

**FAUNISTIC NOTES ON THE BATRISINE
SPECIES FROM MALAYSIA AND SINGAPORE
(COLEOPTERA: STAPHYLINIDAE:
PSELAPHINAE)**

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ABSTRACT

Pselaphine species belonging to the tribe Batrisini from Malaysia and Singapore is revised. A list of batrisine species collected from Peninsular Malaysia and Sarawak in 2002-2003 is presented. One hundred and nine known species of the Batrisini from Malaysia and Singapore was also listed.

Key words: Coleoptera, Staphylinidae, Pselaphinae, Batrisini, inventory, Malaysia.

ABSTRAK

Spesies pselaphine yang berasal dari tibus Batrisini dari Malaysia dan Singapura telah disemak. Senarai spesies batrisine yang

dikumpulkan dari Semenanjung Malaysia dan Sarawak pada tahun 2002-2003 dipersembahkan. Sejumlah 109 spesies dikenalpasti di bawah tribus Batrisini dari Malaysia dan Singapura juga disenaraikan.

Kata kunci: Coleoptera, Staphylinidae, Pselaphinae, Batrisini, inventori, Malaysia.

INTRODUCTION

A surprising biodiversity of tropical rainforest in Southeast Asia has attracted many biologists from all over the world. As to the pselaphine beetles, many species have been described and recorded by some European coleopterologists since the 19th Century, for example, L. W. Schaufuss, A. Raffray, and E. Reitter. Eighty-eight species of the tribe Batrisini were already known at the time of the *Coleopterorum Catalogus* was published (Raffray, 1911).

In the last century, however, the systematic and faunistic studies on the batrisine fauna of this region have not progressed so much except for some genera studied by I. Löbl (1973, 1975a, 1975b, 1979a, 1979b, 1983, 1986). These genera, i. e. *Mnia*, *Sathytes* and *Cratna* were well studied even at the species level, but the other genera have been left untouched since Raffray's time.

In 2001, a preliminary study on insect inventory in tropical Asia was conducted by Dr. O. Yata (Kyushu University, Japan). The first author made a short survey in Sarawak as a cooperative member of this study in March 2002. In 2003, Dr. Yata and several Japanese entomologists started a new inventory project in the same area. Whilst Dr. H. Kojima, Dr. K. Yoshizawa and the authors surveyed the insect fauna of the Peninsular Malaysia for inventory study in March and July 2003.

As the first report of these inventory studies, a list of the 39 collected species of the tribe Batrisini was presented, and a total of 119 known batrisine species from Malaysia and Singapore were also listed up.

MATERIALS AND METHODS

Insects were collected by flight intercept trap (FIT), installed as in Figure 1, or from leaf litter by sifting or from decayed wood. The FIT was made of a transparent pentagonal plastic sheet (1420 mm wide x 940 mm high x 0.1 mm thick) and attached to its lower part was a fitted insect receiver or collector made from the same kind of sheet. The insect collector was then filled up with a mixture of water and one teaspoon of sorbic acid powder (to protect insect decay) (Fig. 2). The FIT was left in forest for three to five days before insects were collected, sorted and transferred into glass vials filled up with 70% ethanol.

Dissections were made using standard techniques in which genitalia and small body parts were mounted in Canada balsam on an acetate piece on the same pin with the specimen. The Leica MZ Apo microscope was used for identification in this study.

SYSTEMATIC NOTES

In 2000, the first author revised the pselaphine and protopselaphine faunas of Yunnan Province, Southeast China (Nomura, 2000). In his report, a total of fifty-seven batrisine species from Yunnan were classified into two subtribes (*Batrisina*, *Stilipalpina*) comprising at least 15 genera including some undetermined genera. It is not conclusive that the only one species identified with the *Stilipalpina* truly belongs to this subtribe, and the identity of the subtribe itself is problematical.

In the case of the batrisine fauna of tropical Asia, many genera are common with that of Yunnan. Many species of this area (see list below) were loosely classified as the genus *Batrisodes* by Raffray (1890, 1895), and they were left in this genus until now. As such, they should be reclassified into some other genera. For example, *Batrisodes quinquesulcatus* Raffray is quite different from typical *Batrisodes* distributed in the Palearctic Region. In our view, many species can be classified into the *Tribasodes* group defined in the present study.

