

A COMPARATIVE STUDY OF SMALL MAMMAL
DIVERSITY OF OIL PALM PLANTATION
AND NEARBY FOREST

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DISSERTATION SUBMITTED IN FULFILMENT OF
THE REQUIREMENT FOR THE DEGREE OF
MASTER OF SCIENCE

INSTITUTE OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE
UNIVERSITY OF MALAYA
KUALA LUMPUR

2014

UNIVERSITI MALAYA

ORIGINAL LITERARY WORK DECLARATION

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ABSTRACT

Large areas of tropical forests around the world were critically converted into agricultural areas especially oil palm plantation and for other human activities. Malaysia is one of the leaders in oil palm production and conversion of natural ecosystems into agricultural area gives an impact to the local biodiversity. This study aims to compare the diversity and abundance of small mammal species in two different habitats; forested habitat and oil palm plantation in Pahang, Malaysia. The study also intends to investigate the effects of forest edge distances (i.e. adjacent, intermediate, and interior forests) and various ages of oil palm plantation (i.e. young, mature, and old) on small mammal communities. Mist-netting, harp-trapping and cage trapping techniques were applied in all study areas from March 2010 until June 2012. A total of 1125 individuals of non-volant small mammals belonging to 22 species and 4 families were captured. The species richness and diversity of non-volant small mammals were significantly higher in the forested habitat than in oil palm plantation but no significant difference for oil palm ages. Species richness of non-volant small mammals was higher in the adjacent forest than intermediate and interior forests. Malayan Wood Rat (*Rattus tiomanicus*) dominated oil palm plantation habitat while Bowers's Rat (*Berylmys bowersi*) was only found in the intermediate forest. Meanwhile, a total of 526 individuals of volant small mammals belonging to 36 species and 5 families were captured which revealed significant higher number in the forest habitat contrast to the oil palm plantation. There were predominated by common species such as Horsfield's Fruit Bat (*Cynopterus horsfieldi*) and Short-nosed Fruit Bat (*Cynopterus brachyotis*) in the oil palm plantation. This study concluded that habitat types are important in determining the occurrences and composition of small mammals. A complex vegetation structure such as forested areas provided increased microhabitat and availability of food resources compared to oil

palm plantation. Thus, proposed in order to promote biodiversity within oil palm landscape the biodiversity outcomes to retain remaining patches of forest within and around the oil palm plantation. The work would assist efforts for conservation strategies and ensuring sustainable management of plantations.

ABSTRAK

Sebahagian besar kawasan hutan tropika di seluruh dunia ketika ini sedang ditukarkan kepada kawasan pertanian terutamanya tanaman kelapa sawit dan juga aktiviti manusia yang lain. Malaysia merupakan salah satu pengeluar utama minyak kelapa sawit dan pertukaran ekosistem semulajadi kepada kawasan pertanian telah memberi kesan kepada biodiversiti. Kajian ini menumpukan kepada perbezaan kepelbagaian dan kelimpahan spesis mamalia kecil di dua habitat yang berbeza; habitat hutan dan dikawasan tanaman kelapa sawit di Pahang, Malaysia. Kajian ini juga bertujuan melihat kesan jarak pinggir hutan yang berbeza (i.e. hutan pinggir, pertengahan dan dalam) keatas komuniti mamalia kecil dan perbezaan umur pokok kelapa sawit (i.e. pokok muda, matang dan tua) keatas komuniti mamalia kecil. Jaring kabus, perangkap harp dan perangkap besi digunakan ketika kajian ini bermula pada bulan Mac 2010 sehingga Jun 2012. Sebanyak 1125 individu mamalia kecil bukan volan terdiri daripada 22 spesis dan 4 keluarga ditangkap. Kekayaan spesis dan kepelbagaian mamalia bukan volan secara signifikansi lebih tinggi di kawasan hutan berbanding di kawasan kelapa sawit, tetapi tidak berbeza secara signifikansi untuk kawasan umur kelapa sawit yang berbeza. Kekayaan spesis mamalia kecil bukan volan adalah lebih tinggi di kawasan pinggir hutan berbanding di kawasan pertengahan dan kawasan dalam hutan. Tikus Kayu Malaya (*Rattus tiomanicus*) menguasai habitat kelapa sawit, manakala Tikus Bower's (*Berylmys bowersi*) hanya direkodkan di kawasan pertengahan hutan. Bagi haiwan mamalia kecil volan, sebanyak 526 individu terdiri daripada 36 spesis dan 5 keluarga telah direkodkan, menunjukkan perbezaan signifikansi, lebih banyak dijumpai di habitat hutan berbanding di kawasan kelapa sawit. Ini telah didominasi oleh spesis yang biasa dijumpai seperti Kelawar Buah Horsfield's (*Cynopterus horsfieldi*) dan Kelawar Buah Hidung Pendek (*Cynopterus brachyotis*) direkodkan di kawasan kelapa sawit. Kajian ini

merumuskan bahawa jenis habitat adalah penting dalam menentukan kehadiran dan komposisi mamalia kecil. Struktur vegetasi kompleks seperti di habitat hutan telah menyediakan habitat mikro dan kewujudan sumber makanan berbanding di kawasan kelapa sawit. Untuk menambah baik biodiversiti di kawasan kelapa sawit adalah dengan mengekalkan kawasan hutan disekitar ladang kelapa sawit. Maklumat ini berguna untuk strategi konservasi dan memastikan pengurusan yang mampan di ladang kelapa sawit.

ACKNOWLEDGEMENT

Praise to ALLAH.

First and foremost, I offer my sincerest gratitude to my supervisor, Associate Prof. Dr. Rosli Ramli, who has supported me throughout my thesis with his patience and knowledge. I would like to express the deepest appreciation to all staff from the Institute of Biological Sciences, that always help me during my sampling work. Special thank also to staff of FELDA at Kota Gelanggi 5 and Lepar Utara 11 for helping me during my field sampling. I would like to show my greatest appreciation to all my lab mates for help and support. Finally, I thank my parents for supporting me throughout all my studies at University. Thank you.

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