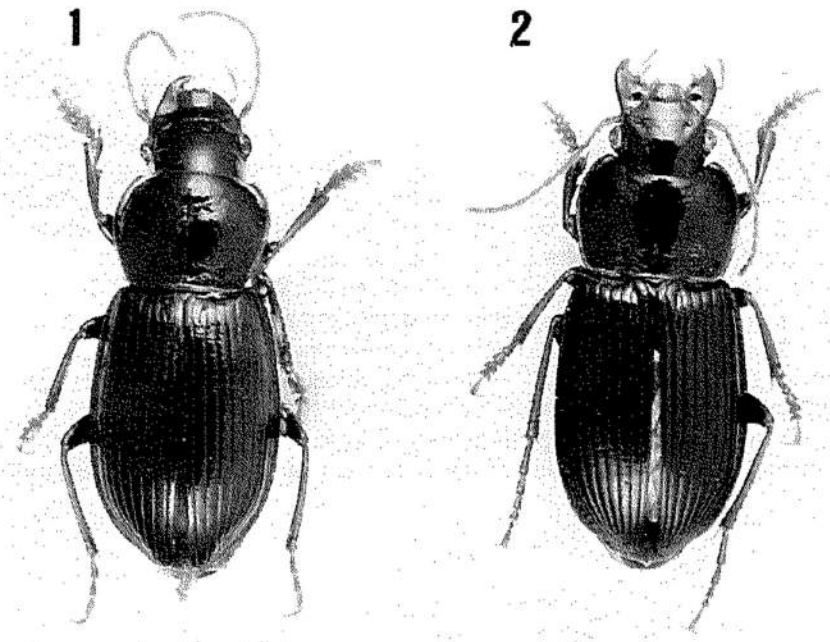
Chydaeus (Chydaeus) satoi N. ITO, sp. nov.

(Figs. 1 & 3)

Similar in body shape to *Chydaeus convexus* N. ITO, a little narrowly oblong than *C. convexus*, fairly convex, black, shiny in ♂, though a little weakly so than in *C. convexus*, opaque in ♀ due to distinct microsculpture, without iridescent lustre; palpi and tarsi brown, antennae dark brown, labrum and basal portions of mandibles brownish black.

Head elevated on vertex, large, 0.71–0.75 times as wide as the pronotal width, sparsely punctate on frons and clypeus, with wide interocular space, about four-fifths width of head including eyes; labrum a little shallower at apical emargination than in *C. convexus*; clypeus gently emarginate at apex, with a narrow swell along the margin; clypeal suture deep lengthwise, from both ends of which frontal impressions run linearly and divergently towards supraorbital grooves and gradually become shallower backwards; eyes small, weakly prominent; temples rather developed, nearly two-fifths the eye length; genuine ventral margin of eye widely isolated from buccal fissure; antennae short, not reaching pronotal base, 3rd segment 1.13–1.21 times as long as the 4th and 1.55–1.70 times as long as the 2nd; labial palpi moderately slender; ligula wide, sharply protruding laterad at apical corners, bisinuate at apex; paraglossae narrow, not surpassing ligula; epilobes of mentum slightly widened distad, a little protruding at apices of lateral lobes; microsculpture a little clearer in ♀ than in ♂, detectable as isodiametric meshes in clypeus, the mesh form as broken transverse in ♂ and as mixtures of isodiametric and transverse meshes in other portions in ♀.

Pronotum quadrate, 1.32–1.41 times as wide as long, widest at apical four-



Figs. 1–2. Habitus of Harpalina spp. —— 1, *Chydaeus* (*Chydaeus*) *satoi* N. ITO, sp. nov.; 2, *Anisodactylus* (*Anisodactylus*) *emarginatus* N. ITO, sp. nov.

ninths, and widely and well convex; sides gently arcuate forwards and sublinearly oblique backwards; apex shallowly and obtrapezoidally emarginate, unbordered in middle; base hardly narrower than apex, almost truncate or slightly arcuate laterally, entirely and clearly bordered throughout; apical angles produced forwards, narrowly rounded; basal angles much larger than right angle, blunt or very obtusely angulate, in the latter case with a minute protuberance at each tip; lateral furrows each engraved in a line lengthwise; basal foveae quite indistinct; front and hind transverse impressions obsolete; median line fine, shallow, reduced near apex and base; surface sparsely and minutely punctate on disc, moderately punctate on lateral and basal portions whose punctures are a little coarser than those in *C. convexus*; microsculpture clearer than in *C. convexus*, in ♂ partly visible as isodiametric meshes on disc and wholly so in lateral furrows and basal foveae, and in ♀ as mixtures of clear isodiametric and subsquare meshes all over.

Elytra elliptical or subovate, 1.22–1.26 times as long as wide, gently convex, very sparsely with microscopic punctures; sides gently arcuate in humeri, subparallel in middle, feebly sinuate preapically; apices widely and separately rounded at tips; bases shallowly emarginate; humeral angles blunt and larger than right angle; striae rather deep, and finely and clearly crenulate, scutellar striole short; intervals in ♂ a little more convex than in *C. convexus*, weakly convex on disc and becoming more convex both basad and apicad, in ♀ almost flat in both species; marginal series divided into two groups, front group composed of 8–9 umbilicate pores, and hind group of

8–11 pores; microsculpture in ♂ a little and in ♀ much more distinct than in *C. convexus*, observed in ♂ as isodiametric meshes only in basal and lateral portions and in ♀ wholly as same meshes though much clearer. Hind wings fully vestigial, 0.13 times as long as the elytral length.

Ventral surface mostly smooth, vaguely coarsened on lateral portions of metasternum and metepisterna, with several short setae on prosternal process and very sparse pubescence medially on 2nd and 3rd abdominal sternites; metepisternum seven-eighths times as long as wide; 6th abdominal sternite in both sexes bisetose on each side, in ♂ feebly emarginate and in ♀ weakly arcuate at apex.

Hind femur trisetose near hind margin; fore tibia bearing several setae near apex and seriate ones in apical half, quadri- or quinquespinous along apico-external margin, and without sulcus, terminal spur lanceolate and fairly expanded in basal half; tarsi glabrous except for ordinary setae along apical margin, mid tarsi not wide and the 1st segment of ♂ armed with adhesive hairs only at apex, hind tarsus 0.80 times in ♂ and 0.70 times in ♀ as long as the width of head, 1st segment three-fifths the 2nd and 3rd taken together and as long as the 2nd, 3rd twice the 4th, claw segment tri- or

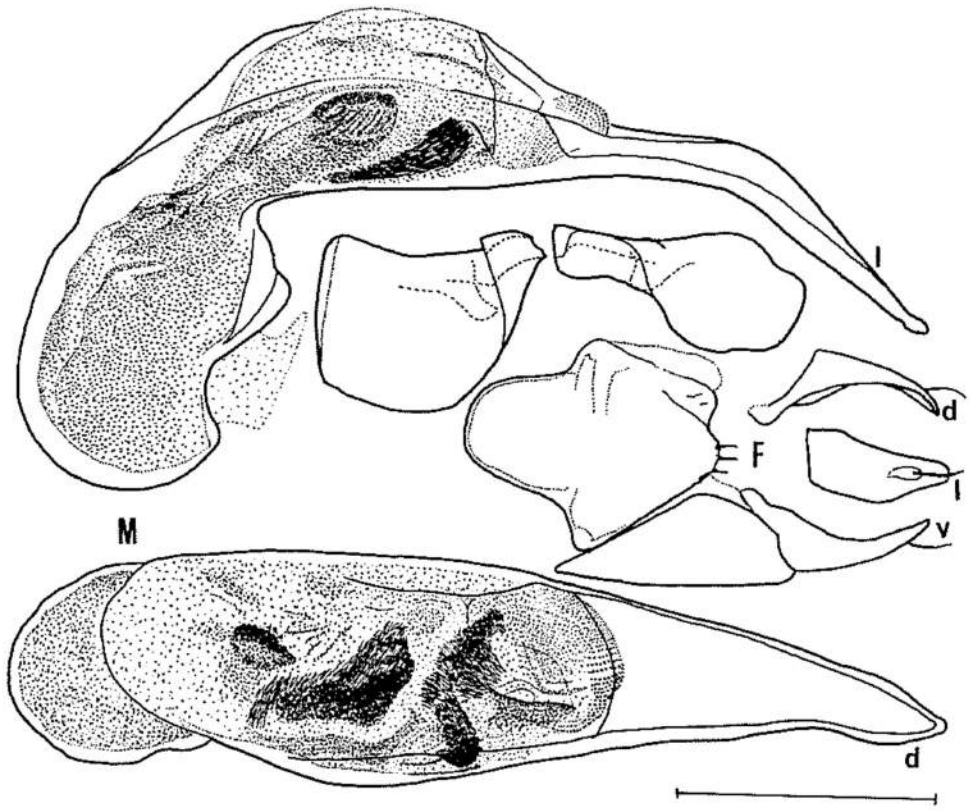


Fig. 3. Genitalia of *Chydaeus* (*Chydaeus*) *satoi* N. ITO, sp. nov. —— M, Male genitalia; F, female genitalia; d, dorsal aspect; l, lateral aspect; v, ventral aspect. Scale: 1 mm.

quadrisetose along each ventral margin.

Aedeagus (Fig. 3–M) in lateral aspect well humped behind basal bulb, thin and abruptly bent ventro-obliquely near apex, slightly thickened at tip; apical orifice widely open near middle, inner sac with two clusters of slim spines; apical lobe well prolonged; ventral surface unbordered. Stylus (Fig. 3–F) slender, weakly curved outwards; basal segment asetose; valvifer quadrisetose at apex.

Holotype: ♂, Zonghe Feng, alt. 2,620 m, Diangcang Shan Mts., Dali Shi, Yunnan, China, 4–IX–1993, S. UÉNO leg. (preserved in NSMT). Paratypes: 1♂, 2♀♀, same data as the holotype (preserved in NSMT and NIc).

This new species is different from *C. convexus* in having the aedeagus more prolonged at apical lobe, in addition to the difference mentioned above. In Yunnan Province, four species of *Chydaeus*, *C. bedeli*, *C. convexus*, *C. oblongulus* and *C. satoi*, are present. *Chydaeus bedeli* may have rather recently invaded to Yunnan, since it has wide distribution and many different characteristics confronted with three remaining species. The three species are endemic to Yunnan. *Chydaeus convexus* and *C. satoi* are very closely allied to each other, but dwell in different regions. On the other hand, *C. oblongulus* is sympatrical with *C. convexus*, but they are different in characteristics from each other, *e. g.*, shape of pronotum, microsculpture, etc. *Chydaeus oblongulus* has the plesiomorphic character in aedeagus as mentioned in my recent paper (2002). It is most probable that *C. oblongulus* firstly separated from the common ancestor, and then *C. convexus* and *C. satoi* recently separated by geographical vicariance.

Anisodactylus (*Anisodactylus*) *emarginatus* N. ITO, sp. nov.

(Figs. 2 & 4)

Body oblong, not convex, similar in body shape to some species of the genus *Pseudognathaphanus*, for example, *P. pulcher pulcher* (DEJEAN), black, shiny, without iridescent lustre; tibia slightly brownish, labrum brown, antennae and tarsi blackish brown.

Head moderate-sized, nearly two-thirds the pronotal width, almost flattened on frons and clypeus, minutely and sparsely punctate; labrum subtrapezoidal, rounded and weakly produced at apical corners; clypeus weakly emarginate, without any rugosities, finely and shallowly sutured with frons; frontal impressions thin, very shallow, linearly divergent behind; eyes small, rather convex; temples each gently convergent behind, a half the eye length; space between genuine ventral margin of eye and buccal fissure fully wide; antennae short, only reaching the pronotal base, and slender, 3rd segment 1.08 times as long as the 4th and approximately twice the 2nd; mandibles stout, though comparatively long in comparison with other species of Anisodactylina, left mandible thick even at apex, roundly and weakly produced at terebral tooth, and sharply triangular at retinacular tooth, right mandible sharp at apex, hardly swollen at terebral one and roundly prominent at retinacular one; palpi slender, 3rd segment slightly longer than the 2nd; ligula bottle-shaped, hardly arcuate

at apex; paraglossae widely fan-shaped, narrowly separated from ligula in apical half; mentum truncate or somewhat prominent forwards at apex, epilobes weakly widened apicad; microsculpture vaguely visible, consisting of isodiametric meshes in apical portion of clypeus and occiput, and also of transverse ones partly on frons.

Pronotum transversely quadrate, widest at middle, nearly three-fifths wider than long, not convex, weakly arcuate at sides; apex very deeply emarginate, clearly and entirely bordered; base 1.20 times as wide as apex, hardly emarginate, similarly bordered as on apex; apical angles extremely protruding forwards, moderately rounded; basal angles a little larger than right angle, narrowly rounded; lateral furrows narrow in apical third, thence gradually widened basad, fused with basal foveae, the foveae not concave, feebly swollen, and bearing small and shallow groove inside; front and hind transverse impressions obscure; median line very thin, reaching base and reduced behind apex; surface smooth centrally, bearing mixture of minute and somewhat coarse punctures in surrounding portions of the smooth area, very coarse and dense in lateral furrows and basal foveae which are partly confluently punctate; microsculpture not clear, lacking on disc, partly visible as transverse meshes near apex and as mixture of transverse and isodiametric meshes in lateral furrows and basal foveae.

Elytra oblong, approximately one-fifth wider than pronotum, flattened on disc, somewhat minutely and sparsely punctate; sides subparallel in middle, weakly arcuate in humeri, rather deeply sinuate before apices; apices relatively produced backwards, narrowly rounded at tips; bases each very shallowly emarginate, much larger than rectangle at humeral angle; striae deep, finely and clearly crenulate, scutellar striole long; intervals gently convex on disc, becoming more convex towards apex, base, and lateral portions, 3rd interval with a setiferous pore slightly before apical fourth; marginal series widely interrupted medially, the anterior group composed of 9 umbilicate pores and the posterior one of 8–10 pores; surface clearly and microscopically reticulated, though well shiny. Hind wings fully developed.

Ventral surface vaguely punctate on prosternum and prepisterna, coarsely punctate on mes- and metepisterna, and leteral portions of metasternum and of 1st to 3rd abdominal sternites; metepisternum not so elongate, one-third longer than wide; 6th abdominal sternite in ♂ bisetose at each side and widely subarcuate.

Hind femur bisetose near hind margin; fore tarsi trisetose apico-externally, and without sulcus, terminal spur lanceolate; tarsi not well widened, 1st segment of mid tarsus in ♂ with adhesive hairs only at apex, hind tarsus 1.02–1.08 times as long as the width of head, 1st segment as long as the 2nd and 3rd taken together, 2nd two-sevenths longer than the 3rd and twice the 4th, claw segment quinquesetose along each ventral margin.

Aedeagus (Fig. 4) almost linearly prolonged, rather thick, gradually tapered distad from apical third; apex sharply reflexed at margins, the reflexed part emarginate viewed in front; apical orifice wide, opening in apical third, inner sac armed with one cluster consisting of spines, two clusters of sclerites consisting of hard squamae and one cluster of microtrichia, the latter three clusters each bearing sharply and conically sclerotized at apex; ventral surface sharply ridged at sides, concave between the ridges.

Length: 11.0–11.4 mm. Width: 4.6–4.8 mm.

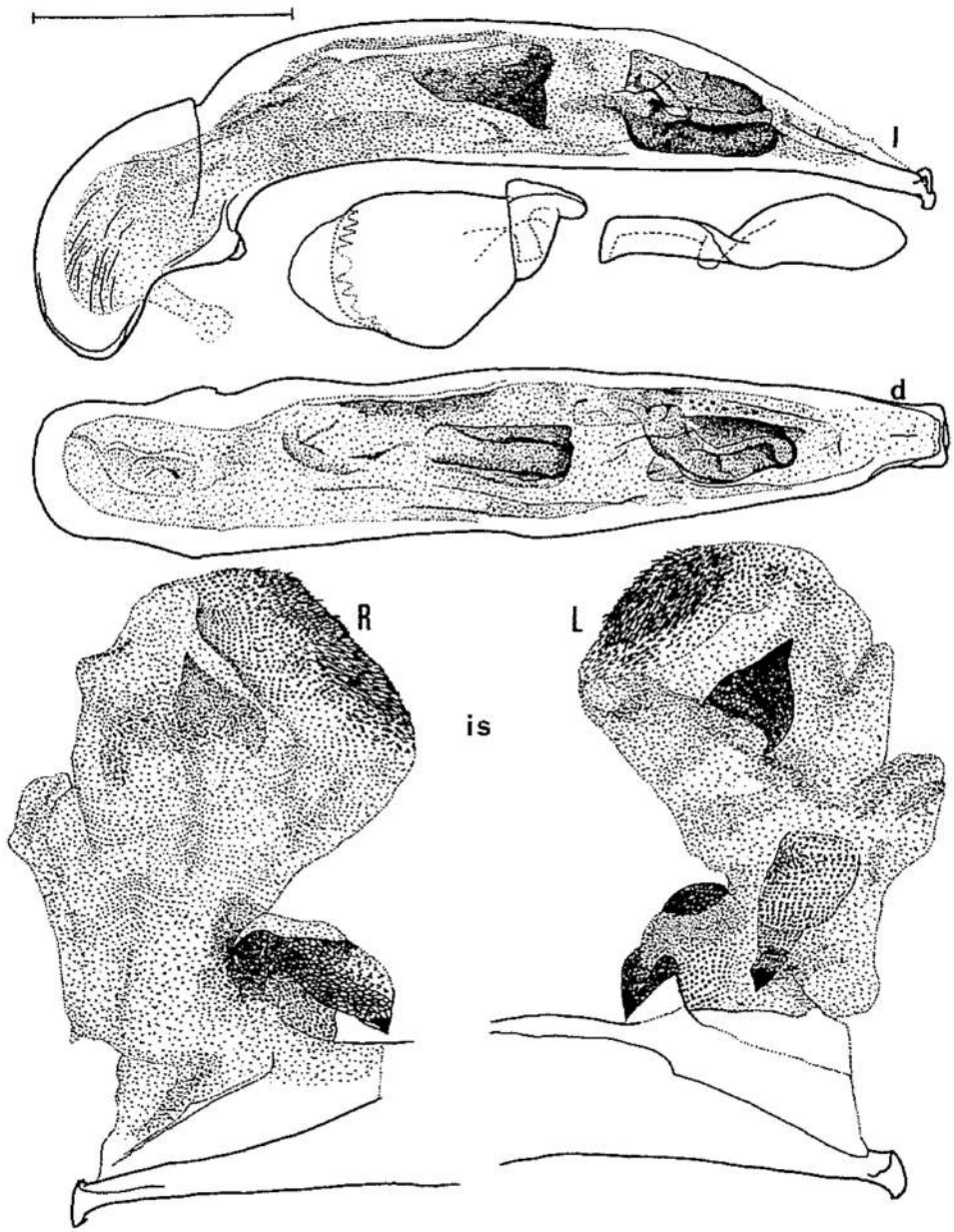


Fig. 4. Male genitalia of *Anisodactylus* (*Anisodactylus*) *emarginatus* N. ITO, sp. nov. —— d, Dorsal aspect; l, lateral aspect; v, ventral aspect; is, inner sac. Scale: 1 mm.

Female unknown.

Holotype: ♂, Qiling Mts., – 1,200 m, Xunyangba env., Shaanxi Prov., China, 20–V~10–VI–2000 (preserved in OMNH). Paratypes: 1♂, same data as the holotype; 1♂, Under Daba, 1,350 m, Micang Shan Mts., N. Nanjiang Xian, NE. Sichuan, 4–VI–1999, Y. IMURA leg. (preserved in NSMT and NIc).

This new species is somewhat similar to *Anisodactylus* (*Anisodactylus*) *sadoensis* SCHAUBERGER, but the head and pronotum are much more sparsely punctate, the pronotum is not angulate at basal angles, the elytra each bears a dorsal pore on 3rd interval, and the tarsi and fore tibiae are not setose dorsally.

The characteristics as apically unexpanded ligula and not acute basal angles of pronotum are somewhat different from the typical form of *Anisodactylus* and similar to those of *Harpalopmimetes* SCHAUBERGER. The aedeagus of this new species is quite different from that of the typical *Harpalomimetes*. It is not strongly massive in middle, not arcuate, sharply reflected at apex instead of simply thinned one, and with sclerites in inner sac.

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Derovatellus satoi sp. nov. (Coleoptera, Dytiscidae) Described from Namibia*

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Abstract *Derovatellus satoi* sp. nov. is described on the basis of five specimens collected from Namibia. Diagnostic characters are given for the new species, which systematically is located in the subgenus *Varodetellus* BISTRÖM.

According to the new world check list of Dytiscidae (NILSSON, 2001), 38 species in total are recognized in the genus *Derovatellus* SHARP; 19 of these belong to the nominotypical subgenus and the remaining 19 to the subgenus *Varodetellus*, introduced in a systematic review of the genus in Africa (BISTRÖM, 1979). All *Varodetellus* species are Ethiopian, while the species located in the subgenus *Derovatellus* are distributed as follows: 15 Ethiopian species, one Oriental species and three Neotropic species, one of which has a subspecies recognized from the Nearctic.

The new species exhibits characters (*e.g.*, shape of pronotum and spermathecal tract), which show that it clearly belongs to the subgenus *Varodetellus*. It was detected among material collected from Namibia during a recent expedition made by the Humboldt Museum of Natural History in Berlin (= MNHUB), Germany.

For identification of the *Varodetellus* species, see BISTRÖM (1979). Since the publication of the revision, some additional species have been described and diagnosed, *viz.*, *D.* (*V.*) *nyanzae* (BISTRÖM, 1980), *D.* (*V.*) *hancocki* (BISTRÖM, 1981) and *D.* (*V.*) *onorei* (BISTRÖM, 1982).

Derovatellus (*Varodetellus*) *satoi* BISTRÖM, sp. nov.

(Figs. 1–5)

Body oblong to oval (Fig. 1). Colour dark piceous to almost black, with head and pronotum partly paler. Length of body 3.64–3.88 mm, breadth 1.72–1.80 mm.

Head ferrugineous; posteriorly at eyes and at pronotum dark piceous to dark brown. Frontal punctation rather fine and somewhat sparsely distributed; posteriorly, punctures become somewhat coarser. Broad posterior area impunctate. Entire head (dorsal aspect) with fine reticulation, submat to rather shiny. Palpi testaceous. Anten-

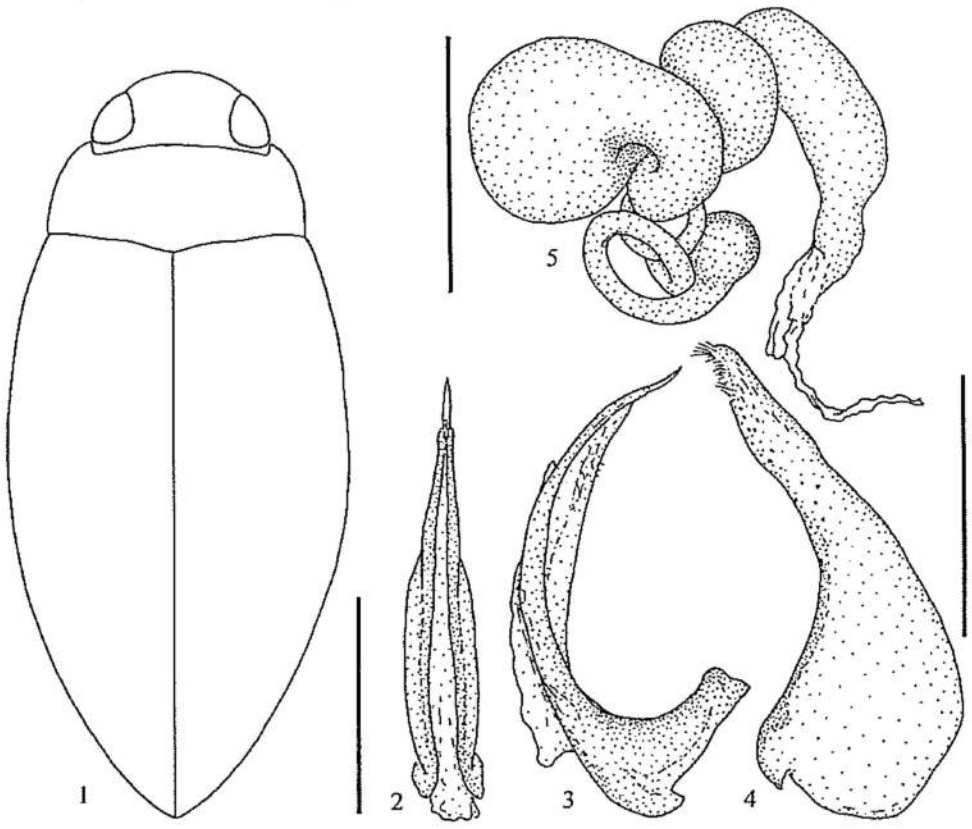
* Contribution to the study of Dytiscidae 78. Results of the entomological expeditions of the Museum of Natural History to Africa (Berlin). 81st contribution.

nae brown to dark brown.

Pronotum anteriorly and posteriorly black to dark piceous; laterally and medially paler, dark ferrugineous to ferrugineous (change of colour vague). Lateral outline slightly curved; pronotum broadest somewhat anterior to posterior corners. Punctation rather fine, dense, almost evenly distributed; mediolaterally, punctures slightly sparser and finer. Submat, finely to very finely reticulated. Medially, fine but discernible meshes of microsculpture.

Elytra blackish to dark piceous. Narrow humeral region and two preapical minor spots testaceous to ferrugineous. Punctation rather fine, dense, almost evenly distributed; laterally, slightly finer. Submat to rather shiny, finely microsculptured, but meshes of microsculpture hardly discernible. Epipleura testaceous to pale ferrugineous, with irregularly distributed punctures.

Ventral aspect testaceous to pale ferrugineous. Rather shiny, although finely microsculptured (meshes extensively discernible). Metacoxal punctation distinct, while sternal punctures variable, in part clearly discernible.



Figs. 1–5. *Derovatellus (Varodetellus) satoi* BISTRÖM, sp. nov. —— 1, Body; 2, penis, dorsal aspect; 3, penis, lateral aspect; 4, paramere; 5, spermathecal tract. Scales: Left, 1 mm, Fig. 1. – Right, 0.4 mm, Figs. 2–4. – Top, 0.2 mm, Fig. 5.

Legs:— Testaceous to pale ferrugineous, tarsus and tibia partly darker. Pro- and mesofemora from base to slightly over half its length distinctly haired. Pro- and mesotrochanters haired.

Male pro- and mesotarsi with two basal segments distinctly enlarged. Male genitalia as in Figs. 2–4.

Female with tarsal segments not enlarged. Spermathecal tract as in Fig. 5.

Holotype, male: "Namibia–Exp. ZMB 1992 East Caprivi: Mudumu NP: Buffalo Trails Camp, lux. 18, 10S/23, 26E, 12. III. 92 leg. M. Uhlig" (National Museum of Namibia, Windhoek).

Paratypes: one male with same data as holotype (Zool. Mus. Helsinki); one male and one female: "Namibia–Exp. ZMB 1992 E Caprivi Mudumu NP: Naktwa 18,10S /23, 26E, lux, 8–13. III. 92 U. Göllner" (MNHUB); one female with the same data as the preceding but "leg. M. Uhlig" (MNHUB).

Diagnostic notes. *Derovatellus satoi* can be distinguished from previously known species by examination of genitalia; male by the penis, which is medially broadest and narrows gradually to a sharp tip, and female by the peculiarly shaped spermathecal tract: its basal part is curled and the globe-shaped terminal part on appendage is remarkably small.

The new species is described in this special issue to commemorate Professor Masataka SATÔ, Nagoya Women's University, Japan, today one of the most renowned specialists of aquatic insects in the Oriental Region.

Acknowledgements

I express my sincere thanks to Dr. Manfred UHLIG, Berlin, for putting the material at my disposal.

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The *Agabus lineatus* Group (Coleoptera, Dytiscidae, Agabinae)

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Abstract The synonymy of *Agabus desertorum* F. MORAWITZ, 1863, and *Agabus lineatus* GEBLER, 1848, is re-established based on a study of all available material. A female syntype of *Agabus lineatus* GEBLER, 1848, was examined. *Agabus poppiusi* n. sp. is described from Yakutia and the Baikal region. This species was previously misidentified as *A. lineatus*, from which it differs chiefly in body size, shape of penis and male anterior protarsal claw, and female elytral sculpture. The geographical distributions of *A. lineatus* and *A. poppiusi* are mapped. Bibliographic data of the species is listed. Variation in elytral colour pattern, and body length and width is analyzed quantitatively.

Introduction

The elytra of most members of the subfamily Agabinae are unicoloured brown or black, frequently with two or more paler spots. The few vittate species known are taxonomically widespread: three North American species in the *Agabus* (*Agabus*) *disintegratus* group, the Eurosiberian *Agabus* (*Agabus*) *lineatus* group, the Nearctic *Ilybius lineellus* (LECONTE), the Himalayan *Platambus lineatus* GSCHWENDTNER, and several species of the *Platynectes dissimilis* complex (LARSON *et al.*, 2000; NILSSON, 1998, 2001). SHARP (1882) placed the vittate *Agabus* and *Ilybius* species in his 9th group of the genus *Agabus*, including also the West Palearctic *A. didymus* (OLIVIER). Later, ZIMMERMANN (1919) instead placed *A. lineatus* in the more inclusive group III of the genus *Gaurodytes*, characterized by the strap-like parameres. Finally, ZIMMERMANN (1934) in his finer division of the genus erected the *lineatus* group, characterized by the vittate elytra, and including only the two species *A. lineatus* GEBLER and *A. desertorum* F. MORAWITZ. This group is still in use (NILSSON, 2001), although it now belongs to the subgenus *Agabus* s. str., instead of *Gaurodytes*.

MORAWITZ (1863) was seemingly not aware of GEBLER's (1848) Siberian species *Agabus lineatus*, when he described his *A. desertorum* from the SE part of European Russia. It was SOLSKY (1873), who first compared the two species, and found them to be identical, with GEBLER's name having priority. SOLSKY (1873) also added a record from north Persia, and suggested that the species was more widespread. SOLSKY's (1873) synonymy was discarded by ZIMMERMANN (1934), who stated that *A. desertorum* was larger, broader, with dark colour on elytra more restricted and contrastive, and with female microsculpture weaker than in *A. lineatus*. As ZIMMERMANN's (1934) view was supported by ZAITZEV (1953), it has been accepted by most

subsequent authors.

I will in this paper present some observations in favour of SOLSKY's (1873) synonymy, and in addition describe a new species in the *lineatus* group, previsously mixed up with *A. lineatus*. ZIMMERMANN (1934) compared these two species, although he misapplied the name *A. lineatus* to the East Siberian specimens he examined. I will also review the geographical distributions of *A. lineatus* and the new species.

The following abbreviations are used: Measurements: (MW) maximum body width, (TL-h) body length measured medially from anterior margin of pronotum to elytral apex. —— Collections: (CBU) coll. J. BERGSTEN, Umeå, (CBV) coll. O. BREKHOV, Volgograd, (CNU) coll. A.N. NILSSON, Umeå, (MZH) Zoological Museum, Helsinki, (NMD) Natural History Museum, Dresden, (ZISP) Zoological Institute, St. Petersburg.

Elytral colour pattern was quantified as shown in Fig. 1.

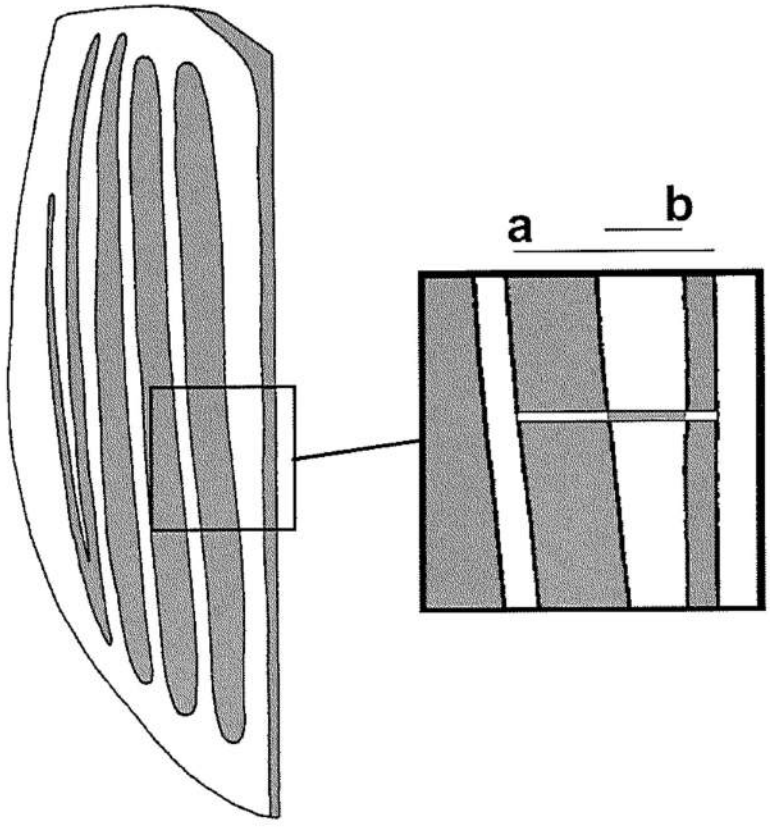


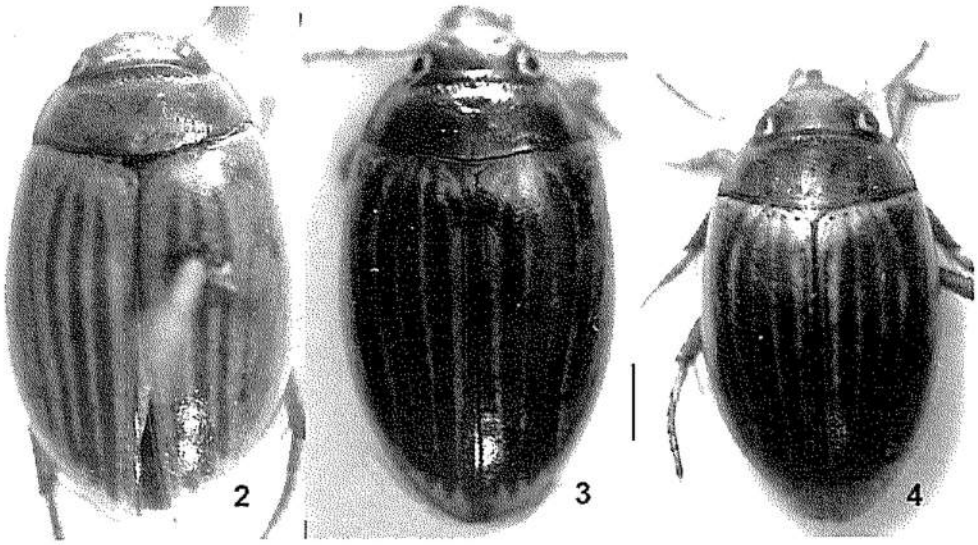
Fig. 1. *Agabus lineatus*, left elytron showing measurements: (a) the shortest distance from the suture to the outer margin of the first vitta, and (b) the width of the yellow area separating the first vitta from the dark sutural band along the same line. The proportion of yellow colour on the elytra was then estimated by the ratio b/a.

Agabus lineatus GEBLER, 1848

(Figs. 1–3, 6, 8–9, 12)

Agabus lineatus GEBLER, 1848, 75 (orig. descr.). —— GEMMINGER & HAROLD, 1868, 455 (cat.). —— SOLSKY, 1873, 307 (syn., faun.). —— SHARP, 1882, 511 (descr.). —— BRANDEN, 1885, 72 (cat.).
Agabus (*Agabus*) *lineatus*: NILSSON, 2000, 25 (class.); 2001, 22 (cat.). —— KIREJTSHUK, 2001, 193 (key).
Agabus (*Gaurodytes*) *lineatus*: SEIDLITZ, 1887, 88 (descr., key). —— SEIDLITZ, 1888, 90 (key). —— HEYDEN, 1891, 125 (cat.). —— JAKOBSON, 1908, 429 (cat.). —— ZAITZEV, 1908, 5 (faun.); 1915, 265 (coll. MOTSCHULSKY); 1928, 14 (faun.). —— ZIMMERMANN, 1920, 167 (cat.). —— WINKLER, 1925, 229 (cat.).
Colymbetes lineatus (MANNERHEIM): MOTSCHULSKY, 1853, 8 (cat.).
Gaurodytes lineatus (GEBLER, 1848): KONEV, 1976, 57 (faun.). —— ISAYEV, 1994, 28 (faun.).
Gaurodytes (*Gaurodytes*) *lineatus*: ZIMMERMANN, 1919, 212 (faun.); 1934, 173 (descr.). —— ZAITZEV, 1953, 261 (descr.).
Colymbetes lineellus MOTSCHULSKY, 1853, 8 (nomen nudum).
Hydroporus desertorum BECKER, 1861, 308 (nomen nudum).
Agabus desertorum F. MORAWITZ, 1863, 169 (orig. descr.). —— GEMMINGER & HAROLD, 1868, 454 (cat.).
Agabus (*Agabus*) *desertorum* F. MORAWITZ, 1863: NILSSON, 2000, 25 (class.); 2001, 22 (cat.).
Agabus (*Badynectus*) *desertorum* F. MORAWITZ, 1863: SEIDLITZ, 1872, 59 (key).
Gaurodytes (*Gaurodytes*) *desertorum*: ZIMMERMANN, 1934, 173 (descr.). —— ZAITZEV, 1953, 262 (descr.).

Type localities. Of *lineatus* Russia, West Siberia, Altay Terr., Loktewsk; of *desertorum* Russia, Volgograd Prov., Volgograd, Sarepta.



Figs. 2–4. Dorsal habitus. —— 2–3, *Agabus lineatus*: 2, female syntype; 3, male, Ulyanovsk. —— 4. *A. poppiusi*, male holotype. Scale bar 1 mm.

Figs. 5–8. Male genitalia: 5–6, right paramere, external view; 7–8, penis, lateral view. —— 5, 7, *Agabus poppiusi*, holotype. —— 6, 8, *A. lineatus*, Ulyanovsk. Scale bar 0.5 mm.

Type material. Syntype ♀ of *Agabus lineatus* GEBLER in MZH (coll. MANNERHEIM behind label '*Lineatus* Mannerh.') labelled: ♀, 'Gebler', 'Siber. occ.', '62', and my syntype label; of *Agabus desertorum* F. MORAWITZ not found.

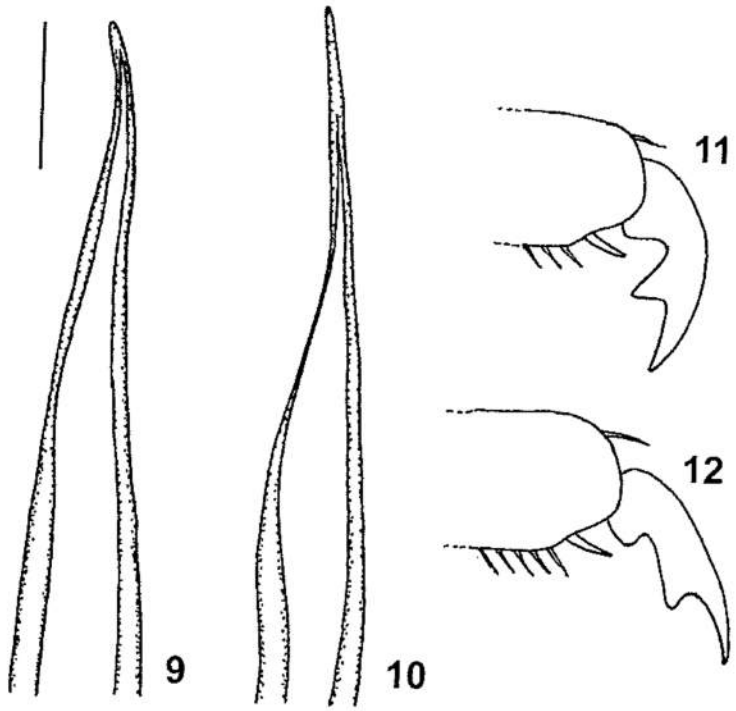
Additional material. [Ukraina]: Krim, Kerch, 3–II–1928, 1♀; Kharkov Distr., Zanku, 19–V–1967, 1♂, leg. STEPNOYNOV; Ascania Nova, 1930, 2 inds., leg. S. MEDVEDEV (ZISP). —— [Russia]: Ulyanovsk Prov., Ulyanovsk, Cherdakly, Mochlovoe Lake, 18–IV–1998, 2♂, 4♀, leg. D. FEODOROV; 17–IV–1999, 2♂, 1♀, leg. O. BREKHOV (CNU); Volgograd Prov., Nikolayevsk, 31–V–1900, 5♂, 8♀, leg. I. L. SAKHAROV (ZISP); Krasnoslobodsk, 15–V–2001, 1♀, leg. J. BERGSTEN (CBU); Khara River, 2 km upstream Elton Lake, 10–V–2001, leg. J. BERGSTEN (CBU); SW of Elton Lake, 11–V–2001, 2♂, 3♀, leg. A. N. NILSSON (CNU), 2♂, 5♀, leg. J. BERGSTEN (CBU); Baybaev, 4 km W of Krasnodonskiy, steppe pond 0.5 km from Don River, 11–V–2002, 5♂, 2♀, leg. A. N. NILSSON (CNU), 9♂, 4♀, leg. J. BERGSTEN (CBU); Tsatsa, steppe lakes, 1♂, 1♀, leg. J. BERGSTEN (CBU); Astrakhan Prov., Svetloyarsk Distr., Baskunchak Lake, 1–V–1998, 1♀, leg. D. FEODOROV (CNU); Nishniy Baskunchak, stream at entrance of Bogdo Zapovednik, 12–V–2001, 1♂, leg. J. BERGSTEN (CBU); Pirogovka, steppe lake, 13–V–2001, 1♂, leg. J. BERGSTEN (CBU); Omsk, 8–VI–1922, 1 ind., leg. A. REICHARDT (ZISP); Krasnoyarsk, 1 ind., leg. JAKOVLEV (ZISP); Yakutia, 1901, 2♂, leg. OLENIN (ZISP). —— [Kazakhstan]: Betscho-Ko, Steppes de Kirg., 1♂ (MZH); Uralsk Prov., V–1902, 1♀, leg. V. UVAROV (ZISP).

Additional records. [Moldova]: River Prut area, VI~VII–1990~1991, leg. A. V.

MATALIN (FEODOROV, in litt.). —— [Ukraina]: Kharkov (coll. MOTSCHULSKY *vide* ZAITZEV, 1915); Simferopol & Tokmak (ZAITZEV, 1908). —— [Russia]: Ulyanovsk Prov., 6 km W of Krestovo Gorodishche (ISAYEV, 1994); Volgograd Prov., Trechodtrovskay (BREKHOV, in litt.); Astrakhan Prov., Bogdo (coll. MOTSCHULSKY *vide* ZAITZEV, 1915); Tomsk Prov. (JAKOBSON, 1908). —— [Kazakhstan]: Desert des Kirghis (MOTSCHULSKY, 1853); Karaganda & Karkaralinsk (KONEV, 1976). —— [Iran]: north part (SOLSKY, 1873). —— [Unknown country]: b. Tschintu hatuki (coll. MOTSCHULSKY *vide* ZAITZEV, 1915).

Description. Body:— Broadly oval (Figs. 2–3); TL-h ♂ mean= 6.05 mm, N= 17; ♀ mean= 6.10 mm, N= 21; MW ♂ mean= 3.60 mm; ♀ mean= 3.70 mm; TL-h/MW ♂ mean= 1.68; ♀ mean= 1.65.

Colour:— Head black with two frontal spots and clypeus rufous. Antennomere 11 infuscate in apical half. Apical palpomere with weak apical infuscation. Pronotum black with lateral margin broadly rufous. Elytron yellow with sutural margin and five vittae dark brown to black. Inner three vittae normally wider than other two, and in dark specimens totally fused. Outer two vittae frequently fragmented. Additional short vittae in some specimens present outside vitta 5 and/or between sutural margin and first vitta in distal third. Vittae normally not reaching base of elytron.



Figs. 9–12. *Agabus*, male: 9–10, penis, distal part in dorsal view; 11–12, anterior protarsal claw. —— 9, 12, *A. lineatus*, Ulyanovsk. —— 10–11, *A. poppiusi*, paratype from Nikolskaja. Scale bar 0.1 mm.

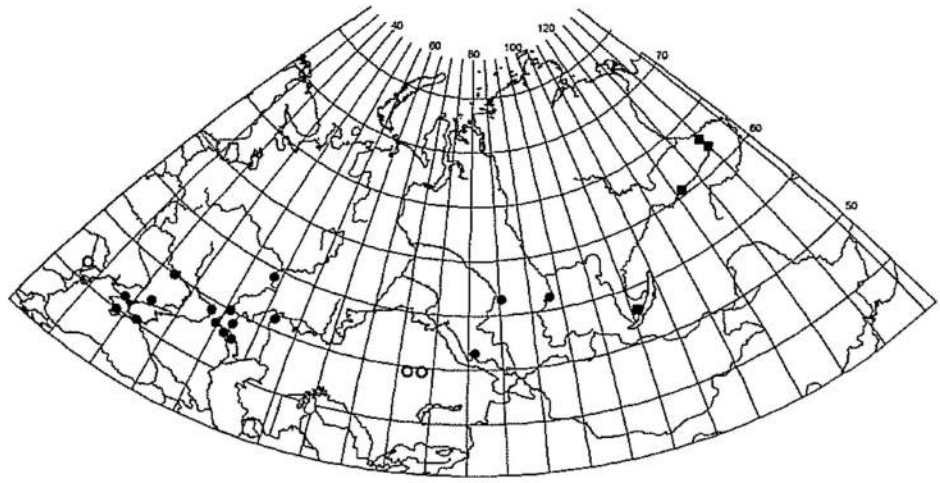


Fig. 13. Known records of *Agabus lineatus* (round symbols) and *A. poppiusi* (square symbols). Filled symbols show records based on examined specimens, and open symbols records based on literature information.

Sculpture:— Dorsal sculpture simple; intersections of many meshes with puncture. Metacoxal plate without primary reticulation. Meshes of reticulation in female more deeply engraved and somewhat stretched longitudinally.

Chaetotaxy:— Epipleuron without row of fine setae. Metatarsomeres 1–3 with PV spines (4–6, 2–3, 1–3); tarsomeres 1–2 with PD spines (3–4, 0–1). Metatibia with row of about five macropunctures on anterior disc.

Structural features:— Clypeal bead continuous. Pronotum with anterior bead broadly broken medially; anterior transverse row of punctures more or less continuous; lateral bead relatively broad. Prosternal process narrow, apically acute, subcarinate; lateral bead narrow. Metasternum with anteromedian depression shallow, not reaching posterior margin of mesocoxa. Metacoxal lines reaching metasternum. Metatibial spurs flattened with surface striate.

Male:— Margin between visible abdominal segments 2 and 3 raised sublaterally. Last abdominal segment with transverse striation and apical punctation. Anterior protarsal claw with blunt tooth (Fig. 12). Metatarsomeres 1–4 with ventral row of swimming hairs. Penis with basal apodeme expanded (Fig. 8); apical part evenly narrowed to tip; slightly twisted to left in dorsal view (Fig. 9). Paramere strap-like; striate in basal half (Fig. 6).

Distribution (Fig. 13). Moldova, Ukraina, Russia (Central and South European Territory, West Siberia, East Siberia), Kazakhstan. I am not sure if the record from 'Perse septentrionale' given by SOLSKY (1873) should be located to present-day Iran or not.

Bionomics. This is a steppe pond species, although stray individuals may be found in lakes and rivers, indicating good flight capacity. I have found it at high densities only in shallow ponds with abundant vegetation of grass and herbs. As

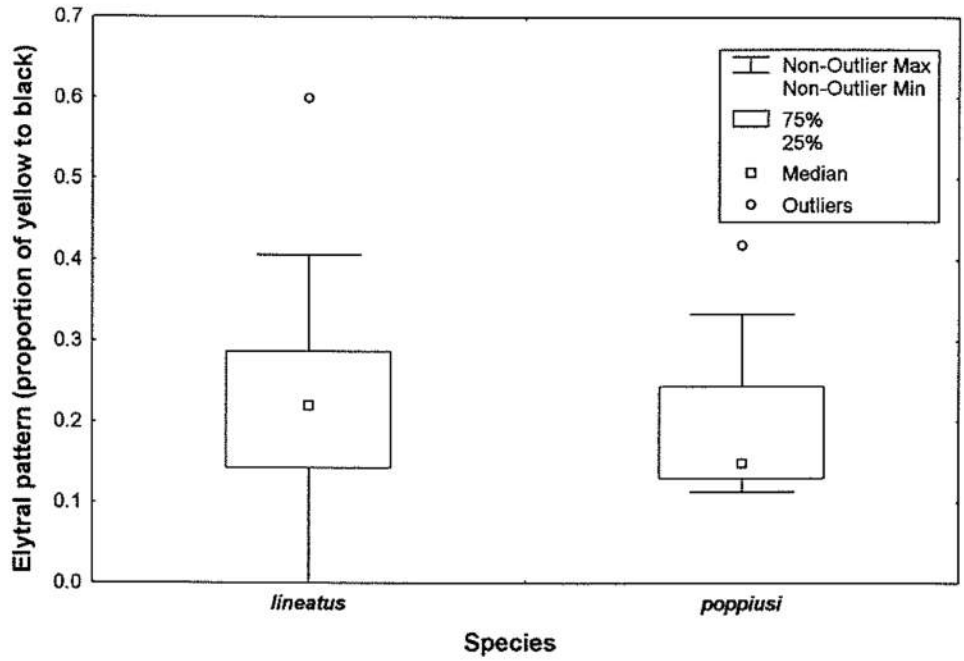


Fig. 14. Variation in the proportion of yellow colour on the elytra in *Agabus lineatus* (N= 38) and *A. poppiusi* (N= 14), quantified as the ratio b/a.

specimens collected in early May were teneral, the larval development seemingly takes place very early in the season. The breeding ponds most probably dry out during the summer.

Agabus poppiusi sp. nov.

(Figs. 4–5, 7, 10–11)

Agabus (*Gaurodytes*) *lineatus* GEBLER, 1848: POPPIUS, 1905, 18 (misident., descr., faun.). —— ZAITZEV, 1910, 35 (misident., faun.).
Gaurodytes (*Gaurodytes*) *lineatus*: ZIMMERMANN, 1934, 173 (misident., descr.).

Type locality. Russia, Yakutia, Namtsy (Nikolskaja).

Type material. Holotype ♂ in MZH labelled: 'Nikolskaja', 'Fl. Lena m.', 'B. Poppius', and my holotype label. Paratypes: Irkutsk Prov., 15 km S of Elantsy, 'Hügelsteppe', 26–VI–1993, 2 ♂, leg. KRAUSSE & JÄGER (CNU, NMD); Yakutia, 1901, 2♂, leg. OLENIN (ZISP); Tyllyminskiy nasleg (about 60 km SSE of Yakutsk), 2–VI–1925, 1♂, leg. BIANCHI (ZISP); Olekminsk, 15–VI–1903, 2♀, leg. V. BRAUDO (MZH, ZISP); Jakutsk, 7♂, 5♀, leg. B. POPPIUS (MZH); Nikolskaja, Fl. Lena m., 19♂, 26♀, leg. B. POPPIUS (MZH).

Etymology. The species epithet is a noun in the genitive case derived from the

name of the late Dr. Bertil Robert POPPIUS (1876–1916), the Finnish entomologist who collected most of the type series.

Description. Only differences relative to description of *A. lineatus* are given.

Body:— Broadly oval (Fig. 4); TL-h ♂ mean= 5.71 mm, N= 8; ♀ mean= 5.76 mm, N= 6; MW ♂ mean= 3.31 mm; ♀ mean= 3.39 mm; TL-h/MW ♂ mean= 1.72; ♀ mean= 1.70.

Colour:— Pronotum rufous with slight infuscation of disc normally present. Elytron yellow with sutural margin and five vittae reddish brown to brown (Fig. 4).

Sculpture:— Meshes of reticulation in female deeply engraved, small and more rounded.

Male:— Anterior protarsal claw with acute tooth (Fig. 11). Penis with apical part more strongly compressed laterally (Fig. 10), and more abruptly narrowed in lateral view (Fig. 7); less strongly curved in lateral view (Fig. 10). Paramere as in Fig. 5.

Distribution (Fig. 13). East Siberia (Baikal Region and Yakutia).

Bionomics. POPPIUS (1905) collected his material in smaller waters with a high salt content on steppe-like meadows adjacent to the Lena River. These grassy ponds normally dry out in the summer. Other characteristic diving beetles of such ponds were *Hygrotus impressopunctatus* (SCHALLER), *H. parallellogrammus* (AHRENS) and *Ilybius lenensis* NILSSON. The two Baikal males were collected in eutrophic pools in

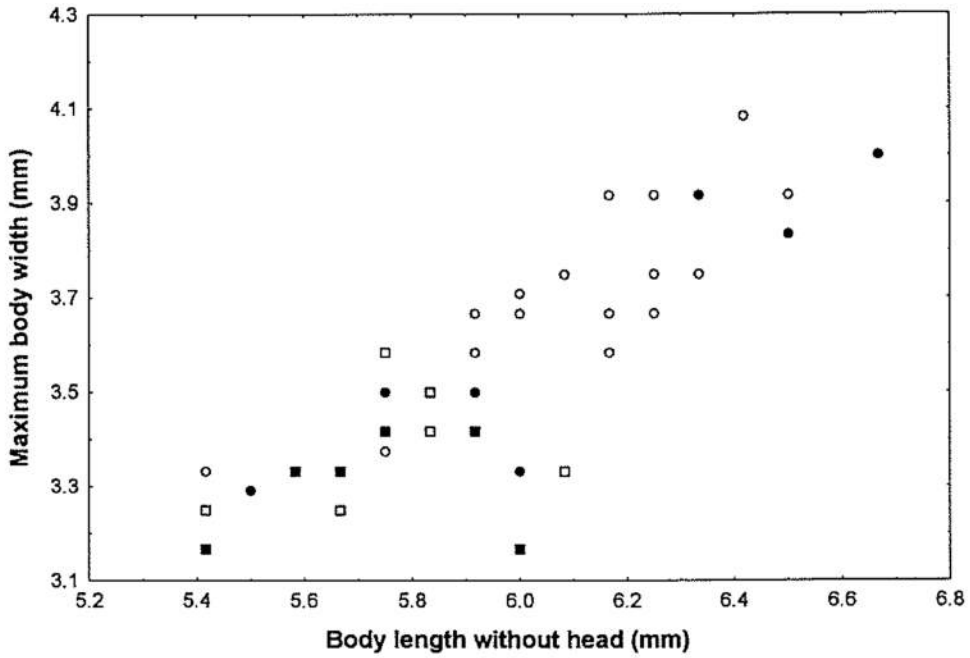


Fig. 15. Variation in body length without head and maximum body width in *Agabus lineatus* (round symbols) and *A. poppiusi* (square symbols). Males represented by filled and females by unfilled symbols.

wet meadow in hilly steppe.

Variation. The separation of the two species is primarily based on the different shape of the male anterior protarsal claw and penis. Other, more quantitative characters are evaluated below.

In the studied material, there are no significant differences in the width of the elytral vittae between the two species or the two sexes (Fig. 14; ANOVA, $p > 0.05$). Within *A. lineatus* the more northern specimens from Ulyanovsk tend to have wider vittae than those from the more southern Volgograd Province, although the overlap is pronounced. The main difference between the two species in elytral colour is that the contrast is weaker in *A. poppiusi* due to the paler and more diffuse vittae.

On pronotum, the extension of the reddish yellow lateral margin shows a pronounced variation. It is in dark specimens reduced to a small area near the anterolateral angle. In *A. poppiusi* specimens it normally covers most of the pronotum, whereas in most specimens of *A. lineatus* studied the pronotal disc is dark brown to black. It should be noted that the female syntype of *A. lineatus* has the colour normal for *A. poppiusi*.

There is a pronounced variation in body size in the studied material, especially so in *A. lineatus* (Fig. 15). Whereas all specimens longer than 6.1 mm belong to *A. lineatus*, the length of the two species overlap at lower values. The proportion of small specimens of *A. lineatus* is, however, low. The length difference between the

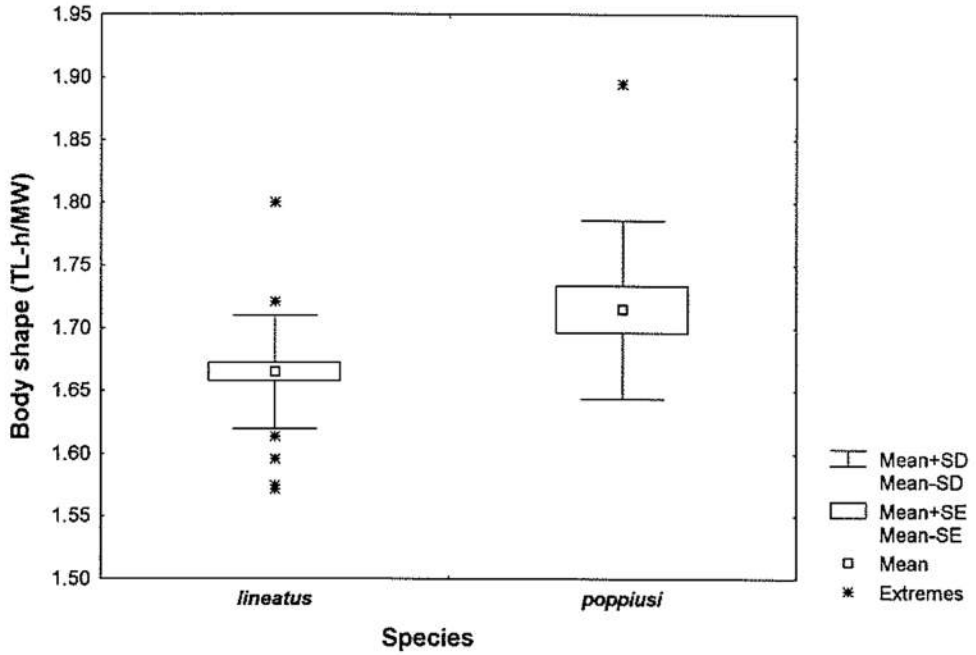


Fig. 16. Variation in body shape, measured as TL-h/MW, in *Agabus lineatus* (N= 38) and *A. poppiusi* (N= 14). The extreme values are those which are outside the 3 box length range from the upper and lower value of the box.

two species is significant (ANOVA, $p < 0.05$), whereas the two sexes are not significantly different.

ZIMMERMANN (1934) argued that *A. desertorum* was relatively broader than *A. lineatus*. His observation is correct once *'desertorum'* is read as *lineatus* and *'lineatus'* as *poppiusi*. In spite of some overlap in the TL-h/MW ratio, values for *A. poppiusi* are significantly higher than those for *A. lineatus* (Fig. 16; ANOVA, $p < 0.05$).

Elytral microsculpture is difficult to quantify. In the studied material, the reticulation is as a rule more deeply incised in females than in males, i.e. adhering to the general pattern within the genus. Moreover, the variation in this character is more pronounced in females than in males, and according to ZIMMERMANN (1934) the reticulation is stronger in *A. lineatus* than in *A. desertorum* females. In *A. lineatus* females, the reticulation becomes more deeply incised and the meshes become smaller and more rounded towards the lateral margin and apex of the elytron. The small deeply incised meshes are markedly more widespread on the elytra of *A. poppiusi* females making them appear more opaque. If quantified, this variation may produce a bimodal pattern, and be used to diagnose the two species like ZIMMERMANN (1934) did.

The two species have seemingly allopatric distributions with *A. poppiusi* delimited to the Lena River basin, and *A. lineatus* west of this basin all the way to Ukraina and Moldova (Fig. 13). The only deviation from this pattern is provided by the four males in ZISP labelled 'okr. Yakutska, Olenin 1901', of which two belong to *A. lineatus* and two to *A. poppiusi*. As no exact localities are known for this material, I have not been able to mark it on the map.

The two *Agabus lineatus*-group species are very similar to the species in the *A. uliginosus* group, both in general habitus, male genitalia, and secondary sexual characters. They differ, however, in the absence of the continuous anterior pronotal bead present in all the *uliginosus*-group species. As this character tend to be stable within other agabine species-groups, it may provide a good reason to keep the two groups separated.

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Larvae of the Genus *Dytiscus* (Coleoptera, Dytiscidae) of Japan

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Abstract Third instar larvae of three species of the genus *Dytiscus*, *viz. D. sharpi*, *D. marginalis czerskii* and *D. dauricus* are described and keyed. The larval description of *D. sharpi* is provided for the first time.

Introduction

The genus *Dytiscus* consists of 27 species in the world (ROUGHLEY, 1990; NILSSON, 2001), and their larvae have been well studied by KINCAID (1900), WILSON (1923), BERTRAND (1928, 1972), JAMES (1969), GALEWSKI (1973), DE MARZO (1979), NILSSON (1982), KLAUSNITZER (1991), and so on.

Up to the present time, three *Dytiscus* species, *D. sharpi*, *D. marginalis czerskii* and *D. dauricus*, have been recorded from Japan (MORI & KITAYAMA, 2002), and the larval characters of the latter two species had been reported fragmentarily, though those of *D. sharpi* have not been described yet.

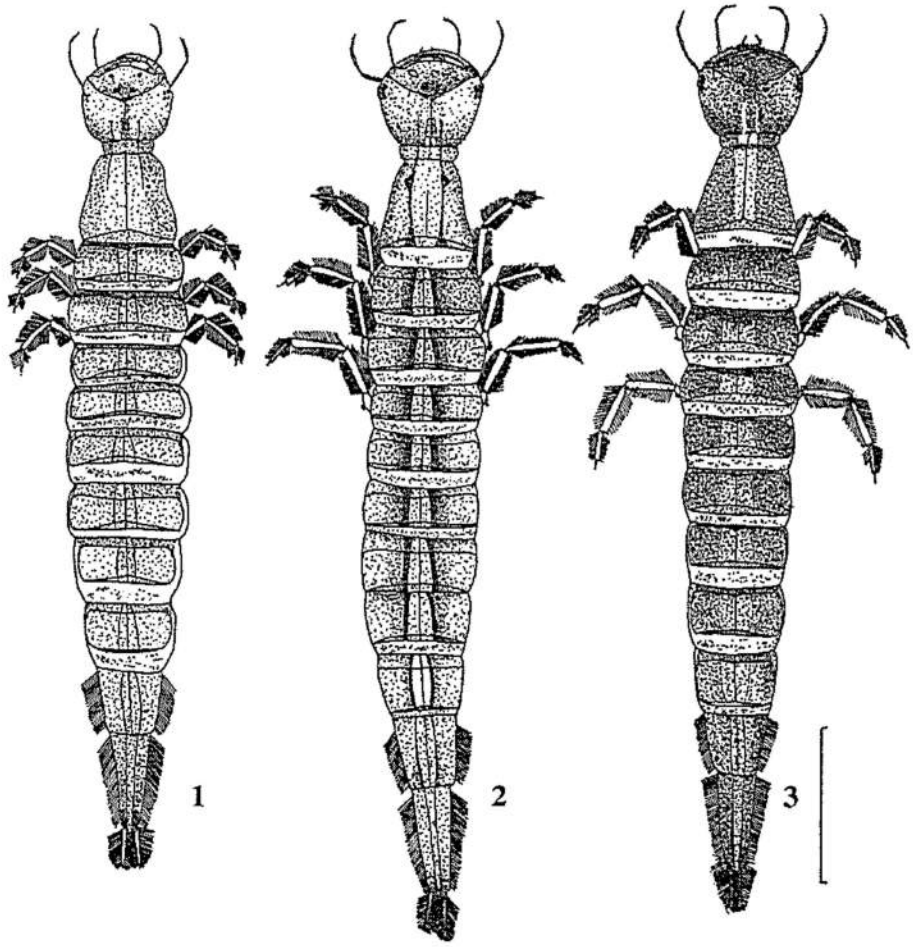
In the present paper, I am going to provide the distinctions among the Japanese species of the genus *Dytiscus* with a key and illustrations of diagnostic characters based on the third instar larvae.

Before going into details, I wish to express my sincere gratitude to Prof. Dr. Masataka SATÔ who led me to the study of aquatic insects and has always given me expert advice. It is my great pleasure to be able to contribute this small, but my first, scientific paper for commemoration of his retirement from Nagoya Women's University. Thanks are also due to Prof. Dr. N. OHBAYASHI, Assoc. Prof. Dr. M. SAKAI, Dr. H. YOSHITOMI and Mr. H. NAKANISHI for their continuous encouragement. Further, I would like to acknowledge my indebtedness to the following persons for their offer of the specimens: Mr. N. KINO, Mr. Y. HASEGAWA, Mr. S. HORI and Mr. A. TOMISAWA.

Materials and Methods

When a living larva attained to the time of fixation, it was killed by being immersed for about 10 seconds in hot water, about 80–90℃. Then it was put into the so-called Pampel's Fluid:— glacial acetic acid : distilled water : formaldehyde : ethyl alcohol (99.8%) = 4 : 30 : 6 : 15.

The specimen was mounted on a standard glass slide with glycerin after leaving



Figs. 1–3. Larvae of *Dytiscus* species, dorsal aspect of habitus. —— 1, *D. sharpi*; 2, *D. marginalis czerskii*; 3, *D. dauricus*. (Scale: 1 cm)

in 10% KOH solution for several minutes. Measurement of the fixed specimen was taken with an ocular micrometer in stereoscopic microscope. The description is prepared on the basis of the third instar larva.

Abbreviations used in the present paper are as follows:— BL – body length measured along the midline from the front margin of the clypeus to the tip of the last abdominal segment; BW – maximum width of body, measured at the widest point; HL – total head length including the fronto-clypeus measured medially along the epicranial stem; HW – head width, measured at the widest point; FCL – length of the fronto-clypeus; OcW – width of the occipital foramen: maximal width measured along the dorsal margin; AL – length of antenna measured by adding the length of each

antennomere which is indicated by the capital letter A and number corresponding to the segment considered (*e.g.*, A1 for antennomere 1); ML – length of maxillary and labial palpi calculated by adding the length of each palpomere, excluding the length of palpifer; LL – length of legs calculated by adding the length of each segment including the longest claw; the length of each segment taken at the longest point except for the trochanter, which is measured along median suture and whose value includes only that of the proximal portion (the length of distal portion being included in the femoral length); LLAS – dorsal length of last abdominal segment; Uro – length of the urogomphus.

The pattern of primary setae, pores and secondary setae of the legs of *Dytiscus marginalis marginalis* were described by NILSSON (1988). Secondary setae and pores are those added in subsequent instars. Number of the secondary setae on the legs of the Japanese species are summarized in Table 2 in accordance with NILSSON's system.

Key to the Japanese Species of the Genus *Dytiscus* (Third Instar Larva)

1. Body with two brownish stripes on each side of the center. Antero-ventral margin of tarsus provided with 0–2 secondary setae. ..... *D. marginalis czerskii*
– Body with two vague brownish stripes on each side of the center, sometimes lacking such stripes. Antero-ventral margin of tarsus provided with 3–7 secondary setae. 2
2. Side of labium provided with many short hairs. Prosternum reniform, 2.32 times as wide as long, with distinctly emarginate anterior margin. ..... *D. sharpi*
– Side of labium lacking hairs. Prosternum subquadrate, 1.54 times as wide as long, broadly notched at anterior margin. ..... *D. dauricus*

Dytiscus sharpi WEHNCKE, 1875

[Japanese name: Sharp-gengorô-modoki]

(Figs. 1, 4–20)

Specimens examined. 6 exs., Utobara, Futsu-shi, Chiba Pref., Japan, 28–I~V–1986, K. AKIYAMA leg.; 4 exs., Wajima-shi, Ishikawa Pref. (reared specimens originating the adult collected on 1998 by A. TOMISAWA), A. TOMISAWA leg.; 1 ex., Anamizu-chô, Ishikawa Pref., Japan, 15–V–1993, N. KINO leg.; 1 ex., ditto, 16–V–1993, Y. HASEGAWA leg.

Description of third instar larva. Body fusiform, convex dorsally and flattened ventrally, widest at the middle of 3rd abdominal segment, and with two vague brownish stripes on each side of the center, though sometimes lacking such stripes.

Color of body generally grayish or yellowish brown to dark brown on dorsum, usually a little paler than that of *D. dauricus*; lateral and ventral surface white to grayish white except for head; sclerotized parts of prothorax and 7th and 8th abdomi-

nal segments yellowish brown to dark brown; legs yellowish brown.

Head subqudrangular, somewhat angulate at the corners, almost as long as wide; ecdysial suture well-developed; coronal suture 0.63 times as long as HL; fronto-clypeus provided with numerous fine (0.1 mm) clavate setae; ocularium black; 6 oval ocelli separately arranged in circle, four of them being situated on dorsum and two at sides. Antenna 7-segmented, relative length of each segment as follows:— 1.00 : 7.86 : 0.86 : 5.77 : 0.82 : 4.59 : 0.23; 4th 0.73 times and 6th 0.58 times as long as 2nd; total length and length of each segment as shown in Table 1. Mandible falciform, more weakly curved than that of the other two Japanese species, acutely pointed at the apex, 3.38 times as long as wide, and 0.65 times as long as HL; inner side grooved; dorsal edge smooth; ventral edge provided with subapical setae. Maxilla simple; stipes slender; galea stout and conical; maxillary palpus 8-segmented, slightly longer than AL; total length and length of each segment as shown in Table 1. Labium furnished with villous setae at sides; labial palpus 4-segmented, 0.30 times as long as ML, shortest in the Japanese species; 2nd segment the longest. Ligula absent.

Prothorax the longest but the narrowest in thorax, 0.92 times as long as wide; mesothorax and metathorax subequal in length; metathorax the widest in thoraces. Mesonotum provided with functional and distinct spiracles. Prosternum reniform, with distinctly emarginate anterior margin and 2.32 times as wide as long. Legs 5-segmented, the length of each segment in all legs as in the following order, coxa> femur> tibia> tarsus> trochanter. Femora, tibiae and tarsi provided with natatory setae on the antero-ventral faces, and those of tarsi are restricted to basal 1/2. Antero-ventral margin of tarsus furnished with 3–7 secondary setae. Metathoracic legs the longest, 1.32 times as long as prothoracic legs, 2.49 times as long as HW. Two claws of tarsi subequal in length. Metathoracic claws 0.39 times as long as metatarsus. Numbers of secondary setae on the legs as shown in Table 2.

Abdomen 8-segmented; 1st to 6th segments cylindrical and membranous except for rectangular tergite which occupies the major portion of dorsum; tergite stretching ventrad on 7th segment in the form of a cone with truncate tip; 8th segment conical, 0.13–0.15 times as long as BL and completely sclerotized; 1st to 6th segments scattered with stout setae on tergite and on ventrite; 7th and 8th segments fringed with very long setae at sides, scattered with somewhat long hairs and minute setae on dorsum, and with stout setae on venter. Spiracles functional, distinct, and situated on 1st to 7th segments at antero-lateral surface. Urogomphus irregularly scattered with long setae.

Remarks. This larva is the smallest of those three Japanese species.

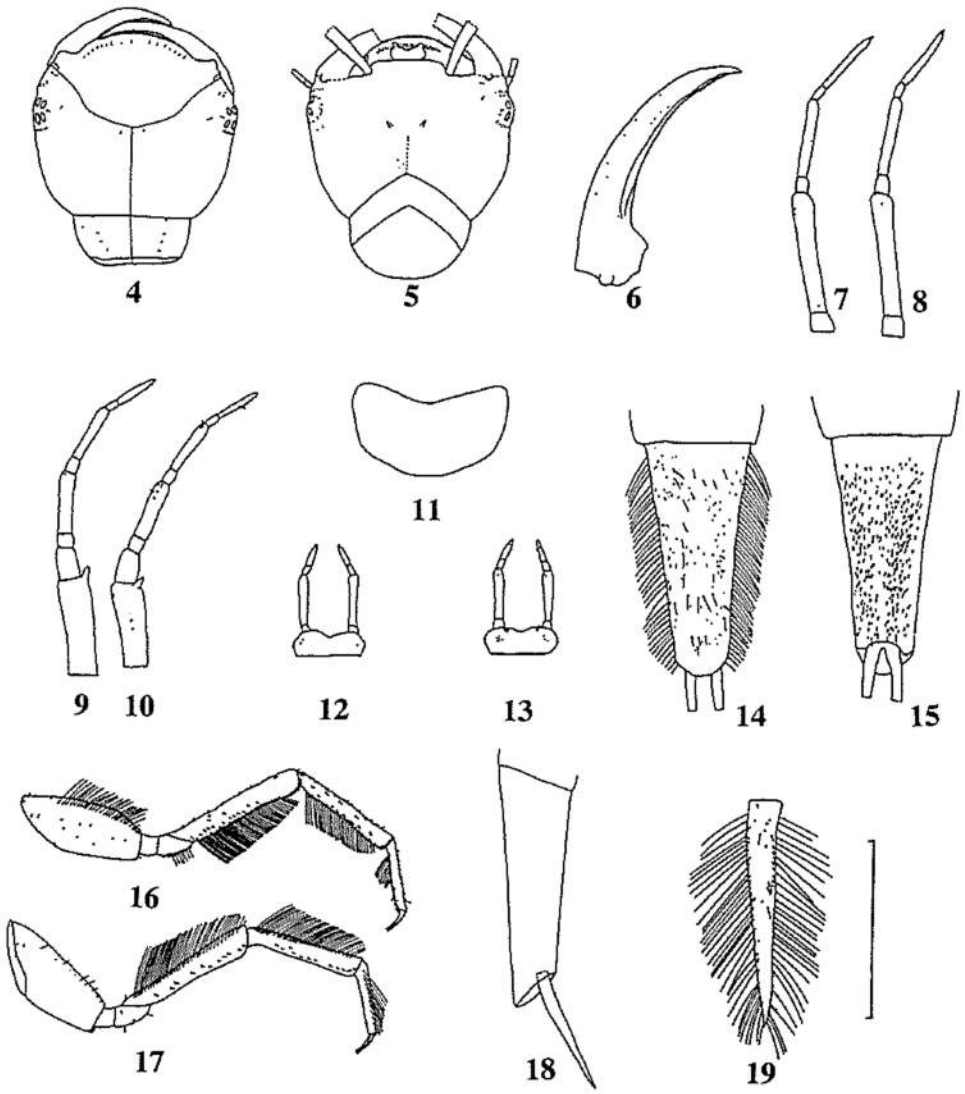
Dytiscus marginalis czerskii ZAITZEV, 1953

[Japanese name: Ezo-gengorô-modoki]

(Figs. 2, 20–35)

Specimens examined. 2 exs., Akaishi, Ajigasawa-chô, Aomori Pref., Japan, 10–VIII–1985, A. ABE leg.

Diagnosis. Body widest at the middle of 3rd abdominal segment, having two



Figs. 4–19. Third instar larva of *D. sharpi*. —— 4, Head, dorsal aspect; 5, ditto, ventral aspect; 6, mandible; 7, antenna, dorsal aspect; 8, ditto, ventral aspect; 9, maxilla, dorsal aspect; 10, ditto, ventral aspect; 11, prosternum; 12, labium, dorsal aspect; 13, ditto, ventral aspect; 14, metathoracic legs, dorsal aspect; 15, ditto, ventral aspect; 16, 8th abdominal tergite; 17, 8th abdominal sternite; 18, lateral aspect of abdominal tip; 19, urogomphus. (Scale: 0.5 cm for 4–6 & 14–19; 0.25 cm for 7–13)

brown longitudinal stripes along the midline.

Color of body distinctly paler than in *D. sharpi* and *D. dauricus*; lateral and ventral surfaces white to grayish white except for head; sclerotized parts of prothorax

and 7th and 8th abdominal segments yellowish brown to dark brown; legs yellowish brown.

Head subtriangular, nearly as long as wide; ecdysial suture well-developed; coronal suture about 0.66 times as long as HL. Relative lengths of antennal segments as follows:— 1.00 : 7.74 : 0.96 : 6.00 : 0.91 : 4.48 : 0.22; 4th 0.77 times, and 6th 0.58 times as long as 2nd. Mandible acute falciform, about 3.69 times as long as wide, and about 0.62 times as long as HL; inner side grooved. Labial palpus 0.32 times as long as ML.

Prothorax the longest, but the narrowest; mesothorax and metathorax subequal in length; metathorax the widest, about 1.08 times as long as wide. Pronotum the widest; metanotum the narrowest. Pleural region of mesonotum furnished with functional and distinct spiracles. Prosternum subquadrate, broadly notched at anterior margin, 1.58 times as wide as long.

Order of lengths of segments in all legs as coxa> femur> tibia> tarsus> trochanter. Femora, tibiae and tarsi provided with functional natatory setae. Antero-ventral faces of all tarsi bearing natatory setae which are restricted to basal 1/3. Antero-ventral margin of protarsus lacking secondary setae and meso- and metatarsi provided with 0–2 secondary setae. Metathoracic legs the longest, 1.33 times as long as prothoracic legs, 2.20 times as long as HW. Metathoracic claw 0.28 times as long as metatarsus. 8th abdominal segment 0.13 times as long as BL.

Remarks. This species is distinguishable from the other Japanese species by the following characteristics: color of body distinctly the palest; antero-ventral faces of all tarsi bearing natatory setae, though restricted to basal 1/3.

Dytiscus dauricus GEBLER, 1832

[Japanese name: Gengorô-modoki]

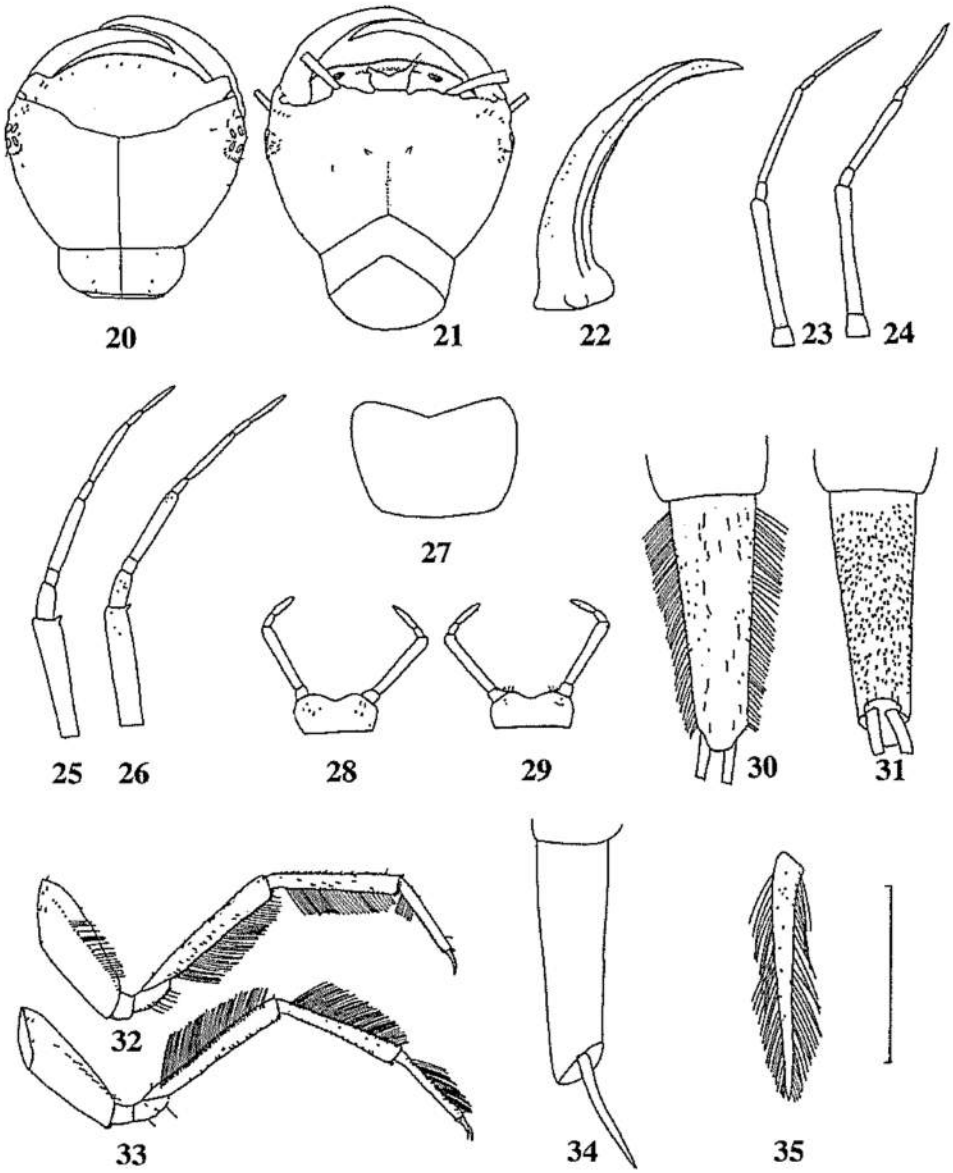
(Figs. 3, 36–51)

Specimens examined. 1 ex., Nogawa, Koshimizu-chô, Hokkaido, 19–VI–2000, Y. KAMITE leg.; 3 exs., Yamubetsu, Koshimizu-chô, Hokkaido, 18–VI–2001, Y. KAMITE leg.; 1 ex., Kiyoizumi, Kiyosato-chô, Hokkaido, 1–VII–2001, Y. KAMITE leg.; 1 ex., Shiomi, Abashiri-shi, Hokkaido, 21–VI–2001, Y. KAMITE leg.; 1 ex., Kyôwa, Abashiri-shi, Hokkaido, 6–VII–2001; 1 ex., Nopporo, Ebetsu-shi, Hokkaido, 14–VI–2001, S. HORI leg.

Diagnosis. Body widest at the middle of 3rd abdominal segment, median stripe usually absent, sometimes discernible as two, very vague, brown stripes at the middle.

Color of body most infuscate of the three Japanese species, generally grayish, but yellowish brown to dark brown on dorsum; lateral and ventral surfaces white to grayish white except for head; sclerotized parts of prothorax and 7th and 8th abdominal segments yellowish brown to dark brown; legs yellowish brown.

Head subtriangular, almost as long as wide, ecdysial suture well-developed; coronal suture 0.64 times as long as HL. Relative lengths of antennal segments as follows:— 1.00 : 7.80 : 0.76 : 5.76 : 0.64 : 3.96 : 0.20; 4th 0.74 times, and 6th 0.51 times as long as 2nd. Mandible falciform, acutely pointed at the apex, 3.83 times as



Figs. 20–35. Third instar larva of *D. marginalis czerskii*. —— 20, Head, dorsal aspect; 21, ditto, ventral aspect; 22, mandible; 23, antenna, dorsal aspect; 24, ditto, ventral aspect; 25, maxilla, dorsal aspect; 26, ditto, ventral aspect; 27, prosternum; 28, labium, dorsal aspect; 29, ditto, ventral aspect; 30, metathoracic legs, dorsal aspect; 31, ditto, ventral aspect; 32, 8th abdominal tergite; 33, 8th abdominal sternite; 34, lateral aspect of abdominal tip; 35, urogomphus. (Scale: 0.5 cm for 20–22 & 30–35; 0.25 cm for 23–29)

long as wide, and 0.67 times as long as HL; inner side grooved. Labial palpus 0.32 times as long as ML.

Prothorax the longest and the narrowest, a little transverse, 0.96 times as long as wide. Mesothorax and metathorax subequal in length; metathorax the widest. Pronotum the widest; metanotum the narrowest. Pleural region of mesonotum furnished with functional and distinct spiracles. Prosternum subquadrate, 1.54 times as wide as long, similar in shape to *D. marginalis czerskii*.

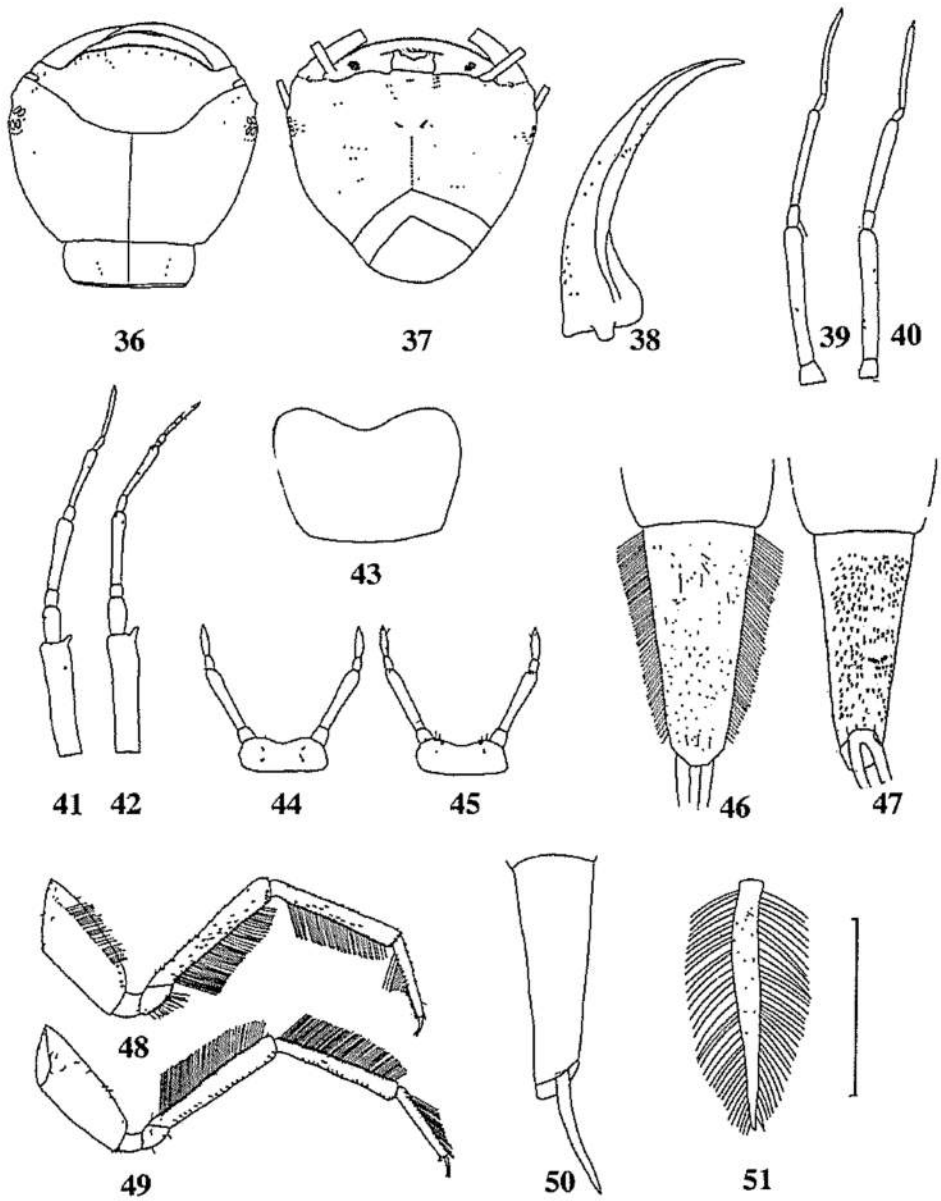
Order of lengths of segments in all legs as coxa> femur> tibia> tarsus> trochanter. Femora, tibiae and tarsi provided with natatory setae. Antero-ventral faces of all tarsi bearing natatory setae, though restricted to basal 1/2.

Antero-ventral margin of tarsus provided with 3–7 secondary setae as is so in *D. sharpi*. Metathoracic legs the longest, 1.34 times as long as prothoracic legs, 2.36 times as log as HW. Metathoracic claw 0.29 times as long as metatarsus. Abdominal segment 0.12–0.13 times as long as BL.

Remarks. This species is distinguishable from the other Japanese species by the following characteristics: BW widest; color of body much infuscated.

Table 1. Measurements (mm) of *Dytiscus* spp.

	D. shapi	*D. marginalis czerskii*	*D. dauricus*
BL	43.4-55.4 (AV 49.6)	51.5-55.3 (AV 53.4)	50.8-53.8 (AV 52.3)
BW	6.16-7.74 (AV 7.15)	6.66-7.12 (AV 6.89)	7.25-8.26 (AV 7.81)
HL	5.65-6.82 (AV 6.35)	6.48-6.86 (AV 6.67)	5.56-7.27 (AV 6.90)
HW	5.53-6.22 (AV 6.04)	6.28-6.65 (AV 6.47)	5.72-7.10 (AV 6.93)
FCL	1.95-2.62 (AV 2.38)	1.86-2.12 (AV 1.99)	2.05-2.72 (AV 2.61)
HW/Ocw	1.66-1.81 (AV 1.73)	1.70-1.93 (AV 1.82)	1.75-1.91 (AV 1.83)
AL	4.39-4.77 (AV 4.58)	4.85-4.89 (AV 4.87)	4.75-5.24 (AV 5.02)
A1	0.20-0.28 (AV 0.24)	0.21-0.24 (AV 0.23)	0.20-0.29 (AV 0.25)
A2	1.67-1.88 (AV 1.77)	1.77-1.78 (AV 1.78)	1.82-2.07 (AV 1.95)
A3	0.16-0.23 (AV 0.20)	0.21-0.22 (AV 0.22)	0.16-0.20 (AV 0.19)
A4	1.10-1.40 (AV 1.22)	1.35-1.40 (AV 1.38)	1.29-1.48 (AV 1.44)
A5	0.16-0.22 (AV 0.19)	0.20-0.21 (AV 0.21)	0.12-0.20 (AV 0.16)
A6	0.80-1.09 (AV 0.98)	1.03	0.75-1.18 (AV 0.99)
A7	0.03-0.06 (AV 0.05)	0.04-0.05 (AV 0.05)	0.05
ML	4.70-5.35 (AV 5.01)	5.24-5.53 (AV 5.39)	5.44-6.15 (AV 5.74)
M1	1.42-1.80 (AV 1.66)	1.40-1.71 (AV 1.56)	1.66-1.96 (AV 1.83)
M2	0.41-0.53 (AV 0.46)	0.48-0.60 (AV 0.56)	0.44-0.61 (AV 0.52)
M3	0.18-0.22 (AV 0.20)	0.21-0.26 (AV 0.24)	0.18-0.26 (AV 0.23)
M4	0.88-0.97 (AV 0.92)	1.00-1.21 (AV 1.10)	1.08-1.23 (AV 1.13)
M5	0.16-0.33 (AV 0.23)	0.18-0.25 (AV 0.22)	0.19-0.27 (AV 0.23)
M6	0.67-0.82 (AV 0.75)	0.95	0.75-0.93 (AV 0.86)
M7	0.13-0.22 (AV 0.17)	0.24-0.49 (AV 0.35)	0.15-0.27 (AV 0.21)
M8	0.56-0.73 (AV 0.64)	0.28-0.58 (AV 0.43)	0.57-0.82 (AV 0.73)
LL	1.33-1.62 (AV 1.56)	1.68-1.77 (AV 1.73)	1.74-2.04 (AV 1.83)
L1	0.15-0.19 (AV 0.17)	0.15-0.23 (AV 0.19)	0.15-0.20 (AV 0.17)
L2	0.76-0.89 (AV 0.82)	0.89-0.93 (AV 0.91)	0.93-1.13 (AV 1.06)
L3	0.16-0.20 (AV 0.19)	0.17-0.22 (AV 0.20)	0.14-0.19 (AV 0.17)
L4	0.31-0.42 (AV 0.38)	0.39-0.44 (AV 0.42)	0.38-0.48 (AV 0.43)
LLAS	6.28-7.15 (AV 6.86)	6.44-7.05 (AV 6.75)	6.41-6.84 (AV 6.68)
Uro	3.19-3.69 (AV 3.50)	3.47-3.99 (AV 3.73)	3.55-4.07 (AV 3.94)



Figs. 36–51. Third instar larva of *D. dauricus*. —— 36, Head, dorsal aspect; 37, ditto, ventral aspect; 38, mandible; 39, antenna, dorsal aspect; 40, ditto, ventral aspect; 41, maxilla, dorsal aspect; 42, ditto, ventral aspect; 43, prosternum; 44, labium, dorsal aspect; 45, ditto, ventral aspect; 46, metathoracic legs, dorsal aspect; 47, ditto, ventral aspect; 48, 8th abdominal tergite; 49, 8th abdominal sternite; 50, lateral aspect of abdominal tip; 51, urogomphus. (Scale: 0.5 cm for 36–38 & 46–51; 0.25 cm for 39–45.)

Table 2. Number of secondary setae on the legs of *Dytiscus* spp.

Segment series	Sensilla	DAU*	MAR*	SHA*	Segment series	Sensilla	DAU*	MAR*	SHA*
ProCO	D	0-10	0-3	2-17	MesoTI	AD	9-17	9-12	12-18
	A	20-24	20-27	18-26		AV	22-28	20-23	19-34
	V	0	0	0-1		PV	9-18	11-14	8-20
ProTR	Pr	0	0	0-4		NS (D)	106-113	103-112	85-101
	Di	11-18	11-14	12-18		NS (V)	96-103	98-119	82-105
	NS	13-17	8-13	16-29	MesoTA	AD	7-8	4-6	6-10
ProFE	AD	6-13	9-10	7-15		AV	3-6	0-1	3-7
	AV	31-41	26-28	23-35		PV	0	0	0
	PV	12-18	13-15	7-17		NS (D)	70-74	70-72	53-58
	NS (D)	72-75	81-89	63-72		NS (V)	33-38	36-41	22-36
	NS (V)	83-93	86-94	77-88		SP	21-23	26-28	16-25
ProTI	AD	7-12	8-10	8-15	MetaTR	Pr	2-3	0	1-5
	AV	22-26	16-19	15-31		Di	12-18	12-14	18-37
	PV	6-8	7-9	5-11		NS	15-19	18-20	20-29
	NS (D)	77-82	85-95	65-85	MetaFE	AD	10-14	8-12	8-20
	NS (V)	83-89	92-95	79-94		AV	39-50	44-47	26-57
ProTA	AD	5-7	3-4	5-12		PV	13-16	12	7-22
	AV	4-6	0	3-7		NS (D)	62-76	74-80	50-68
	PV	0	0	0-4		NS (V)	104-119	95-112	96-111
	NS (D)	53-57	62-66	47-54	MetaTI	AD	14-16	11-13	12-18
	NS (V)	17-19	18-21	11-19		AV	25-40	15	19-35
	SP	23-31	31-34	20-30		PV	12-14	12	6-18
MesoCO	D	5-12	9-13	11-17		NS (D)	92-113	106-111	78-98
	A	26-34	24-26	25-32		NS (V)	100-114	90-97	89-103
	V	0	0	0-2	MetaTA	AD	4-8	3-5	8-11
MesoTR	Pr	3-5	0	1-3		AV	4-7	0-2	3-7
	Di	17-20	12-14	17-23		PV	4-7	0-1	3-7
	NS	20-24	13-18	20-26		NS (D)	58-71	67-69	49-54
MesoFE	AD	7-15	12-14	13-23		NS (V)	25-31	24-26	15-23
	AV	38-47	38-40	33-50		SP	25-30	42-48	25-33
	PV	12-18	11-15	12-23					
	NS (D)	78-88	88-93	59-76					
	NS (V)	100-108	103-105	98-105					

*SHA=*D. shapi*; MAR=*D. marginalis czerskii*; DAU= *D. dauricus*.

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Hydraena (s. str.) *masatakai* sp. nov. (Coleoptera, Hydraenidae) from Vietnam

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Abstract *Hydraena* (s. str.) *masatakai* JÄCH et DÍAZ, sp. nov. (Coleoptera: Hydraenidae) is described from Vietnam. It belongs to the *H. armipalpis* species-group. *Hydraena* (s. str.) *masatakai* is the first member of the subgenus *Hydraena* s. str. from Vietnam.

Introduction

Six species of *Hydraena* KUGELANN have been recorded from Vietnam so far: *H.* (*Hydraenopsis*) *connexa* D'ORCHYMONT, 1932, *H.* (*Hydraenopsis*) *coomani* D'ORCHYMONT, 1932, *H.* (*Hydraenopsis*) *formula* D'ORCHYMONT, 1932, *H.* (*Hydraenopsis*) *knischi* D'ORCHYMONT, 1932, *H.* (*Hydraenopsis*) *paucistriata* JÄCH et DÍAZ, 2000, and *H.* (*Hydraenopsis*) *vietnamensis* JANSSENS, 1972. In this paper, a seventh species is added. It is the first member of the subgenus *Hydraena* s. str. recorded from Vietnam. The new species is dedicated to Prof. Masataka SATÔ.

We are very much indebted to W. ZELENKA (Vienna) for the habitus illustration.

Acronyms:

CDS	Coll. DÍAZ, Santiago de Compostela
CSN	Coll. SATÔ, Nagoya
NMW	Naturhistorisches Museum, Wien

Hydraena (s. str.) ***masatakai*** JÄCH et DÍAZ, sp. nov.

(Figs. 1–9)

Type locality. Tam Dao, northern Vietnam.

Type material. Holotype ♂ (NMW): "N-VIETNAM: Tam Dao (2) 1.-8.6. 1996 leg. Dembicky & Pacholatko". Paratypes (CDS: 4 exs., CSN: 2 exs., NMW: 40 exs.):

46 exs., same label data as holotype.

Description. Habitus (Fig. 1). Length: ca. 1.05–1.15 mm. Width: ca. 0.9 mm. Dorsal surface reddish brown, frons and elytra usually darker brown; legs reddish brown. Labrum distinctly wider than long, with well developed posterolateral emargination (labral mandibular interlocking device); densely micropunctate, except small median glabrous area in front of posterior margin; anterior angles obtusely rounded; anterior margin of labrum deeply excised (ca. 0.7 of entire length); anterior and lateral margins and mesal margins of excision very slightly upturned. Clypeus densely micropunctate and mat except glabrous anterior margin. Fronto-clypeal suture arcuate, not very strongly impressed. Frons moderately densely punctate medially (interstices shining), rugosely punctate and mat laterally; sublateral grooves distinct, close to eyes. Compound eyes moderately large, with about 25 facets visible in dorsal view. Maxillary palpi long, distinctly longer than maximum width of pronotum, sexually dimorphic. Mentum and submentum densely micropunctate, mat. Anterior genal bulge not crested; intermediate and posterior genal ridges distinctly crested; subocular ridge very well developed; an additional longitudinal genal ridge connects maxillary socket and posterior genal ridge and extends to posterior tentorial pit. Gula with large pregular glabrous area.

Pronotum subhexagonal, strongly constricted anteriorly and posteriorly, distinctly wider than long; anterior margin distinctly concave; anterior angles obtuse; lateral rim conspicuously denticulate; disc more or less flat, rather coarsely and irregularly punctate, interstices glabrous; anteriorly with very shallow median V-shaped impression; posterior admedian foveae shallowly impressed; lateral portion of pronotum explanate, not strongly deflexed, separated from disc by longitudinal groove, punctation more rugose than on disc. Prosternum impressed in front of procoxae; distinct median carina not produced into a distinct spine anteriorly. Hypomeral carina without distinct antennal pocket setae. Mesoventrite with distinct median longitudinal ridge and a pair of sublateral ridges, parallel to median ridge; ridges micropunctate, mat, not pubescent; anterior margin of metaventrite reinforced, forming anterior collar; intercoxal process fairly broad, with lateral margins but without median ridge, apically truncate. Suture between mesoventrite and anepisternum 2 indicated by distinct, more or less glabrous, oblique ridge. Elytra oval, conjointly rounded apically; with 13 longitudinal, more or less regular rows of punctures (seven rows between suture and shoulder); punctures large and deeply impressed (in anterior half of elytra); intervals and interstices slightly convex, glabrous; explanate margin of elytra rather wide, anteriorly and posteriorly serrate, not reaching elytral apex. Inflexed lateral portion of elytra very wide, almost reaching apex; pubescent epipleura narrow, reaching middle of metaventrite. Metaventrite sexually dimorphic, distinctly impressed medially; with short anterior median longitudinal carina and Y-shaped ridge behind mesocoxae; distinct plaques absent, faintly indicated by hardly traceable, inverted Y-shaped pubescent ridge. Hind wings present. Legs with pronounced sexual dimorphism, protrochanter not pubescent.

Intercoxal segment (= abdominal sternite II) strongly transverse, not pubescent; strongly emarginate posteriorly; posterior angles acute; anteriorly truncate. Pubescence of abdomen comprises basal four ventrites and ventrite V except semicircular posterior portion. Ventrite I with a pair of admedian longitudinal carinae and with

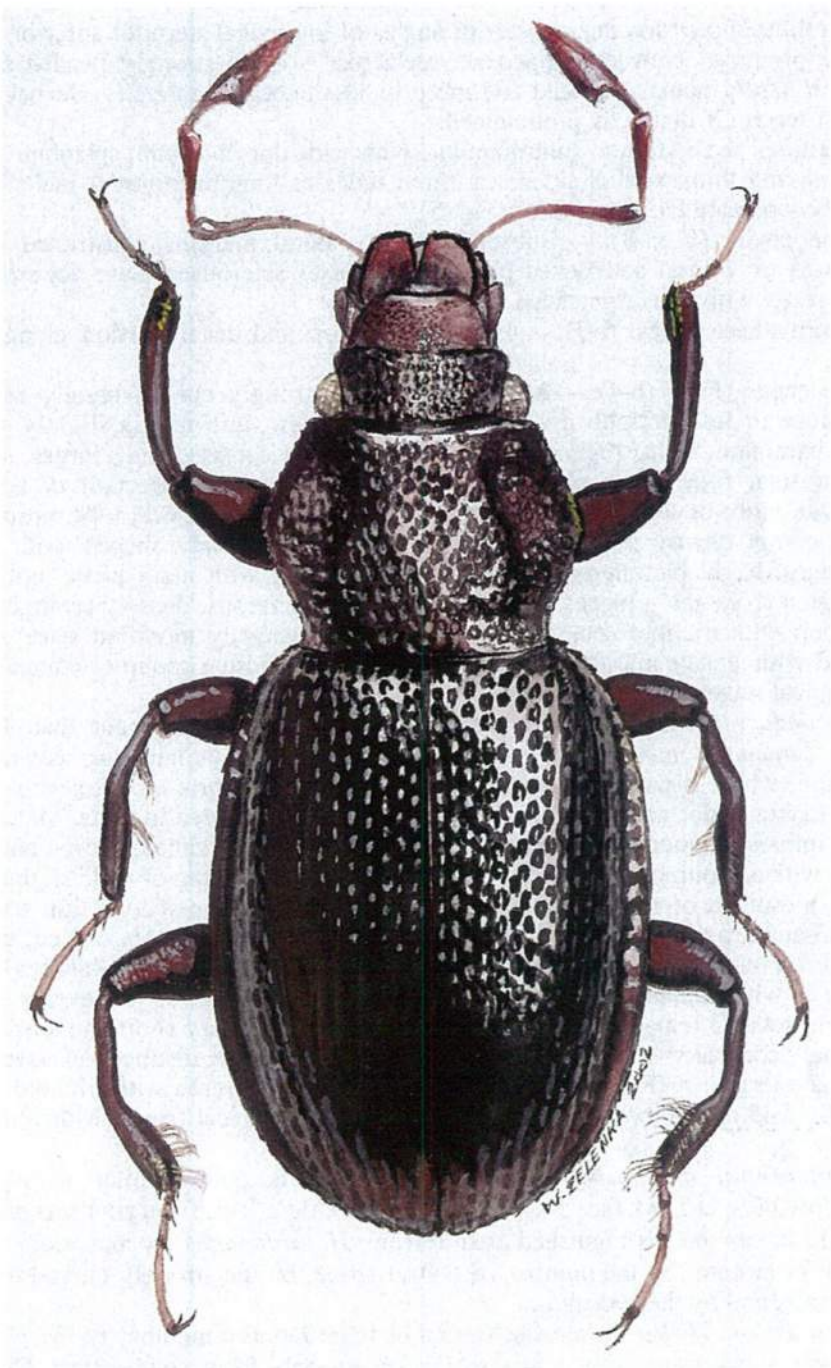


Fig. 1. *Hydraena masatakai* JÄCH et DÍAZ, sp. nov., habitus.

puncture-like impression near posterior angles of intercoxal sternite; anterior margin strongly produced between metacoxae; metacoxal sockets strongly beaded mesally, then with hardly noticeable bead and more or less unbeaded laterally. Sexual dimorphism of tergite X distinctly pronounced.

