UNIVERSITI TEKNOLOGI MARA

EDAPHIC INFLUENCE
ON TREE SPECIES COMPOSITION
AND COMMUNITY STRUCTURE
AT BUKIT LAGONG FOREST
RESERVE, SELANGOR

NURUL ZAWANI BINTI ZOLKFILEE

MSc

August 2021

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.
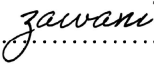
Name of Student : Nurul Zawani binti Zolkfilee

Student I.D. No. : 2019483448

Programme : Master of Science (Applied Biology) – AS730

Faculty : Applied Sciences

Thesis Title : Edaphic Influence On Tree Species Composition and Community Structure at Bukit Lagong Forest Reserve, Selangor

Signature of Student : *zawani* …………………………………..

Date : August 2021

ABSTRACT

Bukit Lagong Forest Reserve was categorized as a hill dipterocarp forest with a total area of 3624.1 hectares. Quarrying activities were significant in Bukit Lagong Forest Reserve from 20 years ago and was expected to continue until 2027 while logging activites were acted during the last 1960s which led to the lacking of tree species composition. A study was conducted to determine the community structure of tree species in relation to edaphic factors at Bukit Lagong Forest Reserve, Selangor. Tree communities and soil samplings were carried out in 14 study plots (25 m x 20 m) established within 0.7 hectares. All trees with a diameter at breast height of 5 cm and above were measured, identified and recorded. Soil samples were collected and analysed for physical and chemical propertis. Relationship between tree species and soil factors were determined by using Redundancy Analysis (RDA). A total of 25 families, 47 genera and 53 species were enumerated from 448 individuals. The Dipterocarpaceae was the most speciose family with six recorded species. Density wise, family of Lauraceae recorded the highest density of 107 individuals per ha, whilst at species level, *Syzygium* sp. showed the highest density of 87 individuals per ha. Euphorbiaceae and *Endospermum diadenum* recorded the highest frequency of family and species level respectively which both of them were appeared in 13 out of 14 plots. The total basal area (BA) recorded was 36.02 m^2/ha in which Dipterocarpaceae contributed the highest value at 8.02 m^2/ha, whilst *Endospermum diadenum* showed the highest basal area with 4.51 m^2/ha at the species level. Dipterocarpaceae and *Syzygium* sp. were the most important family and species with an Important Value Index of 13.11 % and 8.79 % respectively. The Shannon-Weiner diversity (H') index of the tree community showed a value of 3.41 (H'max = 3.97), Evenness Index of 0.57 and Margalef Richness Index (R') of 8.52. The total biomass recorded was 525.20 t/ha in which 455.24 t/ha was contributed by above ground biomass and 69.96 t/ha from below ground biomass. Sandy loam texture was dominated 64.29 % of the area, whilst organic matter content range from 3.53 % to 5.71 % with a pH value of 4.69 ± 0.35. Environmental factors such as soil pH, cation exchange capacity (CEC) and available nutrients are closely associated with several tree species in the study plots as shown by the ordination diagram from Redundancy Analysis (RDA). In overall, the results of this study show that the forest is composed of diverse tree communities and moderate species richness in which justifying conservation action in this forest.

ACKNOWLEDGEMENT

TABLE OF CONTENTS