



***PERCEPTIONS AMONG LOCAL COMMUNITY ON CONSERVATION OF
NON-TIMBER FOREST PRODUCTS (NTFPs) IN CAMERON HIGHLANDS,
PAHANG***

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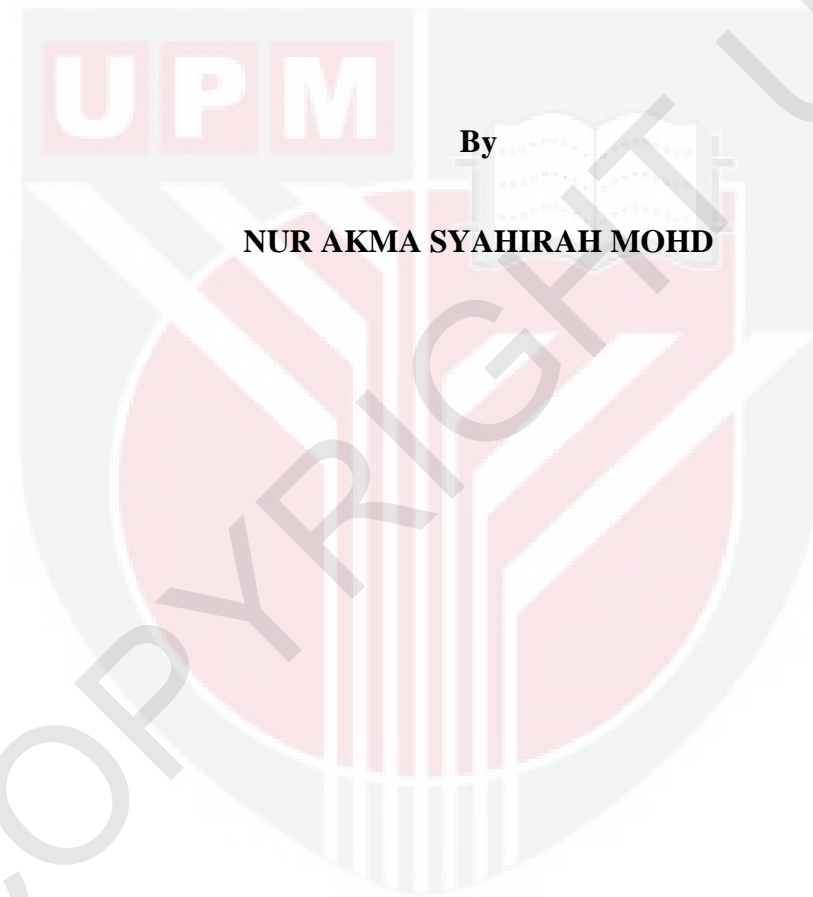
Universiti Putra Malaysia

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NON-TIMBER FOREST PRODUCTS (NTFPs) IN CAMERON HIGHLANDS,
PAHANG**

By

NUR AKMA SYAHIRAH MOHD



**A Project Report Submitted In Partial Fulfilment Of The
Requirements for the Degree of Bachelor Of Forestry Science In The
Faculty of Forestry, Universiti Putra Malaysia**

2019

Specially Dedicated to:

MY PARENTS & FAMILY

MOHD HARUN & ROHANA ZAKARIA & MY SIBLINGS

MY SUPERVISOR

DR. DIANA EMANG

MY FRIENDS

With a grateful appreciation on their never-ending pray, encouragements, love,
inspiration and moral support.

A million thanks to all of you and May ALLAH THE ALMIGHTY bless us always
never ends.

In Shaa Allah.

ABSTRACT

Non-timber forest products (NTFP) represent vital sources of cash and subsistence income for millions of rural and indigenous peoples living in tropical developing countries throughout the world. The objectives of this study were to determine perceptions of the local community on the environmental issue affecting the sustainability of the NTFPs and to identify the socio-demographic factors causing differences in the opinion on appropriate conservation measures that can be used to protect the viability of NTFPs in this area. The questionnaire survey was conducted to obtain the required information and to fulfil the objectives of the study. A total of 111 respondents were interviewed. The result show most of the respondents agree that NTFPs is slowly to decrease and they also decided that conservation measures need to take action. This study indicates that socio-demographic factors were influencing the perception of respondents. In overall, respondents agreed that forest clearing for the several factors gives negative impacts to the production of NTFPs.

