

**THE ETHNOBOTANY OF THE *SEMELAI* COMMUNITY AT  
TASEK BERA, PAHANG, MALAYSIA:  
AN ETHNOGRAPHIC APPROACH FOR RE-SETTLEMENT**

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## **PART I: GENERAL OVERVIEW**

### **CHAPTER ONE: INTRODUCTION**

#### **1.0 Research Background**

Indigenous people, plants and their environment throughout the world have been threatened and challenged in many ways. Development seems to reduce these associations amongst humans, plants and the environment. Development has increasingly entered into spaces and territories previously used by Indigenous peoples for various purposes throughout the world. Obviously, the level of dependency of Indigenous people upon the forest or environment they live within also has been reduced and degraded. The issues of displacement, re-settlement or regroupment of the Indigenous people in the world are mostly associated with government major developments such as dams, housing and industrial projects, as well as agricultural land development. Twentieth century witness more people were involuntarily displaced than ever before, not only by war and natural disasters but due to profit making (M. Cernea, et al., 2009, pp. 263-265). The non-material impacts of the displacement scenario are greater on women, children and elderly in deeper way as compared to man (Downing & Garcia-Downing, n.d.)

As discussed and elaborated upon further in the thesis, Scudder (1993), Evrard and Goudineau (2004) are among the earliest resettlement scholars whom have contributed to developing a valuable international insight on involuntary population displacement and resettlement policies and activities that provides indepth reviews of resettlement policies and events in developing countries especially in South East Asian countries. Development-induced displacement significantly caused environmental, social and economic loses to the inhabitants due to unacceptable changes forced upon them (Price, 2009, pp. 267-268; Weaver, 2002). This research provides an international precedent, despite being ignored historically, providing a valuable international model for ethnographic-informed and ethnobotanical analyses of involuntary resettlement policies and activities (M. M. Cernea, 2009; Evrard & Goudineau, 2004). The paradigm explored in this dissertation includes involves anthropological experience and knowledge which could better help address these environmental and social issues which also includes training in applied anthropology and actively involves policy makers and the public emphasizing the value of long-term studies (Weaver, 2002).

Displacement caused by development must protect the livelihood of the people involved where remedies need to be identified and recommended. It is important to increase the awareness of the unacceptable consequences of displacement among the government and public (M. M. Cernea, 2009, pp. 263-265). Recently, the International Network on Displacement and Resettlement (INDR), led by Scudder, together with the International Accountability Project and the Housing and Land Rights Network have released a list of their initiatives in governing this issue, which includes minimizing displacement, ensuring displaced persons are project beneficiaries, inclusion of individuals who lose their livelihoods arising from the impact of resettlement projects, full risk assessment and livelihood restoration measures, providing information and training about rights and processes options by a third party prior to negotiations and the strengthening of free, prior and informed consents in compliance with international standards (Anonymous, 2010).

In the Malaysian context, national development has had a determining impact on the traditional habitat and lifestyles of the *Orang Asli*, the Indigenous peoples of Peninsular Malaysia (Rambo, 1979, p. 15). Pressure from development has caused large-scale and rapid deforestation as well as damage to natural ecosystems, biodiversity loss and extinctions of genetic resources that are valuable to the *Orang Asli* as being integral to their habitat and resources for living.

Over the last half-century, re-settlement or re-groupment programs in Malaysia have been constantly proposed and intended to exchange the *Orang Asli* original territories or lands with development projects (M. T. Salleh, 1990). The *Orang Asli* have been forced to accept development as other non-Indigenous people in the world have. As a result, the *Orang Asli* have slowly abandoned their traditional lifestyles, which were seen as 'uncivilised' by government officials (M. T. Salleh, 1990). An example of this cultural loss is the Babagon Dam project, which involves the *Kadazandusuns* people in Sabah. This project has jeopardised the sustainability of the Indigenous identity, culture, social system and political structure of these peoples due to their movement or re-settlement from their traditional habitats (Lin, 2003). In addition, the *Kadazandusuns* can no longer rely or are less dependent upon their traditional resources and knowledge base due to inaccessibility of the resources at their new settlements. These adaptations have decreased their dependency on the natural environment and are leading to an eventual reduction of Indigenous knowledge and practices of the *Kadazandusuns* (Lin, 2003). They are also being exposed to modern lifestyles that were introduced to them at their new re-settlement areas.

Re-settlements have brought the *Orang Asli* into contact with 'civilisation' or modernisation, which has threatened their Indigenous culture. This displacement and development has not allowed for the continuation of the association existing between the *Orang Asli* and their environment. Their new settlements have not been designed or planned to suit their needs in order to sustain the traditional practices. One reason may be that government planners lack an appreciation of the documented information on Indigenous peoples traditional living needs. According to Arshad and Ahmad (2004), the reduction of natural resources and environments eventually will reduce Indigenous people's plant use and dependency upon forest resources which will thereupon affect the continuity of traditional knowledge through generations (Arshad & Ahmad, 2004).

The erosion of traditional knowledge amongst the youth in the *Orang Asli* communities is now widespread (M. T. Salleh, 1990). There is a fear that if this situation is prolonged for another generation or two, we might totally lose the knowledge of the Indigenous peoples of the world. In regard to these issues, the involvement of Indigenous people in planning and development might help to sustain their traditional way of living. In addition, they may not be aware that their Indigenous knowledge is significantly important and valuable for conservation goals. The involvement of local people in the planning stage in any development might help to sustain the development project for these people to be involved or to participate. Therefore, there is an urgent need for a new solution that can be adopted in the current practice of Malaysian re-settlement, which considers the traditional and Indigenous culture of the people. As argued, it is vital that scholarly endeavours and the initiation of new knowledge be used to encourage the development of practical applications for the advancement and improvement of the quality of life.

Both the understanding of human settlements and human culture are needed and archaeologists and anthropologists alone cannot do that. This understanding is about settlement patterns interpretations and their interrelationships with other cultures. By understanding this culture, we can better plan culturally and ecologically relevant living environments for them to sustain their Indigenous practices in a transformed landscape. Landscape research has attracted other multi-disciplinary scholars as an approach to gain reasonable comprehension of human culture (Sahlqvist, 2001). Landscape architects have recognised their role as stewards of the land, which involves planning and creating better places for living. Landscape architects and landscape planners, the shapers of environments, are responsible for keeping the habitat habitable for human survival. In

planning and designing spaces for living, cultural aspects of human lifestyles are important features that need attention.

Lifestyles are the most useful criterion for defining groups which determine patterns of human settlements and built environments (Rappaport, 1979). As remarked by Heidegger (1958, p.19), 'place places man in such a way that it reveals the external bonds of his existence and at the same time the depths of his freedom and reality' (Relph, 1976). These aspects of human living are important because humans respond differently to their culture which encompasses landscape elements and arrangements and also interferences based upon the current situation, previous experiences and knowledge backgrounds (Kaplan, 1985). The cultural landscape, which is a human-modified environment for living, should include physical and spiritual aspects of relationships between people and their environment to achieve optimal ecological sustainability as well as successful solutions of spatial and temporal problems of land use and management (Glikson, 1961; Simonds, 1961).

The cultural landscape of Indigenous peoples is shaped by their lifestyles. Indigenous peoples in the world are often still using forests for their natural resources while requiring land for cultivation and settlements. As hunter-gatherers and swidden agriculturalists, Indigenous peoples have a special relationship to their land developed over hundreds of years. They are more sensitive to their environments, compared to modern communities, because they still practice traditional culture (Bahuchet & Grenand, 1995).

"Discussing the role of Indigenous Peoples and Traditional Knowledge in water resource management is important for the community when facing the fast pace at which governments roll out water reforms and the significant environmental changes that challenge the ways in which we perceive our water resources," said Joe Ross, the Chairperson of the Indigenous Water Policy Group.

*(Kiessling & McArthur, n.d., pp. 10-11; Patrick & McKaige, 2008)*

The above statements imply that traditional practices among Indigenous peoples reflect their relationships with the environments, such as water and plants, in terms of knowledge, skills and experience in searching out and obtaining natural resources for food, medicine, utilities, material structures and other social needs for living. Traditional living qualities of Indigenous peoples derive from their natural bonding with the environment and are dictated by the availability of natural resources and materials as well as seasonal changes and localities (Bailey & Green, 1997).

Knowledge of ethnobotany and ethnoecology can assist in developing human and environment relationship theories that have a strong potential to contribute to rural development and conservation projects (Martin, 1998).

Ethnobotanical knowledge of Indigenous peoples is valuable to scholars for understanding their traditional living culture. Ethnobotanical studies across the world have investigated how local and Indigenous peoples characterise and value certain plants and how their practices, cultures and institutions manage the plants. These limited studies focus only on the botanical and physical properties of plants. Many studies still concentrate upon scientific research about plants for medicinal purposes and for their potential commercial values where the documentation and description of local plants names and uses are involved. However, for the last few decades this trend has slightly changed and moved towards applied ethnobotany, whereby, plants are recognised as having important cultural values. Some projects on ethnobotany aim at raising awareness in the community of the importance of sustainable management of plants and forest resources, at conserving Indigenous plants and encouraging local participation in the projects. One example is the Loita Masai, Kenya Ethnobotany Project in 1995, which encouraged a community-based management plan for the people (Maundu, Berger, & *et.al.*, 2001). Cunningham has investigated the impact of wooden artefact production upon the local vegetation in Africa (Cunningham, 1996)

The expansion of ethnobotanical studies have involved different levels of interest and disciplines (Will McClatchey, 1999). These studies have been more analytical, quantitative, interdisciplinary and multi-institutional in their approach and include studies of modern cultures and their application to conservation and sustainable development (*Hamilton, et al., 2003*). How this ethnobotanical knowledge can be used in development planning, by governments especially for Indigenous peoples, has yet to be demonstrated. The dominant emphasized on *Malay* society of the research and studies on rural population has left out *Orang Asli* and other Indigenous minorities not well represented in terms of their needs (Ibrahim, 2000, p. 99). Ironically, land development is seen through contemporary eyes as the only answer to landlessness and poverty problems among the rural population, whereas poverty for Indigenous peoples in their own traditional lands is an arbitrary concept (M. T. Salleh, 1990). Zawawi Ibrahim, a Malaysian anthropologist has highlighted the importance of letting *Orang Asli* become the subject of development rather than passive objects as he agrees to the idea that the success of any program or policy should be examined from the user's perspective, not from the implementor (Ibrahim, 1996). A good example is the re-settlement

schemes for the Indigenous people of Peninsular Malaysia which have been perceived as successful schemes by the Malaysian government. The Malaysian government has been saying that the *Penan* communities, one tribe of Indigenous communities in Sarawak are being well looked after, where a few initiatives have been implemented and taken from these communities on their behalf (Anonymous, 2000, p. 1). Further, the *Jabatan Hal Ehwal Orang Asli, JHEOA* ( Department of *Orang Asli* Affairs) has claimed that re-settlement programs for the *Orang Asli* is a way to increase the living quality of the Indigenous people (JHEOA, 1992, p. 1). Unfortunately, re-settlement might not only benefit Indigenous people in terms of their improvement of their physical environment such as amenities and facilities in the new settlements. As claimed by Hood as among the *Orang Asli*'s urgent issues that need attention is the short-changed and marginalised in the transitional stage of re-settlement programmes that leads to uncomfortable new environment (H. Salleh, Halim, & Man, 2004, p. 90). New settlements also need qualities other than physical attributes such as spiritual and socio-cultural attributes which make the new settlements work and result in meaningful relationships being continued and formed.

Further, these policy statements are contradictory whereby some studies and research projects conclude that there is a failure in the re-settlement schemes in Malaysia. Re-settlements schemes have also caused difficulties in Indigenous communities obtaining access to natural resources due to their location of these new settlements, such as being situated far from their traditional forests. For example, (Sidi & *et.al.*, 2005, p. 2) strongly assert that re-settlement schemes in Malaysia are poorly planned and designed, and that they fail to consider the interrelationship of Indigenous people or the *Orang Asli* with their cultural and environmental aspects. From research undertaken by Sutan Sidi *et.al.* (2005), one report by Collins Nicholas from the Centre for *Orang Asli* Concerns (COAC) (2000), strongly suggests that planning cannot reduce the impact of forced displacement felt by deeply-rooted ecological culture. These statements strongly demonstrate that an understanding of Indigenous people's relationship with their environment could be useful and should be taken into consideration in re-settlement planning. Further, Nicholas, who also worked with the *Semai* ethnic group in Pahang has also provided inspiration in his paper for further research about the affects of research or projects on the *Orang Asli* whether before, while or after those projects are done (Nicholas, 2000).

How do we deal with human development needs and sustainable resources without jeopardizing natural resources is a key question, resulting in rare consideration being given to the valuable

environmental assets of the country such as wetland forests in the development's decision making (Ramakrishna, TL, & S, 2002, p. 2). Landscape analyses recognise spatial arrangement, which can determine settlement patterns. The landscape has to be recognised as a primary instrument for addressing any related community living environments such as health conditions (Sinatra & Murphy, 1997). Sinatra has also emphasized that for cultures that depend upon increased distance to avoid conflict, the spatial arrangements which can determine settlement pattern must be recognised as important influences on community health (Sinatra & Murphy, 1997). A study done by one working group on Indigenous populations demonstrates the importance of land and resources accessibility and management for the survival of Indigenous peoples' land rights (Anonymous, n.d-b). The investigation of Indigenous settlement planning and design will give a strategic meeting ground for archaeologists, anthropologists, ethnologists, planners and landscape architects.

## 1.2 The Significance of Thesis

Previous research on *Orang Asli* in general mostly preoccupied with the only concerns towards reconstructing 'primitive culture' (Ibrahim, 2000, p. 101). Further, there have been numerous ethnobotanical studies undertaken throughout the world which investigate the traditional and Indigenous knowledge of their flora. This thesis is not only concerned with botanical and scientific approach to ethnobotany, but also about the cultural approach to ethnobotany, in seeking to appreciate how Indigenous people use and can apply their ethnobotanical knowledge in Malaysian re-settlement planning and arrangements. A gap in this vast literature is the consideration of the linkages between ethnobotany and land re-settlement and planning. Ethnobotanical knowledge can be a platform to better understand Indigenous communities' behaviour and responses to re-settlement. Knowledge of plants, local people and their environment is significant in informing and appreciating re-settlement issues and displacement concerns of Indigenous people.

This thesis explores how knowledge of plants and associative environments determine and influence Indigenous community responses and behaviours to their surroundings. The fieldwork undertaken adopted the Ramsar framework and guidelines, which implicate inventory and assessment research of the chosen sites which are included within Ramsar site. The Ramsar convention (The Convention on Wetlands of International Importance, especially as Waterfowl Habitat) is an international treaty for the conservation and sustainable use of wetlands to address the encroachment on the loss of wetlands now and in the future, recognising the ecological, cultural, scientific, and recreational value



(Secretariat, 2006, pp. 1-2). The Convention is named after the town of Ramsar in Iran where the Convention was drafted and adopted.

The *Semelai* are a *Proto Malay* tribe who have been living along the banks of and in the forests surrounding the Tasek Bera Lake for 600 years (Santharamohana, 2002). This community has been highlighted since the designation in 1994 of Tasek Bera, Pahang, as Malaysia's First Ramsar site (Seng, 2001). The *Semela's* livelihood is heavily dependent upon the Lake, which sustains their traditional living culture. Their sustainable-yield forest production has been developed over thousands of years which shows the significance of their Indigenous technology (Anonymous, 1996). The arguments made by Professor Gianni about how significant and detrimental the disappearing technology of the *Semelai* community in Tasek Bera, leads to the importance of better integrating their natural product technology with the global economy in providing better financial support for this Indigenous community (Anonymous, 1996).

This thesis examines and explores the *Semela's* ethnobotanical knowledge of their traditional land at Tasek Bera, Pahang, Malaysia, that might give attuned meaning to the development of the Indigenous community's living environments. This research seeks to assemble evidence and argue that ethnobotany can be used to the betterment of re-settlement for Indigenous people. Hence, ethnobotany can be used as a common dialogue in sharing and highlighting the cultural importance of plants among specialists. Knowledge of settlement types, as well it's relationship to other Indigenous knowledge, is important in it's adaptation in planning any physical development for these communities. It is valuable to appreciate their relationship to newly constructed, permanent, and planned new settlements. It is also important to assess and appreciate how the *Semela's* re-settlement has reduced their possession of Indigenous knowledge and practices. There is also a question of what is important and integral in their Indigenous knowledge, and therefore what needs to be sustained and conserved. We may also have to consider what it is that they really want and need to sustain their Indigenous living style. Therefore, this research seeks to undertake a specific and relevant methodology to investigate the *Semela's* Indigenous culture as it relates to their relationship to ethnobotany and culture. In particular, how they use plants in their traditional way of living and the impact of this on their land management. It will be demonstrated that this information is important in contributing to these people's development programs. This thesis will be viable when we realise the existing of what we see today in the near future.

The research applies, established and academically accepted ethnographic methods that allow an in-depth understanding of the cultural reality of the *Semelai* people. Ethnographic methods applied in this research are exploratory, suitable to investigating or discovering what people do and think from their own perspective (Anonymous, 2003, p. 5). Refer Figure 1. There is a need to consider insider and outsider perspectives on what is happening. The important key aspect here that differentiates ethnography from other common social sciences is this ethnographic method. Coming from the background of landscape architecture, the researcher is not trying to be ethnologist, anthropologist, ethnobotanist or any other professional in the inter-discipline that she came across in her research methodology. Looking through the perspective of a landscape architect gives new perspectives of how to deal with Indigenous people's issues and problems of changing landscapes and culture. However, as part of this doctoral research, the researcher has sought to obtain specific expertise and knowledge in ethnobotany and ethnographic research methodologies in which to competently undertake this field research. As part of this learning process, the researcher did not delimit to a specific ethnographic discussion or argument of theory, and which is practical, or not. It is clear that contemporary ethnographers focus more on using different theories about specific human processes in which to better identify and explain micro-level aspects of societies. The researcher would rather discuss what is left for the *Semelai* people to conserve their valuable heritage for their socio-cultural sustainability. Therefore, this research attempts to apply the understanding of Indigenous knowledge into landscape planning that can be sustainably integrated into the future re-settlement development.

### **1.3 Research Aim and Objectives**

This thesis attempts to address gaps in integrating an ethnographic approach with ethnobotanical knowledge in understanding the Indigenous culture which is subsequently integrated into re-settlement patterns of Indigenous people. This thesis aims to examine the extent to which ethnobotanical and ethnological knowledge of the *Semelai* community of Tasek Bera, Pahang, Malaysia does and can help the betterment of re-settlement planning and design.

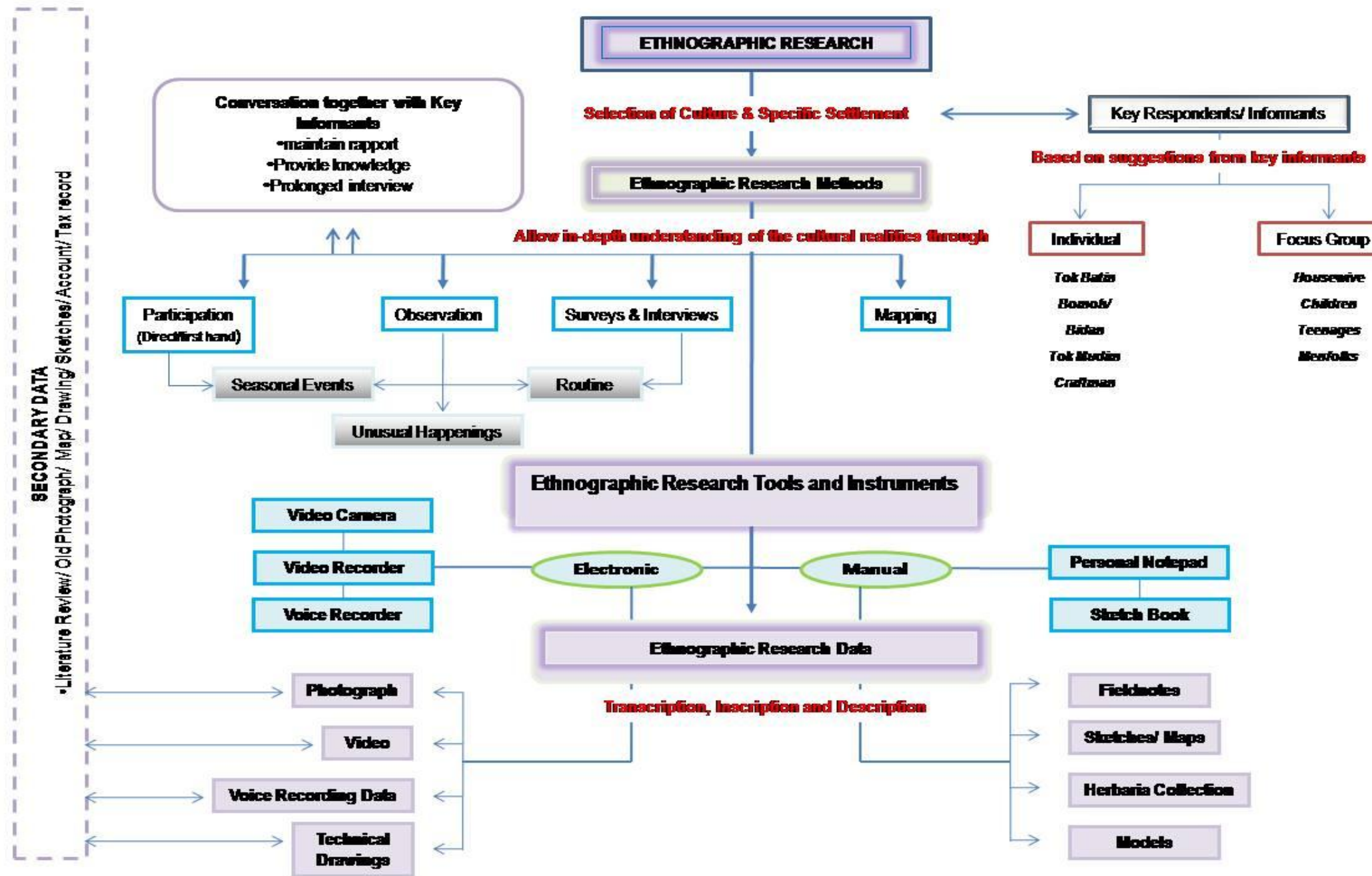


Figure 1: Ethnographic Research Method Applied

In order to achieve this aim, the following objectives have been adopted.

- I. To introduce, examine and justify the role and validity of ethnographic studies in re-settlement planning and design;
- II. To investigate and document the Indigenous ethnobotanical knowledge of the *Orang Asli Semelai*;
- III. To synthesise this knowledge and to draw conclusions as to appropriateness, significance and relevance; and;
- IV. To propose ethnographic and ethnobotanical frameworks for informing re-settlement planning and design guidelines that can better contribute to Malaysian policy making and to the conservation of Indigenous heritage.

#### 1.4 Research Questions

This research is about feelings, perceptions and understandings. Therefore, the researcher needs to be listening to people, interpreting what they are saying, observing what they are doing and trying to understand why they do certain things. The researcher drew upon the Semelai's culture situation to make sense of what she found. The researcher also summarized the ways that she was likely to go about her finding evidence and answering these questions. Specific micro-level research questions themselves were expected to emerge from out of the execution of this research. However, to begin with, this research seeks to address the following questions:

1. What is the significance of using ethnographic and ethnobotanical approaches in re-settlement planning and design in Malaysia?
  - i. What are ethnographic studies?
  - ii. Are ethnographic studies necessary for re-settlement planning and design development?
  - iii. What aspects of ethnography and ethnobotany need to be highlighted in re-settlement planning and design?
2. How can ethnographic and ethnobotanical approaches successfully influence re-settlement planning and design for Indigenous people in Malaysia?
  - i. What is the significance of choosing the Indigenous people and specifically the Semelai community?

- ii. How do ethnobotanical approaches fit into re-settlement planning and design?
- iii. Are there any current guidelines for re-settlement planning and design for Indigenous people?

These research questions are catalysts designed to provoke the generation of content with which to develop the Indigenous knowledge bank. These research questions will be discussed further in literature review, which will help to explain and justify the research clearly.

### **1.5 Research Scope and Limitations**

Significant research problems often arise from the crossing of traditional discipline boundaries having regard to several aspects and factors of limitation. These aspects and factors include, for example, time, accessibility, protocols and permissions within two continents, weather, language and different communities barriers. The researcher also faced limitation in spending longer than 3 months on-site due to logistical and protocols that required the researcher not be away for a long period from the university in order to maintain her candidature status. Further, the time period selected was appropriate and suited her personal logistical arrangements. This is inline with her understanding of the ethnographic approach that an ethnographic discovery methodology is not concerned about the quantity or amount of data and time spent, but more about the descriptive values that could provide a better findings and recommendations. The 3 month period did not act as a limitation to the amount of data that focused this research but not limited to gender specific issues which is strongly suggested for research on displacement (M. M. Cernea, 2009). However, by having a male assistant helped to reduce any possibility of gender bias from the community. Different cultures and languages are also barriers which the researcher is aware of. More important is the correct interpretation of data which was made because researchers within the same community do have their own biases and assumptions that also could jeopardise the data. Preliminary parts of this thesis have been presented in conference papers at two distinguished conferences held in Cairns, Australia and Auckland, New Zealand (S. Mohamad, 2006, 2007).

## 1.6 Research Outline

This thesis is presented in five main parts which include General Overview, Cultural Overview, Development Planning and Design, Ethnographic Research and Findings and Conclusion. The first two parts serve as an introduction that provides a general understanding of the thesis. They describe the study field and provide evidence and justification for the scope and focus of the research questions. These chapters provide a general overview of the pertinent issues and problems that are significant to the research, and serve as an introduction to the thesis. They include a history and background to the Indigenous peoples in Malaysia, and introduce the *Orang Asli Semelai* people who have been selected as the study tribe or community.

The third part is the Development Planning and Design chapter which explains the development policies and guidelines in relation to the *Orang Asli* as the Indigenous People in Peninsular Malaysia. This part provides an introduction to classical and contemporary development theory, concentrating on the elements that apply to the *Orang Asli* situation. Discussion includes a review of the impact of the existing Malaysian planning and development policies, in general and specifically relating to Malaysian Indigenous people's socio-cultural and economic well-being.

The fourth part comprises the main body of the thesis, which explains the research methodology and approach applied in the investigation methodologies of the ethnobotanical knowledge of this people. This part also explains how the research was conducted and analysed, justifying the ethnographic approach, the site and the people chosen for study.

The fifth part comprises the discussion of findings considering the significance of Indigenous knowledge, focusing on the ethnobotanical knowledge of the *Semelai* people. The analysis of the findings is presented in the main text and is also presented in the fieldnotes and themes which are compiled in the Appendices B. The last chapter concludes the thesis by highlighting the relevant ethnological knowledge that could be used and adapted in Malaysian Indigenous peoples re-settlement programs or in any other future developments that may affect these peoples.

## 1.7 Research Timeline

A time frame or schedule is needed to ensure the research program is on track. However, the proposed outline and timeline eventually served as a preliminary guideline, which was subjected to several changes. The actual fieldwork was carried out from February 2007 – April 2007. Therefore the schedule of work was changed accordingly to suit these constraints. The actual commencement of the research is tabulated in Table A in Appendices A.

## PART II: CULTURAL OVERVIEW

### CHAPTER TWO: INDIGENOUS PEOPLE

#### 2.1 Definitions and Terminology

The Indigenous peoples of Peninsular Malaysia (West Malaysia), prior to that known as *Malaya*, are generally called the *Orang Asli*. The word *Orang* means 'people' while *Asli*, from the Arabic word *Asali*, means 'original', 'well-born' or 'aristocrats' (Carey, 1976, p. 3; JHEOA, 1992; Roseman, 1979/ 2003; Wikipedia, 2008). Terminologies used throughout the world to describe the identification of Indigenous peoples or communities include "original people", "native people", "tribal people", "aborigines" and "the first people"; with different conventions as to capitalization of words. Despite this, there is no single definition of "Indigenous people" (Bahuchet & Grenand, 1995; Barsh, n.d; IWGIA, n.d). There seems to be difficulties in finding a single unanimous definition of Indigenous people, which could apply equally to all countries. These different terminologies, however, lead to the same meaning, which is "*the original inhabitants and their descendants of certain countries, the first group of people who originally inhabit or live in those particular countries*" (Hillman, 2001). There is a 'working definition' proposed by José Martínez Cobo (1984) and Erica-Irene Daes (1994), two United Nations experts and Special Rapporteurs for the Sub-Commission, who studied the problem of discrimination against Indigenous populations. The United Nations Working Group on Indigenous Population adopted the following definition of Indigenous communities, peoples and nations as:

"...those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems"

(UNHCHR, 2002c, p. 1).

Clear definition and understanding of Indigenous peoples' specific and unique characteristic and requirements are important to achieving meaningful research and health improvement programs (J. G. Bartlett, Madariaga-Vignudo, O'Neil, & Kuhnlein, 2007). Contemporary debates by authorities over establishing and accepting definitional standards for Indigenous people have caused



international uncertainty over applying international legal instruments to the world's Indigenous people, which also further hampers the construction and legitimacy of Indigenous identity (Corntassel, 2003). Notwithstanding this dilemma, there are a few characteristics that define Indigenous people of certain countries and regions as accepted by International agencies such as tabulated in Table 1. This table and its characteristic categories indicate that among the world's Indigenous people are many unique cultures with their own sense of identity.

According to Barsh, all of the world's 6,000 to 10,000 original cultures were originally Indigenous. However, these cultures have been diluted and absorbed into the majority nation-states (Barsh, n.d). The United Nations estimates that there are over 300 million Indigenous people worldwide and that the majority of them live in Asia, comprising approximately 150 million people. Around 30 million Indigenous people live in Latin America. Indigenous peoples reside in more than 70 contemporary countries and speak over 5,000 languages, which make up one third of the world's extremely poor rural people (Barsh, n.d; Nakashima & Roue, 2002; Shashikala, Kandiah, Zalilah, & Khor, 2005; Statistics and Key Facts about Indigenous Peoples,"). (Refer Map 1 to Map 4).

Maps 1 to Map 4 depict distributions and concentrations of Indigenous peoples across the Earth and also indicate the importance of their habitats and biodiversities to the world. These peoples reside in some of the world's richest biodiversity and natural resource places. Therefore, these factors have made Indigenous peoples throughout the world very vulnerable to exploitation by non-Indigenous societies (Anonymous, 2007; Nakashima & Roue, 2002). For example, as the most populous region on Earth, Indigenous people who traditionally resided in the Asian forest have been interrupted by the Western development movement, which has pushed them to relocate them further inside the forest (Endicott, 1999).

The classification of Indigenous peoples' throughout the world is a complex and contested debate that needs to consider the specific context and locally relevant information as suggested by Bartlett (2007). The identification of Indigenous peoples is often linked to their geographical or spatial territories. The *Orang Asli*, Indigenous communities on Peninsular Malaysia, for example, are called by different names according to their locality such as *Orang Laut* (sea man) for those who occupy coastal areas, and *Orang Darat* (land man) for those who reside inland or in remote areas. In Vietnam, Indigenous peoples are referred to as 'barbarian' due to their lifestyles (Anonymous, 2005b).

***Table 1: Southeast Asian peoples who are or were hunter-gatherers, by country***

NOTE:

This table is included on page 26 of the print copy of the thesis held in the University of Adelaide Library.

Source: (Endicott, 1999, p. 281).

NOTE:

This map is included on page 27 of the print copy of the thesis held in the University of Adelaide Library.

