

<https://doi.org/10.17576/serangga-2023-2803-10>

A CHECKLIST OF BEETLES (ORDER: COLEOPTERA) FROM SARIKEI, SARAWAK, MALAYSIA

Siti Nurlydia Sazali^{1*}, Tan Wei Lim¹, Nurfarida Anum Zainaddin¹,
Zulrafie Hambri¹, Annette Aurelia Molujin¹, Farah Nabillah Abu Hasan Aidil Fitri¹,
Ratnawati Hazali¹ & Nuha Loling Othman²

¹Faculty of Resource Science and Technology,
Universiti Malaysia Sarawak,

94300 Kota Samarahan, Sarawak, Malaysia

²Faculty of Computer Science and Information Technology,
Universiti Malaysia Sarawak,

94300 Kota Samarahan, Sarawak, Malaysia

*Corresponding author: ssnurlydia@unimas.my

Received: 7 February 2023; Accepted: 4 July 2023

ABSTRACT

A biodiversity survey to document assemblages of beetles was conducted at Sarikei town, Sarawak, Malaysia from 28th August 2021 to 5th September 2021. A combination of active (hand-picking and aerial netting) and passive (modified Pennsylvanian light trap, baited trap and flight-intercept trap) methods were used during the eight days of sampling, covering areas of mixed dipterocarp forest, mangroves and a recreational park. As a result, a total of 440 individuals, representing 146 species from 49 subfamilies and 23 families of beetles were successfully recorded. In general, Scarabaeidae was reported as the most diverse and abundant family with 46 species (31.51%), followed by Tenebrionidae with 15 species (10.27%), Chrysomelidae with 13 species (8.90%), Carabidae with 12 species (8.22%), and Elateridae (7.53%) with 11 species, respectively. In terms of individual count, the most dominant species was recorded by the scarab beetles of *Apogonia destructor* (Melolonthinae) with 32 individuals (7.27%). In conclusion, this study provides baseline data for identifying potential biodiversity hotspot areas for future management and conservation action plans in Sarawak.

Keywords: Insect, species assemblages, diversity, relative abundance, rapid assessment.

ABSTRAK

Tinjauan kepelbagaian biologi untuk mendokumentasikan kumpulan kumbang telah dijalankan di bandar Sarikei, Sarawak, Malaysia pada 28 Ogos 2021 hingga 5 September 2021. Gabungan kaedah aktif (kutip dan jaring udara) dan pasif (perangkap cahaya Pennsylvanian diubahsuai, perangkap berumpan dan perangkap perentas-terbang) telah digunakan semasa lapan hari persampelan, merangkumi kawasan hutan dipterokarpa campuran, hutan bakau dan taman rekreasi. Hasilnya, sebanyak 440 individu yang mewakili 146 spesies daripada 49 subfamili dan 23 famili kumbang berjaya direkodkan. Secara umumnya, Scarabaeidae merupakan famili yang paling pelbagai dan dominan dengan merekodkan 46 spesies (31.51%), diikuti masing-

masing oleh Tenebrionidae dengan 15 spesies (10.27%), Chrysomelidae dengan 13 spesies (8.90%), Carabidae dengan 12 spesies (8.22%) dan Elateridae (7.53%) dengan 11 spesies. Berdasarkan bilangan individu, spesies yang paling dominan direkodkan oleh kumbang najis *Apogonia destructor* (Melolonthinae) dengan 32 individu (7.27%). Kesimpulannya, kajian ini menyediakan data asas bagi mengenal pasti kawasan khas kepelbagaian biologi yang berpotensi untuk pengurusan dan pelan tindakan pemuliharaan di Sarawak pada masa hadapan.

Kata kunci: Serangga, himpunan spesies, kepelbagaian, kelimpahan relatif, penilaian pantas.

INTRODUCTION

Sarawak is one of the Malaysian states situated in Borneo, the third largest island in the world (Hon & Shibata 2013; MacKinnon et al. 1996). It is a megadiversity hotspot that accommodates various forest types, including mixed dipterocarp, mangrove, peat swamp, montane, limestone and heath forests (Hazebrook & Abang Morshidi 2000). With such diverse ecosystems, Sarawak has been reported to host more than 277 mammalian species, 673 bird species, 400 freshwater fishes, 200 species of herpetofauna and at least 15,000 species of flowering plants (Chong et al. 2018). Meanwhile, Hill and Abang (2005) reported a total of 29 orders of class Insecta, representing at least 51,530 identified insect species in Borneo.

However, current practices on biodiversity conservation especially in Sarawak are more focused on protecting charismatic, vulnerable, and/or endangered vertebrates of mammals and birds. Although conservation efforts are beneficial to protect the whole habitats or surroundings of targeted animals, the negligence in studying invertebrates especially insects were becoming apparent, not only due to the lack of recent biodiversity research but also due to the shortage of entomologists and taxonomists. Hence, the taxonomic impediment resulting from the shortage of expert taxonomists and gaps in taxonomic knowledge (Valan 2021) has significantly affected the biodiversity inventory that should be updated accurately and regularly. This consequently caused an imbalance in ecological studies at this state where vertebrates received much attention from experts, whereas the number of invertebrate research is still limited.

Under the class Insecta, beetles (order Coleoptera) represent the largest order of insects about 40% of all arthropods (Grove & Stork 2000) and approximately 30% of the kingdom Animalia (Choate 2008). Due to their high diversity and wide distribution, almost two-thirds of beetles were still waiting for formal description which resulted from the taxonomic impediment in species identification (Gibb et al. 2016; Magura 2017). However, at some local institutions or biological museums, well-organised curatorial works were greatly showcased where local entomologists successfully presented a systematic access and informative reference to biological samples. Thus, a collaborative engagement should be initiated by our local researchers to enable database sharing which could be advantageous in enhancing ecological studies of insects in Malaysia.

Though ecological studies are rapidly conducted at the regional scale (Damken et al. 2017; Goh 2014; Goh & Hashim 2018; Luqman et al. 2018; Musthafa et al. 2019; Noerdjito 2008; Seow-En & Lui 2022), fundamental knowledge on beetle diversity as well as phylogenetic and evolutionary history studies are still very much lacking (Chen et al. 2019; Jusoh et al. 2020; Sazali et al. 2021) especially in Sarawak. As the research gap on beetle studies remains, it is noted that there were recent studies conducted at local scale to document beetle species in Sarawak and Sabah, respectively (Abin et al. 2021; Marcellinus et al. 2020, 2022; Sazali et al. 2021). These initiatives indicated that beetle studies are becoming the subject of