DIVERSITY OF UNDERSTOREY RESIDENCE BIRD IN RECENTLY DISTURBED AND REGENERATED FOREST IN PENINSULAR MALAYSIA

ZUBAIDAH YA'COB

FACULTY OF SCIENCE
UNIVERSITY OF MALAYA
KUALA LUMPUR

2012

DIVERSITY OF UNDERSTOREY RESIDENCE BIRD IN RECENTLY DISTURBED AND REGENERATED FOREST IN PENINSULAR MALAYSIA

ZUBAIDAH YA'COB

THESIS SUBMITTED IN FULFILLMENT OF
THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE

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

2012

ABSTRACT

The understanding of the relationship between avian community structure and environmental/ecological change has become the priority for biodiversity conservation processes and predicting the environmental health. Microhabitat change due to logging is one of the components that affects the species composition in the forest understorey. Forest regeneration allows the recovery of understorey bird species to almost as unlogged forest. However, the process generally will take a long period. The aim of this study is to document diversity and composition of understorey bird species inhabiting two forests of about 30 and 50 years after logging. Mist-netting technique was applied in both study areas during twelve visits from January to December 2007. A total of 1423 birds, belonging to 108 species (24 families) were trapped. Of this, 1043 individuals (from 100 species and 24 families) were recorded in the 30 years-old forest and 380 individuals (from 54 species and 15 families) were trapped in the 50 years-old regenerated forest. Species similarity between both regenerated forests was less than 50%. The family Pycnonotidae and Nectariniidae formed considerable proportion (>50%) of total species captured in both areas. Several primary forest babblers such as Short-tailed Babbler (*Malacocincla malaccensis*) and Black capped Babbler (*Pollerneum capistratum*) was abundantly caught and had successfully recolonized both forests. This could be due to the presence of undisturbed forest patches that was left untouched during logging activity and the restoration/regeneration process to a well develop canopy and sparse ground cover. Although considered as species that is sensitive to disturbance, several species of woodpeckers were also recorded in both regenerated forests. Some upper strata specialist such as Black and Yellow Broadbill (*Eurylaimus ochromalus*), Dark throated Oriole (*Oriolus xanthonotus*) and Crested Jay (*Platylophus galericulatus*) were captured by mist-nets indicating that the birds were

foraging at lower strata, perhaps due to more food resources at lower strata. The presence of 23 nearly threatened species and two vulnerable species (Brown chested Jungle Flycatcher, *Rhinomyias brunneata* and Blue banded Kingfisher, *Alcedo euryzona*) in both study areas indicates that the reserves possess valuable resources for survival of critical species even after original forest structure was disturbed by logging activity.

ABSTRAK

Memahami perhubungan antara struktur komuniti burung dan perubahan alam sekitar/ekologi telah menjadi keutamaan dalam proses pemuliharaan biodiversiti dan dalam meramalkan kesihatan alam sekitar. Perubahan habitat mikro disebabkan oleh aktiviti pembalakan merupakan komponen yang mempengaruhi komposisi spesies burung bawah kanopi hutan. Sesaran hutan mengikut masa membenarkan pemulihan spesies burung menyamai spesies yang mendiami hutan asli yang tidak dibalak namun mengambil masa yang agak lama. Tujuan utama kajian ini adalah untuk merekodkan diversiti dan komposisi spesies burung bawah kanopi yang mendiami dua hutan iaitu 30 dan 50 tahun selepas dibalak. Teknik jaring kabut telah digunakan di kedua-dua kawasan kajian untuk merekodkan diversiti burung dalam dua belas lawatan dari Januari hingga Disember 2007. Sejumlah 1432 ekor burung tergolong ke dalam 108 spesies (24 famili) telah ditangkap. Daripada jumlah tersebut, 1043 individu (daripada 120 spesies dan 24 famili) telah direkodkan di hutan 30 tahun selepas dibalak dan sebanyak 380 individu (daripada 54 spesies dan 15 famili) pula ditangkap di hutan 50 tahun selepas dibalak. Nilai kesamaan spesies burung bagi kedua-dua hutan kajian adalah kurang daripada 50%. Spesies burung dari famili Pycnonotidae dan Nectariniidae adalah yang paling banyak ditangkap dikedua-dua hutan (>50%). Beberapa spesies burung hutan primer seperti Rimba ekor pendek (*Trichastoma malaccense*) dan Rimba kepala hitam (*Pellorneum capistratum*) juga banyak ditangkap dan telah berjaya menguasai kedua-dua hutan. Ini kemungkinan disebabkan kehadiran kawasan hutan yang tidak diganggu atau kawasan yang mengalami gangguan yang minima semasa aktiviti pembalakan berserta dengan pemulihan hutan kepada pembentukan kanopi dan lantai hutan yang mempunyai vegetasi yang minima. Walaupun dianggap spesies yang sensitif terhadap gangguan,