Source: (Barsh, n.d) ([http://www.calvert.com/pdf/White\\_paper\\_barsh.pdf](http://www.calvert.com/pdf/White_paper_barsh.pdf))

**Map 1: Principal Undisputed Concentrations of Indigenous Peoples**

NOTE:

This map is included on page 27 of the print copy of the thesis held in the University of Adelaide Library.

Source: (Barsh, n.d) ([http://www.calvert.com/pdf/White\\_paper\\_barsh.pdf](http://www.calvert.com/pdf/White_paper_barsh.pdf))

**Map 2: Principal Concentrations of Indigenous Peoples...and the World's Critical Habitats**

NOTE:

This map is included on page 28 of the print copy of the thesis held in the University of Adelaide Library.

Source: (Barsh, n.d) ([http://www.calvert.com/pdf/White\\_paper\\_barsh.pdf](http://www.calvert.com/pdf/White_paper_barsh.pdf))

***Map 3: Principal Concentrations of Indigenous Peoples...and Global Biodiversity  
“Hotspots”***

NOTE:

This map is included on page 28 of the print copy of the thesis held in the University of Adelaide Library.

Source: (Barsh, n.d) ([http://www.calvert.com/pdf/White\\_paper\\_barsh.pdf](http://www.calvert.com/pdf/White_paper_barsh.pdf))

***Map 4: Principal Concentrations of Indigenous Peoples...and the World Extractive  
Frontier”***

There are often shared aspects amongst Indigenous peoples around the world. Physical characteristics are one of them. It has been described that the Indigenous peoples of Southeast Asia were dark-skinned, frizzy-haired, broad-nosed Australoids, and that some of them travelled into Australia tens thousands of years ago. Indigenous Australians are called the 'Aboriginal' peoples, the Aborigines, and sometimes Australoids, the former of which derives from the 18<sup>th</sup> century European concept of Indigenous peoples (Hillman, 2001). The Aborigines of Australia are characteristically brown-skinned and they exclusively practiced semi-sedentary living styles involving hunting, food gathering and obtaining their sustenance according to time and place, on the basis of what nature provided (Philip A. Clarke, 2003; Mountford, 1969). They are also characterized as being economically poor and rural people who are not participants in the process of economic development as defined by Western culture. Further, most Indigenous peoples share the same demographic profile of developing countries with a population profile characterized by a large youth male and female concentration.

## 2.2 Indigenous Peoples Issues

The cultures, livelihoods and existence of Indigenous peoples around the world have often been placed in danger by conflicts with developments initiated and managed by incoming cultural groups. The Indigenous peoples are the minorities group. Minority as defined by the United Nations Human Rights Commission:

“a group numerically inferior to the rest of the population of a state, in a non-dominant position, whose members – being nationals of the state-possess ethnic, religious or linguistic characteristics differing from those of the rest of the population and show, if only implicitly, a sense of solidarity directed towards preserving their culture, traditions, religion or language” (quoted by Capotorti, in World directory of minorities, p. xiv) (Bahuchet & Grenand, 1995, p. 2).

This definition defines the vulnerable state of these people. The following statements highlight typical Indigenous issues around the world which have not received much attention. Indigenous peoples' issues have only gained international attention since the late 1990s when newly-formed organisations in many colonised countries have been involved in activities and discussions on Indigenous peoples' issues and problems.

“The voices of Indigenous peoples, if we take the trouble to listen to them, convey priceless messages to the world: their traditions, particularly ethical and spiritual ones, coupled with their management of complex ecosystems and their know-how, all play a vital role in the search for development and peace. Safeguarding their cultures and acknowledging their rights are of strategic importance for the future of humankind” *UNESCO Culture Newsletter, 2005.*

“It is essential to know and understand the deeply spiritual special relationship between Indigenous peoples and their land as basic to their existence as such and to all their beliefs, customs, traditions and culture... Their land is not a commodity which can be acquired, but a material element to be enjoyed freely” Study of the Problem of Discrimination Against Indigenous Populations, J. M. Cobo, United Nations Special Rapporteur (1987).  
[http://www.cultureandrecreation.gov.au/articles/Indigenous/peoples/.](http://www.cultureandrecreation.gov.au/articles/Indigenous/peoples/)

Environmental effects on socio-culture, how environmental differences create social differences which dictated by their surrounding climates, soils, geo-political maps, time and seasons have been discussed and debated over the years by historic and classical scholars of society–environment such as Aristotle (1908-56), Pliny (1938-63), Ibn Khaldun (1967) and Diamond (1997) (Dove & Carpenter, 2008, pp. 1-12). Scudder’s (1993) research provides an international precedent, despite being historically ignored, providing a valuable international model for ethnographic-informed and ethnobotanical analyses of involuntary re-settlement policies and activities. Evrard and Goudineau (2004), and Cernea (1993,) have provided indepth reviews of re-settlement policies and events in Laos and elsewhere in politically, troubled South East Asia demonstrating that ethnobotany is an important and significant indicator of successful transmigration re-settlement efforts.

Many of the South-East Asian re-settlement or dislocation failure experiences were due to an inability to understand and consider the social impact on the people, on the areas they left behind, the areas where they will be re-settled as well as their autonomy and leadership that need to be ready at the new settlement (Evrard & Goudineau, 2004, pp. 948-952). Moreover, Goudineau (2003) also emphasized that re-settlement planning should be seen as more of a social and cultural issue than as a technical challenge (Evrard & Goudineau, 2004, p. 959). Understanding the forms of social organization, the local context and inter-ethnic relationships and Indigenous societies’ traditional patterns of mobility are among the important key aspects that need attention. Meaningful participation of the related communities increases the chances and benefit of being beneficiaries, rather than being victims (Price, 2009).

**Table 2: Discussion and Review of Balée's Postulates**

ITEM	BALÉE'S POSTULATES	REVIEW
1	Humans have had an effect on nearly all environments of Earth	This statement is significantly in line with by most of the historic scholars' argument on the adverse effects of environment on socio-culture. It is very hard to find non-altered landscapes. These alterations can be referred as human-mediated disturbances whereby environmental changes can be induced by natural disasters and human interferences such as the encroachment of development surrounding the Indigenous settlement that influence changes to the Indigenous culture
2	Humans are seen as morally neutral: they are not inherently bad and programmed to destroy the land and biodiversity in their environments nor are they inherently good	Human adverse impacts on the environment depend greatly on human values, perceptions, understandings and experiences with their nature that determine their practices. Human intervention can have both good and bad impact to the environment where good impacts may not be the same to every living thing at all time. Indigenous practices and tradition proves the sustainability of the culture until today though there are some negative aspects that might jeopardised the quality.
3	Different types of societies influence their landscapes in different ways	Human cultures and languages vary. Different societies and political systems have distinct impacts on the landscape. For example, Indigenous people's practices can be seen as having minimal impacts on environment degradation due to their high dependency upon the landscape and natural resources which they cherish. Landscape is the area or space where the histories are created. One single community studied could simplify the complex factors that can contribute to the landscape modification and production.
4	The relationship between people and the landscape can be comprehended holistically	People and the landscape are very interdependent. Therefore, it is more efficient and accurate to study them together as a single entity. The landscape is visual evidence of the total interaction of culture and the environment together with natural occurrences. Therefore, humans should be more pro-active in adopting, maintaining and adapting relationships between this Indigenous people and the landscape.

Source: (Balée, 1998; Dove & Carpenter, 2008; R. Ellen, 2008)

Inter-dependency of humans with their environment is also proposed by Balèe through four postulates as further discussed and tabulated in Table 2. The central point of this environmental anthropology discussion is whether people and their culture degrade the environment or enrich the nature? Posey, Fairhead and Leach, as discussed by Dove & Carpenter (2008, pp. 1-12), explored the Indigenous perception of nature and culture concluding that social identity, perception and understanding of landscape and Indigenous ecological knowledge can contribute to the conservation of nature. This selective human interaction mostly depends on how they conceptualise their nature as how they use, transform and practice within it according to their needs as exemplified by the *Nuaulu* people and other tropical lowland forest dwellers (R. Ellen, 2008, pp. 324-325). External influences such as governments, western-sponsored settlement and logging practices have made Indigenous people renegotiate with their conceptualised relationships with forests. Therefore, Indigenous peoples should be seen as integrated models for conservation whereby their lifestyles are not homogenous but changing.

### **2.2.1 *Misrepresentativeness and Misunderstanding***

Internationally and historically, Indigenous peoples have been treated as backward, uncivilised and their culture has been jeopardised by new nation-states. In certain historical contexts they even have been consciously killed, dispossessed, or forced to assimilate in Western national economic growth processes or unconsciously exterminated by the advance of diseases and microbiological changes whether human, animal, plant and or micro-climatic. In this context, the dominant government structure has made decisions as to what is the best for these Indigenous peoples as perceived by them and more often without due consultation or empowerment.

Since the end of the Second World War, many governments have implemented top-down development approaches, involving large-scale projects (Colchester, 1998). Colonization has liberated Indigenous thought, practices and discourses to suit what they desired and appropriated from Western cultural knowledge systems rather than relying on existing local realities and knowledge systems (Battiste, 2000, p. xix). This developmental approach has brought many problems to Indigenous peoples, particularly those in the Philippines, India and the Amazon. Colchester suggests that this is because the Indigenous people have not been involved in the planning stages of projects (Colchester, 1998). There has also been a



conflict in governments' policies between whether to bring Indigenous peoples into the mainstream or to leave them in an isolated context. These thoughts are the result of the misrepresentativeness of the Indigenous communities' actual needs and their wishes being sought and addressed. For example, this has resulted in the manipulation of the identity of the *Orang Asli*, as part of tourism initiatives (Nicholas, 2007).

### **2.2.2 Settlement Issues for Indigenous Peoples**

Government-inspired re-settlement or re-groupment programs in Malaysia have been initiated more for the convenience of the government or other large organisations than for the subject Indigenous people. It is said that re-settlement does have some benefits such as providing employment opportunities and health services to the Indigenous people. However, re-settlement and compensation does not always fill gaps. Development has caused Indigenous people displacement, loss of traditional knowledge and production system. There have also been changes in Indigenous people's relationships with their natural surrounding and amongst themselves (Griffen, 2001a).

“We, the Jahai, have never stayed in a place for more than three or four days. We cannot stay for a longer period, otherwise our children will go hungry. So we are always on the move and we cover long distances. My group is often in Perak, but we have also been to Kelantan and Thailand. But wherever we go, it is our country, the place of the Jahai. The villages belong to the *Malays*, and the towns to the Chinese, but the jungle is ours – it belongs to us (Carey, 1976, p. 251).

This statement demonstrates that Indigenous communities in the Malaysian Peninsular region do belong to the forest, and as forest dwellers they do not have the same 'kingdom' and 'territory' as ours. However, what happens if the jungle becomes scarce and depleted? Where will these people go and live? As the forest area is exploited and reduced, resources are also becoming scarce, and this will affect the forest ecosystem food chain, which these Indigenous people depend on. The concept of settlement for Indigenous people in Malaysia appeared when the *Malays* started to categorise “settled” versus “unoccupied” of the Negrito's occupancy of place by the *Malay* Indigenous people. It has been suggested that good settlement planning is needed for Indigenous people. This is a process which involves determining the settlement needs of migrants and refugees, developing strategies to meet

those needs, identifying who is responsible for meeting those needs and monitoring outcomes of the strategies put in place.

### **2.2.3 Sustainable Practices**

Observations made on the effect of environment on socio-culture and *vice versa* has been discussed and argued by historic and classical scholars of society-environment (Dove & Carpenter, 2008). The level of dependency of Indigenous people on forests or the environments they live in has been reduced and degraded (Arshad & Ahmad, 2004). The degradation and extinction of Indigenous human cultures has been identified as one of a number of environmental problems. As a result increasing awareness of this has led to the formation of environmental movements that become significant forces in contemporary societies (Fox, 1990). In spite of this, Indigenous people are the best example of sustainable society systems. For example, a representative of the *Karen* people, an Indigenous society living in northern Thailand, has stated; “*If you eat from the forest, you must protect it, and if you drink from the river, you must conserve it*” (UNHCHR, 2002a, p. 2). The *Karen*’s maintain a high level of biological diversity based on four categories of land, distinguished by their use, location and pattern of ownership.

The United Nations Conference on Environment and Development (UNCED), popularly known as the Earth Summit, held in 1992, recognised Indigenous peoples as a major group who should participate in sustainable development processes (IWGIA, n.d). The Rio de Janeiro Declaration, arising from this Summit, on Environment and Development in Principle 22, has stated that;

“Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development” (UNHCHR, 2002b, p. 3).

### **2.2.4 Indigenous Rights**

Despite their heterogeneous characteristics, the worlds’ Indigenous peoples share common problems related to the protection of their rights as distinct societies (*J. G. Bartlett, et al.,*

2007). Indigenous rights have often been threatened by the majority dominant populations of their new political countries. Indigenous dignity and rights that has been declared in 45 articles of the United Nations Declaration on the Rights of Indigenous Peoples that covers the whole spectrum of their lives. However, their rights also have been jeopardised and endangered as distinct groups (UNHCHR, 2003). The diminishing size of lands allocated for Indigenous peoples' reserves is one example of where Indigenous peoples' rights have been jeopardized (Berndt, 1962). Rights to their traditional lands and territories have been manipulated by government development policies that have also dislocated their 'ownership' or spiritual curatorship traditions over these lands and waters. Furthermore, Indigenous peoples have often been officially restricted from entering lands and waters that once belonged to them.

Indigenous people today have the legal right to use only 6% of the Earth's ecosystem compared to two centuries ago where they had whole ecosystems to themselves (Anonymous, n.d.). For example, in 1962, land reserved for Australian Aboriginal people, where they could still practice their traditional knowledge and sustain their integrity, only comprised 31,200 square miles (80,801 square kilometer) of the entire Australian continent (Berndt, 1962).

Land rights are also a major concern of Indigenous peoples of Asian countries including Malaysia. In Malaysia, issues concerning Indigenous peoples and loss of their land are not recent. The denial of Malaysian Indigenous peoples rights in the face of development is a major concern as reported in the *Suruhanjaya Hak Asasi Manusia Malaysia* (SUHAKAM) (Human Rights Commission of Malaysia) report (Hak Asasi Orang Asal, 2003). This report concluded that Malaysian Indigenous peoples have never been told nor had discussions about government development projects sanctioned and undertaken on their traditional lands. Further, the report also concluded that these peoples have not been involved in any phases of development projects.

Land ownership issues of Indigenous people should not be seen as being limited to their settlements (sedentary or semi-sedentary) and their surrounding hinterlands, but also includes their ritual lands, hunting sites and other natural resources such as rivers, streams, lakes and other geographical features. These areas are referred as native customary land or

*Tanah Adat*, the term used by the *Orang Asli* (Hak Asasi Orang Asal, 2003). Some of them have special terms which describe these areas. For example, the *Semai* people call their land *Nengrik*, whereas, the *Orang Iban* and *Orang Ulu* use *Pemakai Menua* to designate their 'land'.

Development projects also progressively have had a great impact upon their curatorship of customary lands (Hak Asasi Orang Asal, 2003). Occupation of ancestral lands is very important to the Indigenous societies if they are to be recognized as Indigenous communities. This is because as Indigenous people they need to have and demonstrate a historical continuity to the 'land'. Indigenous identity is derived from a historical continuation for an extended period over ancestral lands, demonstration of common ancestry with the original occupants of these lands and also from religious connections when living under a tribal system, etc ((IWGIA), 2006, p. 1).

### **2.2.5 Indigenous Knowledge and Practice**

Naturally, people acknowledge, experience and react to the environment through their senses. However, information is also one way to know the environment. Environmental knowledge and perception are different due to the beholder perceptions, experiences, expectations and their evaluations of their environment (Rapoport, 1972). The growth of natural resource-driven economic development requires greater exploitation of natural resources (Gillen & Gillen, 1986). This exploitation of natural resources for development affects the availability of natural resources upon which Indigenous peoples depend. This conflict has led to a loss of traditional knowledge and a reduction of traditional practices among Indigenous peoples, which needs to be maintained in order to sustain the Indigenous identities of these peoples.

European colonization and cognitive imperialism have characterized Indigenous people as being primitive and uncivilized, backward and inferior and many more negative words, as described by Marie Battiste in her book entitled *Reclaiming Indigenous Voice and Vision* (Battiste, 2000). This issue has been confirmed by many scholars including Linda Barwick, a senior research fellow, who started to work with Indigenous communities on their language and music to help repatriate them through recording and sound archiving of the Indigenous

music of the *Wadeye* community of a Torres Strait island (Braue, 2004, p. 7). Indigenous knowledge is beneficial to any development for people, including Indigenous communities. As discussed by Hood, these critical concepts of a particular group of culture need to be understood in any social study (H. M. Salleh, 1974b; Santharamohana, 2002). For example, Aboriginal peoples in Australia who live in the coastal areas are good fishermen, and they can make their own boats and other fishing tools from natural products (Hillman, 2001).

Traditional living practices or traditional lifestyles significantly determine Indigenous peoples' qualities. Therefore, we need to better understand more about who these Indigenous peoples are and what makes these conflicts and issues significant to them, before we can propose any solutions to their problems. The stopping of using, practicing whatever Indigenous culture that the Indigenous peoples have eventually will dilute and degrade the values of those intrinsic qualities left for the present and next generation as what happened in Australia.

Misconceptions of Indigenous community traditions by modern societies also have contributed to the loss of Indigenous traditional knowledge. As discussed by Gina Marie McAndrews in her thesis, modern societies view Indigenous tradition culture as less progressive (McAndrews, 1995). Unfortunately, this view has been accepted by the younger generations of Indigenous communities that make them devalue their own native culture and enable and prompt their easy transition to modern lifestyles (McAndrews, 1995). However, Twentieth century movements especially among Indigenous people have begun to articulate a new perspective on knowledge which nurtures the dignity and pride of their Indigenous knowledge and rights. As described by the UNPH's (United People) official website, Indigenous peoples are the practitioners of the unique cultures which they inherit from their ancestors (J. G. Bartlett, et al., 2007). There are also increasing effort and concerns to exploit the Indigenous knowledge of Indigenous communities by the rest of the nation especially of the use of natural environment (Ruppert, 1996).

### **2.3 Ethnological Significance**

Indigenous peoples of the world have direct, temporal, personal and spiritual linkages with their environment. Land and environment are the basis of these spiritual and religious attachments and

harbour the notion of custodianship of Indigenous communities (Commission, 1999). The flora has been integral in human cultures, especially so for Indigenous peoples. Indigenous peoples have developed highly complex and very specific knowledge of their local vegetation, on which some of them still largely depend for food and material culture. It has been recorded that Australian Aboriginal people use every part of plants for food and other artefacts (Isaacs, 2002). Plants are not just botanical phenomena, but also provide significant cultural values (A. H. Mohamad & Bidin, 1991; Othman, 1991a). Apart from functional aspects, plants have also become part of human lives in terms of spirituality. Interestingly, Balick and Cox also agreed on five reasons why the relationship between Indigenous people and plants is vital? The first is that clear relationships exist between Indigenous people and plants which link production and consumption as becoming more direct and transparent. Secondly, sometimes Indigenous cultures represent living analogues of the prehistorical stages of Western civilizations. Third, Indigenous cultures retain much more plant knowledge than the Western cultures give credit to. Fourth, Indigenous societies are the stewards of their sensitive environments. Finally, Indigenous people are vulnerable to rapid economic and cultural change (Balick & Cox, 1996, p. 7).

According to Wightman (1994), the importance of traditional plant knowledge diversity as well as floristic diversity, especially among Indigenous peoples, and is undeniably at risk. This is why ethnobotanical research was undertaken in May 1993 aimed at conserving the Sundanese knowledge as well as acting as a catalyst to promote awareness amongst younger Indonesian generations (Wightman, Astuti, & Munawaroh, 1994). However, ethnobotanical research not only concentrates upon researching the botanical attributes of plants but can also be used in the development planning process for that country. Ethnobotanical values can be looked and perceived from more than one perspective, rather than through a scientific botanical examination only (Battiste, 2000). Ethnobotanical research should be encouraged to protect biodiversity and to prevent natural heritage loss. Ethnobotanical surveys and fieldwork in tribal areas amongst Indigenous societies and cultures have been predicted to become a critical area of future research (Jain, 1986). Ethnobotanical knowledge can be used as a platform to understand Indigenous communities' behaviour towards their human-made environment, such as settlement typologies and configurations, which are also part of ethnoecological research. Ethnobotanical knowledge of Indigenous peoples will re-shape and justify the significance of plants based on traditional knowledge of the community and can be used in their future settlement planning and design of their community. Apart from ethnobotany, "ethnoecology" is another avenue of looking at Indigenous peoples'

relationships with their environments (Nazarea, 1999a). Ethnoecology is the study of the past and present interrelationships between human societies and their living and non-living environments. Ethnoecological research is important given that Indigenous knowledge systems and perceptions can be usefully incorporated into development planning and environmental management.

Indigenous peoples throughout the world share some similar issues and problems, although they live far apart and are not in regular contact with each other. Generally, we find that remnant self-contained Indigenous peoples of the world live in remote areas, far from major concentrations of urban and rural development, such as in forests, jungles, wetlands and coastal areas. Indigenous peoples have close relationships with their environments in providing their main source of food, and they appreciate and honour their environment. The close relationship of Indigenous peoples all over the world with their environments explains why they practice quite similar activities. Forest communities individually have their own unique beliefs and knowledge about their environment. These peoples use forests for their daily subsistence, including as the main source for energy such as food, water and fuel as well as materials for household and artefact construction (Griffen, 2001b). Activities like forest hunting and gathering, hillside agricultural cultivation, fish hunting and gathering, handicrafts such as basket making and weaving, tool making and wood work are examples of the similar practices of Indigenous peoples in India, Malaysia, Australia and some other countries (Gupta, 1986; Isaacs, 1997; Satterthwait, 1990).

Their relationship with their natural resources, for example 'fire-stick farming', exemplifies their strong associations with their environments. Plant and environment associations determine humans' environments, and plants dominate and give character to the ecosystems and the habitats humans live in. For example, Australian Aboriginal people have always interpreted their lands and environments as being part of their life-essence. Wherein they believe that their souls and spirits belong and are connected to the land through rituals (Berndt & Berndt, 1999; Philip A. Clarke, 2003; Commission, 1999). To them, all relationships among peoples, plants and animals involve the spirit world (Isaacs, 2002). Human ecology requires an understanding of human conceptual systems. We need to understand how the involved people classify and think about their lives (R. F. Ellen, 1984; Rambo, 1980). Generally, anthropologists accept the notion that environmental adaptation of human beings is achieved more by cultural means than by biological means (Rambo, 1979). An example is the fight against malaria. Human beings were born with hemoglobin E blood cells which provide built-in protection against malaria. However, cultural adaptation such as taking quinine, sleeping under

nets, spraying houses with Dchlorodiphenyltrichloroethane (DDT) are far more effective means for malaria protection. Thus, it is important to study the cultural adaptive values of certain communities to understand how they sustain their living environment.

## **2.4 Indigenous Use of Space**

Environment has been seen as a passive agent compared to humans, the dominator of the Earth. The concept of environment in this thesis refers to this spatial organisation; how people use and define their space and how they make the space a habitable place for living and other activities to take place. Space can be symbolic. How people adapt to their environment can be seen in four ways; conscious, unconscious, active or passive (Rapoport, 1972). The concept of environment is also much related to space and place-making. For example, the physical environment that is composed of natural and human-made objects, such as mountains, trees, fields, roads, cities and buildings, are inter-related. Similar geographical settings may produce different effects on human-made environments and have different effects upon the people whom make different choices within these settings. Based on Rapoport's theory, the regularities in spatial organisation form cultural values and attitudes and are reflected in the physical results, which is the cultural landscape (Rapoport, 1972). This relationship occurs in space which is organised in different scales (Rapoport, 1972), and in which people move for many reasons. Most importantly, they act on the environment. Apart from these patterns, they also select and modify the environment to suit themselves. The physical effects of geography such as climate, terrain and soil on human affairs have been widely recognised. Forests and trees are essential to people who live in or close to wooded areas (Griffen, 2001a). External and internal factors such as invasion of disease from the European settlers, contacts and accessible roads that encourage occupation and immigrants into the forested land, fire resulted from land clearance which destroy most of the biodiversity of the forests are among factors that contribute to the forest degradation.

Indigenous populations generally hold unique and quite vulnerable cultural and environmental knowledge that is associated with their lifestyles. Therefore, an understanding of Indigenous peoples' environmental knowledge through detailed and in-depth investigations is clearly needed in order to understand their culture. Natural environments which are essential to Indigenous peoples have often been destroyed caused by some misunderstanding through the act of re-settlement and involuntary movements. The displacement, movement or re-settlement of Indigenous peoples from their



traditional and original countries due to invasion and the encroachment of development affected aspects such as sources of material culture, ethnobotanical values and practices, threatens Indigenous peoples' identities. For example is the permanent houses and settlements imposed by Europeans to the Australian Aborigines had underpin values and behaviour upon which such structures were built (P.A. Clarke, 1996, p. 74). The Australian Aboriginal peoples' movement from their original habitats or countries due to re-settlement processes has limited their dynamic and productivity relationships with land (Bailey & Green, 1997). Degradation of the Indigenous traditions of the Australian Aboriginal people was caused by European settlement (Bailey & Green, 1997). The Indigenous Australians previously survived by eating a nutritious and balanced diet of various native plant and animal species, which they found in their surrounding habitats, before the Europeans arrived (Isaacs, 2002).

The scholarly interest in how people perceive their environment started in the 1960s, with geographical research describing how people build up cognitive maps and how they respond to their environment (Walmsley, 1984, pg x). Anthropologists have begun to realize that people do not respond directly to their environment but rather to the environment as they conceive of it. For example, they respond to animals and plants as conceptualized in their minds and label them in their languages (Dentan, Endicott, Gomes, & Hooker, 1997). These associations with environments explain how people derive information from their environment, how they use public and private information, and also how they incorporate environmental information into decision-making that has resulted in the physical forms of their living environments. The knowledge of how Indigenous peoples' respond to their environment should be incorporated into designing or planning of their new settlements, which should possess related characteristics as their former houses and settlements. Unfortunately, there are very few reports and action plans that address or are prepared to overcome these problems. Due to inconsistent and in-parallel objectives between the government and the Indigenous communities, there have been no significant steps in dealing with these issues in Malaysia (Hak Asasi Orang Asal, 2003).

## CHAPTER THREE: THE ORANG ASLI IN MALAYSIA

Malaysia is blessed with multi-cultural societies that consist of three (3) major races namely Malay, Chinese and Indian with a population of 19.7 million in 1994 that increased to 27 million in 2008. Colonisation determined the mass influx of Chinese and Indian migrant labour into Peninsular Malaysia to become part of these residents. During the British administration, the population was classified based on race; a system of categorisation which applied politically, administratively and legally. For both Malays and Orang Asli, they were classified under Bumiputera (son of the soil) and considered as Indigenous to the land with associative claims on land rights based on Indigeneity. However, they later became Malaysians together with Malays and non-malay bumiputera on Peninsular Malaysia as well as in East Malaysia.

### 3.1 Classification of Malaysian Indigenous People

Generally, Indigenous peoples in Malaysia are heterogeneous and multi-cultural. There are recognized several ethnic groups resident in West Malaysia (Peninsular Malaysia) and East Malaysia (Sabah and Sarawak States), whose societies and cultures are closely tied to their ancestral lands (Cheah, 2004; Pala, 1997). In general they are divided into two (2) groups according to the geographical divisions of East and West Malaysia. Indigenous peoples in East Malaysia (Sabah and Sarawak States) have different names. In Sarawak, Indigenous people are commonly called *Kaum Pribumi*, which means 'sons of the soil', whereas in Sabah they are termed as 'natives' or *Anak Negeri* (Lasimbang, 2004). They are the majority of Indigenous peoples in Sarawak, and constitute about 49.2% of the Sarawak State population. In the State of Sabah they comprise 54.3% (Anonymous, 2005a). The first attempt at estimating the population of the *Orang Asli* was made in 1911, as being 30,000 *Orang Asli* on Peninsula Malaysia (Carey, 1976, p. 8). Refer Table B in Appendices A.

The *Orang Asli* in Peninsular Malaysia are the Indigenous minority peoples who comprised only approximately 0.5% of the Peninsular Malaysia population in 1991 (Gomes, 2004; Means, 1985-1986, p. 637; Nicholas, 2002; Shashikala, et al., 2005). This percentage slightly increased to 0.7% in 2003 (JHEOA, 1992; Means, 1985-1986, p. 637). According to the records of the Department of Orang Asli Affairs (JHEOA), a federal agency which is given responsibility and legal authority over issues concerning their welfare and needs; there were 147,412 *Orang Asli* in 869 villages in 2004 in

March 2005 which had increased to a population of 187,400 on Peninsula Malaysia (Anonymous, 2008, p. 6). However, in total, the Malaysian population of the *Orang Asli* is still in the minority compared to the three (3) dominant ethnic groups – Malay (53.35%), Chinese (26.00%) and Indian (7.67%) that resides in Malaysia (Malaysia, 2000). They are also the most economically deprived and under-represented community in the country which creates difficulties in the government policy and also affects the rest of the nation's ethnicities (Means, 1985-1986).

The Indigenous peoples of Peninsular Malaysia (West Malaysia) or prior to that known as *Malaya*, are generally called the *Orang Asli*. The word *Orang* means 'people' while *Asli*, from the Arabic word *Asali*, means 'original', 'well-born' or 'aristocrats' (Carey, 1976, p. 3; JHEOA, 1992; Roseman, 1979/2003; Wikipedia, 2008). The *Orang Asli* have historically been also known by other names. During the British colonial period, they were called 'aborigines' by the colonial administration (Gomes, 2004). Before the late 1950s, the *Orang Asli* was referred to as *Sakai* which means 'slave' or 'servant'. This demonstrates how they have been stereotyped and treated as slaves by the dominant *Malays*. They were also called *Besisi* – 'people with scales', *Orang Liar* – 'wild people', *Pangan* – 'eaters of raw food', or *Orang Mawas* – 'ape-like people' by the anthropologists and administrators (Nicholas, 2002). In 1955, the *Orang Asli* were also commonly called *Orang Bukit* (Hill Men) and *Orang Darat* but rarely, as *Orang Dalam* 'inland people' or 'people of the interior' (Carey, 1976, p. 4; Leary, 1994, p. 89). These terms were standardised by the Government to reduce their negative associations that leads to other unfavourable meanings and behaviour (Carey, 1976, p. 3). Therefore, the term *Orang Asli* started to be used in the 1960s as directed by the Malaysian government, identifying that the Indigenous people of West Malaysia should be referred to as *Orang Asli* (Leary, 1994). In 1977, the Deputy Prime Minister Abdul Ghafar Baba, wanted to reclassify the term *Orang Asli* into *Putra Asli*. However this idea was objected to by staff members of the JHEOA who included one *Orang Asli* (Benjamin, 2002). In addition, the term '*Orang Asli*' is a collective name that refers to 18 to 19 different ethnic groups that are officially categorised for administrative reasons (Carey, 1976; Indriatmoko, 2004).