The other species identified with *Batrisocenus* by Raffray are also poorly studied. Nomura (1991) dealt with the Japanese

fauna of this group as the *Batrisocenus* complex and redefined six Japanese genera. Some Southeast Asian species may possibly be identified (identical) with Japanese ones, but not with the others. Additionally, some tropical or subtropical genera, i. e. *Cratna*, *Trisinus*, *Batrisocenus*, etc. are in deed to be redefined. In the present study, a key to the genus-groups of the subtribe Batrisina in Asia is provided, though, the systematic position of some genera like *Sathytes* is still unknown.

Key to Genus Groups of the Subtribe Batrisina in Asia

1. Elytra each with two basal foveae; pronotum with a well demarcated transverse sulcus near basal 1/3; male genitalia asymmetrical, median lobe with articulated dorsal apophysis..... *Batrisocenus* group.
 - Elytra each with three basal foveae in general; pronotum without well demarcated transverse sulcus; male genitalia symmetrical or asymmetrical.....2.
2. Pronotum with a pair of denticles on both lateral sides in general; hind trochanters each with a short spine on posterior side in male in general; male genitalia asymmetrical, median lobe with an articulated dorsal apophysis *Tribasodes* group
 - Pronotum without lateral denticle; hind trochanters without spine in male; male genitalia symmetrical or asymmetrical, median lobe without articulated dorsal apophysis.....3.
3. Fourth abdominal tergite (1st visible tergite) with a pair of triangular paratergites each demarcated by narrow and oblique carina internally; male genitalia symmetrical or asymmetrical in part..... *Batrisus* group.
 - Fourth abdominal tergite with a pair of indistinct paratergites; male genitalia asymmetrical *Sathytes*, etc. (*incertae sedis*).

**A List of Batrisine Species Collected from Malaysia
in 2002-2003**

The Genus-Group of *Batrisus*

1. *Batrisodes* ? sp. 1 (Fig. 3)

Specimens examined. Mt. Berembun, 1,450m alt., from under bark, Cameron Highlands, Pahang, 12. vii. 2003, S. Nomura leg, 1 female.

Remarks. This species is similar to *Batrisodes* spp. known from Japan which are apparently classified into the genus-group of *Batrisus*.

2. *Batrisodes* ? sp. 2

Specimens examined. Endau-Rompin, 150-200m alt., 9. vii. 2003, S. Nomura leg, 1 female.

The Genus-Group of *Tribasodes*

3. Gen. undet. 1, sp. 1 (Fig. 4: cf. *Batrisodes* ? *quinesulcatus* (Raffray))

Specimens examined. Endau-Rompin, 150-200m alt., 7-9. vii. 2003, S. Nomura leg, 2 males, 6 females.

Remarks. This species was originally described under *Batrisus* by Raffray (1894) (p. 241). In the same paper, *Batrisodes quinesulcatus* Raffray was described on p. 274. According to Raffray (1911), the former was transferred to the genus *Batrisodes*, and the latter was reclassified into *Batrisocenus*, both the names are valid then.

The species-group of *B. quinesulcatus* is doubtful to belong to *Batrisodes*. It includes more than twenty undescribed species distributed in the Malay Peninsula, Borneo, Indochina and the southern part of China.

4. Gen. undet. 1, sp. 2 (cf. *B. ? quinesulcatus*)

Specimens examined. Fraser's Hill, 1,100m alt., 5-7. iii. 2003, S. Nomura leg., 9 males, 9 females.

5. Gen. undet. 1, sp. 3 (cf. *B. ? quinquesulcatus*)

Specimens examined. Lambir, ca. 250m alt., Sarawak, 11. iii. 2002, S. Nomura leg., 2 males, 3 females.

6. *Tribasodes ? sp. 1*

Specimens examined. Fraser's Hill, 1,100m alt., 5-7. iii. 2003, S. Nomura leg, 6 males, 8 females.