ABSTRAK

Hasil hutan bukan kayu (NTFP) mewakili sumber pendapatan utama dan pendapatan untuk berjuta-juta penduduk pedalaman dan penduduk asli yang hidup di negara-negara tropika membangun di seluruh dunia. Objektif kajian ini adalah untuk menentukan persepsi masyarakat setempat mengenai isu alam sekitar yang memberi kesan kepada kemampanan NTFP dan untuk mengenal pasti faktor-faktor sosio-demografi yang menyebabkan perbezaan dalam persepsi mengenai langkah pemuliharaan yang sesuai yang boleh digunakan untuk melindungi kemampanan NTFP dalam kawasan ini. Tinjauan soal selidik telah dijalankan untuk mendapatkan maklumat yang diperlukan selain untuk memenuhi objektif kajian. Seramai 111 responden telah ditemuramah. Keputusan menunjukkan kebanyakan responden bersetuju bahawa NTFP telah semakin berkurangan dan mereka juga bersetuju bahawa langkah pemuliharaan perlu diambil. Kajian ini juga menunjukkan bahawa persepsi responden dipengaruhi oleh faktor-faktor sosio-demografik. Secara keseluruhan, responden bersetuju bahawa pembukaan hutan untuk beberapa faktor memberikan impak negatif kepada pengeluaran NTFPs.

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Thank you.

APPROVAL SHEET

I certify that this research project report entitled “Perception among Local Community on Conservation of Non-Timber Forest Products (NTFPs) in Cameron Highlands, Pahang” by Nur Akma Syahirah Mohd has been examined and approved as a partial fulfilment of the requirements for the degree of Bachelor of Forestry Science in the Faculty of Forestry, Universiti Putra Malaysia.

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LIST OF ABBREVIATIONS

NTFPs	Non-Timber Forest Products
SPSS	Statistical Package for Social Science
WWF	World Wide Fund for Nature
FAO	Food and Agriculture Organization
JPSM	Peninsular Malaysia Forestry Department
IUCN	International Union for Conservation of Nature

CHAPTER 1

INTRODUCTION

1.1 Background of Study

1.1.1 Forest in Cameron Highlands

Cameron Highlands is one of Malaysia's most popular hill station. It is well known for its cold weather, hill cottages and tea plantations. There were many tropical forests from the current natural scheme inside and around the district of Cameron Highlands. The distribution of the varied forest types like Lowland Dipterocarp Forest and Hill Dipterocarp Forest occur at a 100m to 300m elevation and 300m to 750m respectively like those contained in forest reserved in Ulu Telom. Upper Dipterocarp Forest happens at altitude starting from 750m to 1200 m like the forest areas at Ringlet. Lower Montane Forest occurs at 1200m to 1500m elevation vary like the forested areas near to Brinchang and Tanah Rata town whereas Upper Montane Forest happens at altitude larger than 1500m like mountain peaks and ridge-tops on Gunung Brinchang, Gunung Perdah and Gunung Irau.

Forests occupy around 50,778 HA of the Cameron Highlands district of that 76% are within the Permanent Forest Estate and also the remaining in State Land Forest (Forestry Department Of Pahang, 2001). The Permanent Forest Estate is formed from 13 permanent forest reserves (Table 3). Over the years, the forest cover change in Cameron Highlands has declined drastically owing to some activities, agriculture being the primary quill cause followed by urbanisation such as property development, infrastructure development like road construction, water system supply pipeline and so

on. For example, the two sub-catchments which is Upper Telom and Upper Bertam where much of the established locating of man encroachments activities occur. The cover measured at 95% in 1947 has now reduced to only 51% in 2003.