Terminal male sternite subtriangular, with wide dorsal velum; spiculum gastrale very long and thin, parallel-sided, ca. three times as long as terminal male sternite, distinctly separated from the latter (Fig. 5).

Gonocoxite (Fig. 8):— Subsemicircular; lateral margins constricted basally; apical area of ventral sclerotised plate short; dorsal sclerotised plate not surpassing ventral plate, with one large cavea.

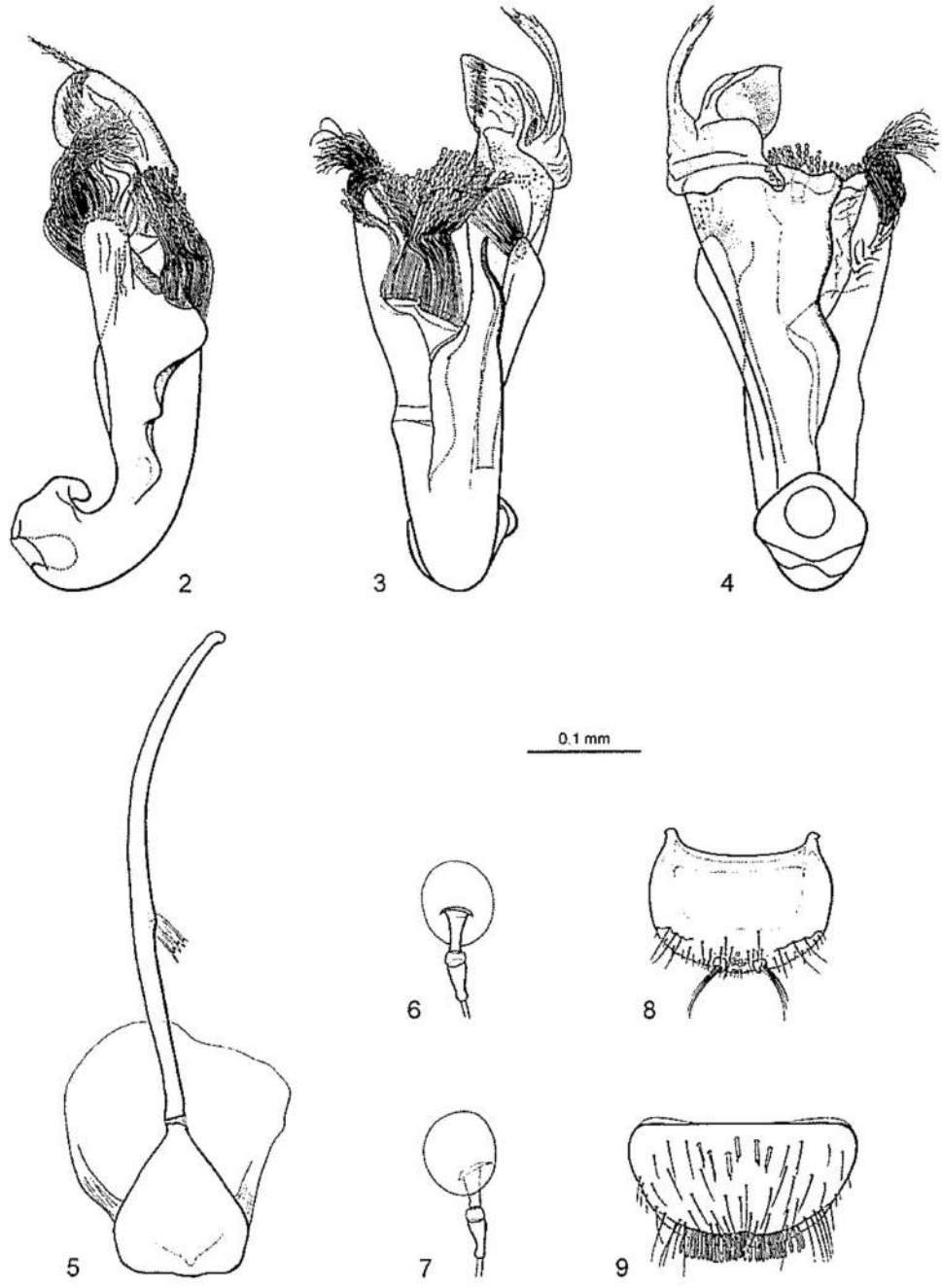
Spermatheca (Figs. 6–7):— Proximal portion and distal portion elongate and tubular.

Aedeagus (Figs. 2–4):— Main piece stout; strongly curved basally in lateral view, more or less straight in ventral (or dorsal) view; left margin slightly grooved for left paramere; apical region with two short, closely set setae and a larger, strongly flattened seta, fourth seta absent or detectable only after dissection of aedeagus. Phallobase more or less symmetrical, forming a closed ring. Distal lobe more or less amorphic, not clearly delimited from main piece, intricately shaped, with several appendages. Right paramere wide, stout, partly fused with main piece, not clearly demarcated from main piece; with two groups of numerous, densely arranged setae, one group with trichoid setae, second group with distinctly modified setae: apically flattened with sinuate margins. Left paramere slender, with a group of comparatively short, apical setae; inserted near basal 0.25.

Secondary sexual characters. Males on average a little larger than females. Apical segment of maxillary palpi of male with conspicuous lamellar, asymmetrical projection, which is partly warped around the segment to form a conspicuous ventral cavity. Elytra wider and apically slightly more widely rounded in male. Metaventrite deeply impressed medially in male. All male femora thickened; meso- and metafemora with a group of long thin setae on ventral face. Protibia of male slightly more curved; mesotibia of male very strongly curved, with groups of long thin setae near basal 0.3 and near apex of ventral face. Male metatibia very strongly curved, enlarged in posterior half, with subapical fringe of setae on ventral face. Glabrous area of ventrite V with admedian pair of setal fringes in male, more or less evenly covered with long setae in female. Ventrite VI very large in male, very short and more or less completely concealed by ventrite V in female. Male tergite X distinctly excised apically. Female tergite X (Fig. 9): transverse, disc sparsely covered with trichoid setae in posterior half and with squamose setae subbasally; subapical fringe with blunt setae medially.

Differential diagnosis. Hydraena masatakai is quite similar to *Hydraena armipalpis* JÄCH et DÍAZ (see JÄCH & DÍAZ, 2000), described from southeastern China (Fujian). It can be distinguished easily from *H. armipalpis* by the more densely punctate pronotum, by the number of elytral striae, by the strongly curved metatibia of the male, and by the aedeagus.

Discussion. Hydraena masatakai can be regarded as a member of the *Hydraena armipalpis* species-group, which is so far known only from southeastern China and



Figs. 2–7. *Hydraena masatakai* JÄCH et DÍAZ, sp. nov.; 2, aedeagus, lateral view; 3, same, dorsal view; 4, same, ventral view; 5, spiculum gastrale and male terminal sternite; 6, spermatheca; 7, same, different view; 8, gonocoxite; 9, female tergite X.

Vietnam. Possible synapomorphies include details of the secondary sexual male characters (*e.g.*, shape of terminal segment of maxillary palpi) and the overall aedeagal similarity (*e.g.*, modified parameral setae).

Distribution. Hydraena masatakai is so far known only from the type locality.

Etymology. It is with great pleasure that we dedicate this extraordinary species to Prof. Masataka SATÔ in commemoration of his retirement.

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The Biology of *Georissus californicus* LECONTE (Coleoptera, Hydrophilidae, Georissinae)

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Abstract The life cycle of *Georissus californicus* is univoltine and fast, with an active period from spring through summer. Three larval instars are present. Pupation occurs in June. The new generation of adults overwinters and returns to the streamside after Spring floods subside.

There are two species of *Georissus* described from North America: *Georissus pusillus* LECONTE, 1852 and G. *californicus* LECONTE, 1874. Currently both are considered valid (HANSEN, 1999). LECONTE (1874) separated the two species because *G. californicus* had the "anterior lobe [of the prothorax] separated by a more distinct transverse impression than in *G. pumilus* [sic]." Several lines later LECONTE said "It is quite distinct from *pumilus* [sic] by the smaller and more distinct rows of punctures of the elytra." I assume "smaller and more distinct..." refers to *G. californicus* but that is not clear. HATCH (1965) noted that *G. pusillus* was "rather variable and I suspect that *californicus* LEC. 1874, 51 is a synonym." Subsequent mentions of *Georissus* in North America have either argued over the proper spelling of the genus and family, added to the listings of North American states and provinces in which the two species have been collected, or discussed the familial status of georissids. Several authors have given georissids their own family (*e. g.*, HANSEN, 1999), while others have made georissids a subfamily in the Hydrophilidae (*e. g.*, VAN TASSELL, 2001).

The biology of georissids has remained little studied until now. The only immatures described were two larvae of *G. crenulatus* from Germany (VAN EMDEN, 1956; SPANGLER, 1991). MESSNER (1964) has described adult biology, noted that mating occurs in the fall, and cited adult association with tridactylid galleries. HINTON (1933) and CHANDLER (1973) both record georissids collected from debris washed up by streams. And lastly, adults have long been known to camouflage themselves with a coating of mud and sand and fly to lights at night.

In May, 1999 I located a population of *G. californicus* in the Sierra Nevada of California. The locality is: USA: California: Placer County, 12 km (7.5 mi) northeast of Auburn, where the North Fork of the American River enters upper Lake Clementine, 247 m (810 ft), 38°57′22″N 120°59′03″W. Adults were easily collected at this location. Since adults were common, I decided to continue to sample the habitat for immatures. Additionally, I decided to summarize the available geographic and ecological information

Methods

Field sampling took place during June and July of 1999 and June through August of 2002, on the sand and silt banks of either the North Fork of the American River or Lake Clementine (Fig. 1). The sampling was of two types. Adults on the surface were visually located and manually collected into 70 % ethyl alcohol. Where adults were found on the surface, the silt and sand was excavated down about a centimeter and sieved through two sieves, to recover larvae, pupae and additional adults. The top, coarser sieve (US Standard #5) retained the larger debris and plants while the lower, finer sieve (US Standard #45) retained the fine debris and small organisms (Fig. 2). Contents of the lower sieve were preserved in 95 % ethyl alcohol and sorted later under a dissecting microscope. Larval measurements were made using a dissecting microscope and ocular grid. To determine the number of larval instars, four measurements were made on each suitable larva — interocular width (IOW), head capsule width (HCW), length of pronotum sclerite along the midline (PL), and total length (TL). The frequencies of the different measurements were then tallied, graphed and instar determination made by visual inspection for peaks of frequencies. Four adults and four larvae were prepared for examination in the SEM.

Museum specimens (all adults) were either examined at or borrowed from the following institutions: University of California, Berkeley; University of California, Davis; California Academy of Sciences (San Francisco); California Department of Food & Agriculture (Sacramento); University of British Columbia (Vancouver); University of Manitoba (Winnipeg), Department of Agriculture, Canada (Ottawa) and the Natural History Museum (London). Data collected included any geographical and ecological information on the labels.

Results and Discussion

L a r v a. Morphologically larvae of *G. californicus* (Figs. 3–5) do not greatly differ from descriptions of larval *G. crenulatus* (VAN EMDEN, 1956; SPANGLER, 1991). However, they do reach a larger size, the mesonotum is represented by two wide sclerites, and the meso- and metasterna are represented by small, rectangular sclerites.

A total of 103 larvae were measured although not every larva was suitable for every measurement. Interocular widths proved difficult to determine accurately as some larvae already had newly formed eyes under the unshed exoskeleton so that "additional" eyespots were visible. Total lengths also proved highly variable due to different inclinations of the head and body plus postmortem swelling and contortion. The more reliable measurements were the head capsule widths and the pronotal lengths. However, all four types of measurements indicated three instars (Figs. 12–13).

Interocular width (IOW) varied from 0.136-0.289 (N=102): instar 1 had an HCW range of 0.136–0.187 mm; instar 2 had an HCW range of 0.187–0.238 mm; and instar 3 had an HCW range of 0.255–0.289 mm. Head capsule width (HCW) varied from 0.204–0.374 mm (N=103): instar 1 had an HCW range of 0.204–0.238

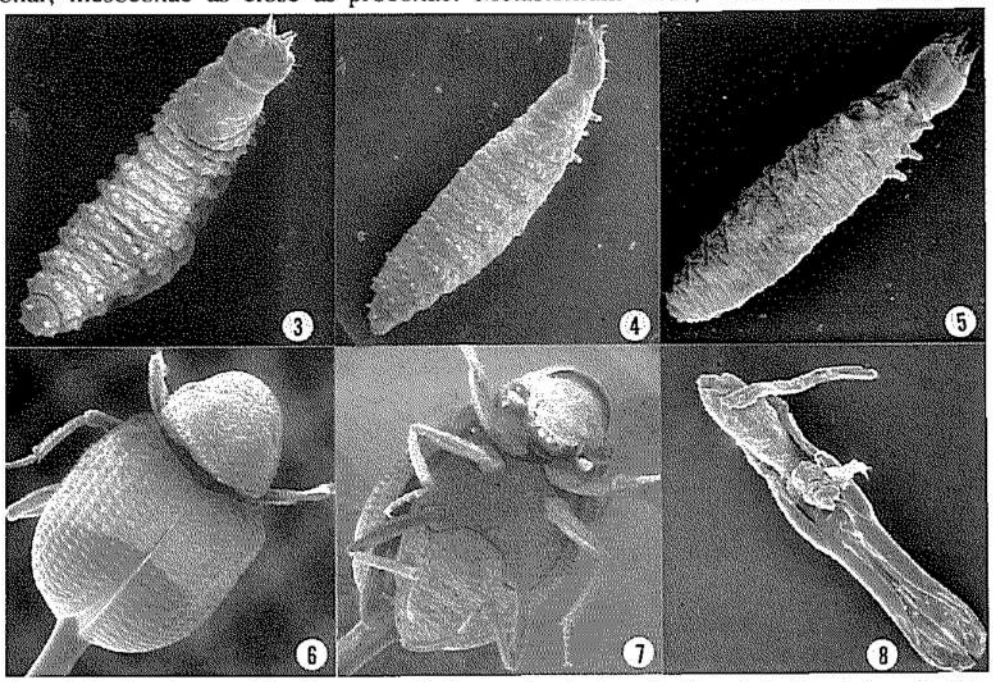
Figs. 1–2. —— 1, *Georissus californicus* collecting site at the junction of the North Fork of the American River and Lake Clementine; 2, sieve contents (left – #45 sieve; right – # 5 sieve) from sampling.

mm; instar 2 had an HCW range of 0.255–0.289 mm; and instar 3 had an HCW range of 0.306–0.374. Pronotal sclerite length (PL) varied from 0.102–0.238 mm (N=100): instar 1 had a PL range of 0.102–0.153 mm; instar 2 had a PL range of 0.170–0.187 mm; and instar 3 had a PL range of 0.221–0.238 mm. Total length (TL) varied from 1.32–2.97 mm (N=98): instar 1 had a TL range of 1.32–1.78 mm; instar 2 had a TL range of 1.82–2.15 mm; and instar 3 had a TL range of 2.24–2.81 mm.

The first larvae I collected were found in late June. But by then third instar larvae were already present, thus larval development began earlier. The 24 July 1999 sample lacked larvae but had one pupa present so larval development was ending by then. However, a few larvae were still found on 27 August 2002 so larval development lasted longer that year.

P u p a. *Description.* Pupa exarate, unsclerotized (Figs. 9–11). Long seta-like processes (henceforth called setae) dorsally and laterally on thorax and abdomen. Abdomen nine-segmented, with apical urogomphi-like processes. Wings wrapping around body.

Head with two pair of frontal setae. Pronotum subquadrate; five pairs of setae along perimeter; basal row of coarse punctures. Mesonotum with one pair of setae anterolaterally; scutellum raised. Metanotum with one pair of anterolateral setae. Abdominal terga each with two pairs of setae, one dorsomedial and one lateral. Prosternum covered by large fused trochanter-coxal complexes. Mesosternum pentagonal; mesocoxae as close as procoxae. Metasternum wide, with medial sulcus and



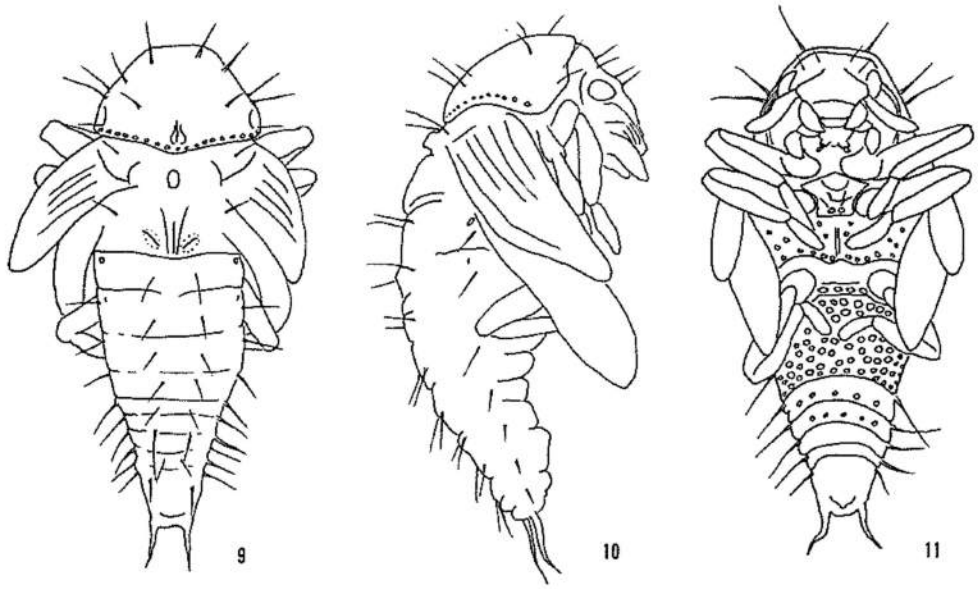
Figs. 3–8. *Georissus californicus.* —— 3, Larva, dorsal view; 4, ditto, right lateral view; 5, ditto, ventral view; 6, adult, dorsal view; 7, ditto, ventral view; 8, aedeagus of adult male, dorsal view.

coarse punctures; metacoxae widely separate. First abdominal sternite long, covered with coarse punctures; second and third abdominal sternites short, with a transverse row of coarse punctures. Remaining sternites difficult to distinguish.

The only pupa collected was taken 25 June 1999, from one of the substrate samples. The pupa was enclosed in an egg-shaped chamber composed of sand. This pupa was nearing maturity as evidenced by adult structures present inside the pupal exoskeleton.

A d u l t. Adults have been described in detail for *Georissus* by ARNETT (1960) and for *G. pusillus* by HATCH (1965). Both descriptions fit adults of *G. californicus* (Figs. 6–7), as does HINTON's (1933) redescription of *G. minor* SHARP, the Central American species! Obviously a generic revision is needed. The aedeagus (Fig. 8) of *G. californicus* is trilobed with the basal piece dorsally open and the parameres extending beyond the acutely pointed penis.

Adults were taken at every collection from June through August. All adults seen on the sediment surface had silt and sand adhering to all sides, but with a much thicker, dorsal cap of sediment. Often this sediment cap was wider than the adult, and sometimes bridged the elytral suture so opening or raising the elytra was prevented. Most often, adults were sitting still when sighted. Occasionally they would take a few steps forward, making their presence obvious. Because of the sediment cap it was impossible to determine what they were doing while still. Mating was never observed. Some sieve samples had adults that lacked the dorsal sediment cap but had some sediment on all surfaces. It is assumed that these were adults collected while still in the pupal cell. Specimens taken at lights during other studies look the same. Thus there



Figs. 9–11. Pupa of *Georissus californicus*. —— 9, Dorsal view; 10, right lateral view; 11, ventral view.

must be a dispersal flight by newly emerged adults after which they make the sediment cap and no longer fly. All adults taken during the end of July and in August were found only in the sieve samples and not on the sediment surface. They also lacked the sediment cap.

Museum specimens show that *G. californicus* adults have been collected throughout California, but always associated with mountains. This is likely so because they need water bodies with sand banks on which silt and debris are permanently deposited. This would exclude any tidally influenced stream and wave-washed lake shores. The California counties for which there are no records are mainly in the Central Valley, the East Front of the Sierra Nevada and the southeastern deserts. I suspect that further collecting will show that *G. californicus* also occurs in mountainous parts of these counties. Adults have been collected from February through August (but most during May–July), and from 247–1,490 m (810–4,889 ft) in elevation.

Life cycle summary. Overwintered adults are present on stream banks from February through July. Oviposition likely occurs from April to July, with the three larval instars present between May and August. Pupation occurs from June to August, with the new generation of adults appearing in July and August. This new generation of adults probably overwinters in the riparian woods above Spring flood levels and returns to stream banks as they are exposed. The life cycle is univoltine and fast.

Associated Taxa. When georissids were collected, the following taxa were also collected and identified, whether on the sediment surface or in the sediments:—

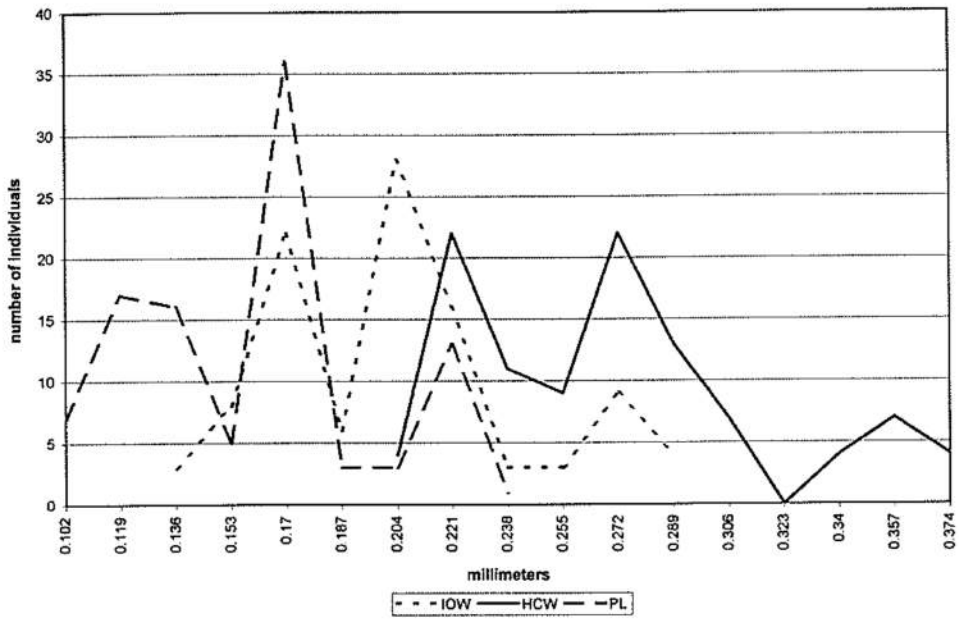


Fig. 12. Numbers of larval *Georissus californicus* versus measurements of interocular width (IOW), head capsule width (HCW) and pronotal sclerite length (PL).

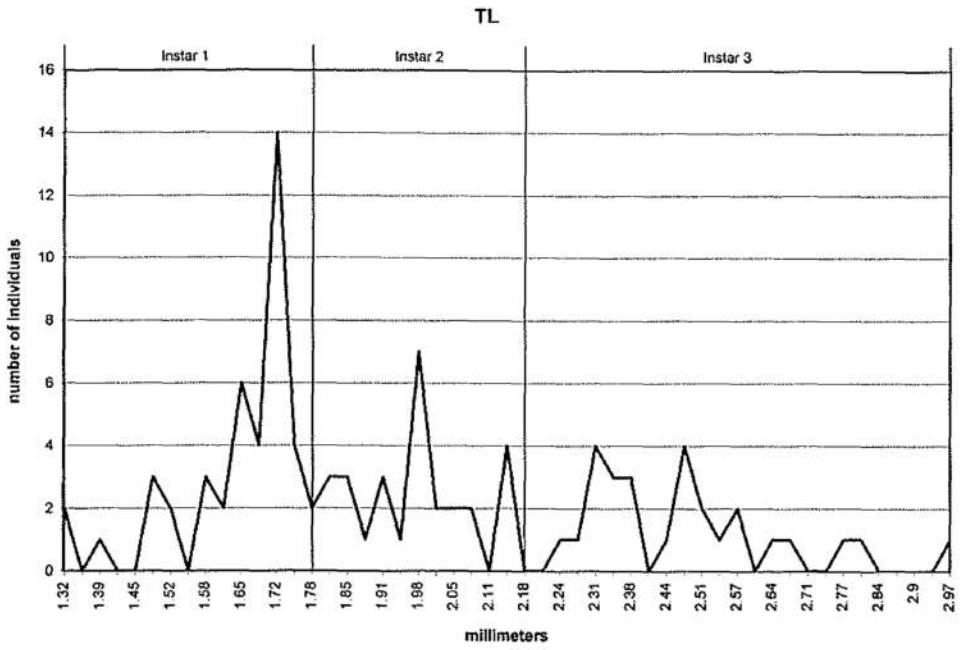


Fig. 13. Numbers of larval *Georissus californicus* versus measurements of total length.

Mollusca – Sphaeriidae, Planorbidae, Lymnaeidae; Annelida – Oligochaeta; Orthoptera – Tridactylidae; Hemiptera – Gelastocoridae, Hebridae, Saldidae; Coleoptera – Carabidae, Sphaeriusidae, Staphylinidae, Histeridae, other Hydrophilidae, Heteroceridae, Limnichidae, Elmidae, Curculionidae; Diptera – Tipulidae, Chironomidae, Ceratopogonidae, Stratiomyidae, Tabanidae. Most specimens of these taxa were also of diminutive size, suitable for a psammophilic existence. Other taxa were taken but not identified, including numerous spiders, mites and larval and pupal Diptera.

Acknowledgments

First, I thank Masataka SATÔ for all the work he has done to benefit entomology and entomologists. It has been my pleasure to count him as one of my friends. He has helped many of us younger entomologists and continues to be an inspiration. Second, I thank the curators and collection managers at the aforementioned collections for access to their specimens. Lastly, I thank Paul SPANGLER for his excitement, encouragement and help obtaining foreign literature.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 129–132, May 25, 2003

A New Species of the Genus *Helochares* (Coleoptera, Hydrophilidae) from Africa

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Abstract A new species of the hydrophilid genus *Helochares* is described from Malawi under the name *H. satoi*. It is recognized on its large and strongly convex body size in combination with the peculiar configuration of the male genitalia.

Large-sized species are hardly overlooked, except when their distribution is much constricted. Malawi is a small state in eastern Africa, dominated by a large lake with a special fish fauna. Though the hydrophilid fauna of this country is little explored, it seems to be rather special as well. This fauna includes a large new species of *Helochares*, to be described in this paper. It is dedicated to Prof. Dr. Masataka SATÔ in celebration of his retirement from the Biological Laboratory, Nagoya Women's University.

The new species is near to *H. ellipticus* D'ORCHYMONT. Both species come close to the *H. taprobanicus* group (HEBAUER, 2001), including *H. longipalpis* MURRAY, the only African member of the group.

Helochares (s. str.) ***satoi*** F. HEBAUER, sp. nov.

(Figs. 1–2)

Body broadly oval, strongly convex, entirely black, with mouthparts, antennae and tarsi ferruginous, shining.

Head extremely finely, rather densely punctate, shining, without reticulate microsculpture; labrum anteriorly reddish. Palpi and antennae ferruginous; antennal club infuscated. Maxillary palpi very long and slender, reaching the middle of pronotum. Serial punctures in front of eyes distinct.

Pronotum strongly convex; sides strongly narrowed anteriorly; fore angles obtuse, almost absent, hind angles broadly rounded; extremely finely and very densely punctate; the antero-lateral and medio-lateral systematic punctures single.

Elytra widest behind middle, ca. 1.2× as long as their combined width, punctate as on pronotum; the irregular rows of coarser punctures very distinct but rather scattered; elytral sides not visible from above.

Underside castaneous; legs piceous; tarsi ferruginous, very slender; claws in the male and female equally curved, moderately large, without sexual dimorphism.

Aedeagus with median lobe wide, apically broadly rounded-pointed, shorter than

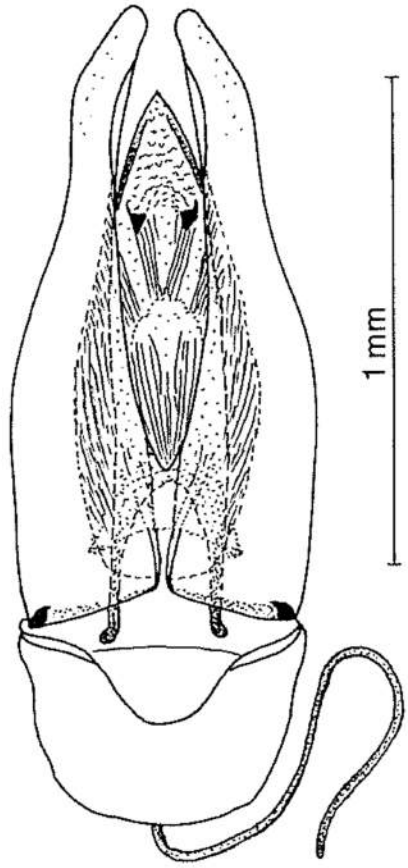

Fig. 1. *Helochares* (s. str.) *satoi* F. HEBAUER, sp. nov., male genitalia.

the parameres; the latter sinuate, with the apices bluntly rounded and slightly curved to midline. Basal piece short.

Length: 8.5–9.0 mm; breadth: 4.5–5.0 mm.

Holotype (male): [Africa]: Malawi S., Balaka env., 19~20–XII–2001, leg. J. BEZDEK. Paratypes: 19 exs.: same data as holotype; 1 ex.: Malawi S., Mulanje Mts. env., 22~26–XII–2001, leg. J. BEZDEK; 8 exs.: Malawi S., Balaka env., 5~6–I–2002, leg. J. BEZDEK.

The holotype and some paratypes are preserved in the author's collection; paratypes are also preserved in the collection of the coleopterist Hans HEBAUER, Rain-Dürnhart, Lower Bavaria, Germany, more material is in the Naturhistorisches Museum Wien, Austria and in the coll. M. SATÔ, Japan.

Notes. The present new species can be distinguished from *H. ellipticus* D'ORCHYMONT by its much smaller size even though it has the same body shape, sculpture and colour. *Helochares ellipticus* is 12–14 mm long, with almost impunctate elytra and with more extended serial punctures on pronotum; the aedeagus is

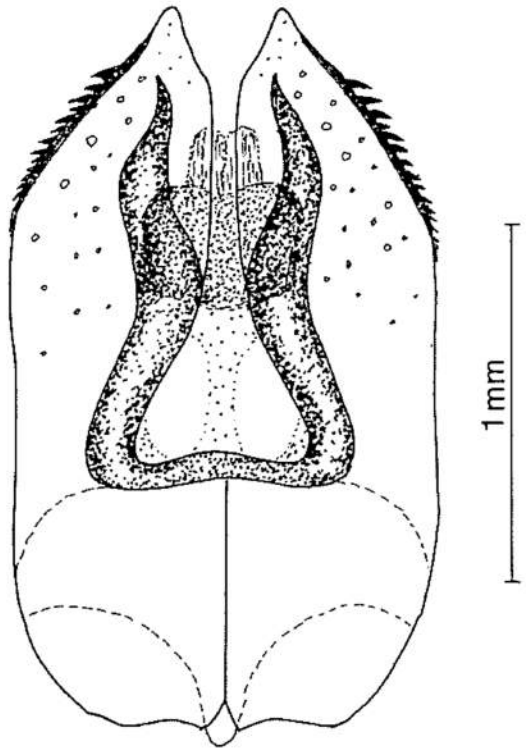

Fig. 2. *Helochares* (s. str.) *ellipticus* D'ORCHYMONT, male genitalia.

quite distinct; it is illustrated in this paper for the first time for comparison. From the other comparable African ally *H. longipalpis* MURRAY, *H. satoi* can be distinguished by its distinctly larger size and much more convex body. The irregular rows of coarser punctures on the elytra are much more scattered in the new species (as in *H. ellipticus*), but very densely arranged in *H. longipalpis*. The sexual dimorphism of the fore claws is not recognisable in the new species, but very distinct in *H. longipalpis*. The aedeagus of *H. satoi* is less differentiated, with evenly curved parameres and broad median lobe.

This remarkable and presumably endemic species is dedicated to Prof. Dr. Masataka SATÔ for commemorating his great contribution to the knowledge of water beetles of the Old World on the occasion of his retirement.

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Discovery of a Fourth Japanese Species of the Genus *Besuchetionella* (Coleoptera, Leiodidae) from Shikoku

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Abstract A new species of the genus *Besuchetionella* is described under the name *B. masatakai* sp. nov., from Shikoku, Japan. As a result of the discovery of this new species, the number of the Japanese species of *Besuchetionella* become four.

The genus *Besuchetionella* erected by ANGELINI and PECK (2000) is distributed in the Oriental Region and East Asia (Japan and Korea) and is composed of 19 known species (HOSHINA, 2002; HOSHINA *et al.*, 2002).

From Japan, ANGELINI and PECK (2000) described two species, *B. castanea* and *B. nipponica* from Honshu and Shikoku. Later, HOSHINA (2002) recorded *Besuchetionella*, for the first time, from the Ryukyus (Okinawa Is.), with a description of a new species, *B. kamiyai*. As a result, three species of *Besuchetionella* have been known to occur in Japan.

In my field survey in the summer, 1998, I collected one male specimen belonging to *Besuchetionella* from a beech forest of Mt. Saragamine, Shikoku. After my careful examination, I have concluded that the specimen is a new member of *Besuchetionella*. Therefore, I will describe it as a new species, under the name, *Besuchetionella masatakai* sp. nov. in this paper.

The holotype specimen used in this study is deposited in the collections of the Museum of Nature and Human Activities, Hyôgo.

Besuchetionella masatakai HOSHINA, sp. nov.

[Japanese name: Saragamine-tsubu-tamakinokomushi]

(Figs. 1–8)

Male. Coloration:— Dorsum of body almost concolorous and brown; main parts of legs, meso-metasterna and venter a little lighter than dorsum; tarsi light brown; 1st segment of antennae reddish brown; 2nd, 7th and 8th segments brown; 3rd to 6th segments light brown; 9th to 11th segments dark brown.

Measurements of holotype: Body 1.5 mm in length and 0.80 mm in width (Fig. 1); head length 0.38 mm (excluding mandibles), width 0.55 mm; pronotum length 0.55 mm, width 0.67 mm; elytra length 0.70 mm, width 0.80 mm.

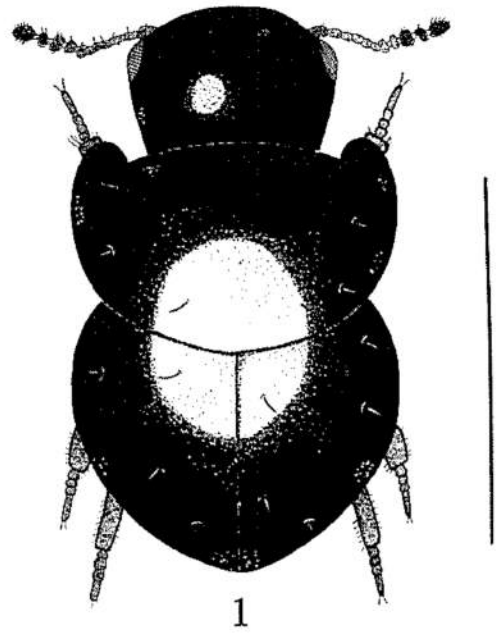

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Fig. 1. *Besuchetionella masatakai* sp. nov. Scale: 1.0 mm.

Head simply narrowed anteriorly along antero-lateral margins, almost impunctate, and weakly microreticulate; eyes slender, located at about apical third of lateral margins; clypeus almost straight on anterior margin (Fig. 2); antennae shorter than cephalic width; 1st to 5th and 11th antennal segments each longer than wide, 6th to 10th segments each wider than long (Fig. 3); 3rd segment about 0.65 times as long as 2nd; 9th segment a little larger than 10th; 11th segment slender and pointed apically.

Pronotum widest at about apical third of lateral margins, feebly curved on anterior margin and moderately curved along lateral and posterior margins in dorsal view (Fig. 5) and simply curved on upper margin in lateral view (Fig. 4), almost impunctate and more strongly microreticulate than head on dorsum.

Elytra widest at about apical third of lateral margins, almost impunctate, and microreticulate as pronotum on dorsum; sutural stria very short and shallow.

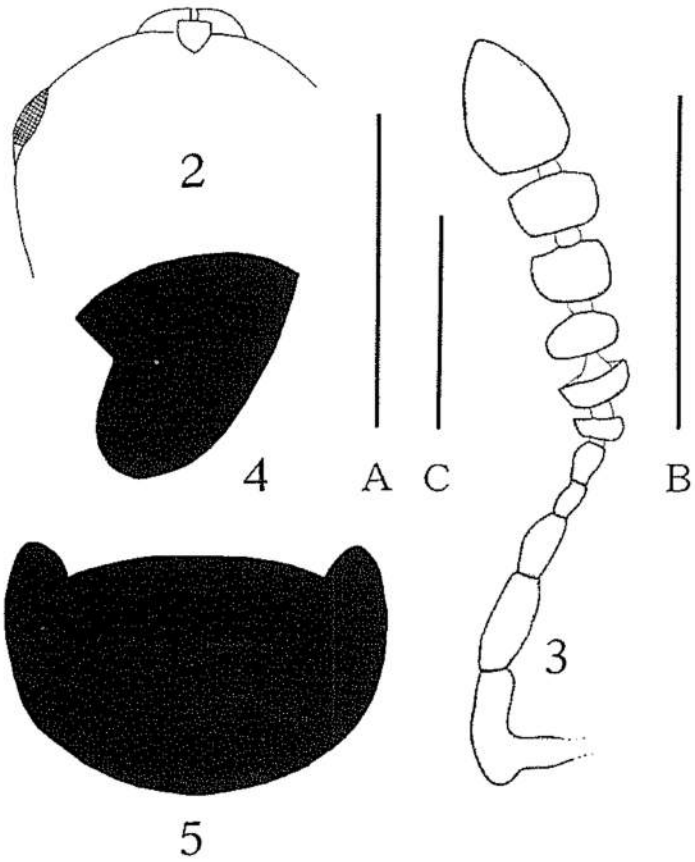
Meso-metasterna almost glabrous and impunctate; mesosternum elevated feebly in the center, but without distinct median carinae.

Hind wings fully developed.

Male genitalia about 0.21 mm in length (Figs. 6–8); median lobe oval and simply narrowed from about the middle to the apex in ventral and dorsal views, sharply pointed in lateral view; parameres thick, with the apices not exceeding median lobe: each apex with a very fine pubescence.

Female. Unknown.

Distribution. Japan: Shikoku (Ehime Pref.).

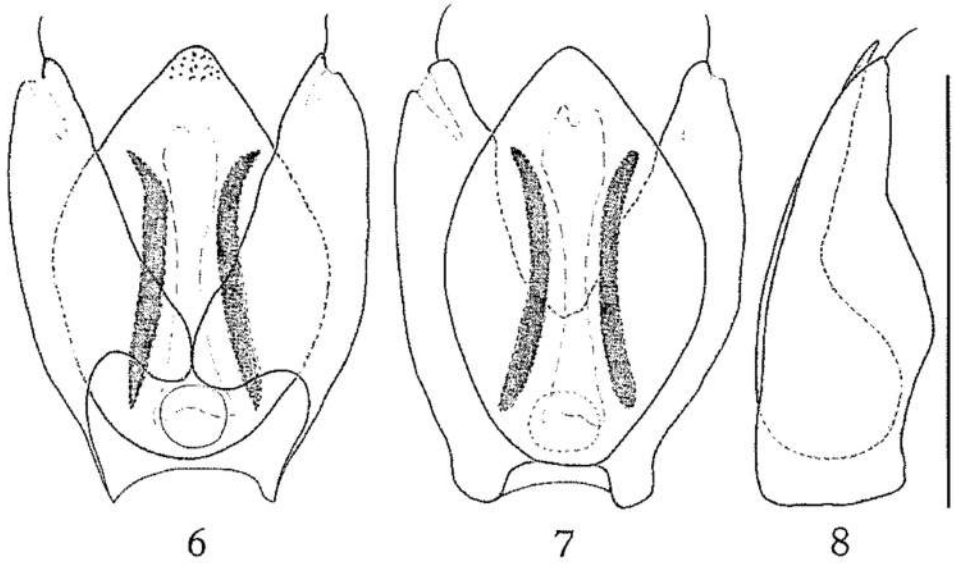


Figs. 2–5. *Besuchetionella masatakai* sp. nov. —— 2, Head; 3, antennae; 4, pronotum, lateral view; pronotum, dorsal view. Scale A: 0.5 mm for Fig. 2. Scale B: 0.2 mm for Fig. 3. Scale C: 0.5 mm for Figs. 4–5.

Type series. Holotype: ♂, Mt. Saragamine, Kuma-chô, Ehime Pref., Shikoku, 6–VIII–1998, H. HOSHINA leg. (collected by using Tullgren apparatus).

Remarks. *Besuchetionella masatakai* sp. nov. is similar in appearance to *B. kamiyai* HOSHINA, 2002, but can be distinguished by having the dorsum strongly microreticulate, whereas in *B. kamiyai*, that is almost smooth. This new species is also similar to *B. castanea* ANGELINI et PECK, 2000, but the clypeus is almost straight on anterior margin instead of being distinctly emarginate in *B. castanea*, and the apical area of median lobe is simply triangular (Figs. 6–7), not sharply protuberant at the apex as in *B. castanea*.

Etymology. This new species is named after Professor Dr. Masataka SATÔ of Nagoya Women's University.



Figs. 6–8. Male genitalia of *Besuchetionella masatakai* sp. nov. —— 6, Ventral view; 7, dorsal view; 8, lateral view. Scale: 0.2 mm for Figs. 6–8.

Key to the Japanese Species of the Genus *Besuchetionella*

1. Dorsum not microreticulate. ..... *B. kamiyai* HOSHINA
– Dorsum microreticulate. 2
2. Median lobe of the male genitalia with parameres clearly longer than median lobe, and curved sharply inwards near apices. .... *B. nipponica* ANGELINI et PECK
– Median lobe of the male genitalia with parameres almost as long as or a little shorter than median lobe and almost straight. 3
3. Body length 1.85 mm; median lobe protuberant at the apex in ventral and dorsal views. ..... *B. castanea* ANGELINI et PECK
– Body length 1.5 mm; median lobe simply triangular at the apex in ventral and dorsal views (Figs. 6–7). ..... *B. masatakai* sp. nov.

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Haida argonautarum sp. nov. and *Haida satoi* sp. nov., the First Representatives of the Genus *Haida* KEEN, 1897 (Coleoptera, Staphylinidae, Omaliinae, Coryphiini) in the Palaearctic Region

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Abstract *Haida argonautarum* and *Haida satoi*, the new and first Palaearctic members of the genus *Haida*, are described and illustrated from specimens collected in Gongga Shan in Sichuan, and in Daba Shan in Shaanxi, People's Republic of China. The position of the two new species within the genus and their relationship to the remaining, North American, species of the genus is briefly discussed. A key to all presently known species of *Haida* is given. The assignment of the genus *Haida* to the tribe Coryphiini is reconfirmed. Two species-groups within the genus *Haida* are established: the Nearctic *Keeni*-Group (containing *H. keeni*, *H. bisulcata*, *H. insulcata*) and the Palaearctic *Argonautarum*-Group (containing *H. argonautarum* and *H. satoi*).

Introduction

The taxonomic history of the genus *Haida* KEEN, 1897 is interesting and it is, in a way, characteristic of problems encountered when attempting the subdivision of the subfamily Omaliinae, and the assignment of the genera to proper higher taxa within the subfamily.

HATCH (1957, 51, 70) included *Haida* in the tribe Coryphiini (the author of the tribe is JAKOBSON, 1908, 452, who used the name for the first time as Coryphiina) (see ZERCHE, 1990, 18, and NEWTON & THAYER, 1992, 58) along with five genera, all occurring in the Pacific coastal area of North America: *Microedus* LECONTE, 1874, *Orobanus* LECONTE, 1878, *Pseudohaida* HATCH, 1957, *Subhaida* HATCH, 1957, *Ephelinus* COCKERELL, 1906, and *Occiephelinus* HATCH, 1957. CAMPBELL (1978 a, 11) excluded the genera *Microedus* and *Orobanus* from this group of genera and assigned them to the tribe Anthophagini. He also argued that the genera *Haida*, *Pseudohaida*, the genus *Eudectoides*, erected by him for *Eudectus crassicornis* LECONTE, 1885, as well as the Palaearctic genus *Eudectus* REDTENBACHER, 1857, are not true Coryphiini and assigned them also to Anthophagini, albeit only tentatively. Therefore, from the Nearctic genera originally included in Coryphiini by HATCH (1957), only *Subhaida*, *Ephelinus* and *Occiephelinus* (junior synonym of *Coryphium* STEPHENS, 1829) remained in Coryphiini after CAMPBELL's revision of *Haida* and *Pseudohaida* (CAMPBELL, 1978 a), and of the Nearctic members of Coryphiini (CAMP-

BELL, 1978 b). ZERCHE (1990) in his monograph of the Palaearctic Coryphiini included the genus *Eudectus* in Coryphiini and synonymized the genus *Eudectoides* with *Eudectus* in a footnote on page 144. He also disagreed with CAMPBELL's transfer of *Eudectus* to Anthophagini, arguing that the genus lacks all synapomorphies of Anthophagini. He also disagreed with CAMPBELL's removal of *Haida* and *Pseudohaida* from Coryphiini (p. 261), and by his argumentation effectively returned these two genera to Coryphiini. There seems to be little doubt that ZERCHE's action was correct and therefore the genus *Haida*, along with the genus *Pseudohaida* is herein considered a member of the tribe Coryphiini.

The discovery of two members of the genus *Haida* in the temperate eastern Asia puts *Haida* in the group of taxa with characteristic distributional range that includes western North America (mostly areas close to the Pacific coast) and the eastern portion of the Palaearctic region. One of such genera is the genus *Deinopteroloma* JANSSON, with members occurring in the Pacific coastal areas of North America and in eastern Asia: China, Taiwan and the Himalaya (see SMETANA, 1985, 1990, 1996). Another example is the *Densiventris*-Group of the genus *Quedius* STEPHENS, 1829, which includes two species in western North America (*Q. densiventris* (CASEY, 1915) and *Q. breviceps* (CASEY, 1915), and one species *Q. jeniseensis* J. SAHLBERG, 1880, in eastern temperate Asia (see SMETANA, 1976, 26).

The two new species are described and illustrated, the position of the two new species within the genus and their relationship to the remaining, North American, species of the genus is briefly discussed. A key to all presently known species of *Haida*, based on CAMPBELL's (1978a) key, is given. The species of the genus are separated into two species-groups: the Nearctic *Keeni*-Group (with *H. keeni*, *H. bisulcata*, *H. insulcata*), and the Palaearctic *Argonautarum*-Group (with *H. argonautarum* and *H. satoi*).

Haida argonautarum A. SMETANA, sp. nov.

(Figs. 1–4)

Description. Head piceous, disc of pronotum brownish-piceous, explanate lateral portions becoming gradually rufobrunneous, elytra rufobrunneous, abdomen piceous, gradually becoming rufobrunneous toward apex and lateral margins. Maxillary and labial palpi pale testaceous, antennae testaceorufous, legs testaceous with slightly paler tarsi.

Head small, across eyes distinctly wider than from apex of clypeus to neck long (ratio 1.56), distinctly narrower than width of pronotum at widest point (ratio 0.65); clypeal area slightly elevated, posteriorly triangularly projecting posteriad, with narrowly raised lateral margin reaching anterior margin of each eye, vertex of head between eyes markedly impressed, on each side with additional, rounded, pit-like impression, posterior area of head slightly elevated; eyes rather small, quite convex and protruding laterally, temples about as long as length of eyes from above, markedly narrowed toward neck; surface of entire head with very fine and rather sparse,

superficial punctation, punctation becoming somewhat denser and coarser around and in both pit-like impressions; pale pubescence very fine, sparse; surface between punctures shiny, without microsculpture. Antenna robust, first segment markedly stronger but somewhat shorter (ratio 0.87) than two following segments, segments 2 and 3 about equally long, each slightly longer than wide, segment 4 as long as wide, following segments becoming increasingly transverse, segment 10 almost twice as wide as long, last segment slightly longer than two preceding segments combined. Pronotum subhexagonal, subangulately widened laterally, at widest point (around middle of pronotum) markedly narrower than elytra at widest point (ratio 0.75), markedly wider than along midline long (ratio 0.59); disc of pronotum highly convex, with a small pit-like impression in front of posterior margin, lateral portions widely, conspicuously explanate, each with conspicuous, deep, pit-like impression posteriorly; lateral margins very finely, inconspicuously crenulate; convex discal area of pronotum coarsely and densely punctate, except for pit-like basal impression and a narrow short area in front of it which is impunctate, punctation of discal area becoming gradually considerably finer and less dense on explanate lateral portions; pale pubescence rather long and dense, particularly on sloping lateral portions of disc; surface between punctures shiny, without microsculpture. Scutellum minute, triangular, glabrous. Elytra wide, slightly wider than along suture long (ratio 1.16), hardly widened posteriad, moderately transversely convex, lateral margins each vaguely, inconspicuously concave around middle, lateral portions explanate and markedly, longitudinally impressed in anterior two-thirds; punctation finer and less dense than that on convex portion of pronotal disc, becoming markedly finer and less dense toward apical and lateral margins; pale pubescence rather long and dense; surface between punctures shiny, without microsculpture. Wings fully developed. Abdomen with tergite 7 with very fine apical seam of palisade fringe. Tergites with very fine and dense punctation, pale pubescence dense and rather long, surface between punctures with traces of faint transverse striae.

Male. Abdominal sternite 8 with apical margin slightly bisinuate (Fig. 2); tergite 8 truncate apically (Fig. 1); genital segment as in Fig. 3. Aedoeagus small and rather short; median lobe with subacute apex; apices of parameres about reaching apex of median lobe, apical portions markedly curved toward median lobe, apical setae absent; internal sac as in Fig. 4.

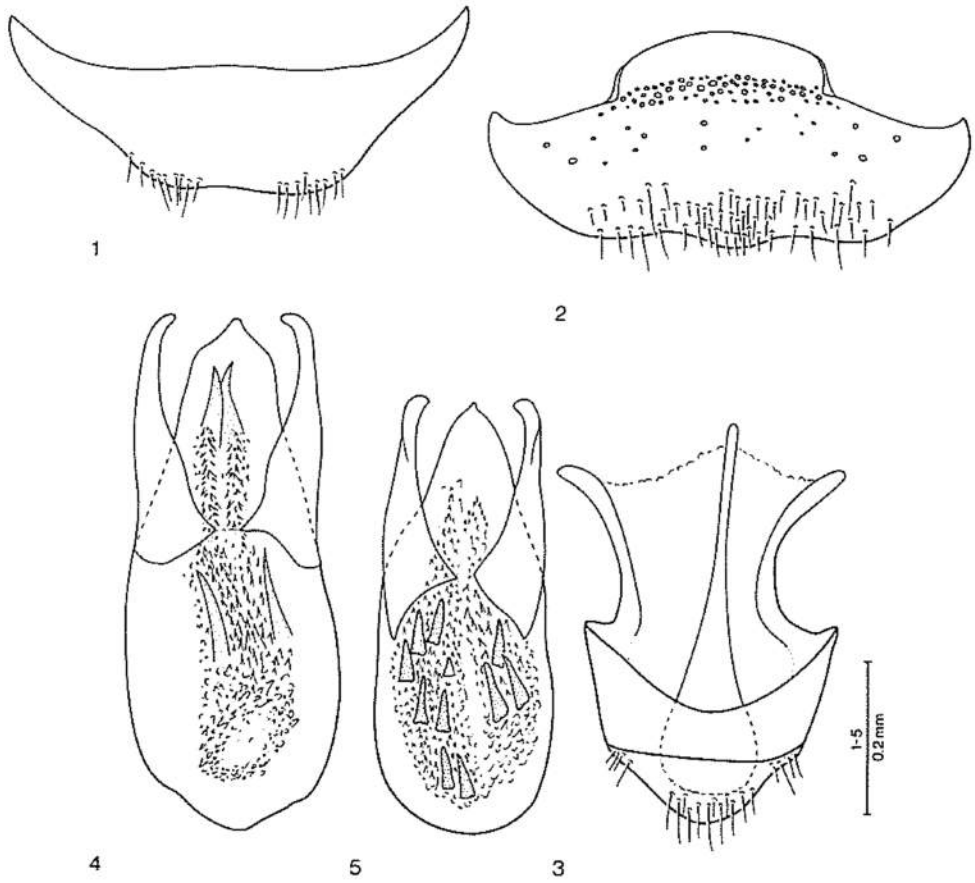
Female. Unknown.

Length 2.0 mm.

Type material. Holotype (male): China: "CHINA Sichuan, Gongga Shan, Hailuogou, above Camp 3,050 m 6–VII–96 29°35N 102°00E C52" / "collected by A. SMETANA, J. FARKAÓ and P. KABÁTEK" / "*Haida* M. K. THAYER det. 1998". The holotype is kept temporarily in the SMETANA collection, Ottawa, Canada, but it will be eventually deposited in the Muséum d'Histoire Naturelle, Geneva, Switzerland.

Bionomics. The holotype was taken at an elevation of about 3,000 m in a coniferous forest by sifting moist moss, rhododendron and other leaf litter under lush undergrowth of deciduous trees, bushes and rhododendrons.

Comments. Haida argonautarum, as well as the following species *H. satoi*, are the first Palaearctic species of the genus. They both are obviously members of a



Figs. 1–4. *Haida argonautarum*; 1, male tergite 8; 2, male sternite 8; 3, male genital segment; 4, aedoeagus, ventral view.; 5. *Haida satoi*, aedoeagus, ventral view.

different lineage within the genus, characterized by the widely explanate lateral portions of the pronotum, and by the short and wide, almost quadrate elytra with explanate and longitudinally impressed anteriolateral portions. These character states separate *H. argonautarum* and *H. satoi* clearly from all three remaining (Nearctic) species of the genus: *H. keeni* KEEN, 1897 (known from Alaska, British Columbia, Oregon and Washington), *H. bisulcata* CAMPBELL, 1978 (known only from the Sierra Nevada mountains in California), and *H. insulcata* CAMPBELL, 1978 (known only from Oregon).

This is the *Haida* species, mentioned as occurring in China by NEWTON *et al.* (2001, 342).

Etymology. The specific epithet is the genitive form of the noun *Argonautae*, *-arum*, m. (meaning "of Argonauts"), a group of heroes who, in the ship *Argo*, sailed with Jason in quest of the Golden Fleece. The name symbolizes the long distance that separates this new species from the rest of the genus in North America.

Haida satoi A. SMETANA, sp. nov.

(Fig. 5)

Description. In all characters similar to *H. argonautarum*, but different as follows: size slightly larger, pubescence of entire dorsal side of body more pronounced, in general longer and denser, particularly that on pronotum. Head with lateral portion, bearing eyes, more extended laterad, head therefore appearing wider and shorter. Antenna less robust and slightly longer, segments 2 and 3 more appreciably longer than wide, segment 3 vaguely longer than segment 2, outer segments less markedly transverse. Pronotum of similar shape, but with lateral portions more widely explanate and lateral margins in posterior half more distinctly narrowed posteriad, with convex discal area bearing markedly finer, more superficial punctation, except for narrow field of somewhat coarser punctures along each side of almost impunctate, rather wide middle area. Elytra of similar shape, but somewhat shorter, combined more appreciably wider than their length along suture (ratio 1.29). Abdomen not appreciably different from that of *H. argonautarum*.

Male. Aedoeagus (Fig. 5) quite similar in shape to that of *H. argonautarum*, but apical portion of median lobe narrower with apex more acute; internal sac different, with numerous, large spine-like sclerites, as in Fig. 5.

Female. Not appreciably different from male.

Length 2.0–2.2 mm.

Type material. Holotype (male): China: "CHINA: S-Shaanxi (Daba Shan) mountain range N pass 22 km NW Zhenping, N-slope 32°01′N, 109°21′E, 2,400 m, 13–VII–2001, leg. M. SCHÜLKE [C01–11]" / "mixed forest (*Pinus*, *Salix* and other deciduous trees) (sifted) [C01–11]" / "Sammlung M. SCHÜLKE Berlin". In the collection M. SCHÜLKE, Berlin.

Allotype (female): China: "CHINA: Shaanxi Daba Shan mtn. range N pass 22 km NW Zhenping" / "32°01′N, 109°21′E 2,850 m 14–VII–2001 A. SMETANA [C103]". In the collection A. SMETANA, Ottawa, Canada.

Paratypes: same data as holotype, 1♀, in the collection M. SCHÜLKE; same data as holotype, but 2,850 m, 14–VII–2001, N-slope near mountain top, *Abies*, bushes, dead wood (sifted) [C01–12], 3♂♂, in the collections M. SCHÜLKE and A. SMETANA.

Bionomics. The specimens collected on July 14 near the top of the mountain were taken by sifting various forest floor debris, particularly rotting wood and bark, mostly under old, mature *Abies* trees.

Etymology. Patronymic, the species was named in honour of my friend, Prof. Masataka SATÔ, Nagoya, in recognition of his outstanding contribution to the knowledge of Coleoptera, particularly of the aquatic groups.

Key to the Species of *Haida*

1. Pronotum subangulately widened around middle, lateral portions conspicuously widely explanate, their combined maximum width about as large as width of

convex pronotal disc. Elytra short, slightly wider than along suture long (ratio 1.16) and therefore appearing about quadrate, with explanate and markedly, longitudinally impressed anteriolateral portions. [*Argonautarum* Group]. Eastern Palaearctic region (China: Shaanxi, Sichuan). 2

– Pronotum arcuately widened laterally, with widest point before middle, lateral portions no more than moderately widely explanate, their combined maximum width smaller than width of convex disc. Elytra appreciably longer, along suture variably longer than their combined maximum width, with lateral portions not explanate and not longitudinally impressed. [*Keeni* Group]. Western Nearctic region. 3

2. Entire convex discal area of pronotum coarsely and densely punctate. Internal sac of aedoeagus with two proximal and two distal, large spine-like sclerites (Fig. 4). Length 2.0 mm. ..... *H. argonautarum* sp. nov.

– Convex discal area of pronotum finely, more superficially punctate except for narrow field of somewhat coarser punctures along each side of almost impunctate, rather wide middle area. Internal sac of aedoeagus with numerous, smaller spine-like sclerites (Fig. 5). Length 2.0–2.2 mm. ..... *H. satoi* sp. nov.

3. Pronotum with engraved, complete linear midline, reaching from apex to base of pronotum. Elytra each infuscate apically. Internal sac of aedoeagus with one string-like sclerite (fig. 22 in CAMPBELL, 1978). Length 2.3–2.9 mm. Alaska, British Columbia, Oregon, Washington. ..... *H. keeni* KEEN

– Pronotum without engraved linear midline. Elytra unicolored, not infuscate apically. 4

4. Disc of pronotum with elevated, almost impunctate elongate middle portion, delimited at each side by narrow, linear impression. Vertex of head virtually impunctate. Internal sac of aedoeagus with two long string-like sclerites (fig. 23 in CAMPBELL, 1978). Length 2.4–2.5 mm. California. ... *H. bisulcata* CAMPBELL

– Disc of pronotum with round, slightly elevated, almost impunctate area in front of basal margin, not delimited laterally by narrow impressions. Vertex of head finely punctate. Internal sac of aedoeagus with one short string-like sclerite (fig. 24 in CAMPBELL, 1978). Oregon. ..... *H. insulcata* CAMPBELL

Acknowledgments

Margaret THAYER, Field Museum of Natural History, Chicago, Illinois, attracted my attention to the Gongga Shan specimen, while browsing through my unidentified omaliine material from mainland China. Mr. Anthony DAVIES, Agriculture and Agri-Food Canada, Research Branch, Ottawa, Canada, made useful comments on the first draft of this paper. Mr. Go SATO from the same establishment finished the line drawings.

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Brathinus satoi sp. nov. (Coleoptera, Staphylinidae), a New Species of Peculiar Omaliine Beetle from Sichuan, China

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Abstract A new species of omaliine staphylinid is described from Sichuan, China, under the name of *Brathinus satoi*. This is the first record of the genus from the Chinese Continent.

The omaliine staphylinid genus *Brathinus* LECONTE comprises five described species from North America and East Asia (HERMAN, 2001). Three of them, *B. nitida* LECONTE, *B. varicornis* LECONTE, *B. californicus* HUBBARD, have been known from the Nearctic and the other two, *B. oculatus* LEWIS and *B. shikokuensis* Y. WATANABE et M. SATÔ, have been recorded from Japan, the former inhabiting Hokkaido and Honshu, and the latter occurring in Shikoku. In the course of our study on the Chinese staphylinid fauna, we found a specimen of a remarkable omaliine staphylinid. After a careful examination, it has become clear that the species is new to science. We will describe it as a sixth species of the genus *Brathinus* and the first record of the genus from the Chinese mainland. It is a pleasure for us to dedicate this paper to Professor Masataka Satô, one of the most excellent coleopterists in Japan, who has studied various Asian beetles including Japanese *Brathinus*, in commemoration of his retirement from Nagoya Women's University.

Brathinus satoi KISHIMOTO et SHIMADA, sp. nov.

(Figs. 1–4)

Body length: 4.1 mm (from front margin of head to anal end).

Body spindle-shaped, with head depressed above, pronotum and elytra convex, abdomen concealed by elytra with the exception of apical segments. Color dark reddish brown and shining, each lateral side and apical margin of elytra somewhat

paler; antennal segment 1 dark reddish brown similarly to body, segments 2–8 somewhat paler, segments 9–10 pale yellowish brown, segment 11 dark yellowish brown; apical halves of profemur and mesofemur dark reddish brown and apical part of mesofemur somewhat darker. Head suborbicular, strongly depressed above and broader across eyes than long (width/length = 1.17) with postocular region weakly arcuate and well contracted towards base; frons impunctate, distinctly and largely depressed along front margin between antennal tubercles, surface of the depression nearly flat and smooth, an oblique furrow before each ocellus deep and long, extending to near the anterior margin of eye, supraorbital area from the oblique furrow to neck rugosely punctate. Ocelli relatively large, elliptical and obliquely situated. Eyes very large and strongly prominent. Antennae long and slender, nearly reaching the middle of elytra and not thickened towards apices, with basal three segments polished and the remainings more or less opalescent with pubescence; segment 1 robust, segment 2 relatively short, segments 3–8 subequal in length to one another, segment

Fig. 1. *Brathinus satoi* KISHIMOTO et SHIMADA, sp. nov., holotype, habitus.

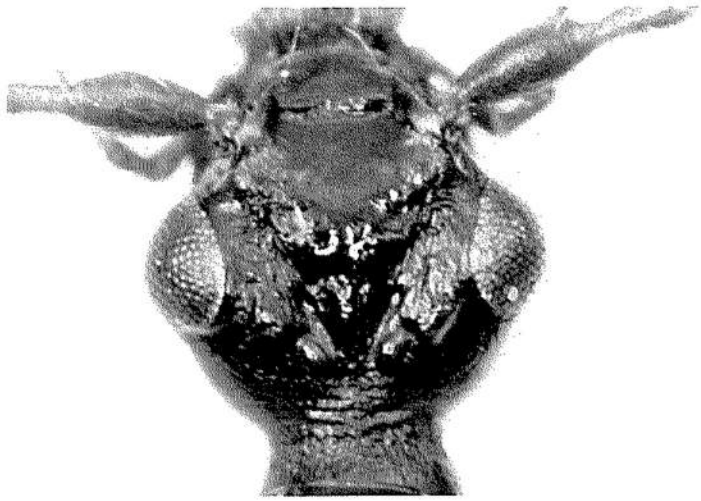
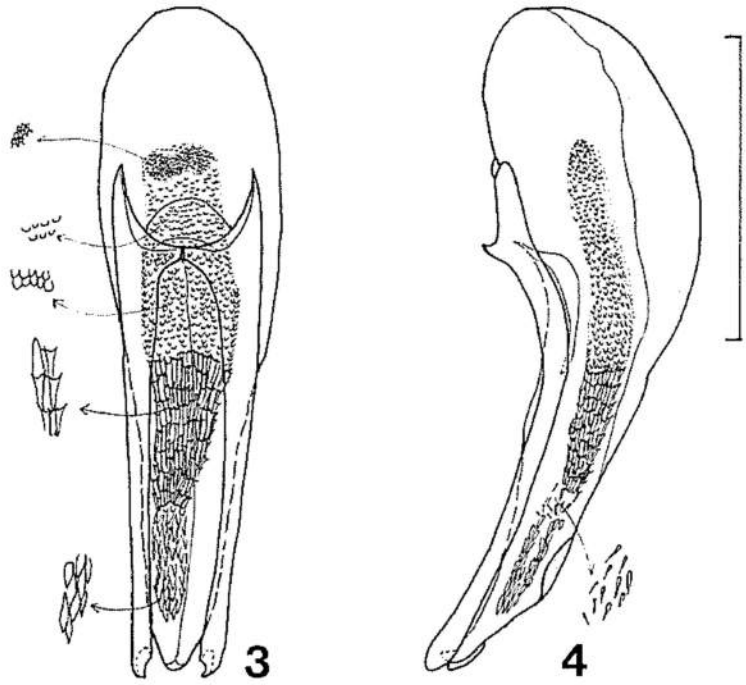


Fig. 2. *Brathinus satoi* sp. nov., head.

11 relatively short, elliptical; length (width) of each segment from base to apex (in mm):— 0.26 (0.12) : 0.20 (0.08) : 0.21 (0.08) : 0.25 (0.07) : 0.24 (0.08) : 0.25 (0.08) : 0.25 (0.09) : 0.25 (0.08) : 0.23 (0.09) : 0.22 (0.09) : 0.22 (0.08).

Pronotum subcordate and well convex dorsally, a little longer (pronotum/head = 1.23) but slightly narrower than head (pronotum/head = 0.94), and longer than broad (length/width = 1.25), widest just before middle, more strongly contracted towards base than towards apex; lateral margins not visible from above though finely bordered; viewed dorsally, sides arcuate in anterior four-fifths and strongly constricted in posterior fifth; anterior margin slightly emarginate at the midle, posterior margin almost straight and finely bordered; anterior angles broadly rounded, though invisible from above, posterior angles obtusely angulate; surface smooth, though finely, sparsely and irregularly pubescent. Scutellum elongate, elliptical and almost impunctate. Elytra nearly elliptical, much longer than broad (length/width = 1.62) and broader than pronotum (elytra/pronotum = 1.25), widest behind middle, distinctly narrowed anteriorly and more feebly so posteriorly; lateral margins finely bordered throughout, though not visible from above; viewed dorsally, sides almost straight in anterior halves though gently arcuate in posterior halves; surface seemingly smooth, though sparsely scattered with outstanding short golden setae in latero-apical areas; sutural angles forming a re-entrant angle. Hind wings well developed. Abdomen concealed by elytra, except for several apical segments; surface of each sternite practically impunctate. Legs very long and slender, each tarsus particularly elongate; length of tarsomeres from base to apex (in mm): fore tarsus:— 0.08 : 0.05 : 0.04 : 0.06 : 0.13; mid tarsus:— 0.07 : 0.05 : 0.05 : 0.05 : 0.10; hind tarsus:— 0.10 : 0.06 : 0.05 : 0.06 : 0.06. Male genital organ symmetrical and slender; median lobe, viewed ventrally, distinctly tapered towards apex, which is acutely pointed; parameres elongate and somewhat longer than median lobe, with claw-like apices.



Figs. 3–4. Male genital organ of *Brathinus satoi* sp. nov.; (3) ventral view, (4) lateral view. Scale: 0.5 mm.

Type. Holotype: ♂, Mojiawan (1,250m), Gaonan Xiang, Chengkou Xian, Sichuan Province, China, 26–IX–1997, T. KISHIMOTO leg. The holotype is preserved at present in the collection of the National Science Museum (Natural History), Tokyo.

Notes. *Brathinus satoi* is easily distinguished from other members of the genus by the following combination of morphological characters: head with rugose punctation in supraorbital areas, antennomeres 9–10 pale yellowish brown, legs slender with very long tarsi, median lobe of male genital organ distinctly tapered towards apex, which is acutely pointed.

The holotype was obtained by sifing moist leaf litter deposited near a small stream with Tullgren's funnel.

Distribution. China (Sichuan Province).

Acknowledgement

We wish to express our hearty thanks to Drs. Shun-Ichi UÉNO and Yasuaki WATANABE, Tokyo University of Agriculture, for their continuous guidance. Special thanks are also due to Dr. Yoshiaki NISHIKAWA (Ohtemon Gakuin University) and Mr. FAN Ting (Chengdu Branch, Academia Sinica) for their help in the field.

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Lathrobium satoi (Coleoptera, Staphylinidae), a New Staphylinid Beetle from Tôkai District in Central Honshu, Japan

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Abstract A new staphylinid beetle of the group of *Lathrobium* (s. str.) *brachypterum* is described and illustrated under the name of *L. satoi*. It was obtained by sifting dead leaves accumulated in a deciduous broadleaved forest on the Mennoki-tôge of Tokai District in central Honshu, Japan.

The members of the group of *Lathrobium brachypterum* have been reported from the Far East Asia: China, Korea and Japan. They are usually obtained from under dead leaves in deciduous broadleaved forests of mountainous areas.

Through the courtesy of Mr. Michiaki HASEGAWA, I had an opportunity to examine an interesting species, which was obtained by sifting dead leaves accumulated in a deciduous broadleaved forest on the Mennoki-tôge of Tôkai District in central Honshu, Japan. This species can be regarded as a member of the group of *Lathrobium brachypterum* in view of having similar body size and facies. After a careful examination, it has become clear that this species is new to science for reason of disagreement with the known members of this species-group in configuration of secondary sexual characters of the abdominal sternites and the genital organ in the male. It will be described in the present paper. The type series of the new species to be described is deposited in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture. This paper is dedicated to Masataka SATÔ, Professor of Biology, on the occasion of his retirement from the Graduate School of Nagoya Women's University.

Before going further, I would like to express my sincere thanks to Dr. Shun-Ichi UÉNO, Visiting Professor at Tokyo University of Agriculture, for his kind advice on the present study. Deep gratitude is also due to Mr. Michiaki HASEGAWA, Toyohashi Museum of Natural History, for his kindness in giving me the opportunity of studying the interesting species, and Mr. Koji TOYODA, Ranzan-machi, Saitama, for his assistance in drawing the figures inserted in this paper.

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

[Japanese name: Satô-kobane-nagahanekakushi]

(Figs. 1–5)

Body length: 6.4–6.8mm (from front margin of head to anal end); 2.1–2.2mm (from front margin of head to elytral apices).

Body elongate, parallel-sided and subdepressed above. Colour blackish brown and moderately shining, with antennae and profemora brownish red, palpi, apical margins of elytra, legs except for profemora, and apical two abdominal segments brownish yellow.

Male. Head subquadrate and subdepressed above, as long as broad, widest at posterior fifth and more strongly narrowed anteriad than posteriad, lateral sides gently arcuate, frontal area flattened and glabrous, provided with a remarkable setiferous puncture inside each antennal tubercle; surface sparingly covered with coarse setiferous punctures which become much sparser in medio-frontal part, and covered with fine coriaceous ground sculpture all over; eyes small and nearly flat, their longitudinal diameter about a half as long as postocular part. Antennae elongate,

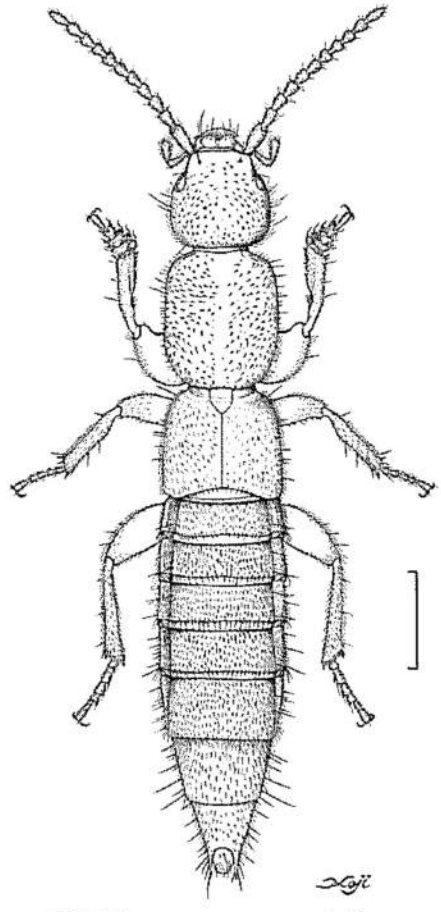


Fig. 1. *Lathrobium* (s. str.) *satoi* Y. WATANABE, sp. nov., ♂, from near the Mennoki-tôge in Irabu-chô of Aichi Prefecture. Scale: 1.0 mm.

extending to posterior fourth of pronotum, not thickened towards apical segment, 6th to 10th segments more or less moniliform, two proximal segments polished, the remainings opaque; 1st robust, distinctly dilated apicad and more than twice as long as broad, 2nd constricted at the base, 1.5 times as long as broad, though remarkably shorter (2nd/1st=0.50) and slightly narrower (2nd/1st=0.80) than 1st, 3rd nearly 1.5 times as long as broad, slightly longer (3rd/2nd=1.08) than but as broad as 2nd, 4th to 10th almost equal in both length and width to one another, each a little longer (length/width=1.25) than broad, but somewhat shorter (each of 4th to 10th/3rd=0.77) than though as broad as 4th, 11th fusiform, about twice as long as broad, and distinctly longer (11th/10th=1.80) than 10th, subacuminate at the tip.

Pronotum convex medially and nearly oblong, though somewhat narrowed posteriad, distinctly longer than broad (length/width=1.20), apparently longer (pronotum /head=1.32) and somewhat broader (pronotum/head=1.12) than head; lateral sides almost straight except near anterior and posterior angles, anterior margin gently rounded, posterior margin subtruncate, anterior angles obtuse and not visible from above, posterior ones narrowly rounded; surface sparingly but more numerously punctured than in vertexal area of head except for a narrow smooth median space through the length of pronotum. Scutellum subtriangular, surface provided with a few minute setiferous punctures. Elytra subtrapezoidal and somewhat dilated posteriad, transverse (width/length=1.13), distinctly shorter (elytra/pronotum=0.76) but slightly broader (elytra/pronotum=1.02) than pronotum; lateral sides feebly arcuate, posterior margin broadly emarginate at the middle, posterior angles rounded; surface provided with a shallow and longitudinal depression inside suture except near apical area, somewhat densely and not very sharply punctured and covered with fine brownish

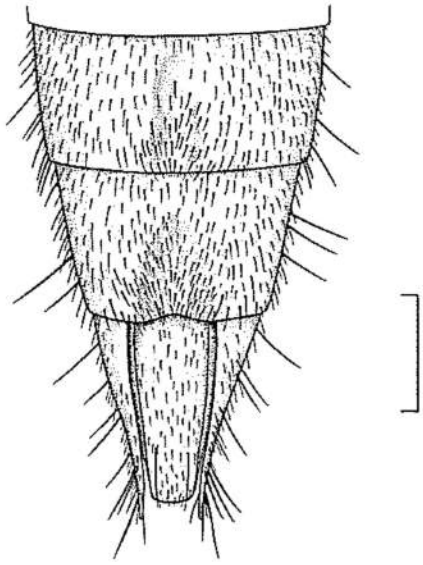
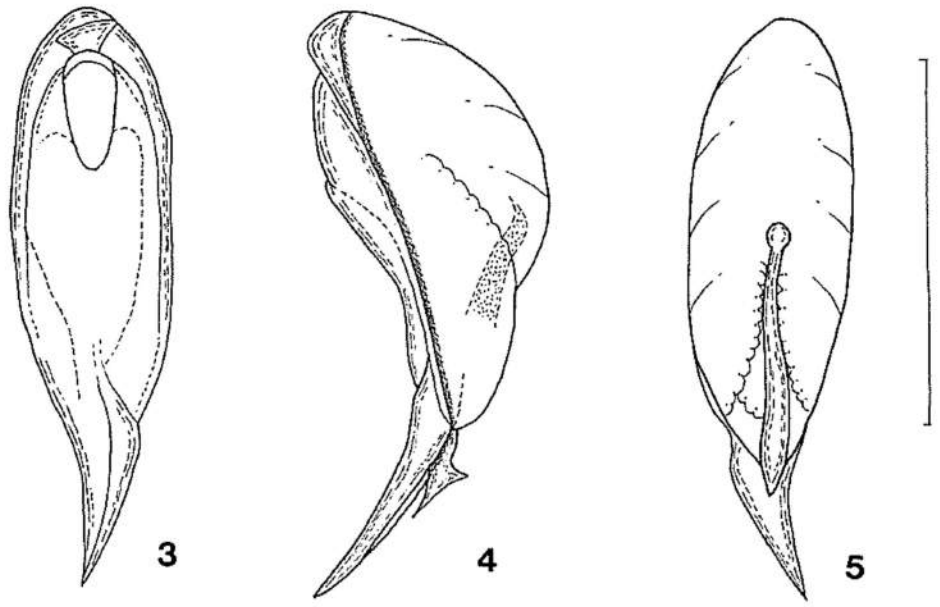


Fig. 2. Last three abdominal sternites in male of *Lathrobium* (s. str.) *satoi* sp. nov. Scale: 0.5 mm.



Figs. 3–5. Male genital organ of *Lathrobium* (s. str.) *satoi* sp. nov. —— 3, Dorsal view; 4, lateral view; 5, ventral view. Scale: 0.5 mm.

pubescence similar to that on pronotum. Legs moderately long; profemora, protibiae and protarsi similar in structure to those of other members of this species-group.

Abdomen elongate, almost parallel-sided from 3rd to 7th segments, and then abruptly narrowed towards the anal end; 3rd to 7th tergites each closely covered with fine and superficial punctures and fine brownish pubescence, 8th and 9th tergites each much more sparingly and more finely punctured than in the preceding tergites; 8th sternite provided with an emargination at the middle of posterior margin and shallowly, longitudinally depressed in front of the emargination, surface of the depression clothed with short blackish setae; 7th sternite subtruncate at the middle of posterior margin and slightly longitudinally flattened or depressed at the middle just before the flattened part, though sometimes obscure.

Genital organ elliptical, well sclerotized except for the ventral side of median lobe. Median lobe remarkably shorter than fused paramere, provided with an elongate sclerite on the dorsal side, the sclerite being widest before the pointed apex and gradually narrowed both anteriad and posteriad, and forming a small dorsal hook at the middle as seen from lateral side. Fused paramere somewhat asymmetrical and relatively broad, slightly curved to the right, almost parallel-sided in basal half and then abruptly narrowed apicad in apical half as seen from dorsal side, and strongly curved to the dorsal side in profile; dorsal surface provided with a fine longitudinal carina along the middle in apical half.

F e m a l e. Similar in general appearance to male, but different from it in the 8th sternite narrowed towards the rounded apex.

Type series. Holotype: ♂, allotype: ♀, near Mennoki-tôge, Irabu-chô, Kita-shitara-gun, Aichi Pref., Honshu, Japan, 8–VII–2002, M. HASEGAWA leg. Paratypes: 1♂, 2♀♀, same data as for the holotype; 4♂♂, 3♀♀, same locality and collector as for the holotype, 22–VII–2002.

Distribution. Japan (Tôkai Dist.).

Remarks. The present new species is similar in general appearance to *L. brachypterum* SHARP (1889, p. 255) from Miyanoshita, Hakone, but can be distinguished from it by the following points: body somewhat smaller; head as long as broad, with more distinct ground sculpture on the surface; elytra much more roughly punctured, and different configuration of second sexual characters of abdominal sternites and genital organ in the male.

Bionomics. The type specimens were obtained by sifting dead leaves in a deciduous broadleaved forest on the Mennoki-tôge at an altitude of 1,400 m.

Etymology. This new species is dedicated to Professor Masataka SATÔ, who is an excellent coleopterist in Japan and has made many contributions to the coleopterology in East Asia.

Reference

SHARP, D., 1889. The Staphylinidae of Japan. *Ann. Mag. nat. Hist.*, (6), 3: 249–267.

Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 157–160, May 25, 2003

Tachinus satoi (Coleoptera, Staphylinidae), a New Tachyporine Species from China [1)]

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Abstract A new species belonging to the staphylinid genus *Tachinus* GRAVENHORST is described under the name of *Tachinus* (*Tachinus*) *satoi*. It is collected from Hubei and Sichuan Provinces of China. Its diagnostic characters are illustrated.

In the course of the studies on the subfamily Tachyporinae of China, we collected a number of specimens of the genus *Tachinus* from Mt. Emei, Sichuan Province and the Shennongjia Nature Reserve of Hubei Province. In this collection, we found a species bearing long bristles at the sides from the 4th to 7th abdominal segments. After a careful examination, we have concluded that the species is new to science and will describe it in the following lines.

This paper is dedicated to Prof. Dr. Masataka SATÔ, Nagoya Women's University for his great contribution to the knowledge of aquatic insects.

Before going into details, we wish to express our hearty thanks to Prof. Nobuo OHBAYASHI (Entomological Laboratory, Ehime University) for critical reading of the manuscript, and to Miss Yan ZHANG and Mr. Liang TANG (Department of Biology, Shanghai Teachers University) for their help in many ways.

Tachinus* (*Tachinus*) *satoi sp. nov.

(Figs. 1–7)

Body length: 5.1–5.9 mm (from front margin of head to anal end); 3.2–3.9 mm (from front margin of head to elytral apices).

Male. Body (Fig. 1) medium in size, oval. Color black to piceous with shine; basal four segments of antennae, mouthparts and apex of abdomen dark reddish brown and legs reddish brown.

Head small, 0.59 times as wide as pronotum; lacking any puncture, with dense and coarse microsculpture mostly consisting of sinuate lines. Eye moderately large and convex; ocular seta long and robust, about as long as the longitudinal diameter of an eye, located near inner posterior margin of each eye. Antennae moderately long,

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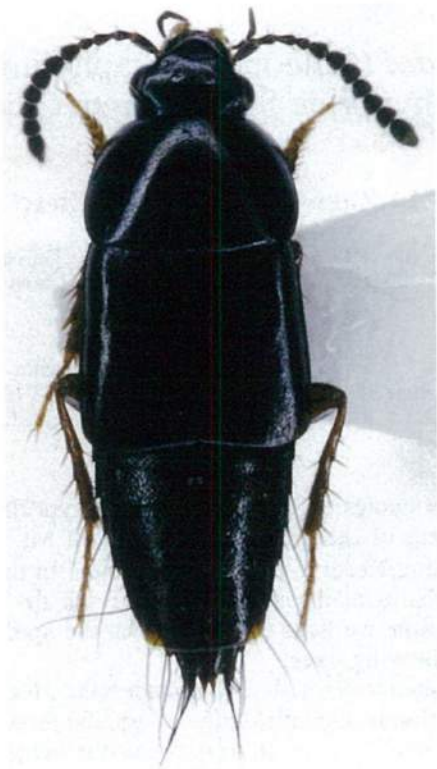


Fig. 1. *Tachinus satoi* sp. nov., male.

reaching the posterior margin of pronotum; 1st to 4th segments glabrous except for a few long setae, 5th to 11th densely pubescent; relative length of each segment from base to apex:— 14 : 10 : 12 : 7 : 10 : 10 : 10 : 9 : 9 : 9 : 16; 10th segment a little wider than long (W/L=1.1). Maxillary palpus moderately long, with 4th segment twice as long as the 3rd. Labial palpus with 3rd segment about 2.5 times as long as the 2nd.

Pronotum 0.68 times as long as wide, widest near basal third; anterior margin bisinuate; lateral margins arcuate; posterior margin slightly and roundly produced behind; posterior angles rounded; microsculpture similar to that on head, without puncture. Scutellum broadly parabolic, with similar microsculpture as that on pronotum.

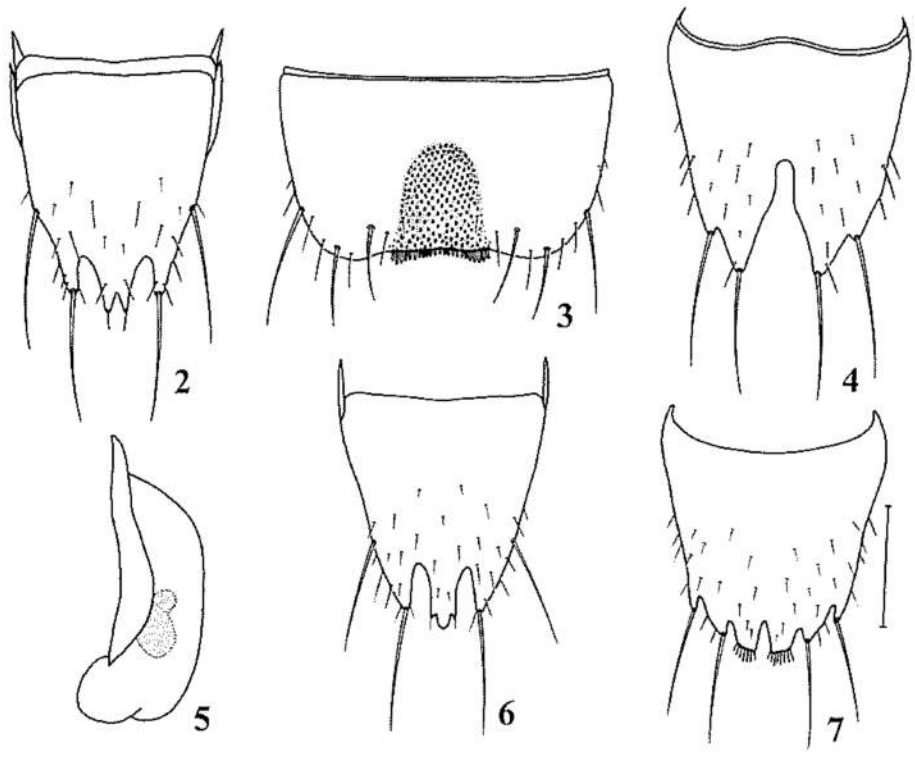
Elytra in sutural length 1.31 times as long as the median length of pronotum, 0.81 times as long as wide; sides gradually divergent apicad; conjoint posterior margins distinctly emarginate at the middle; apical angles rounded; surface with very fine and sparse punctures, microsculpture similar to that on pronotum.

Abdomen triangular, rather narrowed from base to apex; surface covered with sparse fine setae and dense pubescence; punctures as dense as the pubescence, much coarser than those on elytra; microsculpture denser but much finer than that on

elytra, mostly consisting of transverse lines. Fourth to 7th segments each with a long bristle at each side. Third to 5th tergites each with a pair of pruinose spots near the middle. Eighth tergite (Fig. 2) 4-lobed at apex; inner lobes separated from each other by a shallow V-shaped emargination; outer lobes rather shorter than inner lobes. Seventh sternite (Fig. 3) broadly and shallowly emarginate at the middle of apical margin, with a roughly U-shaped granulate area in the middle of posterior part. Eighth sternite (Fig. 4) deeply incised between inner lobes, the depth about 0.47 times as long as the median length of sternite; outer lobes very small, but definite. Aedeagus (Fig. 5) moderately long and robust; lateral lobes long and slightly curved, gradually tapering apicad.

Legs moderately long, with protarsal segments 1–4 dilated.

F e m a l e. Eighth tergite (Fig. 6) 3-lobed; inner lobe distinctly longer than outer lobes, with a small furcula on each side just behind apex; outer lobes moderately long, broadly separated from inner lobes. Eighth sternite (Fig. 7) 6-lobed; inner lobes much broader than intermediate lobes, separated from each other by a V-shaped emargination; both intermediate and outer lobes relatively short. Legs with protarsal segments 1–4 not dilated.



Figs. 2–7. *Tachinus satoi* sp. nov. —— 2, Male 8th tergite; 3, male 7th sternite; 4, male 8th sternite; 5, aedeagus (in lateral view); 6, female 8th tergite; 7, female 8th sternite. (Scale: 0.5 mm.)

Type series. Holotype: ♂, Jinhouling, Shennongjia, Hubei Province, 4–VIII–2002, LI & TANG leg. Paratypes: 15♂♂, 20♀♀, same data as for the holotype; 2♂♂, 6♀♀, Shennongding, Shennongjia, Hubei Province, 3–VIII–2002, LI & TANG leg.; 23♂♂, 26♀♀, Mt. Emei, Sichuan Province, 1–VIII–2001, LI & ZHAO leg.

The type series of the new species is deposited in the Department of Biology, Shanghai Teachers University.

Distribution. China (Hubei, Sichuan).

Remarks. The present new species belongs to the *Tachinus luridus* group and seems to be similar to *Tachinus gelidus* EPPELSHEIM from Mongolia, China, Russia and Japan, and to *Tachinus basalis* ERICHSON from Amur, North Mongolia, North Korea and North America, but it is separable from the latter two by the following characters: the granulate area on the male 7th sternite much broader; inner lobe of the female 8th tergite with a distinct furcula on each side just behind the apex.

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A New *Anisolinus* Species (Coleoptera, Staphylinidae) from China

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Abstract A new species of the genus *Anisolinus* is described from China under the name of *Anisolinus satoi*. This genus is recorded from China for the first time.

The genus *Anisolinus* SHARP is a rather small genus consisting of eleven species (HERMAN, 2001). Five species of the genus are known from Japan, three from Myanmar and three from Nepal (one of them also from India), but no species are known from any other areas including the mainland of China until now. Recently I had an opportunity to examine a specimen of the genus *Anisolinus* from the mountain area of Shaanxi Province, China. In appearance, it is very similar to an *Amichrotus* species occurring in China. After a close examination, it is concluded that the Chinese species is doubtless new to science. Although this species is very closely allied to *Anisolinus elegans* SHARP from Japan at least in having the similar structures of hind wings and dorsum of the body, it is easily separable from the latter by the different structure of the male genitalia and of the elytral color. In this paper, therefore, I am going to describe this interesting new species under the name of *Anisolinus satoi*.

My sincere thanks are due to Dr. Kiyoshi ANDO for his kindness of critically reading the manuscript of this paper.

Anisolinus satoi sp. nov.

(Figs. 1–4)

Male. Body elongate, subparallel-sided, thick, rather flattened dorsally, weakly shiny, with abdomen weakly iridescent; color black, mouth organs pitchy brown, antennae blackish, with apical four segments white, apex of 1st segment, basal half of 2nd, each base of 3rd to 6th segments reddish brown; apices of elytra and 7th abdominal segment narrowly yellowish brown, 8th abdominal segment pale yellow in basal half and black in the rest, with apical margin also yellow; head, pronotum, elytra in basal half, apex and suture and abdomen covered with rather long, pale brownish yellow pubescence, the pubescence conspicuous on vertex, elytra and abdomen. Length: 10.0 mm (somewhat shrunk in dry condition).

Head subquadrate, a little wider than long (43 : 38), a little narrower (43 : 47) and much shorter (38 : 55) than pronotum, widely rounded at posterior angles, slightly dilated anteriad, gently arcuate at posterior margin and gently convex; disc

Fig. 1. Habitus of *Anisolinus satoi* sp. nov.

very densely covered with coarse umbilicate punctures except for narrow clypeal area and median line; median line narrow and convex, impunctate and very finely reticulo-microsculptured. Mandibles nearly as long as head. Eyes moderate in size, weakly convex and slightly longer than postgenae (17.0 : 16.0). Antennae rather thick as compared with those in the known Japanese congeners, moderate in length, reaching behind the middle of pronotum and very slightly thickened apicad; basal seven and 11th segments each more or less longer than wide; 8th and 9th nearly as long as wide; 10th slightly wider than long; segments from base to apex with the following relative lengths:— 22.0 : 13.0 : 15.0 : 12.0 : 12.0 : 12.0 : 11.0 : 9.0 : 9.0 : 8.0 : 15.0.

Pronotum oblong, a little longer than wide (55 : 47), widest at about anterior fourth, much narrower (47 : 67) and shorter (55 : 63) than elytra, gently narrowed anteriad and posteriad from the widest level; sides nearly straight in anterior fourth, feebly emarginate in posterior two-thirds; all angles widely rounded; anterior margin nearly straight, posterior margin wholly arcuate; disc strongly convex, very densely and uniformly punctured as on head, with an indistinct short tubercle before base, and interstices of punctures without microsculpture.

Scutellum shallowly depressed, densely punctured as on pronotum except for margins.

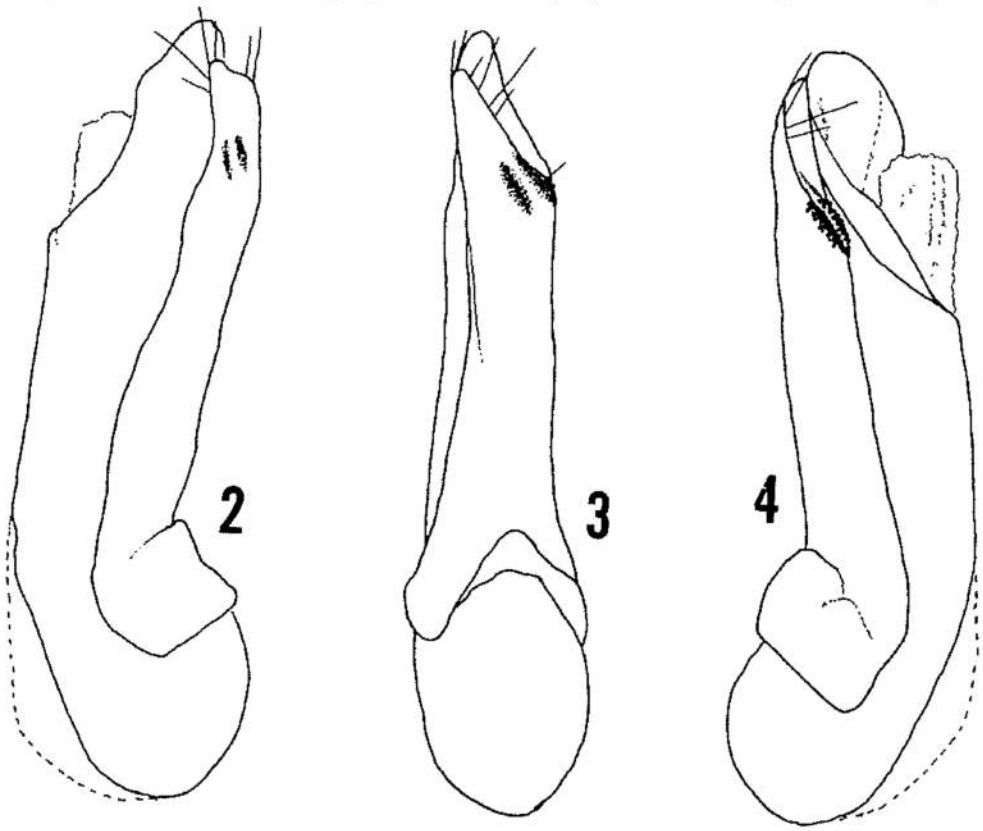
Elytra subquadrate, slightly dilated posteriad, widest at about posterior fifth, slightly wider than long (67 : 63), nearly straight at sides, feebly emarginate at apices; each with postero-lateral angle widely rounded and postero-inner one narrowly so; surface very densely and coarsely asperate-punctured, each puncture a little smaller than that on pronotum, and interstices of punctures without any microsculpture. Hind

wings well developed, functional.

Abdomen nearly parallel-sided in three basal segments, then gradually narrowed posteriad; punctures minute and sparse on tergites but relatively large on sternites, much sparser on 8th segment than on other tergites, gradually enlarged basad on each segment; 7th sternite with a small and rather deep fovea at about basal third, with a pile of long stiff pubescence in the fovea; 8th sternite shallowly and rather widely emarginate at apical margin.

Legs long and slender; 1st to 4th protarsomeres each weakly dilated; 1st segment of metatarsomere much longer than 5th and nearly as long as the following two segments combined together.

Male genitalia (Figs. 2–4) narrow, nearly parallel-sided and straight in basal part, asymmetrical and strongly twisted to the left in apical third; penis subcylindrical, thickened dorsally, obliquely truncate and membranous in apical third, weakly sclerotized in mid-third of dorsum, membranous in basal third of dorsum, subacute at apex (rounded in right lateral view), and ventral surface in apical third faced to the left; parameres unilobed, slightly sinuate, obliquely truncate at right side of apical



Figs. 2–4. Male genitalia of *Anisolinus satoi* sp. nov. —— 2, Left lateral view; 3, ventral view; 4, right lateral view.

fourth in ventral view, bearing a pair of thickly dotted peg-setae at about apical two-fifths of inner surface (Figs. 2–4), not reaching the tip of penis and blunt at apex in lateral view.

Female. Unknown.

Holotype: ♂, Qinlin Mts. (up to 1,200 m), Xunyangba env., Shaanxi Prov., China. 20–V~10–VI–2000. (Preserved in the collection of Osaka Museum of Natural History).

Remarks. The present species is closely allied to *Anisolinus elegans* SHARP, but it is easily separated by having entirely black color of the body and rows of peg-setae on parameres a little shorter and much thicker, while in *A. elegans*, the elytra are bicolorous, *viz*., widely reddish in basal halves with a black macula in each apical half, and the row of peg-setae on the parameres is somewhat longer and thinner than that of *satoi*.

Etymology. The specific name is given after Prof. Dr. Masataka SATÔ of Nagoya Women's University, who is one of the most excellent coleopterists in Japan.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 165–172, May 25, 2003

Two New Species of *Batrisiella* (Coleoptera, Staphylinidae, Pselaphinae) from the Alpine Area of Sichuan, China

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Abstract Two new species of the genus *Batrisiella* are described from the alpine to subalpine area 3,940m at the highest point in Sichuan, China. Systematic position of the genus *Batrisiella* is discussed in comparison with its allied genera. The habitats of these species are also noted.

Introduction

The genus *Batrisiella* was defined by RAFFRAY (1904) on the basis of the type species *Eubatrisus caviventris* RAFFRAY, 1894 from Sri Lanka. According to NEWTON and CHANDLER (1989), fifteen species were known before that time.

NOMURA (1991) revised the Japanese species of the *Batrisocenus* complex including *Batrisiella* and phylogenetically separated the genera *Batrisiella*, *Batriscenellus* and *Arthromelus* from the genus *Arthromelodes* and its allied genera in view of the presence of conical trichome on the first antennal segment and the strongly curved dorsal apophysis of the median lobe adhered to the basal bulb and the ventral stalk (erect on the basal bulb and distant from the ventral stalk in *Arthromelodes* and its allies.). Additionally, he transferred *B. orientalis* LÖBL, 1973 to *Batriscenellus* and *B. semipunctulata* (RAFFRAY, 1909) to *Batrisceniola*.

Batrisiella caviventris, the type species of the genus, was redescribed by JEANNEL (1961), though LÖBL and KURBATOV (2001) reexamined the types again and concluded that JEANNEL's *B. caviventris* was an undescribed species. They then redescribed the type species and newly described JEANNEL's *B. caviventris* under the name of *B. aulica* and added five more species from Sri Lanka. Up to the present, nineteen species have been known from South to East Asia.

In the key to pselaphine genera collected from Yunnan, China enumerated by NOMURA (2000), the genus *Batrisiella* is distinguished from *Batriscenellus* by having a sexual patch on the fourth abdominal tergite. An undescribed species of this genus was also reported by him from Yunnan.

In the expedition 1996 to Sichuan, China, Dr. Masataka SATÔ, Dr. Shun-Ichi UÉNO and I collected some specimens of *Batrisiella* in the alpine area on the borders of Jiulong Xian to Kangding Xian. They were classified into two undescribed species, which are closely allied to each other. They are described herein with notes on their habitats. Systematic position of this genus is also commented in comparison with its allied genera, *Batriscenellus*, *Arthromelus* and so on.

Batrisiella RAFFRAY

Batrisiella RAFFRAY, 1904, Annls. Soc. ent. Fr., **73**: 59; RAFFRAY, 1908, Coleopt., Psel., Gen. Ins., **64**: 178; RAFFRAY, 1911, Psel., Coleopt. Cat. (27): 73. —— JEANNEL, 1961, Bull. Brit. Mus. (Nat. Hist.), Ent., **10**: 436. —— NEWTON & CHANDLER, 1989, Fieldiana, Zool., **53**: 34. —— LÖBL & KURBATOV, 2001, Revue suisse Zool., **108**: 669. Type species: *Eubatrisus caviventris* RAFFRAY, 1894.