Remarks. The species 1 to 8 listed below are closely allied to the genus *Tribasodes* Jeannel known from Japan. They are the members of a species-group including *Batrisodes quadrispina* Raffray and *B. elegans* Raffray known from Singapore. The member of this group is characterized by having a pair of long and acute spines on the basimedial part of the pronotum.

7. *Tribasodes ? sp. 2*

Specimens examined. Fraser's Hill, 1,100m alt., 5-7. iii. 2003, S. Nomura leg., 9 males, 16 females.

8. *Tribasodes ? sp. 3*

Specimens examined. Gunung Perdah – Gunung Jasar, Cameron Highlands, 9. iii. 2003, S. Nomura leg., 2 females.

9. *Tribasodes ? sp. 4* (Fig. 5)

Specimens examined. Endau-Rompin, 150-200m alt., by sifting, 9-10. vii. 2003, S. Nomura leg.; 1 male, 3 females. same data as above, but by FIT, 6-9. vii. 2003, 4 males.

10. *Tribasodes ? sp. 5*

Specimens examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 3 males.

11. *Tribasodes ? sp. 6*

Specimens examined. Endau-Rompin, 150m alt., 9. vii. 2003, S. Nomura leg., 1 female.

12. *Tribasodes ? sp. 6*

Specimens examined. Mt. Berembun, 1,450m alt., Cameron Highlands, 15. vii. 2003, S. Nomura leg., 1 male, 2 females.

13. *Tribasodes* ? sp. 7

Specimens examined. Mt. Berembun, 1,450m alt., Cameron Highlands, 15. vii. 2003, S. Nomura leg., 1 male.

14. *Tribasodes* ? sp. 8

Specimens examined. Mt. Brinchang, 1,900m alt., Cameron Highlands, 11. iii. 2003, S. Nomura leg., 1 female.

15. *Nenemeca* ? sp.

Specimens examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg. 1 male.

Remarks. This genus is characterized by the quadrate pronotum and the fourth to fifth abdominal tergites each having a pair of triangular paratergites.

16. *Batriplica* sp. (Fig. 6)

Specimens examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 male.

Remarks. This genus contains three species known from tropical and subtropical Asia, but there are many undescribed species in Malaysia. It is characterized by the unique shape of the pronotum and the pararell-sided paratergite of the fourth to fifth abdominal tergites.

17. *Batriplica* ? sp. 1

Specimen examined. Fraser's Hill, 1,100m alt., decayed wood, 6. iii. 2003, S. Nomura leg., 1 male.

18. *Batriplica* ? sp. 2

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 male, 1 female.

19. *Batriplica* ? sp. 3

Specimens examined. Mt. Berembun, 1,450m alt., Cameron Highlands, 15. vii. 2003, S. Nomura leg., 1 male.

20. *Hypochraeus* sp. 1 (Fig. 7)

Specimens examined. Fraser's Hill, 1,100m alt., 6. iii. 2003, S. Nomura leg., 2 females.

Remarks. Up to the present, three species has been known from tropical Asia in this genus. However, this genus is also distributed in Yunnan, China (Nomura, 2000) and Vietnam (unpublished). It has very unique characters, i. e., the broadened body, the very large lateral spines on the pronotum and the parallel-sided paratergite on the fourth to fifth abdominal tergites.

21. *Hypochraeus* sp. 2

Specimen examined. Endau-Rompin, 150-200m alt., by sifting, 6-9. vii. 2003, S. Nomura leg., 1 male.

22. *Batrisoschema* sp. (Fig. 8)

Specimens examined. Mt. Mentigi, 1,400m alt., Cameron Highlands, by FIT, 12-16. vii. 2003, S. Nomura leg., 2 males, 1 male.

Remarks. This genus is similar to *Hypochraeus*, but differs in having pararell-sided paratergites articulated with the tergite by narrow joint membrane in the fourth to sixth abdominal segments. This species resembles the Japanese species *B. euplectiforme* in having the narrow and pararell-sided body, and the head with a large sexual patch on the dorsal surface.

23. Gen. undet. 2, sp. 1

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 female.