The forest in Cameron Highlands hosts 727 plant species of which Dicotyledon make up 53.4% of the total plant species followed by Monocotyledon and Fern and Fern Allies at 34.7% and 11.8% respectively. Over the 727 species, there were estimated 445 species are found exclusively in the highlands. While the fauna profile of Cameron Highlands denotes that a total of 56 mammals, 199 birds, 58 reptiles and 14 amphibians species have been recorded (Medway, 1983; Jeyarajasingam and Pearson, 1999; Lim *et al.*, 2002), Cameron Highlands is the refugee for several faunal species that are endemic in Peninsular Malaysia. Cameron Highlands also provide shelter to the endangered species according to the IUCN Red List of Threatened Species (Ballie *et al.*, 2004).

Table 1: Forest Reserves in District of Cameron Highlands.

FOREST RESERVES (FR)	AREA (HA)	SIGNIFICANT
Batu Gangan	914.50	Water catchment and soil protection
Bertam	1,105.60	Rich in dipterocarps
Bukit Bujang	8,578.90	Water catchment
Bukit Jerut	7,940.70	Water catchment and soil protection
G.Siku	1,060.00	Endemic and rare flora, water catchment
Mentigi	990.68	Endemic and rare floral, water catchment
Ringlet	590.00	Rare and endangered flora, water catchment
Sg. Kial	893.00	River reserve for soil protection and
Sg. Terla	1,926.70	watershed
Sg. Wi	11,417.60	Water catchment
Ulu Bertam	739.00	Rich in dipterocarps
Ulu Ichat	291.00	Endemic and rare flora, water catchment
Ulu Lemoi	2,324.00	Endemic and rare flora, water catchment
TOTAL	38,771.68	Rich in dipterocarps

Source: Forestry Department of Pahang (2001); Forestry Department of Peninsular Malaysia (2001); Economic Planning Unit (1993).

1.1.2 The Role of Forest

Forests cover 30% of the Earth's surface and contain abundant of the biological diversity found on land, and it is a safe source of the various type of flora and fauna that can be used and also contribute income to the community (Jabatan Perhutanan Semenanjung Malaysia (JPSM), 2011). Forests play a crucial role in ensuring our continued existence. They provide critical environmental services like regulating water flow into our streams or rivers and moderating climatic change. Forests also supply us with many essential items such as timber for all kinds of uses, non-timber forest products (NTFPs) such as rattan and bamboo, wild fruits such as the petai (*Parkia* sp.), durian (*Durio* sp.) and medicinal plants.

Tropical rainforests have long been recognised as one of the most productive types of forests within the world. There are only three areas in the world where tropical rainforests are found which is tropical South America, Central Africa and Southeast Asia. The rainforests of Southeast Asia are believed to be the oldest and among the most biologically diverse in the world.

Malaysia's land surface was once almost entirely covered with forest. Today, forests still cover about 59.5% of the total land area. However, deforestation is a significant concern as the country is still rapidly developing. In the 20 years from 1983 to 2003, there was a reduction of about 4.9 million hectares of forest cover in Malaysia (WWF, 2017). The shrinking is about four times the size of Singapore about an average of 250,000 hectares of forest being lost annually. Apart from deforestation, the remaining forests face threats from unsustainable logging, illegal removal of forest products and encroachment.

The importance of forests cannot be underestimated. These green giants are essential for people, climate and wildlife. That is estimated that over 2 billion people rely on forests (WWF, 2017). Forest is vital as they are home to 80% of the world's terrestrial biodiversity and they also form the source of livelihood for many different human settlements, including of local community.

Besides, 300 million people live in forests, including 60 million local people. In the past, people are 100% rely on the forest to live. They depend on the forest for the food and other uses of the forest as their beliefs for the natural spirit of every component of a forest. Even though today, local people dependence towards forest seems to decrease because of the education development and urbanisation but the forest still to be so unique for them because the forest is well connected with them and this is the life taught by their ancestors.

The role of the forest is receiving special attention in the conservation of biodiversity and ecosystem of flora and fauna. It is also part of the agricultural sector in rural areas. An essential contribution of forest resources towards sustainable development in rural areas is with economic growth, social stability and environmental education and also awareness.