### 3.2 The *Orang Asli* Origins and Distributions

There are many scholarly views on the cultural and demographic origins of the *Malays* and the *Orang Asli* which mainly can be divided into three sources; cultural anthropologists, archaeologists and physical anthropologists (Rahman, 1997; Solheim, 1980, p. 61). According to archaeological evidence the *Orang Asli* are believed to have been arrived on the *Malay Peninsula* some 10,000 years ago, based upon excavations at various sites dating from the prehistoric trade period (Nicholas, 2000). The *Orang Asli* were once scattered throughout the country. Most of the *Negritos* including *Kensiu*, *Kintaq*, *Jahai* and *Bateq De'* were concentrated in northern parts of the Peninsular (Dentan, et al., 1997). Some of the *Senoi* are isolated in the central part of the Peninsular such as the *Semai*, *Temiar* and *Jah Hut*. *Semelai*, *Jakun (Orang Hulu)* and *Temuan* are among southerly and forest fringe groups of the *Proto Malays*. The other *Proto Malays* resides along the coast lines and rivers specialising in harvesting seas, shores and mangroves for trade and their own consumption, and includes *Orang Seletar*, *Orang Kuala* and *Betsisi*. However, as the *Malay* population grew and spread out on the coastal plains and major river valleys, most of the *Orang Asli* were pushed back into inland. The contemporary pattern is which are illustrated in Map 5.

The *Orang Asli* are direct descendants of the Hoabinhians, the earliest well-documented inhabitants of the *Malay Peninsular* (Dentan, et al., 1997, p. 10; Rambo, 1979, p. 61; Solheim, 1980, p. 69). The similarities of agricultural practices and other civilization cultures concluded by historians and anthropologists is that the *Orang Asli* migrated from upper Thailand, Burma or Cambodia from three to eight thousand years ago before the *Malays* arrived where they practiced as nomadic foragers (hunter-gatherers) until they run out of food supplies and moved on (Dentan, et al., 1997; Means, 1985-1986). As depicted in the Map 5 it can be clearly seen that most of the *Orang Asli* dominated the interior of Peninsular Malaysia before immigrations from Indonesia, China and India colonised the Peninsular (Gianno & Bayr, 1999). Most of the Indigenous *Orang Asli* populations today inhabit the urban fringes and moderately developed lands. From the foregoing Tables we can see that the *Orang Asli* are well distributed across the country. Most of the *Orang Asli* are concentrated in fringe areas of the cities and it appears that a minority of the *Orang Asli* presently live in forest locations. This, in part, reflects the government re-settlement and re-groupment programs undertaken throughout Peninsular Malaysia.

NOTE:

This map is included on page 45 of the print copy of the thesis held in the University of Adelaide Library.

*Source: (Graphic, 2009)*

***Map 5: Map of Orang Asli distributions in Peninsular Malaysia, official view from the Malayan State***

Indigenous populations in Peninsular Malaysia are heterogeneous, wherein their population proportion varies and are scattered in different parts (Nicholas, 2000). Ethnographic literature has identified three (3) main ethno-cultural groups of the *Orang Asli*: the *Negrito*, *Senoi* and *Proto Malays* (Roseman, 1979/ 2003). The location and populations distributions of Indigenous peoples in Malaysia per State are summarised in Table 3. Cultural anthropologist Fay-Cooper Cole believes that the *Negritos*, *Senoi* and *Proto-Malays* migrated from the north (Solheim, 1980, p. 61). The *Negritos* are the most primitive but small in number with the majority living in the northern part of the Peninsula. The *Senoi* are linguistically sub-divided into several sub-groups and live scattered through the Malaysian states of Perak, Kelantan, Pahang and Selangor, in the central part of the Peninsular Malaysia (Means, 1985-1986, p. 638). The *Proto-Malay* people have the closest association with the *Malays* which enables them to speak archaic dialects of *Malay* and most of them have been assimilated into the *Malay* community especially when they embraced Islam (Means, 1985-1986). These three (3) main ethno-cultural groups are further subdivided into approximately 18 sub-ethnic groups based upon their locality or geography or linguistic cultural units, and they are linked through socio-economic indicators and social histories (Carey, 1976; Dentan, et al., 1997; Nicholas, 2000). Linguistically, these ethnic groups are also influenced and distributed accordingly. According to Carey (1976, pp 11-24) and Baharon (1964, pp 39,n.1), these ethnic groups are further divided into approximately 20 linguistic-cultural units as summarised in *able 4* (Roseman, 1979/ 2003, p. 1). Some of the northern *Orang Asli* groups (especially the *Senoi* and *Negrito* groups) speak their own languages, now termed the Aslian languages, which suggests a historical link with the tribal people in Burma, Thailand and Indo-China. The members of the *Aboriginal-Malay* groups of southern Malaysia speak dialects which belong to the same Austronesian family of languages as the *Malay*, with the exception of the *Semelai* and *Temoq* dialects (which are Austroasiatic). Austronesian is an acceptable linguistic concept that spreads from Taiwan to Easter Island.

Table 3: Breakdown of Orang Asli by ethnic group and areas of settlements

PENINSULAR MALAYSIA	AREA OF SETTLEMENTS (STATES)	Population Distributions among Ethnic Groups as in Population and Housing Census 2000																		NUMBER OF VILLAGES	LOCALITY			DEVELOPMENT RATE			
		SENOI						PROTO- MALAYS						NEGRITO							URBAN	FRINGE	INTERIOR	DEVELOPED	MODERATE	UNDEVELOPED	
		Temiar	Semai	Che Wong	Jah Hut	Semoq Beri	Mah Meri	Jakun	Temuan	Semelai	Orang Kanaq	Orang Seletar	Orang Kuala	Bateq	Kensiu	Kintaq	Jahai	Lanoh	Mendriq								
	PERLIS	7						25						1						-	-	-	-	-	-	-	
	KEDAH	64						83							141						1	-	1	-	-	1	-
	PERAK	37,266					1,282								1,681				248	-	139	109	-	132	116		
	PULAU PINANG	81						416						15						-	-	-	-	-	-	-	
	SELANGOR			4,482											377				75	6	69	-	12	45	18		
	KUALA LUMPUR	183						301						92						-	-	-	-	-	-	-	
	NEGERI SEMBILAN	194							6,990							12				67	2	63	2	7	24	36	
	MELAKA	101							991						15				-	14	-		1	8	5		
	JOHOR	454								7,620				200				62	1	57	4	17	45	-			
	PAHANG	21,232						25,974						501					263	3	167	93	9	146	108		
	TERENGGANU					338	25						256							3	-	3	-	-	3	-	
	KELANTAN		8,469				144							859						136	-	21	115	-	21	115	
	<b>TOTAL</b>	<b>72,871</b>						<b>55,852</b>						<b>4,150</b>						<b>869</b>	<b>12</b>	<b>534</b>	<b>323</b>	<b>48</b>	<b>425</b>	<b>398</b>	
	<b>PERCENTAGE</b>	<b>54.84%</b>						<b>42.03%</b>						<b>3.12%</b>						<b>100%</b>	<b>1.4%</b>	<b>61.4%</b>	<b>37.2%</b>	<b>5.3%</b>	<b>48.9%</b>	<b>45.8%</b>	

Table 4: Ethnic Groups Classification in Malaysia

	Main Groups	Sub-Groups	Linguistic
PENINSULAR MALAYSIA	SENOI	<i>Temiar, Semai</i>	Central Aslian
		<i>Che Wong</i>	Northern Aslian
		<i>Jah Hut</i>	Central Aslian
		<i>Semoq Beri</i>	Southern Aslian
		<i>Mah Meri</i>	
	PROTO MALAYS	<i>Jakun, Temuan</i>	<i>Malay</i>
		<b>Semelai</b>	Southern Aslian
		<i>Orang Kanaq, Orang Seletar</i>	<i>Malay</i>
		<i>Orang Kuala</i>	
	NEGRITO	<i>Bateq</i>	Northern Aslian
		<i>Kensiu</i>	
		<i>Kintaq</i>	
		<i>Jahai</i>	
<i>Lanoh</i>		Central Aslian	
<i>Mendriq</i>		Northern Aslian	
SABAH	<b>DUSUNIC</b>	<i>Dusun, Coastal Kadazan, Kimaragang, Eastern/ Labuk, Kadazan, Lotud, Kuijau, Tatana, Tenggara, Bisaya, Rungus, Dumpas</i>	
	<b>PAITANIC</b>	<i>Tambanua, Upper Kinabatangan, Sinabu, Lobuu/Rumanau, (Abai) Sungai, Lingkabau</i>	
	<b>MURUTIC</b>	<i>Kolod/ Okolo, Gana, Kalabakan, Sebangkung, Serudung, Tagal/ Sumambu, Baukan, Nabay, Timugon</i>	
	<b>BAJAU</b>		
	<b>SULUK/TAUSUG</b>		
	<b>SINO-NATIVE</b>		
	<b>OTHER INDIGENOUS</b>	<i>Bonggi, Illanun, Bengkahak/Mangkaak, Malayic (Cocos, Kedayan), Tidung, Dayak, Lundayeh, Bugis, Ida'an</i>	
SARAWAK	<b>IBAN</b>		
	<b>BIDAYUH</b>		
	<b>MELANAU</b>		
	<b>OTHER INDIGENOUS</b>	<i>Kenyah, Kayan, Ukit, Penan, Sekapan, Lahanan, Lun Bawang, Kelabit, Berawan and Punan Bah]</i>	

Source: Nicholas 1996: 158, Lasimbang 1996: 178-9 and Phoa 1996: 198 as stated in (Anonymous, 2005a; Roseman, 1979/ 2003).



### 3.3 The *Orang Asli* Beliefs

Generally, Indigenous communities in Malaysia see themselves as having strong ties to the earth, where their traditional belief system is deeply rooted in animism. Therefore, they have their own unique folklore, myths and legends which relates to their particular religion, customs and culture. In the example of the Australian Aboriginal people, knowledge of their creation myths has declined, although contemporary Aboriginal people have maintained and developed a rich folklore centred on spirits and ghosts. While the Australian anthropological literature acknowledges the important religious dimensions of creation myths, studies of the secularised folklore of Indigenous communities living in rural and urban areas have been largely neglected (Philip A. Clarke, 2007b).

Generally, under the *Orang Asli* belief system, an *Orang Asli* worships numerous gods that individually and/or collectively protect and provide for them. However, some of members of these communities have embraced Islam and Christianity. An Islamic movement in the mid 1970s, sponsored by the JHEOA, promoted the spread of Islamic beliefs throughout the *Orang Asli* tribes hoping to enable cultural assimilation with the dominant population that are *Malays*, Chinese and Indians. Since then, some of these *Orang Asli* have become Muslim, although some mainly in name. The traditional belief system that the *Orang Asli* have practiced over the last thousand years continues to prevail over assumed Islamic beliefs. The assimilation into the *Malay* and Islamic culture may also be to expand the political strength of the *Malays*, the Indigenous people of the *Malay Peninsula* as claimed by the *Malays* (Jumper, 1997). Distribution of religion among the *Orang Asli* in Peninsular Malaysia as in early 1990s is tabulated in Table 5.

**Table 5 :Distribution of Religion among the Orang Asli in Peninsular Malaysia, 1980 and 1991**

Religion	1980 (%)	1991 (%)
Folks/tribe	66	45.7
Islam	5.3	11.2
Christian	4.3	5.1
Others	3.9	12.4
Animism	20.4	25.6
TOTAL	100	100

Source: Jabatan Hal Ehwal Orang Asli, Malaysia (JHEOA)(1980, 1991).

### 3.4 The *Orang Asli* Policies in Malaysia

Both the *Malays* and the *Orang Asli* are classified as *Bumiputera* (son of the soil) and are categorised as the *Malay* language speakers. *Bumiputera* is a Malay term derived from the Sanskrit word *Bhumiputra* which translates literally as “son of land” (*bhumi*=earth or land, *putra*=son). The concept of a bumiputra ethnic group in Malaysia was coined by activist Tunku Abdul Rahman to recognize the ‘special position’ of the Malays expressed in the Federal Constitution of Malaysia. While the Constitution does not use this term “bumiputra” it defines “Malay” and “aborigine” (Article 160(2), “natives” of Sarawak (161A(6)(a)), and “natives” of Sabah (Article 161A(6)(b)). Article 153 of the Constitution states that:

It shall be the responsibility of the Yang Di-Pertuan Agong to be safeguard the special position of the Malays and natives of any of the states of Sabah and Sarawak and the legitimate interest of other communities in accordance with the provisions of this Article.

Article 160 defines Malay as being one who:

“...professes the religion of Islam, habitually speaks the Malay language, conform to Malay customs and is the child of at least one parent who was born within the Federation of Malaysia before independence of Malaya on the 31<sup>st</sup> of August 1957.”

As a consequence of these Constitutional Articles, and the Federal Government Interpretation of them, certain pro-bumiputra policies exist as affirmative action opportunities for bumiputras, for the

Malaysian New Economic Policy aggressively employed in the 1970s. Unfortunately, as highlighted by Hooker in 1991, though the Orang Asli and the Malays were placed under the category of Bumiputra, their relationship remained ambiguous. The original Constitution of Malaysia, made no reference to the Orang Asli whereby there is no congruence of 'Malay' and 'Orang Asli' in the Constitution.

In 1961, the independent Malaysian government released the "Statement of Policy Regarding the Administration of the Aborigine Peoples of the federation of Malaya" (Government of Malaysia 1961). The Malaysian Federal government policy of assimilating the *Orang Asli* into the mainstream society, which is politically dominated by *Malay* Muslims, has been imposed due to the claim by the *Malays* that they are the definitive people who set up the first governments and have the right of indigeneity, shared with the *Orang Asli* (Gomes, 2004).

The *Orang Asli* had a long history of association with the *Malays* by performing important roles in helping to establish the early *Malay* Sultanate Kingdom and have also been involved in forest product trading with the *Malays* (Jumper, 1997; Nicholas, 2002). Around 1000 A.D. the *Orang Asli* were forced inland from the coasts of the Peninsula due to Indian and Chinese trader expansion into the natural coastal-edge lush habitat which affected port security, freshwater, and edible and spice plants (Nicholas, 2000). However, industrialization changes in nineteenth century and twentieth century have reduced association and contact between the *Malays* and the *Orang Asli* (Andaya, 2002). The *Orang Asli* are hardly mentioned in contemporary Malaysian political debates. Early scholarly inference that hostile relations existed between the *Orang Asli* and *Malays* in the pre-colonial and early colonial periods has impacted on policy making about the *Orang Asli* as well as with other Malaysian Indigenous communities (Nah, 2006). Notwithstanding this political intervention there are problems; the *Malays* are Muslim, the Chinese and Indians are mixed Christians, Hindus and Buddhist.

Scholars have identified five (5) stages of historical development which influenced policies towards the *Orang Asli* and their responses towards the Malaysian government's intention to integrate them into the wider national society as follows:

i. *Colonial Policies toward the Orang Asli*

During the British colonial period, prior to independence in 1957, the Indigenous peoples of *Malaya* were called “protected”. The *Orang Asli* were legally placed under the responsibility of the *Malay Rulers* whom mostly influenced and advised by the British rules. The *Orang Asli* were treated by their *Malay Rulers* and their British advisors as gentle and peace-loving due to their vulnerability as being people incapable of deciding anything for themselves. The British even managed to terminate the practice of slavery among the *Malays* (Means, 1985-1986). This welfare policy remained intact until after the Second World War due to assumption by the government, the *Malay Rulers*, that they were inappropriately fit and survived in a jungle living context. The only law that governed Indigenous people before the Second World War was the *Perak Aboriginal Tribes Enactment No 3 in 1939*. Colonial land policy has influenced and affected the Aborigines’ welfare for decades. However, under the colonial land policy, which adopted the Torrens system, a system that was developed for Australia, all land belongs to the Crown. In the case of the *Malay States*, the *Malay rulers* took the *Orang Asli’s* lands as Crown land and treated as if it was unoccupied. There were no provisions or compensation made to the *Orang Asli* for rights to their land. The *Malay rulers* also appointed mixed Aboriginal-*Malay* marriage persons who acted as intermediaries in any negotiation and authority imposed on the *Orang Asli*.

ii. *During the Japanese Occupation and Insurgency Period*

The two months of the Japanese occupation of the Peninsular Malaysia positioned the *Orang Asli* in a fight for jungle control between the Japanese, the British and the *Malays*. After the surrender of Japan, the *Malayan Communist Party* launched a war against the British colonial administration. In 1946, the British Military Administration appointed a federal protectorate for the *Orang Asli* under the *Malayan Department of Social Welfare*. In 1950 a new Department for the Welfare of the Aborigines was established mainly to demonstrate the government’s concerns towards the *Orang Asli* to win their support over the Communist guerrillas. The force of the *Orang Asli’s* re-settlement has been impractical and uncomfortable since it was introduced during the ‘Emergency Period of 1948 – 1960’ was administered under a *Malayan Department of Aboriginal Affairs* created through the *Aboriginal Peoples Act of 1954 (Act 134)*. Refer Appendices A.

*iii. After Independence in 1957*

Political transition and self government for Malaysia led to a gradual shift in government policy toward the *Orang Asli* seeking their political supporter for the ethnic purposes of counting. Later, changes of leadership in JHEOA officers also changed the policy towards integrating the *Orang Asli* into Malaysian society which also included compulsory instruction in Islam which was incorporated into the school curriculum. There were also attempts to convert the *Orang Asli* through various government agencies to Islam.

*iv. 1970s – 1980s*

An increasing number of *Orang Asli* resulted in disputes over limited land resources. The rural land development schemes instituted by the Malaysian government, which were designed to assist the *Malays*, eventually encroached upon *Orang Asli* lands. The JHEOA then sought sponsored land development schemes for the *Orang Asli* on their own Aboriginal reserves accompanied by Federal Land Development Authority (FELDA) schemes resulting in large scale plantations that were meant for the economic betterment of the *Malays*.

*v. Political awakening in 1980s to the present*

The rising awareness in education among the *Orang Asli* produced some educated *Orang Asli* that could articulate for their rights. The first example of the *Orang Asli* rights and issues debate was raised and discussed in the 1982 Memorandum (Means, 1985-1986, pp. 637-651; H. M. Salleh, 1993b, pp. 12-13).

Since the JHEOA was placed under the hands of the Malaysian government, following Independence, the *Orang Asli* have increasingly been placed under considerable of pressure to adapt and adopt the mainstream life-style of the dominant Malaysian population. Today, the Malaysian government is only just beginning to develop an awareness of the problems faced by these Indigenous communities. Accordingly, these *Orang Asli* populations are 'colonized' in the sense that they are at a disadvantage and discriminated against as a minority.

Generally, the wider societies in Malaysia also have the wrong perceptions about the *Orang Asli*. One example is that they believe the *Orang Asli* are unaware of the social and cultural values of the

outside world (H. M. Salleh, 1974b). However, the following quotation contrasts this perception that implies that *Orang Asli* do not totally reject the surrounding development and modernisation of land, and acknowledge its benefits, but that issue of preserving their traditional culture worries them more.

“We want to preserve our identity, but of course when our young people are exposed to the glamour of the outside world, they are drawn to it. Development has many benefits like health and education, but it also takes my people further away from their roots. Now even in a Semai village many youths speak *Malay* to each other.”

*Rahmat Bahnap, the leader (Tok Batin) of Kampung Kabang,  
from Semai tribal group  
(Vengadesan, 2009, p. 2)*

NOTE:

This map is included on page 54 of the print copy of the thesis held in the University of Adelaide Library.

*Source: (graphics, n.d.)*

**Figure 2: Surveys Result by the public on Orang Asli**

Figure 2 depicts survey results about the *Orang Asli* that generally demonstrate a typical range of misperceptions about this ethnic group by the public. Generally the public has a mixed perception of the *Orang Asli*, tainted by their majority representation in the poor of Malaysia (Nicholas, 2000). For mainstream Malaysians, the *Orang Asli* are stereotyped as 'wild creatures closer to jungle beasts' than to human beings, and this has historically justified hunting them down and reducing them to indentured labourers. These Indigenous minorities have been stereotyped with poverty, being uncivilised and backward, "primitive mentally", possessing poor education and health status, and a perception that they still practice traditional rules and values despite continuous efforts by the Malaysian federal and state governments to integrate them into the mainstream economy and culture (Shashikala, et al., 2005). However, contemporary research on *Orang Asli* intelligence and aptitude has proved that they are competent and not less in knowledge and skill than the Malaysian national population provided they are given the same education opportunities (Carey, 1976, p. 5).

### 3.5 The *Orang Asli* Laws and Rights

Over the years, the *Orang Asli* rights on Peninsular Malaysia have been compromised in many ways. One common threat to their Indigenous heritage is the desecration of their environment where their land has often been reclaimed for industrial and agricultural developments. Their sacred sites and land have been trampled on by illegal loggers, legal or illegal land development schemes, and their customary land being their reserve land has been reclaimed for national development projects. The predominant existing legislation which directly implicates the *Orang Asli*, the 1954 Aboriginal Peoples Act, seems to be pointless and not useful in protecting the rights of these Indigenous communities. Unfortunately, the few Memorandums sent by the *Orang Asli* to the relevant state governments informing, asking, begging for their rights back, have been ignored (Jumper, 1997).

The *Orang Asli* have unique ways of claiming or determining their rights on particular lands or territories. Their long history of land mapping through foot trails and songs about their land and territories has never been considered and included into Colonial and postcolonial discourses (Roseman, 1998, p. 106). This Indigenous knowledge, used to determine land ownership, proves the existence of alternative ways of viewing land use and ownership. In *Temiar* culture for example, they will sit and have a meeting which known as *bəcaraa* in *Temiar* language. Household rights and garden territories also have been recognised and shared among nucleus family members who share sleeping areas in *Temiar's* culture as commonly practiced in other tribes such as the *Semelai*

(Roseman, 1998, p. 113). Some of this Indigenous knowledge, such as medical, personal, social, historical and geographic knowledge, is also curated within traditional practices including songs. However, the cultural knowledge of the Indigenous communities is unprotected and at risk of deterioration and extinction (F.Brown, et al., 1998).

### 3.6 The Establishment of the Department of Aboriginal Affairs Malaysia (JHEOA)

The Department of Aboriginal Affairs Malaysia (*Jabatan Hal Ehwal Orang Asli*) (JHEOA), part of the Malaysian Ministry of Home Affairs, was established in the year 1953/1954 under British mandate under the ‘*Aboriginal Peoples” Ordinance 3, 1954*. This government agency was intentionally established to entice *Orang Asli* support to the government side against Communism during the Insurgency Period in 1948-1960 (Jumper, 1997). However, it was only in 1961 when the government declared an administration policy for the Aborigines that aimed to integrate the Aborigines within National communities through several socio-economic development programs (Anonymous, n.d-c).

Administrative reshuffling after 1961 placed the JHEOA under a few different Federal ministries, such as the Ministry of Land & Minerals (1964), the Ministry of Agriculture & Land (1970), the Ministry of National & Rural Development (1971), the Ministry of Domestic Affairs (1974), the Ministry of National Unity & Community Development (1990), the Ministry of Rural Development (1994) and back to the Ministry of National Unity & Community Development (1995) (Anonymous, n.d-c). Refer *Appendices V*. In 2001, the JHEOA was re-organized under the Rural Development Ministry that is currently known as the Rural and Territory Development Ministry (Anonymous, n.d-c). The mission of this Ministry is to improve the Aboriginal’s socio-economic status and competency, increase national involvement in economy, social and political development while preserving the identity and values of the Aborigines (Anonymous, 2008). The JHEOA seeks to intervene in and engage in matters of the *Orang Asli*’s health, housing, education, agricultural services, and forest policy. Towards achieving the said goals, the programs that have been planned and executed are based upon guidelines, which include the *Act 134, Aborigines Act 1954 (revised 1974)*, the *Aborigines Administration Policy 1961*, the *Results of the 1977 Cabinet regarding Plans to Gather Aborigines who are scattered under the Re-Grouping Plan (RPS)* and the *Guide for the Task of Developing Aborigines in a Modern Society 1978* (Anonymous, n.d-c).



The *Aboriginal People Law Act 1954 (amended in 1974)* is the 'special law' which is the only legislation that supposedly directly and completely governs the *Orang Asli* (Indriatmoko, 2004). The *Laws of Malaysia, Act 134* under the *Aboriginal Peoples Act 1954*, also defines the JHEOA's powers and functions under sub-sections 4 and 5. The objective of this *Act* is believed to provide for the protection, well-being and advancement of the Aboriginal peoples of Peninsular Malaysia. This *Ordinance* was passed by the Malaysian *Legislative Assembly* to provide for the protection, well-being and advancement of the *Orang Asli* communities in Peninsular Malaysia against encroachment and exploitation resulting from rapid growth while also providing educational and other development infrastructure compatible to their requirements. The principle objective of the *Ordinance* is to integrate the *Orang Asli* with the wider Malaysian population and to encourage them to re-settle, while in theory respecting their desire to maintain their own cultural traditions.

In recent years the JHEOA has been evaluating their operational strategies and reformulating new plans that they perceive can better assist the *Orang Asli*. The JHEOA has developed an area of 5,328.45 hectares of land through land development agencies such as Rubber Industry Smallholders Development Authority (RISDA) and Federal Land Consolidation and Rehabilitation Authority (FELCRA) where an area of 3,283.45 hectares has already turned in results. A total of RM 107,000,000.00 has been allocated for the year 2008, as previously reported for the socio-economic development, which involves focus areas such as the arranged settlement program, economy development program and social development program. The Department has carried out relocation programs throughout states, namely Pahang, Perak and Kelantan, where these Re-location Plan Scheme (RPS) involve as many as 3,174 *ketua isi rumah* (head of households) and a total of 14,203 settlers. Through RPS, the JHEOA has established places to group scattered Aboriginal communities into one area that had been developed in an integrated manner which includes land development, infrastructure facilities and public facilities as well as a housing area. This was intentionally done for administrative purposes during Insurgency Periods.

Later, the Village Regrouping Project (PSK) was introduced which purposely sought to regroup the existing Aboriginal villages by focusing upon the marginal areas that were not organized and where they were still not equipped with basic facilities as well as undertaking a Land Development Plan as a source of income for the settlers. PSK is a step towards regrouping traditional/local Aboriginal villages in marginal areas. The success of this project depends on the preparation of the Aboriginals to submit their worked areas, where they are not standardized, to reorganization according to the

*Land Ownership Grant Policy* by State Governments. The State Government's approval of the *Land Ownership Grant Policy* to the Aborigines is also needed. Support and cooperation from the State Government, Department of Land & Minerals, Department of Survey & Mapping, Department of Town & Country Planning, Land Development Agencies and other related government agencies who will provide cooperation in determining the success of the PSK project are very much in need. PSK is a local development project which includes the Aboriginal community in traditional villages that are situated on the city's edges and rural areas. A total of RM 8,793,000.00 has been allocated by JHEOA to equip these available settlements with various public and basic facilities without relocating these settlers.

One more project that has been initiated by the JHEOA is the allocation for natural disasters. This project involves new settlements for the populace who are at risk from natural disasters where some 61 villages are high risk. In 2008, the JHEOA allocated a total of RM 4,000,000.00 for this project in the states of Pahang, Kelantan, Selangor, Perak and Johor. Another plan, a New Villages Plan (RKB) is a relocation plan for Aboriginal villages which are involved with the execution of government public projects such as dam construction, airport construction and others. JHEOA is responsible for ensuring that these communities receive benefits and better infrastructure facilities in comparison to their previous settlements. Currently there are 3 RKB projects including the RKB Lubuk Legong in Kedah, RKB Sg. Rual in Kelantan and RKB Sg. Kejar in Perak which cost RM 1,100,000.00. Land Development project is directed more towards village infrastructure restoration and the development land through the cooperation of agencies such as FELCRA, RISDA and the Board of Farmer's Association (LPP) in line with the National Development Policy that stresses on the poverty eradication strategy amongst the poor. FELCRA has developed 9,105 hectares of land area and RISDA a total of 14,999 hectares.

Despite this, in comparison to other Malaysians, the *Orang Asli* still lack the benefits of a modern health science regime. In 1994 an average *Orang Asli* mother was reported as being 119 more likely to die during childbirth than an average Malaysian mother (Nicholas, 2000, p. 27). The JHEOA has attempted to assist by providing medical programs that create health centres within reasonable travelling distances and to enable routine checks by physicians. Further, in 2008, a total of RM58,540,000.00 was allocated to execute a Poor Citizen's Housing Program (PPRT) and a Health & Medicine Program as well as other future physical development programs to improve the quality of health amongst the *Orang Aslis* (Anonymous, n.d-c).

The JHEOA was involved in *Orang Asli* children education until 1995 when the Ministry of Education took over the management of *Orang Asli* education (Anonymous, 2008). However By 1995, this initiative proved to be still disastrous (Dentan 2004, pg 37). By the 5<sup>th</sup> grade of primary school, some 80% of *Orang Asli* students had dropped out of school (Dentan 2004, pg 37). International organizations have blamed the teaching faculty, concluding that they were not properly trained to teach the *Orang Asli* nor adequately introduced to their culture. The ability for the *Orang Asli* to improve their social position through assimilation into the dominant Malaysian society has been restricted. These improvements, with the involvement of Indigenous leaders in their implementation has helped increase communication and formulate common goals between the government's policy desire for assimilation and the wish of the *Orang Asli* to continue their traditional way of life while enjoying the benefits of the 21<sup>st</sup> century.

### **3.7 The Development Impacts on the *Orang Asli***

Generally development will cause impact to the immediate environment. Most Indigenous people reside on valuable land in a country which encourages exploitation for commercial purposes. Traditionally, Indigenous communities in Malaysia have close ties to the land, depending upon the natural resources from the land and water, including forests and lakes within their territories for living through hunting, collecting/gathering, farming, water source, fishing, building materials, herbs and others (Lasimbang, 2004). Indigenous people in Malaysia have a practiced traditional resource management based upon a sustainability concept, although they do not know or use this term. Within their languages it is often abstracted from the "use and protect" concept, where their community conserves a sacred area, which is called *pulau, puru, sogindai, tanah simpan*, etc (Lasimbang, 2004). Forest becomes their social space where networking among humans, plants and animals is established (Roseman, 1998, p. 111). As perceived by Hood, forests have source of intellectual nourishment (H. M. Salleh, 1993a). It has social and 'cognitive value' for forest dwellers who have been living and interacting with these forests and its wildlife for many generations (H. M. Salleh, 1993a). Dunn described how the *Orang Asli Temuan* interacts with the forest starting from childhood progressively developing their skills and sensitivities towards their forest environment. This starts with an understanding of their immediate living surroundings leading to eventually acquiring knowledge of the whole forest system and physical entities (H. M. Salleh, 1993a).

However, with the recent industrialization of post-colonial Malaysia, the *Orang Asli* have struggled to sustain and conserve access to their traditional resources, such as forests, seas and arable lands. They have been dispossessed of their native customary land, which has led to a cycle of poverty and loss of their cultural identity (Anonymous, 2005a; Indriatmoko, 2004, p. 54). New environments given to these Indigenous communities increasingly make it difficult for them to practice their traditional practices due to limited access to the natural resources which make them rely upon agricultural occupations (Ibrahim, 2002; Nicholas, 2000). This shift is due to the government's assumption about the *Orang Asli*'s needs rather than the *Orang Asli*'s actual needs, as pointed out by Hood Salleh (Indriatmoko, 2004, p. 54).