Remarks. The species 1 to 6 listed below could not be classified into the known batrisine genera, but fall into the *Tribasodes* group.

24. Gen. undet. 2, sp. 2

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 male.

25. Gen. undet. 2, sp. 3

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 male.

26. Gen. undet. 2, sp. 4

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg. 1 male, 1 female.

27. Gen. undet. 2, sp. 5

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 female.

Remarks. This species and the following sp. 6 are similar to each other in having a very large and stout body and the rough surface of the head, pronotum and the elytra.

28. Gen. undet. 2, sp. 6 (Fig. 9)

Specimen examined. Mt. Mentigi, 1,400m alt., Cameron Highlands, by FIT, 12-16. vii. 2003, S. Nomura leg. 1 male.

The Genus-Group of *Batrisocenus*

29. *Batrisoplisus* ? sp. 1 (Fig. 10: cf. *Batrisocenus?* *septemsulcatus* (Raffray))

Specimen examined. Fraser's Hill, 1,100m alt., 5. iii. 2003, S. Nomura leg., 1 male, 13 females.

Remarks. The genus *Batrisoplisus* was defined on the basis of a Japanese species by Raffray (1908). It is unique within the *Batrisocenus* group in having the paratergites on the fourth abdominal tergite like the other genus-groups. *Batrisodes septemsulcatus* described by Raffray (1894) from Singapore is probably classified into this genus. The genus *Trisinus* described from Singapore is also closely allied to this genus.

30. *Batrisoplisus* ? sp. 2

Specimen examined. Genting Highlands, 4. iii. 2003, S. Nomura leg., 3 males, 5 females.

31. *Cratna torticornis* Raffray (Fig. 11)

Specimen examined. Fraser's Hill, 1,100m alt., 6-7. iii. 2003, S. Nomura leg., 3 males, 5 females.

Remarks. This is a very characteristic genus in having very long and elongate maxillary palpus. Seven species are known from Malaysia and Singapore.

32. *Cratna reductus* Löbl (Fig. 12)

Specimen examined. Fraser's Hill, 1,100m alt., 6. iii. 2003, S. Nomura leg., 1 male.

33. *Cratna* sp.

Specimen examined. Fraser's Hill, 1,100m alt., 5. iii. 2003, S. Nomura leg., 1 male.

34. *Batriscenaulax* sp. 1

Specimens examined. Fraser's Hill, 1,100m alt., 5. iii. 2003, S. Nomura leg., 4 males, 7 females.

Remarks. This genus has been known only from Japan. However, some species are discovered from Vietnam (unpublished) and Malaysia. It is separated from other genera by having the sexual patch on the fourth abdominal tergite and the small pencil on the fore tibia in the male.

35. *Batriscenaulax* sp. 2 (Fig. 13)

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 2 males.

36. *Batrisocenus?* sp. 1

Specimens examined. Fraser's Hill, 1,100m alt., 5. iii. 2003, S. Nomura leg., 1 male.

Remarks. The type species of this genus, *B. bironis* Raffray was described from New Guinea. It is characteristic for the sexual patch on the sixth to seventh abdominal tergites and the median lobe of the male genitalia consisting of the reduced basal bulb and the very large and arcuate dorsal apophysis.

Batrisina, *incertae sedis***37. *Sathytes rufus* Raffray?**

Specimens examined. Fraser's Hill, 1,100m alt., 5-7. iii. 2003, S. Nomura leg., 1 male, 2 females.

Remarks. The Asian fauna of the genus *Sathytes* was revised by Löbl, 1979a and three species have been known from Penang and Sarawak. This genus is easily distinguished by the cylindrical body and the coarse punctation of the dorsal surface.

38. *Sathytes* sp. 1 (Fig. 14)

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 female.

39. *Sathytes* sp. 2

Specimen examined. Endau-Rompin, 150m alt., by FIT, 6-9. vii. 2003, S. Nomura leg., 1 male.

**A List of Batrisine Species Known from Malaysia
and Singapore**

Subtribe Batrisina

The Genus-Group of *Batrisus* (?; see systematic notes)

Batrisodes? latipalpus Raffray, 1894 Singapore.