1.1.3 Non-Timber Forest Products (NTFPs)

Non-timber forest products (NTFPs) is a term that encompasses biological materials used for purposes other than for commercial timber. NTFPs produced in tropical forests can be grouped into four categories (Conelly, 1985; Peters, 1990; Grundy and Campbell, 1993; Cunningham, 1996; Ayuk et al., 1999; Dovie et al., 2002): (i) fruits and seeds, with plant parts harvested mainly for fleshy fruit bodies, nuts and oil seed; (ii) plant exudates such as latex, resin and floral nectar; (iii) vegetative structures such as apical buds, bulbs, leaves, stems, barks and roots, and (iv) small stems, poles and sticks harvested for housing, fencing, fuelwood, and craft and furniture materials (e.g. carvings, stools).

NTFPs represent important sources of cash and subsistence income for millions of rural and communities that living in tropical developing countries throughout the planet. Whereas society as a whole bears the costs of losing global forest services, local populations suffer the loss of local forest services because of the agriculture, ranching and development, which often directly impacts the physical, economic, and cultural well-being of rural households (Byron and Arnold, 1999; Cavendish, 2000; Vedeld et al., 2004). Given that roughly 80% of the developing world including nearly 60 million of local people depend on non-timber forest products (NTFP) such as fruits, legumes, construction materials, and medicinal plants to meet subsistence and supplemental income needs (FAO 2005).

For the local perception, NTFPs collection by local people is allowed as it may help households cope with poverty, insufficient agricultural yields, catastrophic weather

events or other unfavourable conditions associated with high risk rural environments (Pattanayak and Sills, 2001; Shackleton and Shackleton, 2004; Takasaki et al. 2004; Paumgarten, 2005). For indigenous populations which often lack property rights, human and physical capital, financial resources and political advocacy (Nicholas 1997; FAO, 2005), NTFPs may provide a form of natural insurance to buffer against the effects of rapid rural development or political climates that have displaced them from fertile lands to marginal areas with poor soils and low productivity (Cavendish, 2000).

Restricting forest access would protect forest species and services but would cost local people whose livelihoods depend on the ability to freely appropriate NTFPs. Finally, if clearing activities are restricted access yet for hunting and gathering is allowed, then NTFPs services will continue in as long as the products themselves are not over-harvested.

The need to balance forest conversion, conservation, and rural development is particularly critical within the forested regions inhabited by Peninsular Malaysia's Orang Asli (original people; Nicholas 1997). Most local people in Peninsular Malaysia live as subsistence farmers and cash crop smallholders within remote rural settlements, and roughly 40% reside in or near forested areas (Nicholas 1997). Their economic productivity is limited by imperfect markets, as well as low levels of education, poor health and few wage-income opportunities (Nicholas 1997).

The absence of property rights exacerbates these conditions, limited land, poor soil quality and diminishing forests (Nicholas, 1997; FAO, 2005; Howell et al., 2005). So,

because of the situation above, the conservation of forest for sustainability of NTFPs is needed to prevent this source from becoming extinct in the future. Furthermore, NTFPs is the primary source for the local community to survive and also because of their tradition. The conservation is needed to be applied as to make our forest sustain and it can provide more benefits for the human especially.



1.2 Problem Statement

Forest is a significant place for local communities as they significantly depend on the forest for their living. Local communities that live surround the forest or in the forest are depends on its, and they generate household income by selling forest products. Also, more than 25% of the world populations rely on forest resources for their livelihood (World Bank, 2001). Local communities in Cameron Highlands are still relying on the forest for their life although many of them are involved in many sectors especially tourism sectors, their tradition still is practised as they do not want their culture disappeared because of the rapid development.