Although the *Orang Asli* only comprise a small portion of the total population of Malaysia, 80.8% of the *Orang Asli* live below the Malaysian Government defined poverty line thereby further muddling misperceptions about them, as depicted in Figure 2 (Nicholas, 2000). Poverty among the *Orang Asli* in Malaysia often leads to a decline in general health issues and quality (Mian & Leng, 1998). Malnutrition rates remain high among *Orang Asli* children (Shashikala, et al., 2005). Therefore improvement in their socioeconomic status in Malaysia should be encouraged to overcome malnutrition problems in children in general. The high rate of poverty amongst the *Orang Asli* also has led to sub-standard living. For example, in a study by Nicholas, only 46.4% of the *Orang Asli* had any type of piped water servicing their homes and only 36.2% had electricity (Nicholas, 2000, p. 30). Implementation of modern services such as piped water and construction materials for their modern re-settlement houses, will also increase their dependence upon government support, which unfortunately is not always available to them (Ibrahim, 2002). Moreover, this socio-economic development should also consider the sustainability of Indigenous living styles. For example in Perak State, some 800 hectare of land was allocated for 400 families of *Orang Asli* aimed at improving their socio-economic status (BERNAMA, 2008). Further, these initiatives may lead to an alteration of Indigenous living quality that needs to be managed wisely from destroying the Indigenous quality of the remaining lifestyle.

Efforts in poverty eradication and human capital growth among Aborigines is the main focus in the 9<sup>th</sup> Malaysian Plan (RMK9) as highlighted by the JHEOA through land development programs of rubber and oil-palm planting which cover 24,698 hectares of land of which 167 plantations have been developed (Anonymous, n.d-c). These efforts are not only limited to a single agency's role and commitment but involve joint ventures with Ministries and other agencies including the Ministry of

Education, the Ministry of Health, the Ministry of Agriculture & Agro-Based Industry, the Ministry of Natural Resources & Environment, Department of Islamic Development Malaysia (JAKIM), Welfare Department and others.

As museum archivists, our job is to capture the unique qualities of each individual *Orang Asli* group, whether they are musical performances, healing rituals or even communal cooking. We try to archive artefacts and, nowadays, also record rituals live on video. However, in practical term for the future, village leaders have to work together with government officials to ensure a balance progress and the preservation of the traditional way of life.

(Vengadesan, 2009)

The above statement was articulated by the current Director General of the Department of Museum Malaysia (*Jabatan Muzium Malaysia*) (JMM), emphasized the need for *Orang Asli*'s cooperation with government officials to ensure a balance between progress and the preservation of traditional lifestyles (Vengadesan, 2009). Vengadesan also added that the effort made by the government to improve *Orang Asli* welfare through the establishment of JHEOA, *Orang Asli* Senator, and *Orang Asli* Museum in Gombak, are insufficient and merely cosmetic without proper actions and responsibilities by all parties involved.

Government intervention from the Department of Aboriginal Affairs (JHEOA) has sought to improve the physical homes of the *Orang Asli*. 'Modern' homes, consisting of tin roofs and loose walls, are constructed with government funds next to their pre-existing houses. However, the *Orang Asli* prefer to live in their traditional homes and will only use the new 'modern' structures for show or for storage reasons (Endicott & Dentan, 2004). This is due to the poor design of the new homes in comparison to the existing houses of the *Orang Asli* as documented by research about comfortable housing models using a thermal comfort strategy (Ahmad, Kandar, & Majid, 2007). The traditional houses of the *Orang Asli* are basic, but practical. Most homes were constructed from two to seven feet (0.6m – 2.1m) off the ground to minimize the effects of the monsoon season, enabling ventilation and cooling, while providing protection from snakes and lizards (Laderman 1983, pg 10). Additionally, floorboards were not fully flush allowing openings enabling air circulation throughout the house and easy clean-up of spills (Laderman 1983, pg 10). However, the new designed house, though it is free, delimits the practice of traditional culture which they still practise and favour. Patterns of Aboriginal settlement in Malaysia continuously changed driven by the government policies pre- and post-colonial forces for different reasons, which were not for the holistic betterment of these communities

(Bunnell & Nah, 2004, p. 2453). As mentioned by (M. T. Salleh, 1990), re-settlement planning has brought the *Orang Asli* into contact with 'civilisation' or modernisation thereby diluting their Indigenous culture. This displacement and development has not considered the associations existing between the *Orang Asli* and their environment. These setting and ambiance for these traditional practices to be implemented and continued seems to be absent. Their new settlements have not been designed and planned to suit their cultural and traditional needs in order to sustain their traditional practices and rituals.

## CHAPTER FOUR: THE ETHNOBOTANICAL REALM

### 4.1 The Plant Knowledge Evolution

The flora is a fundamental part of the landscape and environment which nurtures human cultures. Undeniably plants are integral to life, as reinforced in considerable research by Arshad and Ahmad (2004). They are an important source of life physically and spiritually. Plants are essential as a source of food and energy for humans and their animals. They protect and maintain the environment against erosion and atmosphere imbalance (Wickens, 1990). Humans have historically developed complex relationships with the flora. Scholars also agree that plants are not only associated with botanical phenomena, but also with cultural phenomena such as utilisation for households (A. H. Mohamad & Bidin, 1991, p. 59; Othman, 1991a). The interactions and associations between plants and their environments determine the human environment since plants dominate and give character to ecosystems and habitats that humans live in. Spiritually, in many cultures, plants are normally associated with paradise, beautiful, calm and peaceful places often with lush green plants and colourful fruits. Garden is seen as a place for mundane tasks, spiritual refreshment, and the expression of ideals, beliefs and aesthetic values; it is also for interdisciplinary cultural studies (Westmacott, 1992). Plants were also believed to have healing powers, as demonstrated in the earliest documented uses found in Babylonian circa 1770 B.C in the code of Hammurabi and in ancient Egypt circa 1550 B.C (Husain, Malik, Javaid, & Bibi, 2008). The earliest Ancient Egyptians believed that medicinal plants have utility even in the afterlife of their pharaohs. Traditional *Unani* medicine is a part of Hinduism culture and Pakistan is one of the countries where traditional *Unani* medicine is popularly practised among a large segment of its population today (Arshad & Ahmad, 2004). Medicine originated in Greece, founded by old ancient Greek philosophers, and was used by Muslims during the glorious period of Islamic civilisation. It was brought to the Indian subcontinent by Muslim scholars and practised there for centuries (Husain, et al., 2008).

Western plant knowledge was focused upon medicinal values of plants for thousands of years, and in past has been influenced by the writings of Hippocrates (460-360 B.C) (Anonymous, n.d-d). Hippocrates based his medical practice upon physical observations and upon the study of the human body believing that problems should have a rational explanation. Western parts of Islamic countries have also made their own contribution to the world's medical botany. Most of the physicians were herbalists who described plants in various languages. Their names include al-Baytar (1197-1248AD),

Ibn Juljul, al-Ghafiqi, Ibn Bajjah, Ibn Samajun and Abu'l-Hassan al Andalusí (Abu-Rabia, 2005). The Greek surgeon Dioscorides (circa 54 to 68AD) published *'De Materia Medic'*, a catalogue of about 600 plants in the Mediterranean region, which also included how the Greeks used these plants for medicinal purposes. Then, scholars' attention shifted eastward, to Persia due to political and religious factors. Renowned Arab physicians such as al-Haríth Ibn Kalada and Ibn Abi Rimthá appeared during the time of the *Prophet Muhammad* (571-632AD) (Abu-Rabia, 2005). The saying (hadith) of the *Prophet Muhammad* on health and illness was systemized and became expressed as "Medicine of the Prophet" (Jawziyya, n.d.). During the Umayyad period (661-750AD) the collection and translation of ancient manuscripts and medical works from Greek into Arabic began. During the Abbasids period (750 -1258AD), for five centuries, the world witnessed the glory of the Muslim world which centred upon Bayt al-Hikmah, 'The house of Wisdom', which was established in 830 AD by the Caliph al-Ma'mun. During these periods, Muslim physicians and scientists wrote original contributions to medical and botanical knowledge such as Ibn Sina (Avicenna 980-1037AD), author of *'The Canon of Medicine'* (*Kitab al-Qanun fi al-Tibb*), and al-Razi (Rhazes 865-923AD) who published the *Comprehensive Book on Medicine* (*Kitab al-Hawi fi al-Tibb*). These works were translated into Latin, and then continued to be used in nineteenth century medical science.

#### 4.2 Nomenclature System and Identification

Science classifies living things in order for systematic identification. The genus and species names describe physical, biological and chemical character and substrates. The names can also honour individuals. Ethnobotanical researchers suggested that they needed to document plant significance and usage in human culture, such as first articulated in *Hortus Malabaricus*. There was perceived a need to understand ecological systems that can conserve our biodiversity. The use of common plant names is recommended as being limited, and is therefore carefully used in academic writings together with the scientific nomenclature. However, use of common names is often essential when dealing with a wider public audience. The botanical identification of plants involves an identification process through phenotypic and genotypic analysis. Biochemical analysis may also provide an aid to the identification, naming and classification of plants. Herbaria support methodological plant research, where storing, identifying and referencing activities can be done systematically (Kamarudin Mat Salleh, n.d). The history of herbaria started as personal collections of plants, which then became an act of serious collecting among professional and amateur scientists who sought to keep those collections in one place for further reference and research purposes (Philip A. Clarke, 2008). The



first herbariums started in 1635 at the Paris Museum of Natural History and were open to the public (Kamarudin Mat Salleh, 2000, p. 4). A recognised plant species is listed by the International Association for Plant Taxonomy (IAPT) and included in the *Index Herbarium* (Kamarudin Mat Salleh, 2000).

#### 4.3 General History and Definition of Ethnobotany

The definition and scope of the academic field of ethnobotany has evolved exponentially in recent decades, due to its expansion in various disciplines and approaches. The term ethnobotany was introduced in about 1895. The term 'ethno' which refers to 'how other people perceive their world', is commonly attached to the suffix which in this case is 'botany' or the 'study of plants' (Martin, 1998, p. xx). Ethnobotany is defined as the study of the inter-relationships between people and plants (Hamilton, et al., 2003; Martin, 1998). Ethnobotany, therefore, deals with the study of plants used or grown by traditional or Indigenous peoples. Through ethnobotany, we can discover the close relationships of people, especially Indigenous peoples, with their environment. Ethnobotanical sections of botanic gardens interpret plants, cultures and gardens of the past and present as well as speculating about future relationships and diversities (S. B. Jones & Hoversten, 2004). In short, ethnobotany is the study of the complex relationships between plants and cultures (how plants have been or are used, managed and perceived in human societies and includes plants used for food, medicine, divination, cosmetics, dyeing, textiles, for building, tools, currency, clothing, rituals, social life and music). In a landscape, flora is a medium for creating and defining characters, in creating a sense of place (Robertson, 1989). Cereal (wheat, barley, rice, and soya) and legumes (chickpeas, lentils and beans) are among the earliest cultivated crops among the world's inhabitants (Aitken, 2008, p. 4).

The expansion of the ethnobotanical field is illustrated by the development of its definitions and can be exemplified in the following chronology. North American botanist John Harshberger is recognised as starting the science of ethnobotany in 1895. He first introduced the term in his lectures upon "the study of plants used by the primitive and Aboriginal people" (Benthall, 1993; Gary, 1995). A year later, Harshberger broadened the term so that the focus would not only be upon Indigenous people, suggesting that "ethnobotany to be a field which elucidates the cultural position of tribes who used the plants for food, shelter or clothing" (Gary, 1995; Hamilton, et al., 2003). Interestingly, in Harshberger's time, most ethnobotanical publications only concentrated upon plants collections

when seeking to obtain the Indigenous nomenclature of species. An interest in the relationships and associations between traditional cultures and the natural environment was undertaken in 1912 by Edward Sapir who wrote about the influence of the environment on language (Rambo, 1979). Since then, many studies and projects have been undertaken to discover the relationships between humans and their environment. Ethnobotany is a scientific work that is more than just collecting and naming plants but requires deep understanding of the Indigenous people's relationships with plants (Robbins, Harrington, & Freire-Marreco, 1916). This scientific work emphasized the need to understand ethnobotanical knowledge as well as the cultures of the studied people. This theoretical framework was understood and well accepted for the next 25 years before Volney Jones published '*The Nature and Status of Ethno Botany (1941)*'. In this publication Jones argued that ethnobotanical research should be more concerned and focused upon Indigenous people and plant relationships for their sole benefits rather than for their economic purposes (V. Jones, 1941). Further, Richard Ford (1978) has proposed a new synthesis of ethnobotany to accommodate the changes and diversity of modern cultures. He concluded that, "ethnobotany is the study of the direct interrelations between humans and plants" (Ford, 1978). Ford believes that this new definition allows an expansion of the study field by not limiting it only to certain type of people such as Indigenous people. This argument could be extended to various groups of people and cultures that have significant ethnobotanical values. These statements since then, contribute to a widening and expansion of ethnobotany, resulting in an emphasis upon people-oriented research which warranted careful selection of a research methodology. The chronology is also simplified and tabulated in Table 3 in Appendices A.

#### **4.4 The History and Development of Ethnobotany in Malaysia**

Malaysia is blessed by God with the richness, diversified and uniqueness of wildlife species and habitat. The Malaysian rainforest plants are the twelfth richest megacentres for biodiversity in the world, and there is approximately 100 different species of plants in one acre of forest land constituting about 80% of the earth's biodiversity ("Malaysia," 2009; Society, 2006). In total, as stated by Latif (1981), there are some 6,743 recorded species of angiospermae, which collectively belong to 1,392 genera and 197 families; some 83 species of gymnospermae from 5 genera and 5 families; and some 491 fern species, from 98 genera, and 18 families known to exist on the Peninsular (Kamarudin Mat Salleh, Kusalah, & Latiff, n.d). Apart from richness in plant species, Malaysia is also abundance with wildlife that includes 195 species of mammals, 638 species of birds, 529 species of freshwater fish, 320 species of reptiles, another 199 species of amphibians and Insects, alone, are

estimated at 70,000 species (Anonymous, 2004a). Based on Aisyah Haji Muhammad in 1998, plants from Angiospermae, Leguminosae, Rubiaceae, Euphorbiaceae, Rutaceae and Lauraceae families have significant medicinal values in Malay culture (Balwi, 2003, p. 51). In 1993, the Malaysian Economic Planning Unit (EPU) report stated that there were 15,000 flowering plants in Malaysia (Society, 2006). Later, the Encyclopedia of Plants (2005) stated that Malaysia's flowering plants comprise one third of the world's flowering plants, including at least 2,500 species of flowering trees (Soepadmo, 2005). Unfortunately, Malaysian plants also suffer from a rising rate of extinction as stated in the latest IUCN (the International Union for Conservation of Nature) World Conservation Union's biodiversity report which concluded that Malaysia's flora and fauna face serious threats due to the loss of 70% of their original vegetation (Kui, n.d; Society, 2006). Therefore, there is an urgent need in research and development initiatives that integrates the species protection in order to encourage the conservation and diversity of plants and environment.

Malaysian plant knowledge development and expansion is basically derived and characterised by the *Malay* culture. The Malayan world's ethnobotany was recognised as early as 4<sup>th</sup> century A.D, during the Campa, Vietnam Kingdom (Zain, 2003, p. 78). In the early years, in traditional *Malay* culture, plants and animals were used as remedies either for internal or external purposes (Balwi, 2003, pp. 51-52; Zakaria & Mohd, 1994, p. iii). There are approximately 120 species of plants mentioned in the *Malay* proverbs and at least twelve (12) unidentifiable species (Zain, 2003, p. 80). The principles of *Malay* traditional medicine are generally based on the Islamic influences of Arabic *Unani* medicine and galenic philosophy (Jamal, 2006). However, *Malay* traditional medicine is also influenced by beliefs and practices such as supernatural powers that was mostly influenced by Hinduism, before the arrival of Islam (Zakaria & Mohd, 1994, p. 4).

In Malaysia, civilisation as defined by Western literature only evolved following Portuguese settlement commencing in 1511, followed by Dutch colonization in 1642, before a more comprehensive colonization under the British Empire (P. D. K. M. Salleh, 2007b). Historically, ethnobotany is as old as other disciplines in Malaysia and has a common knowledge among Malaysians (Latif, 1991). However, a well documented and intensive study on this knowledge for Malaysia is still insufficient. Munshi Ismail, in 1886, was the first Malaysian scholar involved in translating the manuscripts of '*Malay Traditional Medicines*' into English, which were then sent to London for pharmaceutical purposes (P. D. K. M. Salleh, 2007b). Professional botanists from the United Kingdom were the pioneers in systematic plant literature in Malaysia. Another Western

scholar who had contributed to medicinal botany on the Peninsular was E.M. Holmes, whose notes and records were published as the *Malay Materia Medica* in 1892. Henry Ridley, who pioneered the Malaysian rubber industry, also contributed greatly to the study of *Malayan* botany on the *Malay Peninsula* (P. D. K. M. Salleh, 2007a). Ridley researched plants including fungi, mosses, ferns and other higher plants, making plant collections while he was director of the Singapore Botanic Garden from 1901 to 1912 (Mat Salleh *et. al.*2002). Ridley was also responsible for the Waterfall Gardens in Penang and was in charge of the Forest Reserves in the Straits Settlements (Singapore, Penang and Malacca) (P. D. K. M. Salleh, 2007a). Two local specimen collectors, Mohamed Haniff and Kiah from the Singapore Herbarium, helped Garden Director Burkill with his plants collections, documenting some 1675 specimens including some 13 families and 696 species of medical plants (P. D. K. M. Salleh, 2007b). Gimlett was also an expert in traditional medicine with a particular interest in the local *Malay* people of Kelantan was greatly assisted by Burkill. Gimlett wrote two books, *Malay Poison* and *Charm Cures*, which were published in 1915. In 1920 Burkill and Thomson published 'A Dictionary of Economic Product of the Malay Peninsula' (Kamarudin Mat Salleh, et al., n.d). In 1930 this manuscript had listed 1200 species of plants used by the locals was published as 'The Medical Book of Malayan Medicine', edited by Dr. J.D. Gimlett with a botanical editorial by I.H. Burkill.

Since then, until the early twentieth century, there has not been much research on ethnobotany carried out in Peninsular Malaysia. The Dictionary has been a major ethnobotanical reference which reprinted in 1996 (Kamarudin Mat Salleh, et al., n.d, p. 1). However, these early ethnobotanical publications were only confined to medicinal and poisonous plants that focused upon the physical properties and economic potential of plants, with medicinal and aromatic plants being regarded as the most important ethnobotanical elements of human civilization (Latif, 1991; Kamarudin Mat Salleh, Latif, & Nazre, 2000). This bias in the literature remains, as a modern survey of the field of ethnobotany has indicated that 57% of ethnobotanical publications internationally are about medicinal plants, 23% about general illustrative publications, 8% on edible plants, 5% on culture, customs and beliefs, 5% on Indigenous crafts, 3% on home gardens and only 2% on household items and clothing (Hamilton, et al., 2003). Maybe this scenario is due to demand and market of these products to the nations and commercial interests as compared to other diversified floristic resources which use are only accessed by certain groups of people and are also not fully documented.

In Malaysia, there also have been ethnobotanical studies that involve Indigenous people (Latif, 1991). One of these was an ethnobotanical study of the *Jah Hut* people, an Indigenous tribe who reside in the central part of Peninsular Malaysia. This study concluded that a large number of traditional plants obtained locally for these Indigenous people were commonly used for commercial medicinal purposes and remedies (Wai, 2005). Ethnobotanical knowledge was divided into a few types of plants based on their function to the communities. From an anthropological perspective, plant choices for food and medicinal purposes are generally determined by the cause of illness and magic theory (A. H. Mohamad & Bidin, 1991, p. 79). At Tasek Bera, Pahang, Malaysia, there has also been a few conservation projects seeking to catalogue plants used by the *Semelai* communities for medicines and remedies though these are not popularly mentioned (Anonymous, n.d-a). In *Semelai's* societies, medicinal valued plants have been used for preventative and curing purposes. The preventative includes practices used for taboos (A. H. Mohamad & Bidin, 1991, p. 60).

In the late 1970s and the beginning of 1980s, the establishment of universities in Malaysia stimulated more broader and multi-disciplinary local research. For example, research on Indigenous societies' ethnobotany in Sabah, such as the *Idahan*, *Kadazan*, *Murut* and *Orang Sungai*, was encouraged with the establishment of a new local university, the new campus of Universiti Kebangsaan Malaysia (Kamaruddin Mat Salleh, Saleh, & Latiff, 2002). A Botany Department was established in the Universiti Kebangsaan Malaysia together with an ethnobotany program (Kamaruddin Mat Salleh, et al., 2002). According to Latiff *et al.* (1984), it was perceived that by end of the 20<sup>th</sup> Century there would be numerous publications upon the ethnobotany of the *Malay* and *Orang Asli* societies as well as the Chinese and Indian societies. But Latif also observed that a focus upon the cultural importance was also presently lacking (Latif, 1991). Most Malaysian ethnobotanical research is concentrated upon the Peninsular consisting of 61% of publications compared to 20% for Sabah and 19% for Sarawak (Kamarudin Mat Salleh, et al., n.d, p. 1). While early research of plants in Sabah was undertaken by Arthur in 1954, documenting some 250 species and some 71 families of plants, there were other publications published that contained botanical information that was indirectly related to sociological and anthropological studies of the Sabah societies (Latif, 1991; Kamaruddin Mat Salleh, et al., 2002). In Sarawak, the earliest ethnobotanical research was undertaken in 1958 when Van Steenis listed a few 'magic plants' that were used by the Indigenous people of *Dayak* (Kamarudin Mat Salleh, et al., n.d, p. 4). A study on local ethnobotany of the *Bidayuh*, *Iban*, and *Malay* peoples in Sarawak, on particularly medicine plants was also carried out in 1986 by local

university students (Kamarudin Mat Salleh, et al., n.d, p. 4). The summary list of the publications and expansion of ethnobotany in Malaysia is tabulated in Table 4 in Appendices A.

#### 4.5 Indigenous Association with Plants

Plants have become an integral part of life as a means of physical and spiritual sustenance. This close relationship of people with plants has been an integral part of human civilisation and human way of life (Zakaria & Mohd, 1994). However, the degree of association between humans, plants and environments varies. The level is often determined by the nature of the interaction of humans with the environment. Arshad & Ahmad (2004) have put forward the theory that there are dynamic relationships between human populations, cultural values and plants, which implies different levels of adaptation and relationships of humans to plants and also to their environments. The intensity of this interaction depends greatly upon the given natural and local conditions, including the modes of human civilisation and cultural system (H. M. Salleh, 1993a).

Introduction of new plant species to the country is generally caused by transmigration and trading among countries. Historical evidence may include reports that describe the conduct of early trading or the impact on historic-period landscape changes (Allen, 1998, p. 263). History records that the great age of European maritime advances resulted from advances in boat-building in the late fifteenth century which led to rapid colonisation and trading activities that were mostly undertaken tropical and semi-tropical lands. Sugarcane (*Saccharum officinarum*), cotton (*Gossypium* spp.) and tobacco (*Nicotina tabacum*) are among the earliest plants species that were transferred and introduced apart from other food plants, spices, fibres, dyes and medicinal plants of economic value (Aitken, 2008, p. 71). Cotton has been cultivated by cultures in two widely separated geographies, being South Asia and America (Aitken, 2008, p. 6). *Kapok* (*Eriodendron anfractuosum*), locally known as *Kabu-kabu*, is the floss contained in the pods of the cotton tree which is commonly found throughout Peninsula Malaysia which is believed to have originated from the East; mostly from Java and The Philippines as the main exporter countries to North America, Australia and Great Britain during the early 1990s (Department of Agriculture, 1922, p. 140).

Ethnographic and historical evidence suggests that vegetative reproducible root and tuber crops, such as yams, taro, sweet potato and manioc, were among the earliest tropical food plants to be cultivated and domesticated, beside seed-crop cultivation, through their survival and longevity (D. R.

Harris, 2006). Cassava or tapioca for example is a native plant to Brazil that was so important to early voyagers which was described as 'the most general use of any provision all over the West Indies' as well as being exported in several forms of tapioca of commerce and starch (Department of Agriculture, 1922, p. 169). The cultivation of cassava in most tropical countries includes the Peninsular Malaya which was originated from Malacca whereby the Chinese peoples in Malacca established an integrated local regime of making sago with a well-founded marketable industry (Burkill, M.A., & F.L.S, 1935, pp. 1412-1415).

Associations with plants is also one way to discover Indigenous human culture (Philip A. Clarke, 2007a, p. 6). Indigenous people prefer to remain in close contact with the environment they live in, such as forest and wetland areas (Griffen, 2001b). The close relationships between humans to plants and environment have made Indigenous people rich in traditional knowledge of forest and natural living. They use forest lands for cultivation and settlement formation, as well as for other resources such as water, wildlife and flora for food, medicine and other utilities (Griffen, 2001b). Forests also serve as sacred places to Indigenous peoples (Wadley & Colfer, 2004). For example, Australian Aboriginal people associate with plants to gain their food, medicine, narcotics, stimulants, adornment, ceremonial objects, clothing, shelter, tools and for creating artwork (Philip A. Clarke, 2008). Wood from plants is also used as fuel, pulp for the manufacture of paper, for construction and furniture, and for by-products such as resin, turpentine and terpenes (Jr., 2007). Wild plants were also used for dyes and fibers such as species of *Apocynum*, *Urtica* and *Linum*.

Ethnobotanical values do impact upon cultural landscapes. One good example is the economic aspect in ethnobotany, whereby plant trading such as cacao has some impact on the local language as experienced by the Native Amazonians. They borrowed some words arising from trading activities (Balée, 2003). The introduction of new species also reshaped and transformed landscapes to accommodate new botanical requirements. A detailed and comprehensive taxonomy for significant plant species of a certain Indigenous community gives a different meaning of 'adaptation' as compared to other communities that would normally characterize their socio-cultural identity and quality.

Traditional knowledge is vital for the Indigenous peoples' survival. For example, repeated burning of wetlands has been practiced by Indigenous Australians in managing their environments for more than 50,000 years (Philip A. Clarke, 2005). Burning of wetlands, dominated by the native grass

Mudja (*Hymenachne acutigluma*), encourage the wetlands' biodiversity and also the Indigenous people's access for food gathering and hunting. Ford (1986) has brought together a number of significant papers upon plants and animals used by Indigenous peoples and highlighted the urgent need to document traditional uses of plants and animals by the American Indians (Jr., 2007). Indigenous ethnobotanical knowledge and practices are partly inherited and also from environmental observations (A. H. Mohamad & Bidin, 1991, p. 61; Othman, 1991b, p. 83). In fact, this traditional knowledge is also becoming valuable to the contemporary communities recently.

Land settlement in tropical Asia generally displays conceptual, planning implementation, management and evaluation deficiencies of existing program (Thapa & Weber, 1989, p. 156). Therefore, this research could propose an alternative strategy for land re-settlement planning for Indigenous communities. The National Land Development programme of Malaysia has moved 0.3 million settlers through re-settlements between 1957 and 1978, as documented by MacAndrews, 1982, p.14 (Thapa & Weber, 1989).

#### **4.6 Inter-disciplinary Development**

In general, the ethnobotanical field has evolved in a multi-disciplinary and multi-cultural manner according to the eyes and needs of researchers. A few scholars have noted that ethnobotany was "multidisciplinary" and should involve "disciplinary integration" (Medley & Kalibo, 2005). The perception and understanding of ethnobotanical research and studies amongst researchers has also been progressive and dynamic. The inter-disciplinary development of ethnobotany overlaps with the fields such as ethnoecology, ethnology, ethnobiology, ethnopharmacology, archaeo-ethnobotany or paleoethnobotany, ethnomedicine, ethnomycology and socioethnobotany. For example, in 1944, Edward Castetter in his paper entitled "The Domain of Ethno Biology" encouraged researchers to incorporate ethnobotany into their studies of plant identification by recording the values of plants to people. The International Society for Ethnobiology claimed ethnobiology as a new branch of science in 1988 (Benthall, 1993). Ethnobotany also shares some of the scholastic concerns of economic botany. Corner (1966) drew links to economic botany when he discussed the work of Gabenor Armsterdam in Malabar, *Heinrich van Rheede tot Drnakenstein* (1637-92) who also produced *Hortus Malabaricus*, in 12 editions (volumes) which contained local people usage, description about the local names, nomenclature information, ecological information



and traditional beliefs (Manap, 2007). As noted by Khathirithamby (2005) there are many multidisciplinary studies on the human-nature relationship in Asia that involve studies in Indigenous knowledge and resource management by the anthropologist, ecologist and those who are interested in development and environmental issues in Asia. The interpretative depth of ethnobotanical studies may not be achieved based on the short-term participation of a research, but it can still be achieved through interdisciplinary and complementary data collection tools (Medley & Kalibo, 2005, p. 309).

The alarming loss rate of resource lands every year due to the impact of development such as deforestation, over-grazing, cultivation, etc., also significantly contributes to the reduction of Indigenous knowledge being practised by the Indigenous communities (Shingu, 2005, p. 17). Indigenous plant knowledge is also believed has positive forces for human development. Ethnobotany has been mentioned before that it can be a local solution to general needs to solve common problems facing by developing countries' policy makers for local solutions (Alcorn, 1995, p. 23). Moreover, ethnobotanical knowledge has gradually expanded to other perspectives such as development planning, rather than only concentrating on pharmaceutical development. Any changes to the landscape has impacts upon complex interactions and alterations of physical, biological, social, political and economic entities.

The growing interest of Indigenous knowledge into sustainable development has contributed to valuable insights in sustainable development. As agreed by previous scholars, ethnobotanical knowledge is fundamental for local and regional development planning and policy (Alcorn, 1995, p. 32). Sustainability and ownership issues are important to be integrated, translated and applied in traditional population development. Ethnobotany is an Indigenous knowledge that needs to be integrated into other disciplines. The IUCN (1997, p.46) defines Indigenous knowledge systems as a collective, local and community-based systems of knowledge of Indigenous people, which are unique to a given culture or society, which culture has developed and evolved over many generations of inhabiting particular ecosystems (Green, Goodman, & Hare, 1999; Marrewijk, 2001). Research into Indigenous plant knowledge and the specific plants used by native healers are currently being funded by hundreds of pharmaceutical agencies ("Statistics and Key Facts about Indigenous Peoples,"). Significant steps need to be taken to incorporate input from the public, face to face discussions and identify key resources into any plan (McIntosh, 2005, p. 39). An integration of Indigenous knowledge, ecological, ethnobotanical field methods can assist in local participation and

contribute towards sustainable development at a national and international level. Sustainable development requires the understanding that relationships exist among human, social relations, society, nature, space and time (Rist & Dahdouh-Guebas, 2006, p. 469).

### PART III: DEVELOPMENT PLANNING AND DESIGN

#### CHAPTER FIVE: DEVELOPMENT PLANNING AND POLICY

##### 5.1 Development Impact on Indigenous Peoples

Land is becoming scarce, including land to work on, land to play on and most importantly land to live on (Crowe, 1961, p. 20). Land and environment are the basis of spiritual and religious attachment and the notion of custodianship by Indigenous communities (Commission, 1999). 'Development' to some nations is the process by which a nation harnesses its natural and human resources to produce wealth, rather than merely leaving its citizens to provide for their own needs (Dentan, et al., 1997, p. 3). Development usually refers to the amount of generated economic "growth" measured by Gross Domestic Product (GDP), personal income levels and consumption rates (Dentan, et al., 1997, pp. 3-4). For example, as noted by Kathirithamby (2005), there are many multidisciplinary studies on human-nature relationships in Asia which involve studies in Indigenous knowledge and resource management by anthropologists, ecologists and those who are interested in the Asian development and environmental issues.

