A PHYTOSOCIOLOGICAL STUDY OF EXBUCKLANDIA POPULNEA SPECIES AND ITS COMMUNITIES AT HIGHLAND FORESTS OF CAMERON HIGHLAND

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FH 2018 126

A PHYTOSOCIOLOGICAL STUDY OF *EXBUCKLANDIA POPULNEA* SPECIES AND ITS COMMUNITIES AT HIGHLAND FORESTS OF CAMERON HIGHLAND

By

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A project report submitted in partial fulfillment of the requirement for the of

Bachelor of Forestry of Forest Science in

Faculty of Forestry

Universiti Putra Malaysia

2018

SPECIAL DEDICATION

In the name of ALLAH, the most benevolent and the most merciful

Beloved family:

MY FATHER NGALIMAN BIN MOHAYAN,

MY MOTHER CHE ROHANA BT CHE MAT,

MY BROTHERS MOHAMAD PAZLIN, MOHAMAD PAIZUL,

MY SISTER YANA ASMIDA

The most special:

NUR NABILAH BT MUHAMMAD,

ALSO ALL MY BEST FRIENDS,

For the encouragement, inspirations, understanding and constant prayer throughout to course of my study in Universiti Putra Malaysia.

May ALLAH the Almighty bless them all

Love You All Very Much

ABSTRACT

Phytosociology includes plant communities within the same environment, their floristic composition and development, and the social relationship between them. The information of the distribution of species as well as associations between species or groups of species could be achieved from a phytosociological study, which could lead to an important assessment of the vegetation. A vegetation study was carried out at Sg. Terla and Mentigi Forest Reserved, Cameron Highland, Pahang. The study area been describe as montane forest with attitude 1200m and above. A total of ten plots was established in this study area with size of five meters. The study including the canopy structure, species composition and richness. The phytosociological vegetation study was done followed the Braun Blanquet method (1964) and Fujiwara (1987). Result of the study shows 33 species belong to 29 genera and 23 families were found in study area. The most abundant family was Hamamelidaceae with 39 individual trees, and represent by one species in one genera namely *Exbucklandia populnea.* In addition, there was five species that was represent with only one individual in the study plots, namely, *Daemonorops sp., Ficus benjamina, Licuala sp., Rutaceae sp., and Zyngiber sp.*.With the least number of species and individual, this species is considered as the most uncommon species (rare) within the study plots. The species communities in this area that have been identified is *Lithocarpus rassa - Syzygium cerinum* community and the second is *Selaginella willdenowii - Helminthostachys zeylanica* community. The different from this two communities that can be obtain is based on the slope of the area and the altitude. Indirectly, from the data that been obtain, less super tree have been found in the study area, which is because the plant in the montane forest have been adaptation to the surrounding habitats.

ABSTRAK

Phytososiologi merangkumi komuniti tumbuhan dalam persekitaran yang sama, komposisi dan perkembangan bunga, dan hubungan sosial di antara mereka. Maklumat mengenai taburan spesis serta hubungkait antara spesies atau kumpulan spesis boleh dicapai dari kajian phytososiologi, yang boleh menyebabkan penilaian penting terhadap tumbuhan. Kajian tumbuhan dijalankan di Hutan Simpan Sg. Terla dan Mentigi, Cameron Highland, Pahang. Kawasan kajian telah digambarkan sebagai hutan gunung dengan paras 1200m dan ke atas. Sebanyak sepuluh plot telah dibina di kawasan kajian ini dengan saiz lima meter. Kajian ini termasuk struktur kanopi, komposisi spesies dan kekayaan. Kajian tumbuhan phytosociological telah dilakukan mengikuti kaedah Braun Blanquet (1964) dan Fujiwara (1987). Keputusan kajian menunjukkan 33 spesies milik 29 genera dan 23 famili ditemui di kawasan kajian. Famili yang paling banyak adalah Hamamelidaceae dengan 39 pokok individu, dan diwakili oleh satu spesies dalam satu genera iaitu *Exbucklandia populnea*. Di samping itu, terdapat lima spesies yang diwakili hanya satu individu dalam plot kajian iaitu Daemonorops sp., Ficus benjamina, Licuala sp., Rutaceae sp., dan Zyngiber sp. Dengan jumlah spesis dan individu yang paling sedikit, spesis ini dianggap sebagai spesies paling jarang (Rare) dalam plot kajian. Komuniti spesies di kawasan ini yang telah dikenalpasti ialah komuniti *Lithocarpus rassa - Syzygium cerinum* dan yang kedua ialah komuniti *Selaginella willdenowii - Helminthostachys zeylanica*. perbezaan yang boleh diperolehi dari kedua komuniti ini adalah berdasarkan pada cerun kawasan dan altitudnya. Secara tidak langsung, dari data yang diperoleh, pokok besar kurang dijumpai di kawasan kajian, yang mungkin disebabkan oleh tumbuhan di hutan gunung telah menyesuaikan diri dengan habitat di sekelilingnya.

ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledgement and extend my deepest gratitude to my supervisors, Assoc. Prof. Dr. Mohamad Azani Bin Alias and Assoc. Prof. Dr. Zaki Bin Hamzah for their guidance and encouragement. Acknowledge is also made to Dean Faculty of Forestry, Universiti Putra Malaysia.

I would also like to thanks to Forestry Department of Penisular Malaysia (JPSM) especially Forest District Officer of Cameron Highland and district of Raub gave their support and gain their helps during the study at Cameron Highland, Pahang.

Last but not least, I would like to thank my project members, especially to Haziq Syahmi Bin Rohaizat and Razlan Haniff Bin Jemali during data collection through the course of this study. Thanks also to my fellow friends especially Nur Nabilah Binti Muhammad, for their patience and support, and to all those who are not mentioned but helped in ensuring the completion of this study.

APPROVAL SHEET

I certify that this research project report entitled “A Phytosociological Study Of *Exbucklandia Populnea* Species And Its Communities At Highland Forests Of Cameron Highland” by Mohamad Pazlan Bin Ngaliman has been examined and approved as a partial fulfillment of the requirements for the Degree of Bachelor of Forestry Science in the Faculty of Forestry, Universiti Putra Malaysia.

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CHAPTER 1

INTRODUCTION

1.1 General Background

Phytosociology includes plant communities within the same environment, their floristic composition and development, and the social relationship between them. The information of the distribution of species as well as associations between species or groups of species could be achieved from a phytosociological study, which could lead to an important assessment of the vegetation (Frenedozo-Soave, 2003). Phytosociology is a data that represent integrated units in vegetation systems which provides a very useful basic data ecology, geography, landscape science, conservation and environmental science (Fujiwara, 1987).

According to Enright and Nunez (2013), the classification of vegetation into associations based on floristic composition and the identification of characteristics species is pioneered by Braun-Blanquet. The vegetation science community is becoming a globalized one, thus, the advantages and problem related with the phytosociological approach to vegetation analysis pioneered by Braun-Blanquet will unavoidably continue to be reviewed many times.

The restoration of forest biodiversity in degraded parts of the mountains as well as *in situ* biodiversity conservation are contributed by the understanding of plant community dynamics and species associations as influenced by varying environmental factors (Munishi *et al*.,2007). The long term management of natural resources is contributed by the classification of natural ecosystems into potential plant communities and habitat types (Khan *et al*.,2011). Natural plant communities and biodiversity can be protected by phytosociological studies, and the changes experienced in the past and in the future can be understood with phytosociological studies too (Saglam, 2013)

Many significant studies which involve the floristic composition and diversity of the tropical rainforest in Malaysia have been conducted many years ago. However, those studies did not focus on the social relationship between the plant communities in the tropical forest of Malaysia. The Braun-blanquet method used in this study will provide detail information on the floristic composition of the forest area together with the social relationship of the plants involved.

The principal plant used in this study is *Exbucklandia populnea*, known as *Gerok* is a genus of flowering plants in the family Hamamelidaceae (Peter, 1993). They are medium to large trees whose natural range is from eastern India through

southern China and southward through the Malay Peninsula (Jingyu Wu et al. ,2009). In India and China, they are widely cultivated for their impressive foliage and valuable lumber. A few have been grown in the southern most parts of the United States (Arthur, 2009). To speakers of English, *Gerok* is generally known as the Pipli tree, from the Bengali name.

This species are early successional tree of tropical montane forest. *Exbucklandia populnea* are usually 16 to 20 meters in height, occasionally reaching 30 meters. The largest known individual *of Gerok* grew to 45 meters (Robert, 1984). The leave are attractively reddish when immature. They are arranged alternately on the stems, an arrangement unusual for Hamamelidaceae (Peter, 1993).

Most of the studies were done on dipterocarp species but on non-dipterocarp species such *Gerok* itself. Thus, the strength of this study is on its focus on the phytosociological studies of *Gerok* and its communities from an undisturbed area in Malaysia. Currently, research on the phytosociology of *Exbucklandia populnea* such as detailed studies on its floristic aspects and its plant community level is literally unknown. Furthermore, the knowledge on biological diversity and ecological functions gained from this phytosociological study will assist in

developing the mass planning of *Gerok* and its plant communities and indirectly could contributed to the conservation effort.

1.2 Problem Statement

Each plots that have been chooses have a different parameter that will affect the patterns of community. This is because this parameter takes a big roles in community such as light intensity, humidity, soil, slope, altitude and etc. The communities in plot may affect the growth of *Exbuclandia populnea* because this species are light demanded species that need light more than a shades, so if the surrounding of the tree species is a tree that with bigger crown, it maybe will affect the growth of the study species.

1.3 Research Objective

The general objective of this study is to know the association of vegetation related to *Exbuclandia populnea* in Mentigi and Sg. Terla Forest Reserve in Cameron Highland, Pahang.

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