

## A preliminary checklist of beetles from Ginseng Camp, Maliau Basin, Sabah, Malaysia, as assessed through light-trapping

Noramly Muslim<sup>1</sup>, Chey Vun Khen<sup>2</sup>, Richard Lusi Ansis<sup>2</sup> and Nordin Wahid<sup>3</sup>

<sup>1</sup>No. 6, Jalan 1/7H, Bandar Baru, Bangi, Selangor, Malaysia.

<sup>2</sup>Forestry Research Centre, Sepilok, Sandakan, Sabah, Malaysia.

<sup>3</sup>Institute for Tropical Biology and Conservation, Universiti Sabah Malaysia, Locked bag 2073, 88999 Kota Kinabalu, Sabah, Malaysia.

**ABSTRACT.** A total of 61 species of beetles representing 17 families and 47 genera were collected from Ginseng Camp, Maliau Basin, Sabah using light trapping method. The Scarabaeidae, Cerambycidae, Lucanidae and Elateridae form 70% of the total collection. Some of the species collected are new records for Maliau Basin.

**Keywords:** Beetles, light-trapping, Ginseng Camp, Maliau Basin.

### INTRODUCTION

There are very few records of the beetle fauna from Maliau Basin even though much has been written about Maliau Basin as an enthralling and mysterious treasure house of nature (Haselbroek *et al.*, 2004; Maryati Mohamed *et al.*, 1998; Marsh, 1989; Phillipps, 2002). On record, 32 species of beetles (three of which remain unidentified) were documented during the 1998 Maliau expedition (Lantoh, 1989), and 29 species of dung beetles were recorded during the 1996 Maliau expedition (Davis, 1998). The 1998 collection was made in the lower montane forest on the southern plateau of Maliau Basin at an elevation of 1000 m using Flight Intercept Traps (FITs).

Many beetle records for various parts of Borneo Island have been documented (Tung 1983; Stork 1986; Mohamedsaid 2004) - Kalimantan (Reid, 1997), East Kalimantan

(Makihara, 1999), Sarawak (Fatimah Abang, 2000 & 2005, *personal comm.*; Lim, 1996, Bright, 2000) and Sabah (Mohamedsaid, 1997; Chey, 1996). A detailed entomological collection in Sabah and Sarawak reports about 625,511 processed specimens, which include the Order Coleoptera (Fatimah Abang, 2000). There was also a detailed study on the distribution of beetles in the tropical rain forest at Belalong in Batu Apoi Forest Reserve, Brunei, carried out by the Royal Geographical Society (Earl of Cranbrook & Edwards, 1994).

A checklist of 124 species of galecurine beetles from Kalimantan has been recorded from the Museum of Zoology, Bogor, Indonesia (Reid, 1997). A study of insect profile in the dipterocarp forest of East Kalimantan yielded 555 species of longicorn beetles (Makihara, 1999).

Forest pest insects in Sabah have been studied, listing a number of beetle fauna which are of economic importance to the timber industry (Chey, 1996). A record of 325 species of beetles was collected using Flight Intercept Traps at less degraded and more degraded logged forests in Tibow (Chey *et al.*, 2002). Leaf-rolling weevil beetles and coprophagous dung beetles have been recorded at Tabin Wildlife Reserve (Sawada and Maryati Mohamed *et al.*, 1999). A general collection of beetles from the Crocker Range

Park (Chung *et al.* 2004), and similarly a checklist of 44 species of Passalidae at the same park has been established (Kon *et al.* 2005), of which 26 species are endemic to Borneo. A checklist of Chrysomalids from Banggi Island, Kinabalu Park and Tibow has been documented (Mohamedsaid, 1997, 1999 & 2000). Kinabalu Park has been shown to support a high diversity of galerucine beetles with a record of 163 species.