Development has been proven to cause tremendous effects, threats and impacts; and, material and non-material impacts to communities throughout the world (Bank, 1998). Many efforts and changes have been made to overcome these problems such as through compensation. Issues pertaining to Indigenous community development and policy have been debated in Malaysia for more than three decades. These issues are derived from uncertainties of identity issues, which have brought drastic changes to the *Orang Asli's* living endeavour and also to their environment and setting. Although the *Orang Asli* have tried to accept these changes, the misrepresentation of their cultural and environmental values has resulted in stifling their proper participation in the nation's political processes (H. Salleh, et al., 2004). Malaysian development, especially in rural areas, has been dominated by agricultural sectors that were governed by regional development agencies such as DARA (Development Authority for Pahang Tenggara) and FELDA (Federal Land Development Authority). These plantations, developed by these authorities, generated road and other amenities to areas subsequently turning them into townships. For the Malaysian government, the *Orang Asli's* economic and social development was measured by the success of these re-settlement and re-groupment projects that sought to engage the *Orang Asli* in modern economic sectors, such as palm oil plantations and rubber estates rather than just depending upon forest resources only. Malaysia's

development has historically been based upon natural resources as the primary source, with processing and manufacturing industries as secondary sources with the service industries being only minor (Dentan, et al., 1997, p. 4). The colonial practice of 'divide and rule' in the wider Straits Settlements colonies was very much influenced by the socio-cultural status of the post colonial era (Rahim, 2001).

There is an urgent need to seek out new ways of responding to the effects of ecological, economic and social change on human culture and landscape environments. Built environment design professions require multiple approaches and scales of engagement in order to present society with future design scenarios to respond to increasingly complex conditions. The landscape architectural profession has sought to address this dilemma. (Greenbie, 1981) has expressed that 'landscape architecture' is important to the development of human-made and natural environments. Landscape architecture is challenged by the need to engage in continuous adaptation and to respond to the implications of globalization, cultural shift, and climate change and population growth. It has become increasingly evident that present design forms and approaches frequently fail to meet these challenges. For example, the 2009 Australian Institute of Landscape Architects (AILA) National Conference sought to respond to these needs through showcasing various examples of professional engagement in developing contemporary community perspectives of real and imagined landscapes. The Conference sessions and speakers explored the proposition that built environment design professions should lead positive change in designed landscapes. The Australian contemporary policy landscape has spent more than twenty years in making agreement with Indigenous peoples (Langton & Palmer, 2002, p. 1). It is commonly accepted that Indigenous communities throughout the world were identified after colonisation movements the Europeans made (Brantenberg, Hansen, & Minde, 1995). The world's Indigenous minorities, who are often living on the periphery of national boundaries, have been increasingly incorporated into mainstream development processes, that encroach into their wider natural and eco-cultural system (Ibrahim, 2000). For example, the Australian Aboriginal people have always viewed their lands and environments as part of their life-essence believing that their souls and spirits belong and connect to land through rituals (Berndt & Berndt, 1999; Commission, 1999). To them, all relationships among peoples, plants and animals involve the spirit world (Isaacs, 2002).

## 5.2 Indigenous Communities Settlement Planning

How do Indigenous peoples develop and plan their land, and is there any policy or rules to be learnt in these practices? To answer these questions, we need to understand the culture of the affected Indigenous society. Generally, the habitats of Indigenous peoples are influenced greatly by their surrounding environment. For example, traditionally, the habitat of Indigenous people in Malaysia were based on plants and the natural materials surrounding them, such as vernacular tree and rock shelter, palm leaf ground-screens and *Pangan* analogous to bee-hive huts using rattan. The Australian Aboriginal people have already achieved steps in devising their own system of planning which is formally not expressed on paper but is based upon practice including seasons; what time to get what; the right time to collect certain plants; etc. They had more than four seasons in their environment. For example, they plan not to kill turtle eggs so that those eggs will become turtles and will come back to them. In contrast, they eat old turtle because it will not be able to return to their area next year (Shadforth, 2002, p. 95). Further, it is claimed that health problems amongst Australian Aboriginal communities in rural and remote areas, can be reduced by changes in living environments (Pholeros, Rainow, & Torzillo, 1993, p. vii). Therefore, an understanding of history can enable an enhanced appreciation of the reasons and symptoms of change and thereby the affects of change (Rambo, 1979, p. 42). In general, changes in landscapes result from complex interactions between physical, biological, social, economic and as well as political forces, that alter the structure and function of the overall ecological mosaic over time (Narumalani, Mishra, & Rothwell, 2004). Human settlement changes also contribute to these landscape changes.

Human settlements are also called human-made environments where the close relationship between the natural and human-made environment affects each of them. *“Human environment and human settlements are like two faces of a coin”*, where the environment will be affected when any changes made to the settlement (Oberlander, 1976, pp xiv). For this reason, one cannot have any policies in relation to the natural environment without considering the human-made environments, such as human settlements. The United Nations Human Settlements Conference in 1976 defined ‘human settlement’ as *“any permanent place where human beings can live that consists of a group of houses whether it is in a village, a small city or a huge metropolis”* (Oberlander, 1976, pp xiv). Human settlements are not only about place and setting but also involve the socio-cultural aspects and elements of the whole community. This is in line with the definition of ‘health’ by the World Health Organisation (WHO) in 1946 as ‘a state of complete physical mental and social well-being and not

merely the absence of disease or infirmity' (Sinatra & Murphy, 1997, p. vii). The National Aboriginal Health Strategy Working Party in 1989 extended the definition of health as *"not just the physical well-being of the individual but the social, emotional and cultural well-being of the whole community. This is a whole-of-life view and it also includes the cyclical concept of life-death-life"*. Settlement variability is also one of the factors that determine the genetic inheritance over the years which eventually dilutes their identity in a few generations as demonstrated by blood tests (Polunin & Sneah, 1953, p. 246). Therefore, settlement planning projects must recognize that densely planned communities can generate social discord, which directly affects health and well-being.

However, there seems to be a lack of effort of incorporating existing human settlements, especially the Indigenous communities' settlements, into the national planning process. This process will eventually affect the sustainability of Indigenous people's traditional ways of living. These settlement arrangements relate to the adjustments of human and their culture to an environment and to the organization of society in the broadest sense. Willey (1956) noted that settlement patterns and their spatial arrangements are a reflection of socio-economic activities (Oberlander, 1976, p. 15). A settlement residential spatial arrangement can play a key role in the community's social harmony. Furthermore, Trigger (1978, p.168) advised that *"settlement patterns should also include ecological dimensions, which will involve communities' spatial arrangement over the landscape"* (Wozniak, 1996, p. 171). Trigger has also claimed that settlement patterns should include individual structure, community structure and groups of communities, which mostly depends upon ecological and socio-political aspects.

Settlement patterns can be analysed and described in terms of settlement typology. In turn they can be shown to influence the type and adequacy of housing, available economic modes and opportunities, environmental health status, and the extent and type of social problems. More vigorous research of these typologies is required to understand the causal connections between settlement types, regional settlement patterns and lifestyle problems, and the consequent planning needs and priority services at settlement and regional scales. Settlement pattern is often based on the low cost of services which results in houses being built close together (Sinatra & Murphy, 1997, p. 24). The differences of settlement patterns in various Indigenous regions are also due to variable circumstances of contact history, regional economy and land tenure, and Indigenous policy management. More vigorous research of this typology is required to understand the causal

connections between settlement types, regional settlement patterns and lifestyle problems, and the consequent planning needs and priority services at the settlement and regional scales.

In Australia, the most common form of Indigenous settlement is the 'Discrete Settlements' (Memmott & Moran, 2001b). Traditional forms of these Aboriginal settlements mainly use shelter for windbreaks, sleeping and sitting platforms, shade structures, enclosed structures, open and clad frames and bark structures which are suited and often responsive to the climate and the social organisation and lifestyle of the locals. Housing settlements developed, based on the mainstream society needs for Australian Aboriginals, are not hygienically suitable for Aboriginals due to their failure to address issues associated with the living environment and social obligations of the Aboriginals (Sinatra & Murphy, 1997, p. xi). Appropriate settlement planning and community development practices can contribute a significant role in the environmental health for Aboriginals as described by Reid (1994), and Tregenza & Abbot (1995) (Sinatra & Murphy, 1997, p. xi).

Given the high level of mobility within and between Australian Indigenous settlements, it is instructive to take a regional perspective to settlement planning. Australian Indigenous people typically live in areas with bi- and multi- local residences. To view one Indigenous settlement in isolation may only reveal a part of the settlement pattern of a particular community group. Indigenous settlement patterns in Australia are likely to undergo change in the coming decades due to a range of factors including:

- (i) changing national and global economies and their impact on remote Australia;
- (ii) Indigenous population growth and the current failure by governments to match annual program expenditure in housing, infrastructure and essential quality-of-life services with such;
- (iii) the increased legal rights of Indigenous people in environmental planning processes due to acquisition of Native Title rights; and
- (iv) the gradually increasing autonomy of governance in a number of remote Indigenous regions.

Settlement planning, as defined by the Australian Department of Immigration and Multicultural and Indigenous Affairs, is a process which involves determining the settlement needs of migrants and refugees, developing strategies and identifying responsible parties to meet those needs as well as

monitoring the results from the strategies (Anonymous, n.d-e). Settlement planning must respond to community's sociality, culture and history to determine appropriate residential configurations and spatial arrangements. Settlement planning and community development projects must not only refer to the community studied because each community is unique and the development should incorporate the surrounding neighbourhood and compound rather than concentrate on one single house (Sinatra & Murphy, 1997, pp. 11-19). This pattern needs to cater to different needs between generation groups in a community. Planning strategies that disperse settlements should encourage a healthier lifestyle as well initiate job opportunities among the communities (Sinatra & Murphy, 1997, pp. 23-29). Settlement planning and community development projects must respond to the shelter needs associated with how people live in their physical, social and cultural environments, and how much time they spend outside, day and night, apart from addressing the elements of the heat, wind or cold. Settlement planning also needs to look after the long-term health of the country by not overusing traditional resources around settlements such as bush food resources (Sinatra & Murphy, 1997, p. 31).

Australian national settlement typology for Indigenous settlements is based upon five core components including lifestyle, family, generations, sociality and country which are suggested as primary determinants in settlement planning apart from landscape as the elementary component of people's living environment as tabulated in Table 6 (Sinatra & Murphy, 1997, p. xii). This typology could potentially be useful for setting national policy frameworks, including future housing and infrastructure needs surveys. However, each environment leads to a different way of Aboriginal living, as suggested by Shadforth, an Australian Aboriginal man who lives in the Borroloola area in South Australia (Shadforth, 2002, p. 94). Therefore, these principles would be valuable mainly used as a guide with a few adjustment based upon the local context.



**Table 6: Ten (10) Settlement Planning and Development Principles for Better Health**

NOTE:

This table is included on page 81 of the print copy of the thesis held in the University of Adelaide Library.

### 5.3 Impact of Involuntary Re-settlement on Indigenous Peoples

Generally, involuntary re-settlement is one of controversial issues that has been discussed for decades, especially in developing countries, where millions of people have been involved and suffered (Ming, 2004, p. 32). Issues of re-settlement and the movement of Indigenous people from their natural setting are global and have been pertinent for decades. We can find examples of this issue on every continent, not only limited to climatic, latitude and altitudinal factors. Indigenous people have been discarded from their natural habitat or territory for various reasons, which is more often linked to development. It was reported that the Australian Aboriginal traditional lifestyles, such as hunting and plant gathering, have been modified due to European settlement (Clarke, 2003, p. 21). The cost caused by improper involuntary re-settlement is said to be higher than proper involuntary re-settlement. Since 1990s the Asian Development Bank (ADB) has been working to improve this scenario and came out with several basic principles to sustain the economic and socio-culture of the affected peoples (Ming, 2004, pp. 34-35).

In the context of Malaysia, the pattern of settlement was the result of what happened during and after British colonization. The first British settlement in *Malaya* was on Penang Island (Pulau Pinang) in 1756 instigated by Captain Francis Light who served in The East India Company (V. Bartlett, 1954). The Straits Settlement Colonies were a collection of territories administered by the British East India Company in south-east Asia. One tenth of the population in *Malaya* was resettled using approximately £11,000,000.00. The Chinese were resettled in Kg Baru (New Village) separating them from the Communist Terrorists (CTs) where they were provided with amenities (V. Bartlett, 1954). Fort Iskandar at Tasek Bera, which is also known as “Lake of Changing Colours” has been mentioned as the first destination for helicopter use to discourage the contacts between the Aboriginals and the CTs.

In Malaysia the history of re-settlement started during the Emergency Period where the re-settlement of poor *Malays* into forest areas which were then cleared and planted with rubber trees and oil palms that generates their socio-economic welfare. The re-settlement of the *Orang Asli* started during the Emergency Period between the years 1948 – 1960 to separate the *Orang Asli* from the insurgents (Dentan, et al., 1997, p. 61). The Emergency Period on the *Malay Peninsula* witnessed the smuggling of men, money, arms and food from Singapore. The British sought to cut the guerrillas off from their rural supporters and to control their direct contact of the *Orang Asli* with other the racial

groups. Re-settlement programs, locally called *Penyusunan Semula Kampung* (PSK), in Malaysia were introduced under the 7th Malaysia Plan and commenced in Pahang State purposely to organise and supply the basic amenities and facilities to *Orang Asli* villages. However, in the following 8th Malaysian Plan, there was no more re-settlement of the *Orang Asli* but a concentration on local developments by improving the basic facilities and amenities provided.

Re-settlement in Malaysia has also reduced Indigenous people's power to exercise control over their lands and resources. Re-settlement and the movement of Indigenous people results in the loss of the importance of their environment and nature to the Indigenous people. Re-settlements result in the loss of land and this reduces their accessibility towards food and natural resources. As discussed by Tetteh (1976, p. 55), re-settlements in minimal resource based areas also leads to the destruction of the existing environment. Indigenous people find re-settlements are foreign and destructive to them. Whereby, plants and animals in the forest, as symbols of food, home and their territories are essential to them. Re-settlement often benefits to Indigenous people in terms of improvements to their physical environment such as amenities and facilities in new settlements. However, new settlements also need qualities other than physical attributes such as spiritual and socio-cultural attributes which makes new settlements work resulting in meaningful relationships being continued and formed. Or else, new lifestyles in new settlements do limit their accessibility to natural resources.

The *Orang Asli's* settlements may become more complex as its society becomes more complex as a result of interventions and the exposure to developments. A good example is the re-settlement schemes for the Indigenous people of Peninsular Malaysia which have been promoted as successful schemes by the Malaysian government. For example, the Malaysian Department of Orang Asli Affairs (*Jabatan Hal Ehwal Orang Asli*), (JHEOA) has claimed that re-settlement programs for the Indigenous people of Malaysia (the *Orang Asli*) is a way to increase the living quality of Indigenous people (JHEOA, 1992, p. 1). The establishment of *Orang Asli* Associations to fight for their rights and concerns have had a strong impact upon the policy development. Further, the Malaysian government has been stating that the *Penan* communities (one tribe of Indigenous group) in Sarawak are being well looked after, where a few initiatives have been implemented (Anonymous, 2000, p. 1). Further, these policy statements are contradictory whereby some studies and research projects conclude that there is a demonstrated failure in re-settlement schemes in Malaysia based upon observational research. For example, Sidi *et. al.* (2005) strongly assert that re-settlement schemes in Malaysia are

poorly planned and designed, and that they fail to consider the interrelationship of Indigenous people, or the *Orang Asli*, with their cultural and environmental aspects (Sidi & et.al., 2005, p. 2).

Malaysian re-settlements schemes have also caused difficulties in Indigenous communities obtaining access to natural resources due to the location of these new settlements being situated far from their traditional forests. Resettlement has been disastrous because of social, cultural and economical problems faced by the *Orang Asli* at re-settlement camps. Indeed, most of these re-settlement programs have caused tremendous problems to Indigenous people of Malaysia. There were even deaths reported at several re-settlement camps (Yong, 2004, p. 3-4). As a result, many Indigenous people who had not yet been re-settled abandoned their villages and moved further into the jungle so as to avoid re-settlement. Another example, in *Penan* communities, the major ethnic group in Ulu Baram, Sarawak faced these problems with illegal logging companies (Anonymous, 2000). Knowledge of settlement types, as well as other Indigenous knowledge, is important in its adaptation in planning for any physical developments for these communities. As described by Abbott, the use of a model-based approach to informal settlement upgrading which allows social spatial relationships geographic information systems use that recognise the main objective of upgrading to be essential to the social and economic development of the society, and not just serving as a technical tool to strengthen physical development (Abbott, 2003). As Kristen claims in her thesis, it is important to grasp conceptual meanings about how certain societies understand their world. The conclusion is similar to what Roseman successfully achieved in ethnohistorically documenting land mapping by Indigenous people as a new way of making claims upon land. The advantage of Indigenous knowledge is increasingly convincing government planners, commercial enterprises and also academic researchers as a way of contributing to the marketing of eco-tourism sites (Ruppert, 1996, p. 118). It is therefore important to assess and appreciate how the *Semelai's* re-settlement has reduced their Indigenous knowledge and practices. There is also a question of what is important and integral in their Indigenous knowledge system and what needs to be sustained and conserved. We may also have to consider what it is that they may really want and need to sustain their Indigenous living style.

Therefore, this research project seeks to undertake and pursue a specific and relevant methodology to investigate the *Semelai's* Indigenous culture as it relates to their relationship to ethnobotany and culture. It is reported in one unofficial government census in 1998 that there were about 1,474 individual *Semelai* in 266 families at Tasek Bera, Pahang. These families live in 12 settlements

which can be further grouped into 5 major villages that are centralized at Pos Iskandar (Anonymous, 1999, p. 14). According to Hood, these types of settlements indicate different levels of intelligence and knowledge to their environment, which is valuable and important to understand when constructing permanently-based settlements (H. M. Salleh, 1974a). However, these re-settlements and developments have sacrificed most of the natural resources especially the tropical rainforest. Land clearance by *Semelai* is considerably minor compared to land clearance by the FELDA for oil palm or rubber plantations. In fact *Semelai* people have been suggested to move to the FELDA schemes but the offers were rejected (Anonymous, 1999, p. 5). This is because it was less land than the other communities in Malaysia had been offered. Therefore, the *Semelai* prefer to stay in their traditional area and among themselves.

#### 5.4 Landscape Planning on Indigenous Peoples

In planning and designing spaces for living, the cultural aspects of human lifestyles are importantly needs attention. Lifestyles are the most useful criterion for defining groups which determine patterns of human settlements and built environments (Rapaport, 2001, p. 154). This aspect of human living is important because humans respond differently to space according to their culture which encompasses landscape elements and arrangements, and also interferences based upon the current situation, previous experience and knowledge background (Kaplan, 1985, p. 162). 'Cultural landscape' is a human manipulated landscape term which describe the history of the occupants of that particular area (Ruppert, 1996, p. 120). The cultural landscape, which is a human-modified environment for living, may include the physical and spiritual aspects of relationships between people and their environment to achieve optimal ecological sustainability as well as engaging in successful solutions for particular spatial and temporal problems of land use and management (Glikson, 1961, p. 113; Simonds, 1961, p. 7). The term 'cultural landscape' was introduced by Carl Sauer in his essay 'Morphology of Landscape' in 1925 and emphasized by John Barrett in 1999 as

...the entire surface over which people moved and within which they congregated. That surface was given meaning as people acted upon them. Such actions took place within a certain tempo and at certain locales. Thus landscapes, its form constructed from natural artificial features, become a culturally meaningful resource through its routine occupancy (Barrett 1999, page 4).

There are three (3) types of cultural landscape, as defined by Cleere in 1995 that include:

- i. clearly defined landscapes: designed and created intentionally;
- ii. organically evolved landscapes: resulted from particular economic, religious or administrative effort; And
- iii. associate cultural landscapes: places that have been attributed religious or social significance (Harrison, 2004, p. 11).

The integrity of cultural landscapes can be witnessed if human modification manages to directly reflect people's specific cultural activities, values and norms toward the land. Therefore, the cultural landscape of Indigenous peoples, as distinct from the colonisers, must be considered in dealing with their land management issues. This is because Indigenous peoples can be seen as having a special relationship to their environment. They are more sensitive to their environment compared to modern communities, because they still practice traditional cultures which rely upon natural resources (Bahuchet, 1995). Traditional living qualities of Indigenous peoples derive from their close bonding with the environment. Their traditional lifestyles are dictated by the availability of natural resources and materials, as well as seasonal changes and localities which contributes to the traditional living sustainability (Bailey & Green, 1997, p. 3).

Late nineteenth and early twentieth century of Malaysia's development has witnessed the despoliation of forest areas by the national government who see 'economic return' for plantations and mining operations important in deference to importance of conserving natural forested areas (Gomes, 2004). As suggested by Hood, we need to re-look at the laws of land that could sustain the *Orang Asli's* social cohesion and identity in any future re-settlement development for the community's cultural and psychological integrity (H. Salleh, et al., 2004, p. 93). Government policies related to ethnic minorities are encapsulated in broad principles.

Malaysia adopted the National Wetland Policy in June 2004 after approximately 10 years under Ramsar which demonstrates its commitment to the conservation and wise use of wetlands in the nation. This policy aims to protect and conserve wetlands through the wise use concept, as emphasised by the Convention (Wetlands, 2000). Wetland conservation has lately been discussed and implemented based upon a few guidelines and conservational practices. However, land conservation is the least priority land use category compared to the other four land uses under the Malaysian Land Capability Classification (LCC) system. Therefore, the implementation of LCC has

caused a major deterioration to the existing natural environment (Ramakrishna, et al., 2002) and its recognition as a valuable contributor to the Malaysian land system and its overall contribution to the Malaysian economy. The Ministry of Technology and the Environment (MOSTE) established a National Steering Committee in 1994 on the Ramsar Convention to monitor Malaysia's commitment to this instrument. The committee members include representatives from federal and state government offices, universities and research institutes (Boyer, 1999). A technical committee provided advice to the steering committee on the drafting of Malaysia's National Wetlands Policy. The significance of maintaining wetlands especially for the cultural and ecological conservation of Indigenous people who greatly depend on these ecosystems is vital as also acknowledged by the Australian Environmental Protection Authority (EPA) (Anonymous, 2004b).

In 1969 the International Union for the Conservation of Nature and Natural Resources (IUCN) declared a national park should be relatively large in area and be a place where:

- i. One or several ecosystems are not materially altered by human exploitation and occupation, where plant and animal species, geomorphological sites and habitats are of special scientific, educative and recreative interest or which contain a natural landscape of great beauty;
- ii. The highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphological or aesthetic features which have led to its establishment; and
- iii. Visitors are allowed to enter, under special conditions for inspirational, educative, cultural and recreative purposes (Source: [http://en.wikipedia.org/wiki/National\\_park](http://en.wikipedia.org/wiki/National_park) accessed date).

These criteria were further expanded to be clearer and to provide detailed benchmarks in which to evaluate this definition of a national park.

## 5.5 Decision Making on Indigenous People's Land

Traditional practices among Indigenous peoples involve their relationships with nature. Especially with plants, this includes knowledge, skills and experience in searching out and obtaining natural resources for food, medicine, utilities, materials for structures and other social needs for living. The

Indigenous peoples in the world are often still using forests for their primary natural resources such as land for cultivation and settlements, as well as water, wildlife and flora for food, medicine and other uses (Griffen, 2001b, p. 14). Plants are particularly integral in human culture due to their living and growing qualities. In a landscape, plants are used for various reasons and objectives including as a medium for creating landscape designs, and to create a sense of place (Robertson, 1989, p. 269). How this ethno-botanical knowledge can be used in government development planning, especially for Indigenous people, has not been widely studied and researched.

Over the last half-century, re-settlement or re-groupment programs have been proposed in Malaysia with the intention of exchanging Indigenous peoples' original territories or lands with development projects (M. T. Salleh, 1990, p. 280). Re-settlements have brought the *Orang Asli* into contact with 'civilisation' or modernisation, which has threatened their Indigenous culture and identity. This displacement and subsequent development did not consider the association existing between the *Orang Asli* and their forest environment. Their new settlements have not been designed and planned to suit their needs in order to sustain their traditional practices. Furthermore, the *Orang Asli* has been forced to accept development in its formal sense as with other people in Malaysia were. As a result, the *Orang Asli* slowly left behind their traditional lifestyles, which were seen as 'uncivilised' (M. T. Salleh, 1990).

An example of this change is the Babagon Dam project in Sabah, which involved *Kadazandusuns* people. This dam construction has jeopardised the sustainability of the Indigenous identity, culture, social systems and political structures of the *Kadazandusuns* due to their movement or re-settlement from their traditional environment (Lin, 2003). In addition, these people can no longer rely or are less dependent upon their traditional resources and knowledge base, due to the inaccessibility of these resources at their new settlements. They are also exposed to modern lifestyles that were brought to them at their new re-settlement areas. These adaptations have decreased their dependency on the natural environment and will eventually lead to a reduction of their Indigenous knowledge and practices (Lin, 2003). There is an urgent need for a new solution that can be adopted in the current Malaysian practice of re-settlement, which considers the traditional and Indigenous culture of peoples. By better understanding their culture, we can better plan for and craft a more appropriate and cultural relevant living environment for them in which to sustain their traditional Indigenous practices.



Today, most Indigenous people of the world live in remote areas, far from major concentrations of development, such as in forests, jungles, wetlands and coastal areas. The close relationship of Indigenous peoples with their environments explains why they practice quite similar activities. Indigenous peoples have developed highly complex and very specific knowledge of their local flora, on which some of them still depend for food and material culture. Plants are not only associated with botanical phenomena, but also function in cultural phenomena such as in use by households (A. H. Mohamad & Bidin, 1991; Othman, 1991a). It is noted that Australian Aboriginal people can use every part of a plant for food and for other uses (Isaacs, 2002). Apart from functional aspects, it is also true that plants can become part of humans' lives in terms of spirituality. Indigenous peoples of the world have personal, communal and spiritual linkages with their environment.

Moreover, in recent years anthropologists have realized that people do not respond directly to their environment, but rather to the environment as they conceive of it. For example, to animals and plants as conceptualized in their minds and labelled by their languages (Dentan, et al., 1997). These associations with environments tell how people derive information from their environment, how they use public and private information and also how they incorporate environmental information into decision-making, which results in the physical forms of their living environments. For example, Aboriginal peoples in Australia who live in coastal areas are good fishermen. They make their own boats and other fishing tools from natural products (Hillman, 2001). Traditional living practices or traditional lifestyles significantly determine Indigenous peoples' qualities. Indigenous populations generally hold unique, and still today, quite vulnerable cultural and environmental knowledge, which is associated with their lifestyles. Therefore, an understanding of Indigenous peoples' environmental knowledge including detailed and in-depth investigations is clearly needed in order to understand their culture.

Interest in how people perceive their environment started in the 1960s, with geographical studies investigations as to how people construct cognitive maps and how they respond to their environment (Walmsley, 1984, p. x). Human ecology requires an understanding of human conceptual systems, where we need to consider how the people classify and think about their lives (R. F. Ellen, 1984; Rambo, 1980). Apart from ethnobotany, "ethnoecology" offers another way of looking at Indigenous peoples' relationships with their environments (Nazarea, 1999, p. vii). As suggested by Maheswari (1983), ethnoecological research is important so that Indigenous knowledge systems and perceptions can be usefully incorporated into development planning and environmental

management. Ethnoecology is the study of past and present interrelationships between human societies and their living and non-living environment (Maheshwari, 1983).

Ethnobotanical research should be encouraged to protect biodiversity and to prevent natural and cultural heritage loss. Ethnobotanical surveys and fieldwork in tribal areas amongst Indigenous societies and cultures has been forecasted to become a critical area of research in the future (Jain, 1986). Ethnobotanical knowledge can be used as a platform to understand knowledge of the Indigenous communities' behaviour towards their human-made environment, such as new settlements, which are also a part of ethno-ecological research. The natural environments which form the main source of food for Indigenous peoples have often been destroyed by re-settlement and involuntary movement. Movements of Aboriginal people away from their original environment due to re-settlement limits their dynamic and productivity relationships with land (Bailey & Green, 1997, p. 4). For example, degradation of the Indigenous tradition of the Australian Aboriginal people was caused by European colonisations settlement and displacement (Bailey & Green, 1997, p. 2). Indigenous Australians previously survived by eating a nutritious and balanced diet of various native plant and animal species, which they found in their surrounding habitats, before the Europeans arrived (Isaacs, 2003, p. 11). The displacement, movement or re-settlement of these peoples from their traditional and original territories due to invasion and encroachment of development towards forested areas affected aspects such as sources of material culture, ethno botanical values and practices and also Indigenous peoples' identities.

Socio-spatial experience is multi-sensorial and emotional which is different from one person to another based on their individuality, locality, experience, roles and responsibilities in social lives where photography used as a common technology to represent, elaborate, enhance and illustrate discourse (Bijoux & Myers, 2006, p. 44). Community mapping has been used throughout Malaysia to identify and describe Indigenous people's land and resources rights issues. However, in order to understand Indigenous relationships to land and natural resources, their possession towards land, we need first to understand their attitude towards it as has been discussed before. There might be in relation to their sacred and religious meanings to their lives. As stated by Roberts, settlement landscapes are signs and symbols of human endeavour that are dynamic and moving through time (Roberts, 1996, p. ix). We can understand rural settlements through their physical characteristics and context as well as through their cultural context including the interrelationships with each individual settlement and also other settlements informing settlement patterns (Roberts, 1996, p. 8). Rural

areas provide opportunities for tourism activities which can also contribute to the country's economy, such as with the Kinabalu National Park that supports tourism industry for the Indigenous *Kadazandusun* communities (Ghazali & Sirat, 2003). Roberts also stressed that settlement study needs an historical explanation, because landscape settlement is a product of time (Roberts, 1996, p. 10).

The issue of adequate housing and related issues such as locality, habitability, affordability and etc have been discussed and documented in seminars and workshops before. However, the landscape methodological approach employed in this thesis has not been structured to address these specific issues. Landscape associated with the people's living environment need to be recognised as the major determining factor than the relationships between land, people, lifestyle and sociality in settlement planning and community development projects for addressing health conditions related to the community living environment where planning strategies must support the relationship between people and land by acknowledging that the entire living environment of people including the settlement and the landscape beyond (Sinatra & Murphy, 1997, p. 36). Landscape planning is one way to cater issues on how do Indigenous people plan their land for settlement and cultivation.

## **PART IV: THE ETHNOGRAPHIC RESEARCH**

### **CHAPTER SIX: RESEARCH METHODOLOGY**

#### **6.1 Research Design**

This section explains how the researcher planned and designed the research. In this chapter, the research methodology is explained as well as why it was chosen, how it was executed and how it was analysed. In any research project, objectives need first to be clearly drafted in order to guide specific questions or to clarify a particular subject area. To begin an ethnographic research project, selection of a problem or topic of interest, selection of culture and an underlying theory are compulsory (Fetterman, 1989, pp. 13-15). Secondly, the preparatory stage assembled and considered existing information about the local community and site to be studied. In this stage, a literature review pertaining to the culture and subject audience and place was undertaken. Then, variables of interest such as Indigenous peoples, settlement planning and ethnobotanical aspects were identified.

The third stage involved interviews and data collection, which included the immersion of the researcher in the culture. The former involved a mixture of semi-structured and open-ended interviews that enabled effective interview sessions and data retrieval. However, there were also some general strategies that were planned and executed by the researcher in this fieldwork which cover a spectrum of data collection techniques as summarised in Table 5 in Appendices A. The fourth stage involved data analysis and theory development. In this dissertation, collected data and information was reviewed and considered for its significance and relevance, and thereupon processed and investigated for its ethnobotanical uses and potential in relation to re-settlement planning and design development (Anonymous, 2003, pp. 5-8). Then, the recommendation and guidelines were formulated based upon the analysis.