B.? edentatus (Raffray, 1894)(= *Oxarthrius indentatus* Raffray, 1894) Singapore.

B.? penangensis (Raffray, 1894) (= *Oxarthrius penangensis* Raffray, 1894) Penang.

B.? galeatus Raffray, 1894 Singapore.

B.? tropicus Raffray, 1894 Penang.

B.? bispina Raffray, 1894 Singapore.

B.? persimilis Raffray, 1894 Penang.

B.? parens Raffray, 1894 Singapore.

B.? sylvicola Raffray, 1894 Singapore.

B.? singapuriensis Raffray, 1894 Singapore.

B.? platycephalus Raffray, 1894 Singapore.

B.? elegans Raffray, 1894 Singapore.

- B.?* *quadrispina* Raffray, 1894 Singapore.
B.? *paradoxus* Raffray, 1894 Penang.
B.? *alacer* Raffray, 1894 Singapore.
B.? *raja* Raffray, 1894 Singapore.
B.? *satelles* Raffray, 1894 Singapore; Sumatra.
B.? *auriculatus* Raffray, 1894 Singapore; Sumatra.
B.? *montivagus* Raffray, 1894 Penang.
B.? *geminus* Raffray, 1894 Penang, Singapore.
B.? *miles* Raffray, 1894 Singapore.
B.? *merulus* Raffray, 1894 Penang.
B.? *verticicornis* Raffray, 1894 Penang.
B.? *praeclatus* Raffray, 1894 Penang, Singapore.
B.? *dux* Raffray, 1894 Singapore.
B.? *vegepunctatus* Raffray, 1894 Singapore.
B.? *vulneratus* Raffray, 1894 Penang.
B.? *incertus* Schaufuss, 1882 Borneo; New Guinea.
B.? *hirtellus* Raffray, 1894 Penang.
B.? *crenatulus* Raffray, 1894 Penang.
B.? *hepaticus* Raffray, 1894 Penang, Singapore.
B.? *hispidulus* Raffray, 1894 Penang.
B.? *exiguus* Raffray, 1882 (= *B. nicotianus* Schaufuss, 1882;
= *B. lateridens* Reitter, 1883)
B.? *orneo* (Telang, Tameanglaiang); Java, Sumatra
B.? *cribratus* Raffray, 1894 Penang.
B.? *quinquesulcatus* Raffray, 1894 Singapore; Sumatra.

The Genus Group of *Tribasodes*

- Batrisoschema lateridentata* Reitter, 1883 Borneo (Barabei).
B. denticollis Raffray, 1894 Singapore.
Batrisodema tuberculata Raffray, 1890 Singapore.
Hypochraeus obesus (Raffray, 1894) Singapore.
H. humeralis (Raffray, 1894) Singapore.
Trichonomorphus ursinus Raffray, 1890 Penang.
Ceroderma asperata Raffray, 1890 Penang.
Diaugis opaca (Raffray, 1894) Singapore.
Batrisoplatus rugulosus Raffray, 1894 Penang.
Nenemeca orbata (Raffray, 1894) Penang.
Batrisophyma granosum (Raffray, 1894) Singapore.

- Oxyomera denticollis* Raffray, 1894 Singapore.
Amana crassicornis Raffray, 1890 Singapore.
Batriplica dohrni (Schaufuss, 1887) Penang, Singapore; Birma.
Sumatra.
B. longicollis Raffray, 1894 Penang, Singapore.
B. termitophila Raffray, 1894 Penang, Singapore.