Remarks. This genus is similar to certain species of *Arthromelodes* and *Batriscenaulax* in having a large excavation and a pair of setiferous patches on the fourth abdominal segment in the male. However, it is more closely allied to *Batriscenellus* and *Arthromelus* than to the foregoing genera, even if some members of them lack such a large sexual patch. This type of sexual patch sometimes occurs in relatively remote groups independently, for example, it is also observed in some species of *Cratna*.

The genera *Batrisiella*, *Arthromelus*, *Batriscenellus* and *Babascenellus* share at least three synapomorphies, namely, 1) the first antennal segment bears a trichome formed by some foliate setae on the external side (spine-like trichome in *Babascenellus*), 2) the median lobe of the male genitalia is bulbous and weakly flattened on the lateral sides, and its dorsal apophysis is strongly curved and closely attached to basal bulb in the basal part (never erect on the basal bulb), 3) the female genital plate is small, its lateral arms being hardly thickened distad and lacking muscles on them.

The genus *Batrisiella* is separated from *Batriscenellus* only by position of the sexual patch. Difference between *Batrisiella* and *Arthromelus* is probably only in their distributional ranges. They will possibly be synonymized by future study.

Batrisiella satoi sp. nov.

(Figs. 1 A, 2 A–C, 3 A, C, E, 4 A, B, E)

Etymology. This species is dedicated to Professor Masataka SATÔ for his continuous guidance and encouragement of my coleopterological study, and for his kind offer of some type specimens of this species.

Type material. Holotype ♂ (preserved in National Science Museum, Tokyo), Mt. Wahuishan, 3,940m alt., Dichishan Mts., Jiulong Xian, Sichuan, China, 28–IX–1996, Masataka SATÔ leg. Paratypes: 1♂, same data as the holotype; 1♂, same data as above, but Shun-Ichi UÉNO leg.; 3♂, 1♀, Waze, 3,410 m alt., Kangding Xian, Sichuan, China, 27–IX–1996, S. NOMURA leg.

Male. Length 2.06–2.29 mm (holotype 2.24 mm). Width 0.78–0.84 mm (holotype 0.81 mm).

Body reddish brown, elytra yellowish, maxillary palpi and tarsi light brown, shiny.

Head longer than wide, subparallel-sided laterally, clypeus arcuately expanded anteriad; frons weakly concave, with a short transverse sulcus between antennal tubercles; vertex slightly convex, sparsely punctate, with a pair of small round dorsal

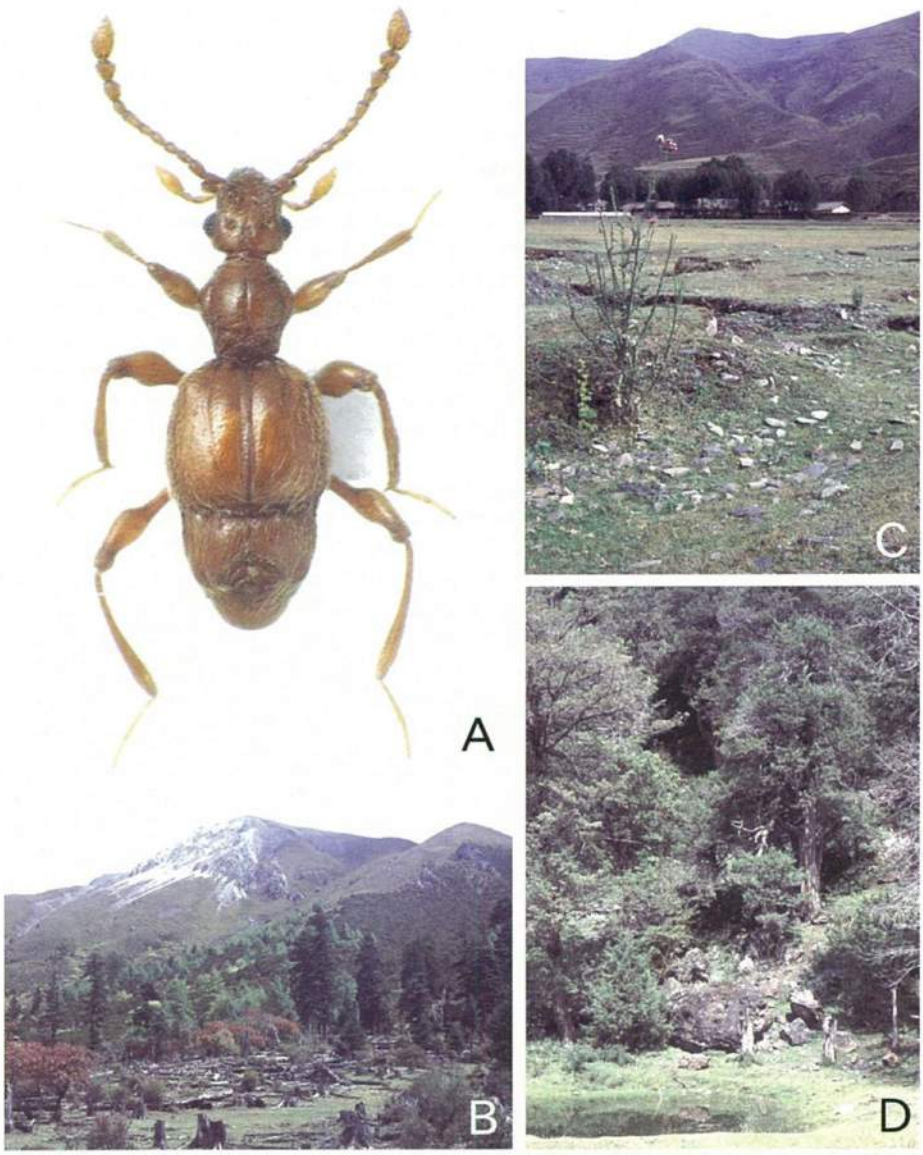

Fig. 1. A, *Batrisiella satoi* sp. nov., male, habitus; B, habitat of *B. satoi* sp. nov., Mt. Wahuishan, 3,940 m alt.; C, ditto, Waze, 3,410 m alt.; D, habitat of *B. subalpicola* sp. nov., Sewurong, 3,300m alt.

tentorial pits; postgenae rounded. Eyes well-developed and ovoid, each composed of about 20 facets. Antennae slender, reaching base of elytra; 1st segment thick and tubular, with a small trichome on external side of apex; 2nd to 8th each narrow,

slightly longer than wide; 9th to 10th thick, each ovoid; 11th the largest, 1.8 times as long as wide; relative length (width) of each segment from base to apex: 1.0 (0.7) : 1.0 (0.5) : 0.7 (0.5) : 0.6 (0.5) : 0.7 (0.5) : 0.7 (0.5) : 0.7 (0.5) : 0.6 (0.5) : 1.0 (0.8) : 1.0 (0.9) : 2.0 (1.1). Maxillary palpi large and geniculate; 1st segment short and tubular; 2nd elongate, thickened distally; 3rd short and nearly triangular; 4th the largest, fusiform, 2.5 times as long as wide.

Pronotum slightly wider than long, round-sided, convex and sparsely covered with minute punctures on dorsal surface, with three longitudinal sulci and a broad and shallow transverse sulcus at basal 1/4. Metasternum transverse and weakly convex, with a pair of small tubercles just before hind trochanters. Elytra wider than long, rounded at lateral sides, convex; each elytron with two basal foveae, a lateral longitudinal sulcus and an adsutural sulcus; lateral longitudinal sulcus gently incurved, running from outer basal fovea to posterior 1/5. Legs long and slender; mid trochanters short, each nearly quadrangular, with a large spine on posterior side; mid tibiae slender and gently incurved, each with a long and acute mucro at apex; hind trochanters short, each slightly broadened distad, densely covered with long hairs in basal part.

Abdomen slightly wider than long, well-expanded posteriorly; 4th tergite predominantly large, with a large median excavation, a posteromedian tubercle and a pair of setiferous patches; median excavation nearly triangular, with a large filament

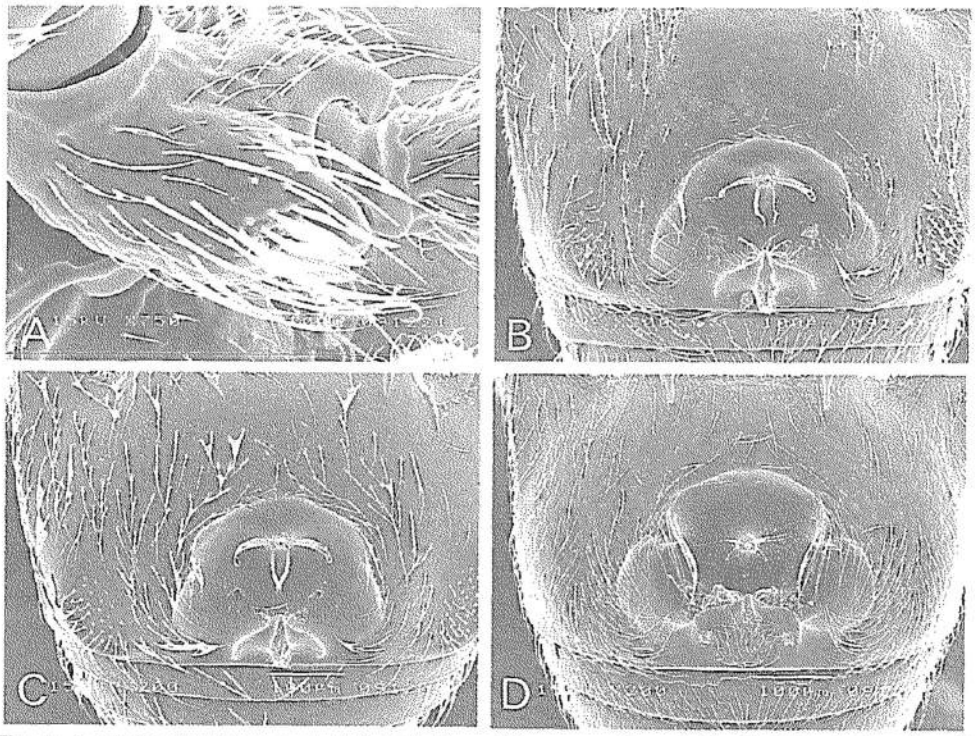

Fig. 2. A, First antennal segment of *Batrisiella satoi* sp. nov.; B, male fourth abdominal tergite of *B. satoi* from Mt. Wahuishan; C, ditto, from Waze; D, ditto of *B. subalpicola* sp. nov.

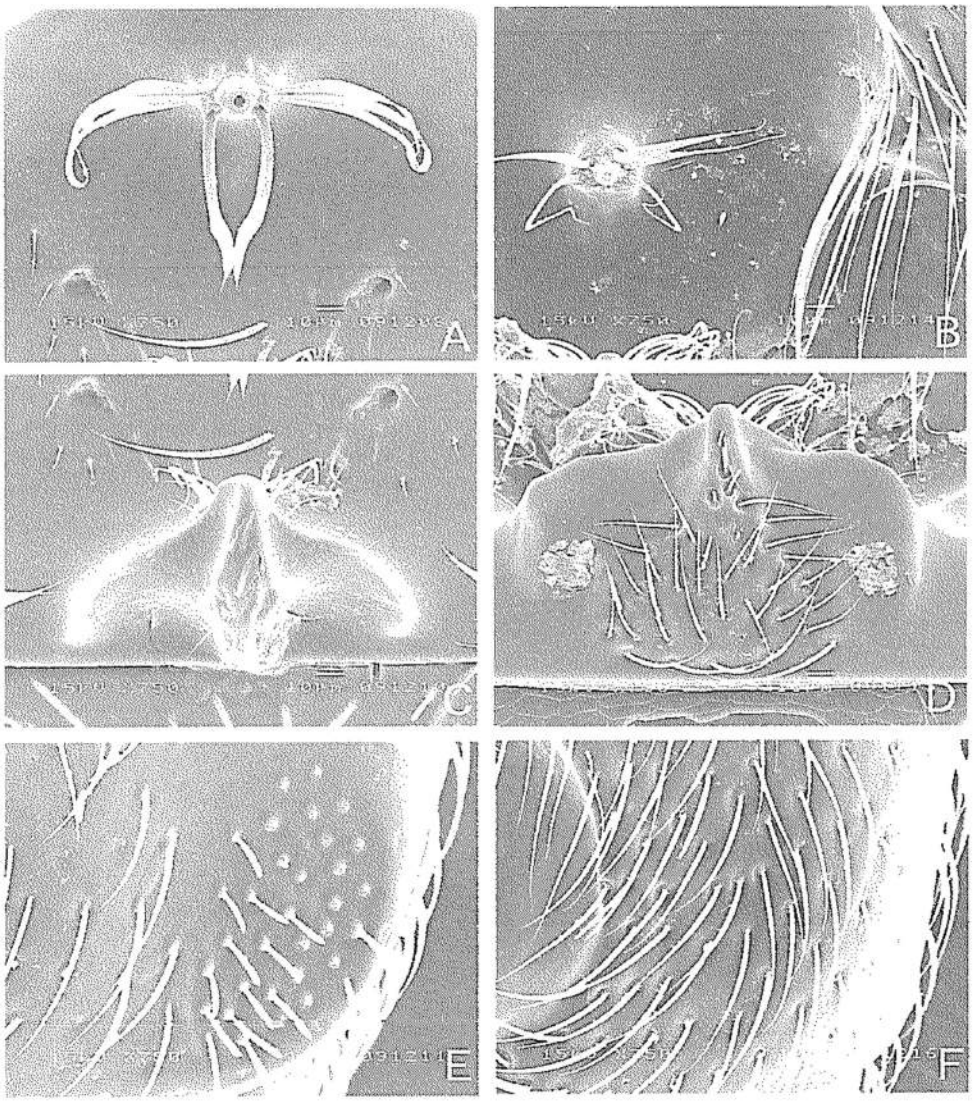

Fig. 3. Microstructures of sexual patches on 4th abdominal tergite of *Batrisiella* spp. —— A, C, E, *B. satoi* sp. nov.; B, D, F, *B. subalpicola* sp. nov.; A, B, filament; C, D, posteromedian tubercle; E, F, posterolateral side.

formed by a median tube, three pairs of lateral spines and a pair of posterior spines in basal part, and a pair of pores at the center; posteromedian tubercle transverse, projected anteromedially, with a short and broad median longitudinal carina; setiferous patches each small, flattened and reniform, regularly setose by spatulate setae; 4th sternite transverse and convex, with a small projection in posteromedian

part; 5th to 6th tergites each very short; 7th tergite large, longer than 5th + 6th; 8th tergite small and invisible in dorsal view, nearly semicircular in posterior view, with a small arcuate emargination on hind margin; 8th sternite semicircular, shallowly concave in median part.

Male genitalia well sclerotized; parameres lamellar, attached to apical margin of basal foramen of median lobe; median lobe bulbous in basal part, with nearly triangular basal foramen, a ventral stalk and a dorsal apophysis; ventral stalk about as long as basal foramen, well projected ventrally, gently curved leftwards, weakly narrowed distad in basal 3/4, then weakly broadened in apical 1/4 in dorsal view; dorsal apophysis about as long as ventral stalk in lateral view, strongly curved leftwards in apical part, narrowed distally and acute at apex.

Female. Length 1.90–2.03 mm. Width 0.73–0.75 mm. Similar to male, but metasternum flat in posterior part; mid trochanters without spine; mid tibiae truncate at apex; 4th abdominal tergite without sexual patch; 4th sternite flat in posteromedian part; 8th tergite small and strongly convex posteriad, visible in dorsal view. Ninth abdominal sternite formed by apical and basal lobes; apical lobe transverse and lamellar, arcuate at posterior margin, constricted on lateral sides, basal lobe partly mem-

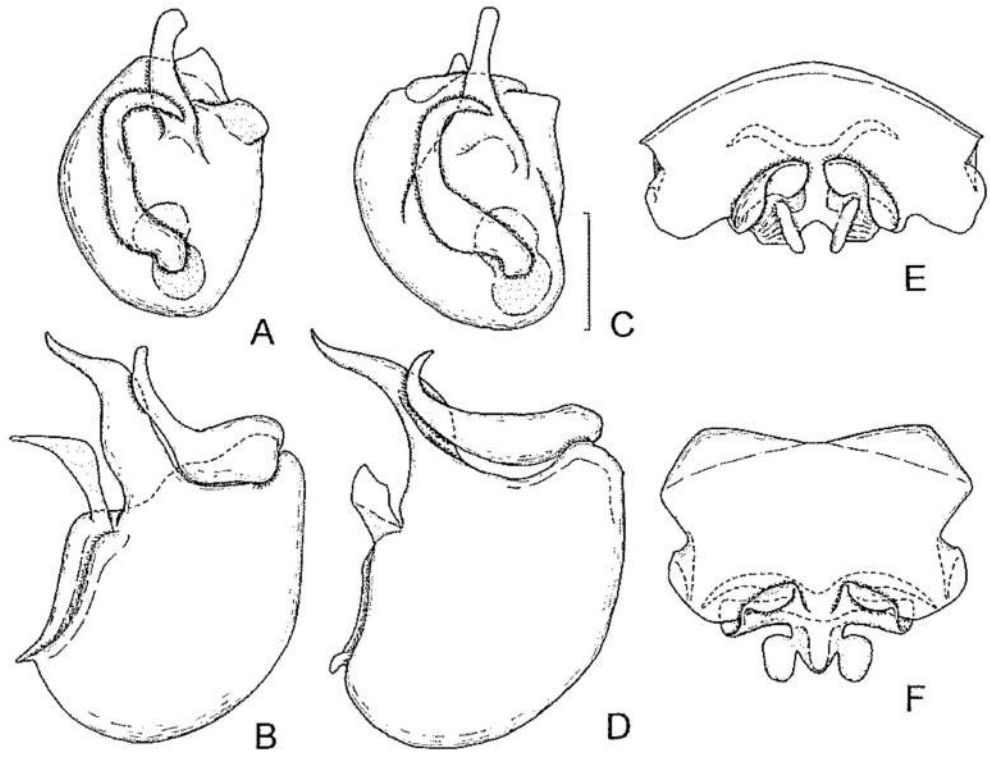

Fig. 4. Male and female genitalia of *Batrisiella* spp. —— A, B, E, *B. satoi* sp. nov.; C, D, F, *B. subalpicola* sp. nov.; A, C, male genitalia in dorsal view; B, D, ditto in lateral view; E, F, female ninth abdominal sternite and genital plate in ventral view. Scale: 0.1 mm.

branous, with a pair of large ventral projections and a pair of small basal sclerites; genital plate T-shaped, connected with basal lobe of 9th sternite at base.

Distribution. China (Sichuan; Jiulong Xian, Kangding Xian).

Remarks. This new species is characterized by some male characters, namely, 1) the fourth abdominal tergite bears large excavation and a pair of setiferous patches, 2) the metasternum bears a pair of small tubercles just before metacoxae, and 3) the fourth abdominal sternite has a short and well projected median carina near base.

The females of this and the next species are distinguished from those of the other species of the *Batrisocenus* complex by the small and strongly convex eighth abdominal tergite.

Biological notes. This species was discovered from ant nests in the alpine area of Mt. Wahuishan, 3,940 m in altitude, Jiulong Xian (Fig. 1B). The host ant species are identified with *Formica fusca* LINNAEUS and *Formica* sp. (cf. *F. japonica* MOTSCHULSKY) by Dr. Kazuo OGATA. On the other hand, at Waze, 3,200 m in altitude, Kangding Xian (Fig. 1C), they were found from the underside of stones lying on a grassland.

Batrisiella subalpicola sp. nov.

(Figs. 2D, 3B, D, F, 4C, D, F)

Etymology. The specific name is derived from the zone which was inhabited by this species.

Type material. Holotype ♂ (preserved in National Science Museum, Tokyo), Sewurong Yidui, 3,300 m alt., Dichishan Mts., Kangding Xian, Sichuan, China, 29–IX–1996, S. NOMURA leg. Paratypes: 2♂, 2♀, same data as the holotype.

Male. Length 2.04–2.08 mm (holotype 2.08 mm). Width 0.74–0.76 mm (holotype 0.76 mm). Very similar to *B. satoi*, but separable by the following characters: 4th abdominal sternite with median excavation and a large posteromedian tubercle; median excavation with a pair of fringes on anterolateral sides, a small filament at the center and a pair of indistinct pores just before posteromedian tubercle; posteromedian tubercle large and transverse, with an indistinct median longitudinal carina, densely covered with setae at base. Male genitalia very similar to those of *satoi* in general structure, but ventral stalk strongly broadened at base, hardly broadened near apex.

Female. Length 1.99–2.03 mm. Width 0.71–0.73 mm. Very similar to *B. satoi*, but differs in larger apical lobe of 9th abdominal sternite than in *satoi*.

Distribution. China (Sichuan; Kangding Xian).

Remarks. This species is very similar to the preceding species. The male characters in the metasternum, the fourth abdominal sternite and so on are quite the same as those of *satoi*. However, it is clearly separated by the sexual patch of the fourth abdominal tergite including a filament with small setae, a pair of fringes on lateral sides of the concavity and a transverse nodule covered with hairs on the posterior part, and also distinguished by lacking the setiferous patch at the lateral sides.

Biological notes. The type specimens were collected by using a compact Tullgren

funnel from leaf litter deposited on the ground of a subalpine forest formed by coniferous and broad-leaved trees at Sewurong, 3,300 m in altitude, Kangding Xian (Fig. 1D). This habitat makes a sharp contrast with that of *satoi*.

Acknowledgements

I wish to express my special thanks to Prof. Masataka SATÔ for his hearty encouragement in the course of my coleopterological study. My special thanks are due to Dr. Wen-ying YIN of the Shanghai Institute of Entomology, Academia Sinica for her kind assistance and encouragement on my field work. I am also much indebted to Dr. Shun-Ichi UÉNO for his continuous guidance and critical reading of the manuscript. I extend special thanks to Dr. Kazuo OGATA for his kind identification of the host ants.

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A New Species of Passalid Beetle (Coleoptera, Passalidae) Closely Related to *Leptaulax punctatus* and *L. schoedli* from Sumatra

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Abstract A new species, *Leptaulax masatakai*, closely related to *L. punctatus* and *L. schoedli*, is described from Sumatra. Explanatory SEM photographs and a key to the three species are also provided.

Leptaulax punctatus was described by IWASE (1995) from Sumatra. This species is diagnosed by having the following characters: the body is relatively thick; the hypostomal process bears a longitudinal groove; the lateral margin of the male genitalia possesses a wing-like projection in ventral view. Later, IWASE (1998) also described *L. schoedli* from Sumatra, which closely resembles *L. punctatus*, but is distinguishable from the latter by having the following characters: the canthus is shining throughout; the male genitalia have no lateral projection in ventral view.

Recently, we found some specimens of a *Leptaulax* species from Sumatra in our collection, which resembles *L. punctatus* and *L. schoedli*. This form is more similar to *L. punctatus* in external morphology and more to *L. schoedli* in the male genitalia. After a close examination and comparison with the holotypes of *L. punctatus* and *L. schoedli*, we concluded that this form is specifically distinct from both *L. punctatus* and *L. schoedli*. Thus, we describe it as a new species of *Leptaulax* from Sumatra.

In the following description, we adopt the terminology of GRAVELY (1914) and IWASE (1995). Explanatory SEM photographs and a key to the species are also provided for the three species: *Leptaulax punctatus*, *L. schoedli* and the present new species.

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

(Figs. 3, 6 & 9)

Description of holotype. Male. Body black and shining; somewhat convex.

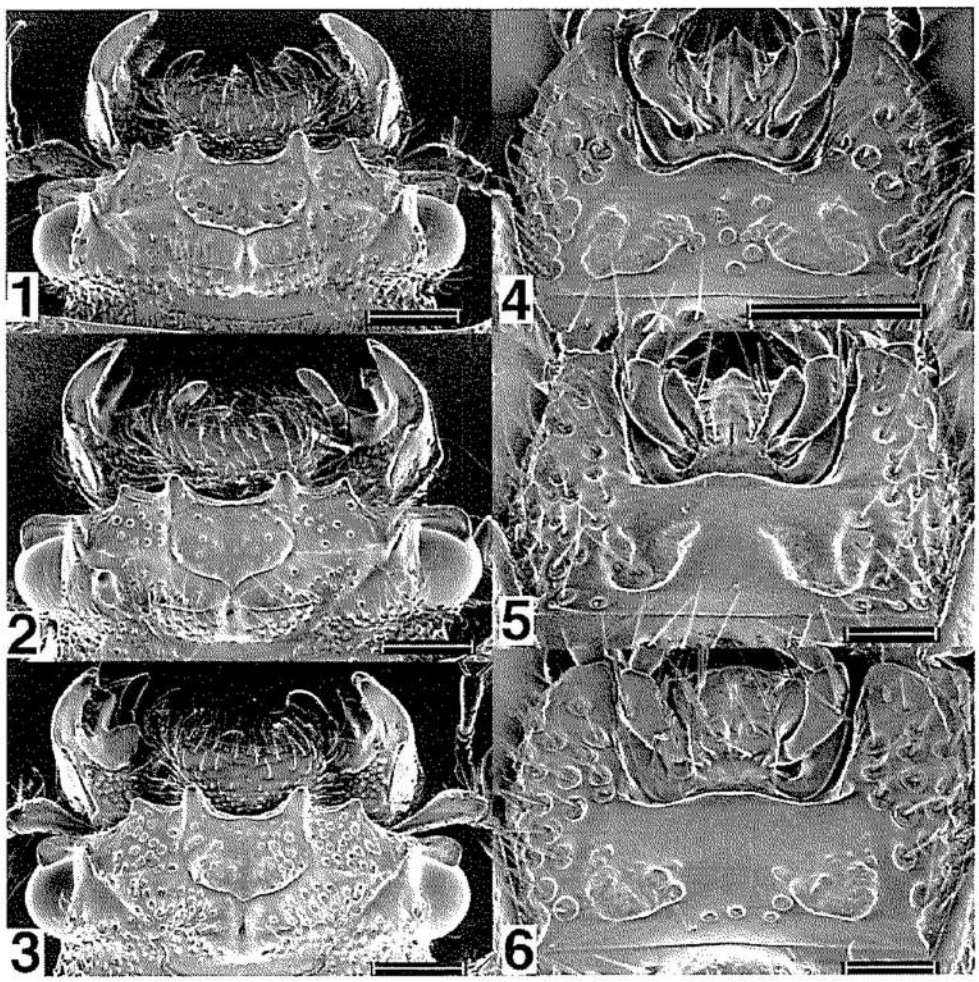
Mandible gently curved inwards, very obtusely angulate at the middle on external side; upper tooth low in lateral view; left anterior lower tooth unidentate, somewhat truncate at apex. Labrum asymmetrical; left anterior angle more prominent forward than the right; anterior margin moderately emarginate; anterior 1/3 distinctly depressed and densely covered with hair-bearing punctures; posterior 2/3 somewhat flattened; the border between anterior and posterior portions distinct and obtusely V-shaped. Inner marginal tubercle of head parabolic, longer than outer tubercle; the distance between two inner tubercles 1.8–2.0 times as long as that between inner and outer ones; outer tubercle triangular, acute or rectangular, protrudent obliquely outward; median tubercle very indistinct; anterior angle of head not prominent; frontal ridge arising obliquely forward from central tubercle, turning to straight forward at the middle and extending to inner tubercle; frontal area almost as long as wide, rounded posteriorly, hairless, densely covered with large punctures; parietal ridge weakly arcuate, gradually lowered to the lateral and ending near the supraorbital ridge, accompanied with horizontal groove along anterior edge; the areas in front of parietal ridge broadly and densely covered with large punctures; the punctures around parietal ridge bearing a long erect hair; canthus mat, with an indistinct longitudinal ridge; anterior and lateral margins shining; anterior angle rounded. Eye large, projecting laterally beyond canthus. Antennal lamellae short and stout. Middle part of mentum smooth, with a few to several large punctures, lateral piece covered with large hair-bearing punctures; scar rather small, U-shaped or short J-shaped, situated at posterior portion of mentum. Anterior margin of ligula weakly swollen or obtusely prominent at angle of more than 120°. Hypostomal process with a longitudinal groove; the depressed surface mat and rugose.

Pronotum moderately convex, hairless; anterior angle obtuse, slightly prominent forward; median groove distinct; lateral groove broad; scar rather small; sides densely punctured in lateral 1/3 to 1/2 including marginal grooves and scar.

Prosternum almost mat except for median keel; median keel smooth and shining, with several small punctures between front coxae; posterior plate occasionally with narrow shining margination. Mesosternum shining, almost smooth medially, minutely punctured laterally; scar short and mat, not sharply defined posteriorly. Anterior portion of mesothoracic epipleuron shining, with large punctures; posterior portion mat. Central area of metasternum smooth and shining, with a longitudinal depression between middle coxae; posterior intermediate area rather densely covered with large punctures; lateral area not broad, almost parallel but somewhat wider posteriorly, rugose and shining.

Elytra somewhat widened posteriorly, hairy in front of shoulder; each groove with a row of distinct punctures; outermost five (6th to10 th) grooves wider than the adjoining ribs; punctures of lateral grooves strongly transverse.

Abdominal sterna smooth and shining except for lateral scars; visible 4th abdominal sternite with a pair of transverse depression at the middle.



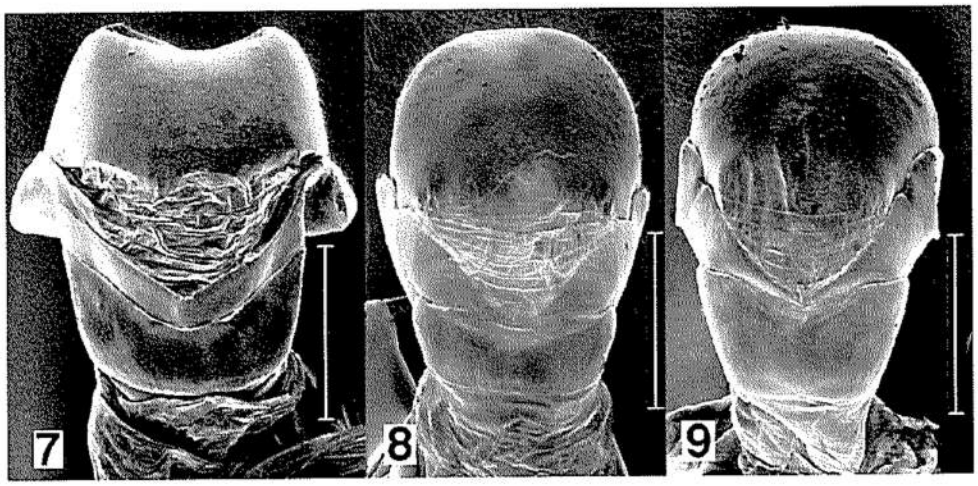
Figs. 1–6. Head, mentum and ligula of *Leptaulax* spp. (scale, 500 μm). —— 1, 4, *L. punctatus* IWASE; 2, 5, *L. schoedli* IWASE; 3, 6, *L. masatakai* sp. nov. —— 1–3, Head; 4–6, mentum and ligula.

External face of middle tibia shining, with a few spines.

Variation. No sexual dimorphism is evident. Body length of the paratypes, 20.8–21.8 mm (N=12).

Type series. Holotype: ♂, Mt. Sanggul (alt. 1,000 m), near Payakumbuh, West Sumatra, 24–VII–1998, K. FUJITA leg.; paratypes: 1♂, 3♀♀, the same data as the holotype; 5♂♂, 3♀♀, Sumatera Barat (=West Sumatra), V–1995.

Specimens compared. Leptaulax punctatus IWASE (Figs. 1, 4 and 7): 1♂, Bandar Baru, North Sumatra, 3–V–1993, K. IWASE leg. (Holotype, National Science Museum (Natural History), Tokyo); 3♂♂, 1♀, the same locality as the holotype (alt.



Figs. 7–9. Male genitalia of *Leptaulax* spp. in ventral view (scale, 1 mm). —— 7, *L. punctatus* IWASE; 8, *L. schoedli* IWASE; 9, *L. masatakai* sp. nov.

1,000 m), 20–VI–1998, K. FUJITA leg.; 1♂, 1♀, Sibolangit (alt. 800 m), North Sumatra, II–1995, K. FUJITA leg.

Leptaulax schoedli IWASE (Figs. 2, 5 and 8): 1♂, Lumban Julu (alt. ca. 1,200 m), Sumatera Utara (=North Sumatra), 18–II–1990, SCHÖDL leg. (Holotype, Naturhistorisches Museum, Wien); 5♂♂, 5♀♀, Sibolangit (alt. 1,200 m), North Sumatra, 30–VI–1994, K. FUJITA leg.; 5♂♂, 5♀♀, Silalahi (alt. 1,600 m), North Sumatra, 9–V–1998, K. FUJITA leg.

Etymology. This new species is named in honor of Prof. Dr. Masataka SATÔ, Nagoya Women's University, one of the dominant figures in the coleopterology in Japan.

Notes. *Leptaulax masatakai* sp. nov. closely resembles *L. schoedli*, but can be distinguished from the latter by having the following characters: the canthus is mat; the mentum bears some punctures in the central portion. It also resembles *L. punctatus* very closely, but can be distinguished from the latter by having the following characters: the anterior margin of the ligula is not sharply pointed; the lateral margin of the male genitalia has no wing-like projection in ventral view.

Key to the *Leptaulax punctatus* Species-group

1. Canthus shining throughout; mentum scarcely punctured in central portion (Fig. 5); lateral margin of male genitalia simple in ventral view; body length 21.0–22.8mm; North Sumatra. ..... *L. schoedli* IWASE
– Canthus mat except for fine marginal ridge; mentum with some punctures in central portion (Figs. 4 and 6); lateral margin of male genitalia either with wing-like projection or slightly angulate in ventral view. 2
2. Anterior margin of ligula acutely pointed (Fig. 4); median lobe of male genitalia

concave in distal margin (Fig. 7); lateral margin of male genitalia with wing-like projection in ventral view (Fig. 7); body length 20.6–21.7mm; North and West Sumatra. ..... *L. punctatus* IWASE

– Anterior margin of ligula not acutely pointed (Fig. 6); median lobe of male genitalia convex in distal margin (Fig. 9); lateral margin of male genitalia slightly angulate in ventral view (Fig. 9); body length 20.8–21.8mm; West Sumatra. ..... *L. masatakai* sp. nov.

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We express our hearty thanks to Dr. H. SCHÖNMANN, the Naturhistorisches Museum, Wien and Drs. S.-I. UÉNO and S. NOMURA, the National Science Museum (Natural History), Tokyo, for giving the opportunities to examine the type specimens. Thanks are also due to Mr. K. FUJITA, Fukuoka, for providing us with invaluable passalid specimens from Sumatra. This study was supported in part by a Grant-in-Aid from the Japan Society for the Promotion of Science (No. 14405013).

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Two New Species of the Genus *Ceraius* (Coleoptera, Passalidae) from Sumatra, with a Key to the Sumatran Species of *Ceraius*

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Abstract Two new species of *Ceraius* are described from Sumatra under the names of *A. masatakai* sp. nov. and *A. kazuhisai* sp. nov. These two species are closely related to each other, but *A. masatakai* can be distinguished from *A. kazuhisai* by having the upper tooth of the left mandible higher than the thickness of the left mandible at a point in front of the base of the upper tooth. Both the species also resemble *A. ashidai*, but can be distinguished from the latter by the hairy posterior plate of prosternum. In addition, *A. pilifer tobae* is ranked up to the species level. A key to the Sumatran species of *Ceraius* is also provided.

The genus *Ceraius* was erected by KAUP (1868) for *A. grandis* (BURMEISTER) as the type species. Later, several authors have revised the definition of the genus *Ceraius* in relation to the related genus *Ophrygonius* ZANG (GRAVELY, 1914, 1918; ARROW, 1950; BOUCHER, 1993). According to BOUCHER's (1993) definition, up to the present, twelve species of *Ceraius* have been recorded from Sumatra (HINCKS & DIBB, 1935, 1958; KON & KATO, 1993; KON & JOHKI, 1996; IWASE, 1998).

When we examined a series of passalid specimens from Sumatra, we found two undescribed species of *Ceraius* among them. Thus, we describe herewith two new *Ceraius* species from Sumatra. In addition, we consider *A. pilifer tobae* IWASE from Sumatra to be a full species, because it is distinct from *A. pilifer pilifer* (PERCHERON) from Java in the dentition pattern of the mandibles. We also provide a key to the Sumatran species of *Ceraius*.

In the following descriptions, we adopt the terminology of GRAVELY (1914) for

external characters and that of LINDROTH (1957) for male genitalia.

We wish to dedicate this study to Professor Dr. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

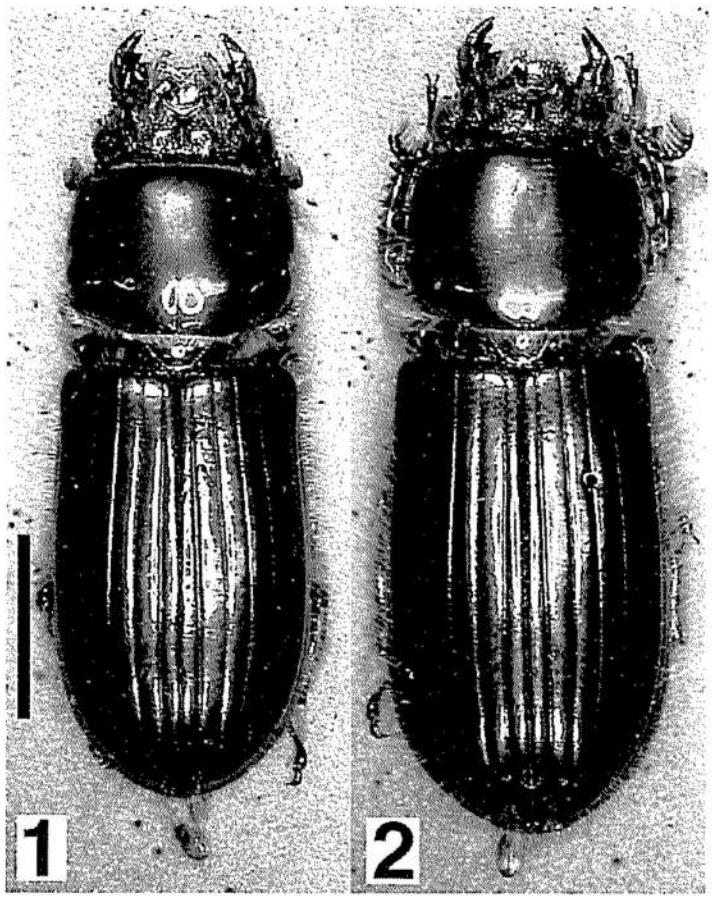
Aceraius masatakai sp. nov.

(Figs. 1, 3, 5, 6, 9 & 10)

Description of holotype. Male. Length from anterior margin of head to apices of elytra 37.2 mm. Body black, polished.

Anterior angle of head rounded. Canthus without denticle pointed upwards. Left outer tubercle larger than the right one, produced obliquely inwards, obliquely truncated at distal end; both outer and inner margins of left outer tubercle slightly concave; right outer tubercle moderately large, obliquely truncated at distal end, inner distal angle of right outer tubercle distinct, less prominent forwards than the outer one; upper surface of outer tubercle a little rough. Inner tubercle moderately large, pointed forwards and upwards. Ridge between inner tubercles distinct, slightly concave, accompanied by shallow groove posteriorly; frontal ridge slightly curved forwards in distal portion, accompanied by distinct groove anteriorly; parietal ridge slightly curved backwards in distal portion, not strongly swollen upwards in distal portion; supraorbital ridge not curved inwards in anterior portion; supraoccipital ridge connected with supraorbital ridge. Area between both outer tubercles hairless, strongly concave in left half in dorsal view; areas between frontal and parietal ridges, behind parietal ridge and behind eye provided with setiferous hair-bearing punctures; frontal area wide, impunctate, hairless. Upper margin of left mandible obliquely straight behind upper tooth in lateral view; upper tooth of left mandible higher than the thickness of left mandible at the point in front of the base of upper tooth, much higher than the right one, distinctly bifid at apex; anterior margin of left upper tooth concave in lateral view; anterior lower tooth of left mandible simple at apex, larger than left lowest terminal tooth; right mandible markedly narrowed prior to upper tooth in lateral view; upper margin of right mandible with a swelling behind upper tooth; right upper tooth pointed forwards in lateral view; anterior margin of right upper tooth concave; lowest terminal tooth of right mandible distinct though small, slightly larger than the upper portion of left anterior lower tooth; upper portion of anterior lower tooth of right mandible represented by a small triangular denticle; lower portion of anterior lower tooth represented by a small swelling, located a little posteriorly to the upper portion. Labrum with setiferous hair-bearing punctures, anterior margin weakly concave with a slight swelling at the middle, anterior angles rounded, the left angle much more prominent forwards than the right one, left lateral margin of labrum weakly convex, right lateral margin convex. Mentum with setiferous hair-bearing punctures in lateral portion, impunctate and hairless in central portion. Antenna with six short lamellae.

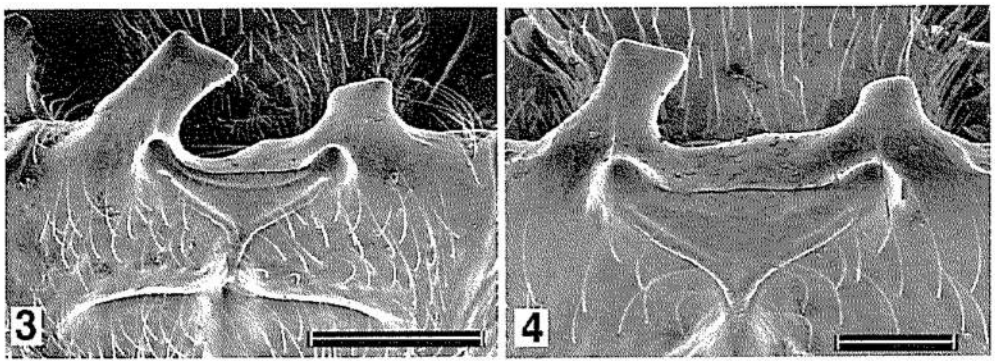
Pronotum polished, with a few setiferous hair-bearing punctures in lateral scar and marginal groove; intercoxal process of prosternum with long hairs in the middle of posterior portion. Mesosternum polished, impunctate, hairless, without scar;



Figs. 1–2. Habitus, scale 1 cm. —— 1, *Ceraius masatakai* sp. nov.; 2, *Ceraius kazuhisai* sp. nov.

mesothoracic episternum weakly frosted and impunctate in posterior portion, polished and with large punctures in both anterior and dorsal portions. Ridge separating intermediate and lateral areas of metasternum blunt, punctured and hairy in anterior portion, impunctate and hairless in posterior portion; lateral and anterior intermediate areas densely punctured and hairy throughout; posterior intermediate area punctured and hairy in posterior portion, impunctate and with shallow dents in anterior portion; central area impunctate and hairless throughout. Tenth rib of elytron punctured and hairy in anterior portion, impunctate and hairless in posterior portion; ninth densely punctured and hairy in anterior portion, more sparsely in posterior portion; eighth impunctate and hairless along whole length; seventh sparsely punctured and hairy along whole length; first with a few hairs in posterior portion close to apex of elytron. Striae of elytron hairless. Second to fourth tarsomeres moderately broadened distally in all legs; upper and lateral margins of distal end of fifth tarsomere rounded in all legs.

Visible second abdominal sternite punctured and hairy along whole length of



Figs. 3–4. Outer and inner tubercles. —— 3, *Aceraius masatakai* sp. nov., scale 2 mm; 4, *Aceraius kazuhisai* sp. nov., scale 1 mm.

transverse carina; third to sixth impunctate and hairless. Basal piece of male genitalia transverse, with anterior margin slightly concave; parameres united on ventral side, with anterior margin rounded in lateral view; penis large, rounded at distal end in ventral view, with orifice at the base of dorsal side.

Variation. No evident sexual dimorphism. Measurements for paratypes (mean± SD, range), 37.1 mm ±1.30, 35.0–39.0 mm (N=9).

Type series. Holotype: ♂, Mt. Sibayak (1,600 m in alt.), N. Sumatra, 5–V–1999, K. FUJITA leg. Paratypes: 3♂♂, 6♀♀, the same data as for the holotype. The holotype is deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Etymology. The name is dedicated to Prof. Masataka SATÔ, one of the dominant figures in the coleopterology in Japan, who has been giving us invaluable literature and encouragement.

Notes. This species seemingly resembles *A. ashidai* KON, ARAYA et JOHKI, but can be distinguished from the latter by the following characters: anterior lower tooth of left mandible simple at apex; lowest terminal tooth of right mandible larger than the upper portion of right anterior lower tooth; inner distal angle of right outer tubercle distinct; posterior plate of prosternum hairy.

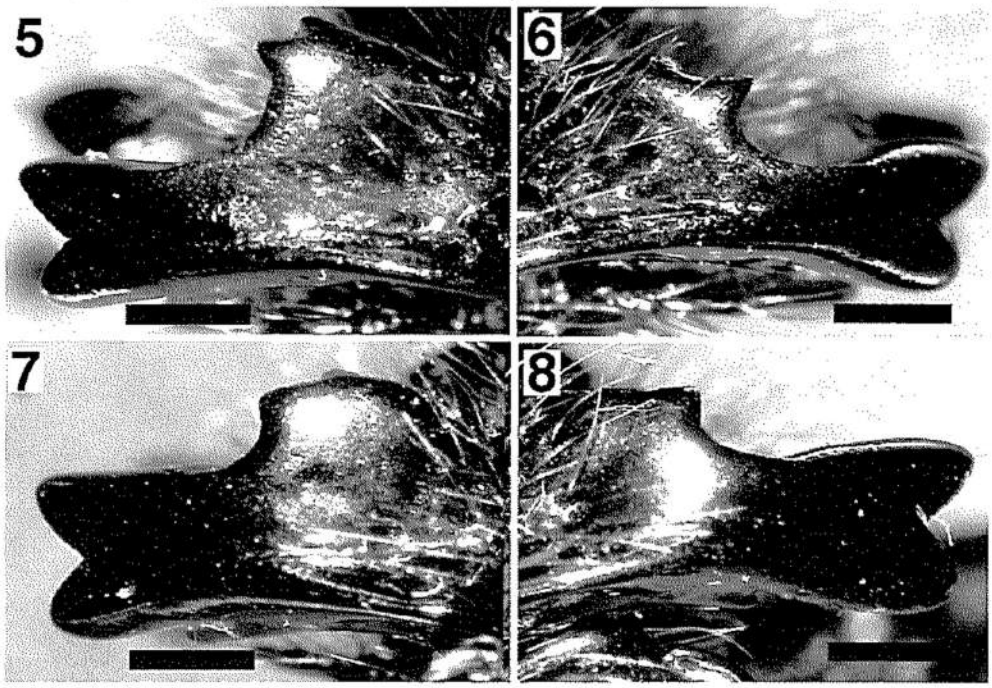
Aceraius kazuhisai sp. nov.

(Figs. 2, 4, 7, 8, 11 & 12)

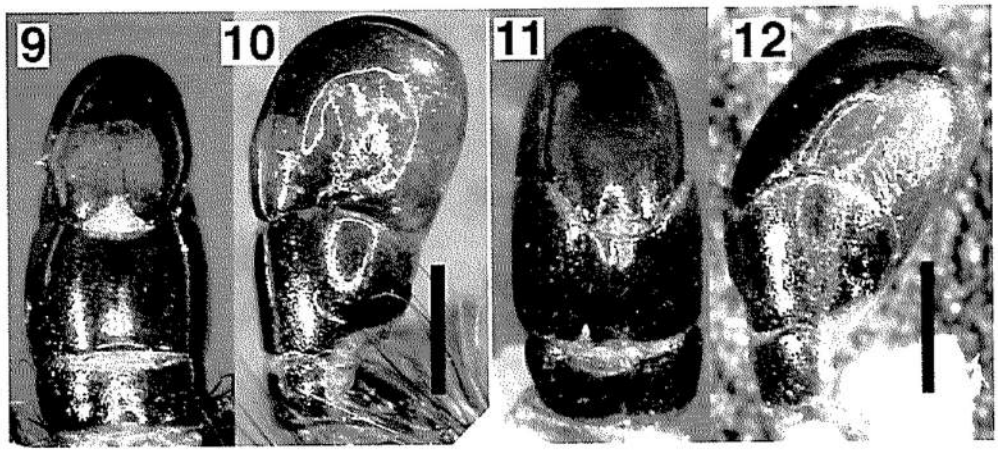
Description of holotype. Male. Length from anterior margin of head to apices of elytra 40.1 mm. Body black, polished.

Anterior angle of head rounded. Canthus without denticle pointed upwards. Left outer tubercle larger than the right one, produced weakly obliquely inwards, obliquely truncated at distal end; both outer and inner margins of left outer tubercle slightly concave; right outer tubercle moderately large, obliquely truncated at distal end, inner distal angle of right outer tubercle distinct though rounded, less prominent

forwards than the outer one; upper surface of outer tubercle a little rough. Inner tubercle moderately large, pointed forwards and upwards. Ridge between inner tubercles distinct, slightly concave, accompanied posteriorly by a shallow groove; frontal ridge slightly curved forwards in distal portion, accompanied anteriorly by a distinct groove; parietal ridge almost straight, not strongly swollen upwards in distal portion; supraorbital ridge not curved inwards in anterior portion; supraoccipital ridge connected with supraorbital ridge. Area between both outer tubercles hairless, slightly concave in left half in dorsal view; areas between frontal and parietal ridges, behind parietal ridge and behind eye with setiferous hair-bearing punctures; frontal area wide, impunctate, hairless. Upper margin of left mandible weakly rounded behind upper tooth in lateral view; upper tooth of left mandible not higher than the thickness of left mandible at the point in front of the base of upper tooth, slightly higher than the right one, distinctly bifid at apex; anterior margin of left upper tooth almost vertical in lateral view; anterior lower tooth of left mandible simple at apex, larger than left lowest terminal tooth; right mandible weakly narrowed prior to upper tooth in lateral view; upper margin of right mandible slightly convex behind upper tooth; right upper tooth almost right-angled in lateral view; anterior margin of right upper tooth vertical; lowest terminal tooth of right mandible distinct though small, slightly larger than the upper portion of left anterior lower tooth; upper portion of anterior lower tooth of right mandible represented by a small triangular denticle;



Figs. 5–8. Mandibles, scale 1 mm. —— 5–6, *Aceraius masatakai* sp. nov., left mandible in left lateral view (5), right mandible in right lateral view (6); 7–8, *Aceraius kazuhisai* sp. nov., left mandible in left lateral view (7), right mandible in right lateral view (8).



Figs. 9–12. Male genitalia, scale 1 mm. —— 9–10, *Aceraius masatakai* sp. nov., in ventral view (9), in right lateral view (10); 11–12, *Aceraius kazuhisai* sp. nov., in ventral view (11), in right lateral view (12).

lower portion of anterior lower tooth represented by a small swelling, located a little posteriorly to the upper portion. Labrum with setiferous hair-bearing punctures, anterior margin almost straight, anterior angles rounded, the left angle a little more prominent forwards than the right one, both lateral margins weakly convex. Mentum with setiferous hair-bearing punctures in lateral portion, impunctate and hairless in central portion. Antenna with six short lamellae.

Pronotum polished, with a few setiferous hair-bearing punctures in lateral scar and marginal groove; intercoxal process of prosternum with some long hairs in the middle of posterior portion. Mesosternum polished, impunctate, hairless, with indistinct scar; mesothoracic episternum weakly frosted and impunctate in posterior portion, polished and with large punctures in both anterior and dorsal portions. Ridge separating intermediate and lateral areas of metasternum blunt, punctured and hairy in anterior portion, impunctate and hairless in posterior portion; lateral and anterior intermediate areas densely punctured and hairy throughout; posterior intermediate area punctured and hairy in posterior portion, impunctate and with shallow dents in anterior portion; central area impunctate and hairless throughout. Tenth rib of elytron punctured and hairy in anterior portion, impunctate and hairless in posterior portion; ninth densely punctured and hairy in anterior portion, more sparsely in posterior portion; eighth impunctate and hairless along whole length; seventh sparsely punctured and hairy along whole length; first with a few hairs in posterior portion close to apices of elytron. Striae of elytron hairless. Second to fourth tarsomeres moderately broadened distally in all legs; upper and lateral margins of distal end of fifth tarsomere rounded in all legs.

Visible second abdominal sternite with a few hairs; third to sixth impunctate and hairless. Basal piece of male genitalia transverse, with anterior margin slightly concave; parameres united on ventral side, with anterior margin rounded in lateral view; penis large, rounded at distal end in ventral view, with orifice at the base of dorsal

side.

Variation. No evident sexual dimorphism. Measurements for paratypes (mean± SD, range), 41.5 mm ±1.04, 40.0–42.3 (N=4).

Type series. Holotype: ♂, Sibolangit (900 m in alt.), N. Sumatra, 1994. Paratypes: 1♀, the same data as for the holotype; 1♂, Sibolangit (1,200 m in alt.), N. Sumatra, 30–VII–1994, K. FUJITA leg.; 2♀♀, Sibolangit (900 m in alt.), N. Sumatra, 6–VI–2001, K. FUJITA leg. The holotype is deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Etymology. The name is dedicated to Mr. Kazuhisa FUJITA who provided us with a number of passalid specimens from Sumatra.

Notes. This species is closely related to *A. masatakai* sp. nov., but can be distinguished from the latter by the following characters: upper tooth of left mandible not higher than the thickness of left mandible at the point in front of the base of upper tooth; left anterior angle of labrum not so strongly prominent forwards; visible second abdominal sternite less hairy. *Aceraius kazuhisai* sp. nov. and *A. masatakai* sp. nov. appear to be altitudinally segregated from each other in North Sumatra; the former occurs at 900–1,200 m in altitude whereas the latter at 1,600 m.

Aceraius tobae IWASE, stat. nov.

Aceraius pilifer tobae IWASE, 1998, Elytra, Tokyo, **26**, p. 136.

Notes. The taxon *tobae* was described from Sumatra by IWASE (1998) as a subspecies of *Aceraius pilifer* (PERCHERON), the type locality of which is Java. However, this taxon is considerably different from *A. pilifer* from Java by the following points: anterior lower tooth of left mandible simple at apex, whereas dorso-ventrally bifid in the latter; lowest terminal tooth distinct, whereas obsolete in the latter. Thus, we have concluded that the taxon *tobae* should be ranked up to the species level.

Specimens examined. 1♂(holotype), Aek Popo, N. Sumatra, 30–IV–1993, K. IWASE leg. (in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo).

Specimens compared. *Aceraius pilifer* (PERCHERON): 1♂, 1♀, Puncak, Cianjur, Java, 8–VIII–1991, T. ITO leg.

Key to the Sumatran Species of *Aceraius*

1. Anterior angle of head produced forwards. 2
– Anterior angle of head not produced forwards. 6
2. Canthus with denticle projecting upwards, body length 46–50 mm. ..... *A. oculidens* ZANG
– Canthus without denticle projecting upwards. 3
3. Body large; body length 45–55 mm. ..... *A. grandis* (BURMEISITER)
– Body length less than 40 mm. 4

4. Ninth rib of elytron almost impunctate and hairless; body length 32.5 mm. ..... *A. sipolae* IWASE
– Ninth rib of elytron densely punctured and hairy in anterior portion close to shoulder. 5
5. Right outer tubercle strongly pointed downwards in anterior view; body length 35–39 mm. ..... *A. moeschleri* KUWERT
– Right outer tubercle not strongly pointed downwards in anterior view; body length 30–35 mm. ..... *A. laevicollis* (ILLIGER)
6. Antennal lamellae extremely long; body length 21–23 mm. ..... *A. lamellatus* GRAVELY
– Antennal lamellae moderately long or short. 7
7. Upper margin of left mandible with convexity behind upper tooth. 8
– Upper margin of left mandible without distinct convexity behind upper tooth. 9
8. Eighth rib of elytron sparsely punctured and hairy along whole length; body length 26–29 mm. ..... *A. borneanus* KAUP
– Eighth rib of elytron impunctate and hairless; body length 35–38 mm. ..... *A. alutaceosternus* KUWERT
9. Body flat, the ratio of prothorax thickness to pronotum width less than 0.59; body length 34–38 mm. ..... *A. wallacei* (KUWERT)
– Body thick; the ratio of prothorax thickness to pronotum width more than 0.63. .. 10
10. Seventh rib of elytron almost impunctate and hairless; body length 35–38 mm. .... *A. fujiokae* IWASE
– Seventh rib of elytron sparsely punctured and hairy along whole length. 11
11. Posterior plate of prosternum hairless; lowest terminal tooth of right mandible smaller than the upper portion of right anterior lower tooth; body length 37–41 mm. ..... *A. ashidai* KON, ARAYA et JOHKI
– Posterior plate of prosternum hairy; lowest terminal tooth of right mandible larger than the upper portion of right anterior lower tooth. 12
12. Body small; body length 27–31 mm. ..... *A. tobae* IWASE
– Body moderately large; body length more than 34 mm. 13
13. Left upper tooth higher than the thickness of left mandible at the point in front of the base of upper tooth; body length 35–39 mm. .... *A. masatakai* sp. nov.
– Left upper tooth not higher than the thickness of left mandible at the point in front of the base of upper tooth; body length 40–43 mm. ... *A. kazuhisai* sp. nov.

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Discovery of the Lucanid Genus *Aesalus* (Coleoptera) in the Indochina Region, with Description of a New Species

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Abstract As the first record of the lucanid genus *Aesalus* from the Indochina Region, a new species, having scattered stick-like bristles but lacking the clumps of erect scale-like bristles on the dorsal surface, is described from Mt. Pan, northeastern Laos under the name of *Aesalus satoi* sp. nov. Among the Asian *Aesalus*, this new species most closely resembles some members of the subgenus *Echinoaesalus* of the genus *Aesalus* such as *A.* (*Echinoaesalus*) *matsuii* and *A.* (*Echinoaesalus*) *yongi* in dorsal ornaments solely consisting of stick-like bristles, but can be distinguished from the latter by having elongate body and lacking a pair of deep cavities on the metasternum. A taxonomic key of the genus *Aesalus* recorded from Asia is also presented.

Lucanid beetles of the genus *Aesalus* are known from both the Old and New World. In Asia, *A. ulanowskii* from Caucasus, *A. asiaticus* from Japan, *A. imanishii* from Taiwan, *A. sichuanensis* from China, *A. himalayicus* and *A. saburoi* from Nepal, and nine species, belonging to the subgenus *Echinoaesalus*, from Tropical Asia (KRAJCIK, 2001). However, no species of the genus *Aesalus* has so far been recorded from the Indochina Region although it is located in the center of the known distributional range of *Aesalus* in East and Southeast Asia, and it appears to include suitable habitats of mountain forests for *Aesalus*. Therefore, if some new members of *Aesalus* are discovered from mountainous areas in the Indochina Region, they will be quite important and interesting in this genus both taxonomically and zoogeographically.

During the entomological expedition to Laos conducted in May of 2002, one of the authors, HY collected many specimens of the genus *Aesalus*, not only adults but also larvae, from the high altitude of Mt. Pan, northeastern Laos.

In general appearance, this *Aesalus* mostly resembles some members of the subgenus *Echinoaesalus* such as *A.* (*Echinoaesalus*) *matsuii* and *A.* (*Echinoaesalus*) *yongi* among the Asian congeners in dorsal ornaments solely consisting of stick-like bristles. However, after a careful examination, it was clarified that it can be distin-

guished from the latter by having elongate body and lacking a pair of deep cavities on the metasternum, and that it should be new to science. Thus, in the following lines, the authors are going to describe this new species as the first member of the genus recorded from the Indochina Region.

The abbreviations of morphometric measurements used herein are: PEL – pronotum-elytra length; BT – body thickness; HL – head length; HW – head width between eyes; CHW – head width measured between tips of canthi; PL – pronotum length; PW – pronotum width; EL – elytra length; EW – elytra width; FTL – front tibia length; FTW – front tibia width (see ARAYA *et al.* (1993) for measuring methods). The genital organs including internal sac were observed after treated with weak solution of potassium hydroxide and lactic acid. The terminology for description of genitalia used herein is the same as that in the other papers of the first author's (ARAYA *et al.*, 1993, 1994, 1995; ARAYA, 1993, 1995). All the larval specimens were taken into 70% ethanol in the field.

Recently, ZELENKA (1993) erected a new genus *Echinoaesalus* on the basis of *E. jaechi* from Sulawesi as its type species, and moved all the Tropical Asian species of the genus *Aesalus* to this new genus without referring to the New World *Aesalus* or to the closest genus *Lucanobium* (ZELENKA, 1993, 1994). Afterwards, KRAJCIK (2001) downgraded the genus *Echinoaesalus* to a subgenus of *Aesalus*. Although there still remain many problems concerning generic classification of the tribe Aesalini, as the first author has already pointed out (ARAYA *et al.*, 1993, 1995 a, b,1998; ARAYA, 1993, 1995), the authors followed the taxonomic arrangement of KRAJCIK (2001) in the present paper for the time being.

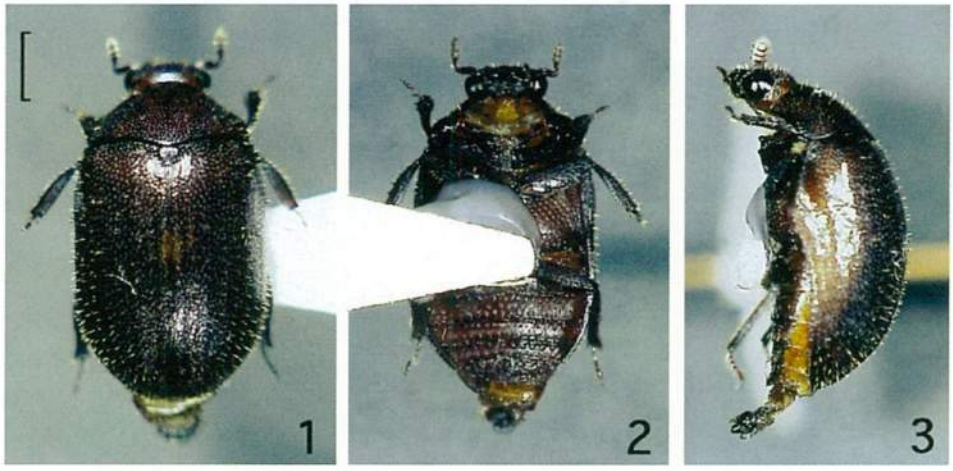
Aesalus satoi ARAYA et YOSHITOMI, sp. nov.

(Figs. 1–18)

Diagnosis. A middle-sized *Aesalus* species, length from anterior margin of head to apices of elyrta 4.2–5.1 mm. Sexual dimorphism including mandible not so distinct in general appearance. Among the Asian *Aesalus*, this new species most closely resembles some members of the subgenus *Echinoaesalus* of the genus *Aesalus* such as *A.* (*Echinoaesalus*) *matsuii* and *A.* (*Echinoaesalus*) *yongi* in dorsal ornaments solely consisting of stick-like bristles, but can be distinguished from the latter by having elongate body and lacking a pair of deep cavities on the metasternum.

Description of male. A middle-sized *Aesalus*, length from anterior margin of head to apices of elytra 4.2–4.8 mm ($\bar{x}$ = 4.5). Body (Figs. 1–3) oval, relatively thick: outline elliptical in dorsal view (EW/PEL 0.57–0.59; $\bar{x}$ = 0.58) and semicircular in lateral view (BT/PEL=0.43–0.48; $\bar{x}$ = 0.45). Body integuments dark-grayish brown in color; dorsal surface shallowly punctate and largely covered with scattered stick-like bristles but without clumps of erect scale-like bristles, whitish or yellowish-golden tomenta scarce.

Head (Fig. 4) covered with punctures bearing scattered stick-like bristles; anterior part of head covered with punctures bearing long setae, distal margin obtusely



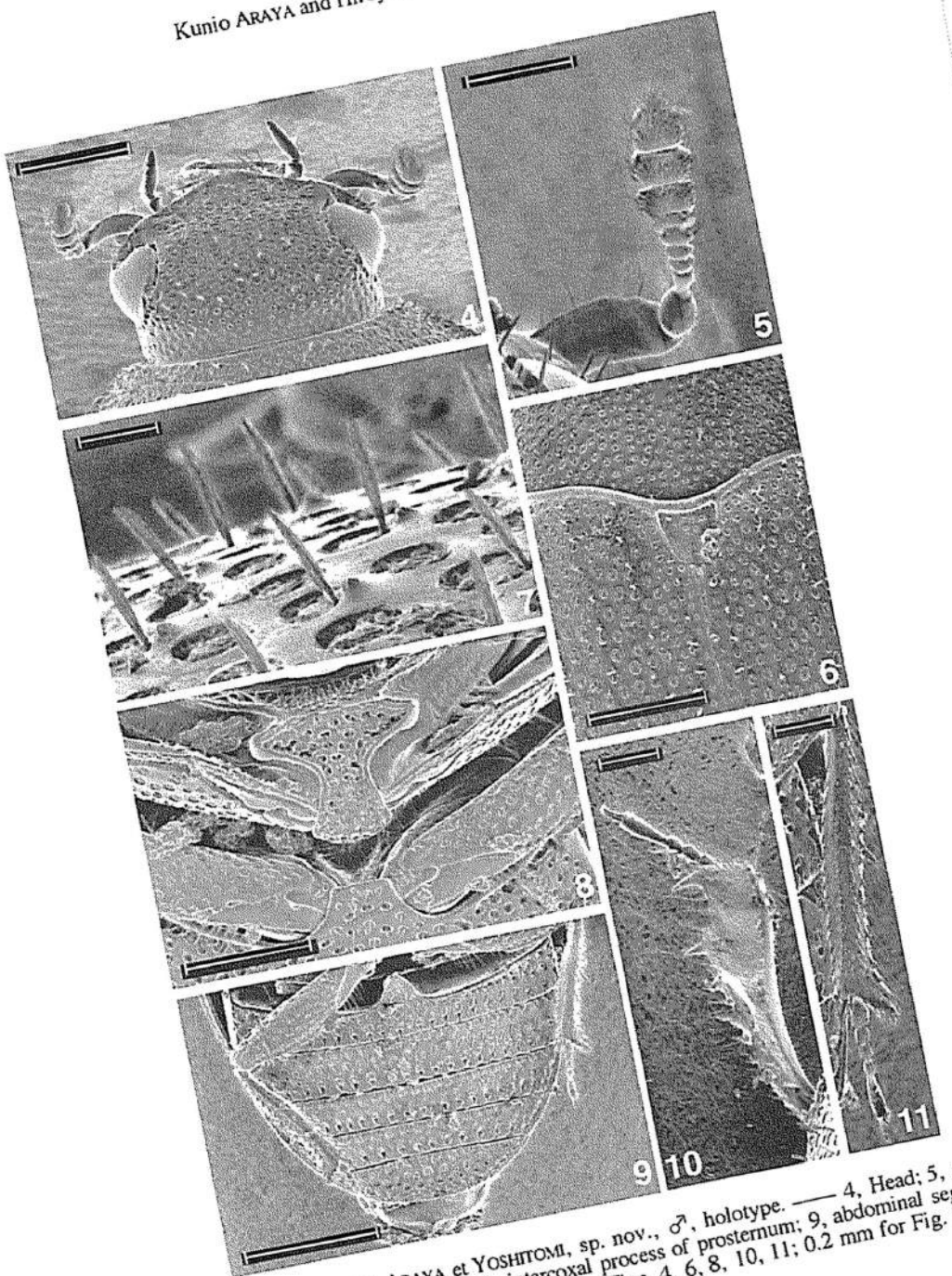
Figs. 1–3. *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov., ♂, holotype. —— 1, Dorsal view; 2, ventral view; 3, lateral view. Scale: 1.0 mm for Figs. 1–3.

angularly projected but apex almost straight. Eye with distinct canthus covering about 3/8 of outer margin. Mandible with a sharp apical tooth and a smaller subapical tooth on dorsal side; without mola and brushy setae. Mentum trapezoidal; both anterior and posterior margin concave; surface with well-defined punctures each bearing a short yellowish grey hair; some of punctures connected and forming irregular sulcus. Antenna (Fig. 5) consisting of ten segments, geniculate between scape and second segment; scape moderately curved, with a few long setae; second segment subconical, about 1.5 times as long as wide; third slender, about twice as long as wide; fourth and fifth transverse; sixth and seventh very short and acutely produced bilaterally; eighth to tenth forming wholly pubescent club, weakly lamellate, eighth and ninth transverse, tenth about as long as wide.

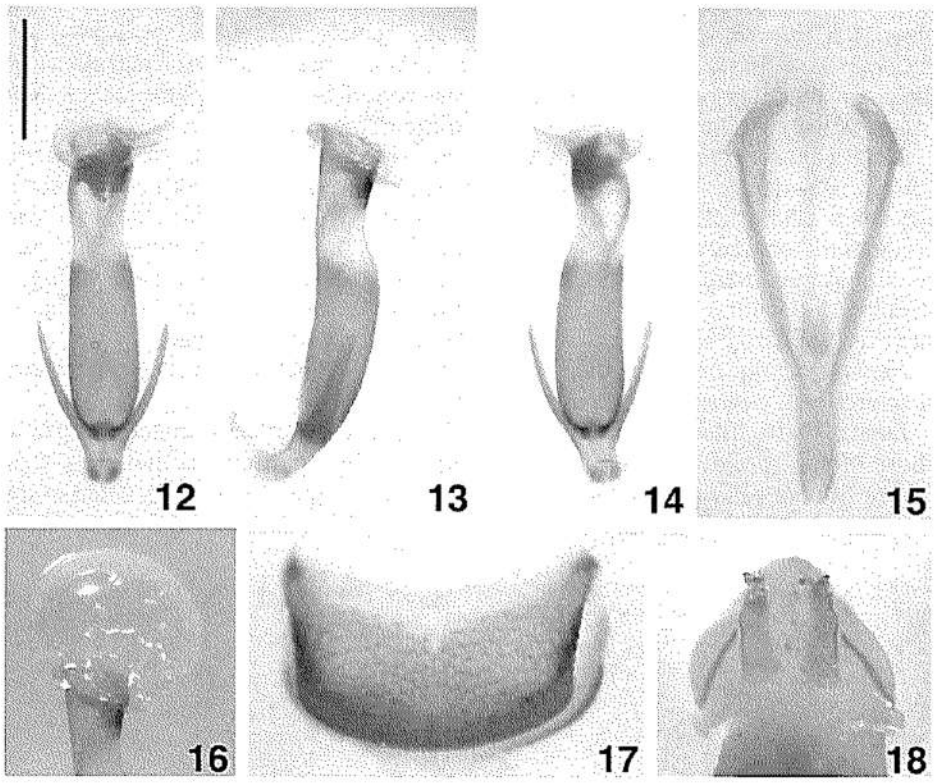
Prothorax about three-fifths as long as wide (PL/PW=0.59–0.65; $\bar{x}$ = 0.62), evenly convex, widest near the posterior margin; surface covered with punctures bearing scattered stick-like bristles, without clumps of scale-like bristles. Scutellum about as long as wide.

Elytra (Figs. 6, 7) about 1.3 times as long as combined width (EL/EW= 1.23–1.35; $\bar{x}$ = 1.30), lateral sides almost straight, without striae and clumps of scale-like bristles but with scattered stick-like bristles, regularly arranged in line; surface densely but shallowly punctate; each puncture bearing a stick-like bristle also with a triangular tubercle at frontal part. Hind wings fully developed.

Intercoxal process of prosternum (Fig. 8) flat, expanding anteriorly, with isodiametric and well-defined punctures, each bearing a short yellowish scaly seta; anterior margin straight; posterior margin rounded, reaching metasternum. Metasternum with fine punctures each bearing a yellowish gray haïr, without a pair of large oblong cavities; anterior margin straight. Metepisternum with shallow sulcus for receiving middle leg. Mesocoxae separated. Intercoxal process of hind legs (Fig. 9) slightly rounded, with a sharp projection at the top. Abdomen (Fig. 9) about 3/4 as long as wide; five abdominal sternites visible; each sternite with isodiametric to



Figs. 4–11. *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov., ♂, holotype. —— 4, Head; 5, antenna; 6, scutellum; 7, elytral ornaments; 8, intercoxal process of prosternum; 9, abdominal segments; 10, front tibia; 11, hind tibia. Scales: 0.5 mm for Figs. 4, 6, 8, 10, 11; 0.2 mm for Fig. 5; 0.05 mm for Fig. 7; 1.0 mm for Fig. 9.



FIgs. 12–18. Genital organs of *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov. —— 12–17, Male genitalia of paratype; 12, aedeagus, dorsal view; 13, ditto, light lateral view; 14, ditto, ventral view; 15, ninth abdominal segment; 16, everted internal sac, light lateral view; 17, ninth dorsal segment; 18, female genitalia of paratype. Scale: 0.4 mm for Figs. 12–18.

elongate foveae bearing minute setae; second to fifth with small U-shaped depressions along anterior margins; first to fourth with crenulate posterior margin.

Front tibia (Fig. 10) somewhat plump but not so strongly widened in distal portion (FTW/FTL=0.20–0.26; $\bar{x}$ = 0.23), with fine punctures bearing minute setae; outer margin with three denticles, and a large curved hook-like apical spine at distal end.

Middle legs with fine punctures bearing semierect pilosity; middle tibia with several denticles on outer margin and with a large spine at inner distal end. Hind legs (Fig. 11) with fine punctures bearing semierect pilosity; hind tibia with a sharp spine at the middle of outer margin; outer margin of distal end projected exteriorly; with a sharp spine at inner distal end.

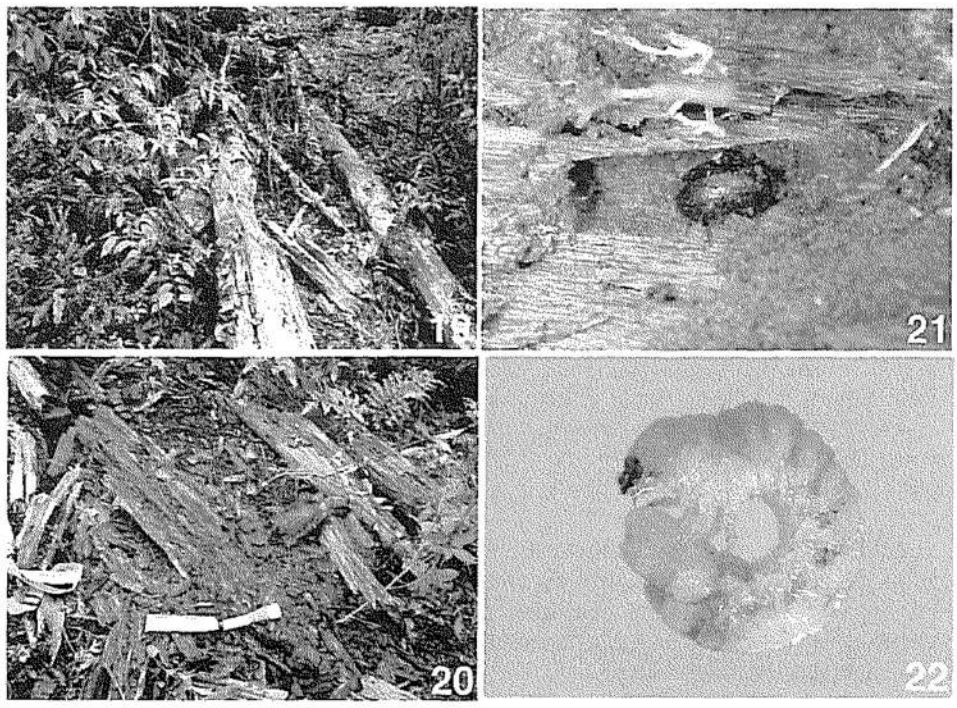
Sexual dimorphism in external morphology. Females are slightly larger (PEL♂ 4.2–4.8, $\bar{x}$ 4.5; ♀4.6–5.1, $\bar{x}$ 4.8) and thick (BT/PEL ♂ 0.43–0.48 $\bar{x}$ 0.45; ♀ 0.45–0.50, $\bar{x}$ 0.48) than males on average. However, standard ratios of most body parts are not different between male and female: EW/PEL ♂ 0.57–0.59 ($\bar{x}$ 0.58), ♀ 0.57–060 ($\bar{x}$ 0.58); FTW/FTL ♂ 0.21–0.26 ($\bar{x}$ 0.23), ♀ 0.24–0.25 ($\bar{x}$ 0.24). In the male,

canthus is a little more developed than in the female: CHW/HW ♂ 1.54–1.79 ($\bar{x}$ 1.63), ♀ 1.43–1.55 ($\bar{x}$ 1.48). Further, in the female, apex of anterior margin of head slightly concave, and projection of outer distal end of hind leg slightly larger than in the male. No sexual dimorphism is distinct in the shape of mandible.

Male genital organ. Male genital organs (Figs. 12–17) well sclerotized, light yellowish-brown in color, with very short basal piece fused to both parameres and penis; penis cylindrical, gradually narrowed distally, with a constricted part whose sclerotization relatively weak at 2/3 from the base, distal part asymmetrical; paired struts absent; paramere slender, about 0.4 times as long as penis. Internal sac (Fig. 16) well developed with a large globe weakly sclerotized at base. Ninth abdominal segment (Fig. 15) partly sclerotized in the middle part with several setae .

Female genital organ. Female genitalia (Fig. 18) with visible styli; hemisternite well sclerotized, with several setae at distal end.

Larva. Third (final) instar larva (Fig. 22) is quite similar in general appearance to those of the species of the subgenus *Echinoaesalus*, particularly having the same structure of anal sclerite consisting of three well-developed lobes. A detailed description of larva will be made together with those of other species of the genus *Aesalus*



Figs. 19–22. Habitat, adult and larva of *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov. —— 19–20, A brown-rotten log in which exist *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov.; 19, before collecting; 20, after collecting. Photo by H. YOSHITOMI. —— 21, A newly emerged adult in its pupal room. Photo by N. OHBAYASHI. —— 22, Third instar larva.

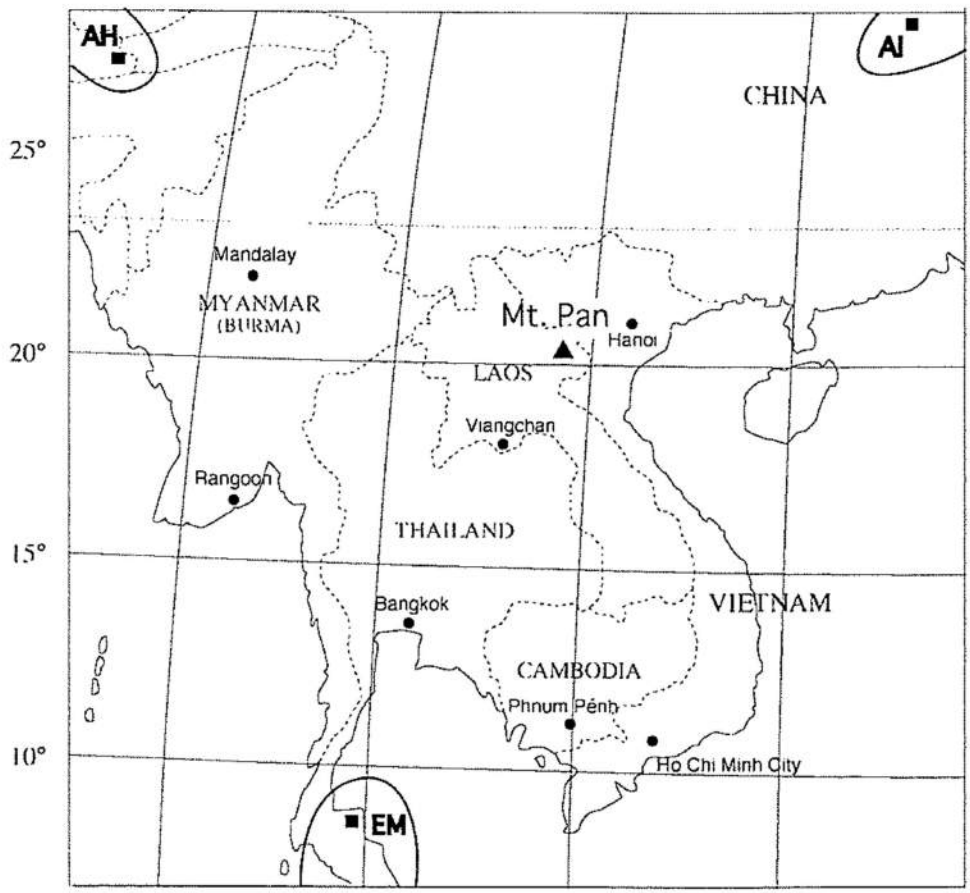


Fig. 23. Map showing the known localities of *Aesalus* in the Indochina Region and its neighboring areas. Black triangle: Mt. Pan, type locality of *Aesalus satoi* ARAYA et YOSHITOMI, sp. nov. AH: distributional range of the *A. himalayicus* species-group; black square, Sikkim in which exists *A. himalayicus*. AI: distributional range of the *A. imanishii* species-group; black square, the Daba Mountains on which exists *A. sichuanensis*. EM: distributional range of the *A.* (*E.*) *matsuii* species-group; black square, Mt. Khao Luang on which exists *A. dharma*.

hitherto known in near future.

Type series. Holotype: ♂, Mt. Pan, Houaphan Prov., Laos, 4–V–2002. H. YOSHITOMI leg. Allotype: ♀, same data as for the holotype. Paratypes: 25 exs., same data as for the holotype.

The holotype, allotype, most paratypes are deposited in the collection of the Entomological Laboratory, Ehime University, Matsuyama. Some paratypes will be distributed to the collections of the following institutions as well as to the private collections of the authors: Laboratory of Biosystematics, Graduate School of Social and Cultural Studies, Kyushu University; Museo Zoologico de "La Specola" Università di Firenze; Naturhistorisches Museum, Wien; British Museum (Natural

History).

Larval specimens examined. 4 exs., 3rd (final) instar, same data as for the holotype.

All the larval specimens will be deposited in the collection of the Laboratory of Biosystematics, Graduate School of Social and Cultural Studies, Kyushu University.

Etymology. This new species is dedicated to Professor emeritus Masataka SATÔ, Nagoya Women's University, who gave us the opportunity of performing the present research, in commemoration of his retirement from the University.

Biological notes. All the specimens of *A. satoi*, both adults and larvae, were collected from a decayed log in a forest dominated by oak trees at about 1,800 m in altitude (Fig. 19). The decay type of the wood was brown rot but fungal species causal to decay was not identified (Fig. 20). The larval habitat of *A. satoi* is similar to that hitherto recorded for the other members of the genus *Aesalus* (ARAYA, 1993).

Remarks. Aesalus satoi is one of the most important and interesting species in the genus *Aesalus* both taxonomically and zoogeographically, since the discovery of this species bridges the gap between the three isolated distributional ranges of the genus *Aesalus* (The Himalayas, southern China and Tropical Asia) in Asia (Fig. 23).

In general appearance, among the Asian *Aesalus*, *A. satoi* most closely resembles the members of the Tropical Asian subgenus *Echinoaesalus* such as *A.* (*Echinoaesalus*) *matsuii* and *A.* (*Echinoaesalus*) *yongi* in dorsal ornaments solely consisting of stick-like bristles, and thus, *A. satoi* might also be assigned to the subgenus *Echinoaesalus* on the basis of the similarity in the external morphology. However, the present detailed examination of *A. satoi* has revealed that this species shares the following important characteristics with the Himalayan members (*A. himalayicus* and *A. saburoi*) as well as Tropical Asian ones: mandible showing no sexual dimorphism; third antennal segment long and slender, not transverse; antennal club wholly pubescent; eye with distinctly developing canthus. Of these, the characteristics in the mandible and the antennal club are also found in Chinese members (*A. imanishii* and *A. sichuanensis*), whereas the slender and cylindrical penis of the male genitalia is common to the Chinese members but not to the Himalayan and Tropical Asian ones. These findings suggest that *A. satoi* has intermediate characteristics among these three geographically isolated groups. Thus, we consider that *A. satoi* should be left assigned to the genus *Aesalus* (sensu stricto) for the time being, until more detailed comparison can be made for all the members of this tribe including the New World *Aesalus* (*A. trogoides*, *A. smithi* and *A. neotropicalis*) and the closest genus *Lucanobium*.

It is well known that the spherical or limuloid postures of adults, which are considered as being related to their defence against the attacks by predators, particularly ants or termites, are found in many beetle taxa especially in tropical regions (CROWSON, 1986). Therefore, it is suggested that circular body shape, which forms limuloid posture, shared by all the species of the subgenus *Echinoaesalus* may be synapomorphy, and that *A. satoi* and *A. himalayicus*, and perhaps *A. imanishii* also, may retain the ancestral character states (i.e., elongate body shape) in the Asian taxa.

Anyway, in order to clarify its true affinity, as well as to solve the problems concerning generic classification of the tribe Aesalini, phylogenetic analysis of the tribe is strongly desired.

Taxonomic Key of the Genus *Aesalus* Recorded from Asia

As to the members of the subgenus *Echinoaesalus*, this key is available to only the species-groups, because no specimen was available for *A. barriesi*, *A. jaechi* and *A. schuhi*, and the original descriptions of these species (ZELENKA, 1993, 1994) are insufficient for understanding their external morphology in detail.

1a Eye with distinct canthus; third antennal segment slender; intercoxal process of prosternum flat, anterior and posterior margins almost straight; male genitalia with asymmetrical penis; sexual dimorphism of hind tibiae indistinct. 2

1b Eye without canthus; third antennal segment not slender; intercoxal process of prosternum convex, anterior and posterior margins rounded; male genitalia with symmetrical penis; sexual dimorphism of hind tibiae distinct. 3

2a Dorsal surface with scattered stick-like bristles but devoid of clumps of erect scale-like bristles. 4

2b Dorsal surface with both scattered stick-like bristles and clumps of erect scale-like bristles. 5

3a Antenna consisting of nine segments; antennal club wholly pubescent; sexual dimorphism in mandible indistinct; body flat (BT/PEL less than 0.36); body surface covered with only scale-like setae and lacking scattered stick-like bristles; penis flat and spatulate. 6

3b Antenna consisting of ten segments; antennal club partly pubescent; sexual dimorphism in mandible distinct; body relatively thick (BT/PEL more than 0.36); body surface covered with both scale-like setae and scattered stick-like bristles; penis cylindrical. 7

4a Body outline circular in dorsal view (EW/PEL ca. 0.75); prothorax widest near the middle; metasternum with a pair of large and oblong cavities behind mesocoxae. ..... *A.* (*Echinoaesalus*) *matsuii* species-group (*A. matsuii* from the Malay Peninsula, *A. barriesi* from N. Sumatra, *A. jaechi* from N. Sulawesi, *A. dharma* from S. Thailand, and *A. yongi* from the Malay Peninsula and Borneo)

4b Body outline oval in dorsal view (EW/PEL ca. 0.58); prothorax widest near posterior margin; metasternum lacking a pair of large and oblong cavities behind mesocoxae (from Laos). ..... *A. satoi* sp. nov.

5a Body outline oval in dorsal view (EW/PEL ca. 0.58) and semicircular in lateral view; dorsal surface scarcely covered with whitish or yellowish-golden tomenta; prothorax widest near posterior margin. 8

5b Body outline circular in dorsal view (EW/PEL ca. 0.75) and obtusely angular in lateral view; dorsal surface largely covered with whitish or yellowish-golden tomenta; prothorax widest near the middle. 9

6a Size smaller (PEL ca. 4.8); body slender (EW/PEL ca. 0.55) and reddish-brown in color; elytral clumps of scale-like bristles arranged irregularly; middle part of intercoxal process of prosternum constricted; a large depression of metasternum oval; intercoxal process of hind legs forming an elongate isosceles triangle; distal end of male penis not expanding (from Taiwan). ..... *A. imanishii*

6b Size larger (PEL ca. 5.5); body broader (EW/PEL ca. 0.58) and grayish-brown in color; elytral clumps of scale-like bristles arranged regularly; middle part of intercoxal process of prosternum not constricted; a large depression of metasternum circular; intercoxal process of hind legs forming a sharp regular triangle; distal end of male penis much expanding (from continental China). ..... *A. sichuanensis*

7a Size smaller (PEL ca. 4.9); body relatively thick (BT/PEL ca. 0.43); elytra with irregularly arranged large clumps of scale-like bristles; front tibia with a large curved apical spine (from Japan). ..... *A. asiaticus*

7b Size larger (PEL ca. 6.4); body relatively flat (BT/PEL ca. 0.37); elytra with regularly arranged small clumps of scale-like bristles; front tibia with a large straight apical spine (from Caucasus). ..... *A. ulanowskii*

8a Body glossless and darker grayish brown in color; canthus covered about 1/3 of its outer margin of eye; pronotum widest near the middle; scutellum about as long as wide; posterior margin of intercoxal process of prosternum straight; front tibia shorter and a little more widened in distal portion (FTW/FTL ca. 0.23); paramere about 0.40 times as long as penis (from Central Nepal). ..... *A. saburoi*

8b Body glossy and light reddish-brown in color; canthus covering about 1/3.5 of its outer margin of eye; pronotum widest near the posterior part; scutellum transverse; posterior margin of intercoxal process of prosternum rounded; front tibia relatively long, not so widened in distal portion (FTW/FTL ca. 0.21); parameres about 0.33 times as long as penis (from eastern Nepal). ..... *A. himalayicus*

9a Abdominal sternites with deep sulci; third to fifth abdominal sternites with foveae but without semicircular depressions; anterior margin of head without projection at middle. ..... *A.* (*E.*) *timidus* species-group (*A. timidus* from Sumatra and the Malay Peninsula, and *A. sabahensis* from N. Borneo)

9b Abdominal sternites without sulci; third to fifth abdominal sternites with semicircular depressions along anterior margins; anterior margin of head with a small triangular projection at middle. ..... *A.* (*E.*) *hidakai* species-group (*A. hidakai* and *A. schuhi* from the Malay Peninsula)

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Two New Species of the Genus *Lucanus* (Coleoptera, Lucanidae) from Indochina

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Abstract Two new *Lucanus* species closely related to *L. koyamai* or *L. miyashitai* are described from Laos as *Lucanus satoi* sp. nov., and from Myanmar as *L. maedai* sp. nov.

Recently, we had an opportunity to examine a series of lucanid specimens of the genus *Lucanus* SCOPOLI, 1763, collected from Indochina through the courtesy of our friends. After a careful examination of these materials, we found out two new species as in the following descriptions.

Before going further, we wish to express our sincere gratitude to Professor Masataka SATÔ of Nagoya Women's University for his continuous guidance and useful suggestions for our taxonomic study. Also we thank our friends listed below for their kind offering of the materials.

The holotypes and several paratypes are preserved in the collection of the Entomological Laboratory, Ehime University, Matsuyama, Japan (EUMJ). Other paratypes are preserved in the collection of the first author (SN), second author (KT), Messrs. Takesi MAEDA (TM) of Kashiwa-shi, Tetsuo MIYASHITA (MI) of Tokyo, Seiichi KASHIWABARA (SK) of Yokohama, and Masaru SUZUMURA (MS) of Kôbe.

This small paper is dedicated to Prof. Dr. Masataka SATÔ for commemorating his retirement from Nagoya Women's University, Nagoya.

Lucanus satoi sp. nov.

(Figs. 1 & 5)

M a l e. Body small in size, relatively slender, widest before the middle of elytra; length 28.5 mm including mandibles and 23.5 mm excluding mandibles, width 9.5 mm.

Color dark brown; elytra reddish brown except for dark marginal area; femora and tibiae yellowish brown but marginal areas widely black; tarsi black. Dorsal

surface without luster; basal area of mandibles, head, pronotum except for middle area of disc, scutellum, and base and apical margin of elytra moderately provided with long recumbent whitish yellow pubescence; elytral disc moderately covered with very short and fine subrecumbent pubescence; ventral surface provided with very long recumbent pubescence.

Head transverse obtrapeziform, coarsely sculptured; clypeus wide trapeziform with shallow middle emargination; frons strongly declined anteriad; vertex widely depressed; crown vestigial with blunt antero-lateral angular ridges and roundly curved hind angles; canthus triangularly produced post-laterally, about one-fourth the length of longitudinal eye diameter; eyes gently swollen but not strongly prominent.

Antenna with second and third segments subequal in length, fourth shorter than third, fifth to tenth fully lamellate and increasing in length towards distal segment (Fig. 5).

Mandibles not developed and almost crescent-shaped without any inner teeth, minutely rugose throughout, gently curved from base to apical third, then bent slightly upward and strongly inward; inner margins sharply bladed in apical two-thirds.

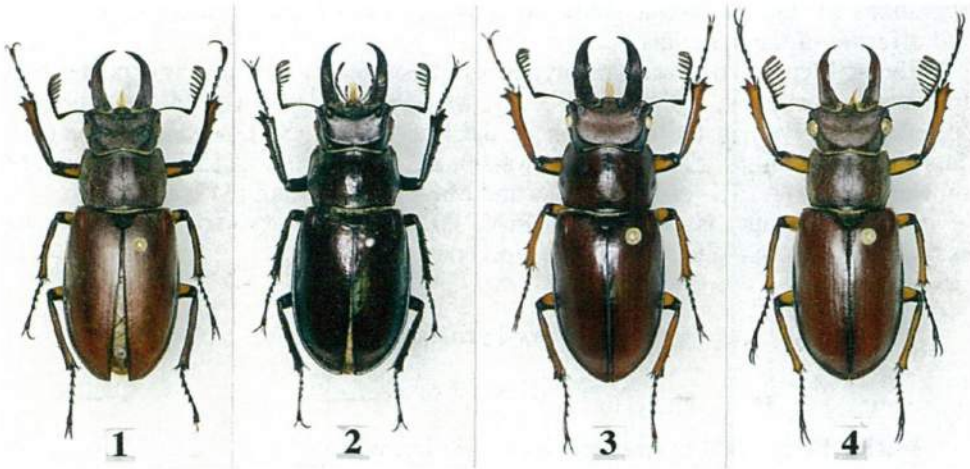
Pronotum wide hexagonal, 1.56 times as wide as long, widest at middle; disc densely provided with shallow punctures which become deeper laterad; apical margin deeply bisinuate, front angles moderately produced with narrowly truncate apices.

Elytra elongate elliptical, 1.37 times as long as wide, very closely covered with moderate-sized punctures except along suture where they are sparse.

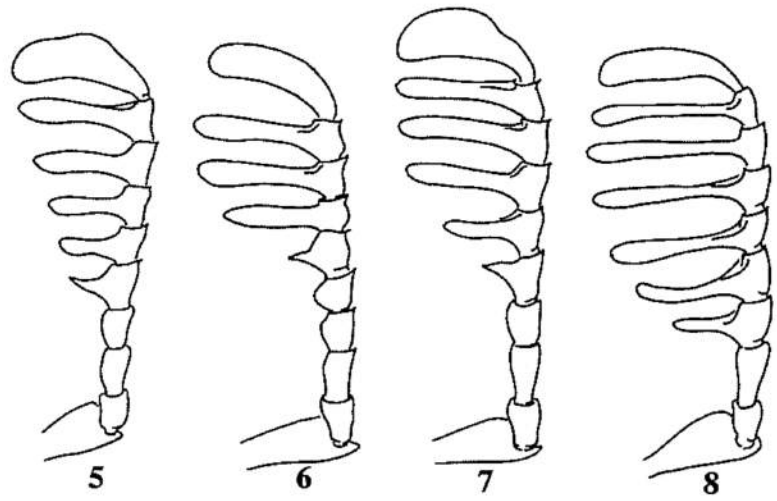
Legs with fore- and mid tibiae provided with two teeth along each outer margin, and with a vestigial one on hind-tibia.

Female. Unknown.

Holotype. ♂, Xam Neua, Houa Phan Prov., Northeast Laos, 3–V–2001, no collector's name (EUMJ).



Figs. 1–4. Habitus of *Lucanus* spp. —— 1, *Lucanus satoi* sp. nov., holotype; 2, *L. maedai* sp. nov., holotype; 3, *L. koyamai* from Mt. Fang, Chiang Mai, Thailand; 4, *L. miyashitai* from Nan, Thailand.



Figs. 5–8. Right antennae of *Lucanus* spp. —— 5, *Lucanus satoi* sp. nov.; 6, *L. maedai* sp. nov.; 7, *L. koyamai* AKIYAMA et HIRASAWA; 8, *L. miyashitai* MIZUNUMA.

Distribution. Northeast Laos.

Etymology. The present new species is named in honor of Prof. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

Remarks. This new species belongs to a small group of the genus *Lucanus* and is similar to *L. maedai* sp. nov. described in the following lines (Fig. 2), *L. koyamai* AKIYAMA et HIRASAWA (Fig. 3) and *L. miyashitai* MIZUNUMA (Fig. 4), but is easily separated from them by the following features:— dorsal surface mat; antenna lemellate from the fifth segment (Fig. 5), whereas from the fourth in *L. miyashitai* (Fig. 8) and from the sixth in *L. maedai* sp. nov. (Fig. 6); pronotal crown not developed instead of distinct crown developed in a U-shaped ridge in *L. koyamai* and *L. maedai*, and so on.

Lucanus maedai sp. nov.

(Figs. 2 & 6)

M a l e. Body small-sized; length 22.0–29.2 mm including mandibles and 17.7–24.2 mm excluding mandibles, width 7.9–10.6 mm.

Color black or dark reddish brown; femora and tibiae without yellow maculations. Dorsal surface rather strongly lustrous, tinged with weak metallic luster; basal area of mandibles, head, marginal area of pronotum, scutellum, and base and apical margin of elytra sparsely provided with long recumbent whitish yellow pubescence; elytral disc moderately covered with very short and fine subrecumbent black pubescence; ventral surface moderately provided with very long recumbent pale yellow pubescence.

Head nearly quadrate, moderately punctured; clypeus wide rectangular with small emargination at middle; frons strongly declined anteriad; vertex widely depressed with a pair of indistinct tubercles on antero-lateral portion; crown vestigial with wide U-shaped elevation; antero-lateral corner in front of eyes triangularly expanded; canthus narrow and produced postero-laterally, about one-third the length of longitudinal eye diameter; eyes rather prominent.

Antenna with second and third segments subequal in length, fourth shorter than third, fifth slightly protruding, and sixth to tenth fully lamellate and increasing in length towards distal segment (Fig. 6).

Mandibles undeveloped without inner teeth but with an indistinct ledge at the middle, nearly straight in basal three-fourths, then somewhat strongly curved inwards with the apices slightly directed upward; apical half of inner margins sharply bladed; dorsum sparsely but distinctly punctured in basal two-thirds, and minutely rugose in apical fourth.

Pronotum wide hexagonal, 1.67 times as wide as the middle length, widest at basal two-fifths; disc provided with shallow punctures which are fine and sparse in the middle area and become deeper and denser laterad; apical margin shallowly bisinuate and front angles triangularly produced with narrowly rounded apices; surrounding areas marginated except for the middle of front margin; basal margin slightly bisinuate.

Elytra elongated elliptical, about 1.29 times as long as wide, densely provided with minute punctures.

Legs with outer margin of fore-tibia provided with four teeth, and that of mid tibia with three long and acute ones, and three vestigial teeth on hind-tibia.

F e m a l e. Unknown.

Holotype: ♂, near Lashio, Shan-state, Myanmar, VI–2002. (EUMJ).

Paratypes: 11♂♂, same data as for the holotype (SN, KT, TM & MI); 2♂♂, same locality as for the holotype, VI–2001 (SK); 1♂, same locality, VI~VII–2002 (MS); 2♂♂, upper Shan-state, Myanmar, VI–2001 (SK); 3♂♂, Namsham, 1,600 m in alt., near Namtu, Shan-state, Myanmar, V–2002 (SK). All the types are lacking in collectors name.

Distribution. Northeastern Myanmar.

Etymology. This new species is dedicated to Mr. Takeshi MAEDA of Chiba Prefecture, who offered us these interesting lucanid specimens.

Remarks. This new species also belongs to the small group of the genus *Lucanus* and very similar to *L. satoi* sp. nov., *Lucanus koyamai* and *L. miyashitai*, but easily separated from them in having different body color, antennal characters and the number of teeth on the outer margin of the tibiae.

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Male Morphological Dimorphism in the Stag Beetle *Dorcus binervis* (Coleoptera, Lucanidae)

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Abstract The body length and mandible length of males of *Dorcus binervis* are measured. The frequency distribution of mandible length has two or three peaks. The body–mandible relationship consists of two parallel lines. These results suggest that this species shows male morphological dimorphism. Comparison of male dimorphism between *D. binervis* and *D. rectus* suggests that these two species have different dimorphic patterns.

Introduction

Dorcus binervis MOTSCHULSKY is similar to *D. rectus* in shape and size. These two species are widely distributed in Japan (FUJIOKA, 2001) and their habitats are almost the same (personal observation).

A recent study revealed the existence of male dimorphism in *D. rectus* (IGUCHI, 2001). However, there are no morphological studies on *D. binervis*. Therefore, the aim of the present study is to explore male dimorphism in *D. binervis*. Moreover, the present study makes a comparison of male dimorphism between these two species.

This paper is dedicated to Professor Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

Materials and Methods

For this study, 59 male adults were collected in and around Nirasaki City, Yamanashi Prefecture in 2002. For each male, body length and mandible length were measured. Body length was measured from the front of the head to the tip of the elytra along the center line of the body. Mandible length was measured in a straight line parallel to the center line of the body.

To analyze body–mandible relationships, this study followed the method of IGUCHI (2001), which successfully detected mandible dimorphism in *D. rectus*. The method was originally introduced by EBERHARD and GUTIÉRREZ (1991) and extensively utilized by KAWANO (1995) to detect male dimorphism in beetles.

First of all, measurements were logarithmically transformed. Next, the data were fit to the following quadratic equation:

$$Y = AX^2 + BX + C$$

where X was the natural logarithm of body length, Y was the natural logarithm of mandible length, and A, B and C were regression coefficients. When A differed

significantly from zero, it was judged that the regression was nonlinear and that the body–mandible relationship consisted of two allometric relationships. Lastly, the original (untransformed) data were divided into two groups (large and small males) at a switch point $x = p$ and fit to two regression lines. The switch point was determined as a x-value giving the minimum sum of the squared deviations from the two regression lines.