#### **6.2 Ethnographic Research**

Ethnography has become one of the major social science methods in educational research since the 1970s. By definition, the word “ethnography” refers to the empirical accounts of culture and social organization and the activities of particular human populations in their own setting (Anonymous, 2003; R. F. Ellen, 1984, pp. 3-4). Generally, ethnography is defined as a study, an art and science of

understanding and describing a group of humans culture (Altheide, 1987, p. 66; R. F. Ellen, 1984; Fetterman, 1989, p. 11; Hammersley & Atkinson, 1995; LeCompte & Schensul, 1999b). Ethnography generates or builds theories of culture, or explanations of how people think, believe, and behave, that are situated in local time and space (LeCompte & Schensul, 1999b). Therefore, ethnography can also clarify the conflicts and interests between significant Indigenous peoples towards their landscape surroundings, including visual and geomorphological analyses (Low, 1987). Ethnography can also create opportunities for improved communication between policy-makers and the public (Howell, 1987).

Ethnographic research derives from the word “ethnography”, which is defined as a specific approach to scientific methods of study for understanding a particular human reality in a social culture and natural setting through the researcher’s participation for a comprehensive period of time (J. J. Schensul, LeCompte, Nastasi, & Borgatti, 1999). Ethnographic research in the early 20<sup>th</sup> century often involved two to three years of living in a community which was generally referred to as ‘true ethnography’. However, gradually, there has been variations, diversifications and adaptations of ethnography caused by limitations and constraints faced by social researchers in recent decades (Hammersley & Atkinson, 1995).

Ethnographic research involves “research methods of understanding the perceptions and cultures of the people and organization studied” (Walford, 2002, p. vii). The involvement of different people and different cultures show that ethnographic research is multi-disciplinary. More recently the concept of applied ethnographic research has been introduced, leading to some degree of disagreement among qualitative researchers. Nevertheless, applied ethnographic research as a methodology can be an effective tool in understanding and improving conditions faced by research participants and others in similar situations (S. L. Schensul, Schensul, & LeCompte, 1999).

The ethnographic method is a valid and important way to know what is happening and can be used by practitioners. Seven (7) identified characteristics of ethnographic research include:

- i. Ethnographic research should be carried out in a natural setting, not in a laboratory;*
- ii. It involves intimate, face-to-face interaction with participants;*
- iii. It presents an accurate reflection of participants’ perspectives and behaviours;*

- iv. *It uses inductive and interactive and recursive data collection and analytic strategies to build local cultural theories;*
- v. *It uses multiple data sources, including both quantitative and qualitative data;*
- vi. *It frames all human behaviour and belief as well as human thinking within sociopolitical and historical context; and,*
- vii. *It uses the concept of culture as a lens through which to interpret results.*

*Source: (LeCompte & Schensul, 1999b, p. 9)*

The underlying theoretical position, model or pattern in this dissertation should always guide and generate ethnographic research (LeCompte & Schensul, 1999a). Another important aspect is in ethnographic research itself, which differentiates ethnographic methods from other social science methodologies. In ethnographic research, the discoveries of what people actually do and the reasons as to why they are doing such are the main important factors to record and document before trying to interpret them using our own personal values and experiences informed by our own lens and cultural nuances (LeCompte & Schensul, 1999a, pp. 1-2). In ethnographic research, it is also important to acknowledge the contextual variations across place, people and time in a given setting (Hammersley & Atkinson, 1995).

### **6.2.1 Ethnographic Research Tools and Instruments**

In order to understand a culture, researchers use their own observation as the main tool which is 'different' in terms of the norms and the language of the observers' culture. Therefore the researcher is considered the main tool in ethnographic research though, no researcher can be completely neutral or detached from the outside and independent of the observed phenomena, as discussed earlier by Pollner & Emerson (1988) (Emerson, Fretz, & Shaw, 1995).

As discussed in many articles and publications, ethnographic field research involves two distinct activities. First, a merging of the researcher into a social setting; getting to know people involved in it while participating in the daily routines of this setting, otherwise known as 'participant observation'. 'Participant observation' transforms researchers into instruments of data collection and data analysis starting from the immersion of the researcher into the studied 'culture' and their ability to intellectualize and put into a different perspective what

has been observed and studied (Bernard, 2002, p. 324; R. F. Ellen, 1984). Immersion enables researchers to feel and get a deeper understanding what is going on in that community. The researcher can then better see from the inside how people lead their lives, and how they carry out their daily routines. Participant observation means that researchers try to experience the life of their informants to the greatest extent possible; although not totally merging into the studied background and becoming fully accepted members of an alien culture (Bernard, 2002, p. 368). Therefore, active participation is important in ethnographic research because it enables researchers to learn what is required to become a member of that particular community, which gives some understanding of how things really work and are perceived. Participant observation fieldwork enables close relationships with the studied community which creates a positive and effective environment that encourages a deep understanding of the lifestyles (Bernard, 2002, p. 322).

Researchers should gather data carefully and thoroughly. Furthermore, the data should be understandable to other researchers to replicate in other or comparable field conditions. Being the primary tools of data collection, the researcher will need to have a few characteristics to ensure good quality of data. The quality and character of ethnography depends upon the circumstances of its production, as well as the quality of ethnographer (R. F. Ellen, 1984, p. 9).

The qualities of a good ethnographer, as suggested by LeCompte & Schensul (1999) are tabulated in Table 7. Being aware of the good characteristics of an ethnographer is also a guide for researchers. By knowing these good characteristics, they can serve as a guide in conducting quality fieldwork. However, in dealing with human beings, there is not a simple standard or guideline that suits everything. As mentioned before, fieldwork is something that is unteachable. It is only acquired through doing it in the field. From there we learn, and then, we have to bear our own mistakes. As what happened to this researcher, it was very hard maintaining the role of being a good ethnographer while in the fieldwork due to internal and external factors. It also requires skills that need to be developed. As *Protocols with Indigenous people* are not the same, the researcher sought to ensure that her presence, and that of her husband, was welcomed by the village people under study. However, as agreed by scholars in ethnography, there is no perfect field-worker (LeCompte & Schensul, 1999a; J. J. Schensul, et al., 1999).

**Table 7: Ethnographers' Good Characters**

**NOTE:**

This table is included on page 96 of the print copy of the thesis held in the University of Adelaide Library.

**Source:** (LeCompte & Schensul, 1999b)

Research assistants play an important factor in deflecting researchers from using their own previous experiences and ideas, and can influence information. Research assistants may also help researchers from losing their track and purpose. They help primary researchers not to miss any important elements, as they often check the data obtained.

The second distinct activity is transcription and or recording. The choice of tools in ethnographic research is vital in determining the expected results and the mode of presentation (LeCompte & Schensul, 1999a). Polunin has highlighted the difficulties of fieldworkers in finding and choosing appropriate tools to undertake research that often determine and describe the nature of the research (Polunin, 1970). The researcher needs to write down in regular, systematic ways what she observes and learns while participating (Emerson, *et al.*, 1995). This approach more often helps researchers explain in more detail and in greater authority how and why culture or a facet within this culture is created, evolves and is maintained. The written approach also allows researchers to explore specific topics, events or happenings; explore social, political and economic changes; and to ask about shared understandings, rules of behaviour, standards of value and mutual expectations. Theory as described by Goode & Hatt (1952) and Pelto & Pelto (1978) is the relationships between facts, the ordering of facts in some meaningful way, to make sense of series, sets or selections of observations, statements, events, values, perceptions and correlations



which describe and discuss in a given time and place that can be used in another time and place to predict or describe events (LeCompte & Schensul, 1999a).

However, there are some cases where writing is not convenient at that time compared to other means of audiovisual modes such as camera and video. Recording apparatus needs to have a high rate of storage and information capacity as well as the ability for repetitive and recall facilities and the choice of apparatus need to be competently handled (Polunin, 1970, p. 3). In short, an ethnographer should be knowledgeable about the relationships between theory, methodology and research procedures. A study without any assistance is very difficult as evidenced by the most experienced ethnographers (LeCompte & Schensul, 1999b).

### **6.2.2 *Ethnographic Research Data***

In any ethnographic study, data is the cultural reality of what people do and say in response to certain contexts and situations. Obviously a study of this nature would be most valuable if carried out in both descriptive and interpretive manners. Descriptive data is because details are important in any ethnographic study, as compared to interpretive; it is valuable for the ethnographer to determine the significance of her/his observations from the broader information.

Generally, ethnographic data is derived from two main sources which are primary and secondary data. The selection of specific data collection modes suggested depend upon the study objectives, types of questions, sampling sizes and distribution as well as budget allocated for the researchers (Marans, 1987, p. 65). Both Bernard (1995) and Pelto & Pelto (1978) agree that a combination of both qualitative and quantitative data is a good characteristic of ethnography (LeCompte & Schensul, 1999b).

In this dissertation the researcher normally started conversations by asking general questions that eventually and progressively related to specific inquiries about plants that were associated with certain activities and events. Within this research methodology, both quantitative and qualitative ethnobotanical data was used. Quantitative data included numerical data such as demographic aspects, frequencies of usage and distribution of plant

species, which provided general concepts, ideas or theories about the studied culture. As suggested by Schensul *et al.* (1999), quantitative data needs to be translated into qualitative form for analysis such as in ideas, concepts and theories. However, there was lack of primary quantitative data found in this investigation.

It is also agreed that ethnographic research involves qualitative methods, such as close field observation, unstructured or in-depth interviews of a defined culture group (Anonymous, 2003, pp. 4-5). The qualitative interview is a construction site of knowledge which encourages people to describe in their own terms a piece of information. Qualitative interviews are highlighted by scholars as being about the understanding of other peoples' lives and experiences which may open windows of new knowledge (Rubin & Rubin, 1995). Qualitative interviews have three characteristics which are:

- i. they are modifications or extensions of ordinary conversations, but with important distinctions;
- ii. they are more interested in the understanding, knowledge and insights of the interviewees than in categorizing people or events in terms of academic theories; and,
- iii. the content of the interview, as well as the flow and choice of topics, changes to match what the individual interviewee knows and feels

(Rubin & Rubin, 1995, p. 6).

Formal interviews, questionnaire forms or handouts are not an appropriate method of obtaining this type of information. It is important for the researcher to bear in mind what previous researchers have done and that this should be carefully studied and understood so that these problems or issues may not be repeated. Unstructured interviews and observations of participants were undertaken with the informants' knowledge and permission. Ethnographic research should also be conducted at places where people or organisations culturally permit face-to-face contact. Face-to-face interviews are the most common means of gathering information as claimed by (Marans, 1987) and best suits environment related surveys which involve settings and places that characterise the situations. Interviews done individually or grouped depend upon the situation and need. For example, individual interviews in this investigation were undertaken with the experts and key

persons. However, grouped interviews can be done to confirm certain statements and information given by individuals where there is discrepancies. As suggested by Heyes, researchers need to be more sensitive when working with Indigenous communities (Heyes, 2002, p. 16). Interview techniques are further described below;

“asking ourselves how do we think those questions relevant to the topic that we have chosen? How do we get people to stay focussed on what we want to hear about? Whom do we interview and why? How can we trust what people are telling us? How do we persuade a person to become an interviewee? How specific should a question be? Is the wording too biased? How do we get people to elaborate on what they say? How do we put together different telling of the same event?” (Rubin & Rubin, 1995, p. 2),

In general, conversations, interviews and observation are not the only methods of gaining information and discoveries of ethnobotanical data. Ethnobotanical data can also be discovered through ethno-ecology such as myths, fairy tales and legends. Ethno-ecology, as defined by The Darrell Posey Fellowship for Ethno-ecology and Traditional Resource Rights, is the study of complex relationships, both in the past and present, between people and their environment, which emphasizes local peoples' perceptions, knowledge and understandings of their own reality and problem (Nazarea, 1999b). These sources of information tell how things historically evolved, and ritual transformations. Traditional resource rights discussions integrate bundles of basic rights that include human and cultural rights of Indigenous and local communities such as spiritual, aesthetic, economic and other resources.

### **6.2.3 Ethnographic Fieldnotes**

Ethnographic fieldwork, as described by many ethnographers, should reveal multiple truths apparent in studied lives rather than determine 'the truth'. Fieldwork involves four types of notes such as jottings or scratch notes, diary, a log and a proper fieldnotes. Ethnographic research often consists of written fieldnotes, and the examination of the rhetorical character of these fieldnotes (Emerson, et al., 1995). Ethnographic fieldnotes have been important tools in ethnographic research for decades. How to write, how to code and manage field notes are important points of handling fieldnotes apart from being aware that the writing up will take long hours (Bernard, 2002, p. 366). Jottings, or 'scratch notes' as called by Roger

Sanjek (1990, p96) are what get you through the day researchers should jot down any details that strike them anytime and anywhere while they are doing their research. Even a keyword should be good enough to remind them later. This is because human memory is very poor in the act of recording. A diary is a personal documentation of the researcher's personal feelings and emotions that make fieldwork difficult.

This procedure demonstrates the tedious nature of the work and the expectations of what it requires. However, fieldnotes are often seen as unfinished materials that the author is not proud to display; untidy, a little bit dirty, something not to be discussed or revealed. Fieldnote formulas have evolved through decades with adjustment through experiences by researchers. For example, Kenny and Bernard have developed and tested fieldnotes using their own experiences and borrowed from other colleagues' methods in fieldnotes including jottings, a diary, a daily log and three kinds of formal notes (Bernard, 2002, p. 367). However, it is suggested by Bernard (2002) that these forms are not the only way to do fieldnotes. Bernard believes that investigators in field research should develop their own style of writing notes (Bernard, 2002, p. 367). Therefore, how ethnographic researchers write fieldnotes remains hidden and mysterious and which is a topic for dissertation in its own right.

#### **6.2.4 Ethnographic Research Analysis**

In ethnographic research, the analysis starts immediately when the researcher ventures onto the site. As suggested by LeCompte & Schensul (1999), data analysis starts immediately when the first few interviews have been conducted and involves several levels of analysis (LeCompte & Schensul, 1999a, p. 149). It is this stage in which ethnographers make sense of their data; where they review and reflect upon the information now to what they have learned before. Much of this analysis came from secondary data such as stories and information given by informants having regard to other related research.

Generally, language defines humans whether individually or collectively (Chamberlin, 2000, p. 133). Language makes things happen and brings things into being by means of what are sometimes referred to as "speech acts". Words of power and words of survival are

remembered by people. In this chapter, the research outcomes are discussed drawing upon the participant observation and unstructured interviewing approaches undertaken in the fieldwork and also introducing the discoveries realised during the research process. The focus of analysis is upon organised description and interpretation. Detailed and extensive data is provided in the Appendices. However, the challenge was to highlight the insights that ethnography can bring to the planning and design process.

### 6.3 The Applied Ethnographic Research Method

This dissertation is an exploration of the significance of Indigenous knowledge to the re-settlement programs involving the *Semelai* people at Tasek Bera, Pahang, Malaysia. This fieldwork was conducted at Tasek Bera, Pahang, Malaysia between the months of February and April in 2007. The researcher stayed for 3 months in one of the residential quarters for Federal Land Development Authority (FELDA) staff with her husband. Any significant events and ceremonies within this period were observed. This was extremely important so to identify unexpected issues and problems. The justification of this site and topic selection is based upon the high integrity of the ecological and conservation aspects of this culture, as well as the habitat and biodiversity at the site.

Since 1994, being the first Ramsar's site in Malaysia, Tasek Bera wetlands has gain international attention and guidance as to permitting wise use of its wetland resources. Then, in 1996 the Integrated Management Plan for Tasek Bera has been implemented that offer opportunities a wide range of research and activities to be undertaken in complying with the same objective of sustaining the wetlands' biodiversity.

In this investigation, the ethnographic method commenced with the selection of a culture where this case study could be undertaken comprising a single-community at a single-site, which is the *Orang Asli Semelai* at Tasek Bera, Pahang, Malaysia. The association and attachment of *Orang Asli Semelai* with Tasek Bera is not only through physical aspects such as social and economic, but also spiritually such as in their belief, myth and legendary stories that describe about the places and their origin. However, the writing and stories about the *Semelai* people was only started in 1949 by Collings who firstly mentions the *Semelai* as the Indigenous peoples of Tasek Bera (Needham, 1974, p. 123). Then, only a few individual researchers and anthropologists and scholars such as Hood

Mohamad Salleh, Rodney Needham, Rosemary Gianni and a few more that were interested with this people. Therefore, from this the decision was made upon selecting this community based on their significant as the main and only inhabitants in the Tasek Bera basin, whom contribute to the conservation and sustainability of the precious wetlands. The status of Tasek Bera as a wetland of international importance is based on its ecological and socio-economic values that lie within the wetlands and its inhabitants.

Accordingly, the applied ethnographic approach was selected and executed. Refer Figure 1 and Table 8. The researcher chose an applied ethnographic approach to demonstrate her credibility in conducting this research in her first attempt in approaching the *Orang Asli* as an independent researcher. Through this approach, the researcher believes that a quality level of information was perceived and recorded as could be feasibly obtained that could be completely synthesised. Previously, the researcher was accompanied by a university Senior Lecturer as the main researcher in a project with the *Semelai* which exposed and gave her a solid relationship and appreciation with this community. However, this research was not started from a mutual agreement from local communities. Therefore, there might be some deficiencies and limitations in this investigation which might not be clearly described and acknowledged. There are also several common limitations such as the availability of financial support and time for the research.

The timing and research activities needed to be carefully planned to make full use of time spent on site. These constraints might limit the level of exploration and discovery in ethnographic research projects. Constraints such as personal, family and religious commitments shaped the researcher's participation in this fieldwork. These limitations need to be acknowledged in understanding the fieldwork. Most ethnographers in ethnographic research engage intensively in study. The researcher is apprehensive about the amount of time with the *Semelai* as what these previous scholars undertook. The researcher was constrained by specific detailed knowledge and experience in ethnographic research, and the limited time for the fieldwork.

This investigation is an ethnographic research project which might be not as intensive as previous research investigations undertaken with the *Semelai* at this particular site. However, when the researcher considers that she can provide what previous scholars were not able to, at least from her intellectual and professional discipline, she feels better and gained strength to finish this dissertation. Further this is an applied ethnographic approach which commonly involves a shorter period of time

than normal ethnographic approaches and assumes non-continuous participation with the community under study (Hammersley & Atkinson, 1995).

**Table 8: Methodological Strategy**

<b>Methodological Steps</b>	<b>Tasks Undertaken</b>	<b>How the Ethnographic Tools and Instruments were applied</b>	<b>Relationship of the Methodological Step to the Research Objectives</b>
<b>SURVEY</b>	Field Interviews	Face to face: <ul style="list-style-type: none"> <li>• Individual Interviews</li> <li>• Group Interviews</li> </ul>	Satisfies the first objective which is to introduce, examine and justify the role and validity of ethnographic studies in re-settlement planning and design
<b>OBSERVATION</b>	Conversation Demonstration Daily routine	Observation on natural setting of: <ul style="list-style-type: none"> <li>• Routines</li> <li>• Seasonal Event</li> <li>• Unusual (Incidents)</li> </ul>	Satisfies characters of Ethnographic method
<b>PARTICIPATION</b>	Wedding Bebelian (ritual shamanic) Hunting Jungle tracking	<ul style="list-style-type: none"> <li>• Build a good rapport</li> <li>• Intimate, face to face interaction with participants</li> </ul>	It presents an accurate reflection of participants' perspectives and behaviour
<b>MAPPING</b>	Discussion on location and rights of ancestor's land	Analyses data into landscape physical by using inductive, interactive and recursive data	Satisfies the fourth objective which is to propose ethnographic and ethnobotanical frameworks for informing re-settlement planning and design guidelines that can better contribute to Malaysian policy making and to the conservation of Indigenous heritage.

The researcher undertook a residency period of nearly three-months including some nights interviewing and observing the living culture. Spending three months doing ethnography fieldwork is not an easy task. In this applied ethnographic research, participant observations were not as close

and long-term as in normal ethnography research. The researcher was also not able to stay continuously with these communities during the period of fieldwork. However, the researcher tried to commute every day and in every condition, night time, weekends, raining, cold or hot weather just to keep her updated. The researcher did start her fieldwork using protocols which commenced with meeting the Department of Orang Asli Affair (JHEOA) officer whom could bring her into the village and introduce her to all the chiefmen (*Tok Batin*). However, during her first day, then, after getting permission from the “*Tok Batin*”, the researcher was unconstrained to interview the villagers. She even met committee members from Semelai Association Boat Tourism (SABOT) to get an overall idea of how to successfully execute the fieldwork and general activities planned for her to observe.

In undertaking this fieldwork, the researcher was also blessed by having a highly competent and sound research assistant, as part of the research team, who possesses a “good field-worker” quality and aptitude. His presence was an advantage in this kind of research that requires direct involvement, participation and strong relationship building with the respondents as suggested previously by a few scholars (R. F. Ellen, 1984, pp. 208-210; LeCompte & Schensul, 1999b, pp. 171-176). The male dominance in the research team also contributed to the success of acceptance by village elders. The freshness of this exposure to the communities and their socio-culture encouraged his spirit and interest to acquire as much information as possible.

Further, the researcher also recognised that her personal characteristics (a woman, a wife and a mother to three small children and at the same time an adult student) and lack of experience with the target culture may have in part compromised the execution of the fieldwork, especially amongst the male informants. Therefore, researcher’s husband accompanied her as an assistant when interviewing *Semelai* men. The researcher sought to overcome these barriers by choosing replicable methods and data collection techniques which could foster and enhance her participation in the *Semelai* community life. Intensive observations and in-depth interviews were necessary for the accurate recording of local meanings and understandings (Bernards, 1995; LeCompte & Preissle, 1993; Pelto & Pelto, 1978 in (LeCompte, Schensul, R.Weeks, & Singer, 1999).

The underlying theoretical position in this dissertation is that there exists a strong association between the *Semelai* communities and their environment, especially in respect of plants. This represents the theory or model, which again the literature highlights, should always guide and generate ethnographic research (LeCompte & Schensul, 1999a). However, in this research,



knowledge was not sought to build theory or other philosophical statements which might be significant to certain field or disciplines. Rather, this knowledge was sought so it could contribute to the future planning and decision-making in any development that may occur at this particular place and involving this particular cultural community. The information obtained from these interviews and participation should increase the understanding of why certain things happen which will be used to support the proposed planning and design development for this people. In short, this applied ethnographic research is a modification of true ethnography based upon some stated assumptions, constraints and limitations faced by the researcher.

### **6.3.1 *The Applied Ethnographic Research Tools and Instrument***

The researcher was fully aware of the important role that she plays because the ethnographer is an instrument and tool in ethnographic research, It is suggested that ethnographers should perform their roles correctly and objectively from the moment they enter into the act of fieldwork, while keeping an open mind about the culture they are studying, to encourage quality exploration (Fetterman, 1989). Therefore, the researcher sought to allocate appropriate and efficient time to spend with these communities. Throughout this investigation, the primary data was gathered from interviews and surveys, including an initial mapping of the villages handled by the researcher and her assistant. As a result, this research relied in part, upon assistant researcher observations, as part of research tool, for the primary researcher to analyse.

In this research, electronic tools such as digital camera, voice recorder and video camera have also been used to collect, store, organise and present data effectively. However, manual tools such as fieldnotes, visual sketches and mental mapping were also employed to describe situations and express feelings and ideas spontaneously. Documents such as a set of interviewer guides was prepared and brought along as the fieldwork was conducted. Thus, the questions that were asked were not restricted to the questions as in the outline. The guide was supposed to be digested into researcher's mind and awareness that those are the things that needs to be inquired. However, the researcher feels that it was only meant for the earlier period of the fieldwork. The researcher had to participate and experience seasonal events that required her to focus her attention to it, instead of asking

questions. Most of the demographic of the informants was not also available. Tips for conducting a successful ethnographic research was also used as a guide throughout the fieldwork. The researcher found that these tips and guide were a help especially when she was stuck during the fieldwork. A checklist on information and materials for the preliminary data collection was also prepared as guide for the researcher while conducting her fieldwork. All these documents are enclosed in the Appendices A.

As suggested in the literature, the recording, collecting, compilation and analysis of texts should be in the native language (R. F. Ellen, 1984, p. 73). Conversations between the researcher and her assistant with the *Semelai* people during this fieldwork were mainly in *Malay*, the national language in Malaysia spoken fluently by both investigators and the respondents. Though the respondents' common language is *Bahasa Semelai* (*Semelai* Language) they can speak *Malay* quite fluently. The true meaning of the findings were therefore not jeopardised by differences in language. However, again, the most important tool in ethnographic research is the researchers' themselves. The researcher has to make sure the given information is valid by asking a few times to reconfirm the meanings given. How the researcher's conduct and bring themselves into the community influences greatly the responses and results of the inquiries.

### **6.3.2 The Applied Ethnographic Research Data**

The data set for this investigation is derived from an ethnographic study of ethnobotany and ethnology among the *Semelai*. This research is more focused at first upon manifestations of ethnobotanical knowledge owned by the *Semelai* communities in relation to settlement planning. Since this research method deals with people's perceptions and cultures, it is vital to be precise and have good quality data. The primary data derived from participant observations was mostly qualitative data from open-ended interviews (Bernard, 2002, p. 324). This research used informal, in-depth and exploratory interviews, which were unstructured, but were not unplanned as suggested by Schensul *et al.* (1999). This is the reason why a few checklist documents were prepared before the commencing of this fieldwork.

The first assumption for this research is that these communities are still closely dependent on plants and their environment for their survival, which also influences and determines their way of life, including their selection of settlement sites for living and cultivation. The investigation and questions raised were firstly focused on their associations with plants, whether directly or indirectly during the conducted fieldwork. Secondly, a reduction of traditional practices has been observed among the *Semelai* communities, especially among the younger generations (S. Mohamad, Zain, Dol, & Razali, 2005). The interviews tried to investigate what was practiced before and why it is not yet practiced to justify this scenario. The demonstrations of cultural practice given by the informants in some ways defeat the real scenario of the traditional lifestyle. However, this is only as an alternative in trying to understand how and why it was practiced.

Further, which is derived from previous research observation that the existing re-settlement houses developed by the federal Malaysian government may be having certain influences upon traditional social lifestyles and values in terms of space and place-making. For example, most owners of the *Semelai* existing re-settlement houses have constructed their own *balai*, or locally known as *Rumah Sigai*, at the back of their allocated houses. This may be a direct cultural response to the house uncomfortableness and insufficiency or the lack of appropriate spaces and places for living from this cultural perspective.

Therefore, these associations and relationships have been explored through ethnobotanical fieldwork that applies ethnographic methods using field survey, participant observation, informal interview, observation and demonstration and spatial mapping, as summarised in Table 8. The researcher initially applied a conceptual framework to focus interviews with key informants. Local experts or key informants were identified and chosen based upon suggestions from the chief man of each village and local villagers. In seeking informants, the selection was based upon identifications or nominations made by community members, and not based upon the researcher's personal judgments. The informants also led who sequentially was to be interviewed in terms of their knowledge and expertise. Each informant was interviewed with both open-ended and close-ended questions enabling new perspectives and greater insights. Both question formats have their own advantages and reasons. This helped to frame the exploration process through the eyes of the participants.

Then, the researcher considered detail as to other significant characteristics or aspects of the *Semelai* people which had not been highlighted previously, such as house construction detail. During the later or confirmation stages, close-ended questions were asked that were more specific and focused, in order to quantify or understand any behavioural patterns that existed in the culture (Fetterman, 1989). However, there are no specific types or order of questions in ethnographic research. Surveys and interviews, instead, are like casual conversations that might close gaps exist between the researcher and the community informants or respondents.

Surveys and interviews executed in this research were undertaken at different times given the availability of informants for interview. For example, based on previous research experience, most *Semelai* men work in the morning until noon (S. Mohamad, et al., 2005). The researcher sought to use morning sessions by interviewing housewives or the elderly who were not working. It was also correctly anticipated that after lunch would be the best time to interview the chief man and other men folk. This was the time when they usually rested and chatted with friends and relatives in the shared *balai*. Late afternoon was then considered better for children and teenager interview sessions. This is mainly observed through the fieldwork and also suggested by the key informants.

The primary data in this investigation was recorded in a mixture of fieldnotes, drawings, photographs, audio-visual recordings and herbaria collections and mappings. Writing fieldnotes straight away was also an initial problem to the researcher in the early stage of the fieldwork. However, these weaknesses were quickly overcome to permit more detailed writings and translations of what was observed into textual records objectively and based upon observation, and at the same time seeking to delimit researcher personal value judgements, as suggested by other ethnographers (LeCompte & Schensul, 1999b). Ethnobotanical data included plant lists, plant samples or herbaria collections and photographs. Plant specimens collected and gathered from the site were also identified by the respondents. Parts of plants, such as leaves, flowers, stems and roots, were collected, dried and pasted onto A3 sized sheets of paper. These herbaria unfortunately could not be brought into Australia due to quarantine restrictions but were photographed, serve as Appendices to this dissertation, and this hardcopy collection will be deposited in a relevant

Malaysian Herbarium for reference purposes able to be identified to species level for this dissertation. Refer Appendices C.

This investigation emphasized mapping heritage land that might still exist, though it might not be accessible and viable for everyone in the *Semelai* families, but it needed to be conserved and protected against development. Based on the knowledge of the importance of mapping to identify and describe customary lands and traditional resources that are disappearing and not being passed into the knowledge of younger generation. The researcher applied a community mapping approach in mapping ancestral land using a schematic base map. These studies and projects can be a platform to better understand the reality of Indigenous people's lives as well as to the conservation of their traditional knowledge. According to the University *Malaya* Rimba Ilmu's co-ordinator, Associate Professor Dr Wong Khoo Meng, proper documentation of biodiversity resources in Malaysia and Brazil have led these to receive alarming comments from around the world concerned about the loss of their biodiversity. This form of documentation, accordingly, actually helps a nation to identify and take into precautions their issues earlier than the rest of the world. Due to lack of human resources and technical expertise, this map was done in AutoCad and not accurately surveyed on the land. However, schematically, this map can be used as a basis for further discussion and investigation.

In this thesis, the researcher discovered that friendship and kinship are important factors in undertaking ethnographic research. Friendships developed with some of the *Semelai* families have resulted in precious memories for the researcher demonstrating the importance of nurturing and establishing their cooperation and willingness to share their experiences and knowledge. These friendships were a major contributor in the success and information resolution making this research possible and legitimate.

Another aspect that was intensively observed was the body language of the respondents. Body language very much represented who they are based on responses they give. The researcher had to be sensitive to whatever questions raised or incidents that may cause discomfort to the respondent needs to be avoided. This is partly to obtain their trust and confidence and also in the process of understanding the real meaning of the socio-cultural behaviour.

## **PART V: FINDINGS AND CONCLUSION**

### **CHAPTER SEVEN: THE ANALYSIS**

#### **7.1 Introduction**

At the beginning of writing this analysis chapter, it is very difficult to express the knowledge learnt and conclusions found. The researcher kept thinking about what to write and how to express this synthesis. The researcher also realised that she was experiencing the same situation as highlighted by Sluka (2007) that some anthropologists have confused the boundaries between experience, impression and emotion while exploring the ways of expressing their findings from fieldwork into ethnographic writing (Sluka, 2007, p. 493). However, in reflection, what the researcher has undertaken in this research, using the ethnographic method explains itself. The researcher has sought to extensively analyse her research findings progressively from the commencement of her fieldwork. Ethnography offers perspectives for human action analysis in the field and also in documentation (Altheide, 1987, p. 76). This ethnographic research involves a deep understanding of why certain things happen, enabling the researcher to investigate the intrinsic values that lie within the *Semelai* society at Tasek Bera. These values are also manifested into current environmental conditions that both influence and sustain the Indigenous quality of society.