beberapa spesies belatuk juga direkodkan di kedua-dua kawasan kajian. Beberapa spesies yang biasanya mendiami strata atasan seperti Takau kasturi (*Eurylaimus ochromalus*), Burung kunyit bercoreng (*Oriolus xanthonotus*) dan Burung menjerit (*Platylophus galericulatus*) juga telah ditangkap menggunakan jaring kabut, menunjukkan spesies tersebut menggunakan lapisan strata bawahan untuk mencari makanan. Ini kemungkinan disebabkan terdapat banyak makanan di strata bawahan. Kehadiran 23 spesies hampir terancam dan dua spesies terancam (Sambar Hutan, *Rhinomyias brunneata* and Binti-Binti Besar, *Alcedo euryzona)* di kedua-dua kawasan kajian menunjukkan hutan simpan tersebut mempunyai sumber yang masih bernilai untuk kemandirian species kritikal walaupun selepas mengalami gangguan teruk dari aktiviti pembalakan.

ACKNOWLEDGEMENTS

Alhamdulillah…praise to God that I managed to complete this thesis as it had been a long journey for me. Behind this successful project there are many people who have contributed and working together to provide meaningful information.

I thank my supervisor Associate Professor Dr. Rosli bin Ramli for his advice, ideas and guidance in designing and implementing this project. Under his guidance (especially in the field and during data gathering), I have become stronger and able to continue this project/study even though it really tested my patience as it push me to the limit all the times.

I also thank Professor Dato' Dr. Mohd Sofian Azirun (Dean of Faculty of Science) for his continuous support either in the field or in contributing his knowledge and guidance to ensure the sampling process goes well.

I also dedicated my thank and appreciation to Professor Dr. Rosli Hashim (Head of Institute of Biological Sciences) for his generous ideas, support and knowledge in order to run this project. My thank also goes to him for allowing me and my team members to stay at PPLUM during the sampling sessions.

Many thanks also goes to Institute of Biological Sciences staffs for logistics support, especially during travelling, sleeping in camp and staying deep inside the forest. Special thank is dedicated to Mr. Fadzlee, Mr. Muhaiyidin, Mr. Ngadiran, Mr Haji Mokhtar, Mr. Anuar, Mr. Izwan, Mr Salleh, and Mr. Rosli Idris.

I also would like to thank PPLUM staffs for their involvement and cooperation. This sincere gratitude is dedicated to Mr. Sharani, Mr. Marisi, Mr. Ismaili, Mr. Husni, Mr. Norliends, Mr. Mat Karim, and Mr. Ahmad Uda.

This project can not be completed without the support from drivers of Institute of Biological Sciences. Many thank and appreciation to Mr. Azhar, Mr. Nizam, Mr. Farizwan, Mr. Fauzi and Mr. Zaidee.

I also would like to thank my parents for their prayers, emotional support and understanding. Their firm belief that I could accomplish anything I set in my mind was a tremendous asset for me especially during tougher parts of the project and when being far from them. Finally, I thank my husband, Mr. Azhar Jamil, who had showed high degree of tolerance and never give up from being a supportive husband and friend to me.

Thank you to all.

TABLE OF CONTENTS

4. MATERIALS AND METHODS

5. RESULTS

LIST OF FIGURES

LIST OF TABLES