Results and Discussion

The test for the nonlinearity of the allometric relationship showed that A differed significantly from zero ($t = 3.27$, df = 56, $P < 0.01$). Therefore, the switch point was determined as $p = 19.2$ and two regression lines were obtained as shown in Fig. 1. Both regression lines were highly significant (small males, $t = 15.38$, df = 30, $P < 0.001$; large males, $t = 11.88$, df = 25, $P < 0.001$). The regression lines did not differ significantly in slope ($t = 1.61$, df = 55, $P > 0.1$), but differed in elevation, namely they were almost parallel ($t = 2.25$, df = 56, $P < 0.05$, ANCOVA).

The frequency distribution of mandible length had two or three peaks (Fig. 2). A valley of the distribution existed at the class of 5–6 mm. On the other hand, the y-value (mandible length) of the switch point in the body–mandible relationship was approximately 5 mm (Fig. 1). The two values were almost the same. These results strongly suggest the existence of male dimorphism in *D. binervis*.

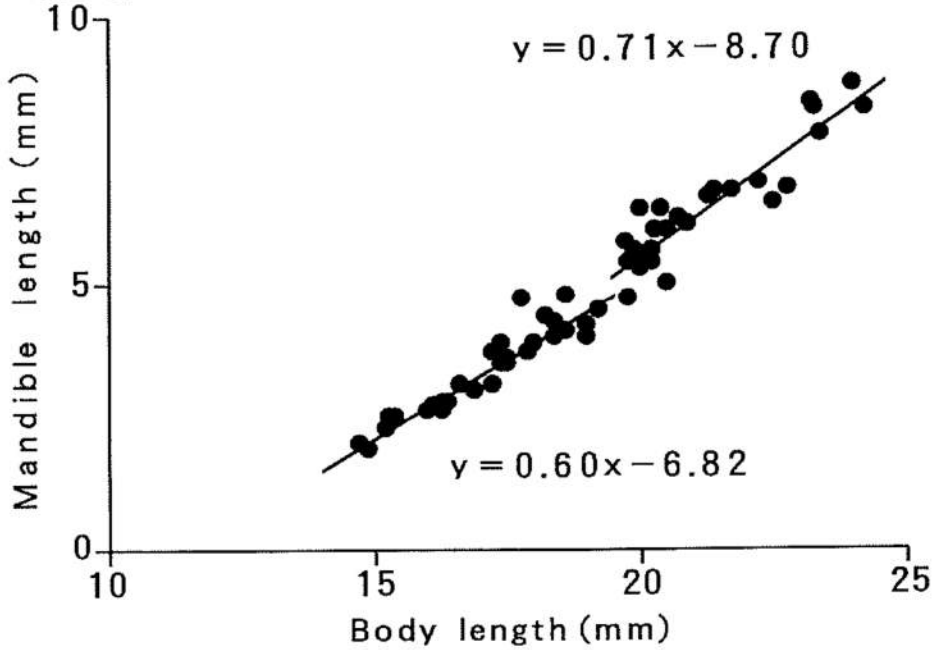

Fig. 1. Relationship between body length and mandible length for 59 males collected in and around Nirasaki City, Yamanashi Prefecture. The two regression lines were separately fit to small males (body length < 19.2 mm) and large males (body length ≧ 19.2 mm).

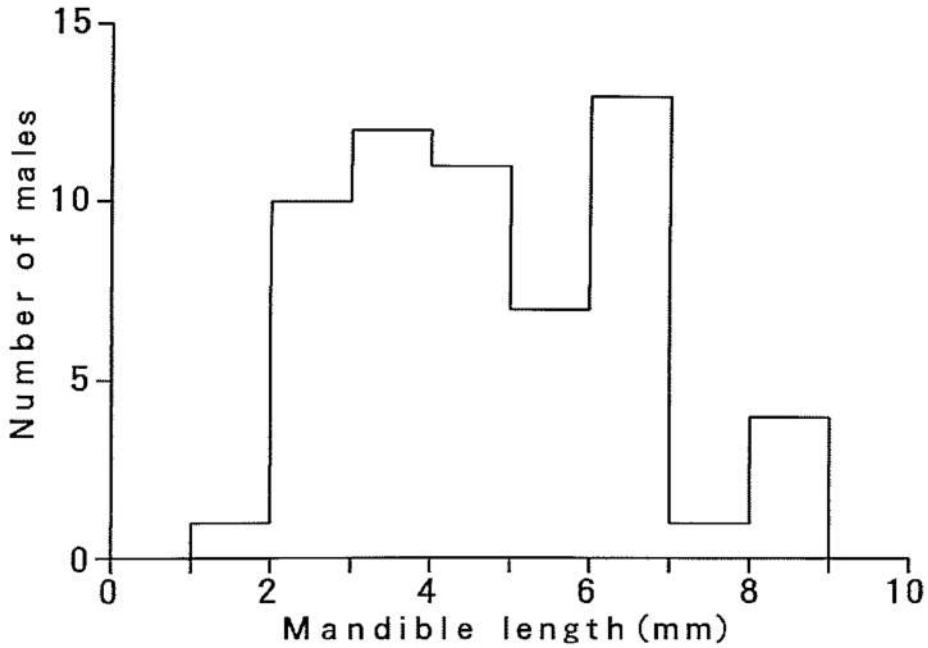

Fig. 2. Frequency distribution of mandible length for 59 males collected in and around Nirasaki City, Yamanashi Prefecture.

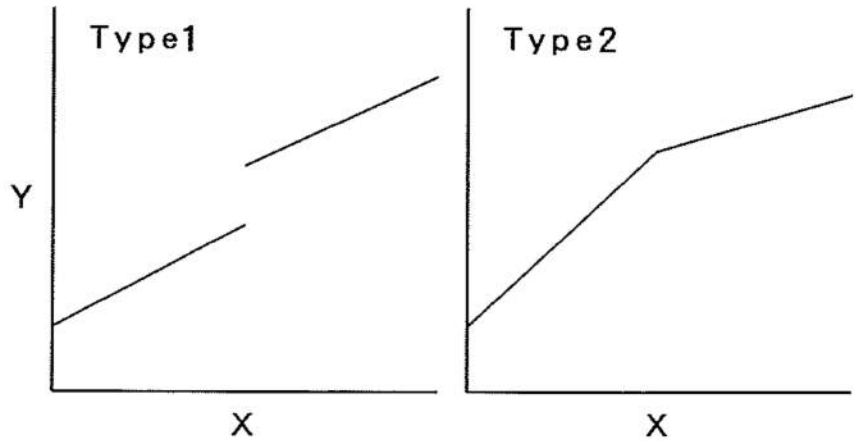

Fig. 3. Two types of male dimorphism shown by EBERHARD and GUTIÉRREZ (1991). In type 1, a regression line discontinuously changes into another. In type 2, a regression line gradually changes into another. In the present study, the x and y axes indicate body and mandible length, respectively.

EBERHARD and GUTIÉRREZ (1991) pointed out two types of male morphological dimorphism (Fig. 3). As shown in IGUCHI (2001), *D. rectus* also has two different allometric patterns for large and small males. However, the change in regression slope is gradual rather than discontinuous. That is, the dimorphism of *D. rectus* is type 2. On the other hand, the present study indicated that the allometry of *D. binervis* was expressed as two discontinuous (nearly parallel) lines. This suggests that the dimorphism of *D. binervis* is type 1.

As mentioned above, these two stag beetles are similar both morphologically and ecologically. Nevertheless, they have different patterns of male dimorphism. It may be important to explore behavioral differences between them.

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A New Species of the Genus *Onthophagus* (Coleoptera, Scarabaeidae) from the Malay Peninsula

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Abstract A new species of the genus *Onthophagus* is described from the Malay Peninsula under the name of *O.* (*Parascatonomus*) *satoi* sp. nov. This new species is closely related to *O.* (*P.*) *denticollis*, but can readily be distinguished from the latter by the following characters: body larger (7.6–9.7 mm); anterior margin of head bidentate at apex.

Parascatonomus (Coleoptera, Scarabaeidae) was described as a genus by PAULIAN (1932), and later regarded as one of the subgenera of *Onthophagus* by BALTHASAR (1963). This taxon has been revised by several authors (NOMURA, 1976; PALESTRINI, 1982; OCHI & ARAYA, 1992). According to OCHI and ARAYA's (1992) definition, six species of the subgenus *Parascatonomus* have been recorded up to the present from the Malay Peninsula.

When we examined a series of *Onthophagus* specimens from the Malay Peninsula, we found some specimens of one species belonging to the subgenus *Parascatonomus*. This form appeared to resemble *O.* (*P.*) *denticollis* LANSBERGE, 1883, from the Malay Peninsula, Sumatra and Sulawesi but it is markedly larger than the latter. After close examination and comparison, we have come to the conclusion that this form is new to science. Thus, we herewith describe a new species of *Onthophagus* (*Parascatonomus*) from the Malay Peninsula.

Onthophagus* (*Parascatonomus*) *satoi sp. nov.

(Figs. 1–5)

Description of holotype. Male. Body length 8.1 mm. Body oblong-oval,

strongly convex above; dorsal side with head and pronotum weakly shining, elytron opaque, sparsely clothed with short semi-recumbent yellowish brown hairs except for glabrous head; ventral side weakly shining, partly clothed with reddish brown hairs. Head and pronotum black, tinged with cupreous to greenish luster; elytron black; mouth parts and antennal foot-stalk reddish brown; antennal club yellowish brown.

Head subpentagonal, almost simple in contour, a little wider than long; clypeus strongly produced forwards, with apex distinctly bidentate at the middle, lateral margin weakly expanded near clypeo-genal suture which is very finely carinate; clypeo-frontal suture completely effaced though slightly raised at the middle; gena strongly produced laterad, with genal angle obtusely angulate; vertex almost simple, very slightly raised along posterior margin; surface weakly shining though slightly micro-granulose, transversely rugose and punctate in front, somewhat closely and a little strongly punctate behind. Antenna short and compact; scape short, not visible in dorsal aspect; club segments compact, with three segments successively diminishing distally in size.

Pronotum simple, strongly convex, about 1.46 times as wide as long, with an obtuse longitudinal impression along midline in posterior half; anterior margin bisinuate and bordered, with marginal border fine; lateral margin gently rounded in front, clearly sinuate behind, with marginal border fine; posterior margin obtusely angulate and slightly raised at the middle, with marginal border indistinct throughout; anterior angle rounded; posterior angles very obtuse; disc strongly and evenly convex; surface feebly shining though slightly micro-granulose, a little sparsely covered with setiferous small punctures, the punctures becoming denser and more asperate at side.

Elytra about 1.25 times as wide as long; striae shallowly and rather finely impressed, finely ridged on either side, with strial punctures small; the 7th stria curved near base; interstriae almost flat, strongly micro-granulose, sparsely and evenly covered with fine asperate punctures.

Prosternum with anterior angle widely and shallowly excavated. Metasternum well convex ventrally, keeled at the middle of anterior portion; finely punctate in central and posterior portions, more distinctly and densely in anterior and lateral portions; hairy in lateral portion. Protibia elongate, weakly incurved, with a small denticle at apical inner end, with four lateral teeth, the 1st sharp, a little smaller than the 2nd, the 2nd the largest, the 3rd shorter than the 1st; the 4th the smallest; the remaining outer margin roughly serrate. Meso- and metatibiae short and stout.

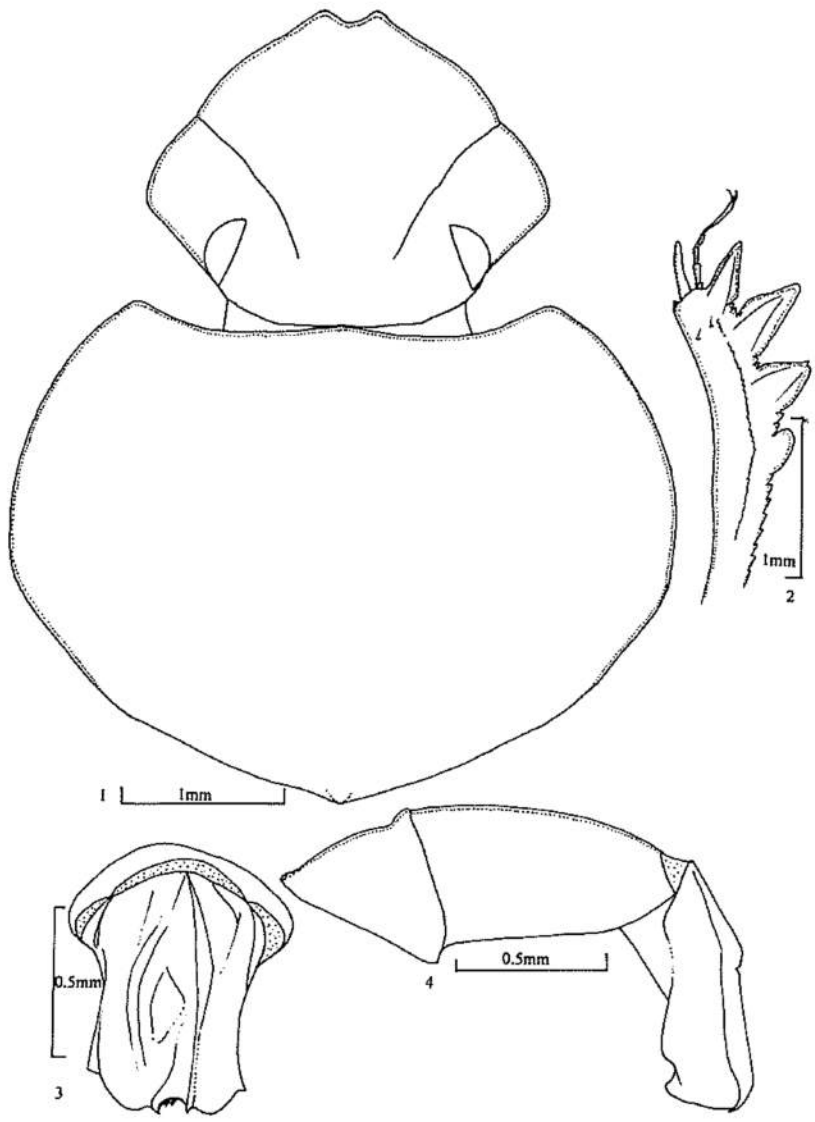
Pygidium slightly convex, carinate at base, micro-granulose, densely covered with strongly transverse shallow punctures. Aedeagus somewhat elongate with phallobase about 1.4 mm in length, about 0.8 mm in apical width. Parameres slightly asymmetrical, weakly constricted at the middle in dorsal view, about 0.8 mm in dorsal aspect.

Female. Body length 7.6–9.7 mm; width 4.0–5.0 mm (n=6). Head slightly wider. Protibia a little broader, without a denticle at apical inner end.

Type series. Holotype: ♂, Tanah Rata, Cameron Highlands, Pahang, Malaysia, III–1979, Y. MIYAKE leg. Paratypes: 1♀, 19 miles from Tapah, Perak, Malaysia; 1♀, Gunung Jasar, Cameron Highlands, 3–IV–1979, K. SUGINO leg.; 2♀♀, Robinson Waterfall, Cameron Highlands, Pahang, Malaysia, 14–III–2002, T. SHIMADA leg.;

1♀, ditto, 15–III–2002, T. SHIMADA leg.; 1♀, Cameron Highlands, 2002. The holotype is deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Etymology. The specific name is dedicated to Prof. Masataka SATÔ, one of the



Figs. 1–4. *Onthophagus* (*Parascatonomus*) *satoi* sp. nov. (holotype, male). —— 1, Head and pronotum, scale 1 mm; 2, right protibia, scale 1 mm; 3–4, male genitalia, posterior view (3) and lateral view (4), scale 0.5 mm.

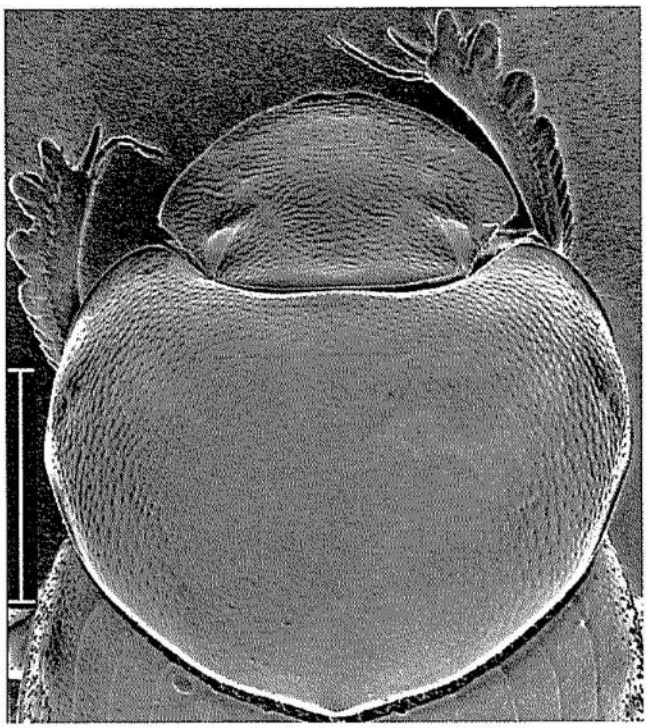


Fig. 5. Head, pronotum and protibia of *Onthophagus* (*Parascatonomus*) *satoi* sp. nov. (paratype, female), scale 2 mm.

dominant figures in the coleopterology in Japan.

Notes. The present new species is closely related to *Onthophagus* (*Parascatonomus*) *denticollis* from Sumatra, the Malay Peninsula and Sulawesi, but can be distinguished from the latter by the following characters: 1) body larger (7.6–9.7 mm), whereas in *O.* (*P.*) *denticollis*, body length is 5.5–6.5 mm; 2) head with clypeal margin bidentate at apex, whereas in *O.* (*P.*) *denticollis*, it is simple and almost rounded at apex; 3) denticle at the middle of posterior margin of pronotum inconspicuous, whereas in *O.* (*P.*) *denticollis*, it is distinct; 4) elytron with interstria sparsely and finely punctate, whereas in *O.* (*P.*) *denticollis*, it is more densely and distinctly punctate.

Acknowledgments

We express our hearty thanks to Y. MIYAKE and K. SUGINO for providing specimens. This study was supported in part by a Grant-in-Aid from the Japan Society for the Promotion of Science (No. 14405013 for M. K.).

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Notes on the Oriental *Melolontha* (Coleoptera, Scarabaeidae, Melolonthinae)

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Abstract The identity of *Melolontha indica* HOPE is confirmed and the species is redescribed with illustrations. *Melolontha insulana* var. *taihokuensis* NIIJIMA et KINOSHITA has a new status and is elevated to the rank of species. The prevailing name of this species, *M. frater taiwana* NOMURA, is therefore deemed to be invalid. The species name *Melolontha amplipennis* FREY is regarded as a junior synonym of *Hoplosternus virescens* BRENSKE. Lecotypes are designated respectively for the following names: *M. indica* HOPE, *Melolontha taihokuensis* NIIJIMA et KINOSHITA and *H. virescens* BRENSKE.

The development of concept of the genus *Melolontha* FABRICIUS, 1775 has experienced three main stages. At the very first time, it was intermingled with various scarab taxa across the subfamilial level that we widely accept today. This chaotic situation formally terminated by BURMEISTER's work in 1855 on primarily documenting the definition of the genus. In earlier times the number of antennal club segments in melolonthines was considered an important feature to separate different taxa. The third stage started with a series of major collections to have been brought into Europe originally captured in the Oriental Region in the last decades of the 19th Century. These diverse collections constitute the major framework of current knowledge of the Oriental *Melolontha* fauna, and also change the taxonomic concept of the genus that had been based merely on the Palaearctic species. Recognition and systematic position of the genus *Hoplosternus* GUÉRIN-MÉNEVILLE, 1838 and the subgenus *Tocama* REITTER, 1902 reflect the paucity and need for a phylogenetic analysis of the genera related to *Melolontha* whose concepts are confused with various morphological features without distinct phylogenetic basis. For example, the definition of the former genus largely depends on the existence of meso-metasternal process. However, ARROW (1913) strongly doubted the importance of this character for supporting generic status since the sexually intraspecific variation of the character was observed. As in the subgenus *Tocama*, the male genitalia are strongly asymmetrical, which has long been ignored. Accordingly, KRYZHANOVSKIJ (1978) proposed to raise *Tocama* to the rank of a genus.

The purpose of this paper is to clarify the systematic statuses of the Oriental species of *Melolontha* (sensu lato) which were taxonomically misunderstood, and this would be of help for their faunistic study in the future.

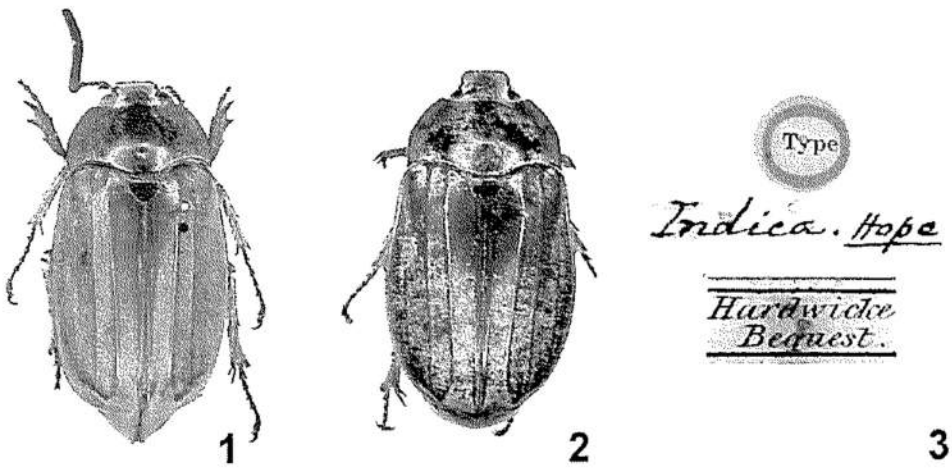
Melolontha indica HOPE

(Figs. 1–13)

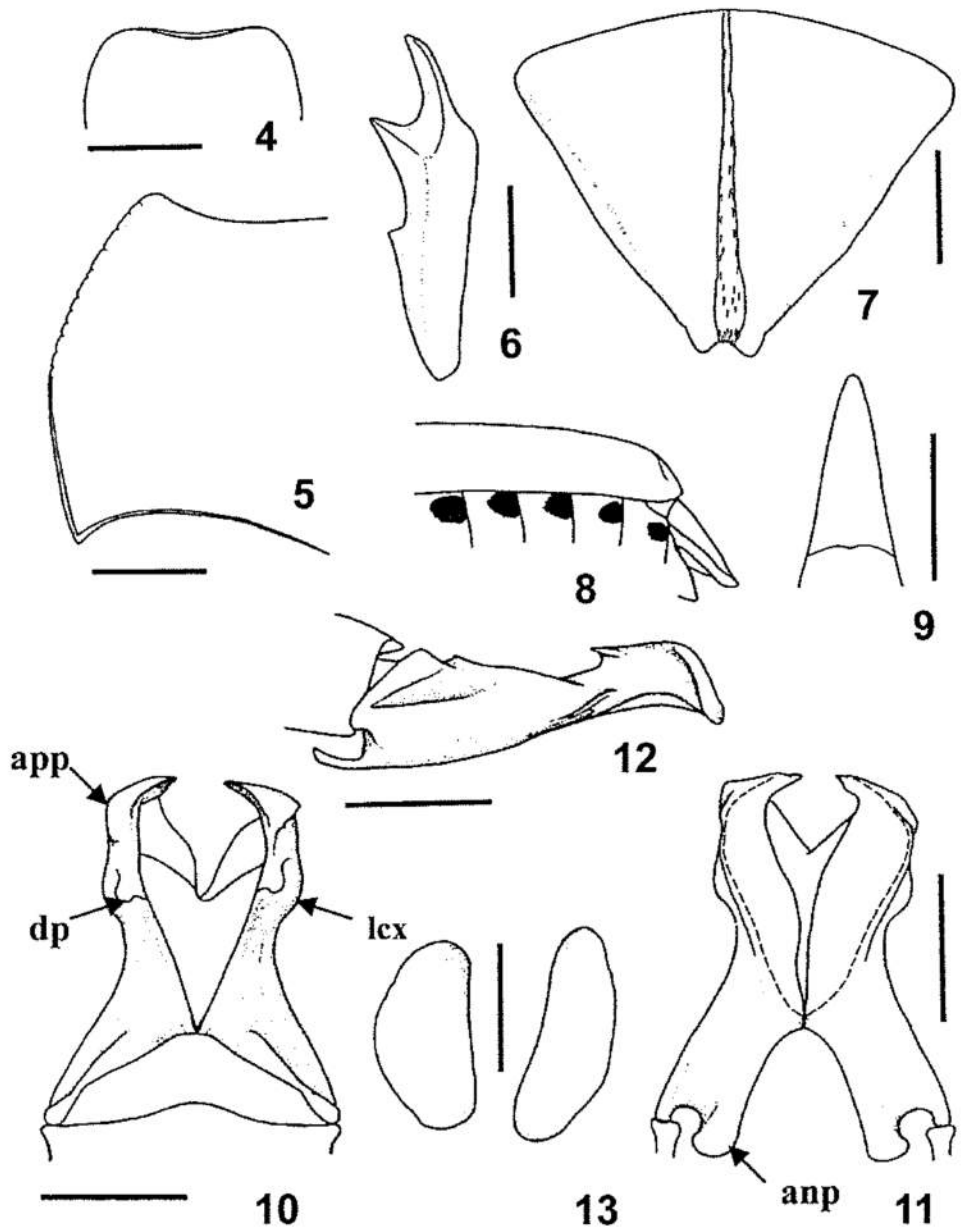
Melolontha indica HOPE, 1831, Zool. misc., **1831**: 23 (original description). —— ARROW, 1946, Ark. Zool., **38 A** (9): 31 (distributional comment). —— SABATINELLI, 1992, Mem. Soc. ent. ital., **71**(2): 616 (catalogue).

Male (Fig. 1). Body: length 27.5 mm to apices of elytra; width 12.5 mm at bases of elytra; surface evenly covered with whitish gray, slender setae; color of pronotum and scutellum with deep metallic green reflection. Antennal club moderately curved outwards, 2.3 times length of stem. Clypeus (Fig. 4): very shallowly depressed, with anterior margin quite weakly concave at center when viewed dorsally. Pronotum (Fig. 5) transverse, fovea almost invisible; apical angle obtuse; lateral margin inwardly curved in basal third, serration moderately developed in anterior two-thirds; posterior margin well developed. Elytra finely and evenly punctate on costae 1–3. Meso-metasternal process (Fig. 9) less protruded, meso-metasternal suture obvious, median metasternal suture lacking. Outer margin of protibia with three well-developed teeth, apical tooth slightly curved (Fig. 6). Abdomen with lateral sides of visible sternites 1–5 roundly maculated by scale-like setae (Fig. 8). Pygidium with pygidial ridge completely developed from base to bifurcating apex (Fig. 7). Genitalia (Figs. 10–13) widely ridged to both tips at the bases of parameres; apical process (app) incomplete in shape dorsally (Fig. 10), reniform in frontal view (Fig. 13); dorsal process (dp) nipple-like; lateral convexity (lcx) oblique downwards (Fig. 12) but somewhat roundly developed in dorsal/ventral view, anal process (anp) moderately enlarged to basal piece (Fig. 11).

Female (Fig. 2). Larger than male, body length 29.4 mm; width 14.1 mm; pronotum and scutellum with metallic copper reflection; whitish yellow setae on head,



Figs. 1–3. *Melolontha indica* HOPE; 1, male paralectotype; 2, lectotype, female; 3, labels attached to lectotype.



Figs. 4–13. *Melolontha indica* HOPE, male. —— 4, Head; 5, pronotum, left side; 6, protibia, left; 7, pygidium; 8, abdomen, left lateral side; 9, meso-metasternum; 10, genitalia, dorsal view; 11, ditto, ventral view; 12, ditto, lateral view; 13, ditto, frontal view. —— anp, Anal process; app, apical process; dp, dorsal process; lcx, lateral convexity. Scale bar 1 mm for Fig.13, 2 mm for remainders.

pronotum, scutellum and elytra obviously stout; antennal stem approximately 1.3 times longer than club; posterior angle of pronotum sharp and somewhat elongated; meso-metasternal process quite robust and protruded over the base of profemora; maculations of lateral sides of sternites larger; bifurcating apex of pygidium vestigial, pygidial ridge weakly developed and not reaching the apex.

Material examined. Lectotype female at the Natural History Museum, London (BMNH), labeled as: a) Type (round label with red typeface and border), b) *Indica.* Hope (Handwriting, H), c) Hardwicke Bequest (Typeface, T). Lectotype here designated. Two paralectotypes at the BMNH, one female without further data label and the other one printed Hardwicke Bequest as in lectotype; one male labeled as: a) 60·15, E. I. C. (T), b) *Indica* Hope (H).

Distribution. N. India.

Remarks. In his original account, F. W. HOPE merely employed ten words to describe *Melolontha indica*, the first *Melolontha* species from the Oriental Region, in the collection of Major General HARDWICKE. No further information such as number of specimens, sex and collecting data is available. Two English museums, the Oxford University Museum of Natural History and the BMNH, are the depositories of the insect collections bequeathed by General HARDWICKE and F. W. HOPE. However, we failed in locating any possible type of the species through the staff's assistance of the former institute. On the other hand, the senior author visited BMNH and found two females of the species with identical printed label "Hardwicke Bequest". One of them also bears a type and a name-determined label (Fig. 3). Besides, a male of the species is kept together with a determination label and is believed to belong to the same species. The above evidences are useful for recognizing the identity of *M. indica*, and the melolonthine species with a long history of uncertainty reveals its true status.

The ambiguous status of *M. indica* in began with two very early major publications in the 19th Century, which had greatly affected the knowledge of melolonthine beetles. First, BLANCHARD (1850) recorded the name *M. indica* neither in the genus *Melolontha* FABRICIUS nor in the genus *Hoplosternus* GUÉRIN-MÉNEVILLE. Meanwhile, the first three species of the latter genus from the Oriental Region were then described. However, the concept of the genus *Hoplosternus* was apparently not accepted by BURMEISTER (1855), who transferred all the three *Hoplosternus* species to *Melolontha*. One of them, *H. nepalensis*, was then erroneously referred to F. W. HOPE, though with correct citation of publication and pagination for *M. indica*. Moreover, BURMEISTER (1855) did not list the name *M. indica* in his century-long influential handbook. This error deeply affected and resulted in a series of inappropriate listing on both *H. nepalensis* and *M. indica*. For example, the catalogue compiled by DALLA TORRE (1912), a current major source to understand the most diverse scarab subfamily Melolonthinae of the world, reflects BURMEISTER's action, the loss of the name *M. indica* and the incorrect citations of *H. nepalensis*. Over 170 years after the introduction of *M. indica* to science, there were only two publications that had noted the existence of the beetle. ARROW (1947) examined R. MALAISE's collections obtained from NE. Burma (presently Myanmar) and identified one male *with M. indica*. A brief comment on the distribution was also given, which said that the species ranges throughout northern India, Burma to Yunnan. SABATINELLI (1992) comprehensively

dealt with the known melolonthines, including *M. indica*, from the Himalayas and north Indian areas in his catalogue. Unfortunately, his citation of *H. nepalensis* still followed BURMEISTER's incorrect record.

Taxonomically, the species-group of *M. indica* comprises five described species (*H. nepalensis*, *H. malaccensis*, *H. carinata*, *H. nitidicollis* and *M. indica*) which can be characterized and separated from other groups by the following combination of morphological features: 1) male antennal club slightly to moderately curved; 2) clypeus shallowly depressed, weakly marginated anteriorly; 3) punctation of pronotum evenly fine, marginal serration developed moderately in anterior two-thirds, posterior one-third smooth, gradually marginated and widened to base; 4) irregular pygidial ridge moderately to well developed longitudinally to apex, surface smooth with scanty setae; 5) pygidial apex slightly elongated and bifurcate/truncate; always less developed in female; 6) all apical, dorsal and lateral processes of male genitalia well developed, anal process small to moderately enlarged. Members of the *indica* group are limited in distribution to the Indochinese and Malay Peninsulas as well as Yunnan along to the Himalayan areas.

Since the actual type locality of *M. indica* was not specified by the original author or on any label attached to the lectotype and the other determined specimens at BMNH, it is quite difficult to find further information on the distribution of *M. indica* from any current northern Indian territory and neighboring areas. However, two allied species, *H. carinata* and *H. nitidicollis*, both also distributed to North India, show rather a close relationship to *M. indica* within the group in several morphological characters. Based on our examinations of several determined specimens, including the types of *H. carinata* and *H. nitidicollis*, we have concluded that intraspecific variations of these species are considerably wide, so that there is a possibility that all the three forms are conspecific. This assumption, however, needs to be verified by examinination of more specimens of *M. indica* and determination of their variation together with that of all the known species.

Melolontha taihokuensis NIIJIMA et KINOSHITA, stat. nov.

Melolontha insulana var. *taihokuensis* NIIJIMA et KINOSHITA, 1923, Res. Bull. Coll. Exp. Forest Coll. Agric. Hokkaido imp. Univ., (2), **2**: 65.

Melolontha frater taiwana NOMURA, 1952, Tohô-Gakuhô, Kunitachi, (2): 2, 6 (original description, key to the East Asian species of *Melolontha*). *New synonym.*

Diagnosis. This species is distinguished from *M. frater* by the following combination of male characters: clypeus very poorly concave (moderately concave in *M. frater*); pronotal fovea almost vestigial (moderately developed in *M. frater*), apical and posterior angles of pronotum protuberant (reduced in *M. frater*), anterior (lacking in *M. frater*) and posterior margins moderately (poorly in *M. frater*) developed; meso-metasternal process apparently longer (short, slightly sticking out from the bases of intermesocoxae in *M. frater*), apex acute, meso-metasternal suture well developed (vestigial in *M. frater*); pygidium conspicuously elongated (ordinary in *M.*

frater), sometimes longer than width (always wider than long in *M. frater*), margin of apical third usually contracted in varying degree (invisible in *M. frater*), longitudinal concavity apparent (weak in *M. frater*); dorsal process of genitalia truncate (pointed in *M. frater*), surface of apical process with sparse minute setae (visible only along posterior margin in *M. frater*), outer margin quite weakly serrate in frontal view (well developed in *M. frater*).

Material examined. Lectotype male in Hokkaido University Museum coll., labeled as: a) "Daihoku (T) 19 V. (H) 1922 R. Takahashi" (T), b) dissected genitalia attached. Lectotype here designated. Two male paralectotypes deposited with the lectotype; one labeled as for lectotype but differing in the collecting date as 27 V (H), genitalia also dissected and attached on a second label; other one labeled as: a) FORMOSA 1922 Murayama (T). 31♂♂, 9♀♀: Hokuto, 15.VI.1929, K. Sato (H) // Sizumu Nomura Bequest, 1981 (T) // HOLOTYPE (T) *Melolontha frater taiwana* NOMURA (1952) (H). TAIWAN: Tai Tung Co., Lee Char Lin Dao, Alt. 1,100 m ca. 23/IV/1995, collr. C. L. Li (T) (5♂♂). TAIWAN: I Lan Co., Nanao Hardwood Forest Nature Reserve, 9/V/1995, collr. C. L. Li (T) (6♂♂). TAIWAN: Pingtung, Da Wu Forestry 36th area, alt. 1,030 m., 17/IV/1994, C. L. Li (T) (3♂♂). TAIWAN: Tai Tung Co., Shin Kan Shan Area, 23°08′45′′N, 121°19′45′′, 25–26/IV /1999, coll. C. L. Li (T) (11♂♂). TAIWAN: Pin Dong Co., Char Lo Shiuu, 4/IV /1995, coll. C. C. Chen (T) (1♂, 1♀). TAIWAN: Tai Pei Co., Sa Luen Beach, 6/VI /1997, collr. C. L. Li (T) (4♂♂). TAIWAN: Taipei, Ba Li, 23/VI/1993, I. S. Hsu (T) (8♀♀).

Distribution. Taiwan main island.

Remarks. NIIJIMA and KINOSHITA (1923) described *Melolontha insulana* var. *taihokuensis*, simply in Japanese, solely based on the character of elongated pygidium to separate it from typical *M. insulana*. Thus, their work does not explicitly referred to an infrasubspecific entity. Accordingly, this name would be available and has a subspecific rank from its original publication. (International Code of Zoological Nomenclature 1999; Article 45.6.4). Furthermore, we raise this subspecific name to the rank of species. As for the prevailing subspecific name, *M. frater taiwana* given by S. NOMURA, the article 23.9.1.2 of the Code provide the ground that the junior synonym in this case cannot be reserved but the senior synonym, *M. taihokuensis*, does have the priority and should be regarded as a valid name of the species.

Besides, we have checked the specimens currently preserved at the Hokkaido University Museum under the name of *Melolontha insulana* determined by NIIJIMA and KINOSHITA, as well as the unique type of *Hoplosternus insulanus* MOSER at the Museum für Naturkunde der Humboldt-Universität zu Berlin (ZMHB). Four of the seven specimens in the Hokkaido University Museum are the same with MOSER's type of *H. insulanus*, all of which are labeled "Hori" of central Taiwan. The remainders are doubtless not *H. insulanus*. More important is that one of the three specimens, the lectotype herewith designated, is identical in pose with the one shown on Table IV figure 23 in NIIJIMA and KINOSHITA's work (1923). This is the strongest evidence to show that NIIJIMA and KINOSHITA misdetermined the specimens taken at T(D)aihoku (now Taipei, the metropolitan city of Taiwan) as *H. insulanus* and subsequently gave

it a new combination with *Melolontha*, though proposed a status of variety at the same time. In fact, the populations of true *H. insulanus* have never been found at places lower than 500 meters in height and on the off-shore islands of Taiwan, though commonly collected from elevations of 1,000–2,000 m in Taiwan, even though the lowest and northernmost record of true *H. insulanus* is from Wu-Lai, a montane village some 500–600 m in height.

Morphologically, *M. taihokuensis* and *M. frater* do show a close relationship allowing both of them placed in the same species-group. Zoogeographically, however, we cannot support a distributional pattern with such a long-distance isolation between *M. taihokuensis* and *M. frater* as a subspecific relationship. Except of Taiwan, E. Siberia, Korea and the mainland of Japan are the other three distributional areas of true *M. frater*. This viewpoint has long been accepted by most authors (ISIDA & FUJIOKA, 1988; TAKAHASHI, 1999; FUJIOKA, 2002). Meanwhile, ZHANG (1997) reported records in the northern Chinese Mainland from Hunan to Shaanxi Provinces. They are the two Palearctic distributions other than the above-mentioned areas. However, such jumping pattern of species crossing the Palearctic and the Oriental Regions at the same time as this is hardly observed among melolonthine beetles. On the other hand, we have carefully examined and compared the name-bearing type of *M. frater* ARROW (at BMNH) with that of *M. frater taiwana* NOMURA (at NSMT, herein treated as a junior synonym of *M. taihokuensis*), and as many voucher specimens of both of them as possible. These comparisons led to the conclusion that a distinct specific status is undoubtedly recognized for the populations of *M. taihokuensis* to separate them from true *M. frater*.

Hoplosternus virescens BRENSKE

Hoplosternus virescens BRENSKE, 1896, Stett. ent. Ztg., **57**: 202 (original description). —— BRENSKE, 1900, Mém. Soc. ent. Belg., **7**: 154 (note). —— DALLA TORRE, 1912, Coleopt. Cat., pars 49: 286 (catalog listing). —— ZHANG, 1988, Insects Namjagbarwa Region, 243 (new record, description).

Melolontha amplipennis FREY, 1975, Ent. basil., **1**: 238 (original description). —— SABATINELLI, 1993, Mem. Soc. ent. ital., **71**: 615 (catalog listing). *New Synonymy.*

Diagnosis. This species can be easily distinguished from all the other species of the genera *Melolontha* and *Hoplosternus* by their identical elytral dull green/ yellowish green color and unidentated protibia in the male.

Material examined. Lectotype male at ZMHB, labeled as: a) Darj: (H) 1101, 6 (T), b) *virescens*, ♂. Type. Brsk (H), c) Coll. Brenske (T). Lectotype here designated. 8♂♂, 6♀♀: a) India (P), Patong (H) (1♂, 1♀, ZMHB). a) India: ex Mus. Calcuutta. B.M.1930–1, b) Kurseong, alt 5,000 ft. E. Himalayas, Lynch, C. (P) (1♂, 1♀, BMNH). (P) (1♀, Institut Royal des Sciences Naturelles de Belgique (ISNB)). a) Burmah, 96–166, b) Salween Valley, 5/90 (1♂, BMNH). a) Punaka (H), Bhutan, 9. V. 1972, S. Takagi (P) (1♂, 1♀, NSMT). a) NEPAL Kamali zone, Kholagad Tila Khola

1,950 m 13.7.95, lg. Ahrens & Pommeranz (P), b) Melolontha virescens Brsk., det. Ahrens (1♀, Staatliches Museum für Tierkunde, Dresden (SMTD)). a) Thimphu, 31/5, b) Nat.-Hist. Museum, Basel – Bhutan Expedition 1972 (P), c) Type, G. Frey 19 (P) 74 (H), *Melolontha amplipennis* (H) (1♂, Naturhistorisches Museum, Basel (NHMB)). a) Wangdi Phodrang, 1,300 m (P) 6– 8/6 (H), b) Nat.-Hist. Museum, Basel – Bhutan Expedition 1972 (P), c) 1♀, (H), d) Paratype (P) *Melolontha amplipennis* (H) G. Frey, 1975 (P)(1♀, NHMB). a) Nepal, near Kathmandu, VI/1997 (1♂). Kurseong, 1904 (H) (2♂♂, 1♀, ISNB).

Distribution. E. Nepal, Indian Sikkim, Bhutan and S. E. Tibet.

Remarks. FREY (1975) proposed a new name for this already-described species, probably because this peculiar and distinctive beetle was simply unknown to him. In his description of *Melolontha amplipennis*, only two known names were mentioned from the Himalayan areas. They are *M. aeneicollis* and *M. alboplagiata*. We can therefore conclude that the late G. FREY did not know the existence of the name *H. virescens* BRENSKE. Variation of the coloration of *H. virescens* may have also given confusion when dealing with this beetle. The type of *H. virescens* in ZMHB shows an unusual opaque body color as compared with any other known specimens that the first author has examined. This strange condition seems to imply that the type had suffered certain inappropriate treatment since the very beginning of collecting and/or the subsequent preservation. This is probably the reason for misidentification of species and/or ignorance of the existence of specific name by succeeding researchers.

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Scirtidae of the Oriental Region

Part 1. A New Species of the Genus *Elodes* (Coleoptera, Scirtidae) from Laos, with a Species List of the Genus *Elodes* Known from the Oriental Region

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Abstract The first part of a revision of the family Scirtidae from the Oriental Region is presented. A new species, *Elodes satoi* sp. nov., is described from Laos. This is the first record of the genus from Laos. A species list of the genus *Elodes* recorded from the Oriental Region is given in the appendix.

Introduction

From the Oriental Region, many species of the family Scirtidae have been separately described by some authors (*e.g.*, KLAUSNITZER, 1976, 1980 a, b; NYHOLM, 1981; YOSHITOMI, 2000). However, there is no revisional study about the species and the genera known from this area. In the course of my systematic study of the family Scirtidae of the world, I am going to review the species and the genera known from this area.

In the present part, I am going to describe a remarkable new species of the genus *Elodes* from Laos. In the appendix, a species list of the genus *Elodes* recorded from the Oriental Region is given.

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

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

I wish to express my sincere gratitude to Dr. B. KLAUSNITZER (Dresden) and Prof. Dr. N. OHBAYASHI and Dr. M. SAKAI (Ehime University) for their kind and continuous guidance and encouragement.

Elodes satoi YOSHITOMI, sp. nov.

(Figs. 1–9)

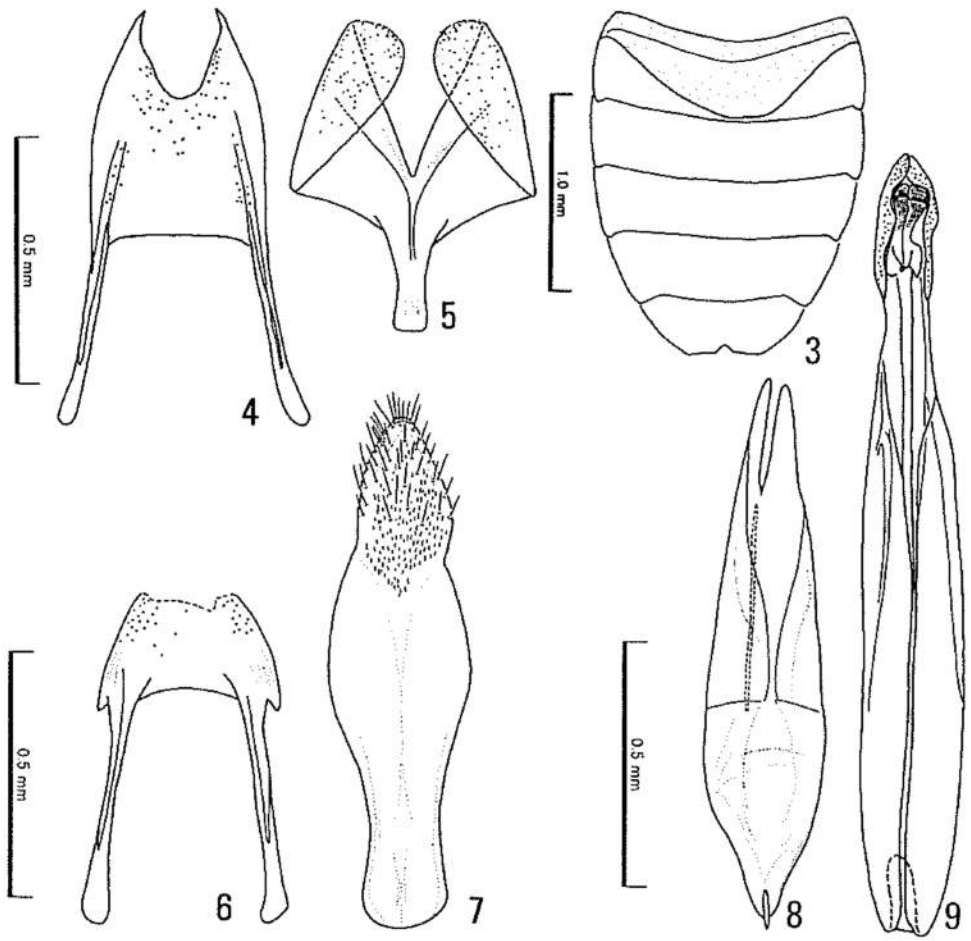
Description. Holotype, male. Body oblong, lightly convex above, shining, dense-

ly covered with yellowish brown hairs throughout. Coloration of body blackish brown in most part; antennae and legs brown; around the margin of pronotum, scutellum and humeral part of elytra yellowish brown.

Head large, slightly convex; clypeus rather long, almost straight in frontal margin. Eyes large, strongly prominent, the distance between them about 1.2 times as long as the maximum diameter of each eye. Fourth segments of labial palpi arising from mesal part of lateral margin of penultimate segments. Antennae missing in 7th to 11th segments, lightly serrate in 4th to 6th; approximate ratio of 1st to 6th antennal segments as 9.0 : 4.0 : 1.0 : 14.0 : 10.0 : 11.0. Pronotum semicircular, bisinuous in posterior margin, slightly depressed above in lateral parts; PW/PL = 1.53. Scutellum triangular. Elytra oblong, subparallel-sided from near base to distal 1/4; EL/EW = 1.68; EL/PL = 3.44; EW/PW = 1.34; TL/EW = 2.16. Legs relatively long. Posterior margin of 6th abdominal sternite almost straight, lacking extra setae; apical margin of 7th abdominal sternite almost straight, distinctly emarginate in the middle.

Eighth tergite moderately sclerotized, sparsely covered with fine punctures, with a pair of long apodemes protruding from antero-lateral corners; postero-lateral angles distinctly projecting straight, pointed at apex. Eighth sternite moderately sclerotized, gingko-leaf-shaped, sparsely covered with fine punctures and minute setae; 9th tergite weakly sclerotized, covered with fine punctures in posterior part, with a pair of long apodemes; 9th sternite weakly sclerotized, oblong, densely covered with long setae and minute spines. Tegmen long and slender, deeply notched in apical 1/4 of dorsal part; longitudinal keel situated in proximal 1/2 to 1/4 of dorsal surface. Penis long, about 1.4 times as long as tegmen; apical part of ventral piece rounded,

Figs. 1–2. *Elodes satoi* sp. nov., holotype. —— 1, Dorsal aspect; 2, lateral aspect.



Figs. 3–9. *Elodes satoi* sp. nov., holotype. —— 3, Abdominal sternites; 4, 8th tergite; 5, 8th sternite; 6, 9th tergite; 7, 9th sternite; 8, tegmen in dorsal aspect; 9, penis in dorsal aspect.

densely covered with transverse furrows; dorsal piece short, slightly longer than ventral piece, densely covered with fine punctures in apical part, with obtuse apices, deeply concave in anterior margin.

Measurement. TL 4.00 mm; PW 1.38 mm; PL 0.90 mm; EW 1.85 mm; EL 3.10 mm.

Type material. Holotype (NSMT): 1 male, Phu Pan (Mt.), Houaphan Prov., Laos, 28–IV~6–V–2002, H. YOSHITOMI leg.

Remarks. This species belongs to the *minuta* species-group, and is related to *Elodes longiuscula* (KLAUSNITZER), *E. indubia* (KLAUSNITZER), *E. cognata* (KLAUSNITZER) and *E. burmensis* KLAUSNITZER, known from the Oriental Region, in having the penis separating into dorsal and ventral pieces. However this species is easily

Fig. 10. Habitat of *Elodes satoi* sp. nov., on Phu Pan, 4–V–2002, photo by H. YOSHITOMI.

distinguishable from them by the following characteristics: the coloration of the body; the posterior margin of the sixth abdominal sternite almost straight, lacking extra setae; the postero-lateral angles of the eighth tergite distinctly projecting straightly; the apical part of the ventral piece of penis rounded, densely covered with transverse furrows.

This is the first species of the genus *Elodes* from Laos.

Biological notes. The holotype specimen was collected by beating the tree leaves in a natural forest mainly consisting of deciduous broadleaved trees near the top of Phu (=Mt.) Pan (Fig. 10, ca. 2,040 m). The collecting site was near a small stream, and I inferred that the stream is the larval habitat.

Etymology. The species is dedicated to Professor Dr. Masataka SATÔ of Nagoya Women's University, in expressing my sincere gratitude for his continuous guidance.

Appendix

A Check List of the Species of the Genus *Elodes* Recorded from the Oriental Region

Elodes alienata KLAUSNITZER, 1976	Bhutan
Elodes burmensis KLAUSNITZER, 1974	Myanmar, Nepal, Vietnam, Thailand, India
Elodes cognata (KLAUSNITZER, 1980)	India

Elodes indubia (KLAUSNITZER, 1980)	India
Elodes longiuscula (KLAUSNITZER, 1980)	India
Elodes major PIC, 1954	China
Elodes miaoershanensis YOSHITOMI et M. SATÔ, 1997	China
Elodes nigrovittata BOURGEOIS, 1896	Himalayas
Elodes rufotestacea KLAUSNITZER, 1976	Bhutan
Elodes satoi YOSHITOMI, sp. nov.	Laos
Elodes sororum PIC, 1918	India
Elodes testaceoapicalis PIC, 1954	China
Elodes wittmeri KLAUSNITZER, 1976	Bhutan

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 233–236, May 25, 2003

Eine neue Art der Gattung *Cyphon* PAYKULL, 1799 (Coleoptera, Scirtidae) aus Myanmar (Birma)

(104. Beitrag zur Kenntnis der Scirtidae)

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Abstract A new species of the scirtid genus *Cyphon* PAYKULL, 1799 is described from Myanmar under the name of *Cyphon masatakai*. The new species belongs to the group of *Cyphon variabilis* and is characterized by the structure of the male genitalia, in particular by that of the 8th/9th tergites.

Die Gattung *Cyphon* PAYKULL, 1799 ist weltweit verbreitet. Wie viele Arten in der orientalischen Region vorkommen ist nicht bekannt. Die Zahl der beschriebenen Arten beträgt mehr als 50. Aus Myanmar (Birma) selbst wurde bisher noch keine *Cyphon*-Art beschrieben. Im folgenden wird *Cyphon masatakai* als erste aus diesem Gebiet vorgestellt.

Cyphon masatakai KLAUSNITZER, sp. nov.

(Abb. 1–10)

Körper länglich oval, rotbraun, hell behaart. Die Naht der Flügeldecken ist hinter der Mitte bis kurz vor dem Apex in einem schmalen (0.08 mm breiten) Streifen dunkelbraun. Dieser Streifen setzt sich als heller abgesetzte Linie nach vorn bis zum Schildchen fort.

Kopf dicht punktiert. Antennen bis zum 4. Glied hellbraun, von da ab bis zur Spitze dunkelbraun. Länge der Antennenglieder: 1. Glied 0.12 mm, 2. Glied 0.08 mm, 3. Glied 0.07 mm, 4. Glied 0.12 mm. Breite der Antennenglieder: 1. Glied 0.09 mm, 2. Glied 0.06 mm, 3. Glied 0.04 mm, 4. Glied 0.05 mm.

Pronotum schwächer als der Kopf punktiert, innerhalb der Hinterecken schwach eingeschweift. Größte Breite zwischen den Hinterecken (1.06 mm). Länge über der Mitte 0.38 mm.

Schildchen dreieckig, schwach punktiert.

Flügeldecken dicht punktiert, die Punkte stehen isoliert und fließen nicht zusammen. Flügeldecken glatt, ohne Längsrippen.

Beine braun.

Körperlänge 2.7 mm.

3.–7. Sternit braun, 7. Sternit hinten gleichmäßig gerundet. 8. Tergit (Abb. 1, 9)

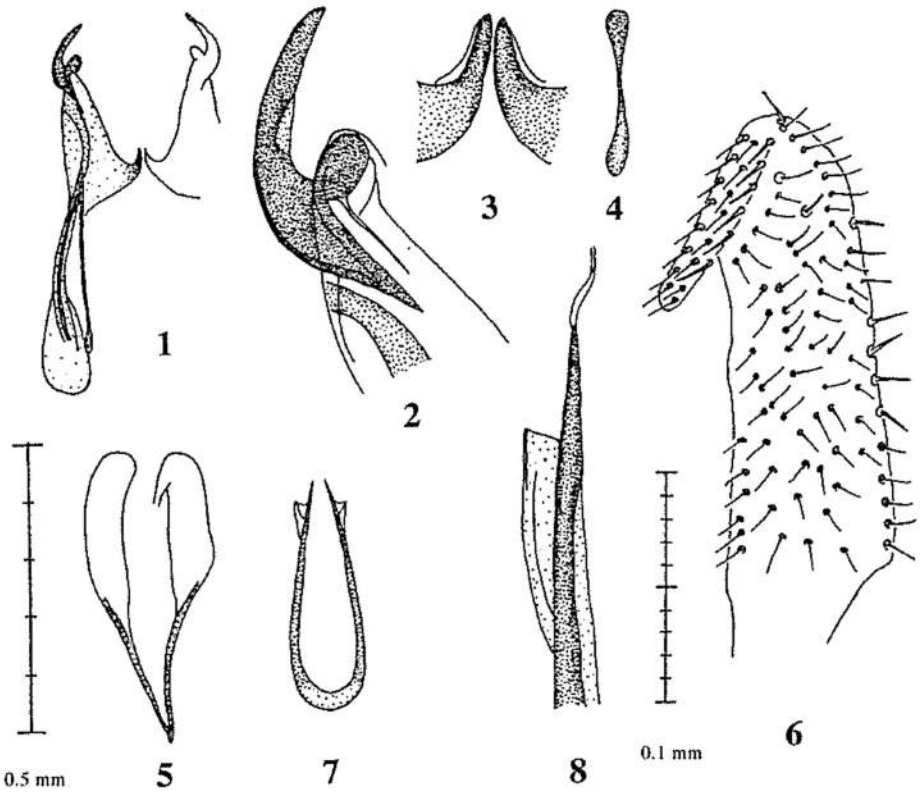
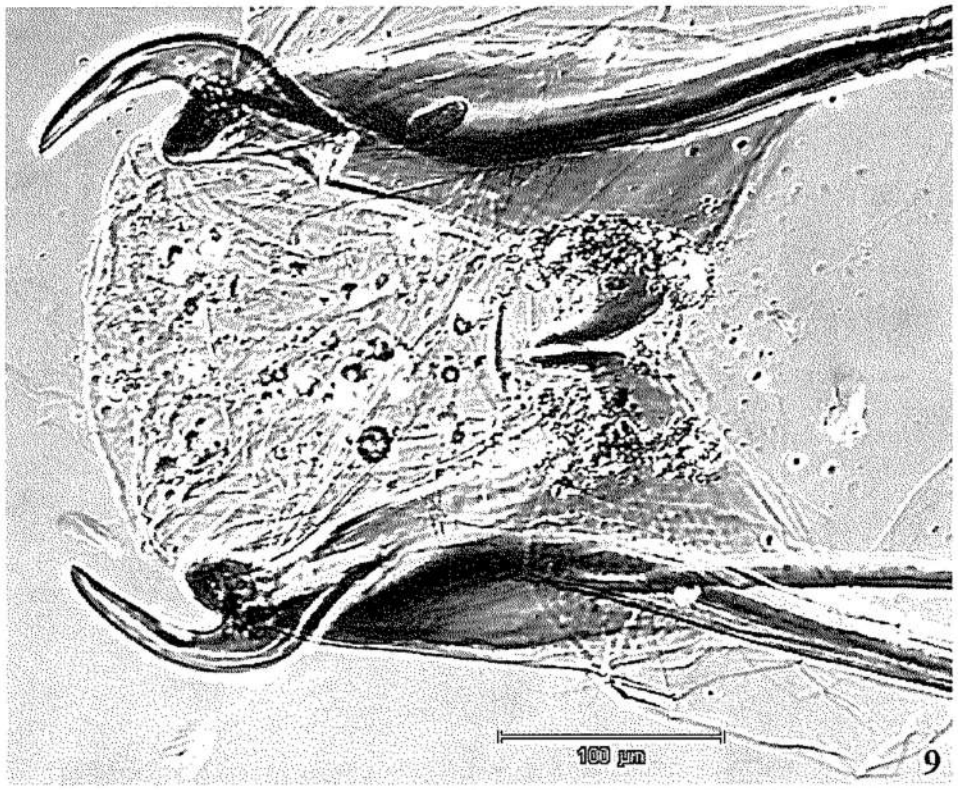


Abb. 1–8. *Cyphon masatakai* sp. nov. —— 1, 8./9. Tergit; 2, 9. Tergit, Thecion und Placion; 3, 9. Tergit, Detail aus der Mitte der Pala; 4, 9. Sternit; 5, Tegmen; 6, Tegmen, Parameren; 7, Penis; 8, Penis, Spitze des linken Prosthem. Der Abbildungsmaßstab links gilt für Abb. 1, 4, 5, 7; rechts für Abb. 2, 3, 6, 8.

zu einem schmalen Stäbchen reduziert (Länge 0.33 mm). Beide Bacilla lateralia sind hinten durch eine dünne, mit winzigen Dörnchen besetzte Membran verbunden. Platte des 9. Tergit teilweise erhalten, in der Mitte befinden sich zwei nach hinten gerichtete spitze Zähne (Abb. 1, 3). Bacilla lateralia in einem spitzen, nach innen gebogenen Thecion endend (Abstand der beiden Haken 0.18 mm). Placion gerundet, ebenso wie das Thecion kräftig sklerotisiert (Abb. 2). Gesamtlänge des 8./9. Tergit 0.64 mm, maximale Breite 0.27 mm. 9. Sternit (Abb. 4) zu einem schmalen Stäbchen reduziert, das vorn und hinten verbreitert ist (Länge 0.29 mm).

Tegmen (Abb. 5) mit schmalem Kapulus, der aus der Verbindung der beiden Stäbchen gebildet wird, an denen die Parameren hängen. Parameren (Länge 0.26 mm) mit Borsten dicht bedeckt (Abb. 6, 10) (Länge der Borsten ca. 0.002 mm). Die beiden Parameren sind im Präparat getrennt. Möglicherweise sind sie in Wirklichkeit miteinander an der Spitze verbunden, und die Trennung ist ein Artefakt. Gesamtlänge Tegmen 0.51 mm.

Penis (Abb. 7) mit bogenförmiger Pala, die hinten in spitze Prostheme ausläuft, die in dünne, kaum sklerotisierte Fortsätze auslaufen (Abb. 8). Die Pala scheint auf einen schmalen Bogen reduziert zu sein, eine Querverbindung konnte nicht gefunden werden. Hinter der Spitze der Prostheme befindet sich seitlich jederseits ein flacher, hinten abgestutzter Fortsatz, der vielleicht als Rest des Parameroides aufzufassen ist.



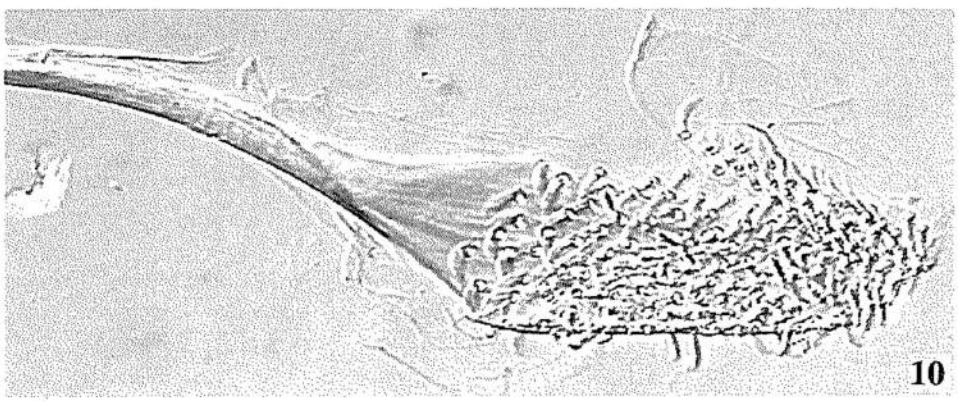


Abb. 9–10. *Cyphon masatakai* sp. nov.—— 9, 8./9. Tergit; 10, Tegmen, Paramere.

Länge des Penis 0.39 mm, maximale Breite 0.13 mm.

Holotypus: 1 Männchen, Myanmar (Birma), Inle See, Nyaungshwe, 11.2.1998, leg. E. HEISS. In Coll. KLAUSNITZER, über das Deutsche Entomologische Institut, Eberswalde, verfügbar.

Der Fundort hat folgende Koordinaten: 20°37´ N, 96°01´ E.

Ich widme die neue Art Herrn Prof. Dr. Masataka SATÔ, Nagoya, in Verehrung für sein umfassendes wissenschaftliches Werk, das auch Bearbeitungen von Scirtidae einschließt und in Erinnerung an interessante Gespräche bei unserer Begegnung anläßlich eines Internationalen Entomologen Kongresses.

Cyphon masatakai gehört wegen der Reduktion der Pala des 8. und 9. Tergit in die *Cyphon variabilis*-Gruppe. Innerhalb dieser ist er nur schwer mit anderen Arten zu vergleichen. Ein schmaler Kapulus und beborstete Parameren finden sich sonst nicht in Kombination. Ähnlich beborstete Parameren haben die Arten der *Cyphon gracilicornis*-Gruppe (KLAUSNITZER, in Vorbereitung).

Der Bau des Penis erinnert entfernt an die *Cyphon ochraceus*-Gruppe, weicht jedoch deutlich ab, vor allem sehen das Tegmen und die Terminalia völlig anders aus (NYHOLM, 1969).

Die Form des 8./9. Tergit findet im Detail ihresgleichen unter den bisher bekannten Arten der Gattung *Cyphon* nicht. Allein an diesen Skleriten kann *Cyphon masatakai* eindeutig erkannt werden. Eine gewisse Ähnlichkeit könnte man zu *Cyphon formosanus* PIC, 1918 finden (YOSHITOMI, 2002). Bei dieser Art ist das 9. Tergit ähnlich gebaut (8. Tergit, 9. Sternit, Tegmen und Penis weisen jedoch große Unterschiede auf). *Cyphon formosanus* gehört auch in eine andere Artengruppe.

Herrn Prof. Ernst HEISS, Innsbruck, danke ich sehr herzlich dafür, daß er von seinen Reisen immer wieder Scirtidae für meine Sammlung mitgebracht hat, darunter auch das dieser Arbeit zu Grunde liegende Exemplar.

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Additional Notes on the Psephenidae (Coleoptera) from the Asian Region, II

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Abstract A new species, *Schinostethus masatakai* is described from Myanmar. In addition, *Dicranopselaphus malickyi* LEE et YANG, and *Schinostethus* (*Sundodrupeus*) *notatithorax* (PIC) are newly recorded from Myanmar, and new records are given for six other species.

The recent collection of the psephenid beetles preserved in the Natural History Museum in Vienna is shown as a list in which all the known Asian specimens have been identified by us. In the identified ones, a new species and two species of new locality records are found from Myanmar. All the specimens listed here will be deposited in the Natural History Museum, Vienna.

This brief paper is dedicated to Prof. Dr. M. SATÔ in commemoration of his retirement.

The following acronyms are used in the present paper: WP = maximum width of pronotum; LP = length of pronotum at middle; WE = maximum width of elytra; LE = length of elytra.

Dicranopselaphus malickyi LEE et YANG

Dicranopselaphus malickyi LEE et YANG, 1996, Ent. scand., 27: 192.

Material examined. 13♂♂, 6♀♀: "MYANMAR: San State (MBS 81) ca. 35 km N Aungban 20°55.20′N 96°33.60′E 31.5.–8.6.2002, ca. 1320 m"; 2♂♂, 1♀: "MYANMAR: Sagaing Division Chatthin WS, ca. 200 m 1 km W Shan Myaung Camp 23°32.263′N 95°38.167′E 15.–20.6.2002 (MBS 87)".

Note. This species is newly recorded to the fauna of Myanmar in the present paper.

Distribution. Thailand, Myanmar (new record).

Dicranopselaphus multimaculatus (PIC)

Ectopria multimaculatus PIC, 1934, J. fed. Malay. Sts. Mus., **17**: 564.
Dicranopselaphus multimaculatus: LEE & YANG, 1996, Ent. scand., **27**: 180.

Material examined. 1♂: "E–MALAYSIA: Sabah (2a) Crocker Range NP env. Gg. Emas Hi. Res. 1500–1700 m, 6.–18.6.1996 / Lower floor of forest vegetation Beating of undergrowth".

Distribution. Malaysia, Indonesia (Kalimantan).

Dicranopselaphus sabahensis LEE et YANG

Dicranopselaphus sabahensis LEE et YANG, 1996, Ent. scand., **27**: 177.

Material examined. 1♂, 1♀: "E–MALAYSIA: Sabah (2a) Crocker Range NP env. Gg. Emas Hi. Res. 1500–1700 m, 6.–18.6.1996 / Lower floor of forest vegetation Beating of undergrowth".

Distribution. East Malaysia (Sabah).

Homoeogenus sp.

Material examined. 1♀: "MYANMAR: Sagaing Division Chatthin WS, ca. 200 m 1 km W San Myaung Camp 23°32.263′N 95°38.167′E 15.–20.6.2002 (MBS 87)".

Notes. The specimen recorded above may represent a new species. However, the generic distribution hitherto known is confined to Laos, China, and Taiwan, and besides, we have not seen males. We therefore refrain from describing it as a new species.

Schinostethus (s. str.) *nigricornis* WATERHOUSE

Schinostethus nigricornis WATERHOUSE, 1880, Cist. ent., **2**: 564.
Drupeus indicus PIC, 1916, Mél. exot.- ent., Moulins, (20): 3.
Grammeubria diversipes PIC, 1923, Mél. exot.- ent., Moulins, (40): 10.

Material examined. 1♂: "NEPAL: Sankhua Sabha Dist. Kandbari-Bhotebas 1000–1500 m, 5.6.1988. leg. Probst".

Distribution. India, Nepal, Burma, Bhutan, Laos, Thailand, Vietnam, Malaysia, China.

Schinostethus (*Sundodrupeus*) *flabellatus* LEE, YANG et BROWN

Schinostethus flabellatus LEE, YANG et BROWN, 1993, Ann. ent. Soc. Amer., **86**: 688.

Material examined. 1♂: "W. Malaysia – Kelantan: 30 km EN of Tanah Rata mt 800 17–19.IV.1999 Leg. A. Ballerio".

Distribution. Thailand, West Malaysia.

Schinostethus (*Sundodrupeus*) *notatithorax* (PIC)

Drupeus notatithorax PIC, 1923, Mél. exot.-ent., Moulins, (40): 12.
Drupeus notatithorax, var. *theresae* PIC, 1944, Échange, **13** :1.
Schinostethus (*Sundodrupeus*) *notatithorax*: LEE *et al.*, 1998, Water Beetles of China, **2**: 316.

Material examined. 2♂♂: "MYANMAR: Shan state env. Inle Lake, 14.5.1999 10km S Nyaungshwe, ca. 1100 m 20°34.617′N 96°57.851′E leg. Schillhammer & Schuh (40)".

Note. The present species is a new record from Myanmar.

Distribution. Vietnam, Laos, Thailand, Myanmar (new record).

Schinostethus (*Sundodrupeus*) *masatakai* sp. nov.

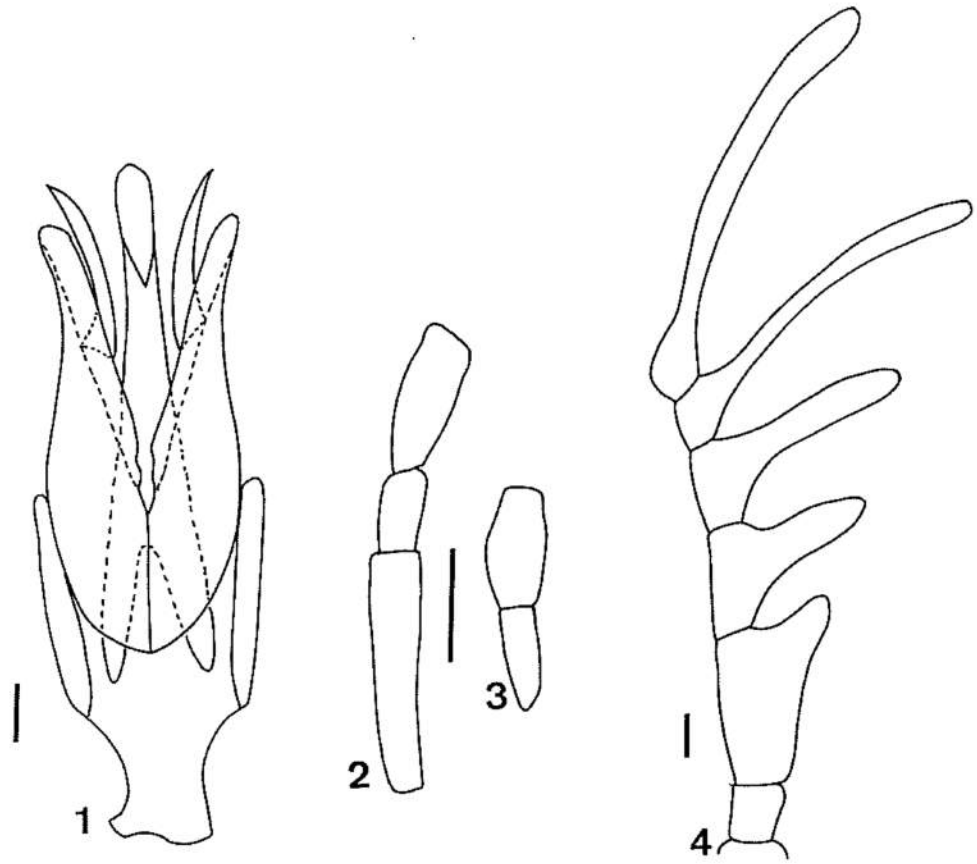
(Figs. 1–4)

Male. Length 3.2 mm, width 2.2 mm. Coloration blackish brown, but prothorax (including pronotum, prosternum, and hypomeron) yellowish brown, except for median longitudinal black stripe on pronotum. Antennae flabellate (Fig. 4), relative lengths of rami of antennal segments 3–7 about 0.17 : 0.31 : 0.44 : 0.81 : 1. Maxillary palpus slender (Fig. 2), terminal segment apically dilated, with truncate apex, relative lengths of segments 2–4 about 3.0 : 1 : 1.8. Labial palpus (Fig. 3) small, about 0.47 times as long as maxillary palpus; terminal segment narrowed near apex, with truncate apex; relative lengths of segments 2–3 about 1 : 1.3. WP/LP = 1.30. LE/WE = 1.10. WP/WE = 0.78.

Aedeagus (Fig. 1): 3.0 times as long as wide. Penis 0.7 times as long as total length of aedeagus, gradually and apically tapering, with rounded apex. Parameres apically tapering, with rounded apex; sides constricted at the middle; medio-apical processes slender, moderately curved, and ventrally articulated with parameres. Basal piece 0.6 times as long as total length of aedeagus and distinctly separate.

Holotype. ♂: "MYANMAR: Kachin State ca. 12 km S Putao, 2.6.1999 W Mularshidi vill., 500–550 m 27°14.98′N 97°24.40′E leg. Schillhammer & Schuh (61)".

Notes. This new species is closely related to *S. laosensis* LEE *et al.* (1998), but differs from the latter by the shorter antennomere 5 and the ventral articulation of medio-apical processes with parameres.



Figs. 1–4. *Schinostethus* (*Sundodrupeus*) *masatakai* sp. nov. —— 1, Aedeagus; 2, maxillary palpus; 3, labial palpus; 4, antennal segments 1–7. Scale = 1.0 mm.

Etymology. The specific name of the present species is dedicated to Prof. Dr. Masataka SATÔ in honor of his great contribution to the taxonomy of aquatic beetles.

Jaechanax insignis (FAIRMAIRE)

Eubrianax insignis FAIRMAIRE, 1904, Mission Pavie Indo-chine, **3**: 87.
Jaechanax insignis: LEE, SATÔ & YANG, 2000, Elytra, Tokyo, **28**: 126.

Material examined. 1♂: "MYANMAR: Kachin State ca. 12 km S Putao, 31.5. 1999 W Mularshidi vill., 500–550 m 27°15.13´N 97°24.95´E leg. Schillhammer & Schuh (60)".

Distribution. Vietnam, Laos, Myanmar.

Reference

LEE, C.-F., M. A. JÄCH & P.-S. YANG, 1998. Psephenidae: II, Synopsis of *Schinostethus* WATERHOUSE, with description of 14 new species. *In* JÄCH, M. A., & JI, L. (eds.), *Water Beetles of China*, **2**: 303–326 [371 pp.]. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Wien.

Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 243–245, May 25, 2003

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

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Abstract A new species of the elaterid beetle, *Procraerus* (*Agaripenthes*) *satoi*, is described from Okinawa-hontô Island of the Ryukyu Islands, Japan. It is related to *P.* (*A.*) *tsutsuii* from Nakano-shima Island, but is different in the configuration of the antennae.

In the present paper, I am going to describe a new species of *Procraerus* from Okinawa-hontô Island of the Ryukyu Islands. The holotype to be desiginated in this paper is preserved in the collection of the National Science Museum (Nat. Hist.), Tokyo.

It is my pleasure to dedicate this short report to Professor Dr. Masataka SATÔ in commemoration of his retirement from the Graduate School of Nagoya Women's University.

Before going further, I wish to express my sincere gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his kindly reading the manuscript and giving me various suggestions.

Procraerus (*Agaripenthes*) *satoi* sp. nov.

[Elaterinae, Megapenthini]

[Japanese name: Satô-hosoki-kometsuki]

(Fig.1)

Male. Length 3.8 mm, width about 0.8 mm. Body small and almost parallel-sided; surface moderately shining, yellowish brown except for head, pronotum (areas of anterior and posterior margins including posterior angles more or less pale yellowish brown) blackish brown with sutural margins of elytra slightly darker; antennae and legs yellowish brown; vestiture pale yellow and semidecumbent.

Head weakly convex between eyes and almost flattened on subvertical portion between antennae, and bearing a shallow median longitudinal channel on vertex; surface coarsely and somewhat rugosely punctate, each puncture seemingly umbilical; clypeal margin rounded and weakly depressed at middle; eyes large and prominent. Antenna elongate, extending beyond posterior angle of pronotum at least by apical segment; basal segment robust and subcylindrical; 2nd small and subglobose, a little longer than its breadth; 3rd subtriangular and about 1.2 times as long as 2nd, 4th

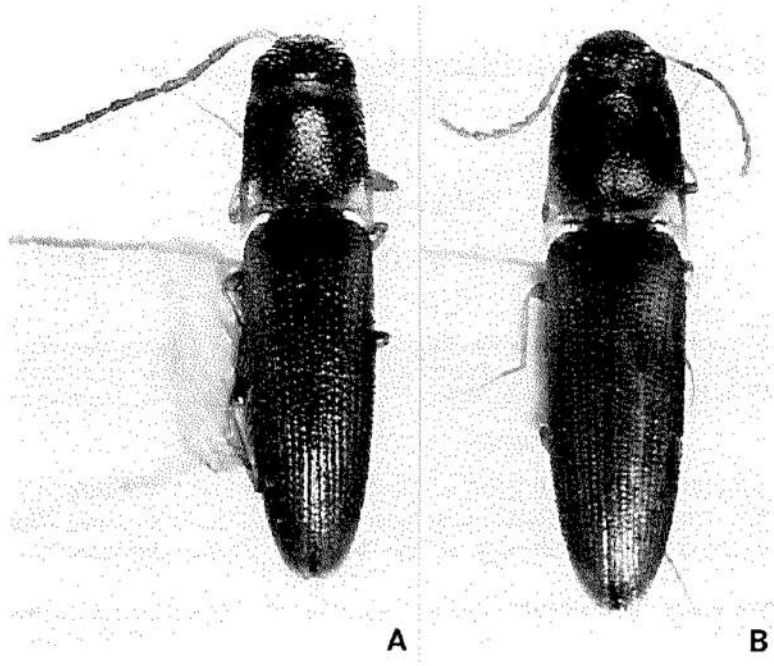

Fig. 1. *Procraerus* (*Agaripenthes*) *satoi* sp. nov.; A, holotype (male); B, paratype (female).

about twice as long as 3rd; from 4th to 10th rather weakly serrate, each outer surface bearing a shallow median longitudinal ridge.

Pronotum trapezoidal, longer than its basal breadth, widest across base, with sides slightly arched just before posterior angles, thence gradually convergent towards anterior angles; disc normally convex, without median longitudinal channel or smooth line, moderately densely and evenly punctate and more or less shagreened among the surface of punctures; posterior angles projected posteriad and pointed apically, each with a distinct carina above. Scutellum lingulate and obtusely pointed apically; prosternal process weakly excavated just behind procoxae and extending posteriad, with apical portion obliquely truncated. Striae on elytra well defined and deeply punctate; intervals weakly elevated, irregularly and transversely rugose.

Female. Length 5 mm. Very similar to male, but the body is larger and robuster, the antennae shorter, not attaining to the posterior angles of pronotum.

Holotype: ♂, Yona in Kunigami-son, 27–IV–1996, H. ÔHIRA leg. Paratype:1 ♀, same data as for the holotype.

Distribution. Okinawa-hontô Island of the Ryukyu Islands, Japan.

This new species is closely allied to *P.* (*A.*) *tsutsuii* NAKANE et KISHII, 1955 from Nakano-shima Island of the Tokara Group of the Ryukyu Islands, but can be distinguished from the latter by the robuster body, more clearly serrate antennae from 4th to 10th segments, and deeper striae and rugoser intervals of elytra.

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Notes on the Genus *Luciola* (Coleoptera, Lampyridae, Luciolinae) of Taiwan

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Abstract Two new species of *Luciola*, *L. trilucida* JENG et LAI, sp. nov. and *L. satoi* JENG et YANG, sp. nov., are described from Taiwan; *Luciola curtithorax* PIC and *L. terminalis* OLIVIER are newly recorded. *Luciola praeusta* KIESENWETTER, instead of *L. gorhami* RITSEMA, is regarded as a valid name. An updated name list of *Luciola* species from Taiwan is provided.

Introduction

The genus *Luciola* LAPORTE (1833) is the most diverse group of the Lampyridae and has over 250 species known from the Old World, Australia and the Pacific (MCDERMOTT, 1964, 1966). Adults are typically nocturnal and many, if not most, of them flash in both sexes. Females of some species have shortened or rudimentary elytra and have lost their hind wings (*e.g.*, subgenera *Hotaria* and *Bourgeoisia*, and the *Luciola filiformis* group) (BALLANTYNE, 1968, 1987; OHBA, 1989; NAKANE, 1991; CHEN, 1999). Larvae of most species are terrestrial but a few are aquatic (OKADA, 1928; BERTRAND, 1972; OHBA, 1988; OHBA *et al.*, 1994; CHANG, 1994; HO & JIANG, 1997; HO *et al.*, 1998; CHEN, 1999; JENG *et al.*, 2003). The genus is so diverse morphologically and ecologically that several attempts to subdivide it have been made in the last few decades. MCDERMOTT (1966) regarded *Photuroluciola* PIC (1931), *Hotaria* YUASA (1937) and *Pygoluciola* WITTMER (1939) as subgenera of *Luciola* and synonymized *Atyphella* OLLIFF (1889) with *Luciola*. BALLANTYNE (1968) established the subgenus *Pygatyphella*, and later she made a review on the morphology, taxonomy and behavior of the Luciolinae (BALLANTYNE,

1987). Meanwhile, BALLANTYNE and MCLEAN (1987) improved the key to the genera of the Luciolinae and the subgenera of *Luciola*. SUZUKI (1997) built a molecular tree based on partial sequence of mitochondrial 16S rDNA of selected Japanese lampyrids, and showed that *Luciola* is not monophyletic. BRANHAM and WENZEL (2001) obtained similar result in their species tree. BALLANTYNE and LAMBKIN (2001) made cladistic analyses of the Luciolinae; their result supported the valid generic status of *Atyphella*, while the status of *Pygoluciola* and *Pygatyphella* was not certain before a further analysis on a wider range of taxa is made. The true range and subdivisions of *Luciola* still need a major revision (BALLANTYNE & LAMBKIN, 2001).

Eleven species of *Luciola* have been recorded from Taiwan (LAI *et al.*, 1998) but some of the records are doubtful (JENG *et al.*, 1999) and some are junior synonyms of the others (JENG *et al.*, 2003). Excluding these species and names from the original name list, eight species are confirmed for Taiwan. On the other hand, several undescribed and unrecorded species have been found in the last decade. We are going to deal with these species and some nomenclatural problems in the present paper.

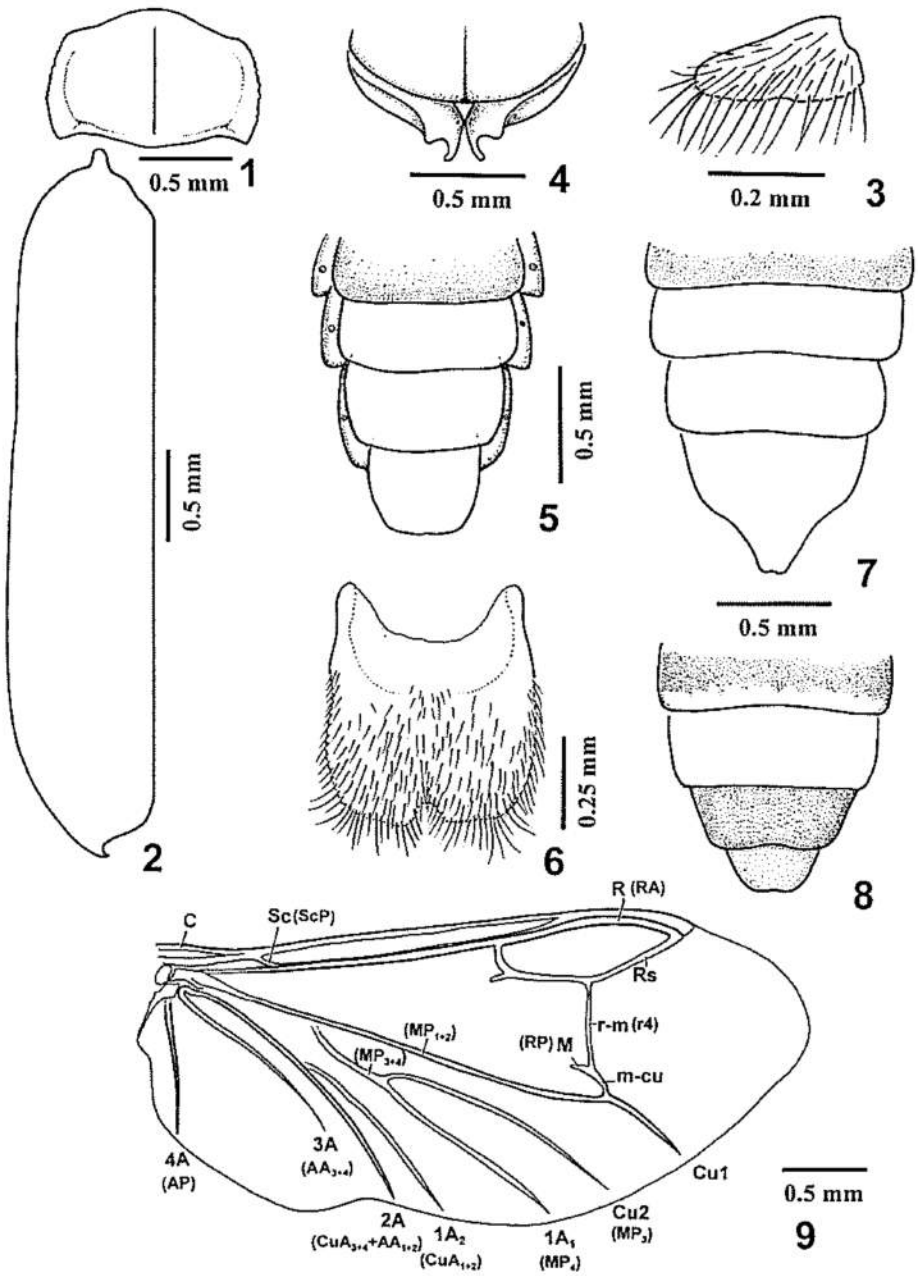
Material and Methods

Taiwanese material was collected by the authors and their colleagues and mainly kept as alcoholic specimens by the first author (JENG). Holotypes were mounted on cardboard. Male genitalia were dissected for examination and illustrating and then glued on the original cardboard beside the specimens or kept in the vials with alcoholic specimens. Measurements are identical to those of JENG *et al.* (1998). Nomenclature of hind wing venation is based on the system proposed by FORBES (1922) and modified by PONOMARENKO (1972), and on the recently introduced system by KUKALOVÁ-PECK and LAWRENCE's (1993) (in parentheses). The abbreviations "BL" and "BW" are body length and width, respectively; the term "ventrite" is used for visible abdominal sterna; "pygidium" is the last abdominal tergum (T8); S8 (true sternum VIII) could be barely seen only if dissected out and soaked with potassium hydroxide (KOH) solution, so we do not use V7 to represent it; "aedeagal sheath" is composed of the terga 9 and 10 (T9+10) and sternum IX (S9). The symbol "/" in the list of material examined indicates separate labels; a name following the symbol "=" is a junior synonym of the name ahead. Holotypes will be deposited in the National Museum of Natural Science (NMNS), Taichung, Taiwan; paratypes will be in the Laboratory of Entomology, Ehime University, Matsuyama, Japan (EU), NMNS and JENG.

Luciola trilucida JENG et LAI, sp. nov.

(Figs. 1–11)

Type locality: Bashanshan Forest Recreation Area, Guguan, 900 m, Taichung Co., central Taiwan.



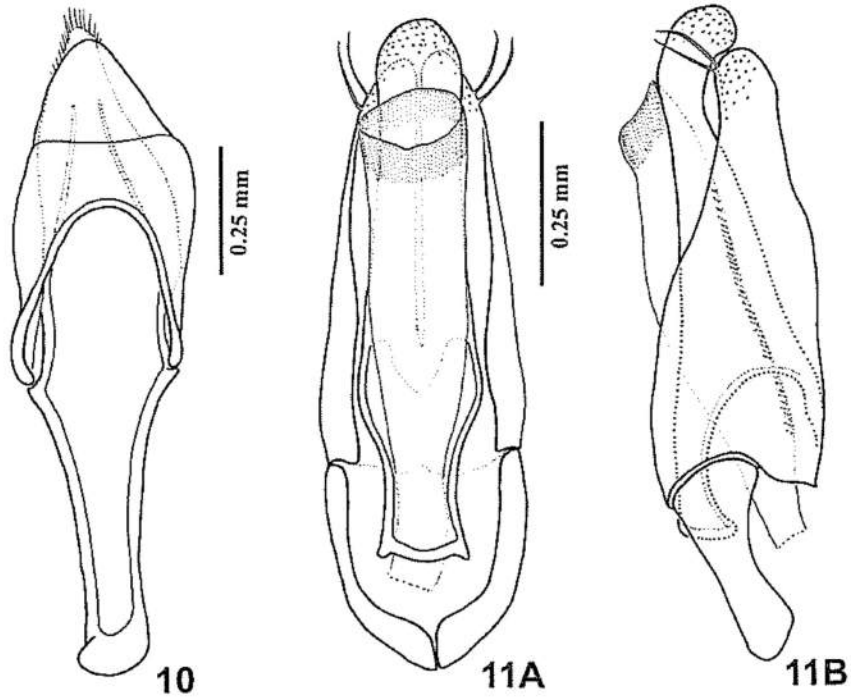
Figs. 1–9. *Luciola trilucida* JENG et LAI, sp. nov., all but 8 are of male. —— 1, Pronotum; 2, left elytron; 3, apical labial palpomere; 4, metasternal apex and metacoxae; 5, last four abdominal terga and pleurites; 6, pygidium; 7, last four abdominal ventrites; 8, ditto, female; 9, hind wing (see text).

Male. BL: 3.6–5.3 mm; BW: 1.2–1.8 mm; small species. Elongate and subparallel. Coloration dark brown to black, with prothorax orange or sandy yellow; abdominal terga 1–5 (T1–5) pale brown; T6–8 and ventrites 4–6 (Figs. 5, 7) with cuticle transparent, but look waxy white because of luminous organs inside.

Vertex concave between eyes. Eyes large, distance across eyes about 5.5 times as broad as narrowest width between eyes. Antennae typically filiform, with 11 antennomeres. Labrum moderately sclerotized, twice as broad as long. Apical maxillary palpomere enlarged and plump; apical labial palpomere (Fig. 3) depressed and not toothed on inner margin.

Pronotum (Fig. 1) transverse, broadly rounded apically and laterally, broadest at basal 1/2 or 1/3, with basal margin nearly straight. Surface coarsely and densely punctate, with a central longitudinal sulcus from apex to basal 1/4. Hind angles about 90° and very weakly projecting if at all. Scutellum lingulate. Elytra (Fig. 2) elongate and subparallel, finely and densely punctate, without significant costae; apex with a small but sharp angle. Hind wing as shown in Fig. 9. Metasternum (Fig. 4) with central longitudinal sulcus in apical 1/2, very weakly notched at central apex.

Abdominal terga except T8 not visible ventrally; T8 (Fig. 6) subquadrate, with a central notch, each apicolateral side with 4–6 thick and black setae; basal angles of T8 not much prolonged; S8 totally membranous. Ventrites 1–6 with apices straight, V4–6 (Fig. 7) bearing luminous organs; V6 sinuate apicolaterally and with broad



Figs. 10–11. *Luciola trilucida* JENG et LAI, sp. nov., male. —— 10, Aedeagal sheath; 11, genitalia, ventral (A) and lateral (B) views.

central projection.

Aedeagal sheath (Fig. 10) about 1.2–1.3 mm long. T9 and T10 recognizable individually, T9 slightly asymmetrical in basal length; T10 weakly sclerotized and subtriangular. S9 asymmetrical at apical 1/2 and weakly elevated at apex and base. Male genitalia (Fig. 11) about 0.8–1.0 mm long, elongate. Median lobe with ventral central groove from base nearly to apex, and short elevation apically; cylindrical ejaculatory duct along the groove. Parameres on dorsal and lateral sides of median lobe digitiform, with apices reaching base of elevated apex of median lobe; dorsal inner margins of parameres very close to each other, while ventral margins are moderately separated. Basal piece symmetrical and broadly rounded apically.

Female. BL: 4.1–5.5 mm; BW: 1.5–2.3 mm. Abdominal V6–7 sandy yellow. Vertex not concave between eyes. Eyes smaller than those of male, distance across eyes about four times width of frons. Elytra without apical angles. Luminous organ (Fig. 8) on abdominal V5 and apical 1/4 of V4; V6 straight apically; V7 broadly rounded apically, slightly emarginate at central apex.

Type series. Holotype: ♂, "Taiwan: Taichung Co., Guguan, 900 m, 29–VI–2002, M. L. JENG leg." Paratypes: 5♂, 2♀ with same data as holotype; 1♂, Nantou Co., Lushan, 1,300 m, VI–1997, S. K. CHEN; 2♂, 4♀, Kaohsiung Co., Tengji, 1,500 m, 21–VI–2000, M. L. JENG; 1♀, Kaohsiung Co., Chuyunshan logging track, 1,300 m, 22–VI–2000, M. L. JENG; 1♂, 2♀, Hwalian Co., Wanrong logging track, 1,700 m, 1–VII–1998, M. L. JENG.

Diagnosis. This species is close to *L. kuroiwae* MATSUMURA from the Southwestern Islands (Amami-Ôshima, Okinawa, Kumejima) of Japan. Both species possess three segments of luminous organs in male. Males of *L. kuroiwae* have their elytra simple apically and not angulate, and abdominal V7 is curved laterally in stronger way; parameres of male genitalia are only as long as 1/2 length of median lobe. Scutellum of *L. kuroiwae* is concolorous with pronotum but smoky brown in *L. trilucida.*

Distribution. Central and southern Taiwan at about 500–2,000 m in elevation.

Flight period. Mainly in summer (June to July).

Ecological remarks. Based on observation at the type locality, adults begin to fly at about 15 minutes after sunset. They fly in mass under the forest and reach peak numbers after about 20–25 minutes and then come to an end in about 5 minutes. The flight activity pattern quite resembles that of *L. kuroiwae* (see OHBA, 1993). Males emit light through their three segmented luminous organs in regular pulses when flying.

Etymology. The specific name *tri-* (Latin, three) and *lucida* (Latin, lucid) refers to the characteristic three-segmented luminous organs of male.

Luciola satoi JENG et YANG, sp. nov.

(Figs. 12–21)

Type locality. Sumakusu, 1,600 m, Hsinchu Co., Taiwan.

Male. BL: 6.8–8.0 mm; BW: 2.5–3.5 mm; medium-sized species. Body elongate and subparallel-sided. Coloration dark brown to black; prothorax rose-coloured (pinkish red) except for central apex dark brown and margins yellowish brown; elytra black with narrow yellow margins; abdominal T1–6 pale brown; V1–4 brown or smoky brown, V4 mixed with milky white in apical 1/2 in various degrees; T6–8 and ventrites 5–6 with cuticle transparent, but looks waxy milky white due to luminous organs inside, except on very narrow apical margins

Vertex slightly concave between eyes. Distance across eyes about 4.8 times width of frons. Labrum subrectangular. Apical labial palpomere (Fig. 14) usually with three sharp teeth on inner margin, varying to 2–4 teeth on left palpomere.

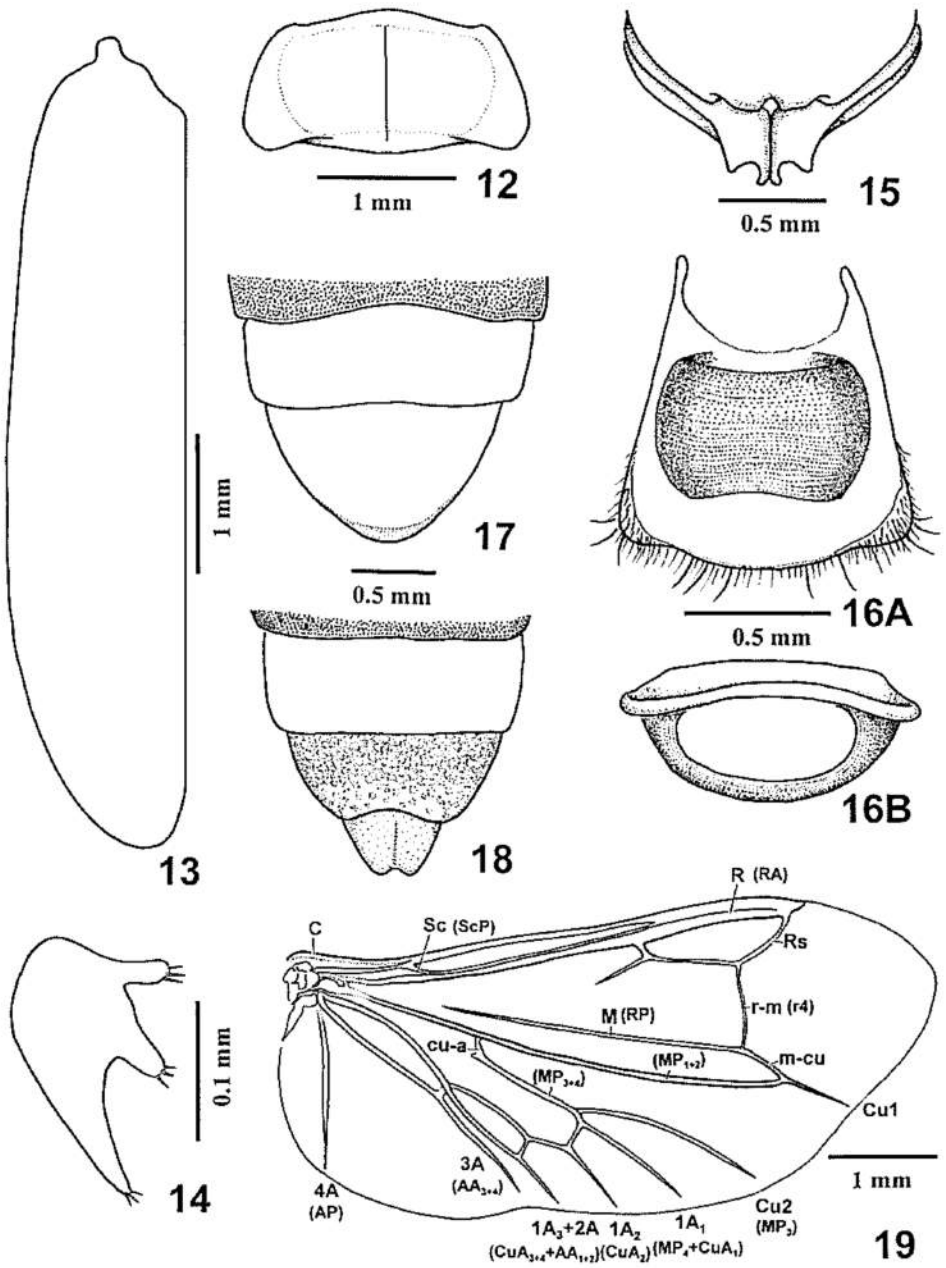
Pronotum (Fig. 12) subtrapezoidal, slightly and broadly projecting apically, broadest near base; hind angles dull and slightly projecting outwards; basal margin incurved near hind angles. Surface of pronotum distinctly convex, finely and densely punctate and pubescent; central sulcus from apex to basal 1/4. Scutellum rhombus-like. Elytra (Fig. 13) elongate and subparallel-sided, finely and densely punctate, without significant striae; gradually separated from each other along inner margin from apical 1/3 towards apices; apex simple. Hind wing as shown in Fig. 19. Metasternum (Fig. 15) notched in central apex and immediately in front of metacoxae; central sulcus almost complete.

Abdominal apex reaching apical 1/3 to 1/5 of elytra; individuals with short abdomen with their V1 very small and barely visible. All abdominal terga not visible ventrally except T8 barely visible; T8 (Fig. 16) subpentagonal, or weakly trisinuate apically with central lobe much longer and broader, reaching apex of V7; basolateral projections moderate; S8 totally membranous; inner space of segment 8 with thick layers of muscles forming a ring embracing aedeagal sheath (Fig. 16 B). Ventrites 2–6 with apices straight or slightly and broadly emarginate; V6–7 (Fig. 17) bearing luminous organs; V7 broadly rounded apically.

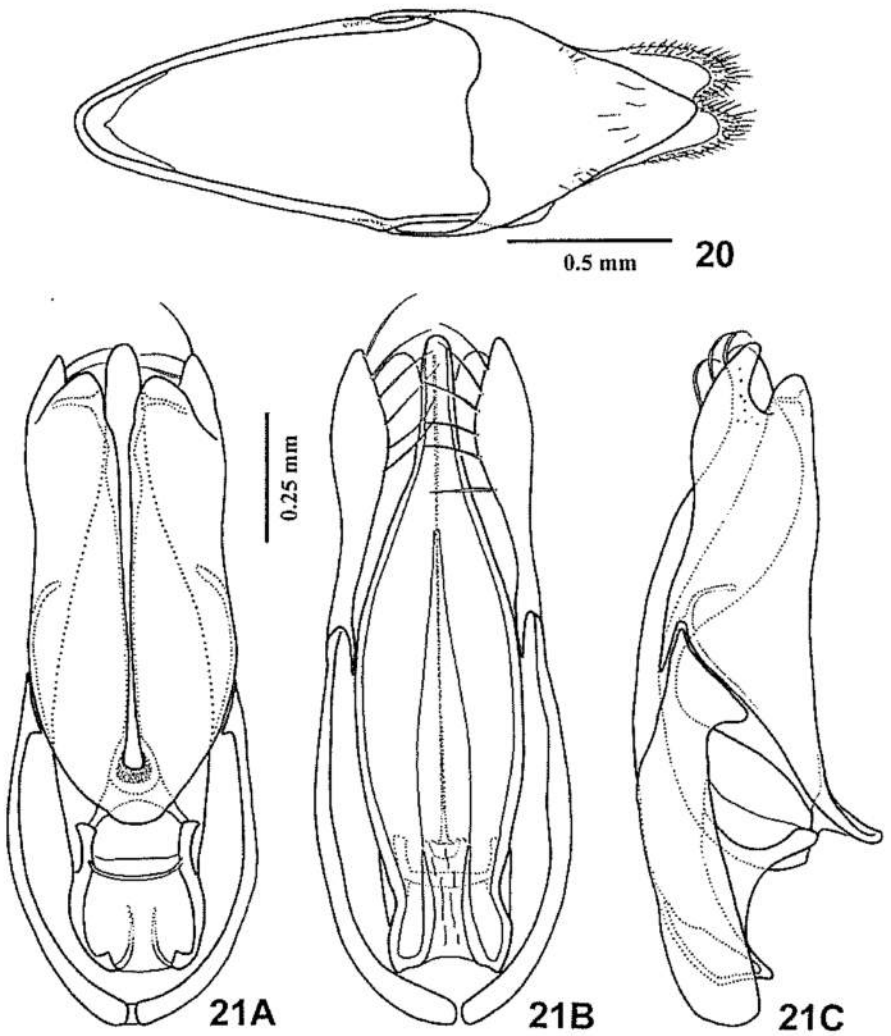
Aedeagal sheath (Fig. 20) about 1.9–2.0 mm long. T9+10 scarcely recognizable individually, T9 slightly asymmetrical at base; T10 subtriangular and nearly reaching apex of S9, which is quite broad, slightly asymmetrical in apical 1/2, bifurcate apically and tapering basally. Male genitalia (Fig. 21) about 1.3–1.4 mm long, median lobe on ventral side of male genitalia broad, widest at basal 1/2 and gradually narrowed towards apex, depressed and curved from lateral view; ventral side of median lobe open and concave to form a broad groove; base well sclerotized and forming a pair of elevated hooks. Parameres on dorsal and lateral sides of median lobe and as long as the latter; dorsal inner margins narrowly separated from each other, emerged at base and forming an elevated plate; parameres with lateral sides broad, bifurcate at apex, dorsal lobe dull apically; ventral lobe larger and longer, towards median lobe ventrally, with six long hairs along apical ventral margin. Basal piece of genitalia two-pieced, broadly rounded apically.