## MATERIALS AND METHODS

Night collections were done around the Ginseng Camp, 620 m a.s.l., 04° 44.810' N, 116° 54.978' E, starting at 6.30 pm till 10.30 pm, from 27 February to 1 March 2005. A 250-watt mercury vapour light, placed next to a white sheet of cloth (3 m<sup>2</sup>) hung between two poles was used to attract beetles. Beetles attracted to the strong light were collected using killing bottles containing ethylacetate or chloroform, later pinned and oven-dried in a laboratory. They have been labeled, identified, classified and kept in the BORNEENSIS repository at the Institute for Tropical Biology and Conservation (ITBC), Universiti Malaysia Sabah. Beetles drawn to the light at Ginseng Camp were collected and similarly treated.

The identification of the beetles is based on Tung (1983), Prisuth Ek-Amnuay (2002), Bro. Amnuay Pinratana & Meas (2003), Didier & Seguy (1952), Tironi (1998) and Mizunuma & Nagai (1994). At the same time, the authors made use of the identified specimens at ITBC and Forestry Research Centre (FRC), Sandakan, for identification and comparison purposes. No attempts were made to do detailed studies on the genitalia of the beetles collected.

## RESULTS AND DISCUSSION

Beetle collection was done at two places close to Ginseng Camp. Both collections can be considered as understorey, and in the upper

portion of the dipterocarp lowland tropical rain forest and close to sub-montane tropical rain forest of Maliau Basin. The weather was rather hot and dry. The nights were not dark enough to attract certain beetles to the light.

The following beetles were collected and identified. Unidentified species at the genus level are kept for further studies.

### Family Cicindelidae:

*Cosmodela aurulenta* Fabricius, 1801

### Family Carabidae:

*Mormolyce ? castelnaudi*

*Mormolyce phyllodes* Hagenbach, 1825

### Family Lucanidae:

*Calcodes striatus* Doyrotte, 1864

*Cyclommantus canaliculatus* Ritsema, 1891

*Cyclommantus lucifer* Boileau, 1905

*Cyclommantus tarandus* Thunberg, 1806

*Dorcus* sp. 1

*Dorcus* sp. 2

*Dorcus* sp. 3

*Odontolabis castelnaudi* Parry, 1862

*Odontolabis vollenhoveni* Parry, 1864

### Family Passalidae:

*Aceraius wallacei* (Kuwert 1898)

*Leptaulax bicolor* (Fabricius 1801)

### Family Scarabaeidae:

*Apogonia destructor* Bos

*Chalcosoma moellenkampi* Kolbe

*Copris agnus* Sharp?

*Copris doriae* Harold ?

*Holotrichia geilenkenseri*

*Lepidiota stigma* Linnaneus ?

*Oryctes trituberculatus* Lansb.

?*Trichogomphus* sp.

*Catharsius molossus* Linnaeus, 1758

*Anomala* sp. 1

*Anomala* sp. 2

*Anomala* sp. 3

*Anomala* sp. 4

*Maladera* sp.

## Family Cerambycidae:

- Cyriopalus wallacei* Pascoe, 1866  
*Dialeges pauperoides* Holzschuh, 1984  
*Hoplocerambyx spinicornis* Newman, 1842  
*Palimna annulata* Olivier, 1792  
*Rhaphipodus hopei* Waterhouse, 1836  
*Trirachys orientalis* Hope, 1841  
*Zegriades magister* Pascoe, 1857  
*Batocera parryi* Hope, 1845  
*Batocera rubus* Linnaeus, 1758  
*Euryphagus lundi* Fabricius, 1792  
*Xoanodera striata* Gressit et Rondon, 1970  
*Aeolesthes* sp.  
*Diorthus* sp.

## Family Trictenotomidae:

- Trictenotoma dividi* H. Deyrolle

## Family Curculionidae

- Mecocerus brevipennis* Jordan, 1894  
*Rhynchophorus ferrugineus* Olivier, 1790

## Family Elateridae:

- Calaus lacteus*  
*Oxyropterus audoniwi* Cand.  
*Alaus* sp. 1  
*Alaus* sp. 2  
*Alaus* sp. 3  
*Lacon* sp.  
*Lanelater* sp.