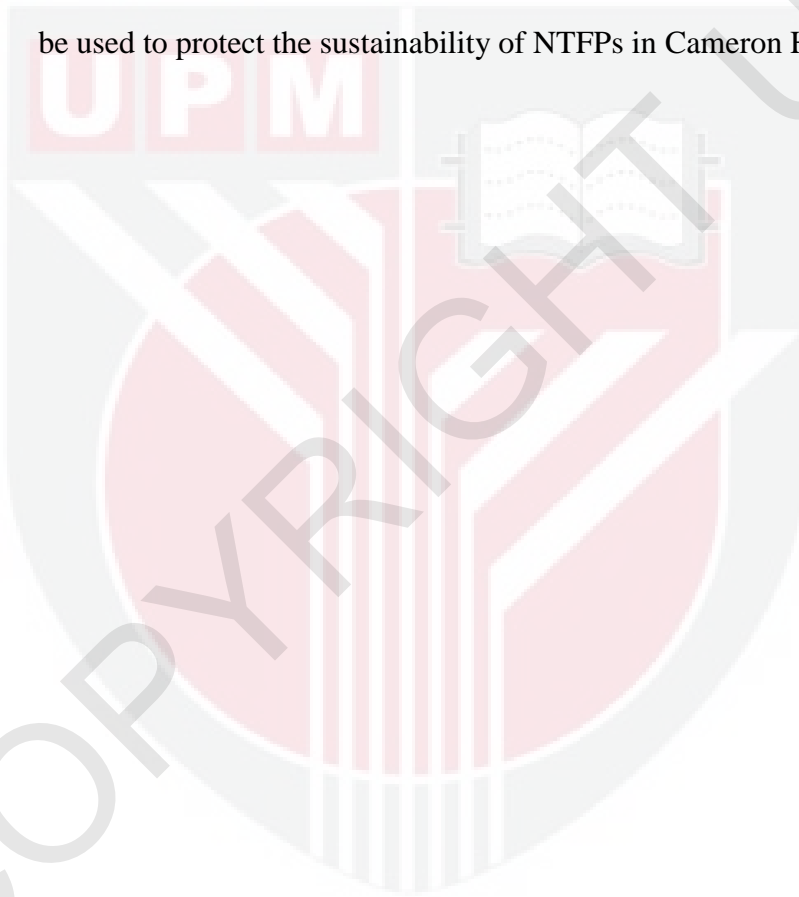
Originally, District Local Plan of Cameron Highlands allowing only 3% (for agriculture) in 2003 and 2015. However, surveys by the Remote Sensing Agency of Malaysia in 2012 showed that the actual areas being used 16%. It shows that encroachment of forest has caused a reduction in forest cover in Cameron Highlands and if this condition occurs continuously without any action to fix, it will lead to decreasing of NTFPs in the forest of Cameron Highlands. All these, reduce the production of NTFPs can affecting the livelihood of local communities.

This study is essential for understanding the knowledge of how local communities can resume their lives in and surround the forest increasingly limited of the source and to know their perceptions if conservation action takes place in their area. The information from this study is essential to know whether communities are agreed or disagree for the conservation to be applied and also to provide information for any agency or sectors in conserving and managing the forest.

1.3 Objectives of the Study

The main objectives for this study were:

- i. To determine perceptions of the local community on the environmental issue affecting the sustainability of the NTFPs in Cameron Highlands.
- ii. To identify conservation measures that local communities perceived that can be used to protect the sustainability of NTFPs in Cameron Highlands.



REFERENCES

- Angelsen, A., & Wunder, S. (2003). *Exploring the forest-poverty link: key concepts, issues and Research implications*. Bogor, Indonesia: Centre for International Forestry Research.
- Arora, D. (1994). From state regulation to people's participation: case of forest management in India. *Economic and Political Weekly*, 29(12), 691-698.
- Ayuk, E.T., Duguma, B., Franzel, S., Kengue, J., Mollet, M., Tiki-Manga, T., Zenkeng, P. (1999). Uses, management and economic potential of *Irvingia Gabonensis* in the humid lowlands of Cameroon. *Forest Ecology and Management*, 113, 1-9.
- Baker, T.L. (1994). *Doing Social research* (2nd Ed.), New York: McGraw-Hill In.
- Ballie, J.E.M., Hilton, Taylor, C. & Stuart, S. N. (Eds). (2004). *2004 IUCN Red List of Threatened Species. A Global Species Assessment*. IUCN, Gland, Switzerland and Cambridge, UK.
- Bishop, J. & Landell-Mills, N. (2002). *Forest environmental services: an overview. Market-based Mechanisms for Conservation and Development*, Earthscan, London.
- Byron, N. & Arnold, M. (1999). What futures for the people of the tropical forests? *World Development*, 27, 789-805.
- Cavendish, W. (2000). Empirical Regularities in the Poverty-Environment Relationship of Rural Households: Evidence from Zimbabwe. *World Development*, 28, 1979-2003.
- Chao.S. (2012). Forest Peoples: Numbers Across the World. *Forest Peoples Programme*.
- Commonwealth Forestry Association. (2005). *Forest product markets, forests and poverty reduction*. Jakarta, Indonesia: Belcher, B. M..
- Conelley, W.T. (1985). Copal and Rattan Collecting in the Philippines. *Economic Botany*, 39, 9-46.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78, 98-104.
- Cunningham, A.B. (1996). People, Park and Plant Use: Recommendations for multiple use zones and development alternatives around Bwindi Impenetrable National Park, Uganda. *People and Plants Working Paper 4*. UNESCO, Paris