Female. BL: 6.5–8.0 mm; BW: 2.3–3.5 mm. Abdominal coloration of V1–4 uniformly brown; V5 (Fig. 18) bearing luminous organ and milky white; V6–7 sandy yellow. Distance across eyes 5.1 times broader than frons; V6 broadly and slightly emarginate apically; V7 semi-elliptical or weakly notched apically.

Type series. Holotype ♂, "Taiwan: Hsinchu Co., Sumakusu, 31–V–2000, 1,600m, M. L. JENG & J. LAI leg." Paratypes: 11♂, 4♀, with same data as holotype;



Figs. 12–19. *Luciola satoi* JENG et YANG, sp. nov., all but 18 are of male. ——12, Pronotum; 13, left elytron; 14, apical labial palpomere; 15, metasternal apex and metacoxae; 16, pygidium, ventral (A) and caudal (B) views; 17, abdominal ventrites 4–6; 18, abdominal ventrites 4–7, female; 19, hind wing (see text).



Figs. 20–21. *Luciola satoi* JENG et YANG, sp. nov., male. —— 20, Aedeagal sheath; 21, genitalia, dorsal (A), ventral (B) and lateral (C) views.

10♂, 4 ♀, Taiwan: Taoyuan Co., Fufushan , 25–V–2000, 1,450 m, C. L. LI; 5♂, Kaohsiung Co., Tengji, 1,500 m, 25–V–1997, C. C. CHANG leg.

Additional material examined. Taiwan: 2♂, 2♀, Hsinchu Co., Dalu logging track, 5–VI–1996, C. L. LI; 1♂, 1♀, Nantou Co., Hueisun Forest, 600 m, 22–IV–1996, J. LAI; 1♂, 1♀, Nantou Co., Lushan, 1,300 m, 17–V–1996, M. F. CHEN; 1♀, Hwalian Co., Nanan, 500 m, 27–V–1996, C. L. LI.

Diagnosis. This species is similar to *L. roseocollis* PIC from China (Gansu Prov.) but distinguishable from the latter by its smaller size (6.5–8 vs. 8–9 mm), dark

brown metasternum, not rugulose sculpture on elytra, and broadly rounded last abdominal ventrite of male. *Luciola kagiana* MATSUMURA resembles *L. satoi* in coloration but the former is much larger (10.5–15.0 mm vs. 6.5–8.0 mm).

Distribution. Widely distributed in Taiwan (about 500–1,500 m).

Flight Period. Late spring to summer (April to June).

Etymology. We are happy to dedicate the species to Dr. M. SATÔ in honour of his great contribution to the coleopterology.

Luciola curtithorax PIC

Luciola curtithorax PIC, 1928, 49. —— MCDERMOTT, 1966, 102 (checklist).

Type locality. Hoa-Binh, northern Vietnam.

Type material examined. Holotype ♂, "Hoa Binh/ type/ curtithorax n sp (hand written)" (in the collection of Muséum national d'Histoire naturelle, Paris, MNHN).

Additional material examined. [Taiwan]: Taipei City; 5 from Mucha, VIII–1996, J. LAI; Taipei Co.: 2 from Hwangshi, 14–VI–1996, M. F. CHEN; 3 from Shijr, VII–2002, H. Y. LI; 5 from Matsao, 6–VIII–2001, M. L. JENG; 3 from Sanji, 5–VI–1996, M. F. CHEN; 10 from Wulai, 5–V–1997, J. LAI; 20 from Wulai, 21–V–1999, M. L. JENG; 4 from Gwangshing, 26–VII–1997, C. C. CHANG; 2 from Fushan, 3–V–1996, M. F. CHEN; 8 from Shenkeng, 2–VI–1996, M. F. CHEN; 2 from Shiding, 11–VI–1996, M. F. CHEN; Hsinchu Co.: 1 from Dashanbei, 9–V–1998, M. L. JENG; 12 from Dalu logging tracking, 3–VI–1996, M. F. CHEN; Nantou Co.: 2 from Shito, 3–V–1996, J. LAI; Kaohsiung Co., 3 from Jiashan, 26–IV–1997, S. K. CHEN; Ilan Co.: 2 from 19–V–1996, J. LAI; 4 from Songluo, 6–VI–2000, J. S. DONG.

Remarks. This species has been known in Taiwan for several years. Males of *L. curtithorax* closely resemble those of *L. filiformis* but have more transverse pronotum and larger head. Females of *L. curtithorax* are alate. Colour of scutellum, once used as a diagnostic character to separate these two species (CHEN, 1999), is variable in *L. filiformis*.

Distribution. Vietnam and Taiwan. This species is very common in Taiwan (below 1,500 m).

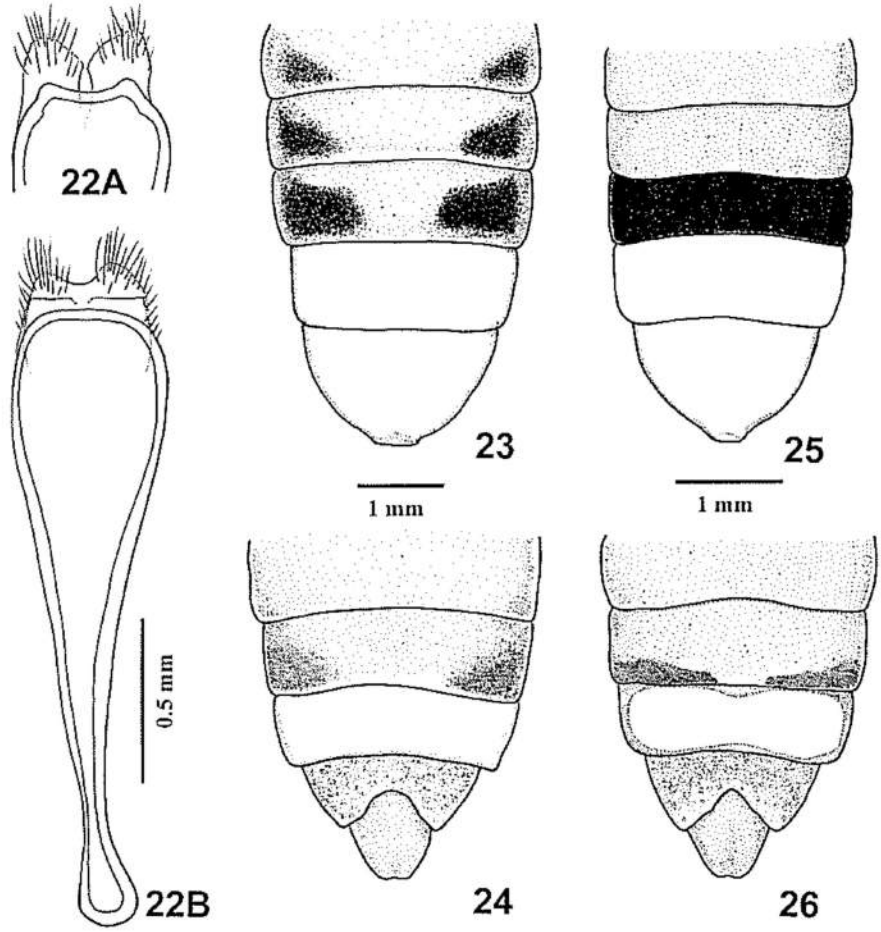
Flight period (in Taiwan). Late spring to summer (April to August).

Luciola terminalis OLIVIER

(Figs. 22 A, 23, 24, 27)

Luciola terminalis OLIVIER, 1883, 330 (Vietnam); 1891, 602 (Myanmar); 1902, 87 (check list); 1907, 54 (checklist); 1912, 90 (northern Vietnam). —— GORHAM, 1895, 306 (syn. of *L. gorhami*); 1903, 327. —— MCDERMOTT, 1966, 112 (variety of *L. praeusta* KIESENWETTER).

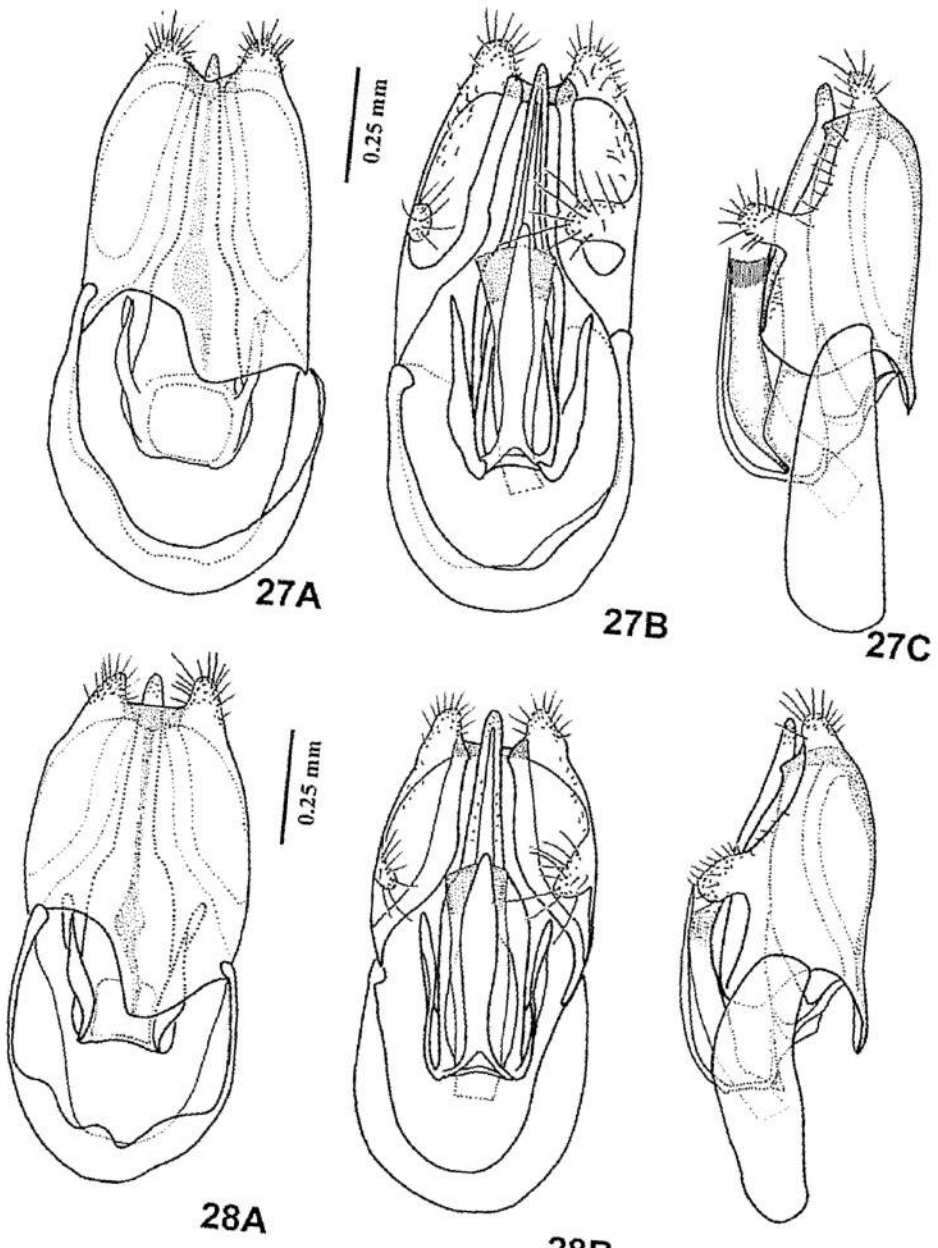
Type material examined. A male syntype was examined: "Type/ La Khone D'Harmand/ *Luciola terminalis* ♂♀ Ern. Oliv." (MNHN).



Figs. 22–26. Comparisons between *Luciola terminalis* OLIVIER and *L. praeusta* KIESENWETTER from Taiwan. —— 22, Sternum of aedeagal sheath, ventral view, *L. terminalis* (A) and *L. praeusta* (B); 23–24, last five abdominal ventrites of *L. terminalis*, male (23) and female (24), in same scale; 25–26, ditto, *L. praeusta*, male (25) and female (26), in same scale.

Additional material examined. [Taiwan]: 2♂, Taipei Co., Hwangshi, 29–IV–1997, M. F. CHEN; 1♂, Taipei Co., Guangshing, 26–VII–1997, M. F. CHEN; 6♂, 1♀, same locality, 27–VII–1997, C. C. CHANG; 1♂, Taoyuan Co., Dashi, 4–IV–1998, Y. J. CHEN; 1♀, same locality, 20–V–1998, Y. J. CHEN.

Remarks. Like the next species, this species belongs to the *L. chinensis* complex. The Taiwanese material matches the description and the type of *L. terminalis* OLIVIER. GORHAM (1895) considered *L. terminalis* synonymous with *L. gorhami* (= *preausta*), and MCDERMOTT (1966) listed *L. terminalis* and *L. gorhami* as junior synonyms of *L. praeusta* KIESENWETTER. The species of this pair are very similar to



Figs. 27–28. Male genitalia of *L. terminalis* OLIVIER (27) and *L. praeusta* KIESENWETTER (28) from Taiwan; dorsal (A), ventral (B) and lateral (C) views.

one another in adults and difficult to distinguish. Externally *Luciola terminalis* is generally larger than *L. praeusta* but the ranges largely overlap; males of the former have black markings on the sides of abdominal ventrites 2–4 or 3–4, while ventrite 4 of the latter is black and sometimes ventrites 2–3 are partially black (Figs. 23 *vs.* 25). Their male genitalia are very similar except some minor differences (Figs. 27 *vs.* 28). Though their body sizes overlap, the sizes of the male genitalia do not: *L. terminalis* has slightly larger male genitalia, even in smaller individuals (1.2–1.3 *vs.* 1.0–1.1 mm). In addition, the sternum of the aedeagal sheath (S9) of *L. terminalis* has larger apical lobes than that of *L. praeusta*, and is more or less anglulate near the apex in *L. terminalis* but broadly rounded in *L. praeusta* (Fig. 22 A *vs.* B). These characters seem stable among different geographic populations of the two species. However, we did not find good diagnostic characters to separate the females of these two species. Generally the markings on the sides of V4 are smoky brown and blurry in *L. terminalis* but dark brown to black and with clear margins in *L. praeusta* (Figs. 24 *vs.* 26). Another evidence of their separation comes from their different larval morphology and phenology. The larva of *L. gorhami* from India shown by METHA (1932) is very similar to that from Taiwan in having a large orange maculation on apical half of the pronotum, while the larva of *L. terminalis* has only two small orange markings at the apicolateral corners (see CHEN, 1999; HO, 2002); adults of *Luciola terminalis* in Taiwan can only be seen in the late spring to the summer, while *L. praeusta* has a much longer flight period (see above and JENG *et al.*, 1999). It seems premature to identify this species as *L. terminalis* until further biological information of both the species is available.

Distribution. Vietnam, Myanmar (= Burma) and Taiwan (under 500 m).

Flight period. In Taiwan the species appears from the late spring to the summer.

Luciola praeusta KIESENWETTER

(Figs. 22 B, 25, 26, 28)

Luciola praeusta KIESENWETTER, 1874, 263. —— MCDERMOTT, 1966, 102 (checklist). —— GANGULY, 1980, 1 (ecology of Indian population).

Luciola affinis GORHAM, 1880, 101 (preoccupied by *L. affinis* RITSEMA).

Luciola gorhami RITSEMA, 1883, 4. —— GORHAM, 1883, 410 (= *L. praeusta* KIESENWETTER); 1895, 306 (Myanmar, = *L. terminalis* OLIVIER); 1903, 327 (= *L. terminalis*). —— OLIVIER, 1902, 79 (checklist); 1907, 52 (checklist); 1912, 90 (a variety of *L. chinensis*); 1913, 270 (valid sp., Taiwan). —— OKADA, 1931, 145 (checklist). —— MIWA, 1931, 102 (checklist). —— METHA, 1932, 101 (life history). —— GANGULY, 1963, 107 (luminescence). —— LAI *et al.*, 1998, 210 (checklist). —— JENG *et al.*, 1999, 77–79 (spatial and temporal distribution). —— CHEN, 1999, 142 (Taiwan). —— HO & SU, 2000, 54 (pygopods of larvae).

Material examined. [Taiwan]: 3♂, 1♀, Taipei Co., Hwangshi, 22–VII–1996, M. F. CHEN; 2♂, Taipei, Yentzuhu, 2–VII–1996, J. LAI; 1♀, Kaohsiung Co., Jiashan, 4–V–1997, S. K. CHEN; 1♂, Kaohsiung Co., Jiashan, 4–V–1997, S. K. CHEN; 1♂,

2♀, Pingtung Co., Mancho, 28–III–1998, J. LAI; 1♂, 2♀, Pingtung Co., Kenting, 10–X–1998, M. L. JENG; 3 ♂, 1♀, Pingtung Co., near Jiopong, III–1999, M. L. JENG; 2♂, 2♀, Pingtung Co., Shihai, 19–VII–2000, M. L. JENG; 3♂, 3♀, Pingtung Co., Nanjenshan, 10–VIII–2000, M. L. JENG; 1♀, Taitung Co, Chenggong, 20–VIII–2000, M. L. JENG; 4♂, 1♀, Taitung Co., Jiben, 20–IV–1998, M. L. JENG.

Remarks. This species belongs to the so-called "*L. chinensis* species-complex" which is characterized by orange coloration with black elytral apices. More than a dozen species with similar appearance were described from Asia, and many of them might be synonymous with the others. Unfortunately, no crucial revision has been made on the species-complex and even worse, the whereabouts of the type of *L. chinensis* (LINNAEUS) is presently unknown if not lost or never existed. Here we deal only with the currently solvable part of the problem before a thorough revision is made.

Luciola gorhami was proposed by RITSEMA (1883) to replace *L. affinis* GORHAM which was preoccupied. GORHAM (1883) synonymized *L. praeusta* KIESENWETTER with *L. gorhami* and argued that the latter is not conspecific with *Luciola vespertina* (FABRICIUS) or *Luciola chinensis* (LINNAEUS). However, there are nomenclatural problems here. *Luciola praeusta* is a senior synonym of *L. gorhami.* GORHAM (1883) stated that KIESENWETTER's *praeusta* was preoccupied by ESCHSCHOLTZ's (1822), which was transferred from *Lampyris* to *Luciola* by GORHAM (1880). Meanwhile he did not refer to the homonymy but used *L. gorhami* as a valid name. However, this homonymy ceased existing later when OLIVIER (1885) transferred ESCHSCHOLTZ's *praeusta* to *Colophotia.* Strangely, OLIVIER (1902, 1907) still listed KIESENWETTER's *praeusta* as a synonym of *L. gorhami* and stated that the former was "preoccupied". MCDERMOTT (1966) reinstated *L. praeusta* KIESEN-WETTER and rendered *P. gorhami* as a junior synonym of it. On the other hand, OLIVIER (1912) regarded *L. gorhami* as a variety (subspecies) of *L. chinensis* or *L. vespertina*, but later he (1913) used *L. gorhami* as a valid name. The latter result was adopted by OKADA (1931), MIWA (1931), LAI *et al.* (1998) and JENG *et al.* (1999) in dealing with the Taiwanese fauna. Though the use of *L. gorhami* is prevailing than that of *L. praeusta*, it does not meet the criteria to reverse the precedence by ICZN (1999, Art. 23.9.1.1). Accordingly *L. praeusta* KIESENWETTER should be used as the valid name.

The type(s) of *L. praeusta* KIESENWETTER was supposedly collected by G. LEWIS from Japan in 1869–1871. This species (= *L. gorhami*) has never been rediscovered from Japan (including the Ryukyus) since then (MATSUMURA, 1918, 1928; OKADA, 1931; KANDA, 1935; NAKANE, 1968; SATÔ, 1978, 1985, 1989; OHBA, 1993, 1996, 1997), but has been reported common in Taiwan by several authors (OLIVIER, 1913; MATSUMURA, 1918, 1928; OKADA, 1931; MIWA, 1931; KANDA, 1935). However, Taiwan was not occupied by Japan until 1895, so that there remains uncertainty about the type locality of *L. praeusta* KIESENWETTER.

Distribution. India, Myanmar and Taiwan (below 500 m in altitude).

Flight period. This species can be seen in Taiwan almost throughout the year, but some seasonal differences are observed among geograohical populations. The main flight period is in the late spring to the summer.

A List of the *Luciola* Species of Taiwan

1. *L. anceyi* OLIVIER, 1891
2. *L. cerata* OLIVIER, 1912
3. *L. curtithorax* PIC, 1928
4. *L. ficta* OLIVIER, 1909
5. *L. filiformis* OLIVIER, 1913
6. *L. kagiana* MATSUMURA, 1928
7. *L. praeusta* KIESENWETTER, 1874
8. *L. satoi* JENG et YANG, sp. nov.
9. *L. substriata* GORHAM, 1880
10. *L. terminalis* OLIVIER, 1883
11. *L. trilucida* JENG et LAI, sp. nov.
12. *L. hydrophila* JENG, LAI et YOUNG, 2003

Doubtful Records, Synonym, and Uncertain Species

13. *L. chinensis* (LINNAEUS, 1767) (incertae sedis)
14. *L. formosana* PIC, 1944 (synonym of *L. substriata*)
15. *L. gorhami* RITSEMA, 1883 (synonym of *L. praeusta*)
16. *L. japonica* (THUNBERG, 1784) (doubtful record)
17. *L. ovalis* (HOPE, 1831) (doubtful record)

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Two New Species of the Lampyrid Genus *Pteroptyx* OLIVIER (Coleoptera, Lampyridae, Luciolinae) from Sulawesi, Central Indonesia, with a List of the Congeneric Species

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Abstract Two new lampyrid beetles of the genus *Pteroptyx* OLIVIER, *P. masatakai* sp. nov. and *P. sulawesiensis* sp. nov. are described and illustrated from Sulawesi Island, Central Indonesia. A list of the congeneric species is given for facilitating future studies.

Introduction

The genus *Pteroptyx* OLIVIER, 1902 belonging to the subfamily Luciolinae are a typical luminescent group of the family Lampyridae, and has hitherto been known to contain 30 species distributed from the Oriental Region to Papua New Guinea including the northeastern part of Australia, mainly Queensland (BALLANTYNE & MCLEAN, 1970; BALLANTYNE, 1987; BALLANTYNE, 2001, etc.). In several important characters, above all in the secondary sexual characters, adult males of the genus are very remarkable. They are mainly characterized by the following points: head not completely covered by pronotum; elytral apices strongly deflexed ventrad in male; distal segments of abdomen variably shaped in male, showing species specificity in a complex manner.

In 1999, through the courtesy of Mr. Minoru YAJIMA, I had an opportunity to examine a series of specimens of the genus, and recognized two new species. In the present paper, I will describe them and illustrate the important taxonomic features mentioned above. These fireflies were sent to Japan by air cargo for showing its mode of life in an exhibition of the Insectarium at the Tama Zoological Garden, Hino-shi, W. Tokyo.

This paper is dedicated to Prof. Dr. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

Materials and Methods

The collecting data of materials are as given under the heading "*Type series*" following the descriptions of the respective new species. For dissection, dried materials were relaxed in hot water, and then, distal segments of abdomen with genitalia

were removed from the body. The metafemora and male genitalia were mounted on a slide glass with glycerol, observed under an optical microscope (OLYMPUS CH-2, max. magnification ×1000), and sketched with the aid of an attached drawing tube. External characters were observed and sketched with a stereoscopic microscope (OLYMPUS SZH10, max. magnification ×140) equipped with a drawing tube.

The abbreviations used herein are as follows: BL — body length, from anterior margin of frons to elytral apices; HW — maximum width of head across eyes; PL — length of pronotum, along the mid-line; PW — maximum width of pronotum; EL — length of elytra along suture; EW — maximum width of elytra; EHW — humeral width of elytra; HTL — length of hind tibiae. The following abbreviations follow BALLANTYNE (1987): LO — light organ; MFC — metathoracic femoral comb; MPP — median posterior projection, 7th sternite; ST 6–7 — 6th to 7th sternites; T 5–8 — 5th to 8th tergites.

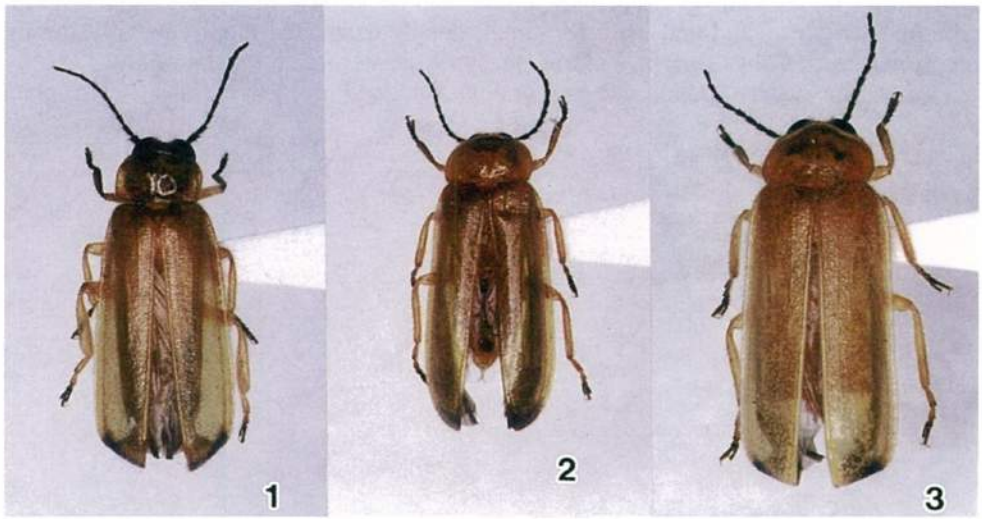
Descriptions

Pteroptyx masatakai KAWASHIMA, sp. nov.

(Figs. 1–2, 4–5, 7–8, 10, 12, 15–18)

M a l e. Head capsule blackish brown, though the clypeo-frontal area is tinged with reddish brown. Antennae almost frosted black, moderately shining in basal three or four segments. Eyes blackish. Labrum reddish yellow. Mandibles shiny, reddish brown, darker towards the bases. Both maxillary and labial palpi frosted blackish. Pronotum yellow, tinged with blackish along anterior margin; disc to basal margin scattered with dark yellowish stained spots. Scutellum pale yellow. Elytra almost pale yellow, becoming blackish at the apices and in deflexed areas. Ventral surface constantly pale yellow, with luminescence organs whitish to creamy yellow. Coxae to femora pale yellow; foretibiae dark brownish, darker towards the apices; mid- and hind-tibiae yellowish brown, also becoming darker towards the apices; fore- and mid-tarsi completely frosted blackish; hind-tarsi almost frosted blackish, only 1st tarsomere being tinged yellowish brown; claws yellowish brown. Body closely covered with pale recumbent pubescence. Antennae, maxillary and labial palpi, tibiae and tarsi more densely covered with blackish brown to blackish minute setae.

Head (Fig. 7) relatively large, a little narrower than the width of pronotum, about 0.77 times as wide as maximum pronotal width, concave on frons to vertex; dorsal surface rather closely punctate. Antennal sockets located at antero-ventral portion of frons, only a little separated from each other, not visible from dorsal side. Eyes (Fig. 7) globular, fairly large and prominent, separated from each other by a width about twice the diameter of an eye in ventral view, a little apart from antennal sockets and bases of mandibles. Antennae (Fig. 4) filiform, relatively long and slender, reaching apical third of the elytra; scape thick and clavate; pedicel short and cylindrical; 1st segment of flagellum remarkably dilated towards the apices; relative length of each segment from scape as follows:— 4.5 : 5 : 10 : 9.5 : 11 : 12 : 11.5 : 12 : 11 : 12 : 12. Labrum small and transverse, slightly dilated apicad, feebly arcuate on front margin; both anterior angles rounded. Fronto-clypeal suture not recognized.



Figs. 1–3. Habitus of *Pteroptyx* spp. —— 1, *P. masatakai* KAWASHIMA, sp. nov., holotype male; 2, *P. masatakai* KAWASHIMA, sp. nov., paratype female; 3, *P. sulawesiensis* KAWASHIMA, sp. nov., holotype male.

Mandibles very small and slender, constantly incurved, not so much pointed, blunt at the apices.

Pronotum (Fig. 7) relatively short, rectangular or subquadrate, a little broader than head and a little narrower than humeral width of elytra, widest just before the middle; anterior margin feebly bisinuate and produced anteriad at the centre, narrowly bordered; both sides weakly reflexed, arcuate, not angulate; basal margin almost straight, very feebly bisinuate, narrowly bordered, transversely concave on both sides along basal margin; dorsal surface relatively smooth and very closely punctate, the punctures being relatively small; medio-longitudinal furrow shallow, running throughout along mid-line. PW/PL 1.63–1.64; PW/HW 1.35–1.37.

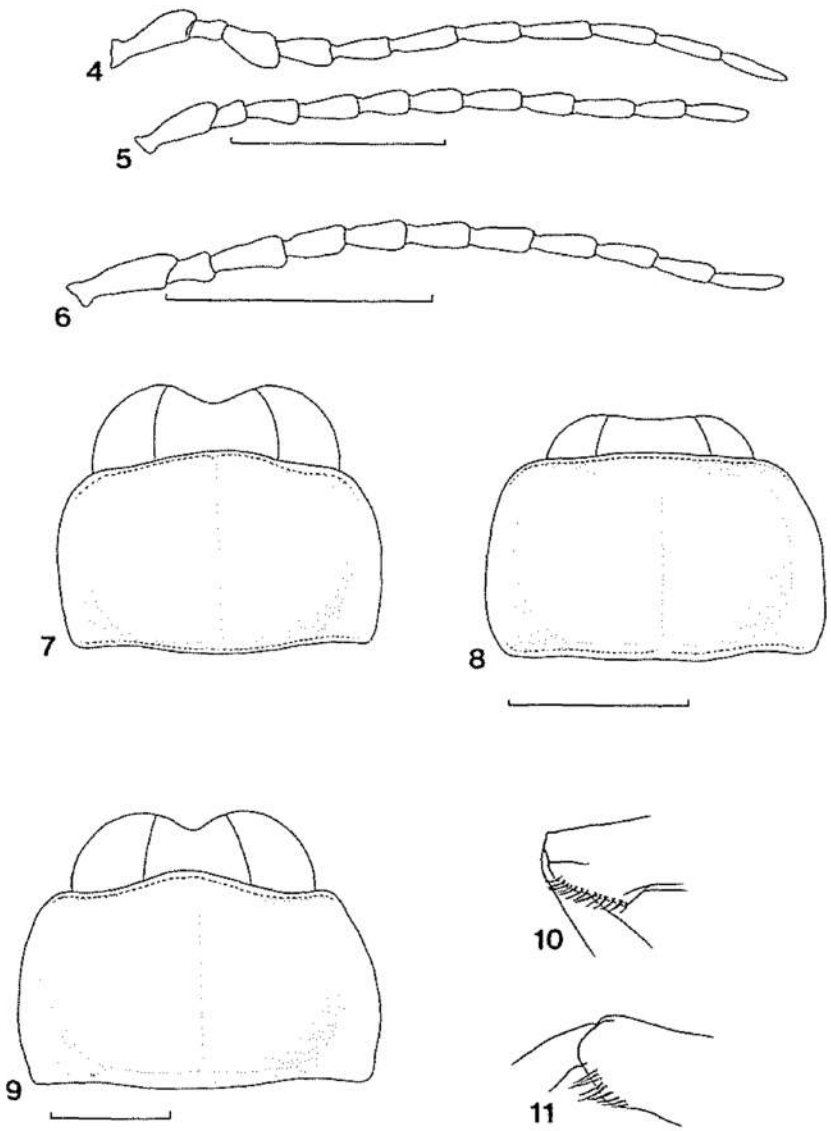
Scutellum triangular with rounded apex, closely and minutely punctate on dorsum.

Elytra (Figs. 1, 12) moderately broad, conjointly 2.12 to 2.67 times as long as wide, sides almost straight and parallel though feebly divergent posteriad, obliquely truncated at the apices in dorsal view; narrowly marginated throughout including suture, the margins being concealed by anterior parts of humeri; dorsal suface fairly smooth, and closely punctate; each elytron with only very weak 1st costa running throughout the length of elytra, though sometimes almost disappearing; deflexed areas of elytral apices (Fig. 12) triangular, each moderately pointed at the apex. EL/PL 4.96–5.05; EL/EW 2.29–2.30; EW/PW 1.03–1.35.

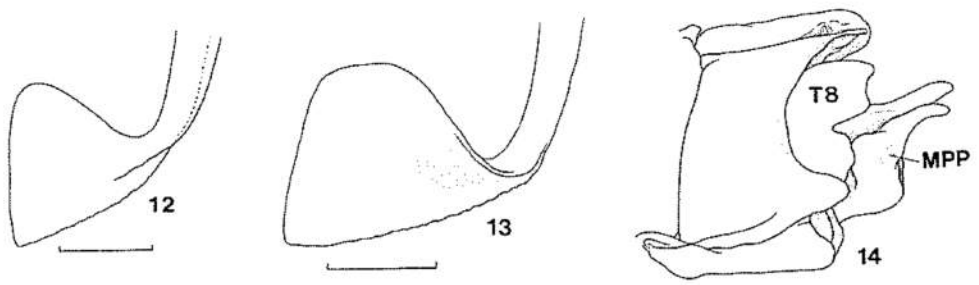
All legs (Fig. 1) not so long and slender; trochanters very short, 1/7 to 1/8 as long as femora in hindlegs; femora moderately fusiform and flattened dorso-ventrally, MFC (Fig. 10) present, consisting of about 12 to 15 spines; tibiae also moderately cylindrical, almost straight, not incurved even in basal portions. Tarsal formula

5–5–5; all tarsi as long as tibiae; 1st tarsomere the longest, a little longer than the combined length of 2nd and 3rd; 4th small, deeply excavated medio-apically for the reception of 5th. Claws simple. Lateral sides of metasternum almost straight.

Abdomen short, broad and moderately flattened dorso-ventrally, with seven

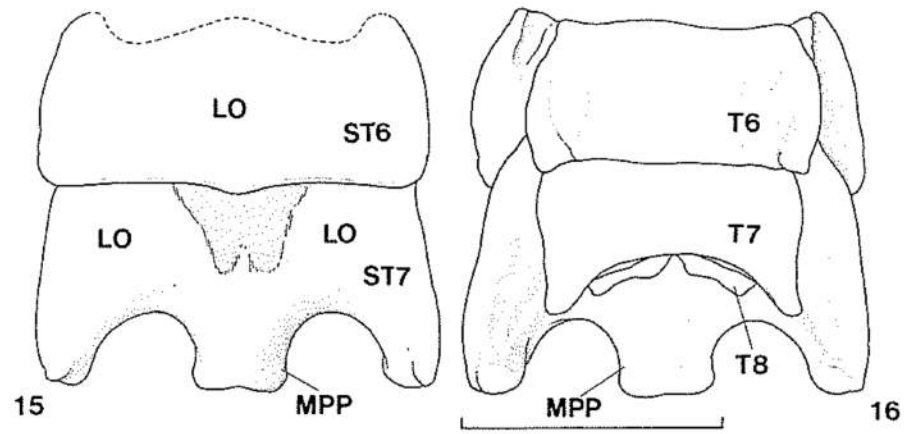


Figs. 4–11. External features of *Pteroptyx* spp. —— 4–6, Right antenna; 7–9, head and pronotum; 10–11, ventral view of metathoracic femoral comb. —— 4, 7, 10, *P. masatakai* KAWASHIMA, sp. nov., male; 5, 8, *P. masatakai* KAWASHIMA, sp. nov., female; 6, 9, *P. sulawesiensis* KAWASHIMA, sp. nov., male. Scales: 1.0 mm.



Figs. 12–14. External features of *Pteroptyx* spp. —— 12, Male elytral apices of *P. masatakai* KAWASHIMA, sp. nov.; 13, ditto, *P. sulawesiensis* KAWASHIMA, sp. nov., ventral view; 14, distal segments of abdomen in male of *P. sulawesiensis* KAWASHIMA, sp. nov., latero-dorsal view. Scales: 0.5 mm.

visible segments in ventral view; 2nd to 6th segments parallel-sided; sides of 7th segment feebly divergent towards apex; LO (Fig. 15) completely filling ST6; ST7 (Figs. 15, 16) transverse and trilobed; LO almost occupying ST7, extending to hind margin including lateral posterior projections; terminal projections separated by two deep circular excavations (Figs. 15, 16); all projections almost equal in length; lateral projections truncated apically; MPP (Figs. 15, 16) broad and quadrate at the apex; T6 transverse, with the sides arcuately expanded; sides of T7 subparallel and sinuate, each with a pair of postero-lateral projections, both of which are weakly curved outwards, not visible from ventral side; T8 (Fig. 16) small, hind margin only seen as a pair of lobes. Male genitalia as shown in Figs. 17–18, elongate; aedeagus longitudinally, gradually dilated towards the apex, which is rounded. Both parameres fused at dorsal side, but separated from each other in distal two-thirds, apices of each paramere hooked.

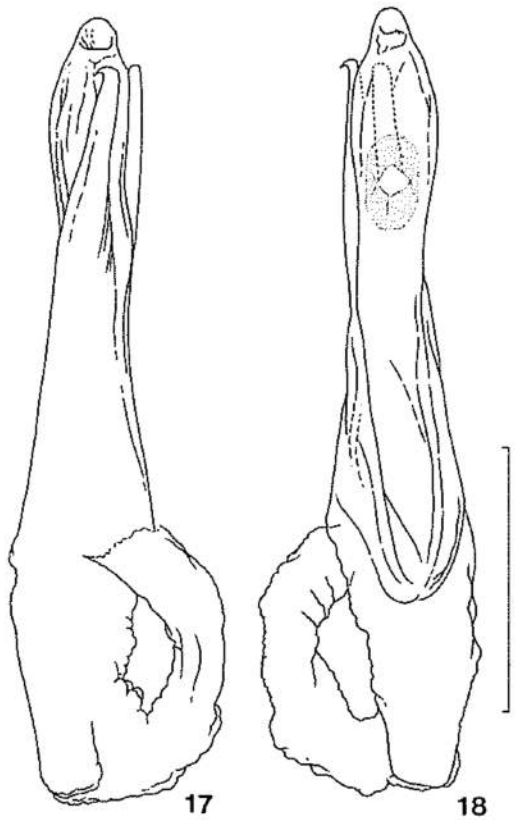


Figs. 15–16. Three distal abdominal segments of *P. masatakai* KAWASHIMA, sp. nov., male. —— 15, Ventral view; 16, dorsal view. Scale: 1.0 mm.

Measurement in mm. BL: 7.30 (in the holotype; range 6.10–8.00); HW: 1.40 (1.15–1.50); PL: 1.10 (0.95–1.25); PW: 1.90 (1.55–2.05); EL: 5.80 (4.80–6.20); EW: 2.60 (2.10–2.70); EHW: 2.00 (2.00–2.60); HTL: 1.50 (1.35–1.65).

F e m a l e. Body coloration basically the same as in the male. General morphology almost as in the male though luminescence organ is restricted to ST6; elytral apices normal, not deflexed; abdominal end also of normal shape.

Head (Fig. 8) relatively smaller than that in male, clearly narrower than the width of pronotum, about 0.62 times as wide as maximum pronotal width, only slightly convex between both eye regions; vertex to clypeo-frontal area shallowly concave. Eyes (Fig. 8) globular and prominent, but smaller than in male, separated from each other by a width about 2.5 times the diameter of an eye in dorsal view, a little apart from antennal sockets and bases of mandibles. Antennae (Fig. 5) filiform, more or less slenderer and shorter than those of male, reaching apical third of elytra, 1st segment of flagellum normal, not dilated towards the apices; relative length of each segment in a specimen as follows:— 14 : 5.5 : 9 : 9.5 : 9 : 9.5 : 10.5 : 9 : 10 : 9 : 11. Labrum and mandibles as in male.



Figs. 17–18. Male genitalia of *P. masatakai* KAWASHIMA, sp. nov. —— 17, Dorsal view; 18, ventral view. Scale: 0.5 mm.

Pronotum (Fig. 8) short, trapezoidal or subquadrate; a little narrower than the humeral width of elytra; dorsal surface relatively smooth, though closely punctate on the disc, the punctures being relatively large, basal margin almost straight but feebly bisinuate. PW/PL 1.62–1.68; PW/HW 1.70–1.75.

Scutellum triangular with rounded apex, closely and minutely punctate on dorsum.

Elytra (Fig. 2) including costae and punctures almost as in male, moderately broader, conjointly 2.02 to 2.44 times as long as wide; sides not straight though moderately curved, not deflexed in apices. EL/PL 4.57–4.80; EL/EW 2.00–2.40; EW/PW 1.19–1.41.

All legs (Fig. 2) including claws as in male, though devoid of MFC.

Abdomen parallel-sided in basal two segments, and then, gradually narrowed towards the moderately pointed apex.

Measurement in mm. BL: 6.00–7.50; HW: 1.00–1.20; PL: 1.05–1.25; PW: 1.70–2.10; EL: 4.80–6.00; EW: 2.40–2.50; EHW: 2.10–2.50; HTL: 1.25–1.50.

Type series (all dried). Holotype: ♂, Sulawesi Island, Central Indonesia, 12–VII–1999, native collector. Paratypes: 15♂♂, 9♀♀, same data as for the holotype.

Type depository. The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The paratypes are distributed to the collection of the National Science Museum, and of the author (Yokosuka-shi, Kanagawa).

Biology. Unknown.

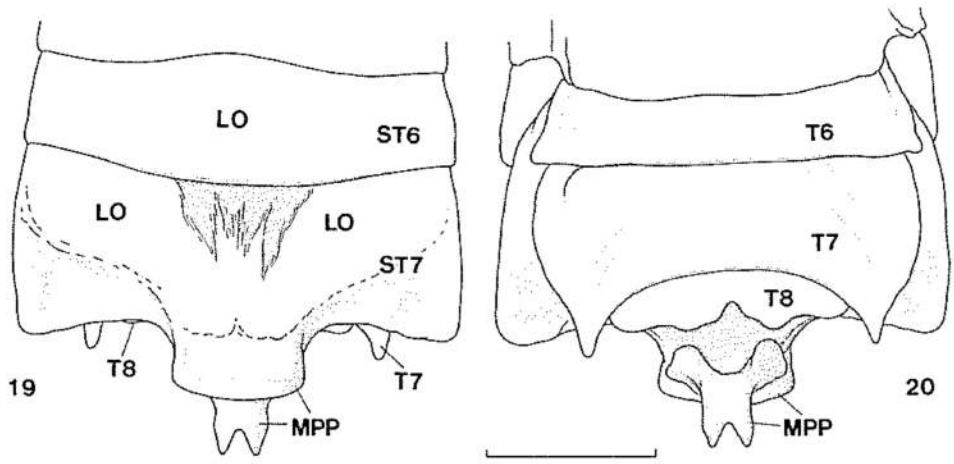
Etymology. The specific name is given in honor of Dr. Masataka SATÔ who has much contributed to the progress of the taxonomic study in the Japanese entomology.

Pteroptyx sulawesiensis KAWASHIMA, sp. nov.

(Figs. 6, 9, 11, 13–14, 19–22)

M a l e. Head capsule yellowish, scattered with dark yellow to brownish spots. Antennae almost frosted black, but moderately shining towards the basal segments; inner side of scape tinged with reddish brown. Eyes blackish. Labrum yellowish. Mandibles shiny, reddish brown, darker towards the bases. Both maxillary and labial palpi frosted blackish brown. Pronotum yellowish, scattered with dark yellow to brownish stained spots. Scutellum pale yellow. Elytra almost pale yellow, becoming blackish at the apices and in deflexed areas, which are moderately paler towards the apices. Ventral surface constantly yellow to pale yellow; luminescence organs whitish to creamy yellow. Coxae to femora pale yellow; tibiae dark yellow to yellowish brown, feebly darker towards the apices; tarsi frosted blackish to blackish brown, but tinged with yellowish brown in basal half of 1st tarsomere and apical half of the 5th; claws reddish brown. Body closely and constantly covered with pale subrecumbent pubescence. Antennae, maxillary and labial palpi and tarsi more densely covered with blackish to blackish brown minute setae.

Head (Fig. 9) clearly narrower than the anterior marginal width of pronotum; about 0.67 times as wide as maximum pronotal width, deeply excavated between eyes.



Figs. 19–20. Three distal abdominal segments of *P. sulawesiensis* KAWASHIMA, sp. nov., male. —— 19, Ventral view; 20, dorsal view. Scale: 1.0 mm.

Eyes (Fig. 9) globular, fairly large and prominent, separated from each other by a width about 1.52 times the diameter of an eye in dorsal view, a little apart from antennal sockets and bases of mandibles. Antennae (Fig. 6) filiform, relatively long and slender, reaching humeral parts of elytra; scape thick and clavate, pedicel short and cylindrical; relative length of each segment from scape in a specimen as follows:— 7.5: 7: 13: 11: 11: 11: 11: 11: 10.5: 10.5: 12.5. Labrum small and transverse quadrate, feebly dilated apicad, both angles evenly rounded. Fronto-clypeal suture not recognized. Mandibles very small and slender, constantly incurved, not so much pointed, blunt at the apices.

Pronotum (Fig. 9) short and trapezoidal or subquadrate, but the anterior margin is moderately produced in an arc at the centre, a little narrower than the humeral width of elytra; lateral margins slightly arcuate; dorsal surface very closely punctate, the punctures being small or minute; basal margin bisinuate. PW/PL 1.62–1.66; PW/HW 1.47.

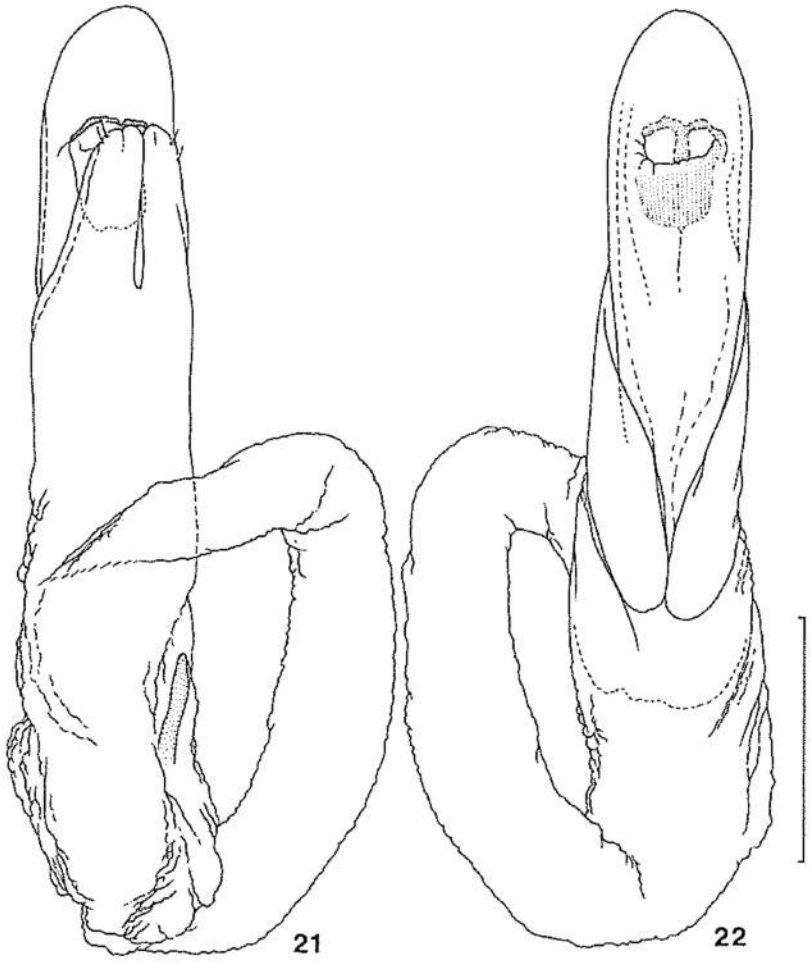
Scutellum triangular with rounded apex, closely and minutely punctate on dorsum.

Elytra (Fig. 3) moderately broad, conjointly 2.06 to 2.19 times as long as wide; sides almost straight and parallel, though feebly divergent posteriad, obliquely and straightly truncated at the apices in dorsal view; narrowly marginated throughout including suture, the margin being concealed by anterior part of humeri; dorsal surface smooth but very closely punctate; each elytron with fairly weak 1st and 2nd costae, which run throughout the length of elytra; deflexed area of elytral apices (Fig. 13) trapezoidal, bluntly rounded. EL/PL 4.55–4.56; EL/EW 2.13–2.21; EW/PW 1.25–1.32.

All legs (Fig. 3) not so long and slender; trochanters triangular, obliquely articulated to femora, 1/4 to 1/5 as long as femora in hindlegs; femora moderately fusiform, and flattened dorso-ventrally, MFC (Fig. 11) present, consisting of about

six to nine spines; tibiae cylindrical, almost straight but weakly incurved in basal portions. Tarsal formula 5–5–5, all tarsi as long as tibial length. Claws simple.

Abdomen short, broad and moderately flattened dorso-ventrally, subparallel-sided though feebly dilated apicad; LO (Fig. 19) completely filling ST6; ST7 broadly bi-emarginate at both sides of hind margin; lateral corners not so much projecting posteriad, though nearly forming right angles; MPP (Figs. 19–20) fairly broad and square, truncate at the apex in ventral view; apical surface of MPP perpendicular to horizontal plane (Fig. 14), with terminal edge bifurcated, as shown in Fig. 14 and 19–20. T6 (Fig. 20) relatively large, with the hind margin straight and the sides dilated apicad; both hind angles projecting laterad; T7 (Fig. 20) a little larger than T6, with the hind margin (Fig. 20) widely and semicircularly emarginate; both hind



Figs. 21–22. Male genitalia of *P. sulawesiensis* KAWASHIMA, sp. nov. —— 21, Dorsal view; 22, ventral view. Scale: 0.5 mm.

angles acutely pointed and projected, apices visible in ventral view (Fig. 19). T8 (Fig. 20) small and transverse; hind margin sinuate, triangularly emarginate in the centre; postero-lateral angles rounded, the edges visible in ventral view (Fig. 20). Male genitalia as shown in Figs. 21–22, elongate, aedeagus longitudinally cylindrical with rounded apex. Parameres fused in dorsal side, though the median cleft still remains; apex of each paramere with two or three minute setae on dorsum.

F e m a l e. Unknown.

Measurement in mm. BL: 9.10 (in the holotype; range 8.70–9.30); HW: 1.80 (1.60–1.80); PL: 1.60 (1.45–1.60); PW: 2.70 (2.35–2.70); EL: 7.35 (6.60–7.35); EW: 3.20 (3.10–3.30); EHW: 2.90 (2.90–3.30); HTL: 2.00 (1.80–2.00).

Type series (all dried). Holotype: ♂, Sulawesi Island, Central Indonesia, 12–VII–1999, native collector. Paratypes: 4♂♂, same data as for the holotype.

Type depository. The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo. The paratypes are distributed to the collection of the National Science Museum and of the author (Yokosuka-shi, Kanagawa).

Biology. Unknown.

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

General Remarks

The fireflies of the genus *Pteroptyx* were discovered from Sulawesi Island of the "Wallace region" for the first time. This discovery is considered to be an effective information of the speciation and the interpretation of biological geography of the genus. The two new species described in this paper are clearly related to "non-New Guinean species", not to "New Guinean species" or the "*cribellata* complex" (BALLANTYNE & MCLEAN, 1970; BALLANTYNE, 1987), judging from several external characters, *viz*., the coloration of the body, the presence of MFC in male, etc. They have close relationship to the Oriental species, *P. malaccae*, *P. varida* and *P. tener*.

The two species from Sulawesi Island were discovered in the same mass of materials. Therefore, there are very high possibility that the two species inhabit the same place. If both the species occupy the same niche or micro-habitat, it is presumed that reproductive isolation takes place in mating behavior and physical difference in the shape of the 7th abdominal segment and the genital organ in the male. They are probably clearly distinguished from each other by the species-specific luminescence and flashing communication between male and female with mating behavior.

A List of the Known Species of the Genus *Pteroptyx* E. OLIVIER, 1902

1. *P. amilae* M. SATÔ, 1976, p. 1. Sebu Is., Philippine Isls.
2. *P. antennata* (E. OLIVIER, 1885), p. 365. New Guinea.
3. *P. asymmetrica* BALLANTYNE, 2001, p. 59. Malaysia.
4. *P. atripennis* PIC, 1923, p. 59. Tonkin, Laos.
5. *P. bearni* E. OLIVIER, 1909, p. 139. Singapore.

6. *P. corusca* BALLANTYNE, 1987, p. 137. New Guinea.
7. *P. cribellata* (E. OLIVIER, 1892), p. 1010. Papua, Australia, Queensland.
8. *P. curticollis* PIC, 1923, p. 59. Tonkin.
9. *P. decolor* E. OLIVIER, 1911, p. 17. Borneo.
10. *P. effulgens* BALLANTYNE, 1987, p. 141. New Britain.
11. *P. elucens* BALLANTYNE, 1987, p. 147. New Guinea.
12. *P. flagrans* BALLANTYNE, 1987, p. 151. New Guinea.
13. *P. fulminea* BALLANTYNE, 1987, p. 153. New Guinea.
14. *P. gelasina* BALLANTYNE, 2001, p. 64. Malaysia (Sabah).
15. *P. hanedai* BALLANTYNE, 1970, p. 259. New Guinea.
16. *P. macdermotti* MCLEAN, 1970, p. 263. Philippine Isls.
17. *P. malaccae* (GORHAM, 1880), p. 101. Malacca, Madras, Sumatra, Thailand, Malaya, Cambodia, Borneo.
18. *P. masatakai* KAWASHIMA, sp. nov. (this paper). Sulawesi Is.
19. *P. microthorax* (E. OLIVIER, 1885), p. 364. New Guinea.
20. *P. minor* BALLANTYNE, 1970, p. 261. New Guinea.
21. *P. papuae* MCDERMOTT, 1959, p. 9. Papua.
22. *P. platygaster* (LEA, 1909), p. 110. Australia.
23. *P. similis* BALLANTYNE, 2001, p. 72. Malaysia (Sabah).
24. *P. similisantennata* BALLANTYNE, 1987, p. 158. New Guinea.
25. *P. similispapuae* BALLANTYNE et MCLEAN, 1970, p. 26. New Guinea.
26. *P. sublustris* BALLANTYNE, 1987, p. 160. New Guinea.
27. *P. sulawesiensis* KAWASHIMA, sp. nov. (this paper). Sulawesi Is.
28. *P. tarsalis* (E. OLIVIER, 1885), p. 360. New Guinea, New Ireland.
29. *P. tener* E. OLIVIER, 1907, p. 181. Borneo, Malaya, Sumatra, Cambodia.
30. *P. torricelliensis* BALLANTYNE, 1970, p. 258. New Guinea.
31. *P. truncata* BALLANTYNE, 2001, p. 77. Indonesia.
32. *P. varida* E. OLIVIER, 1909, p. 397. Burma, Thailand, Cambodia, Malaya, Borneo.

Acknowledgement

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Description of Two New *Falsomalthinus* PIC (Coleoptera, Cantharidae) from Brunei

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Abstract The author describes two new species of *Falsomalthinus* PIC from Brunei: *Falsomalthinus satoi* sp. nov. and *Falsomalthinus wittmeri* sp. nov. The addition of these species brings the total number of known species in this genus to eight.

In my revision of the genus *Falsomalthinus* PIC (BRANCUCCI, 1982), I recognised four species: *F. pallidus* (PIC) from Borneo, *F. flavicolor* (PIC) from Vietnam, *F. malayensis* BRANCUCCI from Malaysia and *F. shillongensis* BRANCUCCI from India (Meghalaya). Later (BRANCUCCI, 1982, 1984), I added further two species, *F. stramineus* (CHAMPION) from India and *F. klapperichi* BRANCUCCI from Sumatra. The London Natural History Museum (BMNH) contains two further species from the same locality in Brunei. The widespread distribution of this genus throughout the whole Oriental region, together with the restricted distribution of the individual species, indicates that this group is poorly known and may provide many surprises in the future. New taxa are also to be expected from all over this region. Although one species was already known from Borneo, the two species described here represent new records for Brunei.

The material studied is deposited in the following collections: London Natural History Museum (BMNH) and Natural History Museum Basel (NMB).

Falsomalthinus satoi sp. nov.

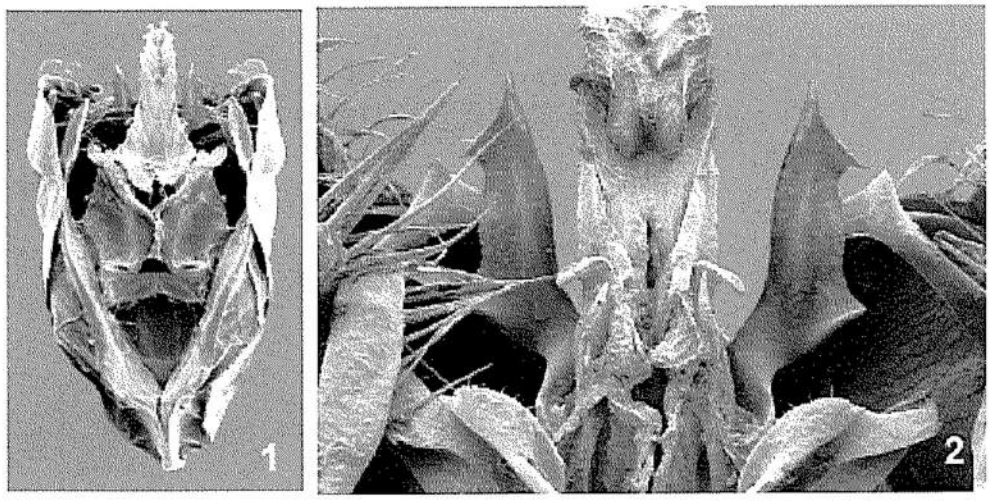
(Figs. 1–2)

Body completely pale yellow-testaceous, eyes black.

Male. Head very broad, distinctly depressed, covered with a fine pubescence. Eyes large and prominent. Eye interspace 1.1 times smaller than the greatest eye diameter. Antennae of medium length, almost reaching the apex of the elytra. First joint long, the second and the third ones 2.1 times smaller, the 4th, 5th, 6th and 7th 1.9 times smaller, and the four last joints 2.1 times smaller.

Pronotum distinctly longer than broad, by 1.2 times. Anterior margin broadly rounded, lateral margins straight and posterior margin sinuate. Ground smooth, finely pubescent. Anterior lobe visible but not prominent.

Elytra short, somewhat more than 1.4 times longer than their combined width at



Figs. 1–2. *Falsomalthinus satoi* sp. nov. —— 1, Aedeagus in dorsal view (holotype); 2, detail of a paratype.

the shoulder. Posterior margin broadly rounded. Pubescence fine.

Last sternite very large, slightly concave on posterior margin. Aedeagus triangular, characterised by a slender median lobe with several apophyses, particularly ventrally (Figs. 1–2)

F e m a l e. Similar to male, but the eyes smaller. Stylus of the coxites very small.

Total length: 3.0–3.2 mm.

Type series. Holotype: ♂(BMNH); locality: Brunei, Kuala Belalong FSC, E 115°7′ N 4°34′, Dipterocarp forest, *Dryobalanops beccarii*, (BMNH), 1991–173, aerial Malaise 1A, 260 m, 4–VII–1991, N. MAWDSLEY, NM 216. 1 paratype ♂ (NMB); Idem., ground Malaise 21, 370 m, 7–II–1992, N. MAWDSLEY, NM 304. 1 paratype ♀ (BMNH); locality: Idem., FOG 34: Site 20–2, 615 m, 13–II–1992, N. MAWDSLEY, NM 357.

Derivatio nominis. Species dedicated to my colleague and friend Prof. Masataka SATÔ.

Affinities. This species is closely related to *F. wittmeri* sp. nov. The aedeagus and the eye interspace, which in the male is smaller than the greatest eye diameter, enable it to be easily identified. As for the female, the very small size and the eyes, which are almost as broad as the eye interspace, are helpful for recognition.

Distribution. Brunei.

Falsomalthinus wittmeri sp. nov.

(Figs. 3–4)

Completely pale yellow-testaceous, eyes black.

M a l e. Head very large and broad, depressed, covered with a very fine pubes-

cence. Eyes large and prominent. Eye interspace 1.2 times as broad as the greatest eye diameter. Antennae of medium length, almost reaching the apex of elytra. First joint long, the second and the third 1.7 times smaller, the 4th 1.6 times smaller, the 5th–10th 1.7 times smaller and the last one 1.5 times smaller.

Pronotum slightly longer than broad, by 1.1 times. Anterior margin broadly rounded, lateral margins straight and posterior margin sinuate. Ground smooth, finely pubescent. Anterior lobe slightly visible.

Elytra short, 1.4 times longer than their combined width at the shoulder. Posterior margin broadly rounded. Pubescence fine.

Last sternite very broad, broadly rounded on posterior margin. Aedeagus more rectangular, characterised by a short and broad median lobe without very distinct apophyses (Fig. 3).

F e m a l e. Similar to male, but the eyes smaller. Stylus of the coxites broad (Fig. 4).

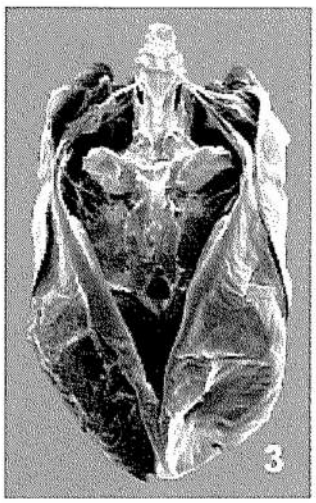
Total length: 3.4–3.8 mm.

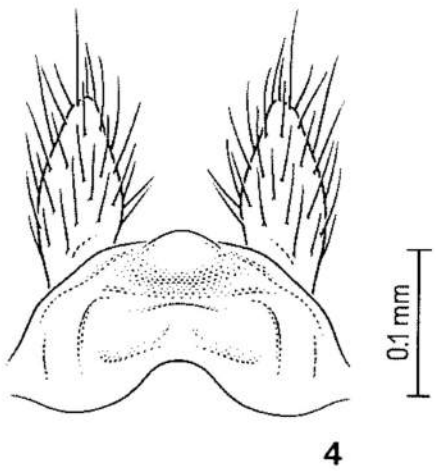
Type series. Holotype: ♂ (BMNM); locality: Brunei, Kuala Belalong FSC, E 115°7′ N 4°34′, Dipterocarp forest, BM(NH), 1991–173, FOG 13: Site 8–2, 280 m, 3–III–1992, N. MAWDSLEY, NM 336. 1 paratype: ♀ (BMNH); locality: Idem., ground Malaise 9A, 260 m, 8–II–1992, N. MAWDSLEY, NM 295. 2 paratypes: ♀ (BMNH, NMB); locality: Idem., ground Malaise 9B, 260 m, 8–II–1992, N. MAWDSLEY, NM 296.

Derivatio nominis. Species dedicated to the late Dr. Walter WITTMER.

Affinities. This species is closely related to *F. satoi* n. sp. The male has eyes whose greatest diameter is smaller than the eye interspace. The females are more difficult to identify; the eye interspace is broad, distinctly larger than the eyes. The styli of the coxites are very large.

Distribution. Brunei.





Figs. 3–4. *Falsomalthinus wittmeri* sp. nov.; 3, aedeagus in dorsal view; 4, genital segments of the female.

Conclusion

The species of this genus are very closely related. The most valuable characters for distinguishing them from each other are the aedeagi and the last abdominal segments of the males, and also the relationship between greatest eye diameter and the eye interspace.

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A New Beautiful Species of the Genus *Themus* (Coleoptera, Cantharidae) from Laos

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Abstract A new species of the cantharid genus *Themus* is described and illustrated from Laos under the name of *T.* (*Telephorops*) *masatakai*. This is the first member of the subgenus *Telephorops* from Laos.

The genus *Telephorops* FAIRMAIRE, 1886, was established based on the Chinese species, *T. impressipennis*, described at the same time. It has been characterized by the large and stout body, remarkable conformation of the elytra which are impressed in some areas, and so on. However, the male genitalia of *Telephorops* are closely similar in conformation to those of the genus *Themus* MOTSCHULSKY, 1857, namely, they are stout and massive particularly in basal parts. At present therefore, *Telephorops* is regarded as a subgenus of *Themus* (WITTMER, 1983). Though FAIRMAIRE (1897) established another genus, *Tryblius*, on the basis of *T. cavipennis* from Sikkim, it has been considered to be a junior synonym of *Telephorops* (WITTMER, 1983). Up to the present, seventeen species of the subgenus *Telephorops* have been known from the Himalayas, Indochina, southern part of Mainland China and Taiwan.

Recently, I was able to obtain some cantharid specimens from northern Laos through the courtesy of Mr. Kaoru SAKAI, a good cooperator of mine. I found a strange *Themus* (*Telephorops*) species in the collection. After a careful examination and comparison with other members of the subgenus, it has become clear that this species does not agree with any of them. It must be new to science, and will be described in this paper. A member of *Telephorops* is recorded from Laos for the first time.

I wish to express my deep gratitude to Dr. Masataka SATÔ, an eminent entomologist, who has kindly given me constant guidance and useful suggestions for my taxonomic study on the Cantharidae. My hearty thanks are also due to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his critical reading of the original manuscript, to Mr. Kaoru SAKAI of Tokyo for his kind support in useful specimens, and to Dr. Jean J. MENIER of the Muséum National d'Histoire Naturelle, Paris, for his helpful support in my examination of relevant specimens at the museum.

Themus (*Telephorops*) *masatakai* OKUSHIMA, sp. nov.

(Figs. 1–4)

Male. Elytra, apical third (in the holotype, but apical fifth in the paratype) of fore fomora, apical halves (in the holotype, but apical fourth in the paratype) of middle and hind fomora, all tibiae, and all tarsi except for claws black with dull metallic lustre; eyes and 9th to 11th antennal segments dark brown; mandibles and claws reddish to blackish brown; head, mouthparts except for mandibles, 1st and 2nd antennal segments, pronotum, scutellum, pro-, meso- and metasterna, all coxae and trochanters, and basal portion of each femur reddish orange; 3rd to 8th antennal segments and abdomen yellow. Body extremely closely covered with pubescence of the colour of respective parts; apical margin of clypeus fringed with pale brown bristles; each mandible provided with a bunch of brown bristles at basal third of outer side.

Body very stout and massive. Head slightly shorter than its width; dorsum almost flattened, but depressed along the apical margin of clypeus and in lateral areas before eyes; surface smooth with minute and sparse punctures; clypeus arcuate at apical margin, with its centre faintly notched; eyes globular and prominent, ratio of the diameter of an eye to interocular space 1 : 2.4; apical segment of labial palpus subtriangular with rounded apical margin; apical segment of maxillary palpus elongate and axe-shaped with rounded apical margin; antennae filiform though somewhat

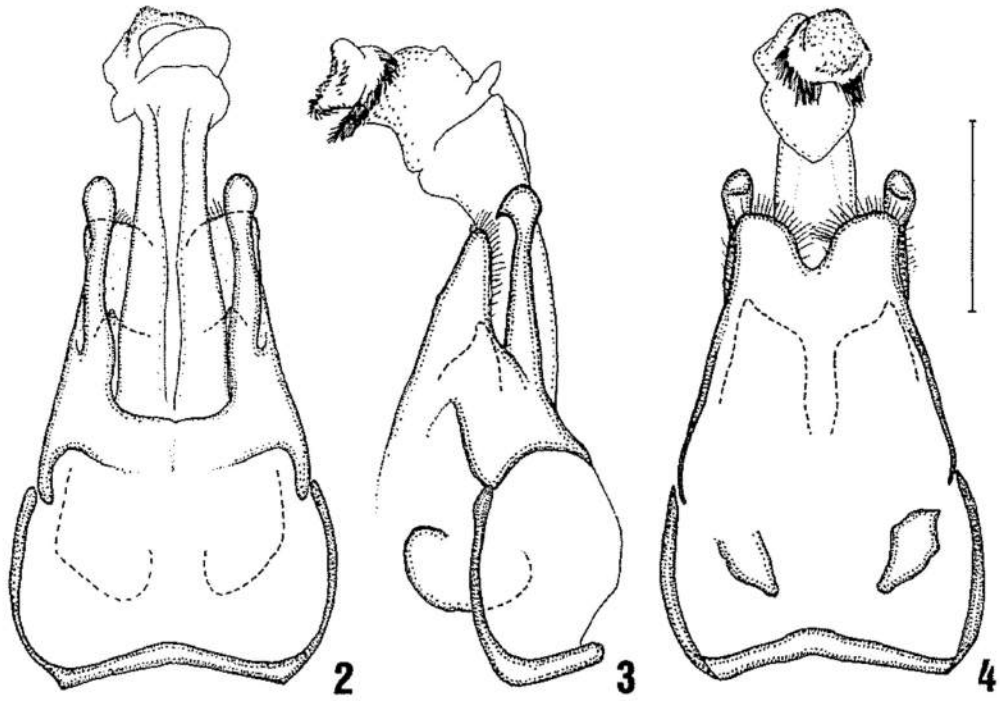
Fig. 1. *Themus* (*Telephorops*) *masatakai* OKUSHIMA, sp. nov., ♂ (holotype), from Xieng Khouang, N. Laos.

flat, 1st segment clavate, 2nd expanded apicad, 3rd to 7th subcylindrical, each of 6th to 10th segments with a longitudinal groove on the dorso-external side between middle and apex, but small and vague in 6th segment, relative length of each segment as follows:— 17.5 : 12.5 : 10 : 15 : 14 : 15 : 16 : 16 : 15 : 14 : 14.

Pronotum trapezoidal, 1.34 times (in the holotype; range 1.31–1.34) as wide as head, 0.75 times as long as wide; anterior margin feebly produced at middle; posterior margin faintly indented at the middle; lateral margins almost straight; anterior angles obtuse with rounded corners; posterior angles almost rectangular with rounded corners; disc convex, particularly so in the posterior area, hollowed in antero-lateral areas, and strongly depressed along the posterior margin; medio-longitudinal furrow indistinct; surface smooth. Scutellum triangular.

Elytra conjointly 1.58 (1.57–1.58) times as wide as pronotum, 1.60 (1.60–1.71) times as long as wide, constricted in front of the middle, whose sides are conspicuously convex; dorsum remarkably and widely depressed before and behind the middle; surface almost smooth with lustre, but rugosely punctate in humeral to middle areas; sutural margins weekly recognized.

Legs moderately slender; each femur mostly straight; each tibia mostly straight though feebly arcuate particularly at the base; claws simple.



Figs. 2–4. Male genitalia of *Themus* (*Telephorops*) *masatakai* OKUSHIMA, sp. nov. —— 2, Ventral view; 3, lateral view; 4, dorsal view. (Scale: 1.0 mm.)

Male genitalia:— Somewhat elongate, narrowed apically. Each ventral process rather long, feebly sinuate, and expanded near the tip with an acute hook on the dorsal side; dorsal plate shorter than ventral processes, deeply cleft at the centre of apical margin, its apical parts produced into a pair of lobes with arcuate apical margins, provided with no tubercles on the inner side. Each laterophysis of median lobe short and broad with pointed tip on outer side. Inner sac expanded dorsad at the apex, provided with many spinous bristles at the apical portion (Figs. 2–4).

Length of body: 17.25 mm (in the holotype; range 15.25–17.25, measured from the anterior margin of clypeus to the apices of elytra); breadth of body: 7.20 (5.95–7.20) mm (measured at the widest part of conjoint elytra).

Female. Unknown.

Type series. Holotype: ♂, Xieng Khouang, N. Laos, VI–1997, native collector. Paratype: 1♂, same data as for the holotype. The holotype is preserved in the collection of the Kurashiki Museum of Natural History. The paratype is preserved in the collection of Dr. M. SATÔ.

Distribution. Northern Laos.

Notes. This new species closely resembles *T.* (*T.*) *crassipes* PIC, 1929 from "Tonkin" (=northern Vietnam), but can easily be distinguished from the latter by the smaller body, the wider elytra, and the ventral processes of the male genitalia well expanded near the tips.

This species is dedicated to Dr. Masataka SATÔ for commemorating his retirement from Nagoya Women's University.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 283–288, May 25, 2003

Description of a New Species of the Genus *Malthodes* (Coleoptera, Cantharidae) from Shikoku, Southwest Japan [1, 2)]

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Abstract A new species, *Malthodes masatakai*, is described from Shikoku, Southwest Japan. It has the remarkable tenth abdominal tergite with almost cylindrical base and laterally swollen apical part in the male. By these characteristics, it can be easily distinguished from the other congeners.

Introduction

The malthinine genus *Malthodes* comprises many small-sized and quiet colored species with softish fragile body. They exhibit various modifications of external morphology in the male apical abdomen. The modification is characteristic of the respective species and available for the species identification. About 600 species are known to occur in the world up to the present and many species are continuously described every year, because of the various modifications of external morphology.

Little is known for their biology. The adults prefer shaded to sunny places on tree branches, shrubs or on grasses and low herbs of moist or boggy areas near small bodies of water (FENDER, 1951; ARNETT, 1963). In Japan, they are also frequently found in such places for several weeks in late spring (TAKAHASHI *et al.*, 2001).

Twenty-two species have been fragmentarily described or recorded in Japan (KIESENWETTER, 1879; WITTMER, 1954; NAKANE, 1977; TAKAKURA, 1988; TAKAHASHI, 1995, 1997, 2002; N. TAKAHASHI, 2001), and several unnamed congeners are still remaining. Furthermore, distributional information on *Malthodes* species is limited, particularly in Shikoku, where only one species, *M. sulcicollis*, has been collected on some occasions after its first discovery by ISHIHARA *et al.* (1953). However, judging from the current knowledge, the identification of *M. sulcicollis* is doubtful.

As the second part of my study of *Malthodes*, a new species is described in this paper and added to the Japanese fauna of the genus. This paper will draw attention of entomologists to *Malthodes* species in Shikoku.

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1) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 5, No. 86).

2) Taxonomic study of the genus *Malthodes* from Japan (Coleoptera: Cantharidae) II.

Materials and Methods

Materials used in this paper were dried specimens. Methods for detailed observation of the terminalia and terminology follow TAKAHASHI (2001). The illustrations were drawn with the aid of a squared eyepiece graticule and graph papers. The photographs were taken with the Nikon Coolpix Microsystem attached to an Olympus SMZ1500 binocular stereoscopic microscope and a Sonic BS–D8000 digital microscope.

Malthodes masatakai N. TAKAHASHI, sp. nov.

[Japanese name: Shikoku-kurochibi-jôkai]

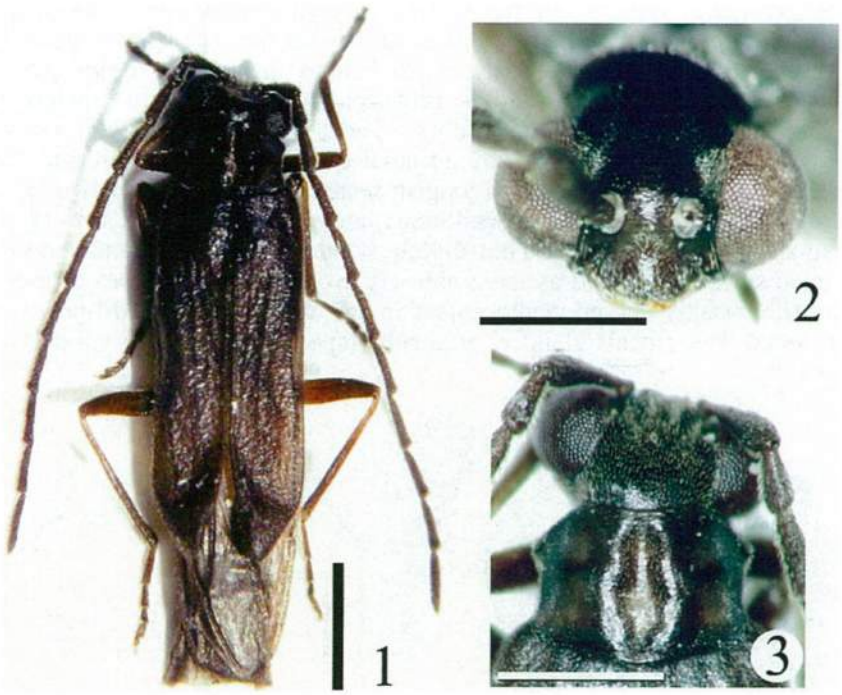
(Figs. 1–9)

Description. Male. Body mostly dark grayish brown; eyes dark brownish black; mandibles and tarsal claws reddish brown; pronotum sometimes faintly reddish; legs, 9th abdominal tergite, and sometimes venter slightly brownish; mouth parts except for mandibles, maxillary and labial palpi, apical parts of coxae, trochanters, basal half of 9th sternite, apical part of 9th tergite, and basal part of 10th tergite yellowish.

Body elongate, densely covered with brownish pubescence; anterior part of head before antennal pits covered with paler and longish pubescence; venter covered with yellowish brown pubescence, and 8th sternite fringed with longish pubescence; antennae, tibiae, tarsi, 9th sternite, and 10th tergite covered with suberect pubescence.

Head (Figs. 2–3) slightly broader than long, 1.12 (in the holotype; range 1.07–1.12) times as wide as pronotum, gently convex dorsad, somewhat flattened before vertex, swollen mesad around antennal pits, particularly so behind them, depressed apicad before them, and arcuate at apical margin of clypeus; surface feebly shiny, finely punctate, but weakly shagreened around clypeus; eyes relatively large, semiglobular and prominent laterally, the interocular distance 1.52 (1.47–1.54) times as long as transverse diameter of an eye; antennae filiform, slightly extending beyond elytral apices, 1st and 2nd segments subclavate, but 2nd short, 3rd somewhat robust, 4th to 11th each subcylindrical, slightly narrowed at base, relative lengths of antennal segments from base as follows:— 34.0 : 21.4 : 25.8 : 34.0 : 36.6 : 36.3 : 35.1 : 33.2 : 31.4 : 29.8 : 37.0.

Pronotum (Fig. 3) subrectangular, somewhat dilated posteriad, slightly broad, and 1.35 (1.35–1.38) times as wide as long; disc slightly convex medio-dorsad and shiny on surface, with a medio-longitudinal depression, though depressed around angles, faintly shagreened and mat on the surfaces, subtruncate but sometimes faintly emarginate in the middle and arcuate antero-laterad on both sides at anterior margin, obliquely truncate and weakly warped dorsad at front angles, gently arcuate at posterior margin, obtusely rounded at hind angles, shallowly emarginate mesad at sides. Scutellum trapezoidal, slightly narrowed posteriad, obtusely rounded at hind angles, weakly shagreened and slightly depressed medio-longitudinally on surface.



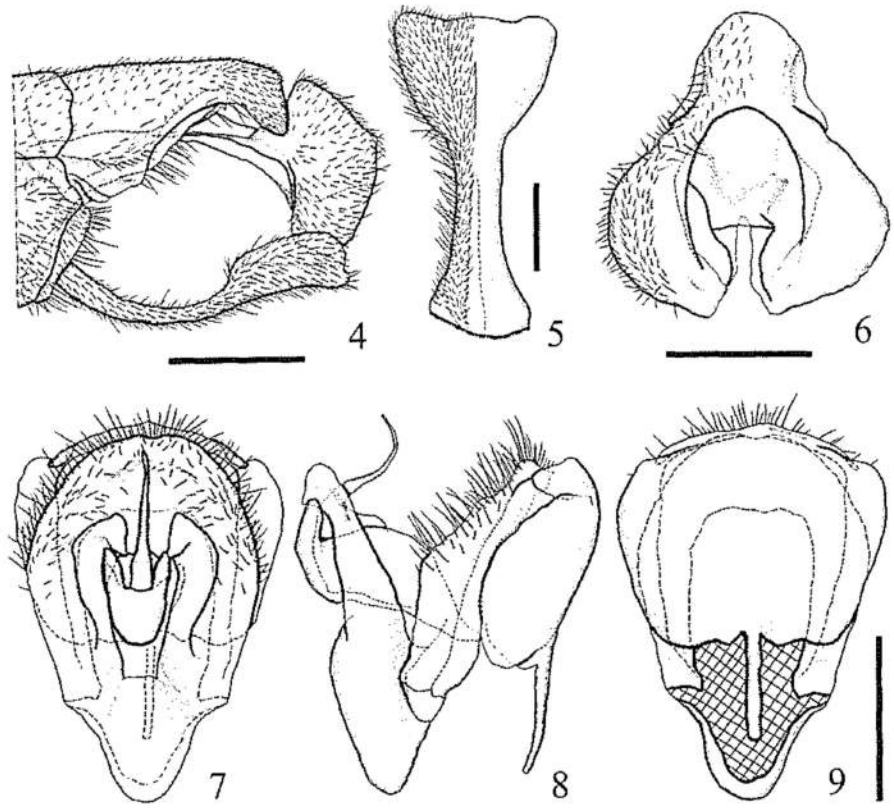
Figs. 1–3. Habitus of *Malthodes masatakai* N. TAKAHASHI, sp. nov., male. —— 1, Dorsum; 2, head, cephalic view; 3, head and pronotum, dorsal view. Scales: 1 mm.

Elytra (Fig. 1) 2.77 (2.77–3.04) times as long as wide; surface mostly rugulose, smoother at base and around apices, feebly marginate along sutural line, with a few vague costae on each elytron.

Meso- and metasterna relatively shiny and finely punctate; mesopleura and anterior parts of metapleura slightly mat on their surfaces. Venter weakly rugulose and dorsum of 10th abdominal tergite somewhat shagreened, though 9th segment and latero-basal areas of 10th tergite rather shiny on their surfaces; 9th sternite (Figs. 4–5) relatively slender but somewhat robust, convex medio-ventrad, slightly dilated basad in basal part, depressed medio-longitudinally in basal half, triangularly dilated apicad in apical portion, shallowly emarginate beside angles and faintly arcuate in the middle at apical margin, obtusely rounded and feebly produced latero-apicad at apical angles in ventral view, gently arcuate ventrad but slightly warped ventrad in medio-apical part in profile, with a median longitudinal carina protruded in basal half of apical dilated part in dorsal view; 10th tergite (Figs. 4, 6) almost cylindrical and robust but depressed dorsoventrally at base, almost angular and protruded dorsally with a round tip on dorsum behind apex of 9th tergite, slightly bent ventrad and feebly narrowed apicad with a round apex in profile, expanded laterally and gouged semicircularly on dorsum in apical half, and bilobed on ventral side of apical part in

caudal view.

Male genitalia (Figs. 7–9): basal piece subquadrate, warped dorsad in apical marginal and lateral areas in ventral view, somewhat produced latero-dorsally with round tips at apical angles, constricted just behind the angles at sides in profile; centrophysis feebly widened dorsad in profile and U-shaped with tapered tips but somewhat dilated apicad in outline in dorsal view; basal part of lateral lobes nearly obovate in outline but constricted around basal quarter at sides, depressed mesad in apical 3/5, covered and fringed with longish setae in apical 3/7, and swollen medio-dorsad in basal 2/5 on dorsum in dorsal view; lateral lobe somewhat slender, projecting dorso-apicad, mostly flattened but slightly swollen around apex and depressed just behind it on surface, rounded at apex, obtusely protruded behind apex at mesal margin in profile, weakly curved medio-dorsad in apical part, subtly and finely serrate at apex in dorsal view; penis slender, gradually tapered apicad, and strongly arcuate ventrad.



Figs. 4–9. *Malthodes masatakai* N. TAKAHASHI, sp. nov. —— 4, Apical portion of male abdomen, profile; 5, male 9th abdominal sternite, ventral view (pubescence omitted in right half); 6, male 10th abdominal tergite, caudal view (pubescence omitted in right half); 7, male genitalia, dorsal view; 8, ditto, lateral view; 9, ditto, ventral view. Scales: 0.4 mm for Fig. 4, 0.25 mm for Figs. 5–9.

Length of body: 4.1 (4.0–4.4) mm; width of body: 1.1 (1.0–1.1) mm.

Female. Unknown.

Type series. Holotype: ♂, Minokoshi, Higashiiyayama Vil., Tokushima Pref., 20–V–1993, Y. OKUSHIMA leg. Paratopotypes: 2♂♂, same locality as holotype, 21–V–1993, Y. OKUSHIMA leg. The holotype and a paratopotype are deposited in the Kurashiki Museum of Natural History, Okayama, Japan, and the other paratopotype is in my private collection.

Distribution. Japan (Shikoku).

Remarks. This new species is easily distinguished from the other Japanese congeners by a combination of the following unique features in the male: the ninth abdominal sternite (Fig. 5) is triangularly dilated in the apical part with feebly arcuate lateral sides, rounded apical angles and a short median longitudinal carina on the dorsum; the tenth tergite (Fig. 6) is almost cylindrical at the base and swollen laterally in the apical part; the penis is strongly arcuate ventrally.

Only a few Japanese *Malthodes* species have the almost cylindrical male tenth tergite as shown in the present new species. In some species of this genus, a copulatory depression is recognized on the apical abdominal tergite in the female terminalia, which corresponds to the male tenth abdominal tergite in copulation. Since the shape of copulatory depression is usually unique to respective species, it seems to be important as one of the key characters for species identification in the female (TAKAHASHI, 2001). Therefore, the presence or absence, and its shape if present, of the copulatory depression should be investigated when female material of this new species become available.

Etymology. This specific epithet is given in honor of Dr. Masataka SATÔ for his encouragement in the course of my study.

Acknowledgments

This paper is dedicated to Prof. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University. I wish to express my gratitude to Prof. J. YUKAWA (Entomological Laboratory, Kyushu University) and Dr. H. KOJIMA (Kyushu University Museum) for their critical reading of the earlier draft. My thanks are also due to Drs. O. TADAUCHI and S. KAMITANI (Entomological Laboratory, Kyushu University) for their continuous guidance, and to Dr. Y. OKUSHIMA (Kurashiki Museum of Natural History) for his kindness in offering the invaluable material.

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Two Remarkable New Species of the Genus *Asiopodabrus* (Coleoptera, Cantharidae) from Central Honshu, Japan

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Abstract Two new cantharid species are described from central Honshu under the names *Asiopodabrus masatakai* sp. nov. and *A. ichihashii* sp. nov. These species form a unique lineage together with *A. yamatonus* and *A. uchigadaninus*.

In a previous paper of ours (TAKAHASHI & KIRIYAMA, 2000), we described two unique cantharid species belonging to the subgroup of *Asiopodabrus macilentus*; they are *A. yamatonus* and *A. uchigadaninus*, both from central Honshu. They have relatively large ventral processes of the male genitalia, each of which is gradually thickened inwards and forms a shape like a triangular prism with two inner margins on the ventral and dorsal aspects, and is concave in the inner aspects. The ventral process of *A.yamatonus* is very elongate and almost similar in shape in the ventral and dorsal aspects. On the contrary, the ventral process of *A. uchigadaninus* is broad and much complicated; it is quite different in shape between the ventral and dorsal aspects, and deeply concave in the inner aspect. Judging from the observation of the ventral processes, we were unable to conclude that these two species are the members of the same lineage, because of its peculiarity in *A. uchigadaninus*. In the previous paper, therefore, the true relationship of these species was left unclarified. *Asiopodabrus* was later recognized by TAKAHASHI (2002) as a full genus.

In 2002, two remarkable species of *Asiopodabrus* were found by KIRIYAMA, the second of the present authors, and Mr. ICHIHASHI, respectively, from Gifu Prefecture, central Honshu. The former somewhat resembles *A. yamatonus*, but the ventral processes of the male genitalia are evidently different in shape and different in the ventral and dorsal aspects. The latter species, found by ICHIHASHI, closely resembles KIRIYAMA's one in the external molphology, but the conformation of the ventral processes is distinctly different. This species possesses much complicated ventral processes which are more distinct than that in *A. uchigadaninus*. The discovery of such an intermediate form as the former species suggests that the wide morphological gap between *A. yamatonus* and *A. uchigadaninus* may be bridged. The existence of

the latter species seems to show the possible direction of the modification of the ventral processes in the male genitalia of this lineage. As a result of these remarkable discoveries, we can now propose that the four species may belong to the same lineage as *A. yamatonus*, and can describe two additional new species on the sound basis. We are also going to give supplementary descriptions of the male genitalia of *A. yamatonus* and *A. uchigadaninus* and a key to the species of this lineage for determination.

Before going further, we wish to express our heartfelt gratitude to Dr. Masataka SATÔ for his continuous guidance and encouragement on our study of the Cantharidae and dedicate this paper in commemoration of his retirement from Nagoya Women's University. Our great appreciation is expressed to Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, Odawara for his critically reading the original manuscript of this paper. Cordial thanks are also due to Mr. Hajimu ICHIHASHI of Komono-chô, Mie Prefecture for his kind help in providing us with valuable materials.

Materials and Methods

Method of examining the male and female genitalia follows TAKAHASHI (1999).

The abbreviations used in the text are as follows. HW – width of head; PW – width of pronotum; PL – length of pronotum; PA – width of anterior margin of pronotum; PB – width of basal margin of pronotum; EW – width of elytra; EL – length of elytra.

Type depositories. Two holotypes designated in this paper are deposited in the collection of the Kanagawa Prefectural Museum of Natural History, Odawara. The paratypes are preserved in the collections of ours.

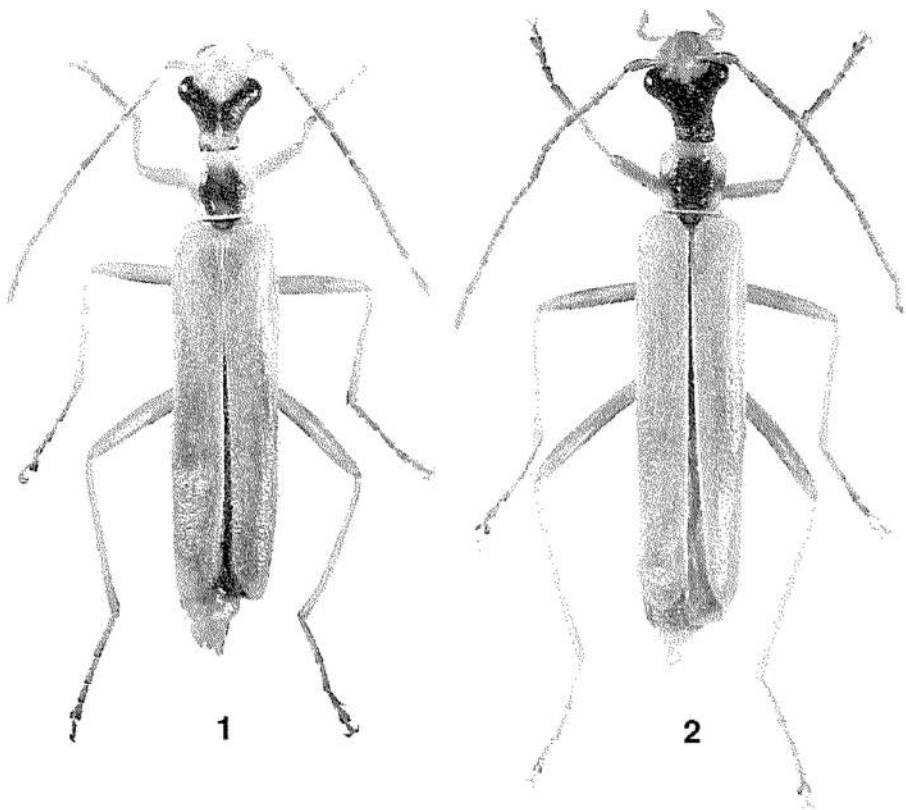
Descriptions

Asiopodabrus masatakai sp. nov.

(Figs. 1, 3–4)

Male. Body slender and medium-sized, almost yellowish white; antennal segments 1st and basal two-thirds of 2nd yellowish white, apical third of 2nd and 3rd testaceous, 4th to 11th dark brown; head behind eyes except for neck and longitudinal median part, basal part of postgena, a macula on pronotum (though longitudinally paler in middle), scutellum except for apical portion, metasternum and metepisterna brownish black; 1st to 7th sternites brownish black except for lateral and posterior margins.

Head almost impunctate in front, somewhat sparsely covered with moderate punctures behind eyes, and densely and somewhat rugosely so on neck. Eyes prominent; interocular distance 3.81 times as wide as eye. Antennae filiform, reaching basal



Figs. 1–2. Habitus of the holotypes of *Asiopodabrus* spp. —— 1, *A. masatakai* sp. nov.; 2, *A. ichihashii* sp. nov.

fourth of elytra; comparative length of each segment as follows:— 1.93 : 1.14 : 1.00 : 1.56 : 1.53 : 1.53 : 1.52 : 1.49 : 1.47 : 1.30 : 1.68. Terminal segment of each maxillary palpus very slender, 3.81 times as long as wide.

Pronotum rather narrow, widest at the middle to basal three-fourths; PW/HW 0.81, PW/PL 1.03, PW/PA 1.43, PW/PB 1.02; disc well elevated except for mediobasal area and lateral sides; surface of elevated area covered with relatively large punctures in basal half, with moderate punctures in apical third and with fine punctures in the remainder; apical and basal margins almost straight; lateral margins evidently sinuate in basal half, slightly angulate at basal three-fourths; anterior angles angulate, posterior ones prominent. Elytra slender, clearly wider than pronotum; EW/PW 1.55, EL/EW 3.50. Hind wings each with radiomedial crossvein intersecting radial sector. Front and middle claws bifurcate, hind ones each with a triangularly projected tooth at base.

Male genitalia elongate (Fig. 3). Ventral processes well developed; each lobe broad and gradually thickened inwards, vertically concave between the two inner margins, almost parallel-sided in ventral aspect with widely rounded apex, clearly

narrower in dorsal aspect than in the ventral, particularly in apical portion. Dorsal processes almost U-shaped together, the bottom of incision distinctly higher than each base of lobes; each lobe very broad, nearly straight, almost the same in thickness from base to near apex. Laterophyses hardly developed.

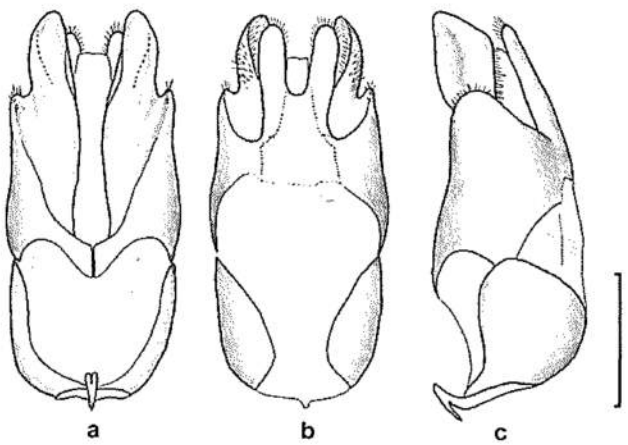
Length: 8.4 mm; breadth: 1.7 mm.

Female. Similar to male, but the body is relatively large and broad, eyes smaller, antennae shorter; clypeus somewhat darkened, postgena broadly brownish black, pronotal spot divided into two maculae in one specimen; eighth sternite brownish black except for lateral and posterior margins.

Eyes relatively prominent, interocular distance 4.10–4.20 times as wide as eye. Terminal segment of each maxillary palpus slender, 2.96–3.00 times as long as wide.

PW/HW 0.82–0.83, PW/PL 1.01–1.03, PW/PA 1.39–1.43, PW/PB 1.02–1.03. Elytra slightly wider and shorter; EW/PW 1.63–1.70, EL/EW 3.31–3.45. Each claw with a triangularly projected tooth at the base.

Genitalia relatively narrow; posterior margin of paraprocts very slightly emarginate, provided with many long hairs; coxite short and broad, provided with



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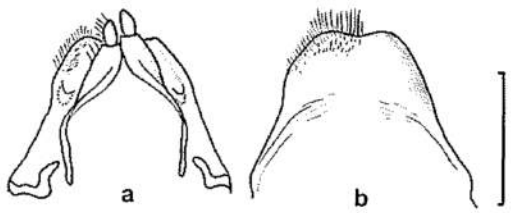

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Figs. 3–4. Genitalia of *Asiopodabrus masatakai* sp. nov.; 3, male genitalia; 4, female genitalia. —— a, Ventral view; b, dorsal view; c, lateral view. (Scales: 0.5mm.)

several distinct hairs on outer side; valvifers strongly bent posteriad near inner apices (Fig. 4).

Length: 8.6–8.8 mm; breadth: 1.8–1.9 mm.

Type series. Holotype: ♂, Mt. Nôgô-hakusan, Neo-mura, Gifu Pref., 28–V–2002, I. KIRIYAMA leg. Paratypes: 2♀♀, same data as for the holotype.

Distribution. Japan (central Honshu, Fagetea crenatae Region).

Asiopodabrus ichihashii sp. nov.

(Figs. 2, 5–7)

Male. Body relatively large and slender, almost yellowish white; antennal segments with basal two-thirds of both 1st and 2nd yellowish white, the remainder testaceous, with 3rd to 11th dark brown; head behind eyes, postgena, a macula on pronotum, scutellum, mesosternum, metasternum and metepisterna brownish black; 1st to 7th sternites brownish black except for lateral and posterior margins, 8th sternite testaceous except for lateral and posterior areas.

Head almost impunctate in front, covered with moderate punctures behind eyes, and densely so on neck. Eyes strongly prominent; interocular distance 3.28 (3.28–3.39) times as wide as eye. Antennae filiform, reaching basal third of elytra; comparative length of each segment as follows:— 1.88 : 1.04 : 1.00 : 1.43 : 1.43 : 1.46 : 1.47 : 1.46 : 1.40 : 1.28 : 1.50. Terminal segment of each maxillary palpus slender, 3.16 (3.16–3.21) times as long as wide.

Pronotum rather narrow, widest at basal three-fourths; PW/HW 0.79 (0.79–0.81), PW/PL 0.98 (0.98–1.00), PW/PA 1.61 (1.54–1.61), PW/PB 1.05 (1.05– 1.07); disc well elevated except for medio-basal area and lateral sides; surface of elevated area covered with relatively large punctures in basal half, with rather small punctures in apical third, and with fine punctures in the remainder; apical and basal margins almost straight; lateral margins sinuate in basal third, slightly angulate at basal three-fourths; anterior angles angulate, posterior ones prominent. Elytra very slender, clearly wider than pronotum; EW/PW 1.55 (1.48–1.55), EL/EW 3.71 (3.71–3.74). Hind wings each with radiomedial crossvein intersecting like a crank at radial sector (Fig. 5). Front and middle claws bifurcate, hind ones each with a triangularly projected tooth at base.

Male genitalia elongate (Fig. 6). Ventral processes well developed and complicate; lobe broad, gradually thickened inwards, deeply concave between ventral and dorsal inner margins, very broad in ventral aspect though very narrow in apical fifth, with distinct median carina observed from tip to middle, evidently narrower in dorsal aspect than in the ventral in basal four-fifths, though moderately wider than the latter in apical fifth, with protruding inner margin. Dorsal processes almost U-shaped together, the bottom of incision higher than each base of lobes; each lobe very broad, nearly straight, almost the same in thickness from base to near apex. Laterophyses rather developed and slender, invisible in dorsal view.

Length: 9.2 mm; breadth: 1.7 mm.

Female. Similar to male, but the body is relatively broad, eyes smaller,

longitudinal brownish black maculae, eighth sternite brownish black except for lateral antennae shorter; clypeus somewhat darkened, pronotum provided with a pair of two and posterior margins.

Eyes relatively prominent; interocular distance 4.76 times as wide as eye. Terminal segment of each maxillary palpus slender, 3.10 times as long as wide.

PW/HW 0.87, PW/PL 1.07, PW/PA 1.37, PW/PB 1.04. Elytra slightly wider and shorter; EW/PW 1.52, EL/EW 3.38. Each claw with a triangularly projected tooth at the base.

Genitalia relatively wide; posterior margin of paraprocts very slightly emarginate, provided with many long hairs; coxite short and broad, provided with several distinct hairs on outer side; valvifers clearly bent posteriad near inner apices (Fig. 7).

Length: 8.4mm; breadth: 1.7 mm.

Type series. Holotype: ♂, Ohshirakawa, Shirakawa-mura, Gifu Pref., 29–VI–2002, H. ICHIHASHI leg. Paratypes: 1♂, 1♀, same data as for the holotype.

Distribution. Japan (central Honshu, Fagetea crenatae Region).

Asiopodabrus yamatonus (TAKAHASHI et KIRIYAMA, 2000), comb. nov.

(Fig. 8)

Podabrus (Asiopodabrus) yamatonus TAKAHASHI et KIRIYAMA, 2000, Jpn. J. syst. Ent., **6**: 124.