The Genus Group of *Batrisocenus*

- Trisinus cratocerus* Raffray, 1894 Singapore.
Batrisocenus fenestratus (Raffray, 1894) Singapore.
B. spinidens (Reitter, 1883) Borneo (Telang).
B. nodicornis Raffray, 1892 Singapore; Sumatra.
B. custos (Schaufuss, 1887) Borneo.
B. septemdentatus (Schaufuss, 1882) Borneo.
B. bipunctulus (Reitter, 1883) Borneo (Telung).
B. circellaris Raffray, 1894 Penang.
B. batavianus (Reitter, 1882) Borneo (Tameanglaiang); Java.
B. vestigifer (Reitter, 1883) Borneo (Tameanglaiang).
B. indus (Schaufuss, 1882) Borneo.
B. claviger (Reitter, 1883) Borneo (Telang).
B. cursitans Raffray, 1894 Singapore.
B. erectus Raffray, 1896 Borneo.
B. tarsalis (Reitter, 1883) Borneo (Telang).
B. laminidens (Reitter, 1883) Borneo (Telang).
B. architectus (Reitter, 1883) Borneo (Tameanglaiang).
B. clavatus Raffray, 1894 Penang.
B. cavifer (Reitter, 1883) Borneo (Tameanglaiang); Sumatra
B. induratus Raffray, 1894 Singapore.
B. reitteri Raffray, 1896 Borneo.
B. abbreviatus (Reitter, 1882) Borneo (Tumbang-Hiang).
B. sarawakensis (Schaufuss, 1882) Borneo.
B. fundaebraccatus (Schaufuss, 1882) Singapore, Borneo
(Telang, Barabei); Java, Sumatra, Celebes; New Guinea.
B. quinquesulcatus Raffray, 1894 Penang.
B. septemsulcatus Raffray, 1894 Singapore.
B. orbicollis Reitter, 1883 Borneo (Telang).
B. brevis (Schaufuss, 1882) Borneo.

- Cratna denticornis* Raffray, 1894 Penang, Singapore (Bukit Timah, Nee Soon swamp).
- C. torticornis* Raffray, 1890 Johor (S. Kahang Estate), Selangor (Sungei Bulok, Fraser's Hill), Singapore, Sarawak (Semengoh); Sumatra (Palembang).
- C. foveiventris* Raffray, 1894 Penang.
- C. senoi* Löbl, 1975 Selangor (Sungei Buloh near Kuala Lumpur).
- C. similis* Löbl, 1975 Selangor (Sungei Buloh near Kuala Lumpur), Johor (S. Kahang Estate), Singapore (Nee Soon swamp); Sumatra (Bela Negli Bahroe).
- C. reducta* Löbl, 1975 Selangor (Genting Simpah, Fraser's Hill).
- C. pedestris* Löbl, 1986 Sarawak (Gunung Mulu).
- ?*Eubatrissus pubifer* (Reitter, 1883) Borneo (Telang).

Batrisina, *incertae sedis*

- Borneana biformis* Schaufuss, 1882 Borneo.
- Mnia elegans* (Raffray, 1890) Singapore
- M. brevicornis* (Löbl, 1973) Sarawak (Semengoh, Mt. Matang).
- M. fossulata* (Löbl, 1973) Sarawak (Mt. Matang).
- M. soror* (Löbl, 1973) Sarawak (Mt. Matang).
- M. varians* (Löbl, 1973) Sabah (Tawau).
- M. simulans* (Löbl, 1973) Sarawak (Kampong Segu near Kuching).
- M. brevipilis* (Löbl, 1973) Sabah (Umas near Tawau).
- M. gracilis* (Löbl, 1973) Sarawak (Mt. Matang).
- M. taylori* (Löbl, 1973) Sarawak (Semengoh).
- M. macrops* (Löbl, 1973) Sabah (Sibuga Forest Reserve).
- M. velaris* (Löbl, 1973) Sabah (Tawau).
- M. variabilis* (Löbl, 1973) Sabah (Labuk, Sepilok near Sandakan).
- M. puncticeps* (Löbl, 1973) Sarawak (Kampong Segu near Kuching).
- M. murphyi* (Löbl, 1973) Selangor (Gombak).
- M. sulcicollis* (Löbl, 1973) Selangor (Gombak).
- M. mutator* (Löbl, 1973) Selangor (Genting Simpah).
- M. tuberculata* (Löbl, 1973) Sarawak (Semengoh).
- M. bryanti* (Löbl, 1973) Sarawak (Mt. Matang).