Danielsen F., Sorensen, M.K., Olwig, M.F., Selvam, V., Parish, F., Burgess, N.D., ... Suryadiputra, N. (2005). The Asian tsunami: a protective role for coastal vegetation, *Science*, 3, 643.

Department of Statistics Malaysia. (1996). *Sixth Malaysia Plan 1996-2000*. The government of Malaysia, Kuala Lumpur.

Dovie, D.B.K., Shackleton, C.M., & Witkowski, E.T.F.(2002). Direct-use values of woodland resources consumed and traded in a South African village. *International Journal of Sustainable Development and World Ecology*, 9, 269–283.

Dubois, O. (2003). Forest-based poverty reduction: a brief review of facts, figures, challenges and possible ways forward. In Oksanen, T., Pajari, B., Tuomasjukka, T. (Eds.), *Forests in Poverty Reduction Strategies: Capturing the Potential*. European Forest Institute, European Forest Institute (EFI), 65-81.

Easterling, W., Aggarwal, P., Batima, P., Brander, K., Erda, L., Howden, S., Kirilenko, A., Morton, J., J.-F. Soussana, S. & Schmidhuber, J. (2007). Food, fibre and forest products. Climate change 2007: impacts, adaptation and vulnerability. *Report of the Intergovernmental Panel on Climate Change*, 2, 273-313.

Endok, A.A.U. (2007). *Community Dependence on Forest Products: A Case Study of Jah Hut Community at Kampung Berdut and Kampung Paya Rekoh, Temerloh, Pahang*. B. Sc. Thesis, Faculty of Forestry, University Putra Malaysia.

FAO. (2005). Global Forest Resources Assessment. Retrieved from <http://www.fao.org/forestry/site/28699/en>.

Fisher, M. (2004). Household welfare and forest dependence in Southern Malawi. *Environment Development Economy*, 9, 135–154.

Forestry Department Peninsular Malaysia. 2011. Annual Report. Kuala Lumpur: Forestry Department Peninsular Malaysia.

Forestry Department Pahang 2001. Annual Report.

Grundy, I.M. & Campbell, B.M. (1993). Potential production and utilisation of oil from *Trichilia* spp. (Meliaceae). *Economic Botany*, 47, 148–153.

Howell, C. J., Schwabe, K. A., Samah, A. H. A., Graham, R. C., & Taib, N. I. (2005). Assessment of smallholder rubber soils for rubber growth in Peninsular Malaysia. *Soil Science*, 170, 1034–1049.

Howell, C. J. (2006). *Non-timber forest product collection as a livelihood strategy for rural indigenous households: A case study of the Jah Hut of Peninsular Malaysia*. Dissertation, The University of California.

Isaac, S. & Michael, W.B. (1995). *Handbook in Research and Evaluation*. San Diego: EdITS.

Jeyarajasingam, A. & Pearson, A. (1999). *A field guide to the birds of West Malaysia and Singapore*. Oxford University Press Inc., New York, pp.460.

Kari, F. B., Masud, M. M., Yahaya, S. R. B., & Saifullah, M. K. (2016). Poverty within watershed and environmentally protected areas: The case of the indigenous community in Peninsular Malaysia. *Environmental Monitoring and Assessment*, 188(3), 1–14.

Larson, A.M. (2010). *Forests for People: Community Rights and Forest Tenure Reform*. Earthscan, London.