In this chapter, the research outcomes are discussed drawing upon the participant observation and unstructured interviewing approaches undertaken in the fieldwork and also introducing the discoveries realised during the research process. Interpretative texts outline the ethnological significance in the *Semelai*'s culture while a series of diagrams, maps, drawings and sketches explain community involvements and activities which provide special access to collection materials. This ethnographic research incorporates 46 excerpts from original sound recordings, 36 digital video recordings, more than 500 photographs and 78 transcripts of fieldnotes and 22 themes documenting the ethnobotanical and ethnographic knowledge of the *Semelai* in Tasek Bera, Pahang, Malaysia.

#### **7.2 The Living Landscape Knowledge**

The world of ethnobotany has been diversified from economic aspects to the cultural and human perception of plants in the lives of the *Semelai*. The ethnobotanical values of the Tasek Bera have generally been recognised but little appreciated until recently. The *Semelai* have an extensive

knowledge of both the forest and the lake which characterises their living styles, and where they obtain their resources for survival. This can be translated from their detail classification of landscape and area where they got their resources. For example, *randu* or *randu* is a term for small patches of wetlands or swamp where dominantly occupied by *Lepironia articulata*; whereas *paya* is a general term for bigger swamp, wetlands that has water channel. Refer glossary.

Generally the landscape of Tasek Bera wetlands can be divided into a few main biological zones as suggested by previous scholars. However, this classification is different to the local people. They fully utilise the natural landscape resources surrounding them holistically based upon their Indigenous knowledge that they have inherited and learnt through experience. Further, this 'scientific' knowledge has never been formally expressed or written down for the younger *Semelai* but it is has been recognised by certain actions and decision-making processes that the *Semelai* have in their taboos and rituals. For example, after rainy days, it is not good to immediately go outside as 'scientifically' this is to avoid the bad evaporated steam from the ground. Refer Voice recorder dated 16<sup>th</sup> March 2007 interview with Puyang Tong Seng. This implies that 'scientific' evidence is being translated into their culture based on their environmental observation.

Unfortunately, the ethnobotanical knowledge among the *Semelai* community at Tasek Bera is deteriorating. Based upon the observations and interviews undertaken, plants and plant components are clearly integral to *Semelai* daily living. Plants have been used in *Semelai* daily routines for various purposes and reasons. The ethnobotanical knowledge of the *Semelai* is deeply integrated into the realms of horticulture, medicine, cosmetic, architecture and art, and can be divided into a number of categories including food, utilitarian and medicine, as illustrated in Appendices C: Plant Inventory Lists. Their living landscape knowledge can be best summarized into a table as tabulated in Table 9.

Table 9: Summary of Ethnobotanical Findings

Ethnobotanical Evidence	Findings and Patterns Observed
<b>The concept of Landscape</b>	<ul style="list-style-type: none"> <li>• Throughout generations, the landscape of <i>Semelai</i> is divided into three (3) main elements which are <i>ladang</i> (domesticated land), <i>hutan</i> (forest land) and <i>lubuk</i> (wetland rich with natural resources).</li> <li>• The understanding of their landscape character and physiology determine their practices and can be seen through many facet such as language or terminology used to characterise these differences. <ul style="list-style-type: none"> <li>• For example, a small portion of swamp which consists of smaller trees and shrubs is called <i>Randu/ Ranuk</i>.</li> <li>• This is a reflection of littoral swamp environment, a patch of <i>Lepironia articulata</i>, <i>Pandanus helicopus</i> and other small aquatic plants as compared to bigger swamp or open water called <i>Paya</i>, the similar term with the Malays.</li> <li>• Sense of stewardships constantly informs the manner they exploit their environment that preserves its long-term ecological integrity.</li> <li>• The <i>Semelai</i> is “people of the forest” (<i>Semaq beri</i>) where the forest has multiple images to the general <i>Semelai</i> or even to those concerned with healing the sick and to elders (H. M. Salleh, 1993a).</li> <li>• However, throughout this fieldwork, the association with the forest is diminishing due to less dependency upon forest as before.</li> </ul> </li> </ul>
<b>Seasons</b>	<p><i>Semelai</i> living culture is greatly influenced and determined by the seasons and microclimate as per following examples:</p> <ol style="list-style-type: none"> <li>1. Good fishing seasons is after heavy rains. Therefore they have what they called Tuba Day (<i>Hari Tuba</i>) being a day where they temporarily poison fish in the river.</li> <li>2. Planting Season or Agricultural calendar had been practiced among <i>Semelai</i> Community. Therefore all activity in relation to hill rice farming strictly follow the microclimatic calendar of the year.</li> <li>3. The Tampoi fruits have become a seasonal popular fruits for making <i>Tuak</i>; a traditional alcoholic beverage for the <i>Semelai</i>.</li> </ol> <p>Therefore the cultures of <i>Semelai</i> are very fragile due to drastic reduction on forest resources.</p>
<b>People</b>	<p>This complex relationship between man and nature should be well understood. These people are considered themselves as part and parcel of their surroundings which finally ensure the sustainable way of consuming the forest resources.</p>
<b>Food and Cultivation</b>	<p><i>Semelai</i> way of life is simple and sustainable especially on the method apply to find food sources for their survival. Slash and burn agriculture for instance had been done in very organize manner within their ancestors land area. All culture start from opening of new farm till move to another place strongly has shown the smart way of increasing wild animals such as mouse deer, deer's etc. Their deep knowledge of every flora and fauna in the forest make them the communities that are respect to the nature in balance with their needs of development.</p>
<b>Myth, Legend and Spiritual Beliefs</b>	<p>Tasek Bera is popular in legend as to it origin as follows:</p> <ol style="list-style-type: none"> <li>1. Giant Cobra believes by <i>Semelai</i> as inhabit the lake. It summarized as a storey about a grandfather that ate an egg found by his grandchild and the grandmother. In turn he never stops drinking and turn into big snake.</li> <li>2. The <i>Semelai</i> also believe that they are the descendents of the seven child of Batin paduka Alam who was a god like being. The place of <i>Lubuk Kruing</i> is believed to be the origin of Tasek Bera.</li> </ol> <p>The <i>Semelai</i> believe in supernatural powers and animism to protect and governed their lifestyle. During shamanic ritual the relation between human fate, human deeds, the land, it spirits, and its natural entities are played out against each other.</p>
<b>On Built Environment</b>	<p>Built environment of <i>Semelai</i> strongly influenced by its surrounding and natural landscape of existing forest. Traditional way of opening any part in the forest to become their settlement area will start with a test that is indirectly show the respect to the nature. <i>Tunyuk Rasi</i> for instance is a method which in deep thinking we can see that they are giving the first priority to the mother nature to take place before they even occupy the place for any reasons.</p>
<b>Semelai's Settlement</b>	<p>The <i>Semelai</i> families bondings are very close each other. Therefore they normally make their houses close among family members. This is evidence that they are minimizing the area which will disturb the nature. They share all the resources together and will not use them in a waste manner.</p>
<b>Semelai's Traditional House</b>	<p>Method of Construction on the traditional <i>Semelai</i> houses are strongly shows that they are very caring in handling their natural resources. They use a lot of medium grade hardwood for the construction accept for main column and structures to ensure that they won't disturb the rest of the resources un necessarily.</p>



The availability of source information about the Indigenous use of plants at Tasek Bera is limited only to several villagers, including the elderly, the *Batin* (Chiefmen), the *Bomoh* (Medicine Man) and *Poyang* (Shaman), whose Indigenous knowledge is currently at risk. Therefore, it is vital to record the close association of the *Semelai* community with flora and their environment. This ethnobotanical significance also exists in the daily living culture of the study area which can be generally embedded in three main entities which are place, people and the environment.

### **7.3 Ethnobotanical Evidence in the Place; the Natural Landscape**

Tasek Bera is located in the southern central lowlands of Peninsular Malaysia, mostly under 80meters above sea level and situated in the Bera District in the State of Pahang, Malaysia as shown in Map 6 (Dorall & Sinniah, 1997). It is located at 02°58'N 102°36'E, in the south-eastern part of Pahang and covers 38,446 hectares of area (Wetlands, 2000). Tasek Bera is a tributary of Sungai Pahang (Pahang River) which is located more than 30meters above sea level. Location map of the Tasek Bera Basin illustrating the dendritic drainage pattern, extent of peat accumulation and peat swamp tributary names is contained in Map 7 which is located in both states, Pahang and Negeri Sembilan. The northern part of the Tasek Bera Basin drains into the western drainage system as shown in Map 8 , which is Sungai Bera (Bera River) and then into Sungai Pahang before discharges into the South China Sea. The southern part of the Tasek Bera Basin drains into Sungai Palong, which joins Sungai Muar before discharges into Sungai Muar and lastly drains into the Straits of Malacca.

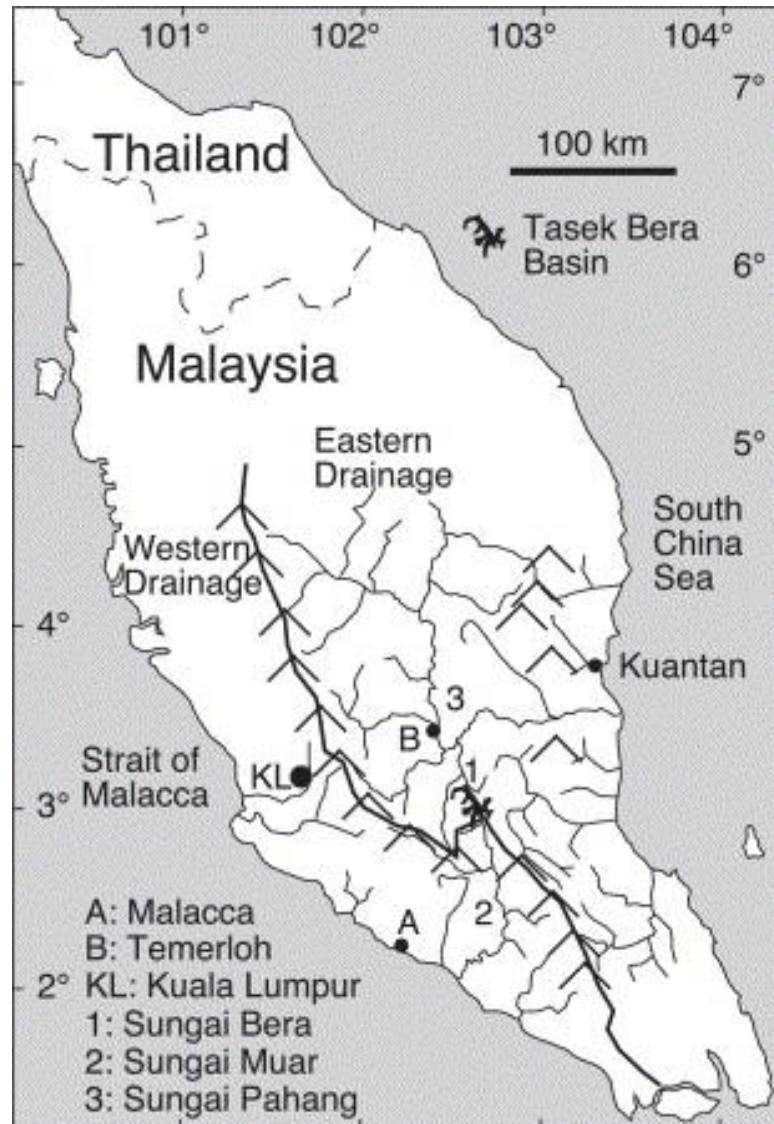
NOTE:

This map is included on page 114 of the print copy of the thesis held in the University of Adelaide Library.

Source:<http://www.dromoz.com/directory/place/?id=1662&p=Tasik+Bera>

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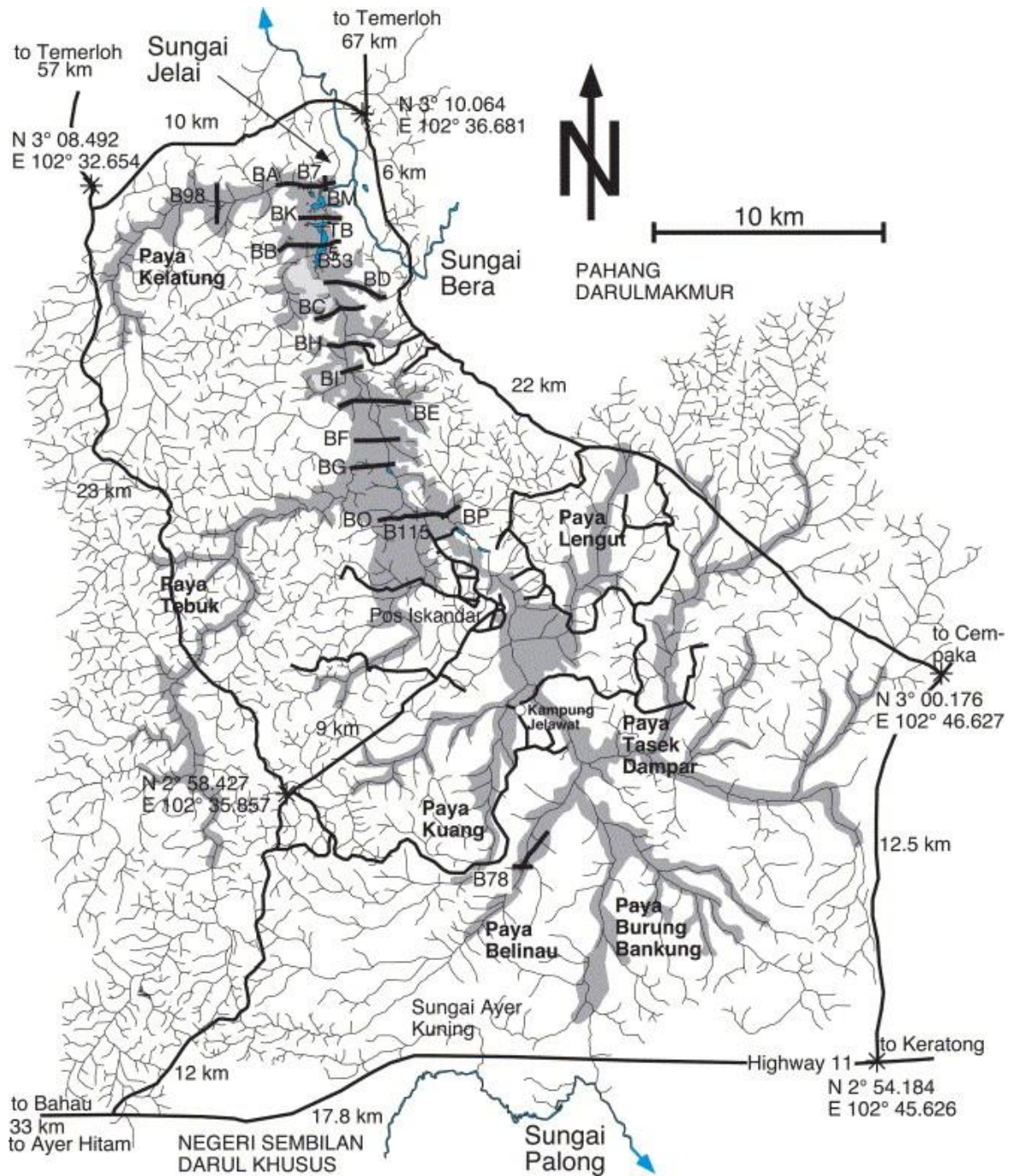
**Map6: Location Map of Tasek Bera**



Source: (Wüst & Bustin, 2004).

**Map 7: Peninsular Malaysia has two (2) distinct drainage areas (western and eastern).**

Tasek Bera basin contains a fluvial/lacustrine mire system that is situated mainly in the east-central State of Pahang. The brackish water of Tasek Bera, dark brown water has a few freshwater red algae species that include *Batrachospermum beraense*, *Batrachospermum cylindrocellulare* and *Batrachospermum tortuosum*, were identified during this joint project (Kumano, 1978, pp. 98-101). Tasek Bera has been subdivided into six botanical zones by Giesen (1998) which are tabulated in Table 10.



Source: (Wüst & Bustin, 2004)

**Map 8: Tasek Bera Basin shows flows of water from the lake to the tributaries**

**Table10: Botanical Zones in Tasek Bera**

NOTE:  
This table is included on page 117 of the print copy of  
the thesis held in the University of Adelaide Library.

Source: (Wüst & Bustin, 1999)

The significance of the Tasek Bera catchments have been recognised since 1961 for its flora and botany based upon research by the University of Malaya and the Singapore Botanic Garden, in conjunction with additional ecological research studies by a Japanese–Malaysian joint team from 1968 to 1972, which led to the realisation of new information about plant decomposition, flora, fauna and fish ecology (Wüst & Bustin, 2001). There was not much publicity and concern about this place until 1994. In November 1994 Malaysia became a signatory to the International Convention on Wetlands of International Importance (Ramsar Convention), and Tasek Bera was accepted as the first Ramsar site in Malaysia, being listed as Ramsar site no 712 which refers to a site reference code as 2MY001 (Peck, 2005; Ramakrishna, 2002). After Tasek Bera, Ramsar accepted six other sites in Malaysia that include Pulau Kukup, Tanjung Piai, and Sungai Pulai in Johor, the Kuching Wetlands National Park in Sarawak, and most recently, the Kinabatangan River in Sabah. The Ramsar site designations in Malaysia now cover an area of approximately 31,200 hectares, including some 6,800 hectares of water bodies, recognising that Tasek Bera is the largest

freshwater lake in Peninsular Malaysia. Tasek Bera covers 61,383 hectares of watershed area but only 26,500 hectares has been gazetted as a Nature Reserve Park (Conservation, 2006). Refer Photograph 1. The Ramsar site is shown in the green colour, while yellow indicates the *Semelai's* settlement.



Source: Author

**Photograph 1: Ramsar Site Map**

Date Photograph Taken: 19<sup>th</sup> April 2007

The Tasek Bera lake system together with the surrounding forest supports a very rich biological community of endangered and endemic species. Tasek Bera is home to a diverse community of species of fauna including mammals, birds, reptiles, amphibians, fish and invertebrates. The main habitats of Tasek Bera, comprise freshwater and peat swamp forests (about 5,440 ha; 79%), transitional open-forested swamps (approximately 510ha; 7%), *Rasau* (*Pandanus helicopus*) swamps and *Purun* or *Kerchut* (*Lepironia articulata*) reedbeds (about 800ha; 12%) and open water (about 120ha; 2%) hosting some 328 species including highly diverse and complex algae communities, and 64 zooplankton species and beds of submerged macrophytes (Pacific, 1999, p. 6; Peck, 2005, p. 2). Among the 19 aquatic plants recorded are the endemic *Hati-hati paya* or locally

known as *Kreboboj* (Purple Water Trumpet, *Cryptocoryne purpurea*), which survives only in Tasek Bera and nowhere else in the world. Refer Photograph 2.

NOTE:  
This photograph is included on page 119 of the print copy of  
the thesis held in the University of Adelaide Library.

Source: (Hua, 2006) [http://www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-26-45-87%5E21622\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-26-45-87%5E21622_4000_0__)

**Photograph 2: Photograph and illustration of Purple Water Trumpet, *Cryptocoryne purpurea***

It has been reported that a total of 68 species of mammals, 94 species of fish, 19 species of frogs, more than 230 species of birds and rare species of crocodile and turtle are found in Tasek Bera. Large mammal endangered species include Asian Elephant (*Elephas maximus*), Tiger (*Panthera tigris*), Clouded Leopard (*Neofelis nebulosa*), Malayan Tapir (*Tapirus indicus*), Panther (*Panthera pardus*), Dusky Leaf Monkey (*Trachypithecus obscurus*), Flat-headed Cat (*Prionailurus planiceps*) and other Civet (*Nandinia binotata*). Small mammals include the Leopard Cat, Malayan Flying Lemur (*Cynocephalus variegates*), Smooth-clawed Otter (*Ambionyx cinerea*) and Red Giant Flying Squirrel (*Petaurista petaurista*), and some 33 species of dragonflies and 2 species of freshwater crab (*Potamon johorensis* and *Potamon ampullaceal*) have been recorded at Tasek Bera.

Unfortunately, the biodiversity of Tasek Bera today is at risk. Threatened fauna include the Clouded Leopard which is illegally hunted for its brilliant skin; many of the freshwater turtle species; and fishes such as *Toman* (Giant Snakehead; *Channa micropelis*) as mentioned by one of the respondent, Pakcik Ne (2007). (Refer voice recorder dated Feb 10<sup>th</sup> 2007, at Kg Putat). Kelisa (Asian Arowana; *Scleropages formosus*) is a highly prized aquarium fish caught by the residents of Tasek Bera and it is among the threatened species listed for Malaysia. For example, Batin Kassim's family own a big Kelisa, *Scleropages formosus* which they put in an aquarium and this species is

decreasing in number in the Lake. (Refer voice recorder dated 9<sup>th</sup> March 2007, track 1:37:35 with *Batin Kassim*). Further, in the past there were quite a number of previously abundant, common and rare fish species, as reported in the *Tasek Bera Ramsar Site Integrated Management Plan Summary* (1999) that have changed their status due to their recent absence in research recordings. Refer to Table E in Appendices A. Although Tasek Bera is within the reserve forest boundaries and a designated Ramsar Site, which is strictly protected by Malaysian law, there have been incidents of illegal logging and collection of non-timber forest products which are ecologically valuable to the sustainability of the ecosystem as well as the inhabitants of Tasek Bera.

Each culture perceives and uses space differently which leads to the situation of cultures competing in land acquisition. In response to the decrease in available and habitual land, the need to properly plan becomes more urgent. Complex interactions of socio-ecological systems on spatial planning which contributes to both positive and negative effects upon the existing and future sustainability and landscape changes (Brunckhorst, 2005, p. 1). Landscape change is predominantly a result of historical manipulation and evolution by humans. Historical ecologists see landscape as the current manifestation of a long history and co-evolution and adjustments of one or more species occupying it. Landscape changes in forests due to timber harvesting, agricultural activities and other associated impacts has jeopardised ecological relationship between animals that live in the forests and this environment (Meijaard, et al.).

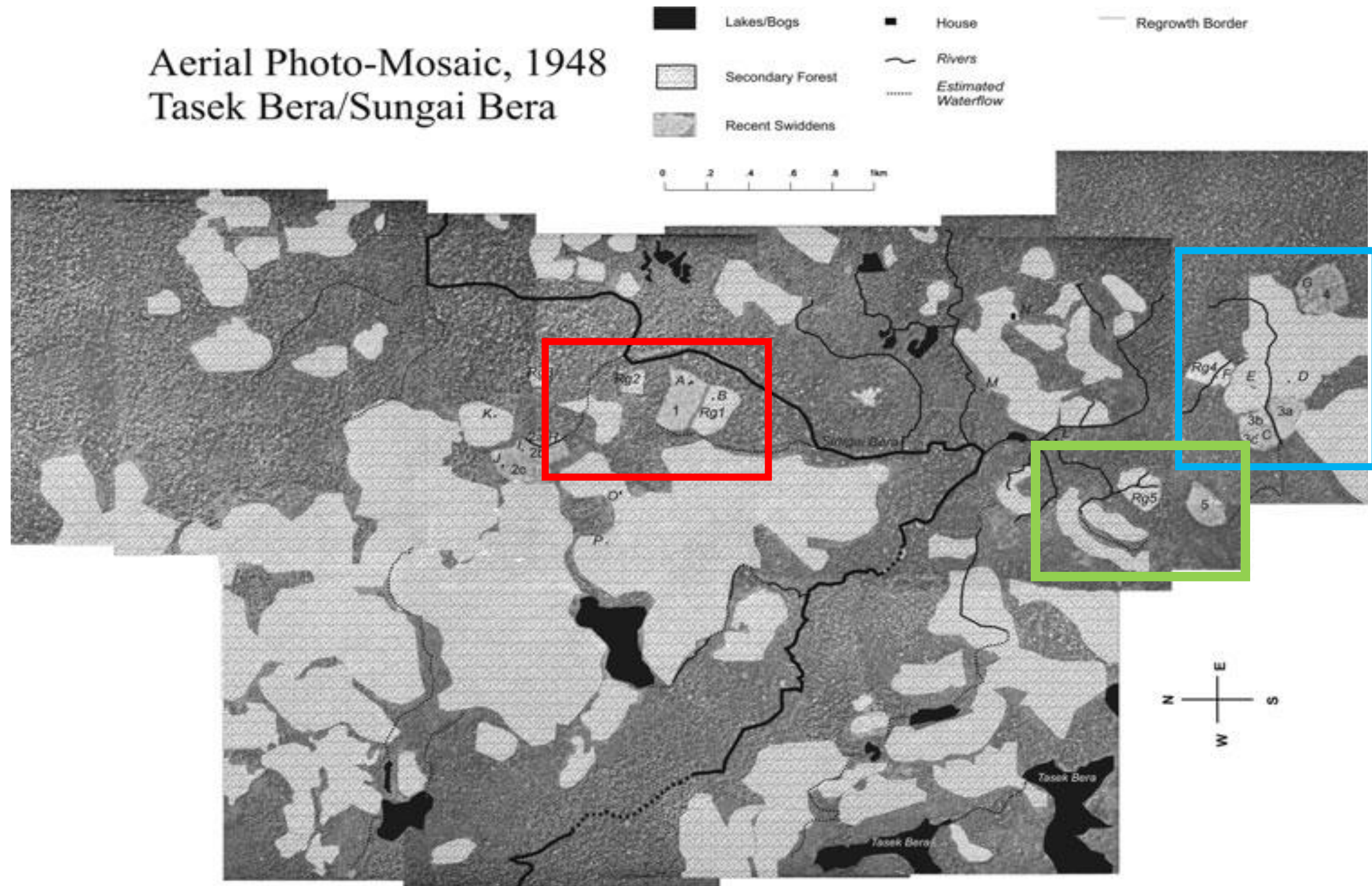
Early record of aerial photography as shown in Photograph 3, documented by P.D.R. Williams-Hunt in 1949 indicates landscape changes due to field clearing and marked *belukar* (old clearing reverting to jungle) at the *Semelai's* settlement near Tasek Bera, Pahang (Williams-Hunt, 1949). Aerial photographs can show land use patterns of forested areas, which can determine changes and human activities. In Maps 9 and 10, the mosaic photos of 1949 depict the patches of new swidden and regrowth secondary forest resulting from previous swidden. However, overall the Tasek Bera wetlands basin was still dominated by forest at that time.



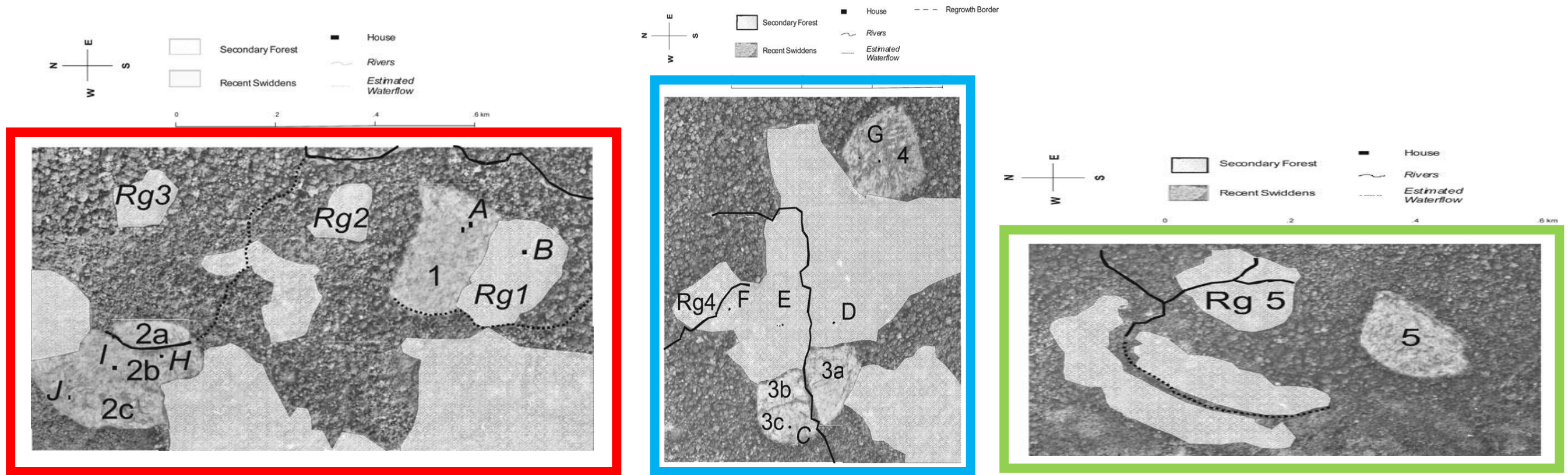


*Source: (Williams-Hunt, 1949).*

***Photograph 3: Photograph (below) shows the field clearing or “belukar” (bright patch) of Tasek Bera in 1:10,000 scale***



Map 9: A photo-mosaic of the 1948 aerial photos of overall area highlighting new swiddens, structures, secondary forest and watercourses



a) Swidden and Regrowth 1, 2 and 3

b) Swidden 3 and 4 and Regrowth 4

c) Swidden 5 and Regrowth 5

Map10: A photo-mosaic of the 1948 aerial photos of detail area highlighting new swiddens, structures, secondary forest and watercourses

Since the early 1980s, as recorded by Hood (1993), various the capital-intensive projects of land reform have transformed the forested areas surrounding Tasek Bera into extensive oil palm and rubber plantations as shown in Photograph 4. Later publication, in the years 1988 and 1996, aerial photos and topographic maps were captured and computed based on Landsat 5 TM imageries that focused on assessing vegetation changes over the wetland basin (Wust & Bustin, 2003). These images show water level changes are reflected by monsoon seasons as presented in Map 11. The vegetation zones are classified into more detail based on botanical characteristics. The six botanical zones which has been identified based on early investigation on site includes: *Lepironia articulata* zone which was expanding, *Pandanus helicopus* with patches of *Lepironia articulata*, unidentified shrubs, lowland *Dipterocarpus* forest, swamp forest, and the Lake Channel zone. The expanding of *Lepironia* zones reduces the lake channel zones which reduce accessibility through Lake Channel. This more detail imagery information from aerial view and satellite image do give valuable insights to the physical documentation of Tasek Bera basin. Refer Photograph 5. Information driven from these images can be used to identify detail study area as well as further physical investigation.

NOTE:

This photograph is included on page 124 of the print copy of the thesis held in the University of Adelaide Library.

Source: [www.ramsar.org/pictures/bio4.jpg](http://www.ramsar.org/pictures/bio4.jpg)

**Photograph 4: Aerial view part of Tasek Bera**

NOTE:

This map is included on page 125 of the print copy of the thesis held in the University of Adelaide Library.

*Source:(Wüst & Bustin, 2004).*

***Map11: Vegetation map of Tasek Bera Basins which distinguishes vegetation communities into swamp forest, Lepironia or lowland rain forest and open water***

NOTE:

This photograph is included on page 126 of the print copy of the thesis held in the University of Adelaide Library.

Source: <http://glcf.umiacs.umd.edu/data> landsat

**Photograph 5: Satellite image of Tasek Bera Basin in 1990**



Source: Author

**Photograph 6: Tasek Bera surrounded by oil palm plantation and other agricultural crops**

Date Photographs Taken: 10<sup>th</sup> Feb 2007

Today, Tasek Bera is surrounded by oil palm and rubber plantations as well as other intensive agricultural land. The green lush of tropical forests has been replaced by the green of oil palm and rubber tree leaves. Refer Photograph 6.