- M. antennalis* (Löbl, 1973) Sarawak (Mt. Matang).
M. frontalis (Löbl, 1973) Sarawak (Mt. Matang).
M. bella (Löbl, 1973) Sabah (Umas near Tawau).
M. dux (Löbl, 1973) Johor (S. Kahang Estate).
M. fallax (Löbl, 1973) Pahang (Cameron Highlands)
Siteromina dayak Löbl, 1979 Sarawak (Semengoh).
Sathytes punctiger Westwood, 1870 Sarawak.
S. vespertinus Raffray, 1890 Penang.
S. rufus Raffray, 1894 (= *S. gracilis* Raffray, 1904) Penang.
Batrisctenistes bicolor Löbl, 1983 Pahang (Fraser's Hill
 4,200ft.).
B. bryanti Löbl, 1983 Pahang (Fraser's Hill 4,000ft.).
Batrisopsis myrmecophila Raffray, 1894 Penang; Sumatra.

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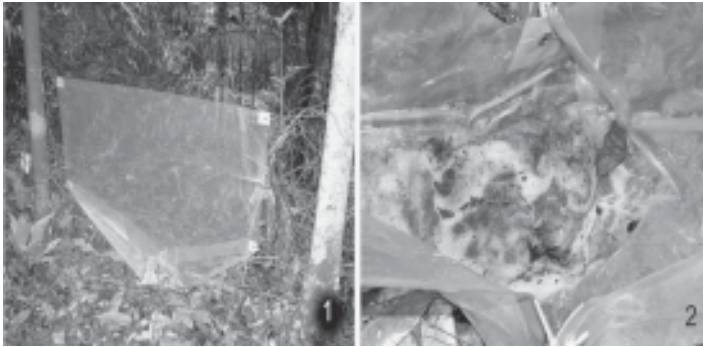
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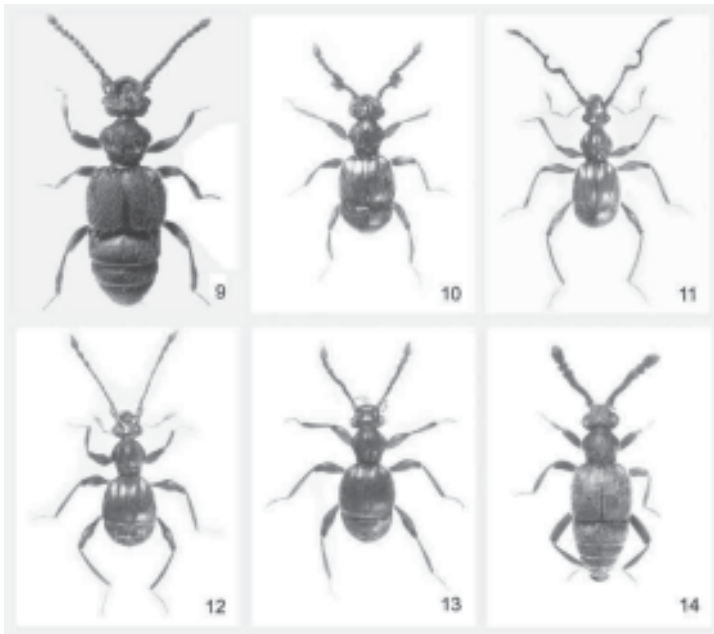
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Figs. 1-2. 1, the flight intercept trap (FIT) set in Endau-Rompin Forest; 2, the so-called water container attached to the lower part of the FIT set in Cameron Highlands Forest.



Figs. 3-8. 3, *Batrisodes* ? sp. 1, female; 4, Gen. undet. 1, sp. 1, male; 5, *Tribasodes* ? sp. 1, male.; 6, *Batriplica* sp., male; 7, *Hypochraeus* sp. 1, female; 8, *Batrisoschema* sp., male.



Figs. 9-14. 9, Gen. undet. 2, sp. 6, male; 10, *Batrisoplisus* ? sp. 1, male; 11, *Cratna abdominalis* Raffray, male; 12, *Cratna reductus* Löbl, male; 13, *Batriscenaulax* sp. 2, male; 14. *Sathytes* sp. 1, female.