## Family Endomychidae:

- Endomychus* sp.

## Family Erotylidae:

- Encaustes* sp.

## Family Chrysomelidae

- Aulacophora antennata* Baly 1886

## Family Harpalidae:

- Pterostichus* sp.

## Family Tenebrionidae

- Setenis* cf. *striatipennis* Lewis  
*Simalura* sp.  
*Nemostera* sp. Marseni ?  
*Tarpela* sp.

## Family Eucnemidae:

- Fornax* sp. Fleutiaux ?

## Family Lampyridae:

- Luciola* sp.

## Family Mordellidae:

- Mordellistena* sp.

**CONCLUSION**

Total collection of beetle fauna at the Ginseng Camp, Maliau Basin was rather poor. Perhaps it was due to the hot, dry season and to the nights not being dark enough for productive collection. One would expect more insects and beetles in an area that is known to be undisturbed and away from pollution.

Only 17 families of beetles were collected, many of which are represented by single specimens. Only four families, the Cerambycidae (11 species and two unidentified), Elateridae (two species and five unidentified), Lucanidae (six species and three unidentified) and the Scarabaeidae (nine species and five unidentified) are represented by five or more species and many specimens are identified only at the genus level. Nine families, namely Cicindelidae, Chrysomylidae, Endomychidae, Eucnemidae, Erotylidae, Harpilidae, Lampyridae, Mordellidae and Trictenotomidae are represented by single specimens while Carabidae, Curculionidae and Passalidae are represented by two species. The Tenebrionidae is represented by four species, three of which are identified at the genus level.

A total of 61 species of beetles (37 identified to species level and 24 to the genus level) were collected and they represent new records for Ginseng Camp, Maliau Basin. Some of the species are new records for Maliau Basin as a whole, adding to the checklist produced by Lantoh (1989) and Davis (1998). The unidentified species collected during the expedition will be reported at a later date.

## ACKNOWLEDGEMENTS

The authors would like to thank Prof. Datin Dr. Maryati Mohamed and the Maliau Basin Scientific Expedition 2005 Secretariat, ITBC for inviting us to participate in the expedition. The ground support was superb. Our thanks also goes to the Forestry Research Centre, Sandakan for transport from the Tawau airport to-and-from Agathis Camp, Maliau Basin and for giving hand in the identification of beetles. Our thanks goes to support staff of UMS, guides and park rangers.

