THE RELATIONSHIP BETWEEN THE PHYSICAL CHARACTERISTICS' BIOMASS ESTIMATION AND SOIL ORGANIC MATTER AT TWO MANGROVE ZONES

SYLVIANA CHELENGGA ANAK WILLIAM ANGGONG

Final Year Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
In the Faculty of Applied Sciences
Universiti Teknologi MARA

JULY 2019

ACKNOWLEDGEMENTS

Upon completion of this project, I would like to express my gratitude to many parties. My heartfelt thanks goes to my supervisor, Dr. Patricia Natin. Without her assistance and guidance in every step throughout the process of completing this final year project, this report would have never been accomplished. I would like to thank her very much for being understanding and supporting me.

I wish to express my sincere thanks to Mr. Ajimi Jawan, project coordinator for his guidance and support to complete my project. I am also grateful to Mr. Mohd Ruzaleh, the coordinator of Kompleks Makmal Sains dan Agroteknologi (KOMSAT) and to the laboratory assistant staffs of KOMSAT for providing the facilities and apparatus to conduct my experiment.

I take this opportunity to express gratitude to Mr. Mohd. Nurazmeel and the staffs at Kota Kinabalu Wetland Ramsar site for giving me opportunities to conduct my fieldwork at the mangroves.

Finally, I would like to express my gratitude to my parents for providing me with support and continuous encouragement throughout my years of study and through the process of researching and writing this final year project. This accomplishment would not have been possible without them.

Sylviana Chelengga Anak William Anggong

TABLE OF CONTENTS

ABSTRACT

THE RELATIONSHIP BETWEEN THE PHYSICAL CHARACTERISTICS' BIOMASS ESTIMATION AND SOIL ORGANIC MATTER AT TWO MANGROVE ZONES

The mangroves which protect the coastal area from sea erosion and marine life breeding ground are suffering from rapid degradation due to human activity such as city development and farming. The main aims of this study are to assess the physical characteristics' biomass by using allometric equation and the soil organic matter (SOM) between *Avicennia marina* and *Rhizophora mucronata* zones. Other than that, the aim is to correlate the effects of physical characteristics' biomass by using allometric equation to the soil organic matter within *A. marina* and *R. mucronata* zones. This study showed that the tree diameter at breast height (DBH), height and physical characteristics' biomass at *A. marina* zone was higher than *R. mucronata* zone ($p < 0.001$). Other than that, there was no difference in SOM between *A. marina* and *R. mucronata* zones ($p = 0.185$). The SOM has no effect on the tree physical characteristics' biomass within both mangrove zones (*A. marina* zone, $p = 0.414$; *R. mucronata* zone, $p = 0.859$). In conclusion, physical characteristics' biomass estimation does not affect the soil organic matter within both mangrove zones. Further studies can be conducted to inspect another aspect in nutrient cycles of mangroves such as mangrove trees age, leaf area index (LAI) and litterfall to see whether it can affect SOM.