Male genitalia elongate (Fig. 8). Ventral processes well developed; each lobe broad, gradually thickened inwards, vertically concave between ventral and dorsal inner margins; ventral aspect gradually narrowed toward apex which is somewhat pointed, dorsal aspect slightly narrower than ventral aspect. Laterophyses rather developed and relatively broad, invisible in dorsal view.

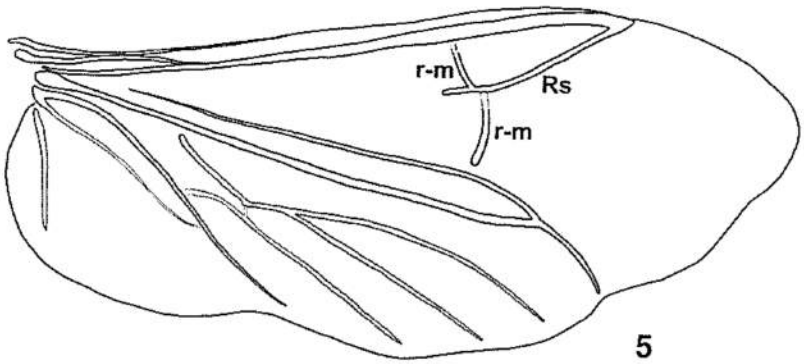
Specimen examined. Paratype (♂, Uchiga-dani, Yamato-chô, Gifu Pref., 11–V–1999, I. KIRIYAMA leg.).

Asiopodabrus uchigadaninus (TAKAHASHI et KIRIYAMA, 2000), comb. nov.

(Fig. 9)

Podabrus (Asiopodabrus) uchigadaninus TAKAHASHI et KIRIYAMA, 2000, Jpn. J. syst. Ent., **6**: 126.

Male genitalia elongate (Fig. 9). Ventral processes well developed and complicate; each lobe broad, gradually thickened inwards, deeply, vertically concave between ventral and dorsal inner margins, very broad in ventral aspect, though strongly narrowed at basal two-thirds to four-fifths and very narrow in apical fifth, almost pallarel-sided in dorsal aspect in basal four-fifths, strongly narrowed in apical fifth, clearly narrower than in ventral aspect in basal four-fifths though wider than that in apical fifth. Laterophyses rather developed and slender, invisible in dorsal view.



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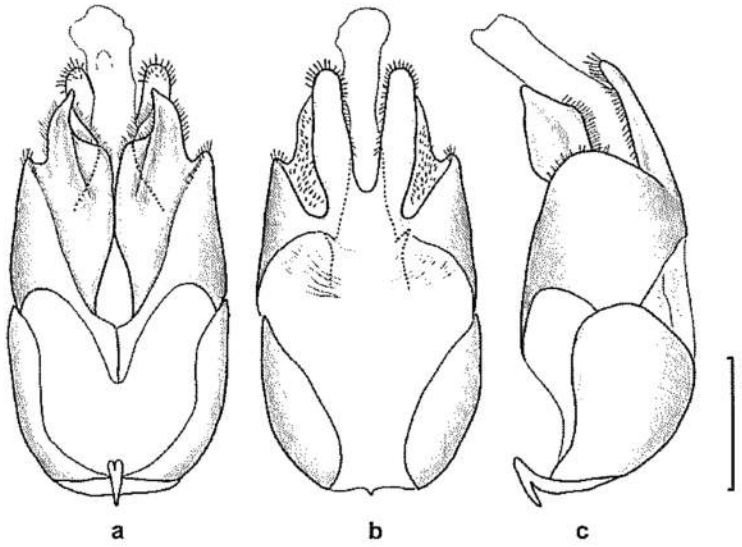

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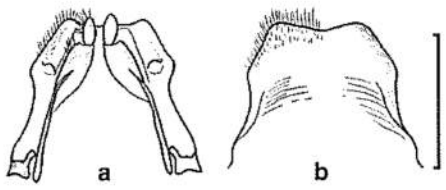

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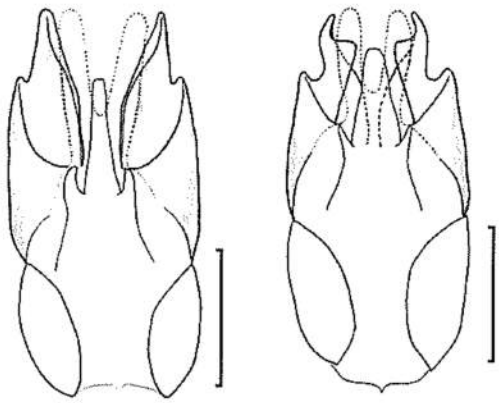
Figs. 5–7. Hind wing and genitalia of *Asiopodabrus ichihashii* sp. nov.; 5, hind wing; 6, male genitalia; 7, female genitalia. —— Rs, Radial sector; r-m, radiomedial crossvein; a, ventral view; b, dorsal view; c, lateral view. (Scales: 0.5mm.)



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Figs. 8–9. Male genitalia of *Asiopodabrus* spp., dorsal view without dorsal processes and middle of dorsal aspect. —— 8, *A. yamatonus* (TAKAHASHI et KIRIYAMA); 9, *A. uchigadaninus* (TAKAHASHI et KIRIYAMA). (Scales: 0.5mm.)

Specimen examined. Paratype (♂, Uchiga-dani, Yamato-chô, Gifu Pref., 14–V–1998, I. KIRIYAMA leg.).

Key to the Species of the *A. yamatonus* Lineage of the Subgroup of *A. macilentus*

1. Elytra entirely brownish black; ventral processes of male genitalia broad in ventral aspect, though strongly narrowed at basal two-thirds to four-fifths and very narrow in apical fifth, almost pallarel-sided in dorsal aspect in basal four-fifths, strongly narrowed in apical fifth, clearly narrower than in the ventral in basal four-fifths though rather wide in apical fifth. ..... *A. uchigadaninus* (TAKAHASHI et KIRIYAMA)
– Elytra entirely yellowish white. 2
2. Ventral processes of male genitalia provided with distinct median carina from tip to middle, very broad in ventral aspect, though very narrow in apical fifith, with protruding inner margin in dorsal aspect, evidently narrower than in ventral aspect in basal four-fifths, though relatively wide in apical fifth. ..... *A. ichihashii* sp. nov.
– Ventral processes of male genitalia without median carina. 3
3. Each ventral process of male genitalia gradually narrowed toward apex in ventral aspect which is somewhat pointed, slightly narrower in dorsal aspect than in ventral aspect. ..... *A. yamatonus* (TAKAHASHI et KIRIYAMA)
– Each ventral process of male genitalia almost pallarel-sided in ventral aspect with widely rounded apex, clearly narrower in dorsal aspect than in ventral aspect, particularly in apical portion. ..... *A. masatakai* sp. nov.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 299–302, May 25, 2003

A New Additional Species of the Anamorphidae (Coleoptera, Cucujoidea) from Japan

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Abstract A new species, *Idiophyes satoi* (Coleoptera, Anamorphidae) is described from Mie Prefecture, Central Japan.

In 1990, I revised taxonomically the Japanese species of the family Anamorphidae (=Mychothenidae) (Coleoptera), including 6 genera and 13 species. I added a new species, *Dexialia mirabilis* SASAJI in 1995 from Fukushima Prefecture, Japan. In this paper, I will describe a further new species of the genus *Idiophyes*.

Before going further, I wish to thank Mr. N. NARUKAWA, Mie Pref., for his kind gift of valuable specimens.

Idiophyes satoi sp. nov.

[Japanese name: Narukawa-maru-tentôdamashi]

(Figs. 1–2)

Male. Hemispherical short oval, 1.4 times as long as wide. Uniformly pale reddish brown, dorsal pubescence yellowish brown. Head relatively large, about 0.7 times as wide as pronotal width. Eyes (Fig. A) relatively large, strongly prominent laterally, interocular distance 0.64 times as much as head width including eyes. Clypeus about twice as wide as length, clearly divided from frons by distinct suture. Antennal distance nearly as much as clypeus (Fig. A). Antenna (Fig. B) 1.18 times as long as head width, 10-segmented with 3-segmented club; basal antennomere thick; 2nd antennomere about 1/2 as long as the basal; 3rd slightly shorter and much narrower than 2nd; each of 4th to 6th nearly as long as thick and 1/2 as long as 3rd; 7th slightly longer than 6th; 8th and 9th trapezoidal, 1.4 times as wide as long; terminal (10th) somewhat wider than the preceding, nearly round. Labrum (Fig. A) much narrower than clypeus, with weakly arcuate apical side. Apical segment of maxillary palpus (Fig. D) subcylindrical, 2.5 times as long as wide. Apical segment of labial palpus (Fig. E) distinctly wider than long. Mandible (Fig. C) with three apical denticles.

Pronotum 2.7 times as wide as long in dorsal view, basal side of pronotum very weakly bisinuate. Lateral sides of pronotum relatively strongly arcuate and very narrowly marginate. Basal corners of pronotum distinctly rectangulate. Distance

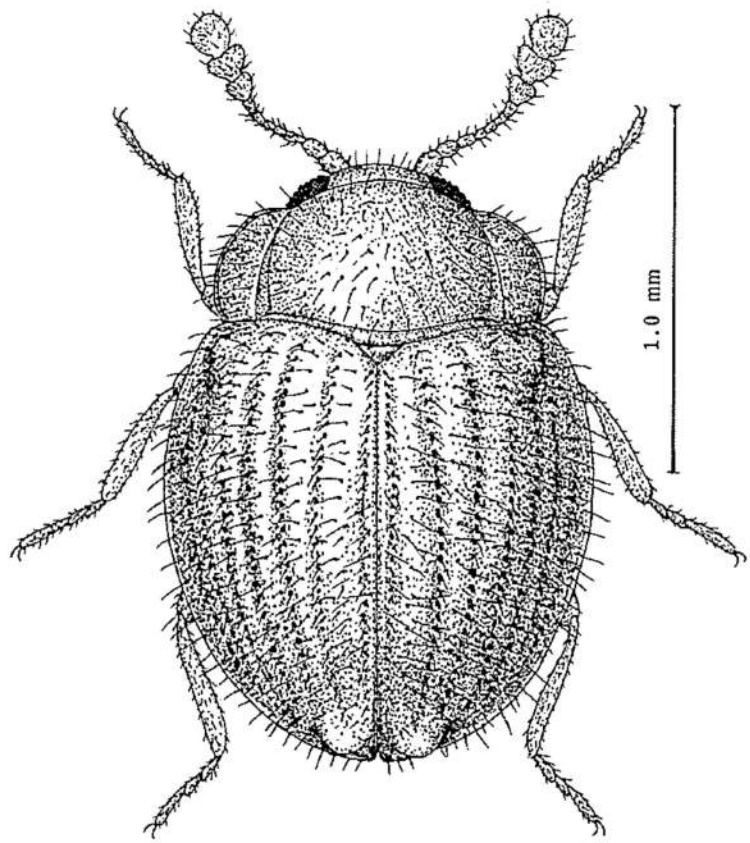

Fig. 1. *Idiophyes satoi* sp. nov., dorsal habitus.

between lateral sulcus and lateral margin weakly narrowing anteriorly (Fig. F); inner branch of pronotal sulcus long, twice as much as the remaining stem, and inclined inward; pronotal disc finely and relatively sparsely punctate. Scutellum triangular, somewhat wider than long.

Elytron with nine distinct punctate-striae. First interstice distinctly wider than 2nd. Surface of interstice very finely and sparsely punctate. Each strong puncture of striae bearing a suberect, relatively short hair. Interspace between striae finely punctate with erect and very long hairs. Elytral outer margin narrowly and clearly marginate. Apex of each elytron (Fig. 1 & Fig. 2–I) strongly prominent and highly swollen; surface between the tubercles deeply excavated.

Prosternal process relatively long, without prosternal carinae, although finely and indistinctly marginate. Tip of prosternal process rounded. Legs relatively long; tibiae slender; tarsus composed of three simple tarsomeres.

Ninth and 10th abdominal sternites and male genitalia as illustrated (Figs. J, K & L).

F e m a l e. Apical parts of elytra simple without any tubercles or grooves.

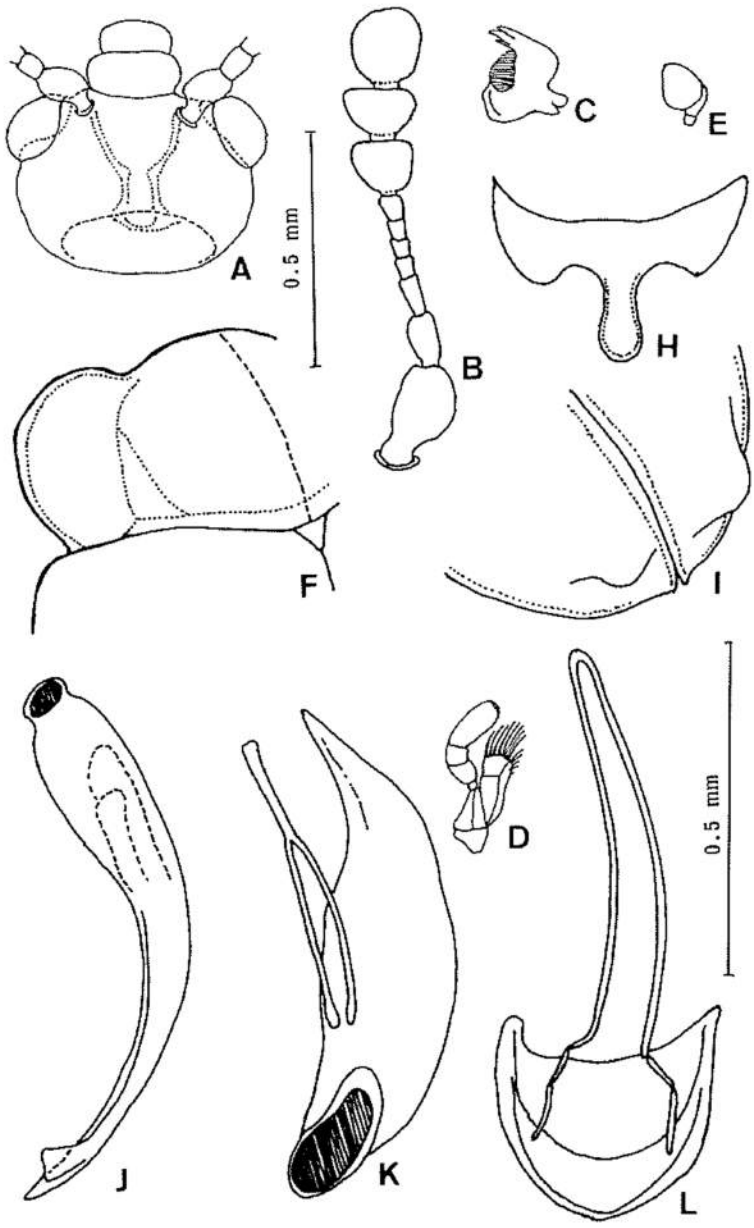

Fig. 2. *Idiophyes satoi* sp. nov. —— A, Head, dorsal view; B, right antenna, ventral view; C, left mandible, ventral view; D, maxilla; E, left maxilla; F, pronotum, fronto-lateral view; H, prosternum, ventral view; I, elytral apex, latero-apical view; J, aedeagus; K, tegmen; L, 9th and 10th abdominal sternites of male. Longer 0.5 mm scale is applied to Figs. B, J, L and K; shorter 0.5 mm scale to the remainings.

Body length: 1.40–1.75 (1.65) mm; body width: 1.00–1.25 (1.15) mm. Those of the holotype are in parentheses.

Holotype, male: Chigusa, Komono-T., Mie Pref., Japan, 9–III–2002, N. NARUKAWA leg., preserved in the Kyushu University Museum, Fukuoka, Japan.

Allotype, female: the same data as the holotype.

Paratypes: 4 males and 13 females, the same data as the holotype; 4 males and 5 females, Chikusa, Komono-T., 3–III–2002, A. AMAGASU leg.

Remarks. The present new species is closely related to all the known Japanese species of the genus *Idiophyes*, but it is easily distinguished by the elytral apex in male. From *Idiophyes niponensis* (GORHAM), it is separated by having the longer 3rd antennomere and prosternal process without parallel carinae. From *Idiophyes boninensis* SASAJI and *I. uenoi* SASAJI, it is divided by the longer branch of pronotal sulci.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 303–309, May 25, 2003

Notes on the Genus *Euxestocis* (Coleoptera, Ciidae), with Description of a New Species from the Malay Peninsula

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Abstract The genus *Euxestocis* is briefly reviewed. Description of a new species, *Euxestocis satoi*, from the Malay Peninsula, an identification key, illustration of *E. bicornutus* and *E. satoi*, and other information of specimens or species are provided.

The genus *Euxestocis* MIYATAKE, 1954 belonging to the tribe Ciini of the subfamily Ciinae has been represented by two species, *E. bicornutus* MIYATAKE from Japan and *E. formosanus* MIYATAKE from Taiwan. In this paper, a remarkable new species from the Malay Peninsula is described as a third one of the genus *Euxestocis*.

The abbreviations used herein are as follows: PL—medio-longitudinal length of pronotum; PW—maximal width of pronotum; EL—medio-longitudinal length of elytra from the base of scutellum to the elytral apex; EW—maximal combined width of elytra; TL—sum of PL and EL.

Before going further, I would like to express my sincere gratitude to Dr. M. SAKAI, Entomological Laboratory, College of Agriculture, Ehime University, for critically reading the manuscript of this paper.

Genus *Euxestocis* MIYATAKE, 1954

Euxestocis MIYATAKE, 1954, Sci. Rept. Matsuyama agric. Coll., **14**: 53; 1985, Coleopt. Japan Col., Osaka, **3**: 279. —— KAWANABE, 1994, Kontyû, Tokyo, **62**: 187.
Type species: *Euxestocis bicornutus* MIYATAKE, original designation, by monotypy.

Body oblong, glabrous on dorsum; vestiture consisting of very short fine hairs. Antenna 10-segmented; apical three segments forming a loose club; each segment of the club provided with four sensillifers which are nearly equidistant from the apex (Fig. 1). Head concealed, almost invisible from above; fronto-clypeal ridge sometimes with minute setiferous pits (Fig. 2). Elytral suture without apical inflexed margin. Prosternum in front of coxae medio-longitudinally carinate; prosternal process relatively thin but not lamellate (Figs. 3–4). Metasternum with a medio-longitudinal groove (Fig. 5). Protibia strongly serrate laterally, acutely dentate at outer apical angle (Fig. 6). Tarsal formula 4–4–4 in both sexes. Abdominal fovea present or absent in male.

Remarks. This genus is allied to the Asian genus *Neoennearthron* MIYATAKE, but in the latter the antenna is 9-segmented, the only one sensillifer of the terminal segment of antenna is situated at the apex, and the prosternal disc in front of the coxae is not carinate but somewhat tumid medio-longitudinally. The Neotropical genus *Porculus* LAWRENCE also resembles this genus in the feature of the protibia. In *Porculus*, however, the prosternal process is lamellate (MIYATAKE, 1954; LAWRENCE, 1987).

Euxestocis bicornutus MIYATAKE, 1954

[Japanese name: Futatsunotsuya-tsutsukinokomushi]

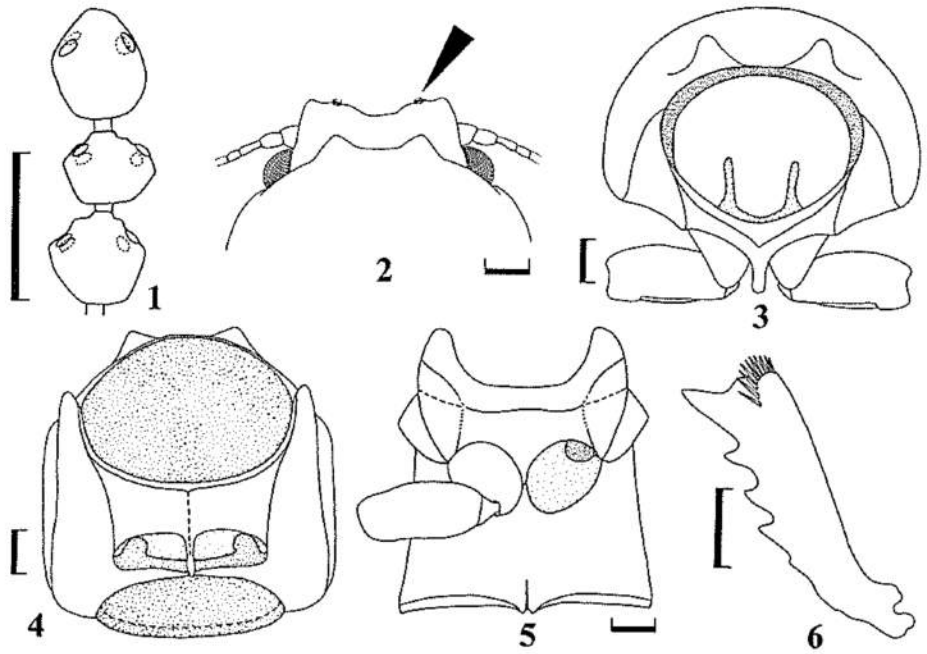
(Figs. 1–6, 8, 10 &12)

Euxestocis bicornutus MIYATAKE, 1954, Sci. Rept. Matsuyama agric. Coll., **14**: 54, figs.; 1982, Spec. Iss. Mem. Retir. Emer. Pref. M. CHÛJÔ, 75; 1985, Coleopt. Japan Col., Osaka, 3: 282, pl. 46, fig. 21. —— KITABATA, 1993, Gekkan-Mushi, Tokyo, (273): 39.

Variation of the type series and the specimens from Higashino, Matsuyama, Ehime Pref., Shikoku.

Male (n=13)	Female (n=11)
TL (mm): 1.36–1.79 (1.55±0.15)	TL (mm): 1.29–1.75 (1.56±0.14)
EW (mm): 0.62–0.78 (0.69±0.05)	EW (mm): 0.6–0.78 (0.7±0.05)
TL/EW: 2.11–2.38 (2.26±0.07)	TL/EW: 2.17–2.31 (2.22±0.07)
PL/PW: 0.85–0.97 (0.92±0.04)	PL/PW: 0.86–0.91 (0.88±0.01)
EL/EW: 1.29–1.41 (1.36±0.04)	EL/EW: 1.31–1.44 (1.37±0.04)
EL/PL: 1.38–1.73 (1.5±0.1)	EL/PL: 1.53–1.67 (1.62±0.04)

Specimens examined. [Honshu] <Aomori Pref.> 11♂♂, 13♀♀, Mt. Iwakisan, 29–IX–1992, M. SAKAI leg. <Kanagawa Pref.> 1♂, Ooiso, 30–VII–1973, Y. HIRANO leg.; 1♂, 1♀, Dôdaira, Tanzawa, 16–V–1993, Y. HIRANO leg.; 1♂, same locality, 27–VI–1993, Y. HIRANO leg. <Hyôgo Pref.> 5♂♂, 3♀♀, Mt. Maya-san, 19–VIII–1989, M. KAWANABE leg. <Okayama Pref.> 13 exs., Mt. Gagyû-san, 28–VII–1989, M. KAWANABE leg. [Shikoku] <Ehime Pref.> 66 exs., Higashino, Matsuyama, 13–IV–1953, M. MIYATAKE leg. (including holotype and 7 paratypes); 2♂♂, 2♀♀, Shiroyama, Matsuyama, 10–IX–1950, S. HISAMATSU leg. (paratypes); 11 exs., Kashima nr. Matsuyama, 29–VII–1953, M. MIYATAKE leg. (including 8 paratypes); 1♀, Matsuyama, 28–V–1950, M. MIYATAKE leg.; 1 ♂, Nuwa Is., 12–X–1957, F. TAKECHI leg.; 1♂, 1♀, Omogokei, 27–VII–1956, M. MIYATAKE leg.; 2♂♂, 2♀♀, Odamiyama, 25–VIII–1992, E. YAMAMOTO leg.; 1♂, 1♀, Mt. Saragamine, alt. ca. 1,000 m, 3–V–1989, M. SAKAI leg. <Kagawa Pref.> 1♂, Mt. Zôzusan, 31–VIII–1975, A. Oda leg. <Kôchi Pref.> 2♂♂, 2♀♀, Oudaba, Kuroson, Hata-gun, 18–VII–1953, T. EDASHIGE leg.; 1♀, same locality, 29–IV–1956, S. HISAMATSU leg.; 1♂, 3♀♀, Cape Ashizuri, 4–IV–1977, H. MIYAMA leg.; 163 exs., same locality, 25~26–VI–1989, M. KAWANABE leg. [Kyushu] <Miyazaki Pref.> 2 exs., Mi-ike, 3–III–1984, M. ÔHARA leg. <Nagasaki Pref.> 26 exs., between Agami-iriguchi and Uchiyama,Tsushima Isls., 10–V–1991, M. KAWANABE leg. <Kagoshima Pref.> 115



Figs. 1–6. *Euxestocis bicornutus* MIYATAKE, male, from Cape Ashizuri. —— 1, Antennal club; 2, setiferous pits; 3, prothorax, frontal view; 4, prothorax, ventral view; 5, meso- and metasterna, ventral view; 6, right protibia. Scale: 0.1 mm.

exs., Hanayama-hodô-iriguchi, Yakushima Is., 23–IX–1989, M. KAWANABE leg.; 1♀, between Kusugawa and Shiratani, 25–IX–1989, M. KAWANABE leg. All the type specimens are preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama.

Distribution. Japan (Honshu, Shikoku, Kyushu, Tsushima Isls., Yakushima Is.).

Host fungi. Cryptoporus volvatus (PERK) SHEAR [Hitokuchi-take], *Heterobasidion insularis* (MURR.) RYV. [Renga-take], *Ganoderma lucidum* (LEYSS.: FR.) KARST. [Mannen-take], *Fomitella rhodopaea* (LÉV.) AOSHIMA [Ô-surume-take], *Fomitella fraxinea* (FR.) IMAZEKI [Bekkô-take], *Gloeoporus dichrous* (FR.) BRESADOLA [Ebi-ura-take], *Daedaleopsis perlevis* AOSHIMA [Senbei-take] and *Perenniporia* sp.

Euxestocis formosanus MIYATAKE, 1982

[Japanese name: Futo-futatsunotsuya-tsutsukinokomushi]

Euxestocis formosanus MIYATAKE, 1982, Spec. Iss. Retir. Emer. Prof. M. CHÛJÔ, 77 (1♂, Taiwan University plantation between Wushe and Lushan, Nantou Hsien).

Measurement.

Male (n=1)

TL (mm): 2.0	EW (mm): 0.8		
TL/EW: 2.5	PL/PW: 1.0	EL/EW: 1.35	EL/PL: 1.5

Specimen examined. Taiwan: 1♂, Taiwan University plantation between Wushe and Lushan, Nantou Hsien, 19–VI–1977, K. USHIJIMA leg. (holotype). The holotype is preserved in the collection of the Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama.

Distribution. Taiwan.

Host fungus. Unknown.

Euxestocis satoi M. KAWANABE, sp. nov.

[Japanese name: Ô-futatsunotsuya-tsutsukinokomushi]

(Figs. 7, 9, 11 & 13)

Male (Holotype). Body length (excluding head): 2.26 mm; greatest breadth of elytra: 1.02 mm.

Body elongate and cylindrical, 2.22 times as long as elytral breadth, strongly convex, very shiny on dorsum. Color dark reddish black; head, antennal clubs, mandibles and legs reddish brown; antennal funicles, palpi and tarsi yellowish brown. Punctures on dorsum each bearing a very short, fine and pale hair which is inconspic-

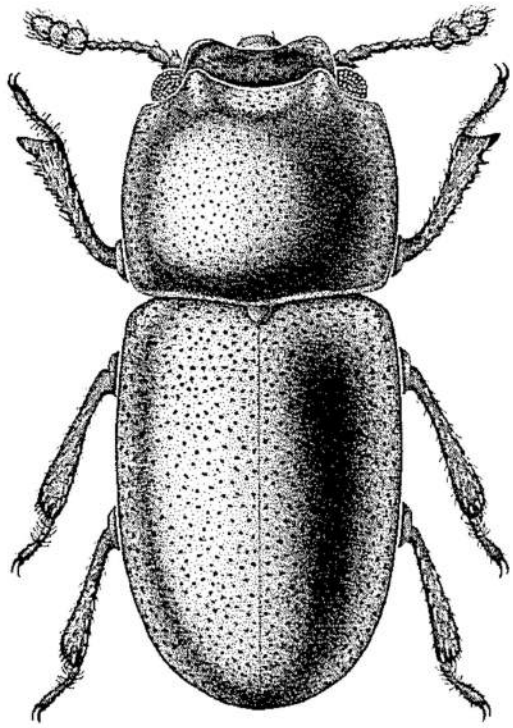
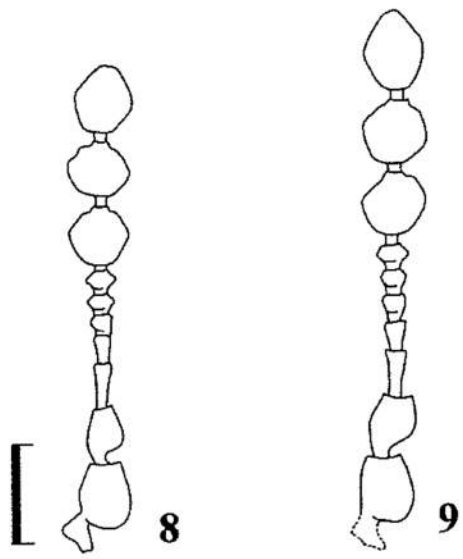


Fig. 7. *Euxestocis satoi* sp. nov., from Gunung Beremban.



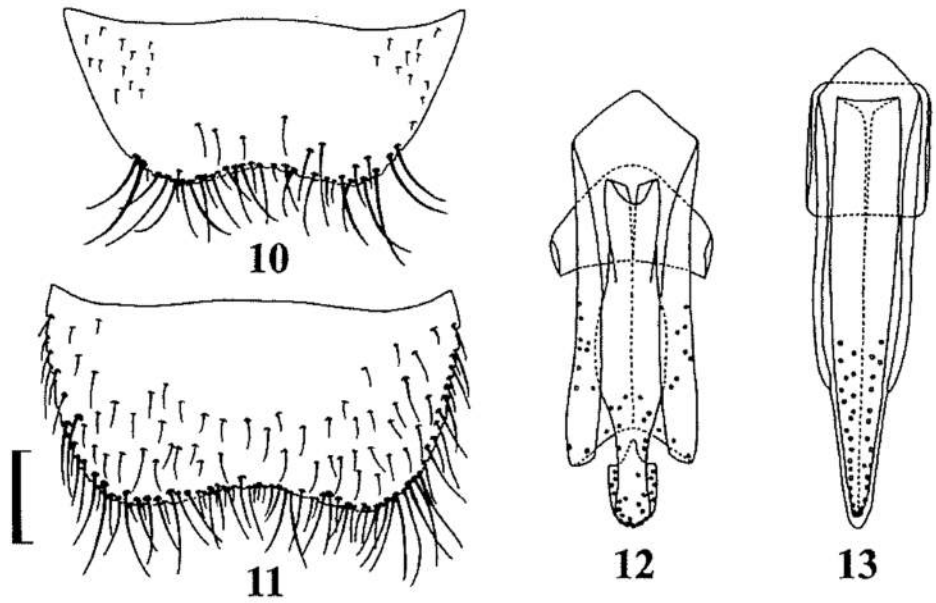
Figs. 8–9. Antennae of *Euxestocis* spp. —— 8, *E. bicornutus* MIYATAKE, from Cape Ashizuri; 9, *E. satoi* sp. nov., from Gunung Beremban. Scale: 0.1 mm.

uous and hardly visible under low magnification (×10).

Head relatively exposed from pronotum, weakly convex; rather sparsely and minutely punctate; interstices between punctures smooth; fronto-clypeal ridge produced forward, reflexed above on each side, and forming two semioval plates. Antennae 10-segmented; 3rd segment 1.54 times as long as 4th; 8th to 10th forming a loose club.

Pronotum including apical projections 0.75 times as long as broad, nearly parallel-sided; anterior margin produced forward and upturned into two lateral projections; margin between the projections arcuately emarginate; anterior corners angulate in lateral view, forming an angle of about 135° and barely visible from above; lateral margins narrowly ridged, barely visible from above; basal margin narrowly ridged, faintly sinuate; hind angles broadly rounded; dorsum opaque, irregularly, closely and conspicuously punctate; punctures uniform in size, deep, separated by a distance equal to about 1.5 to 5 times their diameter; interstices between punctures smooth. Scutellum semioval, smooth, with some small punctures. Elytra 1.45 times as long as broad, and 1.9 times as long as pronotum; sides subparallel from base to basal two-thirds, then gradually convergent apicad; disc closely, irregularly and shallowly punctate; punctures uniform in size, somewhat larger and shallower than those on pronotum, each bearing a short and inconspicuous hair; interstices between punctures smooth or partially somewhat rugulose; suture narrowly margined.

Prosternal disc in front of coxae medio-longitudinally carinate, transversely and shallowly depressed just before each coxa; prosternal process narrow, subparallel-sided, somewhat broadened near apex, somewhat upheaved to the level of the base of prosternum. First abdominal sternite with a circular and marginally pubescent fovea



Figs. 10–13. Male 8th abdominal sternite and genitalia of *Euxestocis* spp., dorsal view; 10–11, 8th abdominal sternite; 12–13, genitalia. —— 10, 12, *E. bicornutus* MIYATAKE, from Cape Ashizuri; 11, 13, *E. satoi* sp. nov., from Gunung Beremban. Scale: 0.05 mm.

at the middle.

Male genitalia in a paratype:— Eighth abdominal sternite shallowly and arcuately emarginate at the middle of apex, bearing short hairs and relatively long ones along the apical margin. Tegmen slender, nearly lancetform, about 0.53 times as long as the combined length of visible abdominal sternite.

Female. Fronto-clypeal ridge slightly reflexed and forming arcuate small lamella at each side; anterior margin of pronotum not produced forward, broadly rounded or truncate; first abdominal sternite devoid of pubescent fovea.

Variation in the type series.

Male (n=2)	Female (n=3)
TL (mm): 2.0–2.26 (2.14±0.11)	TL (mm): 1.82–2.16 (1.96±0.15)
EW (mm): 0.92–1.04 (0.99±0.05)	EW (mm): 0.84–1.02 (0.93±0.07)
TL/EW: 2.08–2.22 (2.16±0.06)	TL/EW: 2.02–2.17 (2.1±0.06)
PL/PW: 0.69–0.78 (0.74±0.04)	PL/PW: 0.73–0.79 (0.76±0.02)
EL/EW: 1.38–1.45 (1.41±0.03)	EL/EW: 1.34–1.43 (1.39±0.04)
EL/PL: 1.86–2.0 (1.92±0.06)	EL/PL: 1.92–1.97 (1.94±0.02)

Type series. Holotype: ♂, Gunung Beremban, Cameron Highlands, Malaysia, 4–V–1996, M. KAWANABE leg. Paratypes: 1♂, 3♀♀, same data as holotype. All the type specimens are preserved in the collection of the Entomological Laboratory,

College of Agriculture, Ehime University, Matsuyama, Japan.

Distribution. Malaysia (Malay Peninsula).

Host fungus. *Nigroporus* sp.

Remarks. This new species resembles *Euxestocis bicornutus* in the feature of the projections of head and pronotum in male, but differs from the latter in the following points: the body is larger and stouter, the fronto-clypeal ridge is devoid of minute setiferous pits in male.

This specific name is dedicated to Prof. Dr. Masataka SATÔ on the occasion of his retirement for his great contribution to the coleopterology.

Key to the Species of the Genus *Euxestocis*

1. Pronotum rather slender, PL/PW more than 1.0. First abdominal sternite in male without pubescent fovea. ..... *Euxestocis formosanus* MIYATAKE
– Pronotum broader, PL/PW usually less than 0.97. First abdominal sternite in male with pubescent fovea. 2
2. Body smaller, TL less than 1.79 mm. Pronotum slender, PL/PW more than 0.85. Fronto-clypeal ridge in male with a minute setiferous pit on each side (Fig. 2). Eighth abdominal sternite in male devoid of many long hairs around the apical area (Fig. 10). ..... *Euxestocis bicornutus* MIYATAKE
– Body larger, TL more than 1.82 mm. Pronotum broader, PL/PW less than 0.79. Fronto-clypeal ridge in male without minute setiferous pits. Eighth abdominal sternite in male provided with many hairs around the apical area and apical margin (Fig. 11). ..... *Euxestocis satoi* sp. nov.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 311–315, May 25, 2003

A New Species of the Genus *Glipa* (Coleoptera, Mordellidae) from Sulawesi, Indonesia

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Abstract A new *Glipa* species belonging to the subgenus *Macroglipa* is described from Sulawesi, Indonesia, under the name of *G.* (*M.*) *satorum* sp. nov. This is included in the group of *G.* (*M.*) *baeri* PIC or *G.* (*M.*) *sauteri* PIC, and particularly characterized by the peculiar maculation on the elytra.

The lineage of *G.* (*M.*) *baeri* PIC or *G.* (*M.*) *sauteri* PIC is a relatively small group, and comprises several known species, *G.* (*M.*) *baeri* from the Philippines, *G.* (*M.*) *ogasawarensis* KÔNO from the Ogasawara Islands of Japan, *G.* (*M.*) *salvazai* PIC from northern Vietnam, *G.* (*M.*) sp. (TAKAKUWA, 2000) from the central Ryukyus of Japan, and *G.* (*M.*) *sauteri* PIC widely distributed in Southeast Asia, though the third species is now regarded as a junior synonym of the second species by HORÁK (1998). They share the following distinct characteristics:— body large and slender, strongly and straightly convergent apicad; terminal segment of maxillary palpus fairly broadly triangular; terminal segment of antenna broadly spatulate with more or less truncate apex; elytra bearing much purplish dark brown pubescense in basal 2/3 in most species or only a few ones along the suture in *G.* (*M.*) *sauteri*, and decorated with whitish maculations, a pair of median reduced marks and posterior clear fascia in most species, or basal and premedian maculae and posterior fascia in *G.* (*M.*) *sauteri*.

Recently, I have noticed an undescribed *Glipa* from Sulawesi of Indonesia, which appears to be closely related to *G.* (*M.*) *baeri* or *G.* (*M.*) *sauteri*, though in this species the elytra are decorated with deep yellowish maculations instead of white ones and a chocolate maculation reduced in the male or quite vague in the female. After a careful study, I have come to the conclusion that the Sulawesian species is doubtless included in the lineage of *G.* (*M.*) *baeri* or *G.* (*M.*) *sauteri*. In the present paper, I am going to describe the mordellid as a new species of a member of the above lineage.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo for critically reading the original manuscript of this paper. Deep thanks are also due to Mr. Nobuo KASHIWAI of the Hosen-gakuen, Tokyo for supplying me with valuable material used in this paper.

This small paper is dedicated to Prof. Dr. Masataka SATÔ for commemorating his retirement from the Nagoya Women's University, Nagoya.

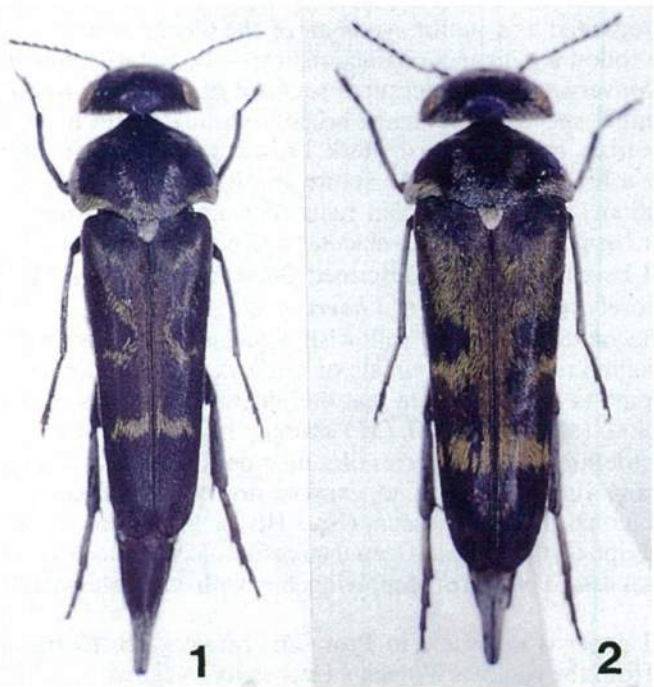
Glipa (*Macroglipa*) *satorum* sp. nov.

(Figs. 1–8)

Large-sized species, characterized by slender and strongly attenuate body, terminal segment of maxillary palpus fairly broadly triangular, antennal terminal segment with almost truncated apex, subquadrate pronotum, longitudinal chocolate sutural band of elytra running from basal fascia to postmedian one especially in male, longitudinally triangular 8th sternite of male with acutely incised apical projection, and sclerotized branch of right paramere without ventral carina behind apex of inner aspect.

Male. Entirely black; mouth parts except for mandibles yellow to dark brownish yellow; antennal segments 1–3 or 4 brownish at each apex, the remaining segments vaguely reddish at each apex; fore femora brown to brownish black; tibial spurs more or less reddish in apical parts; all claws reddish brown.

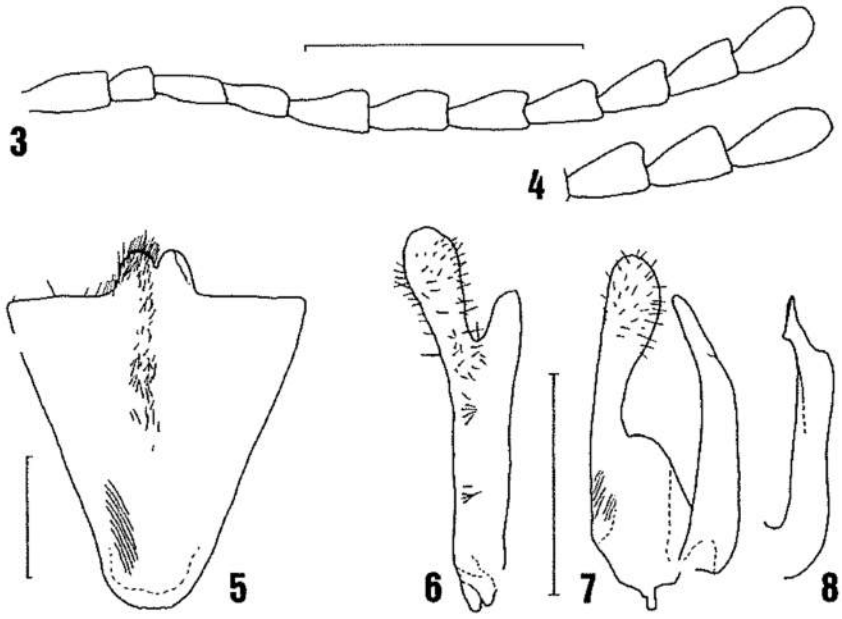
Head rather flattened dorsally, just a half wider than length from postclypeus to hind margin, clothed with golden yellow pubescence particularly in front, whitish one on hind margin, fuscous one on/around vertex; hind margin almost straightly oblique in dorsal view; genae moderately broad, each with margin almost right-angled though widely rounded at corner; eyes densely clothed with long hairs, each not reaching hind margin. Terminal segment of each maxillary palpus fairly broadly triangular.



Figs. 1–2. Habitus of *Glipa* (*Macroglipa*) *satorum* sp. nov. —— 1, ♂, holotype; 2, ♀, paratype.

Antennae 0.88 times as long as width of head, serrate from fifth to tenth segments; relative lengths of antennal segments in the holotype as follows:— 1.85 : 1 : 1.62 : 1.52 : 1.81 : 1.80 : 1.81 : 1.71 : 1.67 : 1.57 : 2.00; 4th segment subcylindrical; terminal segment broadly spatulate with almost truncate apex, just twice as long as wide, 1.27 times as long as the penultimate which is 1.72 times as long as wide.

Pronotum 1.16 times as wide as head, rather quadrate, 1.3 times as wide as long, widest behind the middle, clothed with whitish to yellowish pubescence, with three large black maculations, the lateral pair barely connected with a median one which reaches anterior margin; front margin almost straightly transverse, lateral margins gently arcuate, basal margin distinctly sinuate though median lobe is very broad and extremely gentle; hind corners somewhat narrowly rounded. Scutellum lingulate, covered with whitish pubescence. Elytra slender, 2.45 times as long as humeral width, distinctly narrower than pronotum (0.87 : 1), strongly convergent apicad with very slightly excavated sides, decorated with yellowish or brownish hairs as follows: basal W-shaped fascia, premedian X-shaped macula and postmedian transverse fascia, all consisting of golden yellow hairs, and vague longitudinal sutural band running from above basal fascia to postmedian one consisting of faintly purplish dark brown hairs; surface largely clothed with black setae, with fine purplish reddish pubescence behind humeri; each apex considerably narrowly rounded. Legs clothed with fine whitish to yellowish pubescence on basal parts of fore tibiae and middle and hind femora and tibiae, with whitish to brownish fine pubescence on middle and hind tarsi; inner spur of hind tarsus a half longer than outer one.



Figs. 3–8. *Glipa* (*Macroglipa*) *satorum* sp. nov. —— 3, 4, Right antennae: 3, ♂, holotype; 4, ♀, paratype, last three segments. —— 5, 8th sternite, ♂; 6, left paramere in inner view; 7, right paramere in inner view; 8, sclerotized branch of the same in lateral view. (Scales: 1mm.)

Pygidium 0.43 times as long as elytra, about 1.9 times as long as anal sternite, rapidly attenuate in basal 3/5 though gently so in the remainder, clothed with whitish pubescence in less than apical half; dorsum not so carinate as compared with *G. baeri*, provided with a longitudinal costa in less than apical half. Anal sternite about 1.63 times as long as basal width, medially, longitudinally concave from apex to behind base, clothed with blackish setae all over; apex very feebly, broadly emarginate with widely rounded corners, about a half narrower than base. Eighth sternite thickened, dully brownish, longitudinally triangular with rounded base, 1.18 times as long as wide, with some oblique wrinkles on latero-basal parts of outer surface; front margin straightly truncate; apical projection bilobed with acute median incision; front corners very narrowly rounded.

Genitalia slender. Left paramere 0.59 times as long as 8th sternite, fairly longer than right one, slightly bent inwards before the base, slightly and broadly concave in inner aspect; membranous lobe widely spatulate, about 2.2 times as long as the widest. Right paramere in inner view rather strongly constricted before the middle; basal piece longitudinally, deeply concave, slightly projected anteriad at apex, obliquely wrinkled on lateral callosity; membranous lobe somewhat spatulate with straight outer margin, bent inwards, almost twice as wide as the narrowest; sclerotized branch distinctly long, gradually and almost straightly attenuate towards apex though curved inwards at apical 1/3, without ventral carina behind apex.

Female. Head narrower, about 1.43 times as wide as length from postclypeus to hind margin, provided with more or less paler yellowish pubescence which is almost whitish in most specimens. Antennae wider, for example, penultimate segment 1.63 times as long as wide, though terminal segment is slenderer, 2.34 times as long as wide, and 1.31 times as long as the penultimate. Pronotum 1.2 times as wide as head, 1.4 times as wide as long, decorated with the same colored pubescence as on head. Elytra 2.46 times as long as humeral width, apparently narrower than pronotum (0.90 : 1); yellowish maculations darker, distinctly developed, X-shaped mark apparently connected with both basal and posterior fasciae along suture; faintly purplish dark brown hairs along suture distinctly decreasing in number. Fore tibiae very slightly arcuate both inwards and downwards, clothed with fine whitish pubescence all over. Pygidium distinctly shorter, 0.33 times as long as elytra, about 1.76 times as long as anal sternite, clothed with whitish pubescence all over, with vague dorsal costa. Anal sternite extremely shorte, about 1.05 times as long as basal width, fully convex; apex straightly truncate, less than a half narrower than base.

Length: ♂: 11.1–12.0 mm, ♀: 10.6–12.5 mm (incl. head and excl. pygidium).

Type series. Holotype: ♂, Palolo, about 700 m in alt., Palu, C. Sulawesi, IX–1990, local collector leg. Paratypes: 3♀♀, same data as the holotype; 2♂♂, 3♀♀, same locality as the holotype, X–1990.

The holotype and a paratype are deposited in the collection of the Kanagawa Prefectural Museum of Natural History, Odawara. The remaining paratypes will be presented to some institutes and coleopterists.

Additional specimen examined. 1♀, Karaenta, Maros – Camba, 27–28 km from Maros, Kab. Camba., Sulawesi, 4–VIII–1990, N. KASHIWAI leg.

Distribution. Sulawesi, Indonesia.

Notes. This new species is the most similar in external appearance to *G.* (*M.*)

sauteri PIC from Southeast Asia, but easily distinguished from it by the elytra decorated with yellowish maculations instead of whitish ones.

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Three New Species of the Genus *Oedemutes* (Coleoptera, Tenebrionidae) from Southeast Asia

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Abstract Three new species of the genus *Oedemutes* are described under the following names: *O.* (*Tamdaos*) *satoi* from Sumatra, *O.* (*Oedemutes*) *violaceipes* from East India and *O.* (*O.*) *palawanicus* from the Philippines (Palawan Is.).

Introduction

After KULZER's (1954) revision of the genus *Oedemutes*, seven species and one subspecies have been added to this genus from Southeast Asia (KASZAB, 1980; M. T. CHÛJÔ, 1973; MASUMOTO, 1981, ANDO, 1989, 2000, 2002). Up to the present, therefore, sixteen species and one subspecies have been known in this genus from Sri Lanka, the Philippines, Vietnam, Taiwan and Japan.

Oedemutes resembles *Phaedis* in general appearance, but is distinct from the latter in the following character states: width of elytral base almost equal to that of pronotum; elytra extremely tumid dorsad and laterad. Moreover, most species of *Oedemutes* have foveolate elytral punctures and reduced hind wings.

KULZER (1954) suggested that the form of pronotum and the degree of elytral convexity were useful for species recognition of *Oedemutes*. The author, however considers that any other characters of head, elytra and the ventral side of body are also important as well as the characters referred to by KULZER.

In these years, I have examined the extensive tenebrionid collections of some European museums. Consequently, the author found three undescribed species of *Oedemutes*, all of which differ considerably from any known species of the genus in the characters of head, pronotum and elytra. Of these, two species are from Sumatra and East India, respectively, both being the new records for this genus. Thus, I will describe three new species of *Oedemutes* based on the present materials. The abbreviations for the technical terms and type depository used herein are the same as those in ANDO's previous papers.

This small paper is dedicated to Professor Dr. Masataka SATÔ who retires from the Graduate School of Nagoya Women's University. He is not only one of the author's best friends but also eminent coleopterologist, especially in the study of water beetles. On the occasion of his retirement, I would like to cerebrate his departure to new life and pray for further progress in his entomological works.

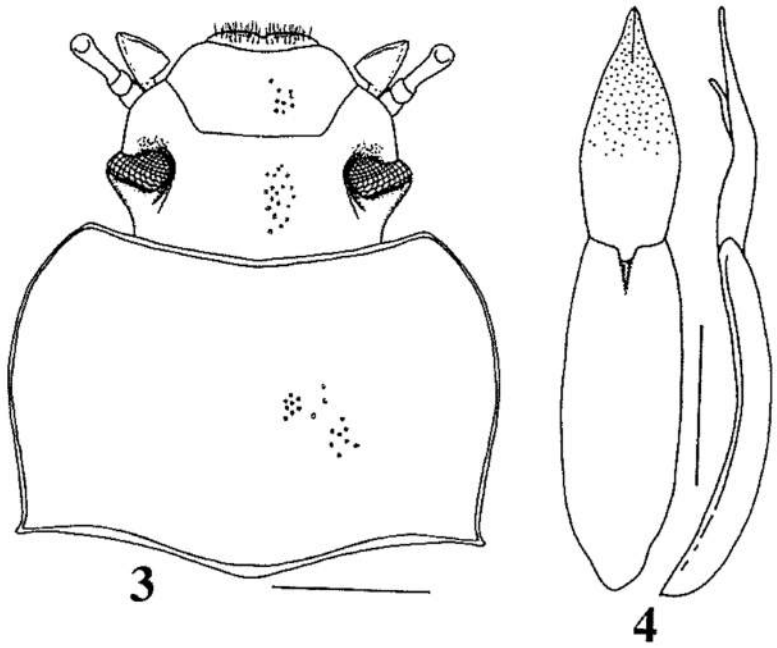
Oedemutes (*Tamdaos*) *satoi* sp. nov.

(Figs. 1–4)

Male. Oblong-oval, robust, covered with very fine isodiametric microsculpture. Colour dark reddish brown; head and pronotum more or less darker; mouthparts, elytra and legs lighter in colour; dorsal surface covered with slight brassy reflection.

Head hexagonal, divergent anteriorly, weakly convex; clypeus transversely and weakly convex, and faintly depressed at both sides behind apex, with apical margin clearly bisinuate, densely and not definitively punctate; fronto-clypeal suture narrow and obvious; genae slightly raised, longer than wide, feebly and roundly narrowed forwards, minutely and sparsely punctate; frons moderately convex and sloping forwards, indistinctly and not densely punctate, with an irregular impression at middle, where the punctures are larger and more distinct than in the other; postgenae ill-developed. Eyes rather small, transversely elliptical, produced laterad, hardly invaded by genae, IE/TD = ca. 2.86; inner ocular sulci deep and clear. Antennae short, reaching basal 1/3 of pronotum; six distal segments weakly clavate, with dense sensory setae; 11th oblong. Terminal segment of maxillary palpus strongly

Figs. 1–2. Habitus of *Oedemutes* (*Tamdaos*) *satoi* sp. nov.; 1, dorsal view; 2, lateral view.



Figs. 3–4. *Oedemutes* (*Tamdaos*) *satoi* sp. nov. —— 3, Head and pronotum in dorsal view; 4, male genitalia, left: dorsal view, right: lateral view. Scale bars = 1.0 mm for Fig. 3, 0.5 mm for Fig. 4.

securiform. Mentum linguiform, clearly produced antero-inferiorly, longitudinally raised in middle and deeply excavated at sides, the raised area covered with dense and transverse microscopical rugosities. Submentum pentagonal, with some punctures. Gula microsculptured; gular suture very tenuous.

Pronotum quadrate, widest at middle, PW/PL = ca. 1.59, moderately punctate, the punctures distinct in median 3/5 and indistinct in the rest by strong microsculpture; disc weakly convex, steeply slanting in each lateral 1/6, devoid of basal foveae; apical margin arcuately emarginate, with apical angles obtusely angulate, a little produced; lateral margins arcuately and moderately produced; basal margin strongly bisinuate, with basal angles rectangular; all the marginal areas narrowly bordered. Scutellum small and depressed.

Elytra oblong-oval, gently and less strongly convex than those in ordinary species of the genus, and not steeply convex beside scutellum in lateral view, with apices rather sharp, EL/EW = ca. 1.45 and widest at apical third; lateral margins weakly reflexed, slightly quadrisinuous in apical half when viewed from side; foveolate serial punctures distinct, larger laterad, very large, irregularly and deeply arranged in apical third; intervals or space between the foveolate punctures clearly convex (much more strongly convex in apical portion) except for almost flat 1st intervals, and constantly narrower than foveae; scutellar striole consisting of two small foveae. Hind wings reduced, much shorter than elytral length.

Prosternum sloping forwards, with surface roughened; prosternal process elongato-triangular, slightly declined posteriad behind coxae, weakly and unevenly depressed along middle and acutely pointed at apex. Mesosternal ridge U-shaped; two anterior edges weakly and roundly produced forwards, so that their inflexed portions are feebly emarginate. Metasternum very short, unevenly convex, densely rugose and sparsely punctate. Abdominal sternites moderately convex individually, densely punctate; three basal sternites densely rugulose, except for medio-basal flattened area of 1st sternite.

Legs slender; femora robust, minutely and sparsely punctate, anterior margin of profemur with a moderate tooth at about apical 3/10, which is directed antero-laterad; tibiae simple, slightly incurved, not ancipital along outer margins, posterior margins of metatibiae devoid of any armature; tarsi slender, LM = ca. 13.0, 7.9, 6.8, 28.1.

Female. Unknown.

Measurements: Length: 8.4 mm; width: 4.2 mm.

Holotype: ♂, 20 km S of Blangkeieren, 1,700 m, Kedah, Sumatra (Aceh), Indonesia, 4~8–III–1998, L. BOCÁK leg. (CAEU).

Diagnosis. This new species resembles *O. varicolor* GEBIEN, 1913, from the Philippines in external appearance, but is readily distinguished from the latter by the following points: body colour rather simple, not metallic; punctures on head not distinct and rather ambiguous; inner ocular sulci curved; frons devoid of longitudinal grooves; apical margin of clypeus distinctly sinuous at middle; pronotum with apical angles angulate, basal margin bisinuate, elytral intervals narrower than foveae; prosternal process slightly declined posteriad, not sulcate; inner margins of male metatibiae devoid of pubescent tuft.

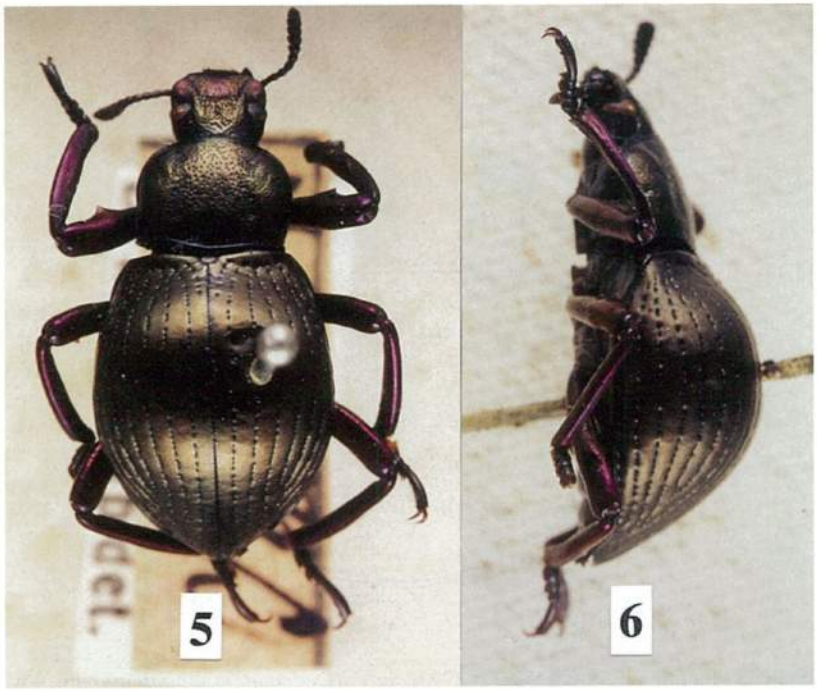
Etymology. The present new species is dedicated to Prof. Dr. Masataka SATÔ, Graduate School of Nagoya Women's University, in commemoration of his retirement.

Oedemutes (*Oedemutes*) *violaceipes* sp. nov.

(Figs. 5–7)

Female. Gourd-shaped, microsculptured, the microsculpture much denser and stronger on elytra than in the rest. Colour dark brown, dorsal surface silky green, head tinged in part with aeneous, elytra matt, antennae, mouthparts, gula, prosternal process, and meso- and metasterna dark reddish brown, legs violet except for tarsi.

Head hexagonal, slightly convex, with apical margin between clypeus and genae distinctly sinuous; clypeus divergent anteriad, weakly and transversely convex in middle and steeply descendant anteriorly, feebly sinuous at middle of apex, minutely and densely punctate, the punctures becoming larger and rugose-like posteriorly, level of the clypeus clearly bounded by the tenuous fronto-clypeal suture and lower than that of frons; genae longer than wide, almost parallel in basal 2/3, moderately raised laterally, with punctures dense, more minute than those on clypeus; frons raised, irregularly depressed behind fronto-clypeal suture, with large, irregular and dense punctures, IE/TD = ca. 2.60. Eyes transverse and rather small, weakly convex; inner



Figs. 5–6. Habitus of *Oedemutes* (*Oedemutes*) *violaceipes* sp. nov.; 5, dorsal view; 6, lateral view.

ocular sulci narrow and deep, arcuately running posteriorly to behind postgenae, which are well swollen and roughened on surface. Antennae short, not reaching middle of pronotum; six distal segments short and well transverse, forming a distinct club; 11th transversely elliptical. Terminal segment of maxillary palpus roundly triangular. Mentum linguiform, produced antero-inferiorly, distinctly carinate along middle and depressed as a roof-shape at sides, sparsely pubescent. Submentum very short, transversely crescent; area behind submentum deeply excavated. Gula very finely microsculptured; gular suture visible in part.

Pronotum quadrate, moderately convex, widest at apical 1/3, PW/PL = ca. 1.28; disc irregularly depressed here and there, somewhat rugose in part; punctures very irregular in size, large and dense in median 3/5, minute and obscure in lateral fourth; apical margin narrow, slightly emarginate, thickly bordered; lateral margins narrowly bordered, slightly bisinuous and divergent from base to apical 1/3, thence arcuately narrowed to apical angles; basal margin almost obtuse V-shaped, thickly bordered; apical angles obtusely angulate, not produced, and their corners entirely rounded; basal angles rectangular, a little produced laterad. Scutellum minute and transverse, twice as wide as long, rounded at apex, with some microscopical punctures.

Elytra oval, strongly convex, striato-punctate, strongly and briefly depressed behind base, then steeply convex and also steeply sloping backward from apical 3/8, EL/EW = ca. 1.35 and widest at middle; lateral margins narrow, hardly reflexed, distinctly sinuous upwards before apex; striae tenuous, interrupted in many parts;

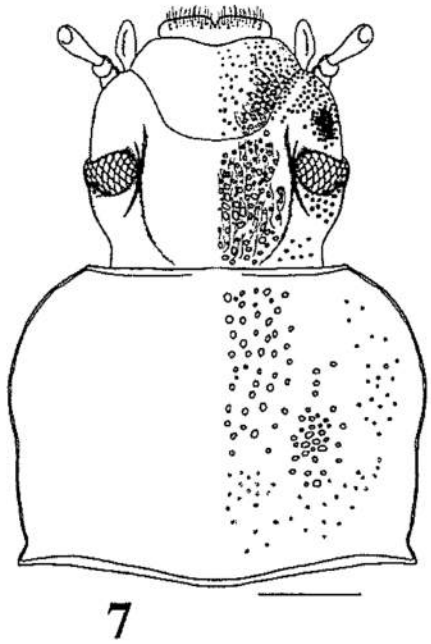


Fig. 7. Head and pronotum in dorsal view of *Oedemutes* (*Oedemutes*) *violaceipes* sp. nov. Scale bar = 1.0 mm.

strial punctures very irregular in density and size, narrow and oblong or elongate in most parts, oval or lineate in some parts, but never foveolate; intervals impunctate, flat in anterior area, weakly convex in median area and more distinctly convex in posterior third; elytral epipleuron almost flat, sloping upwards at humeri; scutellar striole consisting of five or six normal punctures; humeral calli entirely reduced. Hind wings apterous.

Prosternum slightly rugulose and hardly punctate; prosternal process cuneate, not bordered, weakly depressed along middle, and acute at apex, sparsely with hair-bearing punctures. Mesosternal ridge V-shaped, rather weakly raised; two anterior edges moderately produced forwards and continuing basad onto gently emarginate inflexed portions. Metasternum very short, finely and rather densely punctate, distinctly depressed at both sides of the middle. Abdominal sternites densely and strongly punctate, finely and longitudinally rugose in three basal sternites

Legs rather slender; femora coarsely punctate, anterior margin of profemur with a moderate tooth at apical 3/10; tibiae slightly curved, robust, protibiae ancipital along outer margins and strongly depressed on dorsal margins; tarsi simple, LM = ca. 13.0, 9.9, 9.5, 39.8.

Male. Unknown.

Measurements: Length: 12.6 mm; width: 6.3 mm.

Holotype: ♀, Ind: Ost. (TTM).

Diagnosis. This new species resembles *O. subsulcatus* KULZER, 1954, from the

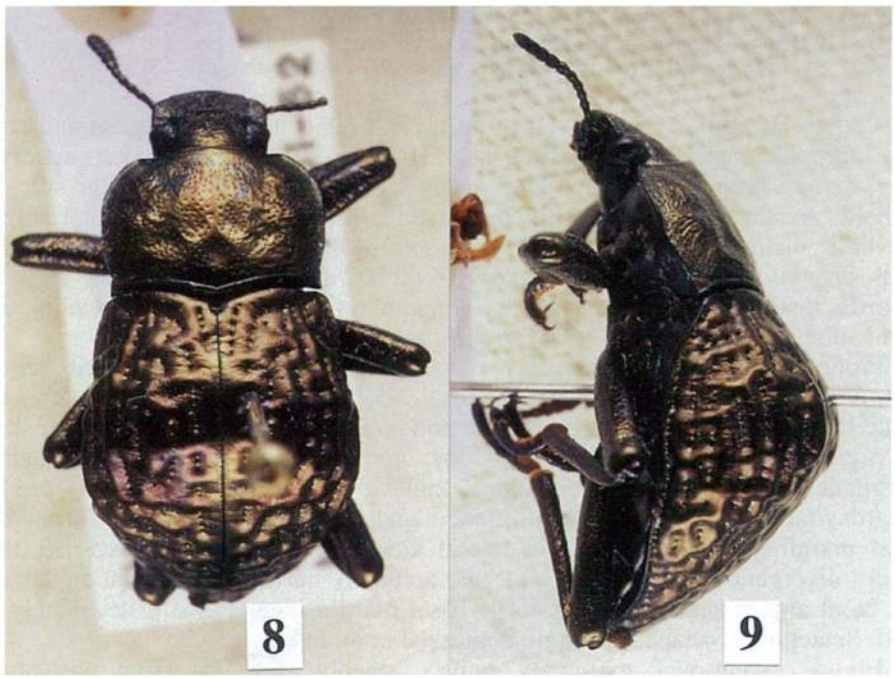
Philippines, but is clearly different from the latter in having the following characteristics: elytra mat, covered with dense and compact microsculpture; apical margin of clypeus sinuous at median portion; apical margin of pronotum evenly and shallowly emarginate; prosternal process shallowly depressed, but devoid of clear sulcus; strial punctures on elytra sometimes jointed with one another.

Oedemutes* (*Oedemutes*) *palawanicus sp. nov.

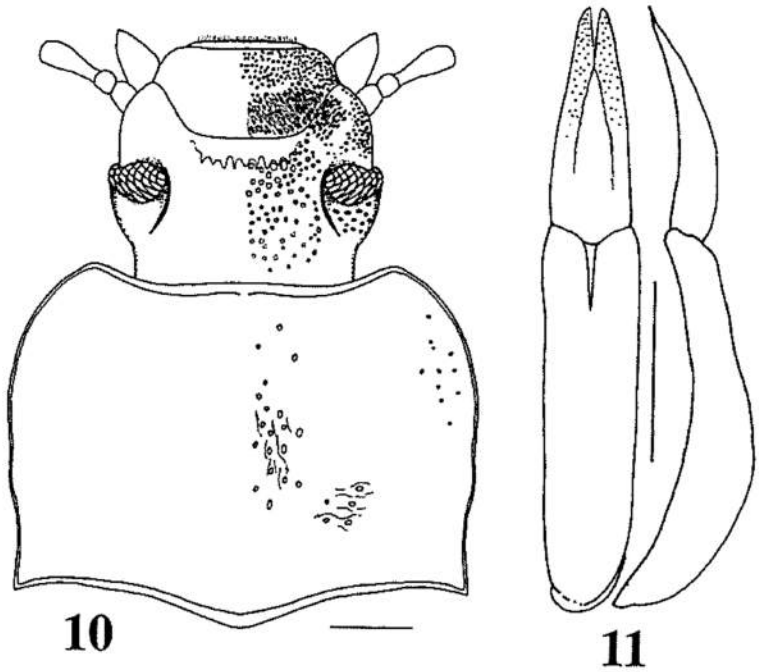
(Figs. 8–11)

Male. Strongly gourd-shaped, strongly convex above in posterior portion. Colour black, tinged with strong brassy; antennae and mouthparts dark reddish brown.

Head hexagonal, sloping forwards, with anterior margin sinuous between clypeus and genae; clypeus well produced forwards, convex in median half and depressed in lateral 1/4, weakly emarginate at apex in median 3/5, densely and strongly punctate, the punctures large and rugose except for those on anterior part along apical emargination; fronto-clypeal suture narrow and distinct, sinuous in part; genae longer than wide, depressed medially and weakly raised along lateral margins, almost parallel at sides, and rounded at anterior corners, irregularly punctate; frons moder-



Figs. 8–9. Habitus of *Oedemutes* (*Oedemutes*) *palawanicus* sp. nov.; 8, dorsal view; 9, lateral view.



Figs. 10–11. *Oedemutes* (*Oedemutes*) *palawanicus* sp. nov. —— 10, Head and pronotum in dorsal view; 11, male genitalia, left: dorsal view, right: lateral view. Scale bars = 1.0 mm.

ately convex, irregularly depressed in part, with punctures rather dense and coarse, much larger than those on the rest of head, IE/TD = ca. 3.00; postgenae roundly and rather weakly produced laterad. Eyes small and transverse; inner ocular sulci deep and bold. Antennae short, reaching before middle of pronotum; six distal segments transverse, distinctly forming a club; 11th semioval. Terminal segment of maxillary palpus strongly securiform. Mentum semicircular, more or less elongate and raised forwards, distinctly depressed at sides. Submentum flat, transversely crescent, an area behind submentum deeply foveolate. Gula smooth, weakly convex.

Pronotum quadrate, moderately convex; disc irregularly depressed here and there, devoid of basal foveae, widest at basal 2/5, PW/PL = ca. 1.45; punctures more minute than those on frons, rather sparse and large on median discal portion, smaller and rugulose on the lateralmost portions; apical margin roundly and shallowly emarginate, moderately bordered; apical angles obtusely rounded, slightly produced forwards; lateral margins slightly reflexed and hardly bordered, not sulcate along lateral margins, feebly bisinuate in lateral view, parallel-sided in basal 1/6, thence roundly divergent to the widest point, and arcuately narrowed to apical angles in the rest; basal angles acute, not produced; basal margin clearly bisinuate, thickly bordered. Scutellum U-shaped, strongly depressed in middle.

Elytra oblong-oval, extremely convex, steeply ascendant from post-scutellar portion and highest before middle, steeply sloping posteriad from the highest point,

widest at apical 3/7, EL/EW = ca. 1.29; disc punctato-striate, but all the striae are tenuous and interrupted by strongly convex intervals, strial punctures minute, a little wider than their striae, three to five punctures lying in each fovea; intervals minutely and sparsely punctate, strongly convex and much irregularly running to every direction, much wider than elytral foveae, the convexity on the highest area of elytra like a kind of hump; lateral margins narrow, slightly reflexed, multisinuous in lateral view; elytral epipleuron flat, with uneven surface, strongly dilated beneath humeri. Hind wings absent.

Prosternum finely rugose; prosternal process long and cuneate, clearly bordered, deeply excavated along middle. Mesosternal ridge U-shaped, finely punctate; two anterior edges strongly produced forwards, continuing basad onto distinctly emarginate inflexed portions in lateral view. Metasternum very short, microscopically punctate, rugosely sulcate behind mesocoxae. Abdominal sternites densely punctate and longitudinally rugulose in three basal sternites; 5th sternite densely and evenly punctate, feebly and transversely depressed in middle.

Mesocoxae close to each other, and meso- and metacoxae very close to each other by very short metasternum; legs rather long and robust; femora densely punctate, anterior margin of profemur with rather small tooth at apical 3/8, posterior margins of meso- and metafemora devoid of any armature; tibiae simple, not ancipital along outer margins; tarsi long and robust, LM = ca. 10.0, 6.2, 5.3, 21.5.

Female. Unknown.

Measurements: Length: 14.0 mm; width: 7.4 mm.

Holotype: ♂, Philippines, Palawan, Mantalingajan, Tagembung, 1,150 m, 18–IX–1961, Noona Dan Exp. 61–62. (TTM).

Diagnosis. This new species resembles *O. physopterus* GEBIEN, 1913, and *O. gebieni* KULZER, 1954, both from the Philippines, but is distinctly separable from the latter by the following points: From *O. physopterus*, body colour without greenish reflection, head devoid of ocular wrinkles, pronotum very finely bordered at sides, with anterior angles obtuse and rounded, pronotal punctures distinct and large; elytral convexity, foveolations and convexities of intervals extremely stronger than in the latter; male metatibiae devoid of tomentum.

From *O. gebieni*, elytra neither fasciate nor vittate; genae not widened anteriorly; punctures on pronotum distinct and large in median area; elytral intervals strongly convex and very irregular, running not only longitudinally but also transversely; male metatibiae devoid of the tuft of pubescence.

This new species is also allied to *O. physogaster* KASZAB, 1980 and *O. ceylonicus* KASZAB, 1980, both from Sri Lanka, but is clearly different from the latter by having the elytra tenuously striate, not tuberculate though the elytral intervals are extremely convex; the pronotum is widest at basal 2/5; the male genitalia are quite different in shape.

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A New *Misolampidius* (Coleoptera, Tenebrionidae) from Sichuan, Southwest China

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Abstract A new *Misolampidius* species is described from Southwest China under the name of *Misolampidius satoi* sp. nov. It belongs to a species-group with mat dorsal surface but differs from the other members in having the eyes whose inner margins are only shallowly grooved.

In the course of the first author's studies on beetles, Prof. Dr. Masataka SATÔ has always given expert advice and offered invaluable materials to him for almost forty years. He met the second author more than ten years ago, and gave him invaluable advice. Dr. SATÔ saw the third author several times at entomological meetings and introduced his wife to her.

For commemorating his retirement from Nagoya Women's University, the authors wish to express their thanks to the professor and are going to describe a very interesting new tenebrionid species from Sichuan, Southwest China.

Before going into details, the authors express their gratitude to Mr. Motohiko TANIKADO, Ibaraki City, for offering the invaluable materials. They also thank Dr. Makoto KIUCHI, Tukuba City, for taking clear photographs inserted in this paper.

The holotype to be designated will be deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Misolampidius satoi sp. nov.

(Figs. 1–3)

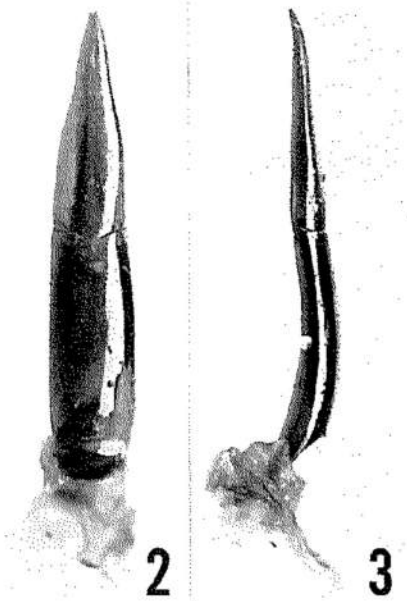
Piceous, with elytra and gula lighter in colour, hairs on surfaces pale yellowish brown; dorsal surface sericeously shining, legs gently shining, ventral surface some-

what alutaceous; each surface covered with microscopic adpressed hairs. Body rather gourd-shaped; strongly convex above.

Head subdecagonal, gently raised basad, covered with isodiametrical microsculpture, rather closely punctate, the punctures becoming smaller apicad; clypeus somewhat transversely hexagonal, feebly depressed in basal (fronto-clypeal border) and lateral parts, weakly bent in apical part, truncate at apex, fronto-clypeal border curved and finely sulcate; genae gently raised in middle, depressed in posterior parts before eyes, with rounded outer margins; frons rather wide, shallowly grooved along the borders of eyes, with a somewhat transverse impression in posterior part; diatone about twice the width of transverse diameter of an eye. Eyes feebly transverse, gently convex laterad, subovately inlaid into head. Antennae slightly clavate, reaching base of elytra, ratio of the length of each segment from basal to apical: 0.36, 0.2, 0.63, 0.35, 0.36, 0.35, 0.37, 0.32, 0.29, 0.24, 0.49.

Pronotum as wide as long, moderately produced laterad, widest at the middle, feebly sinuous near base; apex slightly emarginate, indistinctly bordered in lateral parts; base feebly produced, bordered by a groove, which is deepened laterad; front angles rounded, hind angles subrectangular in dorsal view; sides steeply inclined laterad, bordered from ventral parts by fine sulci; disc gently convex, weakly flattened in anterior part, impressed at the middle on each side and at basal 1/4, covered with isodiametrical microsculpture, rather closely, irregularly scattered with small punctures, which are often fused with one another, each with an adpressed hair, sparsely scattered with microscopical punctures. Scutellum wide triangular with

Fig. 1. Habitus of *Misolampidius satoi* sp. nov., ♂, holotype.



Figs. 2–3. Male genitalia of *Misolampidius satoi* sp. nov.; 2, dorsal view, 3, lateral view.

rounded apex, ridged along base, declivous apicad, very weakly covered with microsculpture, very sparsely scattered with microscopic punctures.

Elytra oblong-ovate, 1.8 times as long as wide, 2.5 times the length and 1.4 times the width of pronotum, widest at posterior 2/5; dorsum rather strongly convex, gently flattened in anterior part, depressed in an area behind scutellum, highest slightly before the middle; disc with rows of foveae, which are often fused with one another; intervals raised, often transversely connected with one another, covered with isodiametrical microsculpure; sides steeply inclined laterad, enveloping ventral body; apices rather strongly produced.

Male anal sternite simply rounded at apex. Profemora simply thickened in middle; protibiae longer and evenly curved in male, shorter and nearly straight in female; mesotibiae weakly curved interiad in apical parts; metatibiae almost straight; ratios of the lengths of pro-, meso- and metatarsomeres: 0.55, 0.35, 0.36, 0.32, 1.2; 0.66, 0.32, 0.36, 0.35, 1.22; 1.18, 0.56, 0.52, 1.29.

Male genitalia elongated fusiform, 2.1 mm in length, 0.36 mm in width; basal piece curved in middle in lateral view; fused lateral lobes 0.9 mm in length, feebly prolonged, with acute apices.

Body length: 12.5–13.0 mm.

Holotype: ♂, Luojishan (2,600–2,900 m alt.), Puge Xian, Sichuan Sheng, SW. China, 23–X–1996, M. TANIKADO leg. (NSMT). Paratypes: 7 exs., same data as for the holotype.

Notes. This new species somewhat resembles *Paramisolampidius formosanus* MASUMOTO, 1981, but can be distinguished from the latter by the elongate body, with

profemora thickened in middle (*Misolampidius*) and elytral intervals transversely connected with one another.

Reference

MASUMOTO, K., 1981. Tenebrionidae of Formosa, 2. *Elytra, Tokyo*, **9**: 15–52.

Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 331–337, May 25, 2003

Tenebrionidae (Insecta, Coleoptera) as an Indicator for Climatic Changes on the Cape Verde Islands [1, 2)]

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Abstract During several stays on the Cape Verde Islands between 1982 and 1999 the distribution and ecology of the endemic species of the genera *Melanocoma, Trichopodus, Platyprocnemis* and *Oxycara* (Tenebrionidae) have been studied. All Tenebrionidae dealt with are flightless. The result is that these genera have colonized this archipelago at different periods of time. Based on the ecology of the species, it can be postulated that the climate of the Cape Verde Islands changed from a generally humid to a semi-arid or even arid climate. The first settlers (species of the endemic genera *Trichopodus* and especially *Melanocoma*) are extremely endangered by the climate change. The climate change is founded on the increasingly rapid erosion of the mountains which is nowadays promoted by the activities of men who have destroyed the original vegetation during the last 500 years on each island almost completely. On the other hand the climatic change in the past has been profitable to *Platyprocnemis* and especially to the species of the genus *Oxycara*, which are adapted to arid climates and therefore have had the chance to colonize this archipelago in the late Tertiary period.

The Cape Verdes — discovered and colonized by the Portuguese at the end of the 15th Century — are a small archipelago situated about 500 to 700 km west of Senegal (Africa), covering 13 islands and some islets (Fig. 1). The largest nine of them are today inhabited by men.

All islands are of volcanic origin and of young geological age. The formation of the three eastern islands (Sal, Boa Vista, Maio) seems to have been completed in the early Tertiary period. Therefore these islands have been settled by terrestrial plants and animals first, whereas the colonization of the other islands certainly could not have been finished before the middle or the end of the Tertiary period, because of the heavy lasting volcanic eruptions. The volcano on the isle of Fogo is still active. The last two eruptions with disastrous results date from 1951 and 1995.

The different timing of island formation is documented in landscape formed by varying degree of erosion. The three eastern islands mentioned above are very flat

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1) Dedicated to my dear colleague Prof. Dr. Masataka SATÔ with compliments and many thanks for his kind collaboration and co-operation in many questions concerning the systematics of the Lampyridae.

2) 23rd contribution to the fauna of the Cape Verde Islands. 22nd contribution: GEISTHARDT, M. (1996): Lista Vermelha para os Coleópteros (Insecta: Coleoptera). *In*: LEYENS, T., & W. LOBIN (eds.), Primeira Lista Vermelha de Cabo Verde. *Courier Forsch.-Inst. Senckenberg*, **193**: 89-120.

rising not higher than approximately 400 m above sea level. They are dry and treeless and mostly sand-covered, while the other islands elevate up to nearly 3,000 m [Fogo: Pico de Fogo 2,829 m; Sto. Antão: Tope de Coroa 1,979 m; Santiago: Pico da Antonia 1,392 m]. [3] In general these islands show semi-arid climate today, which in detail is more humid on the luff-side of the mountains. Further, the higher the mountains are the more clouds arise resulting in fog or even rain. Thus in detail climate is controlled by the NE-trade-wind and landscape with addition from short but sometimes heavy monsoon rains.

Therefore the luff-side in general is more humid than the lee-side which is arid for the most part. But this is true only for the islands higher than 500 to 600 m, because the mountains less than this height are usually unable to catch the clouds producing fog and respectively rain. Therefore the flat eastern islands (Sal, Boa Vista, Maio) are very arid missing rain sometimes for a long period. For example, as known so far, at Sal there was no satisfying rainfall between 1983 and 1994.

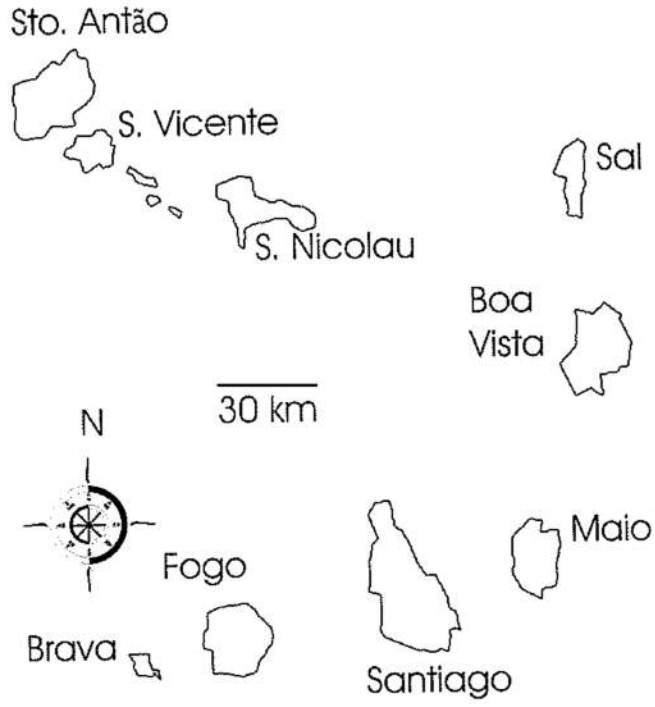

Fig. 1. General map of the Cape Verde Islands; scale = 30 km.

3) The initial height of the volcano of Fogo must have been between 5,000 and 6,000 m. The top of this impressive volcano has been blown away by a tremendous eruption in the past reducing the volcano to a height of about 2,000 m. The remaining caldera has a diameter of more than 10 km which indicates the impressive height mentioned above. The "Pico novo" rising up from the caldera has a height of 2,829 m above sea level.

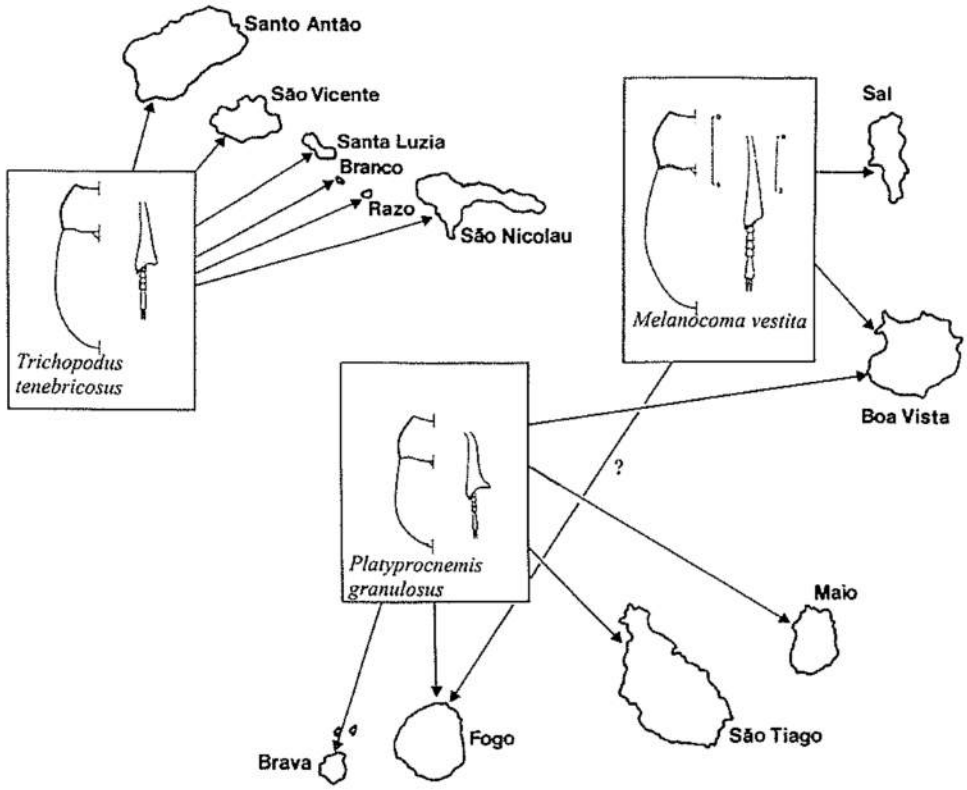

Fig. 2. Distribution pattern of the endemic genera *Trichopodus, Melanocoma* and *Platyprocnemis.*

Regarding the colonization of this archipelago by plants and animals the lack of any land connection either to Africa nor to the Canary Islands, which has been postulated by some earlier authors, has to be pointed out. Nevertheless it seems to be possible, that some of the islands were in contact during some periods (ROTHE, 1982). Because of the sea floor geometry the islands can be arranged in three groups. The sea floor between Sto. Antão, S. Vicente, and S. Nicolau in the north, Sal, Boa Vista, Maio, and Santiago in the east, and Fogo and Brava in the west is less than 200 m deep, whereas between these groups more than 2,500 m depths are observed. Referring to sea level changes of about 150 m glacial variation, land contact between the islands of each group seems plausible.

Genera ***Trichopodus*** MULSANT et REY, ***Platyprocnemis*** ESPAÑOL et LINDBERG, and ***Melanocoma*** WOLLASTON

All genera belong to the Opatrini and are endemic; they are flightless.

Trichopodus (syn. *Trichosternum* WOLLASTON, *Japetus* REITTER), species *tenebricosus* (ERICHSON, 1843), exclusively inhabits the NW islands (NW-platform): *T. t. tenebricosus* (ERICHSON, 1843) lives on S. Vicente, Razo, and Branco, *T. t. melanarius* (ERICHSON, 1843) inhabits Sto. Antão, and *T. t. nicolensis* (WOLLASTON, 1867) the island S. Nicolau (Fig. 2).

Platyprocnemis granulosus (WOLLASTON, 1867) [as far as known no subspecies] inhabits the SW-islands Boa Vista, Maio, Santiago, Fogo, and Brava. Therefore *Platyprocnemis* inhabits the SW and the E platform except Sal (Fig. 2).

Melanocoma vestita has been described by WOLLASTON (1867) from Fogo (Mte. Nucho [about 1,100 m], and Pico Pires [about 700 m]) but has not been found there again [8 specimens have been collected by LINDBERG in 1952/53 at the Pico Pires, but these specimens have not been studied by the author].

Melanocoma vestita boavistae ESPAÑOL et LINDBERG, 1963 is known exclusively from Boa Vista and *Melanocoma vestita salensis* ESPAÑOL et LINDBERG, 1963 from Sal (Fig. 2). *Melanocoma* inhabits the northern two islands Sal and Boa Vista of the eastern platform and Fogo (till today?) of the SW-platform.

Genus *Oxycara* SOLIER

This genus belongs to the Tentyriini and has a wide distribution ranging from Asia to Africa. With about 20 species it inhabits all islands of the Cape Verdes — all of them are endemic and flightless (Fig. 3). The genus *Oxycara* inhabits all three geological platforms of this archipelago.

In general Fig. 3 shows that the small, flat and nearly arid, monotonous eastern islands are inhabited by two to three species, whereas the mountainous islands, offering a number of ecological niches, are inhabited by only one to two species. This, at the first sight, is a very surprising result which does not depend on the shorter distance of the eastern islands (Sal, Boa Vista, Maio) to the western coast of Africa (giving more chance to reach these islands in the past), but results exclusively from the changes in climate which have taken place during the last millions of years on the Cape Verdes (see discussion).

Discussion

Hints concerning the habitats and the ecology in respect to the Tenebrionidae collected on the Cape Verdes are rare in literature. Therefore by studying the literature only it has been absolutely impossible to give a satisfying solution concerning the distribution of some endemic Tenebrionidae on the Cape Verdes.

During several stays between 1982 and 1999 on the Cape Verdes the author was also directed his attention to the ecology and to the regional distribution of the Tenebrionidae dealt with in this paper. The vertical locations as well as ecological conditions were of special interest. The outcome is, that the distribution-patterns of

these four genera are extremely different from one another!

The species, respectively subspecies, of the genus *Trichopodus* have been found at higher geographical levels only, in general not lower than 600 to 1,000 m, and only inhabiting the luff-side of the mountains. [4)]

Today the genus *Melanocoma* exclusively inhabits very (!) small areas on the luff-side of the Mte. Grande on Sal (406 m), and the luff-side of the top of the Pico de San Antonio (370 m) on Boa Vista. Some visits after 1992 of the Pico de San Antonio have been unsuccessful in finding *M. vestita boavistae*.

The population at Fogo seems to be extinct. (Excursions to Fogo in 1982, 1989, and two visits in 1995 have not been successful in finding this species.)

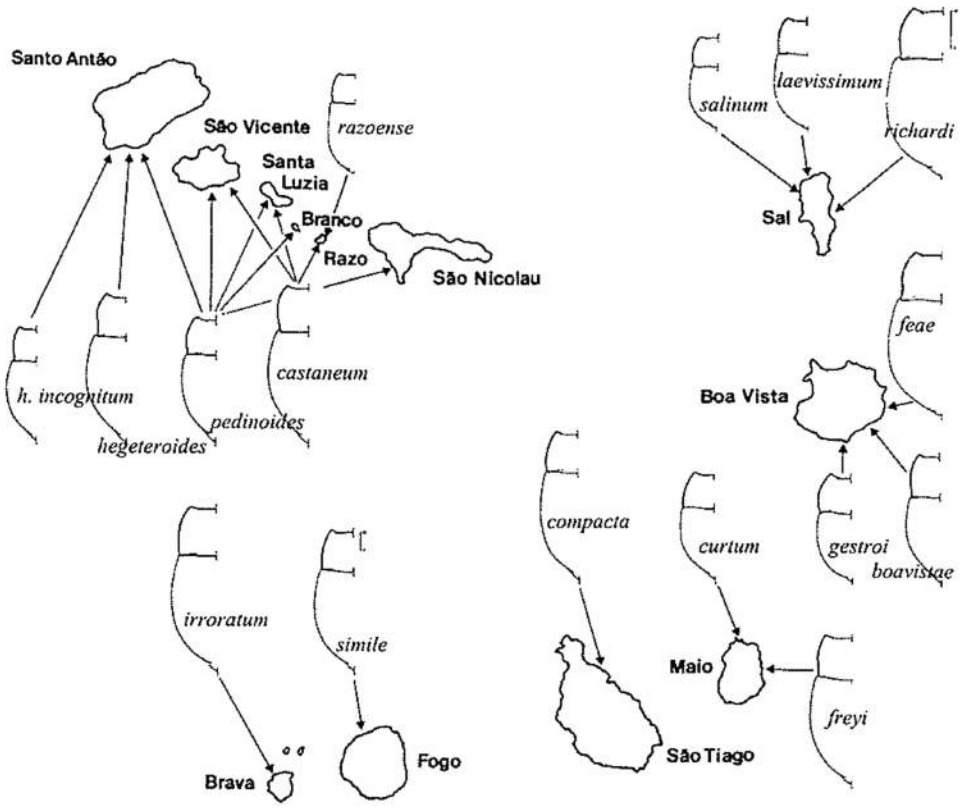

Fig. 3. Distribution pattern of the endemic Capeverdian species of *Oxycara*.

4) On Sto. Antão in 1993, a very small population of *Trichopodus tenebricosus melanarius* has been discovered by the author near Ponta do Sol (half the way to the small village Fontainhas) at a height of only about 150 m. But this place is very dark, never contacted by the sun and quite wet. Furthermore, it has a nice vegetation composed of mosses and ferns. A very small water is running down the rocks for some meters.

Platyprocnemis granulosus ESPAÑOL et LINDBERG has to be discussed in a different way. As mentioned above, this genus inhabits not only different platforms of islands, but also shows no clearly defined ecology. *Platyprocnemis* seems to prefer wet regions and is therefore predominantly active at higher geographical levels, but this genus seems to be able to survive and reproduce in lower and arid regions as well. Therefore, specimens of this genus can be observed spreading almost all over the islands they are living on.

The Capeverdian species of the genus *Oxycara* are adapted to arid climates, and they are able to survive and reproduce even in deserts and sand-covered regions.

Because of these different ecological demands of the species, the following hypothesis can be postulated:

1. The climate of the Cape Verde Islands has changed from a wet or humid period in the past to the arid respectively semi-arid conditions of today.
2. Particularly on the eastern islands (Sal, Boa Vista, Maio), which must have had a humid climate during the early Tertiary period, the devastation is extremely dramatic.

These hypotheses are supported by the following facts: [5)]

• The genus *Melanocoma* (absolutely adapted to humidity) is restricted today to very small areas of some slight hills on Sal and Boa Vista only. These populations have to be regarded as relicts. In earlier times with humid conditions the genus *Melanocoma* was the first pioneer inhabiting the eastern islands — may be some more islands indicated by the first record of this genus by WOLLASTON (1867) from Fogo. Because of the climatic changes this genus has been thrust aside up to the top of the hills where it has until today a little chance to survive.

• The genus *Trichopodus* (also adapted to humidity) must have reached this archipelago later than *Melanocoma*, but had no chance to colonize the eastern islands because of the increasing devastation.

• The genus *Platyprocnemis* seems to be the latest pioneer of the endemic Opatrini. *Platyprocnemis granulosus* is adapted to semi-humid conditions but otherwise it is also tolerant to arid conditions. Therefore this species has been able to colonize all islands except the NW-platform and Sal, which must have been too dry at the time of colonization even for *Platyprocnemis*.

• Concerning *Oxycara* we have to take into consideration the climatic changes during the Tertiary period and later, also. As mentioned above we have the amazing fact that the small, flat and dry eastern islands are inhabited by up to three species of *Oxycara*, whereas the mountainous islands are inhabited by one to two species only. The explanation for this observation is, that the eastern islands have been first favourable for the genus *Oxycara* — adapted to arid conditions. Therefore several species of the genus have had the chance to establish and develop. By the increasing

5) These hypotheses are based on about 450 observations and collections in the field. The data are made available by the author if demanded.

devastation of the western and northern islands at later times, *Oxycara* had the chance to colonize also these parts of this archipelago. At present the author has no definitive results concerning the adaptive radiation of the genus *Oxycara* as far as the Cape Verdes are taken into consideration. But there are five "groups" (or more ?) of Capeverdian species clearly different from one another. This indicates that different colonizations at different times must have taken place by this genus. The radiation of these settlers is quite uncertain till today. More studies have to be carried out to answer these and several other questions.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 339–344, May 25, 2003

New Taxa of the Genus *Oedemera* (Coleoptera, Oedemeridae) from China

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Abstract New taxa of the genus *Oedemera* OLIVIER, 1789 are described and illustrated: *O. satoi* sp. nov (China: Shaanxi), *O. centrochinensis lixiana* ssp. nov. (China: Sichuan), *O. pallidipes shaanxiensis* ssp. nov. and *O. masatakai* sp. nov. (China: Sichuan). Besides, a key for determination of subspecies of *O. pallidipes* PIC, 1907 is provided and female sex of *O. qinlingensis* ŠVIHLA, 1999 is described and illustrated.

Material and Methods

Material studied is deposited in the collection of the National Museum, Praha (NMPC).

The shades of colours used in the descriptions are classified according to PACLT (1958), structures of integument are named according to HARRIS (1979). They were observed under 90× magnification. Locality labels of the type material are cited in the original version, only dates are written in the English style. The names of localities of the additional material examined are transliterated.

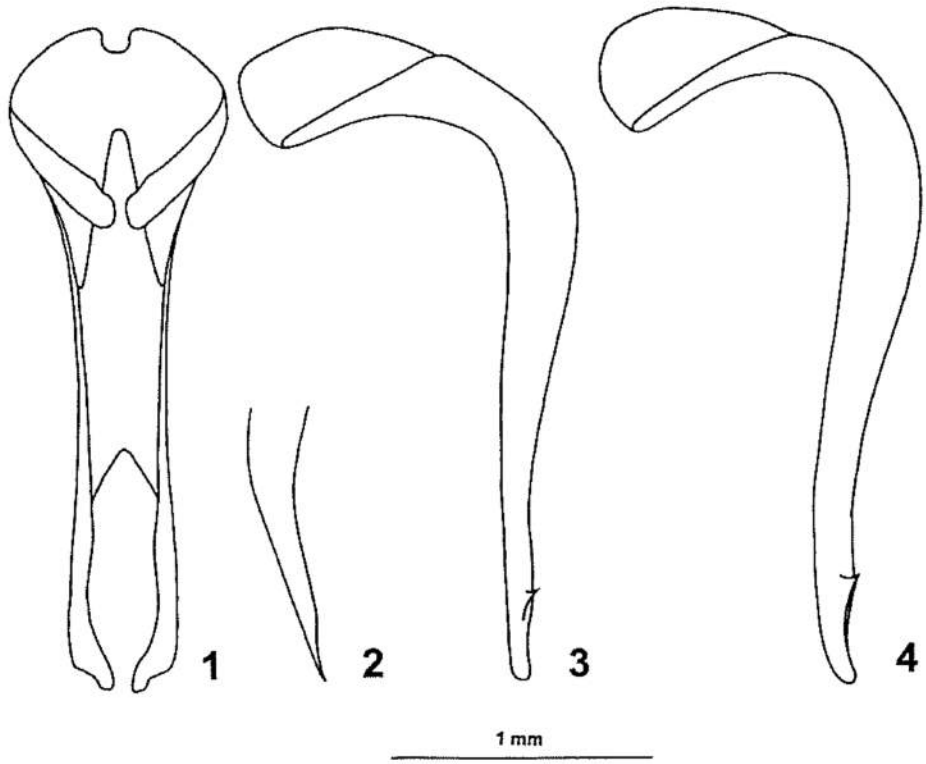
Oedemera satoi ŠVIHLA, sp. nov.

(Figs. 1–3)

Description. Coloration:— Head obscured green, mouthparts sepia with maxillary palpi rusty. Antennae sooty, first two antennomeres excluding their tips and underside of antennomere 3 rusty. Prothorax and meso- and metasterna obscured green, ventral portion of abdomen obscured green, last two abdominal segments sienna. Anterior legs rusty with darker tarsi, middle and posterior coxae, femora and bases of tibiae rusty, rest of tibiae and tarsi sooty.

Male. Eyes moderately protruding, head across eyes distinctly wider than pronotum, head before eyes as long as wide. Antenna reaching 5/6 of elytral length, last antennomere abruptly narrowed on one side behind its midlength. Surface of head confused-rugulose, sparsely yellow pubescent, matt.

Pronotum distinctly longer than wide, very slightly cordiform, pronotal depressions very shallow, medio-longitudinal keel absent. Surface of pronotum sculptured and pubescent like that of head, matt. Posterior femora moderately thickened, supracoxal process of metasternum moderately exceeding trochanter in lateral view.



Figs. 1–4. Male genitalia of *Oedemera* spp. —— 1–3, *Oedemera satoi* ŠVIHLA, sp. nov.; 4, *O. pallidipes shaanxiensis* ŠVIHLA, ssp. nov. —— 1, Tegmen; 2, paramere, lateral view; 3, 4, aedeagus.

Both lateral and sutural margins of elytron distinctly arcuately emarginate, elytral nervation well developed, surface of elytra finely rugulose-lacunose, finely and sparsely yellow pubescent, matt. Tegmen and aedeagus as in Figs. 1–3.

Length male: 7.5 mm.

F e m a l e. Unknown.

Holotype (NMPC), male, "China, Shaanxi, Qinling Shan, 1,000–1,300 m, 6 km E Xunyangba, 23. v. –13. vi. 2000, C. HOLZSCHUH lgt."

Distribution. China: Shaanxi.

Etymology. This species is dedicated to Prof. Masataka SATÔ for commemorating his great contribution to the fields of coleopterology on the occasion of his retirement.

Differential diagnosis. Oedemera satoi sp. nov. belongs to the *Oedemera croceicollis* group as defined by me (ŠVIHLA, 1999). It is very similar in its coloration to *O. centrochinensis* ŠVIHLA, 1999 and *O. pallidipes* PIC, 1907, but differs from both these and from all other species of this group by parameres strongly dilated before apex (cf. Fig. 1 and ŠVIHLA, 1999).

Oedemera centrochinensis lixiana ŠVIHLA, ssp. nov.