## REFERENCES

- Bright, D.E.. 2000.** Scolytidae (Coleopteran) of Gunung Mulu National Park, Sarawak, Malaysia, with Ecological Notes and descriptions of Six New Species. *Serangga* 5(1): 41-85.
- Bro. Amnuay Pinratana & J-M Maes. 2003.** Lucanidae of Thailand. Sunrise Printing, Bangkok, Thailand.
- Chey, V.K. 1996.** Forest Pest Insects in Sabah. Sabah Forest Record No. 15, Sabah Forest Department, Sandakan, Sabah, Malaysia.
- Chey, V.K., A.Y.C. Chung & Noramly Muslim. 2002.** Insects sampled by Flight Intercept Trap at a Logged Forest in Sabah. *Malayan Nature Journal* 56(1): 15-22.
- Davis, A.J. 1998.** Beetle Abundance and Diversity in the Maliau Basin, with Special Reference to the Dung and Carrion Beetle Fauna. In: Maryati Mohamed, W. Sinun, A. Anton, Mohd. Noh Dalimin & A.H. Ahmad (eds). *Maliau Basin Scientific Expedition*. Kota Kinabalu: Universiti Malaysia Sabah.
- Didier, D. & E. Segue. 1952.** Catalogue Illustrate des Lunacies due Globe. Encyclopedia Entomologique. P. Lechevalier (Eds). Paris, France.
- Earl of Cranbrook & D.S. Edwards. 1994.** Tropical rain Forest. The Nature of Biodiversity in Borneo at Belalong, Brunei. The Royal Geographical Society, U.K. and Sun Tree Publishing, Singapore.
- Fatimah Abang, 2000.** Entomological Collections in Sabah and Sarawak. In: Zahra Yaacob, Moo-Tan, S. & Yorath, S. (eds.). *Proceedings of the International Conference on in-situ and ex-situ Biodiversity Conservation in the New Millennium 20-22 June 2000*. Kota Kinabalu: Yayasan Sabah/Innoprise Sdn. Bhd. and Sabah Museum.
- Fatimah Abang. 2005.** Universiti Malaysia Sarawak (Personal communication)
- Kon, M., K. Mizota & K. Araya. 2005.** Passalidae (Coleoptera) recorded from the Crocker Range, Sabah, Malaysia. *Journal of Tropical Biology and Conservation* 1:31-46.
- Lantoh, S. 1989.** Insects. In: Marsh, C.W. (ed.). *Expedition to Maliau Basin, Sabah, April-May 1988, Final Report*. Kota Kinabalu: Yayasan Sabah and World Wide Fund for Nature Malaysia, pp.138-142.
- Lim, C.K. 1996.** Systematics and Distribution of the Subfamily Cerambycinae (Coleoptera: Cerambycidae) of Sarawak. Thesis. Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Sarawak, Malaysia.
- Makihara, H. 1999.** Atlas of Longicorn Beetles in Bukit Soeharto Education Forest, Mulawarman University, East Kalimantan, Indonesia. Pusrehtu Special Publication No. 7 (1999) Mulawarman University (UNMUL) and Japan International Cooperation Agency (JICA).
- Mizunuma, T. & Nagai, S. 1994.** The Lucanid Beetles of the World. Mushi-Sha's Iconographic Series of Insects 1. (Ed) Fujita. Mushi-Sha, Japan.
- Maryati Mohamed, W. Sinun, A. Anton, Mohd. Noh Dalimin & A.H. Ahmad. 1998.** Maliau Basin Scientific Expedition 12<sup>th</sup>-26<sup>th</sup> May 1996. (eds). Kota Kinabalu: Universiti Malaysia Sabah.
- Maryati Mohamed, M. Andau, Mohd. Noh Dalimin & T.P. Mali. 1999.** Tabin Scientific Expedition (eds.) Kota Kinabalu: Universiti Sabah Malaysia.
- Mohamedsaid, M.S., 1997.** The Galerucine beetles of Banggi Island, Sabah (Coleoptera: Chrysomelidae). *Serangga* 2(2): 195-207.
- Mohamedsaid, M.S. 1999.** The Galerucinae from Taman Kinabalu, Sabah (Coleoptera: Chrysomelidae). *Serangga* 4(1): 87-145.
- Mohamedsaid, M.S. 2002.** The Galerucine Beetles from Tibow Sabah (Coleoptera: Chrysomelidae). *Serangga* 5(2): 309 -314.
- Mohamedsaid, M.S. 2004.** Catalogue of the Malaysian Chrysomelidae (Insecta: Coleoptera). Pensoft Publishers, Sofia, Bulgaria.
- Phillipps, A. 2002.** *Secrets of the Lost World. Sabah's Maliau Basin*. Kota Kinabalu: Yayasan Sabah/ Innoprise Corporation Sdn. Bhd.
- Reid, C.A.M. 1997.** Chrysomelidae from Kalimantan (Borneo) in the Museum of Zoology, Bogor, Indonesia. *Serangga* 2(1): 29-47.
- Stork, N.E. 1986.** An annotated checklist of the Carabidae (including Cicindelinae, Rhysodinae and Paussinae) recorded from Borneo. Dept. of Entomology, British Museum (Natural History), London.
- Tung, V.W. 1983.** Common Malaysian Beetles. Kuala Lumpur: Longman.