Lim, K.K.P., Leong, T.M. & Lim, B.L. (2002). Herpetofaunal records from Cameron Highlands, Peninsular Malaysia. *Journal of Wildlife and Parks*, 20, 49-57.

Mankiw, N. G.(2004). *The Economic Report of the President*. Washington, D.C.

Medway, Lord. (1983). *The wild mammals of Malaya (Peninsular Malaysia) and Singapore*. (3rd ed.). Oxford University Press, Kuala Lumpur.

National Academy of Science. (2004). *The Economics of Ecosystems and biodiversity*. United States of America

Nicholas, C. (1997). The Orang Asli of Peninsular Malaysia. Retrieved from <http://www.magickriver.net/oa.htm>.

Ndoye, O. & Tieguhong J.C. (2004). Forest resources and rural livelihoods: the conflict between timber and non-timber forest products in the Congo Basin. *Journal of Forest Research*. Retrieved from <https://www.tandfonline.com/>.

Pahang, District Council of Cameron Highlands & Department of Town and Country Planning. (2006). *Local Plan Draft of Cameron Highlands 2030*.

Pattanayak, S. K., & Sills, E. O. (2001). Do tropical forests provide natural insurance? The microeconomics of non-timber forest product collection in the Brazilian Amazon. *Land Economics*, 77, 595–612.

Paumgarten, F. (2005). The role of non-timber forest products as safety-nets: A review of evidence with a focus on South Africa. *Geo Journal*, 64, 197–198.

Peters, C.M.(1990). Plenty of fruit but no free lunch. *Garden*, 14, 8–13.

Pimentel, D., McNair, M., Buck, L., Pimentel, M. & Kamil, J. (1997). The value of forests to world food security. *Human Ecology*, 25, 91-120.

Ricketts T., Daily G.C., Ehrlich, P.R., & Michener, C.D.(2004). Proceedings National Academy Science USA.,: *Economic value of tropical forest to coffee production*,101, 12579–12582.

Rohaiza, M.A. (2008). The Socio-economic of Orang Asli Community in Meranto, Gua Musang, Kelantan. B.Sc. Thesis, Faculty of Forestry, Universiti Putra Malaysia.

Ros-Tonen MAF and Wiersum K.F. (2005). The scope of improving rural livelihoods through non- timber forest products: An Evolving Research Agenda. *For Trees Level* ,15(2),129-148.

Rusli M, Awang N.A.G.& Abdul Rahim H.O. (1998). Indigenous People's Dependence on Non- Wood Forest Products: A Case Study, Faculty of Forestry, University Putra Malaysia.

Shackleton, C., & Shackleton, S. (2004). The importance of non-timber forest products in rural livelihood security and as safety nets: A review of evidence from South Africa. *South African Journal of Science*, 100, 658–664.

Takasaki, Y., Barham, B. L., & Coomes, O. T. (2004). Risk coping strategies in tropical forests:Floods, illnesses, and resource extraction. *Environment and Development Economics*, 9, 203–224.

Timko, J., Waeber, P. & Kozak, R. (2010). The socio-economic contribution of non-timber forest products to rural livelihoods in Sub-Saharan Africa: Knowledge Gaps and New Directions, 12, 284-294..

University of Reading. (2012). *Numbers of Forest Dependent People: A Feasibility Study*. Reading.

Vedeld, P., Angelsen, A., Sjaastad, Espen, Kobugabe Berg, Gertrude. (2004). Countin on the Environment: Forest Incomes and the Rural Poor.

World Bank Environment Department. Retrieved from [http://documents .worldbank .org/curated/en/825651468778804896/pdf/300260PAPER0Counting0on0ENV0EDP0198.pdf](http://documents.worldbank.org/curated/en/825651468778804896/pdf/300260PAPER0Counting0on0ENV0EDP0198.pdf)

World Bank (2001). Supporting the Web of Life – Biodiversity at the World Bank. *The World Bank Group*, Washington D.C.

World Wide Fund for Nature, Malaysia .(2017). Forests in Malaysia. Retrieved from http://www.wwf.org.my/about_wwf/what_we_do/forests_main/.

Zikmund, W.G. (2003). *Business Research Methods* (7th Ed.). Thomson/ South-Western.