Type material (NMPC). Holotype, male, "China: Sichuan, Lixian env., 2,000 m, 22.–23. vi. 2001, S. MURZIN lgt."; paratypes, same data 1 male, 1 female.

Distribution. China: western Sichuan.

Etymology. Named after its type locality.

Differential diagnosis. *Oedemera centrochinensis lixiana* ssp. nov. differs from the nominotypical subspecies in the partly dark femora of the middle and posterior legs in both sexes and in entirely dark abdomen in male (cf. ŠVIHLA, 1999).

Oedemera pallidipes shaanxiensis ŠVIHLA, ssp. nov.

(Fig. 4)

Type material (NMPC). Holotype, male, "China, Shaanxi, Qinling Shan 1,000–1,300 m, 6 km E Xunyangba, 23. v.–13. vi. 2000, C. HOLZSCHUH lgt."; paratypes: same data, 1 male, 1 female; same locality, I. H. MARSHAL leg., 1 male, 3 females.

Distribution. China: Shaanxi.

Etymology. Named according to its type locality.

Differential diagnosis. *Oedemera pallidipes shaanxiensis* ssp. nov. differs from already known subspecies in the following key to *O. pallidipes* subspecies.

1. Terminal portions of posterior femora more or less dark with slight metallic tinge. 2
– Posterior femora entirely yellow to orange, tegmen see ŠVIHLA (1999), aedeagus as in Fig. 4. Guangdong, Fujian. ..... *O. p. angustipennis* GRESSITT
2 Aedeagal teeth not or only very slightly protruding in lateral view, parameres distinctly thickened before apex, see ŠVIHLA (1999). Sichuan. .... *O. p. pallidipes* PIC
– Aedeagal teeth distinctly protruding in lateral view, parameres almost not thickened before apex, tegmen as in ssp. *angustipennis*, aedeagus (Fig. 4). Shaanxi. ... . *O. p. shaanxiensis* ssp. nov.

Oedemera masatakai ŠVIHLA, sp. nov.

(Figs. 5–7)

Description. Coloration:— Black, elytra with very slight blue tinge, mouthparts and last two abdominal segments sepia brown.

Male. Eyes protruding, head across eyes distinctly wider than pronotum, head before eyes about 1/4 wider than long. Antenna reaching 2/3 of elytral length, last antennomere not emarginate nor constricted, its apex tapered. Surface of head very finely and very sparsely punctate, very finely and sparsely brown pubescent, lustrous.

Pronotum as long as wide, very slightly cordiform, pronotal depressions shallow, medio-longitudinal keel not developed. Surface of pronotum punctate and pubescent like that of head, lustrous. Posterior femora very slightly thickened, supracoxal process of metasternum not exceeding trochanter in lateral view. Lateral margin of elytron straight, sutural one very slightly arcuately emarginate. Nervation well developed, surface of elytra finely rugulose-lacunose, finely and sparsely rusty pubescent, semilustrous. Tegmen and aedeagus as in Figs. 5–7.

Length male: 7.8 mm.

F e m a l e. Unknown.

Holotype (NMPC), male, "China: Sichuan, Wolong env., 3,250 m, 18.–21. vii. 2000, S. MURZIN lgt.".

Distribution. China: Sichuan.

Etymology. This species is dedicated to Prof. Masataka SATÔ for commemorating his great contribution to the fields of coleopterology on the occasion of his retirement.

Differential diagnosis. Oedemera masatakai sp. nov. belongs to the *O. femorata* species-group as defined by me (ŠVIHLA, 1999). It is very similar and closely related to *O. qinlingensis* ŠVIHLA, 1999, from which it differs in the shorter parameres, which are almost straight in lateral view, in the straight apical portion of the aedeagus and in the shorter head before eyes (cf. ŠVIHLA, 1999). It also differs in the form of the last antennomere, though there is a possibility of teratological modification, because it is very unusual within the genus *Oedemera*.

Oedemera qinlingensis ŠVIHLA, 1999

(Fig. 8)

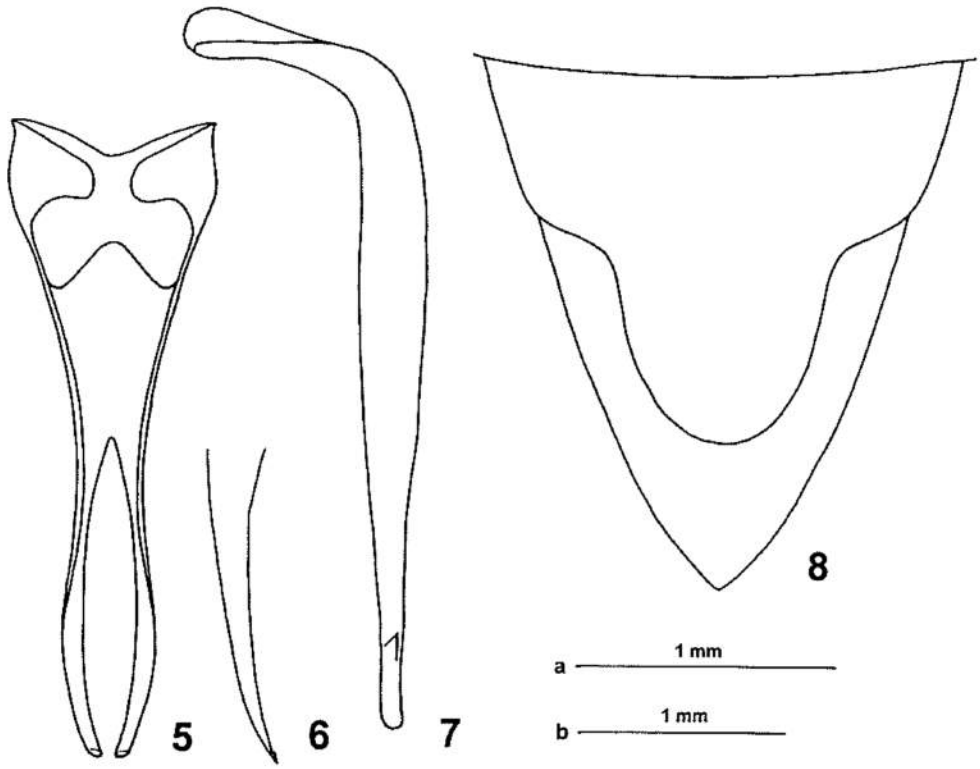
Originally described only on male specimens.

Sexual dichroism and dimorphism. Pronotum entirely dark as in male or in different degree saffron yellow, mostly with only U-shaped or W-shaped spot in basal third to half of pronotum. Eyes less protruding than in male, head across eyes approximately as wide as pronotum. Last abdominal segment as in Fig. 8, last sternite moderately concave in its narrowed portion.

Length: 6.9 – 9.8 mm.

Material examined (NMPC). "China: Shaanxi: Qinling Shan 1,900–2,250 m, 12 km SW Xunyangba, 4.–18. vi. 2000, C. HOLZSCHUH and I. H. MARSHAL lgt.", 22 males, 14 females; "S and W env. of Xunyangba, 1,400–2,100 m, 5.–9. vi. 1995, L. & R. BUSINSKÝ lgt., 1 female; "Hubei: Shennongjia Nat. Res., 1,700–2,500 m, 1.–5. vii. 2000, BOLM lgt.", 1 female; "Dashennongjia Mts., 2000–3000 m, 31,5N 103,3E, 21.–24. vi. 2001, O. ŠAFRÁNEK lgt.", 1 female.

Comments. Female of *O. qinlingensis* is very similar in its habitus and coloration including variability of the colour of pronotum to female of *O. nigripes* (GANGLBAUER, 1890), from which it differs in relatively large last abdominal segment and in coloration of apical half of the last sternite, which is more largely brown (cf. ŠVIHLA,



Figs. 5–8. —— 5–7, *Oedemera masatakai* ŠVIHLA, sp. nov.; 5, tegmen; 6, paramere, lateral view; 7, aedeagus. —— 8, *O. qinlingensis* ŠVIHLA, last abdominal segment of female, ventral view. Scale: a for Figs. 5–7, b for Fig. 8.

1999). The female cited by me (ŠVIHLA, 1999) as *O. nigripes* from Shaanxi Province, belongs to *O. qinlingensis*.

Acknowledgements

I am much obliged to the following colleagues for the kind offer of the material: Carolus HOLZSCHUH (Wien), Ondřej ŠAFRÁNEK (Děčín) and Miloš TRÝZNA (Děčín).

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A New Species of *Pseudopyrochroa* (Coleoptera, Pyrochroidae, Pyrochroinae) from China and Korea

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Abstract A new Asian species of the fire-colored beetle genus *Pseudopyrochroa* is described with salient features illustrated. The new species, *P. satoi*, comes from Korea and Fujian Province in southern China.

Introduction

In recent years, the number of species in the Asian fire-colored beetle genus *Pseudopyrochroa* has been reduced by synonymization (*e.g.*, YOUNG, 1996 a, b, 2001 a) and transfer of species to *Pseudodendroides* (YOUNG, 1999). Conversely, several new species have been added (*e.g.*, YOUNG, 2000, 2001 b), and *Pseudopyrochroa* remains the most speciose pyrochroine genus, with approximately 50 species.

Over the course of several years, while examining loans of unsorted pyrochroids from around the world, a series of an undescribed *Pseudopyrochroa* from Korea, mostly from in and around the Seoul region, and Fujian Province in southern China, has accumulated. I am pleased to be invited to be a part of this Festschrift honoring the career and contributions of Dr. Masataka SATÔ, and I take this opportunity to name this distinctive new species in his honor.

Methods

Measurements. Using a Wild M5A dissecting microscope and Mini Tool™ with 0.1 mm scaled lines, specimens were measured for total length (L), measured dorsally along the meson, humeral width (HW) across the elytral bases, and maximal width (W) across the elytra, typically in the apical third. Elytral length was measured along the sutural margin from the anterior mesoscutellar margin to the elytral apex and width was measured by doubling the width of a single elytron basally (HW) and at its maximum (W). Total length was determined in the following manner: head, pronotum, and elytra were measured separately and recorded. Thus, a value for L was obtained by adding the three measurements (head + pronotum + elytra). This procedure has been standardly employed with measuring specimens of *Pseudopyrochroa* due to the considerable variation observed in the distance between the posterior margin of the head and the anterior pronotal margin (i.e., cervical

distention and tilting of head) as well as variation in the distention of soft tissue between the prothorax and the elytral bases.

Dissection and clearing. As noted elsewhere (YOUNG, 2000) males of *Pseudopyrochroa* generally have a number of diagnostic characters associated with the genitalia and the last visible (= 8th) abdominal sternite. Specimen preparation and procedures follow those described elsewhere (YOUNG & STRIBLING, 1990; YOUNG, 2000).

Collection acronyms. For the most part, the 4-letter entomological collection acronyms proposed by ARNETT and SAMUELSON (1969) and HEPPNER and LAMAS (1982) were followed. Most of these are identified in the acknowledgments. My collection (DYCC) houses material as noted in the text, but it is not identified in the acknowledgments. Acronyms and collections pertinent to this study are as follows:

BPBM	Bernice P. Bishop Museum, Honolulu, HI, USA
DYCC	collection of the author, Madison, WI, USA
ICCM	Carnegie Museum of Natural History, Pittsburgh, PA, USA
NHMB	Naturhistorisches Museum Basel, Basel, Switzerland
PMNH	Muséum National d'Histoire Naturelle, Paris, France
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
USNM	The National Museum of Natural History, Washington, D. C ., USA

Characterization of *Pseudopyrochroa* PIC

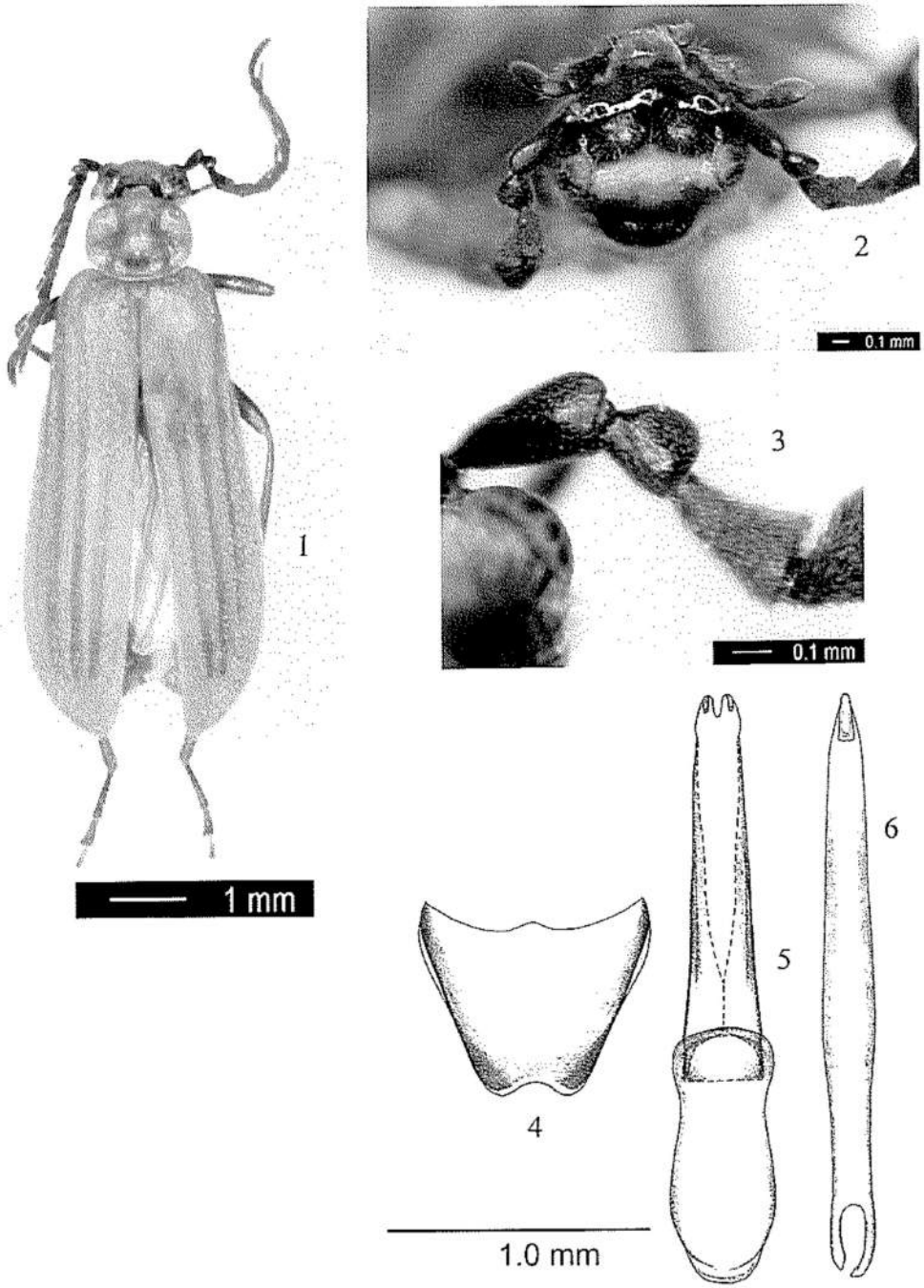
YOUNG (2000) provided a generic redescription and diagnosis for *Pseudopyrochroa* adults; that generic characterization holds for *P. satoi*. The presence of paired, interocular cranial pits (Fig. 2), emargination of last visible sternite (Fig. 4), and genitalia with parameres fused proximally, separate and subparallel distally (Fig. 5), with apices each bearing a recurved, dentate process, and penis (Fig. 6) elongate and bearing a recurved, dentate apex, are consistent with salient features of adult males of *Pseudopyrochroa*.

Species Description

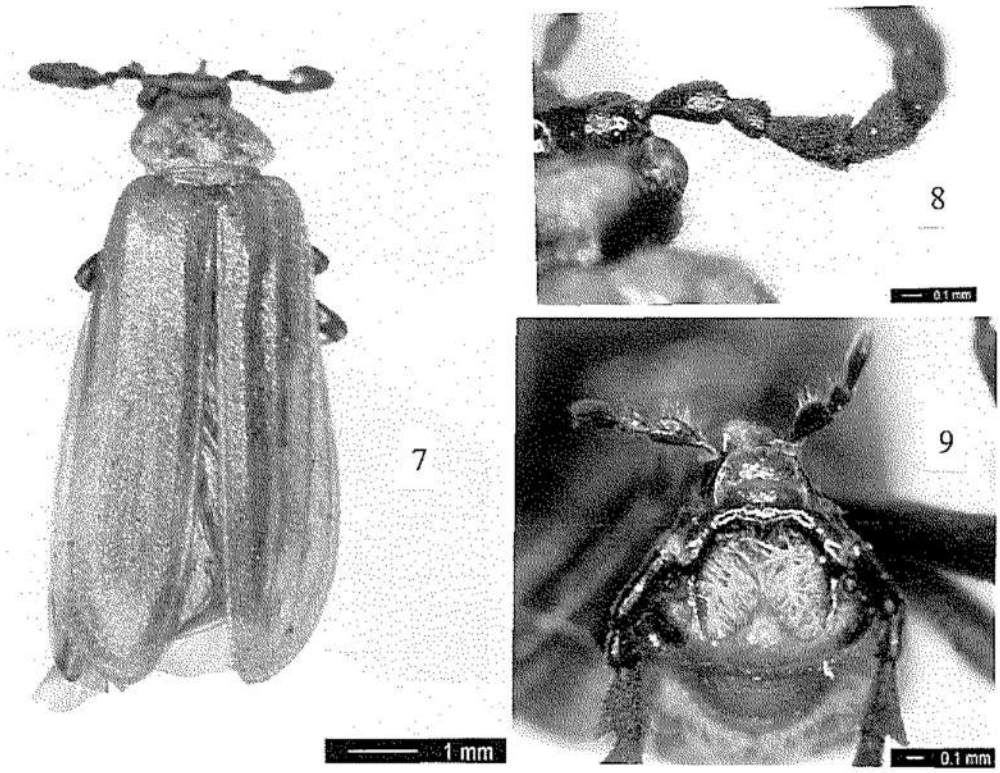
Pseudopyrochroa satoi YOUNG, sp. nov.

(Figs. 1–8)

Male (Figs. 1–6). Length 9.3–11.0 mm (n = 07), humeral width 2.2–2.5 mm; maximal elytral width 3.1–3.8 mm. Color of antennae and venter rufopiceous to black; mouthparts generally rufopiceous to black, sometimes with apices of mandibles and palpi yellowish-orange; scutum yellowish-orange to piceous; cranium piceous to black except for a yellowish-orange interocular region of varying extent; pronotum, usually a portion of hypomera, scutellum, and elytra yellowish-orange.



Figs. 1–6 . *Pseudopyrochroa satoi* sp. nov., adult male. —— 1, Habitus, dorsal view; 2, head (cranial pits), dorsal view; 3, right antennal scape and pedicel, dorsal view; 4, eighth abdominal sternite, ventral view; 5, tegmen (= basal piece + parameres), dorsal view; 6, penis, dorsal view.



Figs. 7–9. *Pseudopyrochroa* spp. —— 7, 8, *Pseudopyrochroa satoi* sp. nov., adult female; 9. *Pseudopyrochroa fascialis* (FAIRMAIRE), adult male. —— 7, Habitus, dorsal view; 8, right antennal scape and pedicel, dorsal view; 9, head (cranial pits), dorsal view.

Head:— Cranial surface generally finely, densely punctate anteriad cranial pits, more coarsely and sparsely punctate posteriorly, sparsely to moderately densely clothed in yellowish-gold setae, those of postocular region conspicuously longer. Compound eyes finely faceted. Antennae with scape and pedicel densely punctate, somewhat shining, clothed with yellowish-brown to black, short setae, those along posterior surfaces more elongate; scape elongate, subtriangular, approximately twice the length of the pedicel; antennal pedicel broadly, slightly asymmetrically triangular (Figs. 2–3). Flagellum densely setose, flabellate, the ramus of each flagellomere as long as or slightly longer than that of the preceding flagellomere. Cranial pits (Fig. 2) located interocularly, broadly and deeply impressed, each with inwardly decumbent yellow to golden setae clothing the external perimeter. Cranial pits incompletely separated by thin, mesal carina; elevation of carina greatest anteriorly.

Thorax:— Pronotum densely, moderately coarsely punctate, with paired antero-lateral depressions, a single posteromesal depression, and a fine, weakly impressed mesal groove, vestiture consisting of a moderately dense covering of fine, erect to decumbent yellowish to golden setae. Scutellum moderately densely covered with

retrorsely decumbent, yellowish, moderately coarse setae. Elytra elongate, covering abdomen, mildly explanate in apical one-half to two-thirds, longitudinal costae indistinct. Elytral vestiture consisting of short, dense, erect yellowish-brown to golden setae; elytral surface appearing vaguely striped longitudinally by virtue of the indistinct costae and matting of vestiture.

Abdomen:— Eighth sternite narrowed apically, its distal margin rather narrowly and deeply emarginate (Fig. 4). Genitalia of heteromeroid type, with tegmen dorsad the median lobe, but apparently subject to some degree of torsion. Parameres narrowly separated apically, each bearing a mesal, recurved hook (Fig. 5). Penis somewhat dorsoventrally flattened, apically produced into a bluntly truncate, recurved hook (Fig. 6).

Female. (Figs. 7–8). Length 9.6–12.8 mm (n = 07), humeral width 2.4–3.8 mm; maximal elytral width 3.2–5.0 mm. Color similar to that of male; yellowish-orange interocular region of cranium generally more extensive (one female also with small orangish areas on either side of meson in cranial "neck" region).

Head:— Cranium with sculpturing and vestiture similar to that of male; cranial pits entirely lacking, but with somewhat similar swollen frontal ridge extending transversely between antennal insertions, very slightly produced posteromesally to form an indistinct, rounded prominence. Antennae (Fig. 8) with scape very coarsely punctate, scape and pedicel setose, but slightly shining, all flagellomeres stout, densely setose, velvet-like in appearance. Flagellomere one subtriangular; remainder of flagellum pectinate throughout, the ramus of each flagellomere as long as or slightly longer than that of the preceding flagellomere.

Thorax:— Similar to that of male. Elytra generally more stout and slightly more explanate than those of males.

Abdomen:— Eighth sternite with distal margin entire, not at all emarginate.

Larva. Presently unknown.

Etymology. I am pleased to name this species to honor the career and contributions of Dr. Masataka SATÔ.

Type information. Holotype (♂) [PMNH]: KUATUN, FUKIEN; China, 17. 3. 46; (TSCHUNG SEN.). The card mounted holotype bears three additional handwritten labels, all certainly added later, presumably in the hand of Maurice PIC. These are written on deteriorating paper and are difficult to read, but allude to the likelihood ("probable") that the specimen is *Pseudopyrochroa fascialis* (FAIRMAIRE).

Allotype (♀) [USNM]: Seoul Korea; April 14, 1948; S. L. SUIB.

Paratopotype (1♂) [SMNS]: same data as holotype, except dated "21. 3. 46." The second label reads: Sammlung; J. KLAPPERICH; SMNS 1990. Like the holotype, three additional handwritten labels, all added later, presumably in the hand of Maurice PIC and difficult to read allude to the possibility that the specimen is *Pseudopyrochroa fascialis* (FAIRMAIRE).

Paratypes (6♂♂, 6♀♀) as follows: (1♀) [DYCC]: [first label handwritten, all in Chinese characters.] Second label: Aengmugong, Gyeonggi Prov., Korea. 9, May, 1971. J. I. Kim; (1♂) [DYCC]: [first label handwritten, all in Chinese characters.] Second label: Mt. Cheomma Gyeonggi Prov., Korea. 26, April, 1970. J. I. Kim; (1♂) [DYCC]: KOREA, Seoul Area, 25–IV–1954, G. W. Byers # 2; (1♂) [USNM]: Suigen, Korea, Jun.–16–1927, Coll. T. R. Gardner; (1♂) [BPBM]: FUKIEN, S. China:

Shaowu, Tachuland, 15. iv. 1943, [second label]: T. C. Maa, collector; (1 ♀) [BPBM]: S. CHINA: FUKIEN, Shaowu, Wukwoh, 15. iii. 1945, [second label]: T. C. Maa, collector; (1 ♀) [PMNH]: Kuatun (2,300 m) 27, 40 n. Br. 117, 40 6. L. J. Klapperich, 2. 4. 1938 (Fukien). Three additional handwritten labels, all added later, presumably in the hand of Maurice PIC, nearly illegible in places but alluding to the possibility that the specimen is *Pseudopyrochroa fascialis* (FAIRMAIRE); (1 ♀) [NHMB]: Kuatun (Fukien), China 1946 12. 4.; (3 ♀ ♀) [ICCM]: KOREA: Seoul, May 1985, J. Marklewitz; (1 ♂) [TMCB]: S KOREA, Prov. Kyongsang, Mts. Pohyonsan, 129°00′E, 36°09′N., at light, No. 1676. 24. IV. 1994, Peregovits, Ronkay, Vojnits.

Distribution. The 15 known specimens of *P. satoi* were collected from Korea and Fujian Province in southern China, from mid-March to mid-June.

Diagnosis and Remarks. The broad, slightly asymmetrically triangular shape of the antennal scape (Figs. 2–3) is diagnostic for males of *P. satoi*. This condition is approached in *Pseudopyrochroa lateraria* (MOTSCHULSKY), from northeastern Russia, and in the Japanese *Pseudopyrochroa peculiaris* (LEWIS), but in numerous other respects, including color and formation of the cranial pits, these species are very different. An even more expanded antennal pedicel, slightly carinate along the anterior edge, and with the distoanterior angle slightly "knobbed" is exhibited by males of the Chinese *Pseudopyrochroa girardi* YOUNG (YOUNG, 2001 b, p. 277, figs. 2–3). But, again, other features including the cranial pit configuration, are quite different.

PIC's confusion between specimens of *P. satoi* he examined, as noted above (see *Type information*) and *P. fascialis* is something of a mystery. Granted, the cranial pit apparatus of both *P. satoi* and *P. fascialis* males is among the more deeply and vividly pronounced in the genus. However, the cranial pits of *P. satoi* are definitely paired by virtue of the mesal septum (Fig. 2) that is most prominent anteriad the pits. In males of *P. fascialis*, the pits lack a septum and are distinctly confluent (Fig. 9). The pits are also conspicuously reniform and the posteromesal rim is slightly gibbose and projects acutely into the concavity of the pits, which are very densely lined with yellowish setae that project decumbently into the lumen of the apparatus.

Color images for several of the figures in this paper, including the habitus illustrations, will eventually be found at the Pyrochroidae of the World webpage (currently under construction) associated with the University of Wisconsin, Department of Entomology, Insect Research Collection homepage: ***http://www.entomology.wisc.edu/irc/ircpage***

Acknowledgments

This study is part of an ongoing project relating to the systematics and phylogeny of *Pseudopyrochroa*. I am grateful to Michael YOUNG for computer graphic assistance with the digital images for the figures and for development of the pyrochroid website, and to Michelle SCHWENGEL for illustrating the male terminalia (Figs. 4–6). I thank Malcolm KERLEY and Sharon SCHUTE (BMNH) for their assistance during my visits to compare material at The Natural History Museum, London, and to Claude GIRARD (PMNH) for his kindnesses during my visit, and for his patience with my

extended use of loaned material. I also extend thanks to Nancy ADAMS (USNM), Robert DAVIDSON (ICCM), G. Allan SAMUELSON (BPBM), Wolfgang SCHAWALLER (SMNS), and the late Walter WITTMER (NHMB) for loans of material under their care. The specimen from the Budapest Museum is under care of Otto MERKL, and was forwarded to me for examination by Dmitry TELNOV from mixed, undetermined anthicid material on loan to him. This research was supported in part by grants from the National Science Foundation (BSR–9006342), the University of Wisconsin Graduate School (900159), and the University of Wisconsin's Natural History Museums Council Small Grants Program.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 353–360, May 25, 2003

Three New Species of Longicorn Beetles (Coleoptera, Cerambycidae) from the Ryukyu Archipelago, Japan

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Abstract Three new species of cerambycid-beetles are recognized from the Ryukyu Archipelago: *Cephalallus ryukyuensis* sp. nov. from Amami-Ôshima Is., Okinawa Is. and Miyako Is.; *Acalolepta masatakai* sp. nov. from Yakushima Is.; *Peblephaeus satoi* sp. nov. from Amami-Ôshima Is.

In the present paper, three new species are described from the Ryukyu Archipelago of Southwest Japan. These are *Cephalallus ryukyuensis* sp. nov. from Amami-Ôshima Is., Okinawa Is. and Miyako Is., which is related to *C. unicolor* (GAHAN) from the Japanese main islands, *Acalolepta masatakai* sp. nov. from Yakushima Is. which is close to *A. kusamai* HAYASHI, and *Peblephaeus satoi* sp. nov. from Amami-Ôshima Is., which resembles *P. ishigakianus* (YOKOYAMA) from the Sakishima Isls.

The present author wishes to gratefully dedicate this paper to Professor Dr. Masataka SATÔ on the occasion of his retirement from the Graduate School of Nagoya Women's University. Besides, the author is going to name two new species, *Peblephaeus satoi* and *Acalolepta masatakai* spp. nov., in honor of Masataka SATÔ.

Subfamily Spondylinae

Tribe Asemini

Cephalallus ryukyuensis sp. nov.

[Japanese name: Ryukyu-munakubo-kamikiri]

(Figs. 1 A, B, 2 A, A′, B & B′)

Arhopalus sharpi : KAWASAKI, 1955, Shin Konchû, Tokyo, **8** (5): 14 (Amami-Ôshima Is.).
Arhopalus (*Cephalallus*) *unicolor*: HAYASHI, 1963, Ent. Rev. Japan, **13**: 64 (Amami-Ôshima Is.).
—— SAMUELSON & GRESSITT, 1965, Pacif. Ins., **7**: 54 (Okinawa Is., Minami-Daitô Is.).
Cephalallus unicolor: KUSAMA & TAKAKUWA, 1984, Longic. Beetl. Japan Col., p. 145, pls. 4, 20 a (Okinawa Is.).

Male. Form moderately elongate; color dull reddish-brown to blackish brown, pubescence and hairs silver.

Head finely punctured, irregularly clothed with suberect and recumbent pubes-

cence; eyes finely faceted, slightly emarginate; antennae a little longer than body, first to fifth segments stout, coarsely punctured and dark brown, sixth to eleventh slender, finely punctured and reddish brown; first to seventh segments densely clothed with flying hairs, eighth to eleventh sparsely with short suberect hairs and finely covered with recumbent pubescence, relative lengths (%) of segments as follows:— 7.0 : 4.6 : 13.5 : 9.4 : 12.0 : 10.8 : 10.0 : 9.0 : 8.0 : 8.0 : 8.0.

Pronotum transverse, rounded at sides, blackish brown in color; surface usually roughly punctured, though the punctation is variable, finely clothed with recumbent pubescence; disc strongly impressed at middle. Scutellum semicircular or trapezoidal in form, brown except for blackish brown margin, shallowly and coarsely punctate, densely clothed with recumbent pubescence.

Elytra about 2.7 times as long as broad, brown in color; disc with raised longitudinal striae that are sometimes evanescent or indistinct, densely and finely clothed with recumbent pubescence; basal punctures coarse, subconfluent, becoming denser towards apical third, then a little finer and sparser to apical ends; apices rounded, sutural apices sharply dentate.

Legs rather long, finely punctured and pubescent; first segment of posterior tarsi a little longer than the following two segments combined.

Abdomen with sternites shining, shallowly and finely punctured, finely pubescent; exposed portion of fifth sternite shorter than fourth, broadly rounded at apex.

Male genitalia stout; median lobe with rather short median struts, ventral edge of median orifice strongly projected, median foramen weakly projected; tegmen without roof, with lateral lobes rather stout, sparsely clothed with long setae on apices, densely with short setae on ventral sides, basal piece well developed, ringed part converging, geniculated at the widest portion.

Body length 13–21 mm.

F e m a l e. Body more stout and robust than male. Antennae about 0.75 times as long as body; relative lengths (%) of segments as follows:— 8.7 : 3.5 : 12.2 : 10.5 :

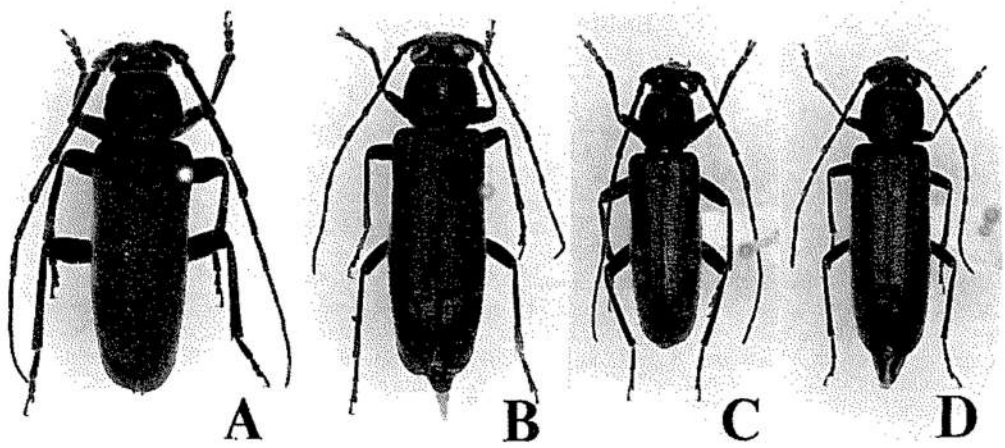

Fig. 1. *Cephalallus* spp. —— A, *C. ryukyuensis* sp. nov., ♂, 21 mm; B, *C. ryukyuensis* sp. nov., ♀, 20 mm; C, *C. unicolor*, ♂, 17 mm; D, *C. unicolor*, ♀, 18 mm.

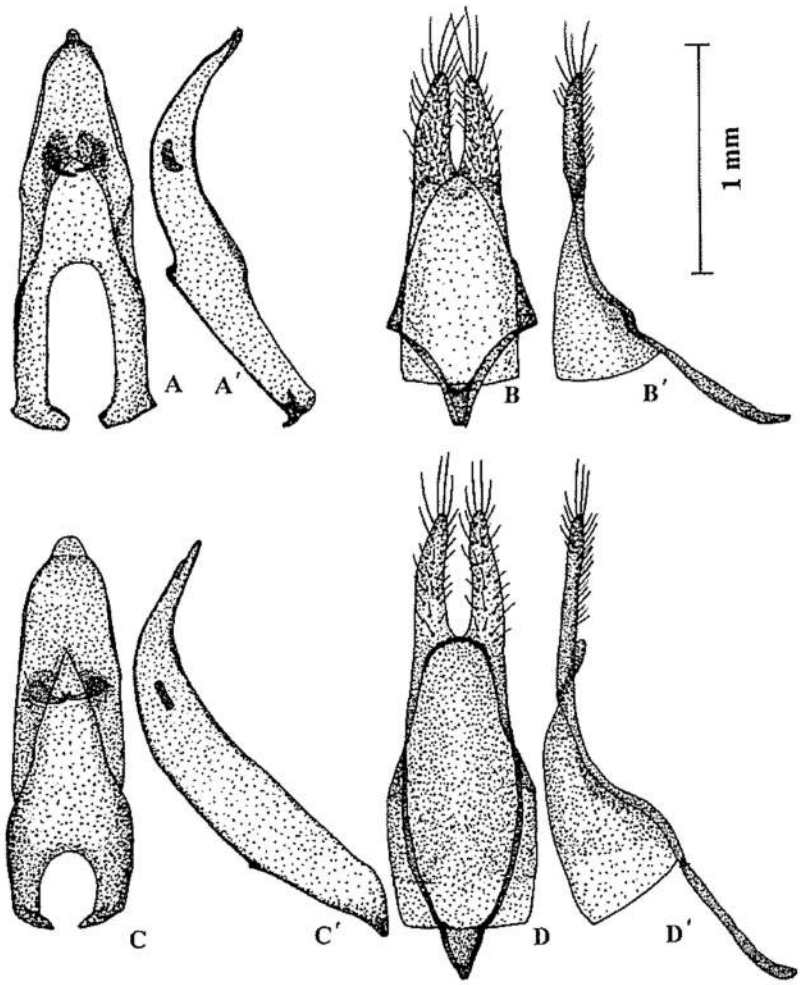

Fig. 2. Male genitalia of *Cephalallus ryukyuensis* sp. nov. (A, A′, B & B′) and *C. unicolor* (C, C′, D, & D′). —— A, A′, C & C′, Median lobe; B, B′, D & D′, tegmen; A, B, C & D, ventral view; A′, B′, C′ & D′, lateral view.

11.8 : 10.5 : 10.0 : 8.7 : 8.3 : 7.4 : 7.9.

Elytra about 2.5 times as long as broad, less parallel at sides. Abdomen with fifth sternite as long as fourth, and narrowly rounded at apex.

Body length 12–20 mm.

Distribution. Amami-Ôshima Is., Okinawa Is. and Miyako Is. (artificially introduced from Okinawa Is.) of the middle to southern Ryukyus, Japan.

Type material. Holotype ♂ (Type No. 3, FFPRI), Oku, Okinawa Is. of the Ryukyus, 18–V–1978, H. MAKIHARA leg. Paratypes: [Amami-Ôshima Is.] Mt. Yuwan-

dake, 2♀♀, 5–VII–1980, R. NODA leg. [Okinawa Is.] 1♀, 13–IV–1955. T. TAKARA leg.; 1♀, Yona, 9～13–VIII–1969. H. MAKIHARA leg.; Yona, 1♀, 28–V–1973, T. TERUYA leg.; Yona, 1♀, 9～11–VII–1977, H. MAKIHARA leg.; Oku, 22♂♂, 19♀♀, 16–V–1978, H. MAKIHARA leg.; Oku, 14♂♂, 4♀♀, 16–V–1978, H. MAKIHARA leg.; Iso-rindô, 2♂♂, 2♀♀, 8～11–X–1988, H. MAKIHARA leg. [Miyako Is.] 1♀, Shokubutsuen, Hirara City, 28–VII–1998, T. MIZOGUCHI leg.

Type depository. The holotype is preserved in the collection of the Forestry and Forest Products Research Institute, and the paratypes are in the collections of the University of the Ryukyus, Kyushu University and the National Science Museum (Nat. Hist.), Tokyo.

Notes. This new species is closely related to *C. unicolor* (GAHAN) from the Japanese main islands (southern part of Hokkaido to Kyushu and Yakushima Is.), but is distinguishable from it by the following points:

Cephalallus ryukyuensis sp. nov.: Pronotum transverse; elytron stout; exposed portion of fifth sternite shorter than fourth; median lobe of male genitalia with rather short median struts, ventral edge of median orifice strongly projected; lateral lobes of tegmen stout.

C. unicolor: Pronotum somewhat transverse; elytron slender; exposed portion of fifth sternite a little shorter than or as long as fourth; median lobe of male genitalia with very short median struts, ventral edge of median orifice weakly projected; lateral lobes of tegmen slender.

Cephalallus species is known to distribute on the islands of Amami-Ôshima, Tokuno-shima, Okinawa and Minami-daitô-jima, of the central part of the Ryukyu Archipelago, and not from the Sakishima Isls. of the southern island group. Unfortunately, the present author has no opinion for the true affinity of *Cephalallus* species from two of the above islands, Tokuno-shima and Minami-daitô-jima, since comparative specimens from those islands were not available for the present study. On the other hand, it is most probable that the single record of *C. ryukyuensis* sp. nov. from Miyako-jima Is. was derived from an artificially transplanted specimen from Okinawa Is. The larvae of *Cephalallus* species are special feeder of dead pine tree. No record from growing pine trees has been known from Miyako-jima Is. before the time when *Pinus luchuensis* MAYER was introduced from Okinawa Is. (NAKASONE, 1997).

Subfamily Lamiinae

Tribe Lamiini

Acalolepta masatakai sp. nov.

[Japanese name: Yakushima-chairohige-biroudo-kamikiri]

(Fig. 3 A)

Male. Form slender, subparallel-sided; antennal scape strongly thickened distally; integument dark reddish brown; pubescence brownish.

Head impunctured, covered with long coarse suberect brown hairs on mouth-

parts. Antennae 2.5 times as long as body, relative lengths (%) of segments as follows:— 5.2 : 0.5 : 13.1 : 10.1 : 9.9 : 9.5 : 10.1 : 9.1 : 9.4 : 9.0 : 14.0.

Pronotum broader than long, provided with a pair of sharply developed lateral tubercles; disc uneven and impunctured. Scutellum trapeziform, covered with fine yellowish gray pubescence.

Elytra slender and subparallel, 2.57 times as long as the basal width; disc somewhat uneven in basal halves, with coarse and shallow punctures which are gradually obsolete towards apices, covered with fine pubescence, which shows light and dark weak marmoreal pattern; apices subtruncate.

Legs long and stout, densely pubescent.

Abdomen densely pubescent, with last sternite concave, with dense setal fringe at apex.

Body length 23.5 mm.

Female. Form somewhat slender, parallel-sided; integument reddish brown; pubescence pale brownish. Antennae 1.6 times as long as body; relative lengths (%) of segments as follows:— 7.5 : 0.3 : 16.3 : 11.5 : 9.9 : 8.8 : 9.1 : 8.5 : 8.0 : 8.0 : 11.7.

Pronotal disc uneven, coarsely and shallowly punctate except for apical half and basal area. Elytra slender and parallel-sided, 2.53 times as long as the basal width.

Body length 30.5 mm.

Type series. Holotype ♀ (Type No. 4, FFPRI), Mt. Miyanoura, Yakushima Is., Kagoshima Pref., Japan, 19–VII–1974, H. IRIE leg. Paratype: 1♂, Shiratani-unsuikyô, Yakushima Is., 20–VII–2001, S. MARU leg.

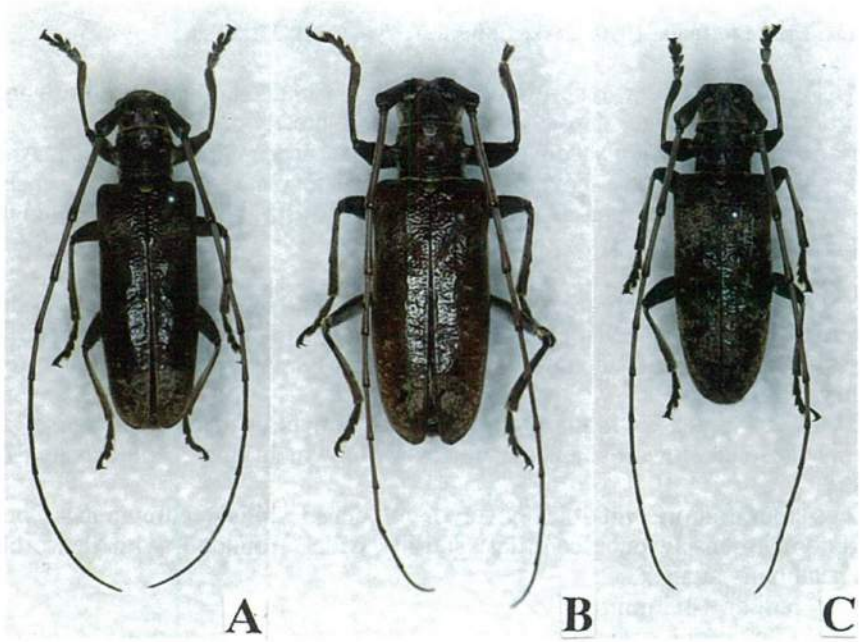

Fig. 3. *Acalolepta* spp., female. —— A, *A. masatakai* sp. nov., 23.5 mm in body length; B, *A. kusamai*, 26 mm; C, *A. ginkgovora*, 24 mm.

Type depository. The holotype is preserved in the collection of the Forestry and Forest Products Research Institute, Tsukuba, Ibaraki Pref., Japan. The paratype is in the private collection of S. MARU.

Distribution. Yakushima Is. of the northern Ryukyus, Japan.

Note. This new species resembles *Acalolepta kusamai* HAYASHI from Honshu (Kantô District) and *A. ginkgovora* MAKIHARA from the northern part of Kyushu and Honshu (Chûgoku District), but is distinguishable from them by the following key.

A Key to the Related Species of *Acalolepta kusamai* from Japan

1. Elytra robust, 2.1–2.3 times as long as the basal width. 2
– Elytra slender, about 2.5 times as long as the basal width. ..... *A. masatakai* sp. nov.
2 Elytra parallel. ..... *A. kusamai*
– Elytra subparallel. ..... *A. ginkgovora*

Peblephaeus satoi sp. nov.

[Japanese name: Amami-futo-kamikiri]

(Figs. 4 A & A')

Peblephaeus sp.: OKAMURA, 1990, Gekkan-Mushi, Tokyo, (238): 27.

Male. Form slender, tapering posteriad; color black, antennae, femora and tarsi reddish brown; pubescence dense, short, appressed, mostly dark silver.

Head with frons slightly convex; inter-antennal area deeply impressed. Antennae 1.7 times as long as body, covered with dense chocolate brown pubescence, with sparse white pubescence in basal areas of segments fourth to sixth; relative length (%) of segments as follows:— 10.9 : 0.8 : 15.3 : 14.9 : 14.1 : 11.3 : 8.5 : 6.9 : 5.6 : 5.2 : 6.5.

Pronotum slightly broader than long, apex narrower than base, moderately constricted behind apex and before base, provided with a pair of developed lateral tubercles, coarsely punctate in the middle. Mesosternal process without tubercle. Scutellum triangular.

Elytra 2.4 times as long as broad; basal punctures deep and coarse, though becoming obsolete towards apices; apices widely emarginate, outer angles dully dentate.

Legs stout; femora and tibiae covered with dense whitish yellow pubescence.

Abdomen densely pubescent, last sternite widely rounded, with dense blackish brown setal hairs at apex.

Body length. 14.5 mm.

Female. Form somewhat robust, slightly tapering posteriorly. Color black, antennae blackish brown except for reddish brown apical halves of segments third to sixth which are annulated with whitish yellow pubescence. Antennae 1.35 times as

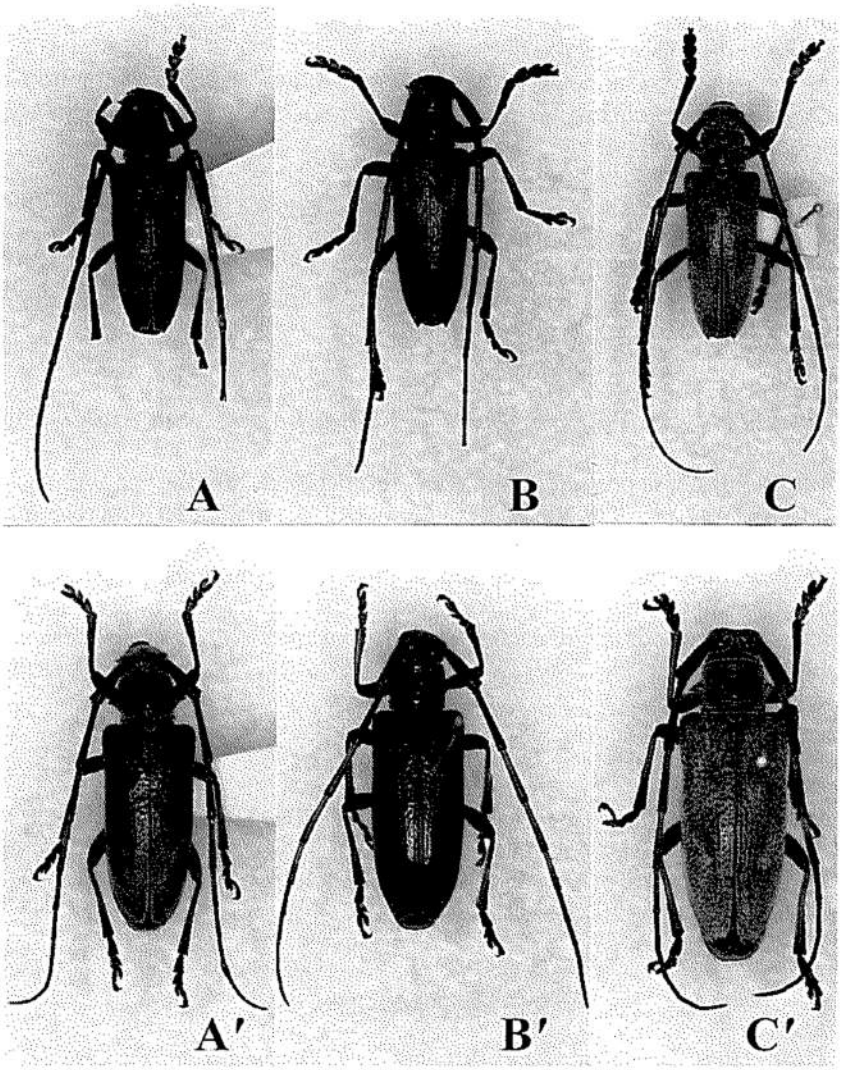

Fig. 4. *Peblephaeus* spp. —— A, *P. satoi* sp. nov., ♂, 14.5 mm in body length; A′, ditto, ♀, 19 mm; B, *P. ishigakianus*, ♂, 17 mm; B′, ditto, ♀, 19 mm; C, *P. nobuoi*, ♂, 18 mm; C′, ditto, ♀, 20 mm.

long as body; relative lengths (%) of segments as follows:— 13.6 : 1.2 : 16.3 : 14.4 : 12.5 : 10.5 : 8.2 : 6.6 : 5.8 : 5.1 : 5.8.

Mesosternal process provided with a very small tubercle at the middle. Elytra 2.2 times as long as broad.

Body length 19.0 mm.

Type series. Holotype ♂ (Type No. 5, FFPRI), Setouchi T., Amami-Ôshima Is.,

Kagoshima Pref., Japan, 30–VI–1989, H. OKAMURA leg. Paratype: 1♀, 29–VI–1989, same locality and collector as the holotype.

Type depository. The holotype is preserved in the collection of the Forestry and Forest Products Research Institute, Tsukuba, Ibaraki Pref., Japan. The paratype is in OKAMURA's private collection.

Distribution. Amami-Ôshima Is., Japan.

Notes. This species closely resembles *Peblephaeus ishigakianus* (YOKOYAMA) (Fig. 3B & B′) from Miyako Is. (1♂, Nanseien, Miyako Is., 25. VII. 1998, A. KOMADA leg., new to Miyako Is.), Ishigaki Is. and Iriomote Is., and *P. nobuoi* (BREUNING et OHBAYASHI) (Fig. 3C & C′) from Yonaguni Is., but is distinguishable from them by the following key.

A Key to Three Species of *Peblephaeus* from Japan

1. Mesosternal process provided with a small tubercle at middle. 2
– Mesosternal process smooth or provided with a very small tubercle at middle; elytra covered with dark silvery pubescence. ..... *P. satoi* sp. nov.
2. Elytra provided with large, deep and slightly long punctures, covered with bluish gray pubescence. ..... *P. nobuoi*
– Elytra provided with large, deep punctures, covered with brown pubescence. ..... *P. ishigakianus*

Acknowledgement

I wish to express my sincere gratitude to Messrs. H. IRIE of Fukuoka Pref., S. MARU of Chiba Pref., H. OKAMURA of Kôbe City, and Dr. N. OHBAYASHI of Ehime University, for the loan or donation of the valuable specimens used for the present study.

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A New Lepturine Species of the Genus *Eustrangalis* (Coleoptera, Lepturinae) from Laos

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Abstract A new lepturine species, *Eustrangalis masatakai* sp. nov. from northeastern Laos is described with some additional notes on the lepturine species collected from logs of *Fokienia hodginsii*.

This finding originates from my first trip to Mt. Phu Pan in northeastern Laos towards the end of 2001 as a member of a dendrochronological expedition led by Prof. Tatsuo SWEDA of Ehime University in search of old *Fokienia hodginsii* for reconstruction of the past climate. It was midwinter, and what I was able to collect was only some specimens of the Passalidae, Tenebrionidae and Carabidae overwintering under the bark of dead logs or in the surface soil of escarpment. However, the natural forests of this area were so attractive with hidden potential of entomological biodiversity that I have revisited Mt. Phu Pan in late April to early May with my fellow entomologists Dr. Hiroyuki YOSHITOMI, Prof. Masataka SATÔ and his wife Sumiko OHIWA, which resulted in the present collection and findings.

Among over 40 species of the Lepturinae collected on this trip, there was a beautiful species of the genus *Eustrangalis*. Most of the specimens collected were huddling together around logs of *Fokienia hodginsii* for oviposition but some were flying in the forest. It appeared closely related to *Eustrangalis viridescens* from Taiwan or *E. aenipennis* from South China, but could be identified as a distinct species at first glance. After a close examination, it was concluded that it is a new species as described below.

Before going into descriptive details, I wish to express my hearty thanks to Mr. Hiroyuki WAKAHARA, a resident of Vientiane, who offered every facility for us during our stay in Laos. My thanks are also due to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for his critical review of the manuscript, and Dr. Tatsuya NIISATO of Bioindicator Co. Ltd., Tokyo for kindly allowing unlimited access to his valuable specimens for comparison. I would like to dedicate the present paper and specific epithet of the new species to Prof. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University as well as for the memory of our fantastic and impressive collecting trip to Laos with him and his newly-wed honey-sweet wife.

Eustrangalis masatakai sp. nov.

(Figs. 1, 2, 5–8, 17)

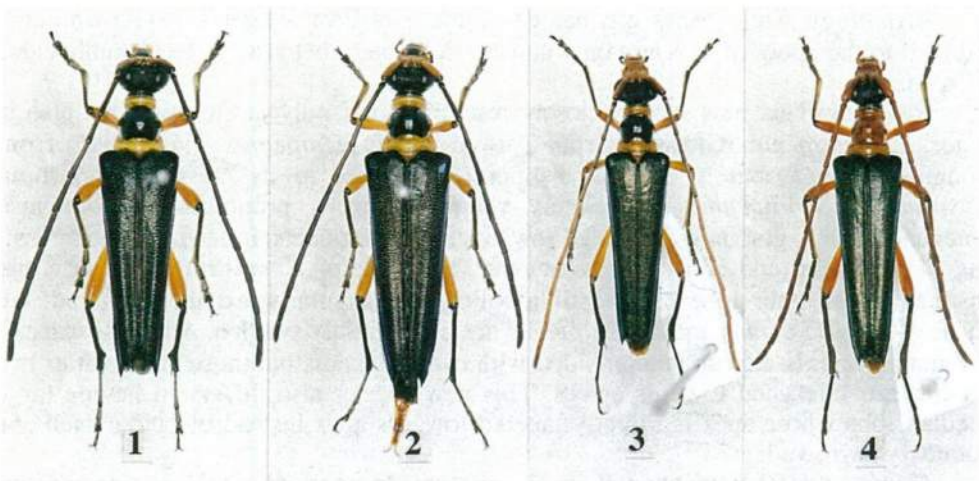
Male. Body light yellowish brown. Head with labrum and clypeus black, except for each apical margin which is reddish brown; apical half of mandibles black and yellowish brownish basally; frons yellowish brown except for black triangular area which is connected to clypeus, and the area from the apex of the triangular area to vertex narrowly reddish brown; eyes, occiput and dorsum of neck entirely black. Antennal color variable, usually almost of dark color except for yellowish dorsum of scape, but sometimes bicolored as follows: scape yellowish brown dorsally and black ventrally, succeeding segments black except for each base of six to ninth yellowish. Pronotum with central swollen portion of disc between anterior and basal constrictions shiny black, and the remainder yellowish brown. Legs with coxae, trochanter and femora yellowish brown, except for each apex of trochanter and femora which are black; fore- and mid-tibiae black dorsally and more or less yellowish brown ventrally, hind-tibiae entirely black; all the tarsi black, claws reddish brown. Scutellum yellowish brown and slightly darkened towards apex. Elytra metallic green tinged with bluish luster which becomes stronger from humeri towards the lateral half of each elytron. Ventral surface of body almost entirely light yellowish brown except for apical margin of the last sternite which is black.

Body moderately clothed with fine glossy hairs, pronotum almost naked, elytra provided with short, suberect golden hairs throughout.

Head moderately prolonged anteriad, strongly constricted just behind eyes without tempora; clypeus and genae moderately, and frons to occiput through vertex densely provided with large punctures except for triangular area of frons and neck which are smooth and shining; eyes very large and prominent laterad; long distance of eye diameter 2.20 times as long as gena; vertex deeply concave. Antennae slightly exceeding the elytral apices; scape distinctly curved and not thickened towards apex, slightly shorter than third segment; third segment 1.4 times as long as fourth; third and fifth equal in length; third to fifth segments fine, thickened at apices; sixth to eleventh thicker, subcylindrical; relative lengths of segments as follows:— 34 : 5 : 37 : 26 : 37 : 35 : 37 : 34 : 33 : 30 : 32.

Pronotum smooth and shining, provided with fine punctures sparsely on dorsum and with distinct punctures on lateral sides, deeply constricted at apical and basal 1/6, respectively; disc distinctly convex above; sides roundly expanded laterally just before the middle; base distinctly bisinuate, the widest, 1.76 times as wide as apical width, 0.95 times as wide as pronotal length, and 0.66 times as wide as elytra at humeri; hind angles rounded.

Elytra densely provided with setigerous punctures which are arranged in rows and becoming sparser laterally; disc longitudinally depressed along suture; sides almost straightly convergent towards apex; humeral angles slightly rounded; each apex deeply emarginate with strongly toothed external and sutural angles; the tooth of the external angle much more prominent. Mesosternal process declivous and the apex lower than the level of mid-coxae. Metasternum thick, strongly convex beneath, moderately punctured and provided with a pair of longitudinally ridged small



Figs. 1–4. Habitus of *Enstrangalis* spp. —— 1, *E. masatakai* sp. nov. male; 2, ditto, female; 3, *E. aenipennis* (FAIRMAIRE); 4, *E. viridipennis* GRESSITT.

elevations beside median line at posterior 1/3. Legs short and slender; hind tibia provided with a ridged triangular lobe at apical 1/4 of inner side (Fig. 17).

Abdomen with sternites sparsely and finely punctate; apical area of fifth visible sternite triangularly depressed with slightly emarginate apical margin. Male genitalia as in Figs. 5–8; median lobe 0.30 times as long as elytral length, directly convergent apicad with bluntly pointed apex, strongly curved in lateral view, with dorsal plate distinctly shorter than ventral plate; lateral lobes about 1/5 the whole length of tegmen, twice as long as width, each provided with about 12 to 14 long hairs at apex, and several short erect hairs on ventral surface; the hairs becoming longer towards base.

Length, 14.4 to 16.9 mm; breadth 3.7 to 4.0 mm.

F e m a l e. Almost same as male, but different as follows: Antennae just reaching the elytral apices; relative lengths of antennal segments as follows:— 37 : 6 : 40 : 27 : 40 : 37 : 37 : 33 : 32 : 30 : 31; color variable from almost black to light colored, scape yellowish brown dorsally and black ventrally, second black with yellowish extremity, third black with basal two-thirds of dorsum yellowish, sixth to ninth black with yellowish base, tenth and the last segment black. Pronotum more voluminous than in male, as long as basal width. Metasternum without ridges. Hind tibia straight without lobe. Fifth abdominal sternite largely black with widely truncate apical margin.

Length 15.8 to 19.8 mm; breadth 3.8 to 5.2 mm.

Host plant. Fokienia hodginsii (DUNN) HENRY et THOMAS (Cupressaceae).

Type series. Holotype: ♂, Mt. Phu Pan, Ban Saleui, Xam Neua, Houa Phan Province, altitude 1,500–1,700 m, 30–IV–2002, N. OHBAYASHI legit. Allotype, ♀, same data as for the holotype.

Paratypes: 15♂♂, 81♀♀, same locality as for the holotype, 27–IV~ 6–V–2002, N. OHBAYASHI legit.; 16♂♂, 23♀♀, ditto, H. YOSHITOMI legit.; 1♂, 4♀♀, ditto, M. SATÔ legit.

Etymology. This species was named in honor of Prof. Masataka SATÔ who contributed to the knowledge of not only aquatic Coleoptera but also of the Cerambycidae of Asia.

Remarks. This new species closely resembles, not only in structure but also in color, *E. viridipennis* GRESSITT from Taiwan and *E. aenipennis* (FAIRMAIRE) from Southwest China, but it is quite distinct at a glance in its massive proportion. *Eustrangalis viridipennis* has entirely yellowish brown pronotum and brownish antenna which is gradually darkened towards apical segments, instead of black marking of pronotum and almost black antenna. The male of *E. masatakai* sp. nov. has distinct apical inner lobe of hind tibia which is triangularly expanded laterad, but those of *E. viridipennis* and *E. aenipennis* are only slightly swollen. Antennal scape of the new species is almost parallel-sided with even thickness but those of the latter two species are thickened towards apices. This new species also differs in having large median lobe whose apex is directly tapered towards apex instead of being small and roundely narrowed.

GRESSITT (1934) mentioned in his original description of *E. viridipennis* that "most of the examples were found on cut surfaces of logs, probably of *Chamaeocyparis formosensis*." The host plant of this new species is undoubtedly *Fokienia hodginsii*. Both *Fokienia* and *Chamaeocyparis* belong to the family Cupressaceae and the species-group consisting of *E. masatakai* sp. nov., *E. aenipennis* and *E. viridipennis* is probably the feeders of cupressacean species.

Eustrangalis aenipennis (FAIRMAIRE)

(Figs. 3, 9–12, 18)

Stenura aenipennis FAIRMAIRE, 1889, 63. (Type locality: Moupin, China.)
Eustrangalis aenipennis: GRESSITT, 1942, 8; 1951, 119.

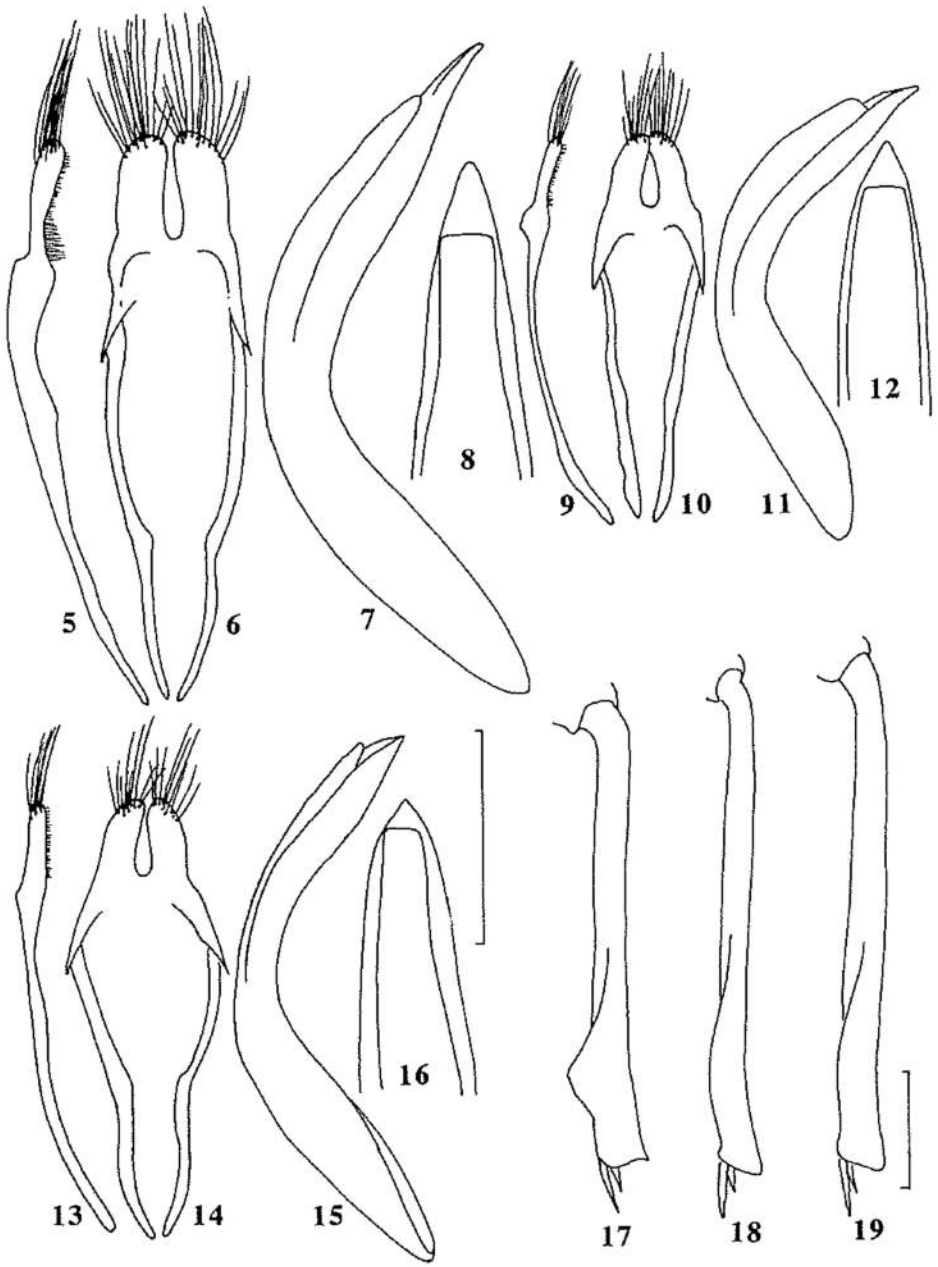
Specimens examined. 2♂♂, 2♀♀. Mt. Haba Shan, E. slope, 2,800–3,150 m alt., N27°20′36.6″, E100°09′37.0″, NW Yunnan, SW China, 6~14–VI–2002, S. BEČVÁŘ and R & H. FOUQUE legit.

Eustrangalis viridipennis GRESSITT

(Figs. 4, 13–16, 19)

Eustrangalis viridipennis GRESSITT, 1934, 380. (Type locality: Taiheizan and Arisan, Taiwan.). —— YU & NARA, 1988, 17, pl. 4. —— JIANG & CHEN, 2001, 168, pl. 8.

Specimens examined. 1♂, Ari-san, Formosa, V–1934, U. SHIGA leg.; 1♂, Hohuanchi – Sungchuankang, Nantou Hsien, Taiwan, 24–VI–1976, H. MAKIHARA leg.; 2♂♂, near Pilu Husiulin, Hwalien, Taiwan, 14–V–1977, T. NIISATO leg.



Figs. 5–19. Male genitalia and hind leg of *Enstrangalis* spp. —— 5–8 & 17, *E. masatakai* sp. nov., male; 9–12 & 18, *E. aenipennis* (FAIRMAIRE); 13–16 & 19, *E. viridipennis* GRESSITT. —— 5, 9, 13, Tegmen, lateral view; 6, 10, 14, ditto, dorsal view; 7, 11, 15, median lobe, lateral view; 8, 12, 16, ditto, dorsal view of apical part; 17, 18, 19, male hind leg, dorso-lateral view. Scale 1 mm.

A Key to Three Species of the Genus *Eustrangalis* with Metallic Green Elytra

1. Pronotum yellowish brown with central swollen portion shiny black; antenna with scape yellowish brown dorsally and black ventrally, slightly shorter than third segment. 2
– Pronotum entirely shiny reddish brown; antenna with scape entirely reddish brown, as long as third segment; succeeding segments gradually darkened towards apical segments; third segment 1.5 times as long as fourth; third and fifth equal in length. ..... *E. viridipennis*
2. Antenna with scape thickened towards apex; third to fifth segments brown with darkened extremities, sixth to the last segments almost yellowish brown; third segment 1.17 times as long as fourth. Pronotum 1.47 times as wide as apical width, 0.85 times as wide as pronotal length. Hind tibia slightly widened apically with a ridged lobe in male (Fig. 18). Male genitalia with median lobe about 0.25 times as long as elytral length, gradually convergent apicad with bluntly pointed apex (Figs. 11–12). ..... *E. aenipennis*
– Antenna with scape not thickened towards apex; usually almost all the antennal segments dark-colored except for yellowish dorsum of scape; third segment 1.4 times as long as fourth. Pronotum 1.76 times as wide as apical width, 0.95 times as wide as pronotal length. Hind tibia provided with a ridged triangular lobe at apical 1/4 of inner side (Fig. 17). Median lobe 0.30 times as long as elytral length, directly tapered apicad with bluntly pointed apex (Figs. 7–8). .... *E. masatakai* sp. nov.

Additional Record of Lepturinae Collected from Logs of *Fokienia hodginsii*

Acording to the "Oxford encyclopedia of trees of the world", the genus *Fokienia* contains a single species, *Fokienia hodginsii*, which is native to China, extending westwards into Indochina and very rare in cultivation. On Mt. Phu Pan of Laos, we observed several *Fokienia* trees of over five hundred years old, which were distributed between ca. altitude 1,600 m and 1,800 m of natural forest. Some of them were cut down and left to stand in the forest and the following lepturine species were collected on the logs in addition to *Eustrangalis masatakai* sp. nov. Here I record them as feeders of this plant.

1. *Anoploderomorpha abstrata* HOLZSCHUH, 1989, 365.
2. *Leptura aurosericana* FAIRMAIRE, 1895, 177.
3. *Macroleptura quadrizona* (FAIRMAIRE, 1902), 244 (*Strangalia*).

Figs. 20–21. Collecting sight and life of *Eustrangalis masatakai* sp. nov. on Mt. Phu Pan (May 5, 2002). —— 20, Logs of *Fokienia hodginsii* beside the forest road; 21, adult female of *E. masatakai* on a log of *F. hodginsii*.

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A New Species of the Genus *Pidonia* (Coleoptera, Cerambycidae) from Laos

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Abstract A new species of the cerambycid genus *Pidonia* is described from Laos under the name of *Pidonia (Pidonia) satoi*. This is a fourth species of the genus *Pidonia* from Indochina, and the genus *Pidonia* is recorded for the first time from Laos.

In the spring of 2002, an entomological expedition to Laos was organized by Drs. M. SATÔ and N. OHBAYASHI. The party mainly visited Mt. Phu Pan in the northeastern part of the country, and succeeded in collecting a fairly large number of specimens of cerambycid beetles, which contained several specimens of a *Pidonia*. Through the courtesy of Dr. OHBAYASHI, the present authors were given the opportunity to study them, and are going to describe them in the present paper as a fourth species of the genus from Indochina, which follows the three Vietnamese species, *Pidonia (Pidonia) insperata* A. SAITO, 1995, *P. (P.) sciaphila* KUBOKI, 2001 and *P. (P.) morikawai* KUBOKI, 2001.

The type locality, Mt. Phu Pan in Houa Phan Province, is located to the northeast of Vientiane, 20°11′N in latitude and 104°00′E in longitude, with the height 2,079 m at the top. This is the southernmost locality for a species of *Pidonia* ever known in the world. According to Dr. OHBAYASHI, the specimens were obtained from the flowers of a kind of oak in a natural forest of a native cypress at an altitude of 1,500–1,800 m on the mountain.

Before going further, the authors wish to express their hearty thanks to Dr. Nobuo OHBAYASHI of Ehime University, who collected the specimens of this interesting new species. Deep gratitude is due to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for his kind reading and criticizing the original manuscript of this paper.

This paper is dedicated to Professor Dr. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University.

Pidonia (Pidonia) satoi A. et S. SAITO, sp. nov.

(Figs. 1–9)

Length: male 6.4–8.2 mm (from mandibular tip to elytral apex). Breadth: male 1.7–2.2 mm (between humeral angles of elytra).

Male. Head testaceous, with mouth-parts brown except for blackish brown apex of each mandible; eyes black; posterior parts of eyes sometimes blackish brown; gula blackish brown; lateral and ventral parts of neck also blackish brown. Antennae blackish brown except for 1st and 2nd segments testaceous to brown.

Prothorax testaceous; pronotum testaceous, with a remarkable black marking at each lateral margin (Fig. 2); prosternum blackish brown to brown; ventral surfaces of meso- and metathoraces blackish brown; scutellum black; anterior margins of metasternum and metepisterna black.

Legs blackish brown, with claws dark brown to brown; lateral and ventral sides of front and middle femora testaceous to brown, basal half of hind femur testaceous to brown.

Elytra almost yellowish brown, paler than head and prothorax, each elytron provided with three black markings at the side; first and second markings oval and located at basal fourth and before the middle; third marking transverse and lying at three-fourths from base, sometimes extending to suture; apex of each elytron black, which extends forwards linearly along lateral margin and links with the third marking; elytral suture black.

Abdomen blackish brown to brown; 1st and 2nd visible sternites blackish brown, 3rd blackish brown in basal third or entirely blackish brown, 4th blackish brown in basal third or two-thirds, 5th almost brown.

Head subquadrate, slightly broader across eyes than length (1.04–1.08 : 1); surface densely covered with coarse punctures and short testaceous pubescence, with two or three pairs of rather long and thin setae directed backwards postero-internal to eyes; an obscure median longitudinal line extending from frons to vertex; eyes prominent laterally. Antennae slender, extending beyond elytral apex at the base to the middle of 9th segment; length order of antennal segments roughly measured as follows: 5th>3rd>6th>7th≧4th>1st>8th≧9th>11th>10th>2nd.

Pronotum slightly longer than width at the middle (1.1–1.2 : 1), swollen laterally and constricted both anteriorly and posteriorly; disc convex above, surface covered with slightly denser and finer punctures and pubescence than those on head; scutellum triangular in the visible area, a little longer than width and covered with short testaceous pubescence.

Legs fairly elongate, densely covered with fine testaceous pubescence.

Elytra 2.2–2.3 times as long as width between humeral angles, with the disc slightly but widely depressed at middle; surface covered with sparser and larger punctures and longer testaceous pubescence than those on pronotum; apex of each elytron subtruncate with the two angles rounded.

Abdomen gradually narrowed towards apex, densely pubescent throughout; last abdominal sternite and tergite, and 8th abdominal tergite as shown in Figs. 3—5. Median lobe of genitalia (Fig. 6) ventrally curved throughout, very gradually nar-

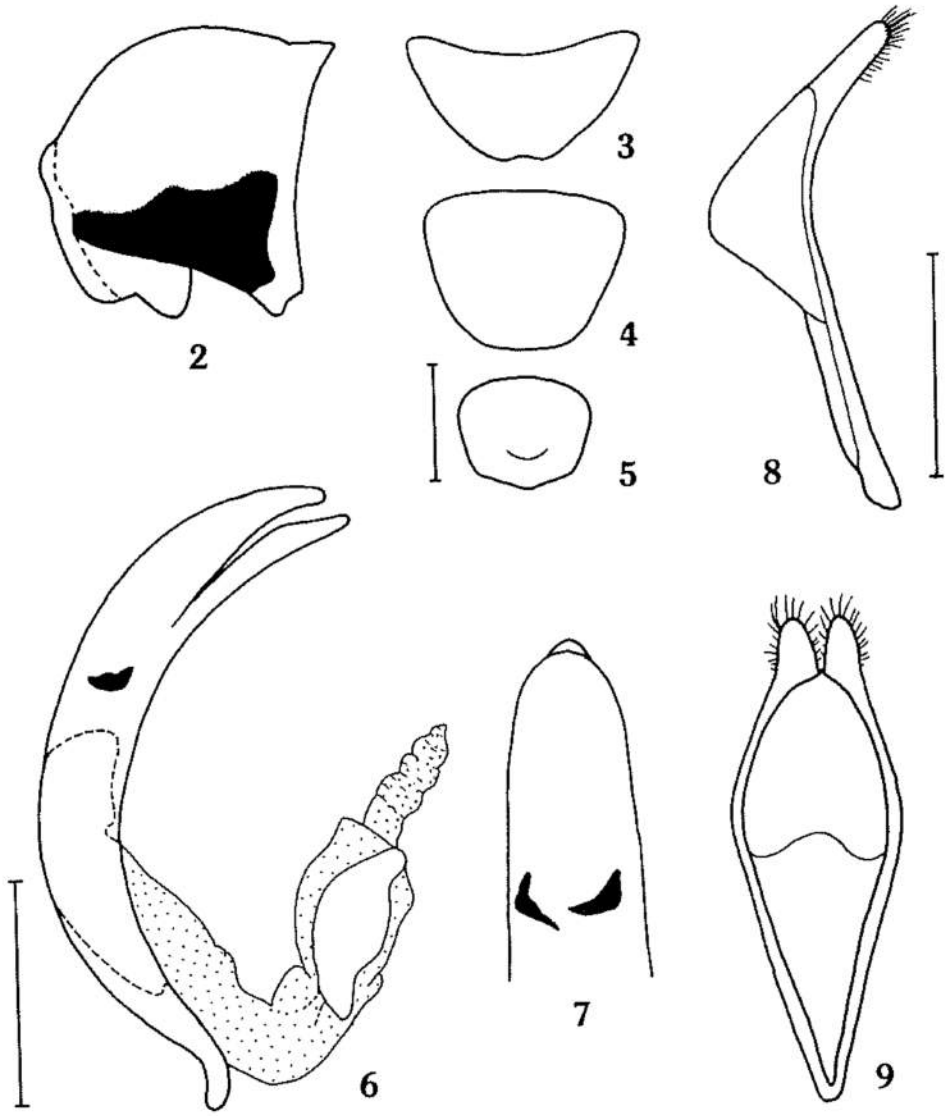
rowed towards apex; median struts narrowed towards bases, dorsally curved at each base; a pair of sclerites irregularly falcate (Fig. 7). Internal sac moderately sclerotized at the subapical part, which is sinuately and obtusely ridged on each side, with the apical membranous part rather broad and relatively short. Tegmen (Figs. 8–9) widest at about apical third, narrowed towards both apex and base in dorsal view; lateral lobes short and rounded at each tip, ventrally bearing short but conspicuous terminal hairs.

Type series. Holotype: ♂, Mt. Phu Pan, Ban Saleui, Xam Neua, 1,500–1,800 m in altitude, in Houa Pan Province, NE. Laos, 4–V–2002, N. OHBAYASHI leg. [EUMJ]. Paratypes: 3♂, same data as for the holotype [EUMJ, CBM–ZI 94275].

The holotype is preserved in the collection of the Entomological Laboratory, Ehime University [EUMJ]. The paratypes are preserved in the above collection and the collection of the Natural History Museum and Institute, Chiba [CBM].

Notes. This new species resembles *Pidonia (Pidonia) insperata* A. SAITO, 1995,

Fig. 1. *Pidonia (Pidonia) satoi* sp. nov.; holotype, male [EUMJ].



Figs. 2–9. *Pidonia (Pidonia) satoi* sp. nov.; paratype, male [EUMJ]. —— 2, Left lateral view of prothorax, showing the black marking; 3, last abdominal sternite; 4, last abdominal tergite; 5, 8th abdominal tergite; 6, median lobe and inner sac in lateral view; 7, apex of median lobe in dorsal view; 8, tegmen in lateral view; 9, same in dorsal view. (Scales: 0.5mm.)

from northern Vietnam, but can be distinguished from the latter by the dark anntenae and legs, and rather prominent 8th abdominal tergite.

As was already mentioned in the introduction, this is the first record of *Pidonia*

from Laos.

In describing *Pidonia insperata*, the first author (SAITO, 1995) placed it in the subgenus *Cryptopidonia*. Later, KUBOKI (2001) transferred it from *Cryptopidonia* to the subgenus *Pidonia* s. str., when dealing with further records of Vietnamese species of *Pidonia*. His arrangement can be disputed, since the characteristics of the ovipositor of *P. insperata* agree, as was already pointed out by SAITO (1995), in many respects to those of *Cryptopidonia*. For the time being, the present authors will follow KUBOKI's opinion in regarding *P. insperata* as a member of *Pidonia* (s. str.), and will also regard the present new species, which is doubtless a close relatve of *P. insperata*, as a member of the subgenus *Pidonia* (s. str.). However, further investigations in the future are needed for drawing a final condition as regards the true phylogenetic relationship of the *Pidonia* species occurring in the Indochinese Peninsula.

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Glaphyra satoi sp. nov. (Coleoptera, Cerambycidae), a Palearctic Element of the Molorchine Longicorn Beetle from Taiwan

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Abstract A new species of the molorchine genus *Glaphyra* is described from the central mountains of Taiwan under the name of *G. satoi* sp. nov. This new species shows the ordinarily flattened facies like the Palearctic species, *G. umbellatarum* (SCHREBER) from Europe, *G. kojimai* (MATSUSHITA) and *G. ichikawai* NIISATO from Far East Asia. Occurrence of such a relict species in Taiwan is very important from the zoogeographical viewpoint, since *G. satoi* sp. nov. is an element filling in a wide gap between the ranges of the two known groups of species. The group of *G. umbellatarum* is newly proposed for the above four species, and a brief discussion is given on their differentiation and dispersal.

Introduction

Two Palearctic species, *Glaphyra umbellatarum* (SCHREBER) and *G. kojimai* (MATSUSHITA) no doubt belong to the same lineage, and share such unique characters as the ordinarily flattened habitus, the elongate pot-shaped pronotum, the long attenuate elytra, the scarcely haired ventrites without any pubescent maculation, and the unique conformation of the male genital organ. The two species are isolated to the two edges of the Palearctic region, western and eastern; *viz.* the western species, *G. umbellatarum* has the rather wide range between Europe and Central Asia, while the Far Eastern one, *G. kojimai* is distributed in the Japanese main islands and the southern part of the Korean Peninsula. Another species, *G. ichikawai* NIISATO rather recently described from the central part of the Korean Peninsula, is a sibling species differentiated in the Far East. No certain evidence, a *G. umbellatarum*- and/or *G. kojimai*-like species, has so far been obtained in a wide blank area of distribution extending from northeastern China to western Siberia.

In the course of the faunal survey of the Taiwanese cerambycid beetles, I have found a strange *Glaphyra* species having markedly different habitus among the other congeners from Taiwan and the mainland of China. However, a *Glaphyra* species in question seems to have somewhat familiar impression at first sight, since it closely resembles a common molorchine species in Japan, *G. kojimai*. Soon it has become evident from their morphological similarity that the *Glaphyra* species in question no doubt belongs to a direct lineage of the two Palearctic species, *G. umbellatarum* and *G. kojimai*. The discovery of such a Palearctic element of the genus *Glaphyra* in Taiwan is very interesting from the zoogeographical viewpoint since no congener of *umbellatarum*- and/or *kojimai*-like facies has so far been found from the wide

distributional gap in Central Eurasia and its continental islands. In the following lines, this interesting species will be newly described under the name of *G. satoi*, and a brief discussion will be given on its importance for filling in the blank in our knowledge about the molorchine longicorn beetles.

Professor Dr. Masataka SATÔ is both an esteemed entomologist and my teacher of coleopterology and conservational biology in long standing. I have received his help and guidance for my study and my activity of nature conservation since the earlier period of the 1980's. In commemoration of his retirement from Nagoya Women's University, I would like to dedicate this paper and to give his name to the interesting new species.

Before going into further details, I wish to express my heartfelt thanks to Dr. Shun-Ichi UÉNO for his continuous guidance and critical reading of the original manuscript of this paper. My special thanks are also due to the late Dr. Kintaro BABA, Dr. Masatoshi TAKAKUWA, Messrs. Shigeo TSUYUKI and Hiroshi MAKIHARA for their offer of valuable material used in this study.

The following abbreviations are used in the description and the depository of the type specimens: HE — maximum width of head across eyes, FL — length of frons, FB — basal width of frons, FA — apical width of frons, PL — length of pronotum, PW — maximum width of pronotum across lateral tubercles, PA — apical width of pronotum, PB — basal width of pronotum, EL — length of elytron, EW — humeral width of elytra, M — arithmetic mean; NSMT — National Science Museum (Nat. Hist.), Tokyo, KPMNH — Kanagawa Prefectural Museum of Natural History, Odawara, ST — S. TSUYUKI's private collection, TN — T. NIISATO's one.

Glaphyra (s. str.) *satoi* sp. nov.

(Figs. 1, 2 & 3a)

Medium-sized species having ordinarily flattened brownish body, and characterized by the elongate pot-shaped pronotum, the long attenuate elytra, and the absence of any pubescent maculation on pronotum and venter. Closely resembles *G. umbellatarum* and *G. kojimai*.

Male. Colour dark reddish brown, usually slightly more reddish in antennae and legs, moderately shiny; mouthparts dark yellowish brown, palpi yellowish brown, mandibles reddish brown except for black margins; elytron dark brown, usually with pale yellow large discal maculation at a level between just behind base and apical 3/8, which is sometimes inconspicuous according to individuals; legs reddish brown, pale yellow in pedunculate parts of mid and hind femora, tarsi yellowish brown.

Head globose including large eyes, rather voluminous, well convex, distinctly wider than pronotum, sparsely covered with medium-sized punctures, sparsely clothed with pale erect hairs, HW/PA 1.21–1.41 (M 1.32), HW/PW 1.07–1.14 (M 1.10); frons almost trapeziformed, gently convex on each side and divided by a distinct median longitudinal furrow which barely reaches slightly arcuate apical margin, with markedly arcuate sides which are broadly impressed, FL/FB 0.72–0.96 (M 0.84), FB/FA 1.13–1.29 (M 1.23); clypeus large and rather long, distinctly

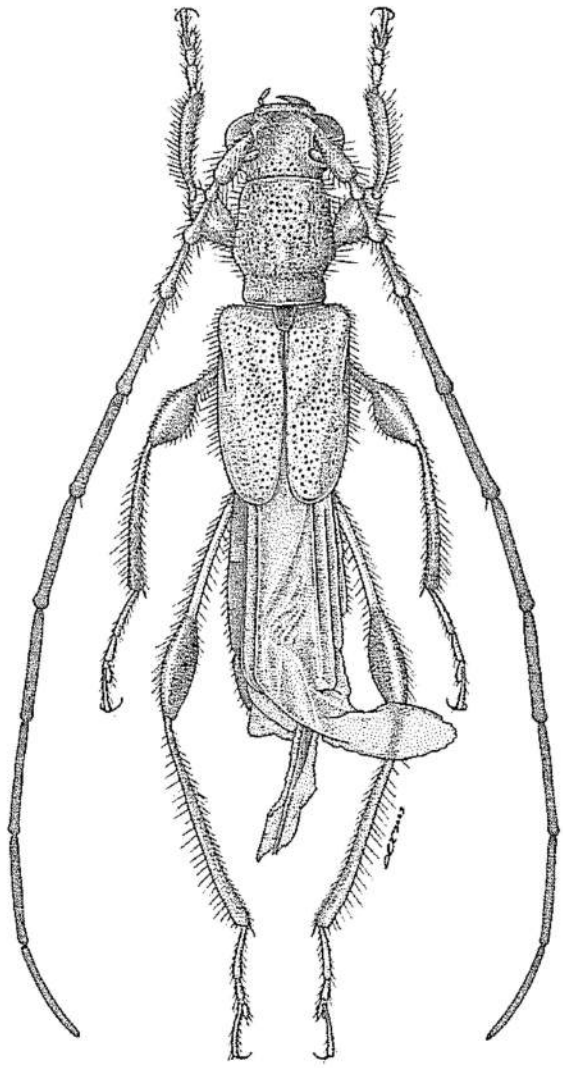

Fig. 1. *Glaphyra* (s. str.) *satoi* sp. nov., holotype ♂, from Chingjing Farm in Nantou Hsien of Taiwan.

narrowed to apex, strongly depressed at base, distinctly uneven on surface, 1/3 the length and 2/3 the apical width of basal width, gently emarginate at apical margin; mandibles short and broad, briefly acute near apices; genae fairly shallow, 1/3 the depth of lower eye-lobes, with sides parallel or slightly convergent apicad; eyes large and strongly prominent, with upper lobes separated from each other by 2/3 the width of occiput. Antennae relatively long though slightly varying in length according to individuals, 1.36–1.55 times as long as body, rather slender, with basal four segments

shiny and sparsely clothed with yellowish brown hairs, segments 5–11 matted and with dense minute brown pubescence; scape gently clavate, widest near the middle, with a few coarse punctures, nearly as long as segment 3; segment 2 not so reduced, distinctly dilated apicad, 3/8 the length of segment 3; segments 3 and 4 rather distinctly thickened at each apex, the former a little shorter than the latter; segments 5–7 weakly dilated to each apex and slightly increasing in length, of which segment 7 is the longest, 1.9 times as long as segment 3; segments 8–10 slender and gradually decreasing in length; terminal segment gently arcuate, simply pointed at the apex, a little shorter than the preceding segment.

Pronotum fairly long and forming an elongate pot-shape, distinctly narrowed to apex and moderately so to base, widest just behind middle across the lateral swellings, PL/PA 1.34–1.76 (M 1.53), PB/PA 0.91–1.12 (M 1.00), PL/PW 1.18–1.29 (M 1.27), PW/EW 0.72–0.80 (M 0.75), PL/EL 0.63–0.73 (M 0.66); apex moderately arcuate, weakly bordered throughout, narrower than base; base nearly transverse though slightly emarginate at middle, bordered as in apex; sides weakly constricted just behind apex, almost straightly divergent to lateral weak swellings just behind middle, then also straightly convergent to basal sixth, with basal collar gently sinuate; disc moderately convex, distinctly depressed on basal collar and slightly so behind apex, uneven by somewhat undefined smooth swellings ranging as follows: two pairs of rounded lateral swellings at apical and basal 4/9, of which the posterior pair are larger and somewhat oblique, and sometimes continue to the anterior pair, and also a median longitudinal one between lateral two pairs; surface coarsely and irregularly provided with medium-sized punctures and with brownish long erect hairs, though transversely rugose and pale pubescent on basal collar. Scutellum rather large, subquadrate though rounded at apex, longitudinally concave at median line, densely clothed with pale pubescence.

Elytra relatively long, reaching the base of first ventrite, widest just behind humeri, completely covering the sides of metathorax, narrowly dehiscent in apical fourth, moderately bordered throughout, EL/EW 1.37–1.46 (M 1.44); sides with humeri slightly projected forwards, then arcuate for a short distance, and almost straightly convergent to apices which are narrowly rounded; dorsum hardly convex, flattened on disc, though obliquely depressed from basal 3/8 to apical fourth and longitudinally so near suture behind scutellum, moderately provided with medium-sized punctures throughout and sparsely clothed with erect brownish hairs.

Prosternum arcuately emarginate in profile, closely provided with transverse furrows and a few coarse punctures, scattered with a few long pale hairs; prosternal process convex and forming a narrow triangle in basal third, excavated and strongly compressed in apical 2/3; furcasternum not so much extended posteriad, barely reaching the hind margins of pleural processes. Mesosternum slightly depressed near middle, weakly rugose on the surface, rather densely clothed with pale pubescence at sides; mesosternal process weakly arcuate at sides and bluntly pointed. Mesepisternum smooth and almost bare. Metasternum strongly raised towards the posterior half, coarsely punctured, clothed with long pale hairs at sides and almost smooth near middle. Metepisternum provided with a few punctures and pale hairs. Abdomen elongate barrel-shaped, scattered with medium-sized punctures, clothed with long pale hairs and devoid of any pubescent maculation; anal ventrite transversely truncate at

apex; anal tergite rounded apically and briefly concave at middle.

Legs thin and moderately long; hind femur weakly swollen in apical 4/5, with weakly arcuate clavate part; tibia weakly arcuate or almost straight in apical half; metatarsi with 1st segment slightly longer than the following two segments combined.

Male genital organ large though weakly sclerotized. Tergite 8 almost trapeziform, 7/10 as long as the basal width, apex 2/5 as wide as the latter, provided with medium-sized to long setae near apical margin. Sternite 8 transversely semicircular, provided with several setae at sides. Median lobe large, a little less than a half the length of abdomen, fairly broad, slightly arcuate in profile, flattened in apical lobe; dorsal plate very wide, slightly longer than ventral plate, gently arcuate at sides, with broadly truncate apical margin; ventral plate strongly arcuate in profile, with sides in ventral view arcuately emarginate in basal 3/5, then strongly dilated and triangularly

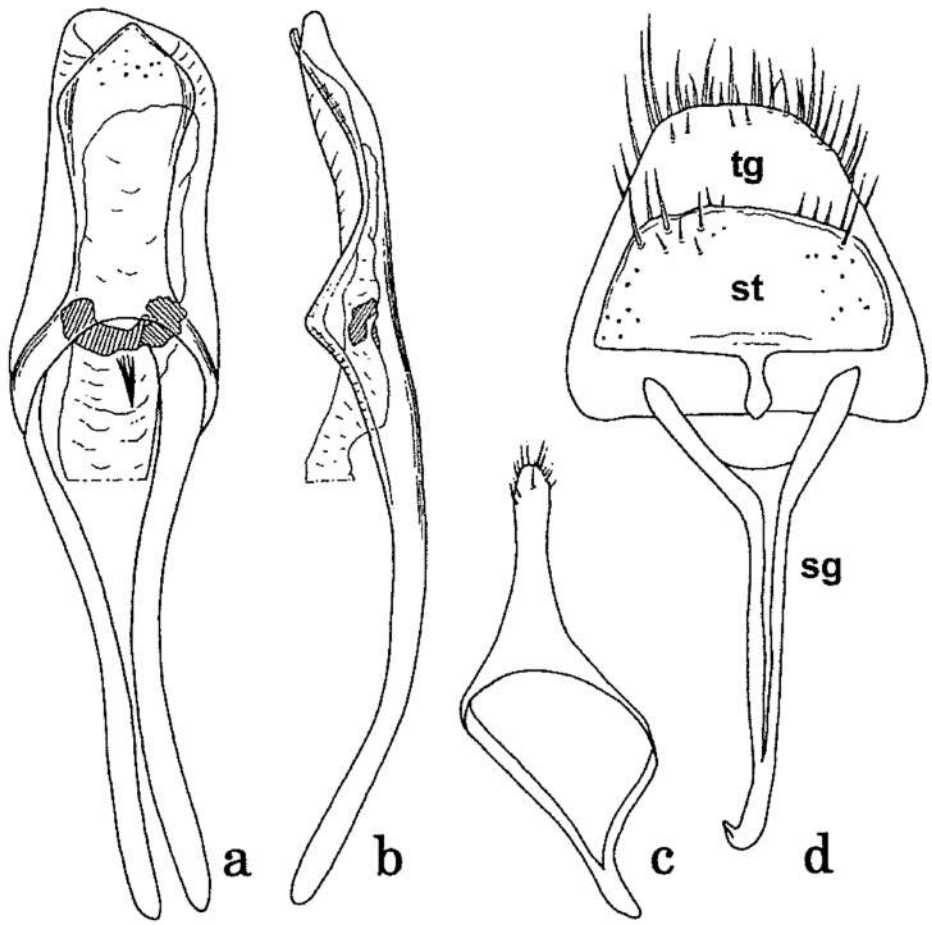

Fig. 2. Male genital organ of *Glaphyra* (s. str.) *satoi* sp. nov., holotype, from Chingjing Farm, Nantou Hsien of Taiwan. —— a, Median lobe, dorsal view; b, ditto, lateral view; c, tegmen, dorsal view; d, abdominal terminalia (segment 8), ventral view, (tg: tergite, st: sternite, sg: spiculum gastrale).

convergent to the pointed apex, reflexed at a level between apical 1/5 and 3/7; median struts slender, distinctly longer than apical lobe. Tegmen a little longer than a half the length of median lobe; paramere complete uni-lobed, very slender, nearly a half the length of tegmen, arcuately narrowed towards the slightly thick apical third, bluntly rounded and provided with a few short setae at the extremity.

Body length 5.6–7.4 mm.

Female. Unknown.

Type series. Holotype ♂, near Chingjing Farm (清境農場), ca. 1,700m alt., Jenai Hsiang, Nantou Hsien, C. Taiwan, 3–VI–1995, T. NIISATO leg. (NSMT). Paratypes: 1♂, same data as the holotype (TN); 1♂, same locality and date as the holotype but S. TSUYUKI leg. (ST); 1♂, Nanshan Shi (南山溪), ca. 1,200m alt., Jenai Hsiang, 27–IV–1978, M. ITO leg. (TN); 1♂, Tsei Feng (翠峰), ca. 2,100 m alt., Jenai Hsiang, 16–VII–1976, H. NARA leg. (KPMNH); 1♂, Mt. Shinan Shan (溪南山), ca. 2,300m, Touyuan Hsiang, Kaohsiung Hsien, S. Taiwan, 4–V–1986, K. BABA leg (TN).

Distribution. Taiwan.

Notes. Variations in coloration and structure are slightly exhibited in *Glaphyra satoi* sp. nov. individually and/or geographically. Elytral maculation is almost always inconspicuous though it is recognized as distinct pale yellow ones in a specimen from Mt. Shinan Shan. The same colour variation is shown in the almost uni-colored dark yellowish brown hind femur of a male specimen from Nanshan Shi. The colour of hind femur is quite stable in other specimens as a pattern of the pale yellow peduncular part and dark yellowish brown club. The length of appendages and the proportion of pronotum are also variable. A specimen each from Nanshan Shi and Mt. Shinan Shan has shorter and stouter legs and antennae and more reduced pronotum than those from other localities.

All the four known localities of *G. satoi* sp. nov. are rather isolated at the higher elevation on the Jingyang Mountains of Taiwan. Three of them are located along the Mei Shi Drainage at the southeastern to eastern sides of Mt. Souchengda Shan at the northern part of the Jingyang Mountains. The southern locality, Mt. Shinan Shan along the Mali Shan Drainage lies at the eastern part of the Tengji Forest Amusement Park, which is located at the southernmost part of the mountains. The vegetation of their localities is a primary evergreen broadleaved forest dominated by oak trees. The adults of *G. satoi* sp. nov. were collected during the period from late April to mid July according to elevation of the localities. The earliest record is April 27 at the site of Nanshan Shi about 1,200 m in height along the Mei Shi Drainage, while the latest one is July 16 on Tsei Feng about 2,100 m along the same drainage. Flight period of *G. satoi* sp. nov. is the latest at least among the Taiwanese congeners of the genus.

Glaphyra satoi sp. nov. seems to be very rare among the Taiwanese molorchine species since only six male specimens from the four localities have so far been recorded by our repeated surveys made in the past quarter century. According to my poor experience of the field observation, the adult beetles were collected from the blossoms of an *Quercus* tree standing at least 10 m removed from the margin of a primary forest. The collecting site is located on a hill about 1,700 m in height at the Chingjing Farm of Nantou Hsien. The three male specimens came flying to the top of the tree at midday in fine weather.

General Remarks

As was written in the introduction, *Glaphyra satoi* sp. nov. no doubt belongs to the same lineage as the Palearctic species, *G. umbellatarum* (SCHREBER), *G. kojimai* (MATSUSHITA) and *G. ichikawai* NIISATO. The four species seem to constitute a distinct monophyletic group in the genus so-called the group of *G. umbellatarum*. This species-group is characterized by the following features: 1) ordinary, flattened and less specialized habitus, with moderately long antennae and legs; 2) basically provided with large pale basal maculation on the elytra, and pale yellow peduncles of mid and hind femora; 4) elongate pot-shaped pronotum, with a pair of longitudinal (though usually separated into two rounded spots) and a median swellings on the disc; 3) long, attenuate and flattened elytra, usually provided with a mal-defined pale maculation near the middle; 4) moderately haired ventrites without any pubescent maculation; 5) trapezoidal tergite 8 and transverse sternite 8; 6) median lobe with ventral plate reflexed at the sides and triangularly pointed at the apical part; 7) completely united paramere of simply narrow form. The four related species are distinguished by a key shown later.

It is a very interesting fact that such a most primitive species among the group as *G. satoi* sp. nov. was discovered from the higher elevation of the central mountains of Taiwan. The species-group may have been derived from a common ancestor with *G. satoi*-like facies in the southern part of the Chinese continent at a period in the late Tertiary or early Quaternary. According to paleogeographical evidence, a narrow land bridge connecting Fujian of the Chinese continent, Taiwan and the Ryukyu arc was formed by regression under a cool climate about 1.5 million years ago. *Glaphyra satoi* sp. nov. or its ancestral species invaded Taiwan along the temperate forest at that time, and then its habitat was isolated at the higher elevation of the island by the

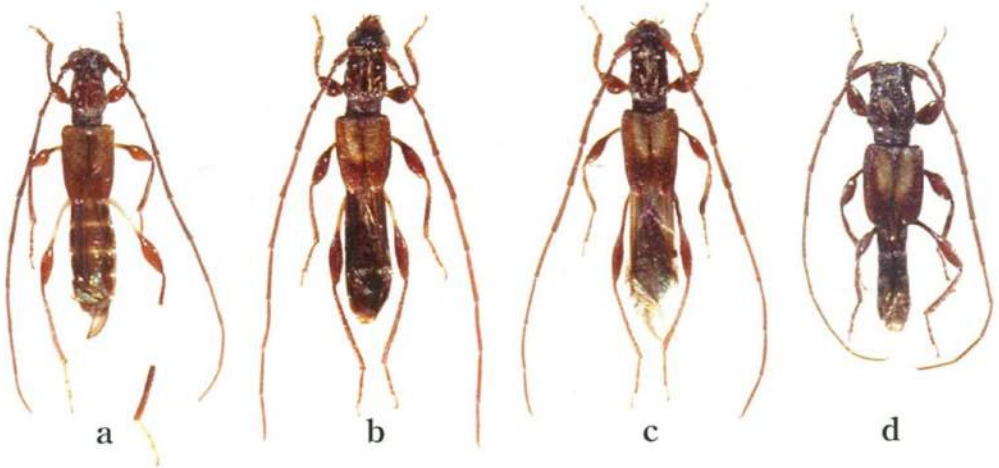

Fig.3. Male habitus of the group of *Glaphyra umbellatarum*. —— a, *G. satoi* sp. nov., holotype from central Taiwan; b, *G. umbellatarum* (SCHREBER) from central Europe; c, *G. kojimai* (MATSUSHITA) from Honshu of Japan; d, *G. ichikawai* NIISATO from the Korean Peninsula.

recovery of climate in the Holocene. No distributional record of *G. satoi*-like species has so far been known from the Chinese continent and northern Indochina, though it may be found by our future investigations as in the case of Taiwan. At the continental side, the ancestral population may have radiated to several directions; one of the groups dispersed to Europe beyond Siberia and yielded *G. umbellatarum* before the Last Glacial Maximum; the other group may have been differentiated into *G. ichikawai* and *G. kojimai*, and the latter species dispersed southwards along the Korean Peninsula and reached the Japanese Islands before the formation of the Korean Straits about 140 thousands years ago. It is most probable that a wide blank in the range of the species-group in Siberia is caused by the cool climate in the present period. All the congeners of the species-group are almost always live in broadleaved forests in the temperate zone and cannot invade conifer forest in the arctic zone.

Key to the Species of the Group of *Glaphyra umbellatarum*

1(4) Antennal segments 3–11 matted and clothed with minute pubescence.

2(3) Larger species with moderate fore body; head not so voluminous, moderately constricted at neck; pronotum rather elongate, distinctly narrowed to apex, less than 0.65 times as long as elytra in male; elytra narrower, strongly narrowed to apices; length 5.5–8.0 mm; (Japan (main islands), Korean Peninsula (southern part) ..... *G. kojimai* (MATSUSHITA).

3(2) Smaller species with large fore body; head voluminous, hardly constricted at neck; pronotum broad, weakly narrowed to apex, more than 0.73 times as long as elytra in male; elytra broader, weakly narrowed to apices; length 4.4–6.8 mm; (Korean Peninsula) .....*G. ichikawai* NIISATO.

4(1) Antennal segments 4–11 matted and clothed with minute pubescence.

5(6) Pronotum with transverse or gently arcuate apical margin, lateral tubercles usually distinct; elytra strongly narrowed to apices and forming a triangular shape, with punctation shallow; terminal antennal segment in male briefly appendiculate; median lobe with ventral plate distinctly exposed in dorsal aspect; length 5.0–8.5 mm; (Europe to C Asia) .... *G. umbellatarum* (SCHREBER).

6(5) Pronotum with distinctly arcuate apical margin, lateral tubercles weak; elytra moderately narrowed to apices and forming an attenuate tongue-shape, with punctation deep; terminal antennal segment in male simply pointed; median lobe with ventral plate completely covered by the dorsal plate; length 5.6–7.4 mm; (Taiwan) ..... *G. satoi* sp. nov.

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A New *Aulaconotus* (Coleoptera, Cerambycidae) from the Malay Peninsula

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Abstract A new species of the lamiine genus *Aulaconotus* is described from the Malay Peninsula under the name of *A. satoi*. It is closely related to *A. pachypezoides* THOMSON, but discriminated from the latter by light body color and long elongated antennae. A member of *Aulaconotus* is firstly recorded from the Malay Peninsula.

The genus *Aulaconotus* THOMSON is one of the small genera in the tribe Hippopsini, and characterized by tuberculate or subvermiculate pronotum, presence of some ridges at bases of elytra, and so on. Up to the present, six species of the genus have so far been known from East Asia to Southeast Asia, *viz.*, *A. pachypezoides* THOMSON from Japan and China, *A. gracilicornis* MAKIHARA et A. SAITO and *A. semiaulaconotus* (HAYASHI) both from Taiwan, *A. incorrugatus* GRESSITT from China, *A. atronotatus* PIC from China and Indochina, and *A. grammopterus* BREUNING from Assam.

Through the courtesy of Mr. Hiraku YOSHITAKE, an unknown species of the genus *Aulaconotus* collected by himself from the Malay Peninsula had rather recently been brought to my hand. A close and comparative examination revealed that it was a new species closest to *A. pachypezoides*. In this paper, I am going to describe it under the name of *A. satoi* in commemorating Professor Dr. Masataka SATÔ's retirement from Nagoya Women's University.

Before going further, I wish to express my cordial thanks to Professor Dr. Masataka SATÔ for his constant guidance in the course of my study. My great appreciation is expressed to Dr. Tatsuya NIISATO of Bioindicator Co., Ltd., Tokyo, for his critical reading the original manuscript of this paper. Thanks are also due to Mr. Hiraku YOSHITAKE of Kyushu University, for giving me the opportunity to examine this striking *Aulaconotus* species.

The abbreviations used in this paper are as follows; IEL—length of inferior eye lobe, measured in sublateral view; GL—length of gena, measured in sublateral view; PL—length 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.

Aulaconotus satoi sp. nov.

(Figs. 1–2)

M a l e. Rather slender species closest to *A. pachypezoides*, with light body color and long antennae.

Color dark to light amber, moderately shiny; head and pronotum dark amber; antennae light amber, black at the apical margins of scape and segments 3–7; elytra, and meso- and metasterna light amber; legs light amber, black at the apices and external margins of femora, in tibia and tarsi including claws; abdomen dark amber.

Body densely clothed with white, light brown and black pubescence or hairs; head with light brown pubescence, pubescence on occiput, margins of eyes and antennal cavities are dense, and sparse on frons; antennae with scape to 5th segments with brown short hairs, which on the scape to 3rd are dense, and become sparser towards apical segments; beneath scape to basal half of 6th provided with dense rows of long suberect hairs; pronotum sparsely with long erect black hairs, and densely with whitish brown pubescence except for apical and basal margins, and also provided with longitudinal blackish stripes along middle and 4–5 ones on each side; scutellum with whitish brown pubescence except for the median area, which is intermixed with black pubescence; elytra clothed with three kinds of pubescence, which usually form bands and stripes: light brown pubescence exists on most of the surface, three black longitudinal lines at basal 1/5 of each elytron, and a broad transverse white band in an

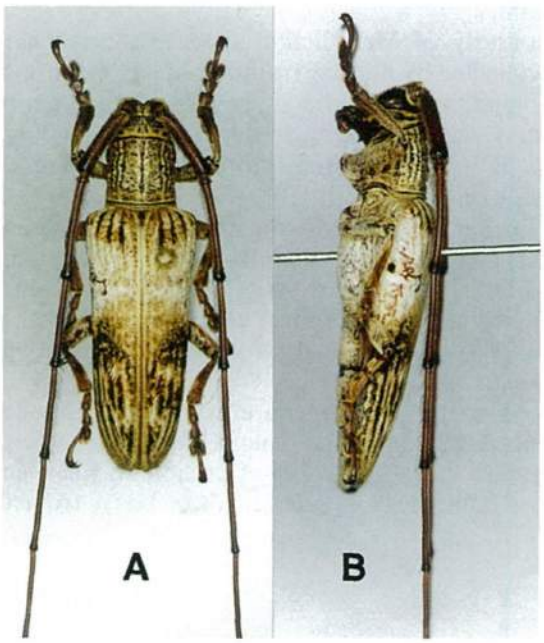

Fig. 1. *Aulaconotus satoi* HASEGAWA, sp. nov., ♂, holotype; A, dorsal view; B, lateral view.

area between basal 2/5 and 1/2, posterior half of elytra with several mottled incomplete black bands and lines on posterior halves, and also a black dot on basal 1/4 of each side; ventral sides densely with light brown pubescence, except for white pubescent metasternum and metepisterna; legs with brown pubescence.

Head moderate in size; vertex of inter-antennal area deeply concave; frons (Fig. 2–A) almost flattened, comparatively narrow, rather strongly dilated apicad, rather coarsely granulate; eyes large and strongly convex, LEL/LG 1.8; occiput with a pair of longitudinal glabrous callus behind eyes. Antennae long and slender, about 2.5 times as long as body, passing elytral apices at base of 6th segment, relative length of each segment as follows:— 7.2 : 1 : 9.4 : 8.5 : 9.0 : 9.0 : 9.2 : 9.0 : 8.8 : 8.6 : 16.6; scape slender, about 1.03 times as long as pronotum, weakly rugose.

Pronotum cylindrical, weakly convex above, constricted at apical 1/4 and basal 1/6; PL/PB 1.0, EW/PB 1.6, EL/PL 4.0; disc densely and irregularly provided with rather large tubercles or callus, with an incomplete glabrous median line provided with a longitudinal glabrous callus at the end. Scutellum tongue-shaped.

Elytra rather slender, EL/EW 2.5, EL/TL 0.7; sides strongly projected at humeri, almost parallel in basal 3/4, then roundly attenuate towards obliquely truncate apices; base of disc provided with three pairs of ridges which are interspersed with black lines, and also with a weakly developed basal callosities just behind the ridges;

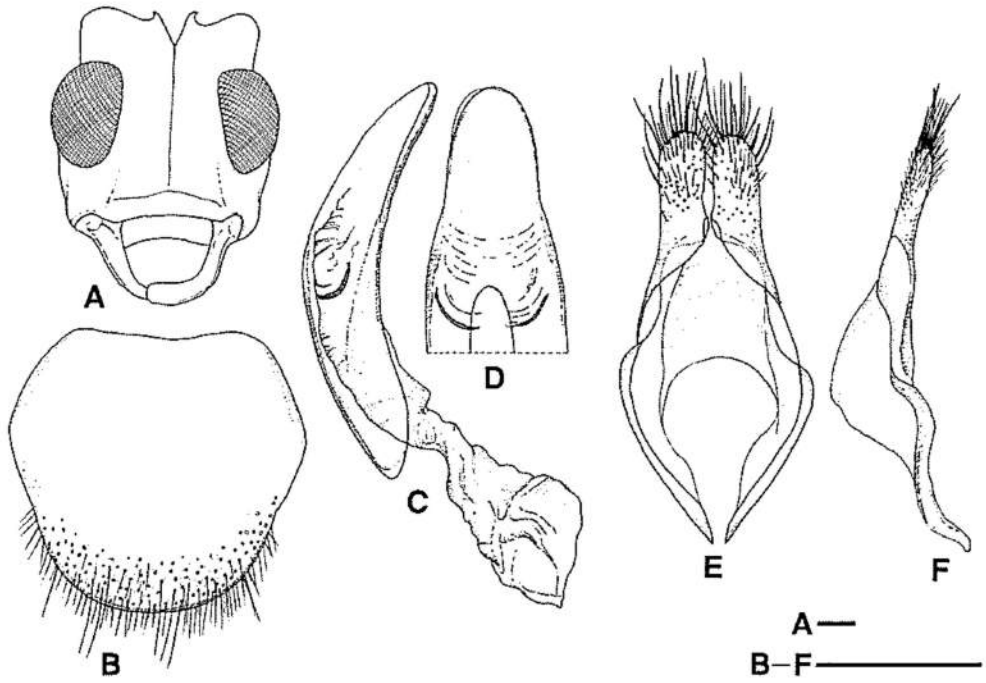

Fig. 2. Head, male genitalia and 8th abdominal sternite of *Aulaconotus satoi* HASEGAWA, sp. nov., holotype. —— A, Head in frontal view; B, 8th abdominal sternite; C, median lobe in lateral view; D, ditto, apical part in dorsal view; E, tegmen in dorsal view; F, ditto, in lateral view. Scale 1 mm.

surface weakly rugose or punctate all over. Legs moderate in length; femora and tibia comparatively slender.

Abdomen 0.58 times as long as elytral length, densely and weakly provided with rugose or minute punctures except for smooth median area; 8th sternite as shown in Fig. 2–B, with sides curved at basal 3/10, then roundly attenuate towards widely rounded apex, densely provided with long setae on apical portion.

Male genitalia thick. Median lobe (Fig. 2–C & D) about 0.26 times as long as abdomen, widest at middle, moderately arcuate; viewed dorsally, sides of apical half strongly narrowed near middle, then gently attenuate towards widely rounded apex; ventral plate almost of the same length as dorsal plate, rounded at their extremities; median struts about half in length to the whole length of median lobe. Tegmen (Fig. 2–E & F) almost of the same length as median lobe; ringed part lozenge-shaped; lateral lobes about 1/4 the whole length of tegmen; almost parallel-sided, widely rounded at apex, densely provided with long and short setae at apical half of each lobe.

Body length 21.0 mm (from tip of head to elytral apices), width 6.0 mm (maximum width of elytra).

F e m a l e. Unknown.

Type specimen. Holotype: male, Gunung Jasar, Cameron Highlands, Pahang, Malaysia, 15–IV–1998, Hiraku YOSHITAKE leg. (TMNH–I–20956). The holotype is preserved in the collection of the Toyohashi Museum of Natural History.

Distribution. Malay Peninsula.

Notes. This species is similar to *A. pachypezoides* THOMSON which was originally described from Japan, but differs from the latter in the following features: body almost light amber (dark amber to black in *A. pachypezoides*); antennae very long, about 2.5 times as long as body, passing elytral apex at the base of 6th segment (about 2.0 times as long as body, passing elytral apex at the base of 7th segment in *A. pachypezoides*); male genitalia with median lobe thick and moderately arcuate (slender and bent at basal third in *A. pachypezoides*).

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A Note on the Species of the Genus *Lema* (Coleoptera, Chrysomelidae, Criocerinae) from Mindanao Island, the Philippines, with Description of a New Species

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Abstract *Lema* (*Lema*) *satoi* Y. KOMIYA, sp. nov. is described from Mindanao Island, the Philippines, which has been currently recorded under the name of *L.* (*Lema*) *concinnipennis* (BALY, 1864). Additional records of two other *Lema*-species are also presented.

Three species of the genus *Lema* FABRICIUS, 1798 have been recorded from Mindanao Island, the Philippines (WEISE, 1922; MEDVEDEV, 1975; KIMOTO, 1984), one of them, *Lema (Lema) concinnipennis* BALY, 1864, being first recorded by WEISE (1922). According to his description, the specimen from Iligan, Mindanao Island examined by him was a very small example with very fine and not uniform punctures on the pronotum, and with brownish red abdomen except for the anterior portion of the first segment. I examined more than ten specimens from Mindanao Island, all of which agreed well with WEISE's description, yet all of them are quite distinct from populations of *L.* (*L.*) *concinnipennis* BALY, 1864 collected in Taiwan and Japan. I recognize this Philippine race as a new species and describe it in this report, with several additional records of two other *Lema*-species.

On the occasion of the retirement of Professor Dr. Masataka SATÔ from Nagoya Women's University, who has been one of the best friends of mine for more than 45 years since we were high school boys, frequently exchanging beetle specimens, I would dedicate the specific name of the present new species in commemoration of his retirement.

Lema (*Petauristes*) *quadripunctata* (OLIVIER, 1808)

Crioceris quadripunctata OLIVIER, 1808, Entomol., **6**, p.731, pl.1, fig. 5 (Java).

Lema quadripunctata philippinica HEINZE, 1941, Ent. Bl., **37**, p. 208 (Philippines). —— MEDVEDEV, 1975, Reichenbachia, **15**, p. 249 (Palawan, Panay, Leite, Negros, Mindanao, Busuanga, Butas Grande, Masbate).

Lema quadripunctata: KIMOTO, 1984, Kurume Univ. J., **33**, p. 52 (Ceylon, Burma, Andaman Is., Thailand, Laos, Vietnam, Philippines and Java).

Specimens examined. 6 exs., Maligatong, Calinan, Mindanao Island, Philippines,

12–II–1979, Y. KOMIYA lgt.

Lema (*Petauristes*) *cyanoptera* LACORDAIRE, 1845

Lema cyanoptera LACORDAIRE, 1845, Mon. Phyt., **1**, p. 369 (Manila). —— BALY, 1865, Trans. ent. Soc. London, (3,) **4** (1), p. 22 (Manila). —— WEISE, 1922, Philipp. J. Sci., **21**, p. 424 (Mindanao, Luzon). —— MEDVEDEV, 1975, Reichenbachia, **15**, p. 249 (Luzon, Mindoro, Catanduanes). —— KIMOTO, 1984, Kurume Univ. J., **33**, p. 47 (Philippines: Luzon).
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Specimens examined. 2 exs., Ilomavis, Kidapawan, Mindanao Island, Philippines, 7–II–1979. Y. KOMIYA lgt.; 3 exs., the same locality as the preceding ones, 11–II–1979. Y. KOMIYA lgt.

Adult food plants. Dioscorea spp. (Dioscoreaceae).

Lema (*Lema*) *satoi* Y. KOMIYA, sp. nov.

(Figs. 1 & 2)

Lema concinnipennis: WEISE, 1922, Philipp. J. Sci., **21**, p. 423 (Mindanao). [Nec BALY, 1864.]

Male. Body oblong, subparallel-sided. Black, dorsal side with bluish luster, legs, mouth-parts, most of abdominal sternites 1 and 2 dark brown, median part of 1 and distal part of 2 and from 3 to 5 entirely yellowish brown. Dorsum glabrous except for head covered with yellowish silvery hairs; antenna clothed with short yellowish silvery hairs beyond segment 2; ventral surface and legs covered with yellowish silvery hairs.

Head almost as broad as prothorax, strongly constricted at a short distance behind eyes; interocular area raised triangularly with a deep longitudinal furrow at middle, margined with a deep groove, scattered with hair-bearing punctures; areas beside eyes closely punctured; frontal tubercle subquadrate; clypeus flatly raised with hair-bearing punctures in the posterior half, glabrous and shining in the anterior portion scattered sparsely with extremely fine punctures; labrum glabrous and shining, furnished with a row of hair-bearing punctures along base; gena almost 1/2 as deep as the diameter of eye, covered thickly with hair-bearing punctures. Antenna about 2/3 as long as body length; segment 1 short and swollen; 2 the shortest, almost globular; 3 about twice as long as 2; 4 a little longer than 3; 5 the longest, subequal to 2+3; 6 and 7 subequal to each other, a little shorter than 5; 8 slightly shorter than the preceding two segments; 9 and 10 subequal to each other, a little shorter than 8; 11 almost as long as 7, apex pointed.

Pronotum a little broader at base than 1/2 of elytra, slightly broader than long, almost as broad at base as at anterior end, strongly constricted at a little behind the middle; disc smooth and shiny, scattered sparsely with extremely fine punctures, provided with a distinct transverse furrow at the constriction, with a large and deep fovea

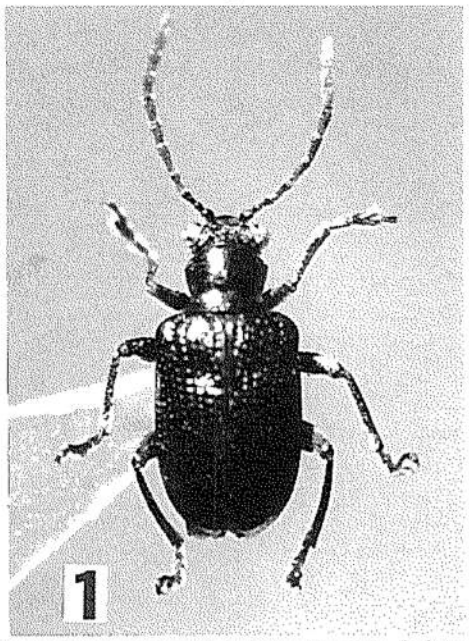

Fig. 1. *Lema* (*Lema*) *satoi* Y. KOMIYA sp. nov., holotype, male.

in the median portion.

Scutellum widest at base, acutely narrowed posteriorly, then almost parallel-sided to apex, forming a rectangular apical portion, smooth and shiny on surface.

Elytra almost parallel-sided in basal 3/4, then narrowed and rounded toward the apices; surface with ten regular and a short scutellar rows of punctures which are stronger at the bases than near the apices, with a distinct depression near the suture at about basal 1/4; interspace of punctures smooth and shining.

Ventral surface shiny, minutely but distinctly punctured.

Legs with femora, especially posterior ones swollen; tibiae almost straight.

Color variation:— Coloration of dorsal surface varies from black with bluish luster to cupreous tinge. That of legs and antennae also varies from black to dark brown, and further to yellowish brown in legs and of basal two antennal segments. Ventral surface varies from black to dark brown, with abdominal sternites 1 to 5 yellowish brown except for darkened anterior margin of 1.

Body length: 3.86 ± 0.22 mm (n=18), range 3.55–4.35 mm (3.75 mm in holotype).

Body breadth: 1.59 ± 0.09 mm (n=18), range 1.45–1.75 mm (1.65 mm in holotype).

Type series. Holotype: male, Ilomavis, Kidapawan, Mindanao Is., Philippines, 11–II–1979, Y. KOMIYA lgt. Paratypes: 11 exs., same data as holotype; 1 ex., Agko-Ilomavis, Kidapawan, Mindanao Is., Philippines, 10–II–1979, Y. KOMIYA lgt.; 5exs., Maligatong, Calinan, Mindanao Is., Philippines, 12–II–1979, Y. KOMIYA lgt.; 1ex., Mindanao Is., no further locality available, 20–IV–1977, native collector.

Adult food plants. *Commelina* spp. (Commelinaceae).

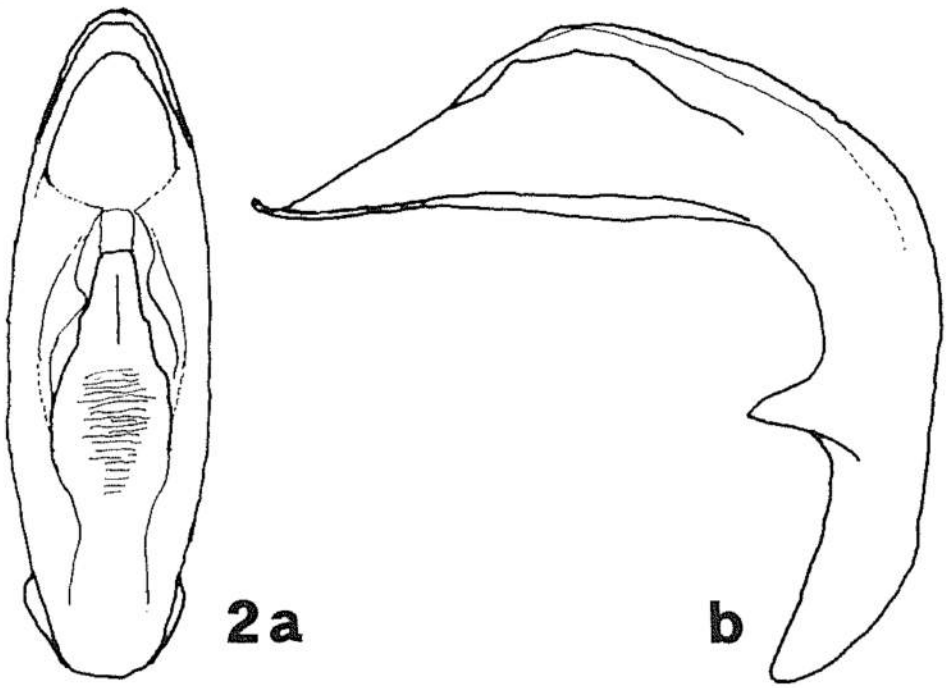

Fig. 2. Male genitalia of *Lema* (*Lema*) *satoi* Y. KOMIYA sp. nov.; a: dorsal view, b: lateral view.

The specific name is dedicated to Dr. Masataka SATÔ, Professor of Nagoya Women's University, in commemoration of his retirement.

The present new species somewhat resembles *Lema* (*Lema*) *concinnipennis* BALY, 1864, but is easily distinguished from the latter by distinctly smaller body size and by the structure of pronotal disc devoid of large punctures, etc.

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 393–396, May 25, 2003

Satoanthribus masatakai (Coleoptera, Anthribidae), a New Genus and Species from the Island of Flores, Indonesia

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Abstract A new genus and species of the subfamily Anthribinae, *Satoanthribus masatakai*, is described from the Island of Flores, Indonesia. The genus is probably related to *Acorynus* SCHÖNHERR, but it can be easily distinguished from the latter by the configuration of eyes and the broad, thick and humped elytra.

Recently, a collection of Southeast Asian anthribids was submitted to me for taxonomic research through the courtesy of Mr. Kaoru SAKAI of Tokyo. In this collection, I found a very peculiar anthribid obtained in the Island of Flores, Indonesia. After a careful examination, it has become clear that this anthribid is a new genus and species belonging to the subfamily Anthribinae.

The present paper and the scientific names of the new genus and species described herein are dedicated to Professor Masataka SATÔ in commemoration of his retirement from the Graduate School of Nagoya Women's University. He has continuously encouraged and supported my researches of beetles from my student days.

Before going further, I wish to express my sincere gratitude to Emeritus Professor K. MORIMOTO of Kyushu University for his constant guidance and encouragement, and to Dr. S.-I. UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for kindly reading the original manuscript of the present paper.

Satoanthribus SENOH, gen. nov.

Type species: *Satoanthribus masatakai* SENOH, sp. nov.

A medium-sized anthribid beetle, with peculiarly humped elytra. Body relatively thick and broad. Head extending downwards, without any longitudinal sulcus; eyes not so large, hemispherical, not so convex above, and relatively estranged from each other; antennae ovate in basal two segments, very thin in funicle, club including short 10th segment slender, and somewhat depressed. Pronotum transverse; basal margin horizontal even at both sides; anterior marginal parts strongly expanded forwards in middle; disc with a transverse sulcus before the middle; carinula distinct. Elytra thick and broad, strongly convex above, but depressed in humeral parts, and with some peculiar humps in 4th, 6th and 8th intervals, and linearly elevated in 8th and 10th intervals.

Notes. In the configuration of antennal club, this new genus is identical with

Acorynus (SCHÖNHERR, 1833), but the former can be distinguished from the latter by the following characteristics: eyes not so large, hemispherical, not so convex above, and relatively estranged from each other; pronotal base horizontal even at both sides; elytra thick and broad, strongly convex above, but depressed in humeral parts, with some conspicuous humps, and linearly elevated in 8th and 10th intervals. Because of the presence of conspicuous humps on the elytra, or eyes not so large, relatively estranged from each other, this genus is similar to *Physopterus* (LACORDAIRE, 1866), but can be distinguished by the following characteristics: head without median longitudinal sulcus; funicles of antennae short and very thin; 10th segment of antennae very short; pronotum with a transverse sulcus before the middle.

Satoanthribus masatakai SENOH, sp. nov.

(Figs. 1–5)

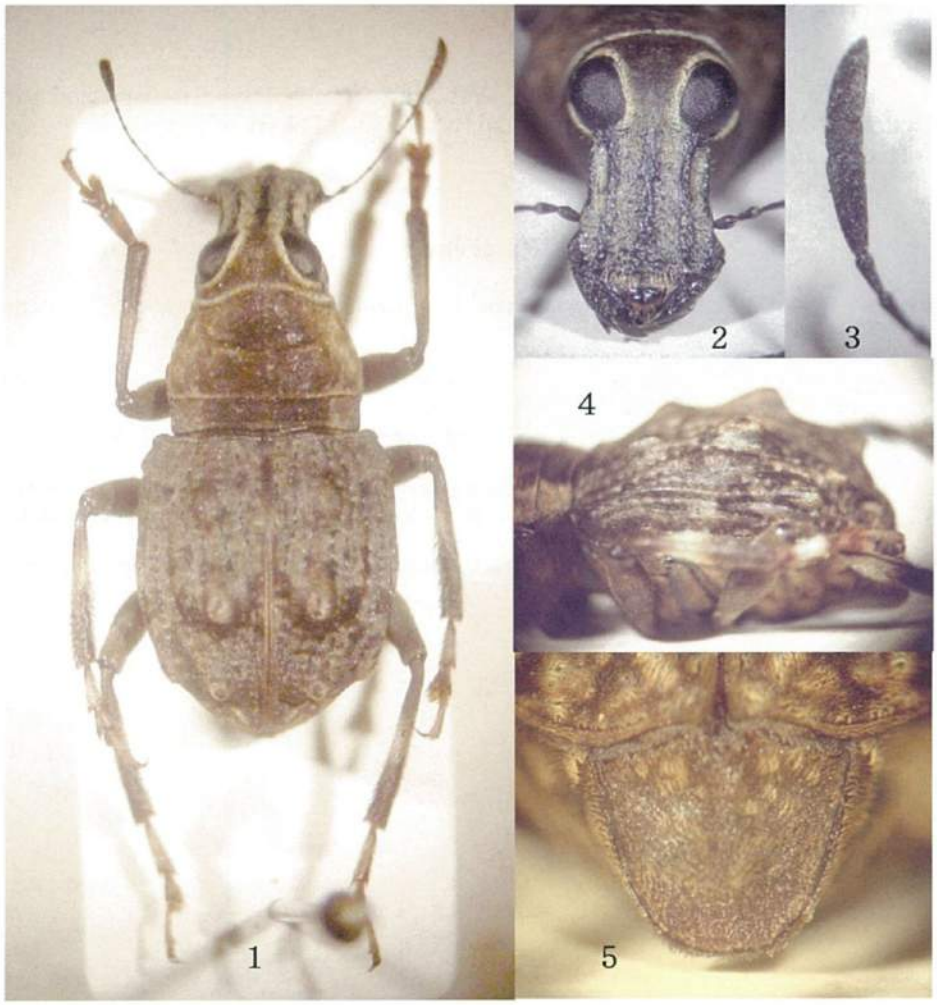
Length: 12.5 mm (from apical margin of rostrum to apex of pygidium).

Female. Body relatively broad, about 2.3 times as long as wide, including rostrum and pygidium. Colour entirely black with the exception of third and fifth tarsal segments, which are reddish. Pubescence dense, blackish to blackish brown and whitish; whitish hairs present on dorsal surface of rostrum, around eyes and along anterior margin of pronotum.

Head thick, depressed and with a longitudinal elevation between eyes; eyes not so large, hemispherical, not so convex above, and relatively estranged from each other; rostrum somewhat transverse, 1.07 times as wide as long, gradually widened towards the bases of mandibles; disc with three longitudinal elevations; maximum width of rostrum about 3.0 times as wide as the shortest distance between eyes. Antennae short, barely reaching the dorsal transverse carina, scape and pedicel slender, funicles very thin, somewhat depressed except for 7th, clubs slender, somewhat depressed, proportions in length from 1st to 11th about 18 : 17 : 28 : 22 : 19 : 15 : 16 : 13 : 29 : 9 : 28. Mandibles covered with longitudinal punctures and fine sparse hairs in basal two-thirds, and with a long fine hair in apical third.

Pronotum transverse, about 1.4 times as wide as long, subparallel in basal fourth, then slightly broadened anteriorly, and gradually narrowed in apical half; basal margin almost straight and horizontal even on both sides, anterior marginal parts strongly expanded forwards in middle; disc somewhat convex above in middle of apical parts, and with a transverse sulcus before the middle; dorsal transverse carina straight, subparallel to pronotal base, and angulately connected with each lateral carina, the latter declivous, extending to apical two-fifths of side margin; carinula distinct and horizontal. Scutellum small and round.

Elytra thick and broad, about 1.18 times as long as wide, widest at middle, basal margins almost straight; disc strongly convex above with the exception of humeral parts which are depressed, and with two humps on each 4th interval, median hump larger and higher than the subbasal one, with preapical one on each 6th interval, which is a little smaller than the subbasal, and linearly elevated from subbasal to apical sixth on 8th interval, terminal parts of the linear elevation humped, also



Figs. 1–5. *Satoanthribus masatakai* gen. et sp. nov., female. —— 1, Dorsal view; 2, head; 3, left antennal club; 4, elytra, lateral view; 5, pygidium.

linearly elevated from subbasal to the middle on 10th; strial punctures deep, their diameter distinctly smaller than the widths of intervals.

Pygidium inclined backwards, subtriangular, about 1.1 times as wide as long, lateral margins gradually convergent towards widely rounded apex.

Prosternum with a thin keel from the end of lateral carina towards coxal cavity. Viewed from side, sternites 1st to 4th successively raised, the terminal one somewhat directed downwards.

Legs relatively short, anterior femur nearly as long as the median which is shorter than the posterior; anterior tibia nearly as long as the median which is shorter

than the posterior; anterior, median and posterior tarsi subequal in length to one another.

Male. Unknown.

Holotype ♀, Flores Is., Indonesia, VII–1998. The holotype is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

Distribution. Indonesia (Flores Is.).

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Satozo, a New Genus of the Celeuthetini (Coleoptera, Curculionidae) from Minami-Iwojima Is., Japan

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Abstract *Satozo minamiiwoensis* gen. et sp. nov. is described in the tribe Celeuthetini from Minami-Iwojima Is., Volcano Isls., Japan. This weevil is conspicuous by its ovate and rather flat general shape, grayish stripes on the elytra, transverse mesosternal process, and two visible ventrites in female.

It is with our great pleasure that we dedicate the name of a new genus in the tribe Celeuthetini to Prof. Masataka SATÔ on the occasion of his retirement from Nagoya Womens' University, though twenty years have passed since this weevil was collected by him on Minami-Iwojima Is., Volcano Isls., Japan in 1982, and entrusted to MORIMOTO for its identification.

Minami-Iwojima Is. is of volcanic origin in the Quaternary by the eruptions above sea level and lying 60 km south off Iwojima Is. located at N. 24°13.7′ and E. 141°27.7′. This island is steep conical with about 7.5 km in circumference and 916 m in altitude, and uninhabited. A comprehensive scientific survey was conducted by the Environment Agency in June 11–21, 1982, including 18 members of geologists, botanists and zoologists, and Dr. SATÔ took a part of this survey. The result was already published in "The Conservation Reports of the Minami-Iwojima Wilderness Area" in 1982, and Dr. SATÔ gave a list of 152 species of insects and zoogeographical comments.

Discovery of the endemic genus of the celeuthetine weevil on this small island is unexpected because of its young geologic history and its intermediate location between the ranges of *Lochotethes* and *Ogasawarazo*, of which the former has a wide range from the Bismarck Archipelago northwards to Uracas Is. of the Northern Marianas, and the latter are known to occur on the Ogasawara Isls.

Satozo gen. nov.

Coleoptera: Curculionidae: Entiminae: Celeuthetini.

Type species: *Satozo minamiiwoensis* sp. nov.

Etymology: Prof. SATÔ + zo (weevil and elephant in Japanese), masculine.

Head narrowing in front, separated from rostrum by a sharply angulate sulcus that continues obliquely downwards to antennal scrobes; eyes weakly convex, highest in the middle in dorsal aspect; frons with a shallow median depression close to the angle of transverse sulcus. Rostrum shorter than broad, continuously narrowing from head to the middle, then weakly widening distally, with weak elevation on each side margin along antennal scrobe, without any elevation above the abrupt apical declivity, which is provided with sparse setae and at most with a few scales in some individuals; prementum resting on a short peduncle, with 3 to 4 pairs of setae; labial palpi three-segmented, basal segment with a long seta. Antennae long and slender, with appressed simple setae; scape weakly curved, slightly clavate at apex; funicle with seven segments, each segment longer than broad, first segment the longest, a little longer than second.

Prothorax truncate at anterior margin, weakly arcuate caudally at posterior margin. Scutellum small, triangular. Elytra broad, ovate, flattened dorsally, jointly rounded at apex, with 10 striae, with sides sinuate above hind coxae, produced ventrally at apex in female when viewed laterally; 9th and 10th striae complete.

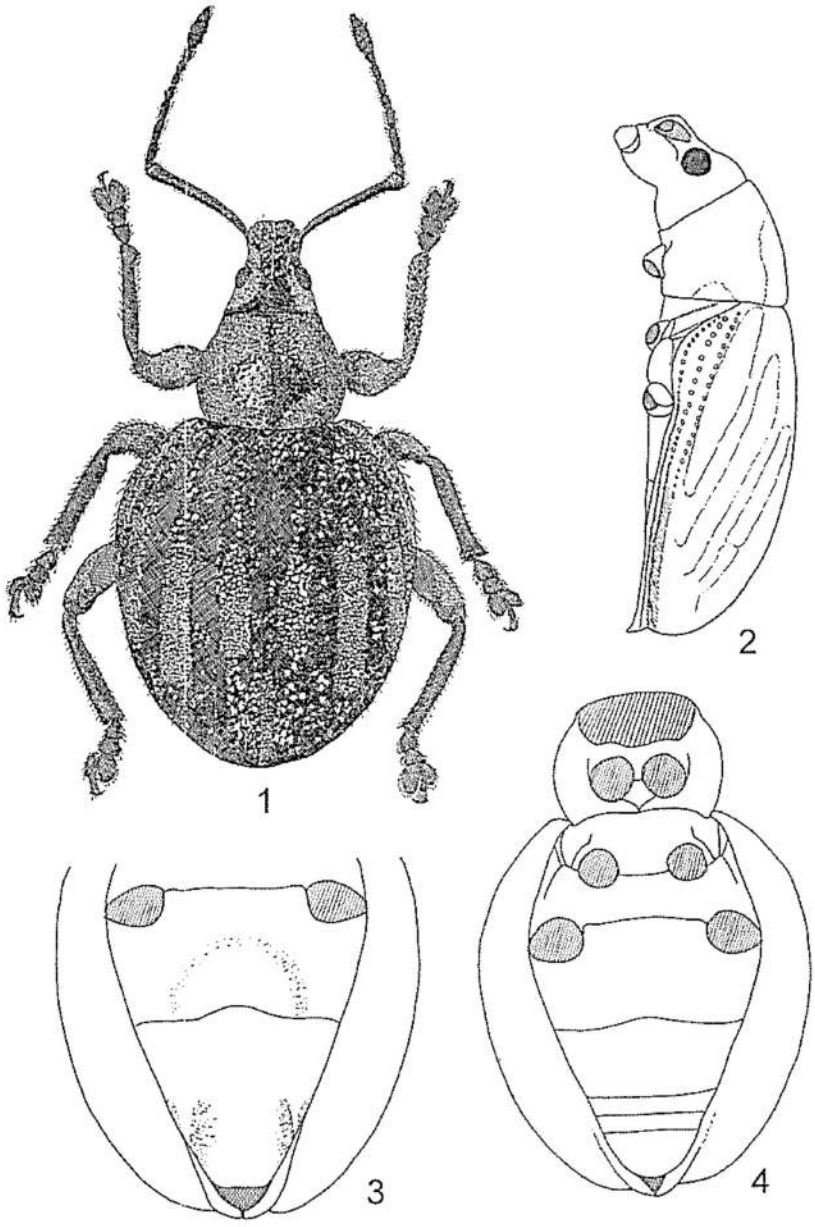
Legs with femora clavate, hind pair not reaching the apices of elytra in both sexes; tibiae almost straight, mucronate at apices except for female hind tibiae, not denticulate along inner margin, hind tibiae semienclosed at apices; tarsi with first segment as long as broad, second segment transverse, third segment much wider than second; claws simple, free.

Sternum with front coxae narrowly separated externally and internally, lying on the middle of prosternum; mesosternal process transverse; metasternum much shorter than first ventrite, metepisternal suture discernible on anterior two-thirds, then continued posteriorly with a row of punctures; hind coxae widely distant from each other, contiguous with elytra at side. Intersegmental suture between meso- and metasterna strongly inflected and forming stout transverse ridge. Metendosternite short, broad, stalk vertical, furcal arm reaching anteriorly above but not conglutinate to mesocoxal bowl, anterior tendons widely distant, lateral arms absent.

Venter sexually dimorphic, in male first ventrite (= third sternite) broadly truncate between hind coxae, much longer than second, second longer than third and fourth combined, fifth simply rounded at apex; in female visibly two-segmented, second ventrite greatly enlarged, much longer than first, covering the rest ventrites; third and fourth ventrites membranous, fifth ventrite (= seventh sternite) semicircular, sclerotized; tergum of venter membranous, with a median weak sclerotized area on fourth to seventh tergites, and a pair of latero-tergal sclerotized areas on sixth and seventh tergites in both sexes.

Male aedeagus with tegmen ringed, without paramere, inner sac Z-folded; eighth sternite divided into a pair of crescent sclerites; ninth sternite with long spiculum gastrale. Ovipositor long, coxite with basal membranous part long and slightly wrinkled, apical weakly sclerotized part divided, stylus present, spermathecal duct robust,

weakly sclerotized; spermatheca bent rectangularly; eighth sternite with long spiculum ventrale.



Figs. 1–4. *Satozo minamiiwoensis* gen. et sp. nov. —— 1, Habitus, dorsal view; 2, ditto, lateral view; 3, venter, female, ventral view; 4, underside, male, ventral view.

Comparison. VOSS (1940) proposed the subtribe Coptorrhynchina for the genera *Pyrgops, Eupyrgops, Piezonotus* and *Coptorrhynchus* having two visible ventrites instead of five in the female, and later he placed *Philicoptus* in the Coptorrhynchini (VOSS, 1958), but the type species *Philicoptus waltoni* has normal five ventrites in both sexes (MARSHALL, 1956; MORIMOTO & KOJIMA, 2001). Moreover, the genera in the Isopterina (MORIMOTO & KOJIMA, 2001) and *Ogasawarazo* have two visible ventrites in female, and the female of *Hypotactus papillatus* has four visible ventrites instead of two or five. In female of some genera, the first and second ventrites are strongly enlarged and the second produced caudally in an arc covering more than half of the third ventrite. Thus, the condition having two visible ventirtes in female may occur parallel in some lineages of the Celeuthetini, though those can be regarded as one of the most conspicuous structures in the Curculionoidea. MARSHALL (1956) and ALONSO-ZARAZAGA and LYAL (1999) did not recognized the Coptorrhynchina and merged them into the Celeuthetini.

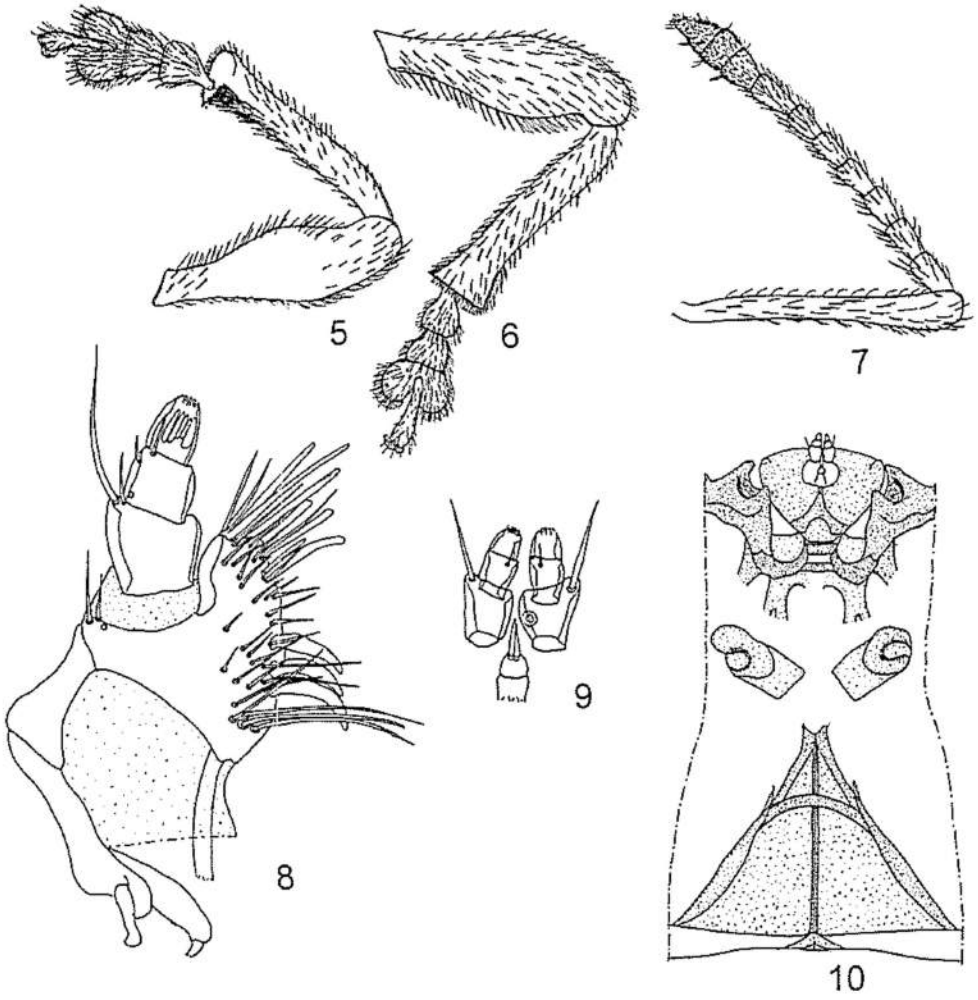
When tested in the key to genera of the Celeuthetini made by MARSHALL (1956), this genus runs down to couplet no. 77 including *Brachynedus* and *Behrensiellus*, and is closest to the latter, but the female venter has only two visible ventrites, legs are robust in both sexes, hind femora do not reach the apices of elytra, the seventh segment of antennal funicle is as long as the first of club, and the general shape is oval and rather flat. In disregard of the breadth of mesosternal process, this comes close to *Ogasawarazo* in the key mentioned above and is close to its subgenus *Torishimazo* (MORIMOTO, 1981), but the latter has much shorter rostrum, strongly convex eyes latero-posteriorly, the oblique and dorsolateral antennal scrobes in position, and the mesosternal process is about as long as broad.

Satozo minamiiwoensis sp. nov.

Celeuthetini, gen. et sp.: SATÔ, 1982, 318, figs. 13 & 14 [Host plant: *Boehmeria nivea* (Nanbankaramushi in Japanese)]. —— SATÔ, 1983, 4, figs.

Black, three caudal ventrites in male and claws brownish, shiny, with grayish scaly markings, scales oval to round and appressed; head and rostrum with grayish scales except for bare occipital margin and a triangular area on dorsum, scales denser on circumocular areas; rostrum on apical declivity bare in general, but often with more than ten scales in some specimens, with 7 to 9 pairs of short setae; prothorax with grayish scales except for a bare transverse rhombic area on dorsum, and with short grayish setae appressed inwards; elytra with broad scaly stripes on even-numbered intervals, where the scales are dense in the middle and a little sparser anteriorly, first interval with stripe on declivity, the other odd-numbered intervals with scattered scales, often stripe on second interval reduced to a short oblong patch; lateral parts of meso- and metathoraces and basal two ventrites with scattered scales; femora with scales on swollen part.

Head continuously narrowing anteriorly from the base to the middle of rostrum, then weakly dilated to the apex of rostrum, with indefinite shallow and small punctures on bare area, which are often longitudinally confluent, forehead between eyes



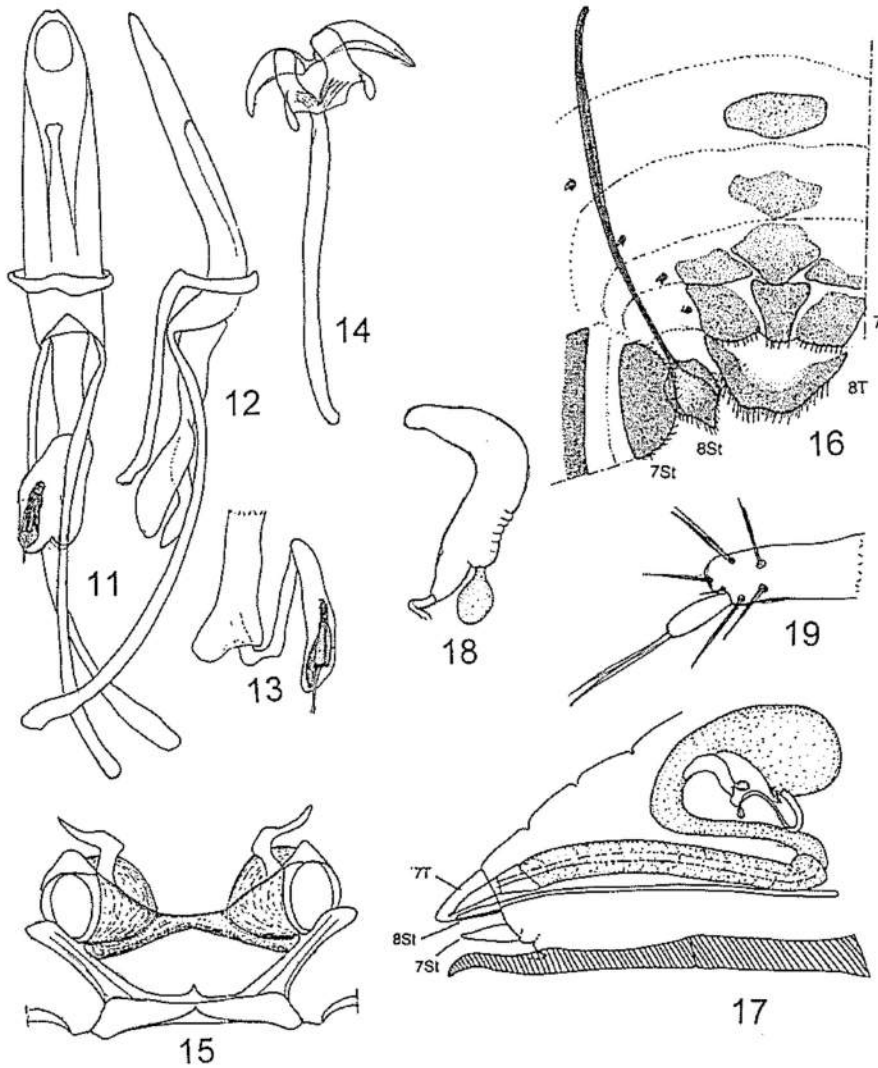
Figs. 5–10. *Satozo minamiiwoensis* gen. et sp. nov. —— 5, Fore leg; 6, hind leg; 7, antenna; 8, maxilla; 9, labial palpi and hypopharyngeal process; 10, underside of head and rostrum, internal view, showing tentorium and strengthening structures.

twice as broad as the minimum distance of antennal scrobes on dorsum; eyes oval, evenly convex. Rostrum about as long as broad, dorsum almost parallel-sided and flat on basal half, with a median carina. Antennae slender, with length (width) of segments in funicle from base 27 (10) : 20 (11) : 18 (10) : 17 (10) : 17 (10) : 16 (10) : 17 (11), club 46 (18).

Pronotum transverse (5 : 4), broadest behind the middle, evenly arcuate at sides to a faint subapical constriction, truncate at apical margin, slightly arcuate caudally at basal margin; dorsum punctate, interstices between them almost as broad as the diameter on the bare area, gradually becoming smaller and denser anteriorly and posteriorly, each puncture with a short appressed seta. Scutellum short triangular,

bare, declined.

Elytra ovate, with rounded humeri, 1.1–1.2 times as long as broad, broadest at about basal third, weakly convex dorsally, embracing body by lateral expansion, visible lateral margin when seen dorsally constituted of 9th interval from humerus to the middle, then successively continued to the inner intervals to conjoint apex; true



Figs. 11–19. *Satozo minamiiwoensis* gen. et sp. nov. —— 11–14, Male, 15–19, female. —— 11–12, Aedeagus, dorsal and lateral views; 13, basal part of inner sac in loosed condition; 14, 8th and 9th sternites and spiculum gastrale; 15, meso- and metendosternites, internal view; 16, terminalia, sketched from an unfolded preparation; 17, venter and ovipositor, lateral view; 18, spermatheca; 19, apex of ovipositor, enlarged.

lateral margins latero-ventral, invisible dorsally in entire length, strongly embracing body behind hind coxae due to depression of 8th interval, straight at apex in male, distinctly produced ventrally at apex in female; intervals smooth, almost flat, each with a row of grayish seta, which is shorter and appressed posteriorly on dorsum, suberect and a little longer on declivity and side margins, 9th interval with a row of small piliferous granules; striae with separate punctures, septa between them as high as intervals, 7th and 8th striae deeply depressed on caudal third.

Metasternum and basal two ventrites transversely wrinkled, broadly and continuously depressed in male, broadly depressed on metasternum and first ventrite in the middle, and also depressed in the middle of second ventrite excepting the base with obtuse side ridges in female.

Male aedeagus as figured, median lobe with a small notch at apex, gonopore with a short tubular sclerite and its wrapping sclerite.

Length: 7.1–9.6 mm (including rostrum).

Holotype, male (Type no. 3152, Kyushu Univ.), Minami Iwo-jima, 500 m, Volcano Is., June 16, 1982, Masataka SATÔ leg. Paratypes: 22 males and 19 females, same locality and collector, 150 m, June 12, and 500 m, June 16.

Distribution. Minami-Iwojima Is., Volcano Isls., Japan.

Biodata. Adults feed on the leaves of *Boehmeria nivea* (Nanban-karamushi or Mao in Japanese) at 150 m and 500 m above sea-level but not found in coast area (SATÔ, 1982 & 1983).

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Spec. Bull. Jpn. Soc. Coleopterol., Tokyo, (6): 405–413, May 25, 2003

Notes on the Apterous Weevil Genus *Pinacopus* MARSHALL (Coleoptera, Curculionidae, Molytinae)[1)]

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Abstract Two new species of *Pinacopus* are described: *P. fraseri* sp. nov. from Malaysia as an eighth species from the peninsular part and *P. satoi* sp. nov. from Laos beyond the previous distribution range of the genus. The type series of *P. caudatus* MARSHALL must be a mixture of at least two other sympatric species and its true female is newly characterized.

Apterous molytine weevils of the genus *Pinacopus* MARSHALL occur in the mountainous rainforests of East Asia: North India (1 sp.), Thailand (1 sp.) and Malaysia (7 spp.). In Malaysia they are found on leaves and branches of mossy shrubs. Due to the complete obliteration of the hind wings and their habitat restriction to the mountainous areas, they are apparent to have local speciation because of limited movement.

After our study of the Malaysian *Pinacopus* species (KOJIMA & MORIMOTO, 2002), additional materials were obtained by the first author and offered us from our friends. These materials include the following interesting species not only from Malaysia but also from Laos, where no congener has ever been known.

A new species closely resembling *P. intermedius* KOJIMA et MORIMOTO described from the Cameron Highlands was found on Fraser's Hill, located at 100 km southeast of the Cameron Highlands. The discovery also indicates the localized distribution of *Pinacopus* species as was shown by us.

The female of *P. caudatus* MARSHALL, which was unknown to us in the previous study because the type series seemed to be a mixture of several species, was obtained in the recent survey conducted by KOJIMA. It was found in the narrow area together with its close relative *P. watanabei* KOJIMA et MORIMOTO occurring almost sympatrically and had been confused with *P. caudatus* until recently.

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1) This study is supported by KAKENHI (13740491, 14255016).

Lastly, a new *Pinacopus* species was found from Laos in the recent survey conducted by a team organized by Prof. Masataka SATÔ. It is the easternmost record of the generic distribution and is an important finding for the necessity of future surveys in the intervening areas.

In this paper, we will deal with these three species as the second part of our study of *Pinacopus* weevils as well as a supplement to our study on the Malaysian *Pinacopus*.

Abbreviations used in this study are as follows: ELKU: Entomological Laboratory, Kyushu University, Fukuoka, ELEU: Entomological Laboratory, Ehime University, Matsuyama and UKM: Centre for Insect Systematics, Universiti Kebangsaan Malaysia, Bangi.

We heartily thank Mr. Kenichi EMOTO (Tokyo), Dr. Shûhei NOMURA (National Science Museum, Tokyo), Prof. Nobuo OHBAYASHI (Ehime University, Matsuyama), Dr. Naoki TAKAHASHI (Kyushu University, Fukuoka) and Dr. Hiroyuki YOSHITOMI (Sapporo) for their kind offering of interesting materials. KOJIMA also thanks Mr. RUSLAN (Universiti Kebangsaan Malaysia) for his assistance in the field.

Supplement to the Malaysian Species (Descriptions of a New Species)

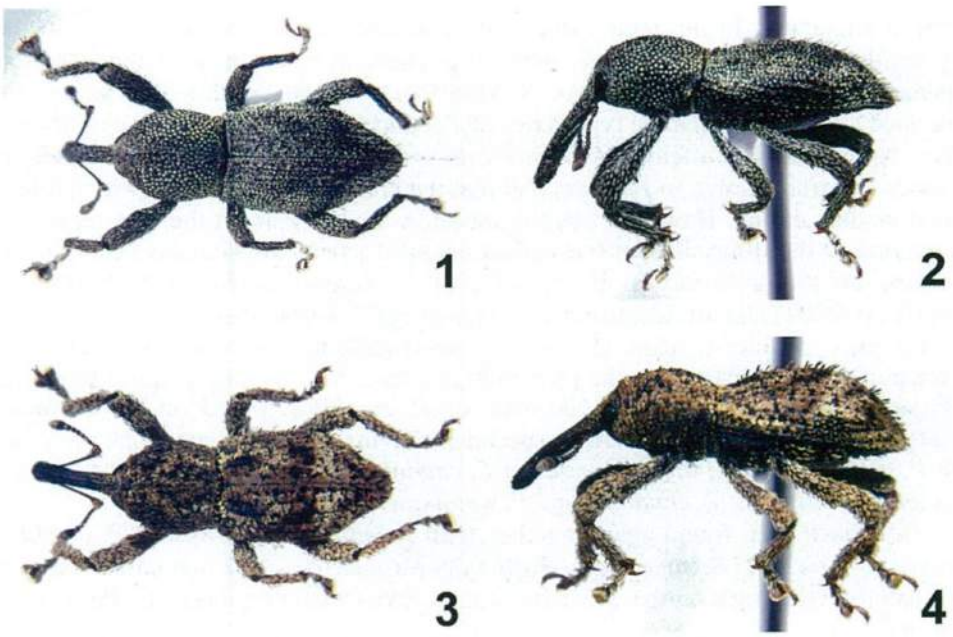
Pinacopus fraseri KOJIMA et MORIMOTO, sp. nov.

(Figs. 1–9, 18, 19)

Description. Male and Female. Length: 5.3–7.0 mm. Breadth: 2.1–2.8 mm. Closely resembles *P. intermedius* KOJIMA et MORIMOTO, 2002 except for the following features externally (the states of *P. intermedius* are indicated in parentheses): elytra widest around middle (widest before middle), apices almost jointly contiguous, but not forming a round apex (separately produced into faint processes), intervals each with a row of suberect scales (with a row of subrecumbent scales), scales around apex longer than width of interval (shorter than or nearly of the same width as interval); hind tibiae without bare space dorso-internally (with bare space dorso-internally); first ventrite with flat process curved inwards on each side of median depression in the same manner as *P. intermedius*, but the process is shorter than its height (longer than its height), fifth ventrite not broadly raised ventrad behind the depression (broadly raised ventrad behind depression) in male.

Male and female terminalia as illustrated (Figs. 5–9, 18, 19), aedeagus similar to that of *P. intermedius* in apical shape and long ventral process on basal part of median lobe, and also structures seen in inner sac, but median lobe abruptly attenuate apically in this species (Figs. 5, 6, 9, cf. figs. 43, 44, 47 of KOJIMA & MORIMOTO, 2002); spermatheca and sternite 8 of female very similar to those of *P. intermedius* (Figs. 18, 19, cf. figs. 58, 60 of KOJIMA & MORIMOTO, 2002).

Type materials. Holotype: ♂ (Type No. 3172, ELKU), Malaysia: Selangor, Fraser's Hill, 15–V–1979, S. IMASAKA. Paratypes: 1♀, same data as holotype. 1♂,



Figs. 1–4. Habitus photographs of females of *Pinacopus* species. —— 1, 2, *P. fraseri* sp. nov.; 3, 4, *P. satoi* sp. nov.

1♀, same locality as holotype, 23–V–1981, S. IMASAKA; 1♂, 24–V–1981, S. IMASAKA (ELKU); 2♂♂, 5♀♀, 5~6–III–2003, H. KOJIMA; 1♂, 7–III–2003, S. NOMURA (litter); 2♂♂, 3♀♀, 7–III–2003, N. TAKAHASHI (ELKU & UKM).

Distribution. Malaysia (Selangor: Fraser's Hill).

Comments. This species is also easily confused with another Malaysian species, *P. dolosus* MARSHALL, 1932 in having the elytra without any trace of apical process, but the first and fifth ventrites of *P. fraseri* are more deeply depressed than those of *P. dolosus*, and the first ventrite of *P. fraseri* is provided with a well developed process on each side of median depression in the male.

When MARSHALL (1932) described *P. dolosus*, he included a female specimen from Bukit Kutu, Selangor, about 150 km apart from the type locality, within the type series. We have not yet examined the specimen in question, but it should be checked since it may easily be confused with the present new species.

The name of this species is dedicated to an English adventurer, Mr. Louis James FRASER, who reclaimed the place where the present new species was found. Now the place is one of famous highland resorts in the Peninsula Malaysia as Fraser's Hill named after him.

(On the Female of *Pinacopus caudatus* MARSHALL)

Pinacopus caudatus was described based on a series of materials from the

Cameron Highlands. In our recent study of the Malaysian *Pinacopus*, we described a very similar species of *P. caudatus* occurring almost sympatrically on the Cameron Highlands as *P. watanabei* (KOJIMA et MORIMOTO, 2002). Within that paper, we mentioned a possibility that the type series of *P. caudatus* may be a mixture of several species because at least a female specimen examined in the type series of *P. caudatus* possesses a feature shown in *P. watanabei* that the pronotum is provided with a longitudinal median carina. However, we did not know anything about the true female of *P. caudatus* at that time since in our collection, all the female specimens bear a median carina on the prothorax as in the male of *P. watanabei* (fig. 3 of KOJIMA & MORIMOTO, 2002) and are identified as the female of *P. watanabei*.

Recently, additional materials were obtained including the females, which have no trace of a median carina on the pronotum and the elytra with long apical processes divergent from bases as seen in the male of *P. caudatus*. Based on the character correlation, we identified the female specimens having the above-mentioned features with *P. caudatus*. Thus, the type series of *P. caudatus* was confirmed to be a mixture of at least two species: *P. caudatus* and *P. watanabei*.

They have been found again together with *P. watanabei* as well as *P. caudulus* MARSHALL, 1942 and *P. intermedius* KOJIMA et MORIMOTO, 2002 in a narrow area of the Cameron Highlands on the way from Tanah Rata to Gunung Jasar, G. Perdah and G. Beremban.

Additional specimens examined. 1♂, 2♀♀, Malaysia: Pahang, Cameron Highlands, Gunung Jasar – G. Perdah, 24–III–2002, H. & M. KOJIMA. 6♂♂, 3♀♀, Gunung Perdah – G. Jasar, 9–III–2003, H. KOJIMA. 1♂, Gunung Perdah, 9–III–2003, H. KOJIMA. 1♀, Gunung Beremban, 12–III–2003, H. KOJIMA; 1♀, 12–III–2003, N. TAKAHASHI.

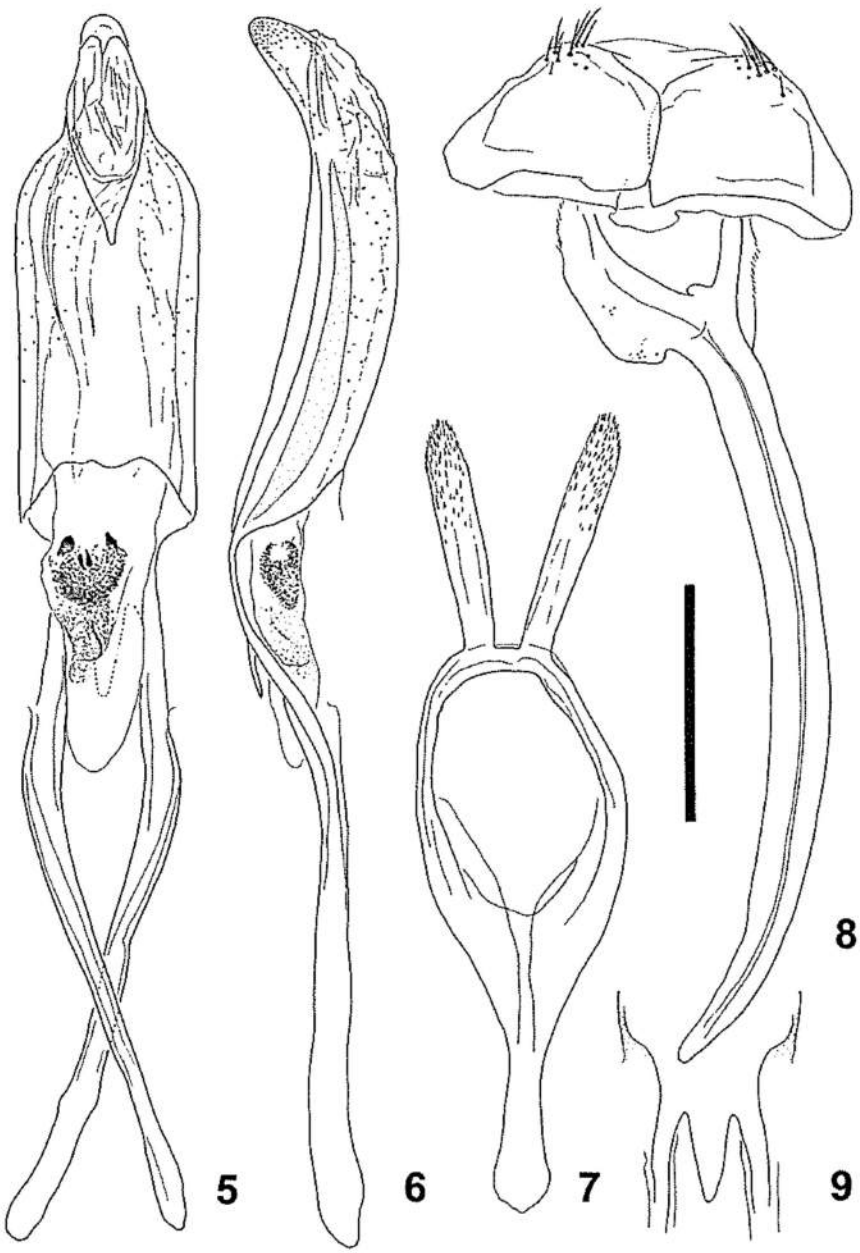
Discovery of a New Species from Laos

A new representative of the genus *Pinacopus* was found in Laos and will be described below. This is the easternmost record of the genus. It is rather a conspicuous species provided with colored scales forming pattern, and somewhat resembles *P. mishmensis* MARSHALL, 1942 from Assam. The discovery beyond the previously known range suggests a possibility of the occurrence of congeners in the mountainous regions of such intervening areas as Myanmar and southern China.

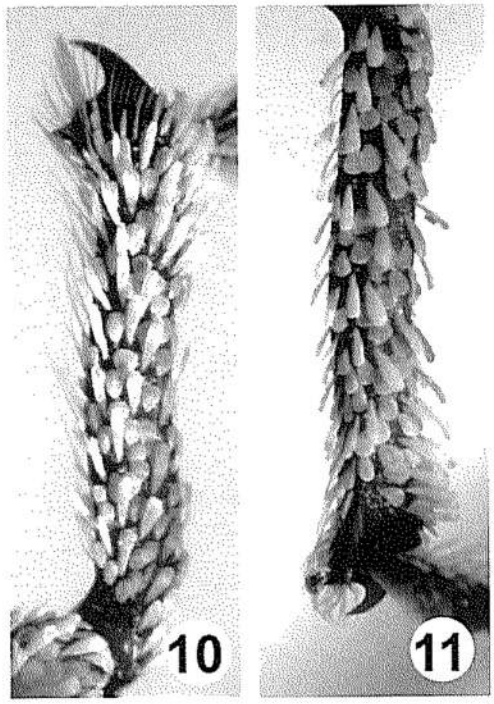
Pinacopus satoi KOJIMA et MORIMOTO, sp. nov.

(Figs. 3, 4, 10–17, 20)

Description. Male. Length: 7.3 mm. Breadth: 2.9 mm. Dull black, antennae and tarsi piceous, with dense, moderately large, round grayish brown, cream white and black colored scales above, and sparser and narrower grayish brown scales beneath, prothorax with an ill-defined cream white round stripe on each side of



Figs. 5–9. Male terminalia of *Pinacopus fraseri* sp. nov. —— 5, 6, Aedeagus, dorsal (5), lateral (6); 7, tegmen; 8, sternite 8 and spiculum gastrale; 9, basal part of median lobe, ventral. Scale=0.5 mm.



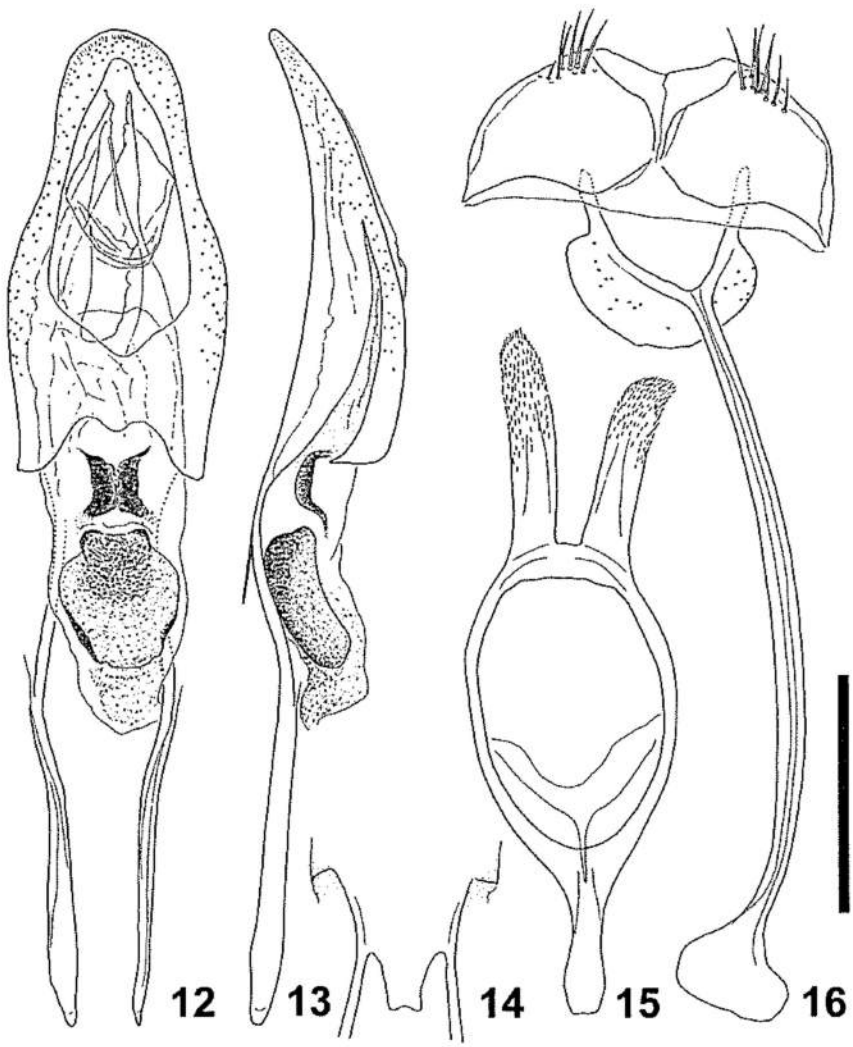
Figs. 10–11. Male tibiae of *Pinacopus satoi* sp. nov.; 10, fore tibia; 11, hind tibia.

median dark fleck at base, elytra mostly with grayish brown to cream white scales, the cream white scales forming transverse band behind middle, dark scales denser at base of interval 3 and forming an ill-defined U-shaped dark fleck between intervals 2–6 around middle on each elytron.

Head with round scales, several subrecumbent oblong-ovate scales adjoining eyes. Rostrum a little shorter than pronotum, dorsum with very weak median carina faintly denticulate, two lateral carinae uniting as usual near antennae, the inner ones sharply denticulate and ending in a larger tooth close to apex, interspaces with shallow subconfluent punctures, set with round scales and subrecumbent oblong-ovate scales. Antennae with scape densely scaled at apex; funicle with basal two segments subequal in length, 3rd to 7th subequal in length, 3/5 the length of the 2nd.

Prothorax 1.1 times as long as broad, rounded laterally, widest a little before middle, weakly constricted at base and apex; dorsum with a fine median carina, which is diminishing near base, rather strongly and reticulately punctate, but each puncture is filled with round scale, some of them being irregularly replaced by subrecumbent ovate scales.

Elytra 1.5 times as long as broad, subparallel-sided behind shoulders to middle and weakly curved toward conjointly rounded apex, without any process; weakly striate, with rows of deep separated punctures, each containing a scale-like seta; intervals wider than punctures of striae, with a row of small granules, each bearing an oblong erect scale, concolorous with area in which it stands. Legs densely clothed



Figs. 12–16. Male terminalia of *Pinacopus satoi* sp. nov. —— 12, Aedeagus, dorsal (12), lateral (13); 14, basal part of median lobe, ventral; 15, tegmen; 16, sternite 8 and spiculum gastrale. Scale=0.5 mm.

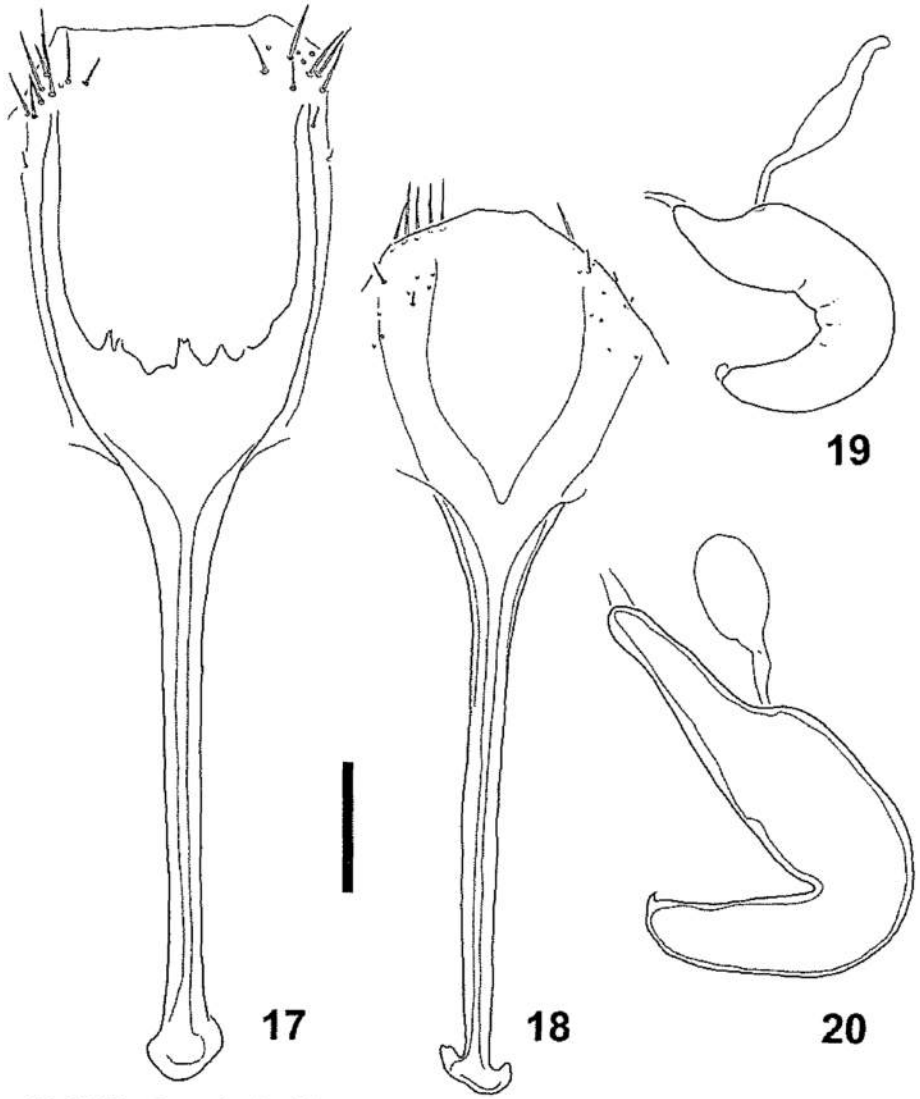
with grayish brown to cream white, recumbent, round and subrecumbent oblong scales; femora each with an obtuse tooth concealed with scales; tibiae relatively short, each with a distinct premucro, of which the hind one (Fig. 11) is decurved at the apex, fore pair (Fig. 10) fringed with moderately long hairs along inner margin.

Venter with first and second ventrites weakly depressed in middle.

Terminalia as illustrated (Figs. 12–16), aedeagus rounded at apex, inner sac with a paired granulated patches and a rounded sclerite; spiculum gastrale slender.

Female. Length: 6.8–8.0 mm. Breadth: 2.8–3.3 mm. Resembles male, except rostrum which is almost as long as pronotum, and weakly arcuate before middle in lateral view; dorsum without carinae or granules; prothorax almost as broad as long; fore tibiae without fringe of long hairs, hind one with premucro usual in shape; elytra 1.4–1.5 times as long as wide, sometimes weakly rounded laterally; venter with first and second ventrites faintly depressed or flattened in middle.

Terminalia as illustrated (Figs. 17, 20), spermatheca J-shaped, distance between duct and gland long.



Figs. 17–20. Female terminalia of *Pinacopus* spp. (17, 18, sternite 8; 19, 20, spermatheca). —— 17, 20, *P. satoi* sp. nov.; 18, 19, *P. fraseri* sp. nov. Scale=0.2 mm.

Type materials. Holotype ♀ (ELEU), Laos, Phu Pan (Mt.), Houaphan Prov., 28–IV~6–V–2002, H. YOSHITOMI. Paratypes, 2♀♀, same data as holotype. 1♂, same locality as holotype (alt. ca. 1,500–1,700 m), 4–V–2002, N. OHBAYASHI (ELKU and ELEU).

Distribution. Laos.

Comments. This is a conspicuous scaled species and somewhat resembles *P. mishmensis* from Assam among congeners. However, *P. satoi* is easily distinguishable from it by having the following features: pronotum with a median longitudinal carina and, in male, fore tibiae with long hairs along inner margin. These features are shared with *P. watanabei*, but the latter has the developed apical processes on the elytra and differs from *P. satoi* in the body size and the density and length of the male tibial hairs.

This species is dedicated to Prof. Masataka SATÔ in commemoration of his retirement from Nagoya Women's University and for praising his remarkable career as a coleopterist.

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The Sawfly Genus *Conaspidia* (Hymenoptera, Tenthredinidae) in Vietnam

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Abstract Two new tenthredinid sawflies of the genus *Conaspidia*, *C. satoi* and *C. onoi*, are described and illustrated from northern Vietnam. *Conaspidia satoi* is an isolated species not assignable to any of the previously recognized species-groups, whereas *C. onoi* belongs to the *bicuspis* group and is closely related to *C. fasciatipennis* TURNER, 1919, from Laos and southern China. This is the first distribution record of the genus from Vietnam.

Conaspidia KONOW, 1898, is a well-defined genus of tenthredinid sawflies most diverse in southern China. WEI and NIE (1997) keyed 19 world species, which were classified into five species-groups. HARIS and ROLLER (1999) described two new species from Yunnan, China, and proposed a new species-group for one of them.

In the course of the survey on Vietnamese sawflies, I was able to examine two species of *Conaspidia* from this country. A close examination has shown that they are new to science and I am going to describe them in the following lines. Though *Conaspidia* is known from the neighboring Laos ("Haut Mekong," TURNER, 1919) and China (Yunnan, WEI & NIE, 1997), no species of the genus has been recorded from Vietnam.

I wish to thank Dr. S.-I. UÉNO, National Science Museum, Tokyo, for his critical review of the manuscript and Dr. H. ONO, National Science Museum, Tokyo, for paying careful attention to finding and collecting sawflies in Vietnam. This work is supported in part by the Grant-in-Aid Nos. 13575015, 09041167 and 06041116 for International Scientific Research (Field Research) from the Ministry of Education, Science, Sports and Culture, Japan.

Conaspidia satoi sp. nov.

(Figs. 1 A–B, 2 A, C, E, 3)

F e m a l e (holotype, Fig. 1 A–B). Length about 14.5mm. Head and its appendages pale yellowish brown; interocellar area, anteromedian part of postocellar area, and upper part of postocular area with very obscure blackish marking; apex of mandible blackish; antenna slightly darkened in basal half and paler in apical half. Thorax pale yellowish brown; mesoscutum with anteromedian half of median lobe and large dorsal

surface of lateral lobe blackish; median part of mesopostnotum slightly blackish; mesopleuron slightly darkened. Legs pale yellowish brown all over. Wings yellowish hyaline, apical part very slightly infuscated; sharply defined blackish band across

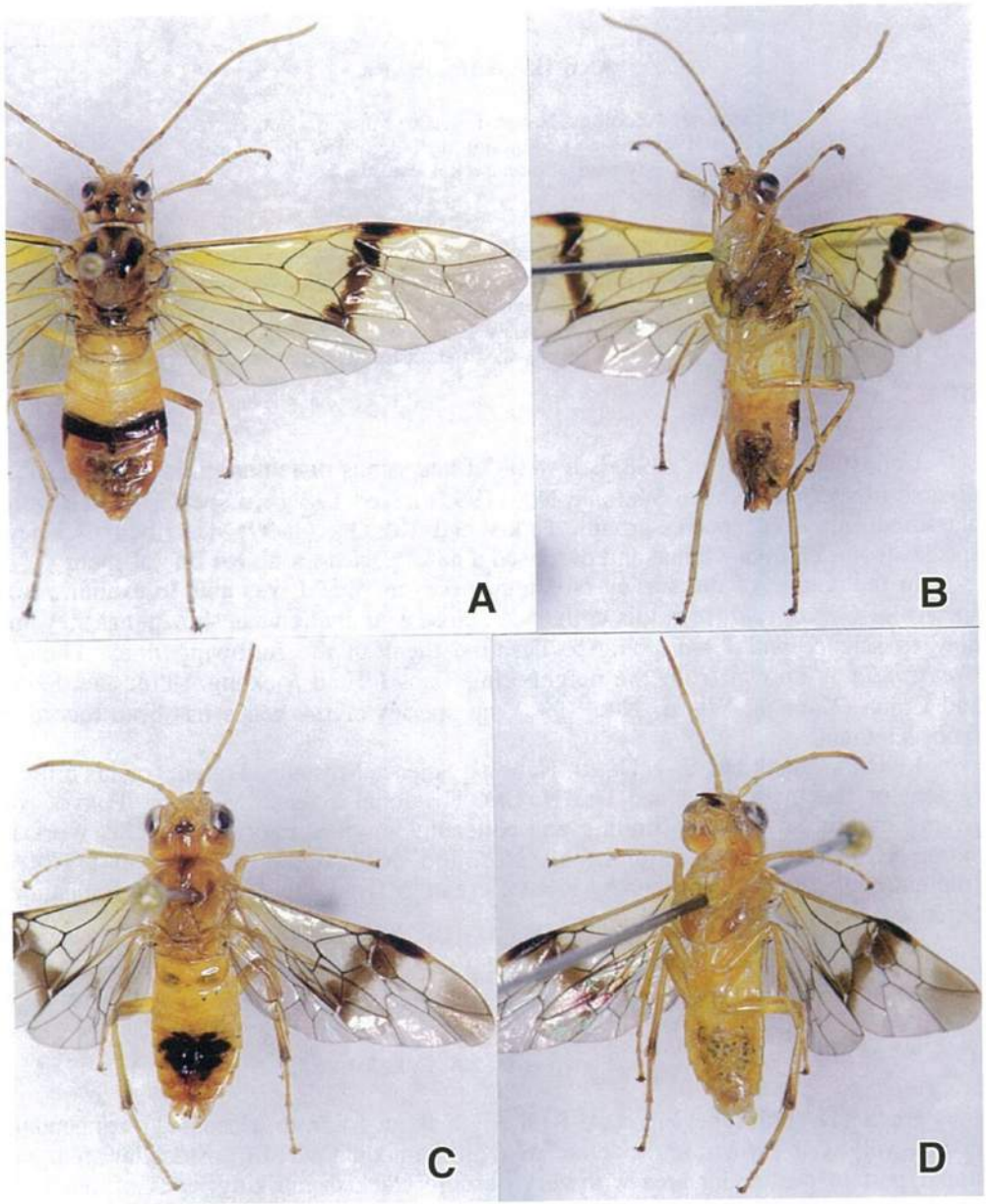

Fig. 1. *Conaspidia satoi* n. sp., ♀, holotype (A–B) and *C. onoi* n. sp., ♂, holotype (C–D).

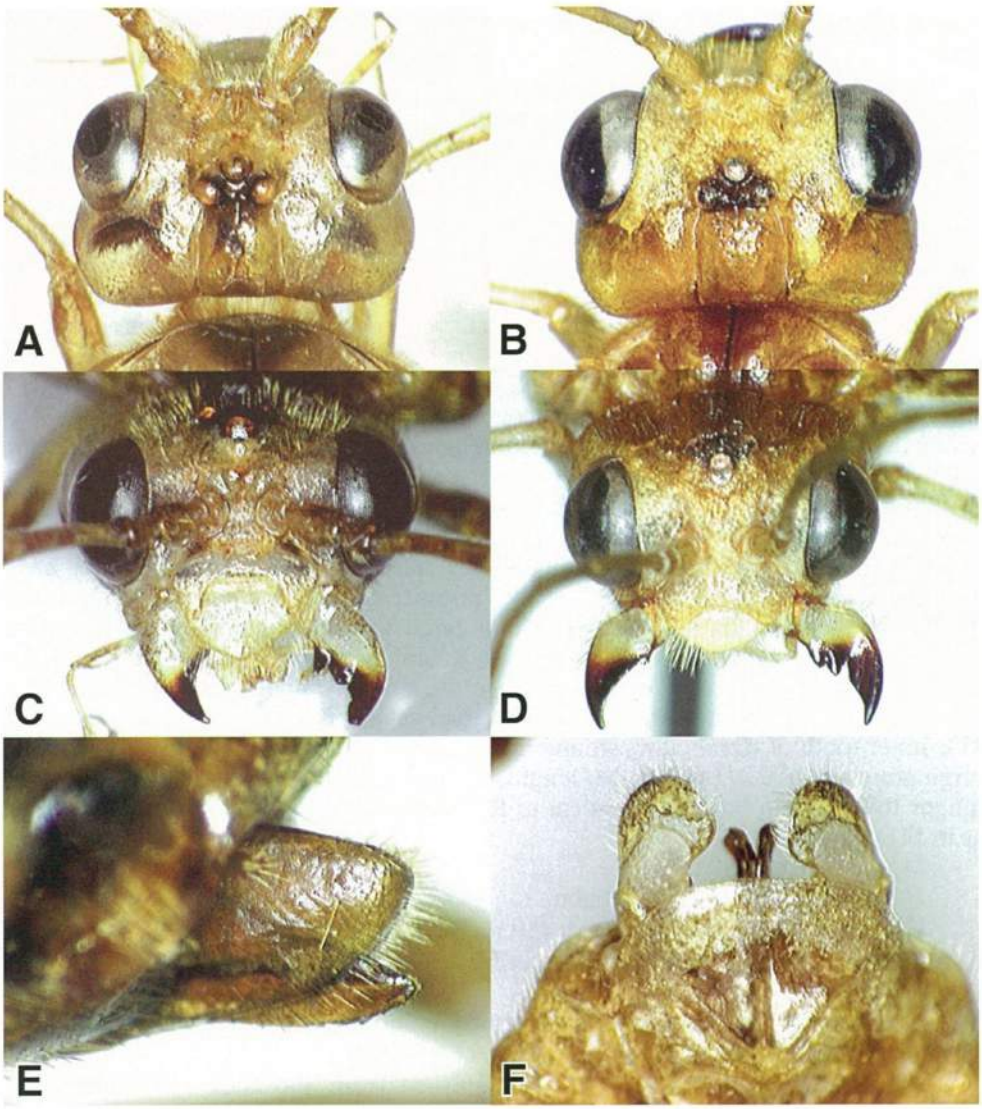

Fig. 2. *Conaspidia satoi* n. sp., ♀, holotype (A, C, E) and *C. onoi* n. sp., ♂, holotype (B, D, F). —— A–B, Heads, dorsal view; C–D, heads, frontal view; E, sawsheath and surrounding parts of abdomen, lateral view; F, subgenital plate and surrounding parts of abdomen, ventral view.

forewing below stigma; width of band about half length of stigma; veins in basal half of forewing mostly pale brown and those in apical part blackish; vein C, anterior half of vein R, and vein R_1 basal to stigma pale brown; stigma blackish, with basal 1/5 and apical 1/3 pale brown. Abdomen pale yellowish brown, with 5th tergum (except for ventrally folded lateral parts) and narrow longitudinal anteromedian spot and narrow longitudinal spot at lateral margin of dorsal part of 6th tergum black; anterolateral

part of 9th tergum slightly blackish; sawsheath and surrounding area slightly darkened.

Head (Fig. 2 A) rather strongly dilated behind eyes; inner margins of eyes subparallel (Fig. 2 C); distance between eyes about 1.25× height of eye; OOL : POL : OCL = 7 : 4 : 10; occipital carina present only in ventral part of gena, very blunt; postocellar area subquadrate, with lateral margins distinctly convergent anteriorly; clypeus very deeply, rather rectangularly emarginate, lateral lobes subtriangular, narrowly rounded at apices; malar space about 1/2× diameter of median ocellus. Upper head behind level of ocellar area and gena very smooth, with very sparse minute punctures; area between eyes from level of ocellar area to dorsal margin of clypeus rather mat, irregularly coriaceous, with dense minute punctures; clypeus covered with irregular punctures, with interspaces somewhat rugose or coriaceous. Left mandible with basal tooth long and obtuse (middle and apical teeth damaged in holotype, Fig. 2 C); labrum large, obtusely pointed at apex. Antenna long, about 7.6× width of head across eyes, filiform; 3rd segment shorter than 4th (ratio of lengths about 19 : 24).

Mesoscutellum pyramidally raised, with anterior margin roundly produced and posterior margin feebly arcuately incised in dorsal view; in lateral view, anterior slope long, gentle, and slightly rounded and posterior slope straight, very steep, nearly vertical. Cenchrus extremely small, distance between cenchri about 13× width of each. Mesoscutellum smooth, with some large irregular punctures on lateral and posterior margins; mesepisternum smooth, lateral surface irregularly covered with very large deep pits and ventral surface with sparse indistinct punctures. Hind basitarsus slightly shorter than following tarsal segments combined (ratio about 20 : 21); inner tooth of tarsal claws stouter and longer than outer one. Forewing with cu-a originating at basal 1/3 of cell M; length of stigma about 3.8× its width; R+M much longer than R; vein Sc nearly vertical to R. Sawsheath as in Fig. 2 E; lance and lancet as in Fig. 3.

Male. Unknown.

Distribution. Northern Vietnam.

Holotype: ♀, Deo O Quy Ho, 1,750 m, Sa Pa, Lao Cai Prov., 12~17–V–1995, A. SHINOHARA. Kept in the National Science Museum, Tokyo.

Host-plant. Unknown.

Etymology. This new species is named in honor of a renowned coleopterist, Professor Masataka SATÔ, Nagoya Women's University.

Remarks. *Conaspidia satoi* is distinguished from the known congeners by a combination of the following features: The third antennal segment is shorter than the fourth (the ratio is about 19 : 24); the hind basitarsus is slightly shorter than the following tarsal segments combined (the ratio is about 20 : 21); the inner tooth of tarsal claws is stouter and longer than the outer one; the head is rather strongly dilated behind the eyes; the head (including the entire antennae), thorax, and abdomen are almost entirely pale yellowish brown (except for the 5th and parts of the 6th abdominal terga and other small areas described above); the forewing is hyaline, with a rather narrow but sharply defined blackish cross-band below the stigma.

This new species does not agree with any of the species-groups proposed by WEI and NIE (1997) and HARIS and ROLLER (1999). In both the keys to species-groups

given in these papers, *C. satoi* disagrees with either of the two sections in the first couplet, one of the sections leading to the *dubiosa* group and the other to all the other species-groups. The *dubiosa* group is represented only by *Conaspidia dubiosa* FORSIUS, 1931, which is the only species of *Conaspidia*, besides *C. satoi*, having the third antennal segment shorter than the fourth. However, *C. dubiosa* is a much smaller species having a very different color pattern (*e.g.*, the antenna and thorax are black-marked and the forewing has no cross-bands); *C. dubiosa* also differs from *C. satoi* in having the hind basitarsus longer than the following tarsal segments combined and the head strongly narrowed behind the eyes.

Conaspidia onoi sp. nov.

(Figs. 1 C–D, 2 B, D. F, 4)

Female. Unknown.

Male (holotype, Fig. 1 C–D). Length about 9 mm. Head pale yellowish brown; interocellar area narrowly blackish; frons, clypeus, and gena whitish yellow; labrum yellowish white; mandible pale yellow, with apex black; antenna pale yellowish brown, slightly darkened towards apex. Thorax pale yellowish brown; mesoscutum and metascutum slightly darker. Legs pale yellowish brown; apex of hind tibia blackish. Wings hyaline, slightly stained with dark brown; forewing with sharply defined blackish band across it below stigma and with large but rather obscure cloud at apex; maximum width of band nearly equal to length of stigma; veins blackish brown, with vein C, anterior half of vein R, crossvein 2r, and basal 2/3 of anal veins pale brown; stigma blackish with narrow apex pale brown. Abdomen pale yellowish brown, slightly darker above; obscure large paired spots on propodeum, and large mark covering posteromedian part of 4th tergum, large median parts of 5th and 6th terga, and anteromedian part of 7th tergum black.

Head (Fig. 2 B) very weakly dilated behind eyes; inner margins of eyes very slightly convergent below (Fig. 2 D); distance between eyes about 1.22× height of eye; OOL : POL : OCL = 21 : 13 : 32; occipital carina sharply defined laterally, obsolete above; postocellar area slightly longer than wide (length : width 10 : 9), with lateral margins very weakly convergent anteriorly; clypeus deeply, rather roundly emarginate, lateral lobes subtriangular, rounded at apices; malar space about 1/2× diameter of median ocellus. Upper head behind level of ocellar area and gena smooth, with sparse minute punctures; ventral and posterior parts of gena densely punctured; area between eyes from level of ocellar area to dorsal margin of clypeus mat, irregularly coriaceous, with dense minute punctures; clypeus covered with irregular punctures, with narrow interspaces rather smooth. Left mandible (Fig. 2 D) with basal and middle teeth stout and obtuse; labrum rather short, obtusely pointed at apex. Antenna short, about 2.3× width of head across eyes, slightly thickened subapically; 3rd segment longer than 4th (ratio of lengths about 6 : 5).

Mesoscutellum pyramidally raised, with, in dorsal view, anterior margin roundly produced and posterior margin subtruncate; in lateral view, anterior slope long, gentle, and rounded and posterior slope straight and steep. Cenchrus very small,

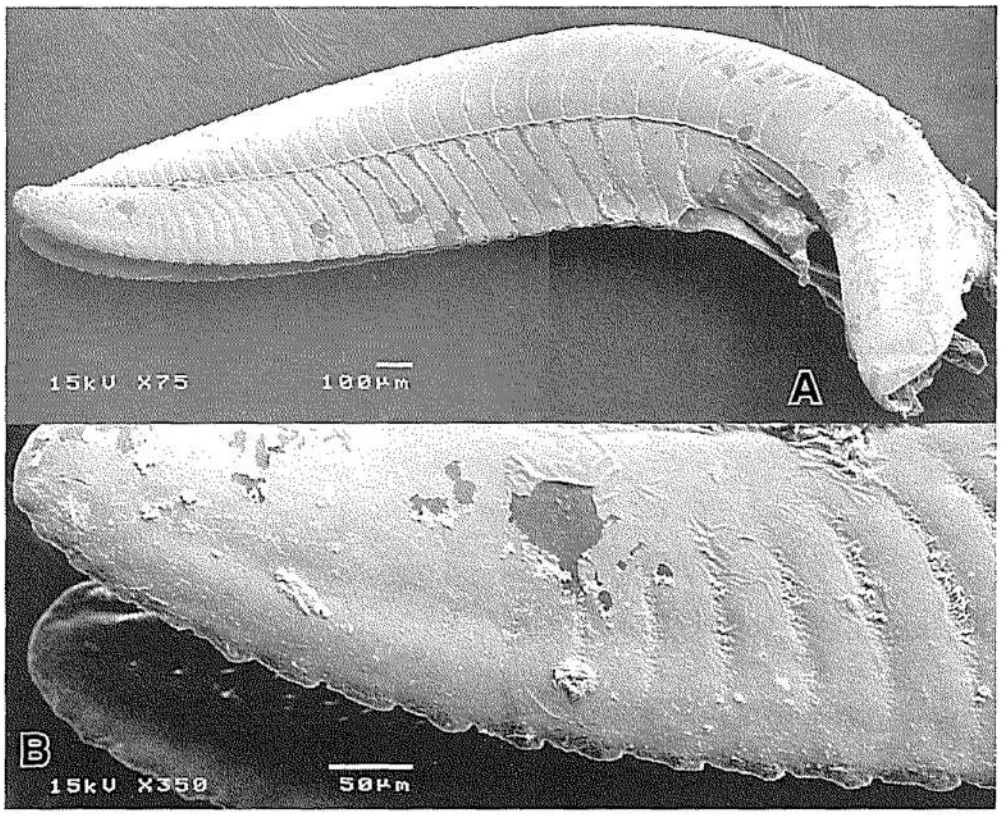

Fig. 3. *Conaspidia satoi* n. sp., ♀, holotype, lance and lancet (A) and apical part of lancet (B).

distance between cenchri about 7× width of each. Mesoscutellum smooth, with dense irregular punctures, top of anterior slope nearly impunctate; mesepisternum with lateral surface very coarsely densely irregularly punctate and rugose and ventral surface rather smooth with sparse shallow irregular punctures, median part densely coarsely punctate and rugose. Hind basitarsus shorter than following tarsal segments combined (ratio about 22 : 25); inner tooth of tarsal claws smaller and shorter than outer one. Forewing with cu-a originating at basal 1/3 of cell M; length of stigma about 3.3× its width; R+M slightly longer than R; vein Sc nearly vertical to R; hindwing without marginal vein. Subgenital plate (Fig. 2 F) nearly truncate at apex. Genitalia as in Fig. 4.

Distribution. Northern Vietnam.

Holotype: ♂, Ba Be, 400 m, Bac Can Prov., 17~18–X–1997, H. ONO. Kept in the National Science Museum, Tokyo.

Paratypes: 2♂♂, same data as for holotype. Kept in the National Science Museum, Tokyo.

Variation. The three specimens examined show little variation in color and structure, though they vary in length from 9 to 10.5 mm. In the paratypes, the large

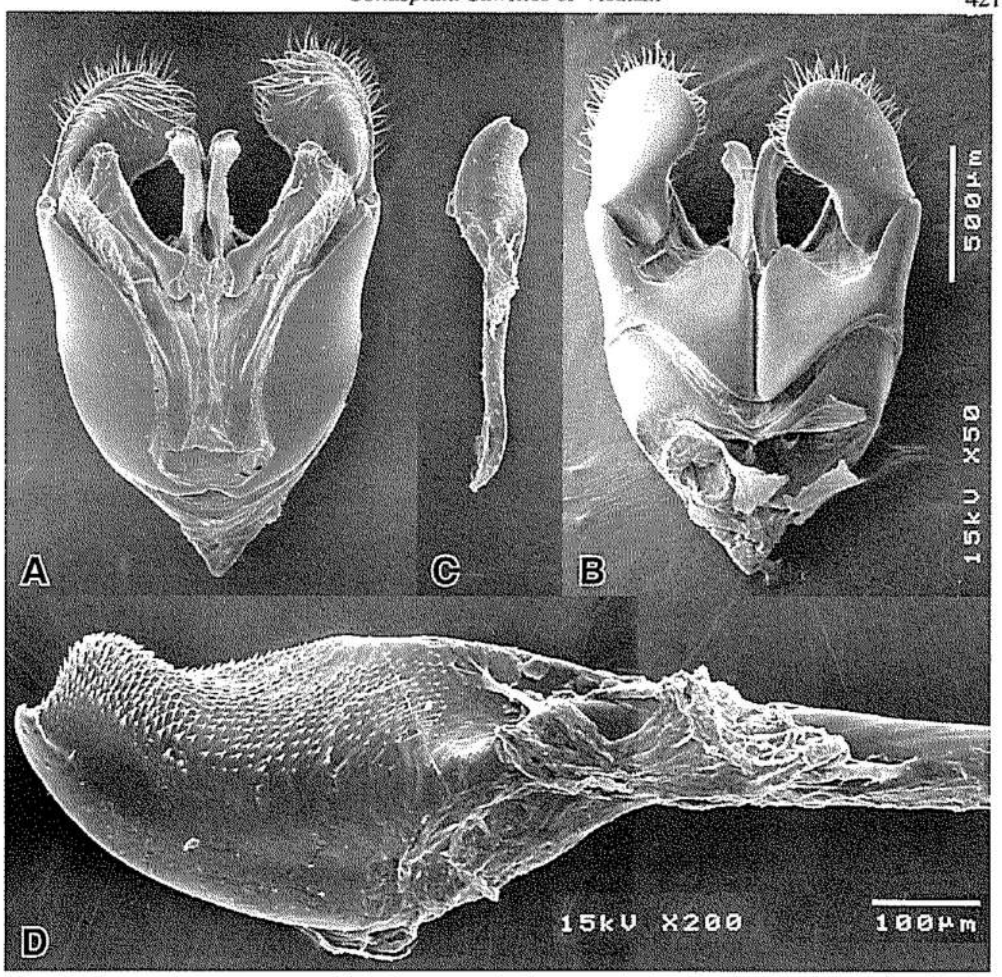

Fig. 4. *Conaspidia onoi* n. sp., ♂, holotype, genitalia. —— A, Genital capsule, dorsal view; B, do., ventral view; C, penis valve, lateral view; D, do., anterior part.

paired black spots on the posterior part of the propodeum are very distinct and the black area on the 7th tergum reaches the posterior margin of the sclerite.

Host-plant. Unknown.

Etymology. This new species is named in honor of the collector, Dr. Hirotsugu ONO, National Science Museum Tokyo.

Remarks. This new species runs to *C. fasciatipennis* TURNER, 1919, in MALAISE's (1945) key. MALAISE's interpretation of TURNER's species was based on the original description by TURNER (1919), who studied the holotype from "Tong Lap, Haut Mekong" only. *Conaspidia onoi*, known only from the male, differs from TURNER's description of the female in having no black spots on the head, the mesonotum, the fore and mid tibiae, and the hind femur. The apical fuscous mark on the forewing covers all of the cell 3Rs and apical 2/3 of $3R_1$ in *C. onoi*, whereas the

fuscous mark covers the cell 3Rs and "the extreme apex of the radial cell" in *C. fasciatipennis*. The propodeum and the 4th to 7th terga are marked with black above in *C. onoi*, whereas the 3rd and succeeding terga are black in *C. fasciatipennis*.

WEI and NIE (1997) recognized "*bicuspis* group" to accommodate *C. fasciatipennis* and three Chinese species, *C. bicuspis* MALAISE, 1945, *C. latifasciata* WEI et NIE, 1997, and *C. tibetana* WEI et NIE, 1997. *Conaspidia onoi* agrees with WEI and NIE's diagnosis of the species-group. In WEI and NIE's (1997) key, *C. onoi* also runs close to *C. fasciatipennis*, but does not agree with it in the coloration of the head and thorax. WEI and NIE's interpretation of *C. fasciatipennis* was based on TURNER's original description and a newly acquired pair (female and male) from China. Judging from WEI and NIE's description, the male of *C. onoi* differs from that of *C. fasciatipennis* as follows (characters in *C. fasciatipennis* in brackets): Head and thorax yellowish brown, with only narrow area surrounded by ocelli blackish ["three spots on head above" and "three large spots on mesonotum" black]; abdomen pale brown, with paired spots on posterior part of propodeum and large mark covering posteromedian part of 4th and median parts of 5th to 7th terga (7th sometimes only anterior part) black ["3rd and following tergites mainly" black]; only hind tibia blackish at apex ["the extreme apex of tibia" blackish].

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