NOTE:

This photograph is included on page 127 of the print copy of the thesis held in the University of Adelaide Library.

*Original source: courtesy; Williams-Hunt Collection, School of Oriental and African Studies.*

*Source: (Gianno & Bayr, 2009).*

***Photograph 7: Photograph as taken by H.D. Collings showing a Semelai swidden from the previous year planted with cassava as well as a newly felled swidden in the background***

However, today most of the newly felled swidden is not the virgin forest but rather secondary forest and also ex-rubber plantation. Although the association of these planted plants with humans will always remain, the value that these agricultural plants contribute to the environment is totally different from this previous environment. Plants and animals in this locality have been pushed to extinction due to these reasons. Further, the limitation of resources is also being caused by the encroachment of agriculture lands surrounding Tasek Bera being developed by a Federation Land Development Authority (FELDA) scheme. The natural freshwater and its catchment area are usually hidden behind the agricultural land which has a negative visual effect upon the natural attraction of

this place. Despite this, agricultural waste run-off has been polluting the catchment area of Tasek Bera, which is threatening the health of the wetland ecosystem. The Malaysian *Wetland Directory* (1987) claims that shifting cultivation by the *Semelai* causes possible pollution from tributaries in the river system, including logging operations, associated road construction, drainage problems and siltation in the river tributaries which leads to the deterioration of the watershed (Dorall & Sinniah, 1997). Plant species that have been used in *Semelai's* daily life have many competing uses due to the limitation of resources. For example, the same plant is used to make *Prahu Jalur* (traditional dug-out canoe) as well as in the construction of houses. This competition eventually will limit traditional living practices to the most common activities in order to survive.



Source: Author

**Photograph 8: Pakcik Laman's newly swidden for rubber and other crops**

Date Photograph Taken: 27<sup>th</sup> April 2004

The association of plants with humans includes plant usage but could also serve in spiritual bonding. The site's picturesque natural landscape of the wetland makes Tasek Bera a unique place for nature lovers and eco-tourists. This added value of the site has been appreciated and manifested more by outsiders, and local and international tourists, who can see the site's beauty which is not overly realised by the *Semelai*. There is one significant statement from anonymous about the natural scenery of the lake expressed on the back of an old photograph that states: "*Inilah salah satu pandangan yang sangat menghiburkan hati di kalangan peminat-peminat Tasek Bera,*



*Tanjung Kruin bertarikh 16hb Ogos 1971, anonymous*". Refer Photograph 9. Generally the statement can be translated as "this is among views that gives excitement to the nature lovers at Tasek Bera, Tanjung Kruin dated the 16<sup>th</sup> August 1971", demonstrating that Tasek Bera continues to be an attraction to nature lovers for its magnificent scenery and natural surroundings.

NOTE:

This photograph is included on page 129 of the print copy of the thesis held in the University of Adelaide Library.

*Source: Courtesy from Makcik Kalsom*

***Photograph 9: Old Photograph that shows the picturesque of Tasek Bera***

*Date Photograph Taken: 16<sup>th</sup> August 1971, Tg Kruin, Tasek Bera*

Tasek Bera also enabled the *Semelai*'s main mode of transportation in the past. But due to the decreasing water levels it is now not possible to travel from one village to another by boat. A ruined jetty at Kg Gau, which has not been repaired, also obstructs access the Lake. Even to access the water body is also becoming very difficult today due to the domination of *Kerchut*

(Tube Sedge plants) (*Lepironia articulata*). A panoramic view of the Lake full of water in the past is now replaced by a Lake of Tube Sedge. Refer Photograph 10.



Source: Author

**Photograph 10: Panoramic view of natural live Kercut (Tube Sedge; *Lepironia articulata*) dominates the lake**

*Date Photograph Taken: 7<sup>th</sup> March 2007, Kg Jelawat, Tasek Bera*

However, the loss of Indigenous culture can hardly be described by looking only at photographs but needs an in-depth understanding of the biological and communities quality that once existed but currently is diminishing. It is a critical agent in understanding culture formation which cannot be undertaken in other sources (D. Harris, 1999, p. 434). Landscape is a product of cultural forces and a powerful agent in the production of culture (D. Harris, 1999, p. 435). Landscape analysis increasingly involves the work of multi-discipline scholars in material culture. The integration of Geographical Information System (GIS) mapping application in a landscape resource assessment is only one alternative to share this diminishing resources issue achieve comprehensive and sustainable wetland development. The landscape of Tasek Bera to the *Semelai* represents past lives and conventional collective values, and is continually being recreated and invested in with new meanings, reflecting current problems and individual fates.

### 7.3.1 *Ethnobotanical Evidence in Seasons*

Generally, the climate at Tasek Bera is mostly influenced by micro-climate changes and its low topographic relief with base elevation of 25-30m and surrounding hills up to 280m above sea level (Conservation, 2006; Wust & Bustin, 2003). Tasek Bera has a humid tropical climate with two main seasons. The two wet seasons are generally from April to May and from October to January where the highest of 250-300mm rainfall is in the latter season (Wust & Bustin, 2003). In contrast the dry season is from February to March with 93-130mm rainfall.

The *Semelai's* living culture is greatly influenced and determined by the seasons and microclimate. There are certain activities that can be undertaken only in wet season which may not be suitable in the dry season. For example, according to the *Semelai*, the good fishing season is after heavy rains. In *Semelai* culture, they have what they call the Tuba Day (*Hari Tuba*) (*Musim Tuba*) being a day where they poison fish in the river. On this day, all *Semelai* communities will go to the *Lubuk* and catch fish under the leadership of the *Batin*. During the ritual process, no one is allowed to overtake *Batin* or catch any fish before *Batin* catches one. The unique thing about these rituals is that at certain periods of time and year a *Derris* sp. (*Daun Tuba/ Pokok Tuba*) plant which they use to make fish float to the water surface will neutralize and the fish will eventually return in another season. This kind of practise or ritual is another example that demonstrates the way the *Semelai* community have practised sustainable living practices for many generations. However, they are no longer able to practice this ritual today due to the lack of resources as well as the decrease of water levels. Therefore, maintaining the natural resources and seasonal forces will help to conserve these Indigenous practices.

Table 11: Comparison of Planting Seasons among selected Indigenous Peoples

MONTHS	EUROPEAN SEASONS (north/south hemisphere)	AUSTRALIAN ABORIGINAL SEASONS				MALAY SEASONS	SEMELAI SEASONS			
		Minang SW WA temperate	Arnernte Central Australia Desert	Gadgerong NW NT Monsoon Tropics	Tasmania NE TAS Cool Temperate		"Periantan"	"Bulan" Malay Term	Based on Hood, 1974	Based on interviews with Yuhanif, Kak Salmi and Pakcik Laman
JANUARY	SUMMER/ WINTER	Beruc	Uterne	Mayurr	Wegtellanyta	North East Monsoon (Musim Tengkujuh)	Ra'mo'	Keralai	paddy harvesting in stages	Harvest
FEBRUARY		Meertilluc					Periantan Po'ot'	Galang	resting after harvesting	
MARCH	AUTUMN/ SPRING	Pournar	Alhwerrrpeurle	Nguag/ Gagulong	Tunna	South Western Monsoon (Musim Tengkujuh)	Ring Beri	Selatan Burung	Season for finding new forest/ land for clearing	Burning. Searching for a new site to clear. Have to get approval from the village chief
MAY							Nebas	Selatan Besar	Season for forest and small shrub clearing (normally done by women and their children). The clearing may takes 10-15 days.	clearing takes 10-15 days to dry out felled trees
JUNE							WINTER/ SUMMER	Mawkur	Alhwerrpa	Gago
JULY	Meerningal	Ulpulpe	Cor	Kertika	Season for burning					
AUGUST			Nugal	Esges	Planting new paddy	free time				
SEPTEMBER	SPRING/ AUTUMN		Uterne urle	Bandenyirrin	Pawenya peena		North East Monsoon (Musim Tengkujuh)	Periantan Penunggungan	Kijang	Waiting next harvest pf paddy and normally they will work on smaller plot of garden in their house compound (repohan) or planting vegetables near temporary shelters at swidden. Or work at other places such as plantation labour
OCTOBER						Penunggungan		Lesew		
NOVEMBER						Penunggungan		Keruing	harvest	
DECEMBER	SUMMER/ WINTER	Beruc	Uterne	Bandenyirrin	Wegtellanyta	Ra'mo'	Keralai	Paddy harvesting in stages. Sometimes started from November		
References		(Fletcher & Whitaker)					(H. M. Salleh, 1974a) Ban Seng,			interviews with Semelai people, Feb - April 2007

Traditionally, plants are used throughout the year in Semelai traditions. For example, as explained by Hood (1974), the Semelai have their own planting season or agricultural calendar determined by a few factors including climate (H. M. Salleh, 1974a). Refer Table 11. These cycles appear to change accordingly to changes in related aspects including climate and socio-cultural factors. The Semelai's sensitivity towards these seasons enables them to manage their resources in an informal manner according to the nature of the habitat and their behaviour of these resources.

The *Semelai* maintain a close relationship with nature enriching them with valuable and traditional knowledge as well as their heritage. For example, *Tampoi* fruit (*Baccaurea reticulata*) has become a seasonally popular fruit for making "tuak"; a traditional alcoholic beverage for the *Semelai* (Collings, 1949). Drinking tuak among menfolks is a tradition that gradually has changed into modern alcoholic because of the scarcity to get and process "tuak". The scarcity of getting "Tampoi tree" is also a factor of this alteration. This custom was also shared by other ethnic groups including *Temuan* and *Temiar* (Rambo, 1979). However, in literature, the "Aborigines" are known as..."Aborigines are strictly non-alcoholic drinkers..." (Williams-Hunt, 1952, p18)" and, the *Senoi* brew no intoxicating liquor of their own" (H.D.Noone, 193, p.65). These quotations show the microclimate of the site does influence the decision-making and activities practiced.

#### **7.4 Ethnobotanical Evidence on the People; the *Orang Asli Semelai*.**

There is limited literature about the *Semelai* people compared to other Indigenous groups in Malaysia. This dearth remained until the 1990s when Tasek Bera was gazetted as a Ramsar site (International, 2003). The *Semelai* now recognized as the Indigenous people of the Tasek Bera who first inhabited Tasek Bera and its surrounding forest more than 600 years ago based on the geological formation of Tasek Bera which is believed began 6,000 years BP (International, 2003). They were the true 'wetland people' as hunters and gatherers and they fully utilised the wetland's natural resources such as Screwpines (*Rasau*) (*Pandanus helicopus*) and Tube Sedge (*Lepironia articulata*) for thatching and weaving. The *Semelai* have been described as living in close contact with their forest environment which they manipulated through a regime of slash and burn agriculture (Dobbins, 1979).

The *Semelai* are one of eighteen or nineteen *Orang Asli* groups on Peninsular Malaysia, a part of *Proto-Malay* subgroup, and the same group as *Temuan* and *Jakun*. *Proto-Malay* is one of several sub-ethnic groups of Indigenous people residing on Peninsular Malaysia. Literally, *Semelai* means “man of the island”. It is believed that they were the natives of this land for more than 600 years (Project, n.d). As described by Merton in 1962, the *Semelai* have historically lived in scattered village clusters around the Tasek Bera watershed, an inland lake some 27.36 kilometres long and 4.8 kilometres wide (H. M. Salleh, 1993a). The *Semelai* mainly reside in the low-lying, swampy region that straddles eastern Negeri Sembilan and *southwestern* Pahang which includes Tasek Bera, Sungai Bera, Sungai Teriang, Paya Besar and Paya Badak as well as Sungai Lui, Sungai Sering and Ulu Muar (Baer, et al., 2006, p. 94; JHEOA, 1992, p. 48).

The Malaysian Census in 1969 identified 2,931 *Semelai* people overall who largely resided in southwest Pahang, including 1,635 people, and 756 living in Serting. The *Semelai* were originally distributed in the middle part of Pahang, and today are mostly resident in south-western Pahang, around Tasek Bera, Sungai Bera, Teriang, Paya Besar and Paya Badak (Baer, et al., 2006; Carey, 1976; JHEOA, 1992, p. 48). Apart from Pahang, approximately 800 people of the *Semelai* reside in eastern Negeri Sembilan and some parts of the Johor States, including near Sungai Serting, Sungai Lui and Ulu Muar (Carey, 1976, p. 250; JHEOA, 1992). In 1974, this population had increased to 16% supposedly due to advances in medical services (H. M. Salleh, 1974a). Given the Malaysian Census in 2003, it is now estimated that the *Semelai* population has increased to more than 6,000 people.

Scholars have identified in ethnographic studies that ethnobiological knowledge and practice varies according to geographical origin, residence, ethnicity, religion, occupation, educational background, social and economic status and age including gender. Males and females seem to have their own relationships and associations with their environment. Each extended family normally has their own respected person who becomes the spokes person or representative for their family whenever it is needed. However, the roles of Indigenous leaders in their own political and community structures are declining due to changes in the structure and content of traditional Indigenous society which determine the role and function of Indigenous leaders (Nicholas, n.d.). This statement was drawn based on Nicholas’s vast experience in anthropological studies. The *Batin* is unfortunately appointed by the Government based upon their political credibility, no longer upon their kinship to the village. As described by Nicholas, the Indigenous culture is complicatedly bonded. Thus, there can be a

conflict of interest with some *Batin* who have taken some land for their own purpose which was supposed to be governed by other *Batin* and their families from other villages. Weak leadership among the *Orang Asli* might be another reason why their rights have been pushed aside, jeopardised and manipulated.

This conclusion is also applicable to *Semelai's* leadership. *Semelai's* culture is dominated by males. All of the leaders and the key roles in their society are occupied by males such as *Batin* as the village leader. Social structures of the *Orang Asli* are commonly headed by *Batin* old and respected leaders; a role passed down from generation to generation. Villages are culturally divided by their *Batin* (chief man). Other male players in *Semelai's* culture are Shaman or *Bomoh* (Medicine Man), as well as *Poyang Gedo*, as the eldest *Poyang*, and the highest ranking of *Poyang* (shaman) is normally male. In fact *Bidan* (midwives) are also male. The domination of man is accentuated due to the physical strength and power of male compared to female. For example, *Bidan* Sudin, the male midwife at Kampung Pelawan once told the researcher that being a midwife needs lots of energy which not many *Semelai* women are willing to do. (Refer voice recorder dated 14<sup>th</sup> April 2007; 02:00:00 – 02:09:36).

The *Semelai* predominantly speak the *Semelai* language, a part of the Austro-Asiatic language group which is also classified under the Aslian languages. The *Semelai* language belongs to a group of languages which fall under the Austroasiatic-Vietnamese-Muong or Austro-Asiatic, Mon-Khmer, Aslian, South Aslian (Gordon, 2005). The *Semelai's* language is basically derived from two different systems which is the concanative system, resulting from the extended context with the *Malays* and also the non-concatenative system, inherited from Mon-Khmer (Kruspe, 2004, p. xvii). The names and spelling of some of Aslian groups are not standardised and vary. Generally they are based on a few conventions on the phonemic and standard of IPA symbols used in linguistic literature. A scholar, who has spent her time with this community in terms of language, described the *Semelai* language as 'unique and complex'. The *Semelai* language is described as a non-written language that intertwines two types of morphological systems which are a concatenative and non-concatenative systems (Kruspe, 2004). The lack of a written language for the *Semelai* makes the conservation of this Indigenous knowledge more difficult and challenging. This is a drawback which discourages the continuity of Indigenous knowledge dependent upon oral language being passed from mouth-to-mouth although this language can today be recorded and written in other languages

to conserve the Indigenous knowledge from dilution, there is a need to regularly practice this Indigenous linguistic heritage orally to safeguard it from being diluted and lost.

The *Semelai* language is spoken by approximately 4,103 people in Peninsular Malaysia and is primarily articulated along the Tasek Bera shores, and along river banks of the Bera, Teriang and Serting rivers (Southwest Pahang and Northwest Negeri Sembilan states) and Muar river (Northwest Johor). However, the *Semelai* are not fluent in conversation with *Temiar* and *Semai* although they are ethnographically included in the same language grouping. As stated in the literature, this demonstrates that the *Semelai*, had minimal or no contact historically and ethnically with the *Semai* and *Temiar* (H. M. Salleh, 1974a). However, the *Semelai* are fluent in the *Malay* language, the official language of Malaysia. Most of the research undertaken by the researcher was in *Malay* language though sometimes the researcher insisted that they phonetically spell out the plant name or specific terms in *Semelai* language. The *Semelai* have their own language and terms for specific plants which is different from the *Malay* language although a word might phonetically sound similar. The *Semelai* have specific words that explain different characteristics of plants which demonstrates the understanding they have with plants and their constituent parts. The *Semelai* do not only have an oral language but also possess a rich body language that determines and expresses their sensitivity and concern towards their environment. Certain physical actions represent certain understandings within their culture. For example, when a *Semelai Sabda* (*berpesan*) (remind) when they give something (weapons) such as knife or sword, they need to tie it with a handkerchief to indicate that it is not purposely meant to fight or to kill someone.

#### **7.4.1 Ethnobotanical Evidence in Food and Cultivation**

The *Semelai* have been described as living in close contact with their forest environment, which they manipulate through slash and burn agricultural regime (Dobbins, 1979). In the past, the *Semelai*, as the pre-dominant *Orang Asli* population, were opportunistic foragers trading forest products such as rattan, *Petai* (*Parkia speciosa*), *Durian* (*Durio zibenthinus*), *Rotan* (Rattan, *Calamus spp.*) and medicinal plants which were abundant at Tasek Bera, that were sold to *Malay* and Chinese merchants. They used this cash or its equivalent, to purchase rice, tinned fish, sarongs, parangs, matches, kerosene and other necessities of jungle life (Rambo, 1979). This trading system is believed to have been an important element in *Orang Asli* life for thousands of years.



The *Semelai's* traditional cultivation is generally divided into two forms, which are rice (*Oryza* spp.) and root crops such as yams, taro, sweet potatoes and cassava. As demonstrated in the literature, the *Semelai* used to be rice cultivators before the anti-communist Malayan Emergency (1948-1960) which had a big impact to their settlement and ways of living changes (Gianno & Bayr, 1999). Traditionally, the *Semelai* engaged in swidden cultivation as shown in Paragraph 12 as their main source of income. The detail of thought and cultural process involved in Padi Huma (hill rice) cultivation, as shown by a respondent, is described in Fieldnotes dated 16th February 2007, 24th March 2007 and 25th April 2007. Refer Appendices B. Before the rice harvest started; the *Semelai* cut seven panicles of rice which were believed as the rice-soul. These panicles were put in a basket and hung up in a house which is mixed with the seed for next year's sowing. The *Semelai* need to wait some three days before they can continue to harvest those seeds until finish (Baer, et al., 2006, p. 32).

Today, only few villagers plant *padi huma* (hill rice) for personal reasons and only on small plots of land. The researcher was fortuitous to interview a respondent, named Kak Salmi, who willingly demonstrated her *padi huma* harvesting method during the course of the fieldwork. Kak Salmi purposely and consciously undertook this process in the presence of the researcher for recording purposes. However, the researcher missed the planting season because it had ceased a few months previously before arriving at the site.



Source: Author

**Photograph 11: Tapioca leaves are used as indicator for the dryness of Padi huma due to the leaves' freshness.**

*Date Photograph Taken: 24<sup>th</sup> March 2007*



*Source: Author*

**Photograph 12: Padi Huma planted in Kak Salmi's field**

*Date Photograph Taken: 16<sup>th</sup> February 2007*

Today, still undertake 'planting' but not the 'shifting'. The Semelai have permanent allocated land for their farming activities. Shift cultivation is no longer being practised, despite its historical popularity. Most of the *Semelai* have shifted into rubber plantation cultivation as their main source of income with some *Semelai* being given six acres (14.82 hectares) of rubber plantations for cultivation from the federal government under the Replantation Scheme to manage. (Refer Recorded Interview Voice with Noriah, dated 17<sup>th</sup> March 2007).

One sustainable practise that the *Semelai* have managed to adapt into their new agricultural practices, as narrated by Kak Salmi on the 16<sup>th</sup> February 2007, is biological control achieved by the planting of tapioca together with rubber trees. This strategy attracts pests to the tapioca instead of the rubber seedlings. More *Semelai* are pursuing this practice. The shift to rubber plantation management is due to the increasing price of latex, as compared to hill rice or cassava, for selling. However, the resultant damage to the natural environment reduces the benefits for the long future. Further, the limitation of land availability and the difficulties of managing pests are factors that also significantly determine the *Semelai's* decision to shift to other sources of income. In addition, the *Semelai* can now access harvested rice that is sold in nearby shops. This convenience encourages the *Semelai* to buy rather than to plant hill rice for themselves. Therefore, the role of *Bomoh Padi* (the shaman of paddy) is also gradually decreasing.

#### 7.4.2 Ethnobotanical Evidence in Material Culture

Plants are multi-useful for the *Semelai* people. Apart from their fields, the *Semelai* communities also obtain useful plants in the forests while they are gathering forest products such as rattan and resin. Plant parts such as bark can be adapted into rope for tying purposes. Fan Palm leaves are used to diversify the *Licuala* spp. leaves which are used in food wrapping, and in making drink containers. These plant parts are also useful for hunting in the forests. Refer Photograph 13.

Plants parts such as trunk, wood, bark are also significant in the use and in the construction materials such as *Kepong*, *Pelawan*, *Meranti* and Bamboo. As described by Hood (1974) plants in *Semelai* culture play adaptive magic functions in their form, shape and characteristics in defining the metaphysical world of *panjang*, a village where human souls reside (H. M. Salleh, 1974a). The *Semelai* people also produce *Keruing* oil (resin from *Keruing* Tree), which is widely used by the *Semelai* as a commodity for trade due to its multi-purpose use as a source of light, incense, dye, adhesive, sealant, medicine and even poison. *Keruing* (*Dipterocarpus kerii*) is believed to be one of the most important plants in *Semelai* tradition. The *Semelai* extract the resin from the tree bark and sell it to middlemen.



Source: Author

**Photograph 13: Forest Gathering Activities by Pakcik Rodi (Medicine Man)**

Date Photograph Taken: 25<sup>th</sup> April 2007



Source: Author

**Photograph 14: Malayan Fan Palm (*Licuala* spp.) leaves are used as food wrap**

Date Photograph Taken: 25<sup>th</sup> April 2007



Source: Author

**Photograph 15: Method of folding *Licuala* spp. (Malayan Fan Palm) to make “Chenu’uh” (food/water container) in the forest**

Date Photographs Taken: 25<sup>th</sup> April 2007



Source: Author

**Photograph 16: Techniques of collecting Rasau (Screwpinces) (*Pandanus helicopus*) thorny leaves**

Date Photograph Taken: 15<sup>th</sup> February 2007, Tasek Bera

The *Semelai* were the true 'wetland people' because they fully utilised the wetland's natural resources. For example they used *Rasau* (Screwpinces; *Pandanus helicopus*), *Sakek Ladangan* (*Mengkuang Ladang* in Malay language; planted *Pandanus*), *Sakek Jekos* (Wild *Pandanus*), *Selingsing* and *Kerchut* (Tube Sedge; *Lepironia articulata*) leaves for thatching and *anyaman* (weaving), a colourful woven or plaited mats, containers, baskets, purse (pouches) and other household items. These plants have some similarity and differences in the process of making mat or weaving. There are different types of *Pandanus* leaves that the *Semelai* use for weaving based on observations made throughout the fieldwork which is recorded in Table 12. The detail of weaving activities is described in the Appendices B (Refer Theme; *Mengkuang* and *Rasau Weaving*).

**Table 12: The differences of *Pandanus* spp. Weaving Leaves used by the Semelai's Women**

Type	Semelai Name	Scientific Name	Malay/ English Name	Description
On Lands	Saqeq Ladangan	<i>Pandanus spp.</i>	Mengkuang Ladang	Planted in the farm
	Saqeq Buyuk	<i>Pandanus spp</i>	Mengkuang Hutan/ Wild Screwpine	Naturally grown in the forest
In wetlands	Rasau	<i>Pandanus helicopus</i>	Rasau	Naturally grown in the lake
	Selingsing	<i>Thoracostachyum babacanum Kurz</i>	Not known	Naturally grown in wetlands
	Purun	<i>Lepironia articulata</i>	Kerchut Tube Sedge	Naturally grown in wetlands

**Sources:** Author's Interviews and observation, February 2007 – April 2007.

Semelai have various adaptive cultural traits in technology, such as windmills (*bebaling*), are used by the *Semelai* for noise-making to scare birds and others predators from attacking their plants. Plants are also used for parts of materials in musical instruments used in Semelai ritual and cultural ceremonies. However, based upon observations on site, these traditional instruments are not popular and favourable among the youngsters. The young prefer modern music, resulting in the decline of interest in and use of traditional music and the making of musical instruments. Blowpipes and poison darts, bows and arrows and house construction, however, are still held as Indigenous knowledge to this community. Hunting was part of the *Semelai's* way of finding food. In hunting, the *Semelai* people believe that animals are part of their ancestor that they should show respect to. Traditionally they used tools and traps that they made themselves for hunting. However, today some of them can get access to guns. This experience is documented in the Video dated 23<sup>rd</sup> March 2007. Therefore, when hunting they only hunt for their needs. They also use rattan to make fishing trap that they called *Telekong*.

Plants parts such as trunk, wood, bark are also significant in the use and in the construction materials such as *Kepong*, *Pelawan*, *Meranti* and Bamboo. As described by Hood (1974)

plants in *Semelai* culture play adaptive magic functions in their form, shape and characteristics in defining the metaphysical world of *panjangan*, a village where human souls reside (H. M. Salleh, 1974a). The *Semelai* people also produce *Keruing* oil (resin from *Keruing* Tree), which is widely used by the *Semelai* as a commodity for trade due to its multi-purpose use as a source of light, incense, dye, adhesive, sealant, medicine and even poison. *Keruing* (*Dipterocarpus kerii*) is believed to be one of the most important plants in *Semelai* tradition that can continue to generate income. The *Semelai* extract the resin from the tree bark and sell it to middlemen.

#### 7.4.3 ***Ethnobotanical Evidence in Myths, Legends and Spiritual Beliefs***

In general, the association of Tasek Bera with its natural surroundings, particularly plants, can also be observed in several myths and legendary stories. These demonstrate the close relationship the *Semelai* have with their environment. Their belief in myths, legends and taboos indirectly helps them in managing their environmental resources and reinforce their respect of nature. Tasek Bera is popular in legends as to its origin. The Lake is associated with many mysterious legends with the most popular story narrative being about huge lake serpents and cobra-like animals that are covered in large scales. As revealed by Stewart Wavell in his expedition to Malaysia in 1951, the *Semelai* believe in giant cobras, which they refer to as *Ular Tedong*, that inhabit the Lake (Wavell, n.d). Some sources also record this creature as *Naga* (dragon, an aquatic serpent-god in Hindu and Buddhist mythology). Other sources also record that young grey-coloured serpents, have short horns on their heads and instead of hissing, they snort loudly like a ship's horn, reminiscent of an elephant's trumpet and a sea lion's bark all rolled into one. Luckily, these creatures are peaceful and have never attacked humans. The main *Semelai* story of the origin of Tasik Bera has a preamble that begins at Tasik Chini that explains how this subterranean river came about. The preamble, as told by Sahat to Rosemary Gianno in 1981, was recorded as:

*"In the beginning, the man there took a wife. Where? At Tasek Chini. The grandchild, who was digging for sweet potatoes, sees eggs. She carried them over here, over there. The grandchild with the grandmother was digging up sweet potatoes. The husband came home. He saw the eggs. He took them and ate them. After he ate the eggs there, the grandmother returned home with the grandchild. She asked what had happened to the eggs the grandchild had found earlier. I ate them said the*

*grandfather. She asked why he had eaten them. He didn't do it for any reason. Not that we wanted to tease them. He just ate them. Oh, said the grandmother, you must hate me. Let's go, said the grandmother (and she left).*

*After a while, he wanted to drink. He drank all the water in the house. He asked the grandchild to go down and get him more water, he asked his wife to go get him more water. The wife there went down and she got some. At first, she was able to bring a basket full of water. After a while, she used a tin, then after a while she wasn't able to bring it up anymore to their house. So they made a house down at the pool of water. At Tasik Chini. There. They made a house in the water. He kept drinking. Initially his body was small but after a while it became big. He was just drinking, not eating any food there.*

*Until, after a while, he there became an animal, became a snake. After he became a snake, he was still in the house they had built but then the size of his body filled the pool of water. He was the same size as the pool of water. Then he said, oh, don't feel that you have to stay with me here. Go! He said that if they wanted to see him, they should return there once every seven days. So, at first they did that, returning every seven days. Then, after a while, no, they weren't returning to see him anymore. Then they went away without the intention of returning. The grandmother with the grandchild fled to Lubuk Keruing there. So, they stayed there, year followed year, they made a settlement there at Lubuk Keruing. Eventually they were followed there by the husband there. He followed them there by making a tunnel from Tasik Chini, arriving at Lubuk Keruing there. So, he's there."*

The Tasek Bera also hosts several myths that explain the evolution and creation of the Lake as told by *Semelai* old folks. The *Semelai* themselves believe that they are the descendants of the seventh child of *Batin Paduka Alam*, who was a god-like being (International, 2003). The *Keruing* tree (*Dipterocarpus kerrii*), *Mahang* (*Macaranga spp*) and *Terap* (*Artocarpus elasticus*) are popular plants mentioned in these myths. The place of Lubuk Keruing is believed to be the origin of Tasek Bera, which is also recorded as the *Semelai* people's earliest settlement (H. M. Salleh, 1974a).

The *Semelai* believe in supernatural powers and animism to protect and govern their lifestyle, as it is now. These customs and beliefs determine their rules and law of the nature that ensures their sustainable management of land and resources. During a shamanic ritual the relation between human fate, human deeds, the land, its spirits and its natural entities are played out against each other, in a search for explanation and solutions for misfortune.



Gianno (1997) has also identified several plants that are brought together in this ritual including the *Smburu* (*Dillenia spp.*), *Midur* (*Goniothalamus macrophyllus J. Sinclair*), a fragrant herb, *Kijjay* (resin incense; *Triomma malaccensis*) and *Kmyan* (resin incense; *Styrax benzoin*).

Plants are also used as medicine for taking orally, in external applications or as a poison or antidote. This knowledge is normally possessed by the *Bomoh* and *Puyang* who are directly involved in curing sick people. However, there are two types of sickness; spiritual and physical. The *Bomoh* is considered by the *Semelai* as the best person to treat physical sickness, whereas the *Puyang* treats bad spirits or bad omen problems normally involving ritual ceremonies and treatments. In *Semelai* tradition, the ritual ceremony for this treatment is called *Bebelian*. The *Bebelian* Ritual Ceremony is one of the most pronounced traditional heritage rituals of the *Semelai*. However, a comprehensive study about the *Semelai's* *Bebelian* ritual has been undertaken by the Professor Hood Salleh in 1974 which greatly described about the *Bebelian* ritual ceremony. A record of audio is listed in Table F in Appendices A dated 15<sup>th</sup> April, 2007.

The *Semelai* are also rich and bounded with taboos and beliefs that guide their behaviour and attitudes towards their environment. A good example is *Tunyuk Kراسي*, a ritual step in deciding land before building a house or land for cultivation. The normal steps are land clearing and the land being left for a day or two to enable a sleep and dream. If the dream is good they can proceed with land opening and planting or building a house. If it was a bad dream they have to move to another place and repeat the same ritual method again in order to get the answer. Examples of good dreams are mentioned by Pakcik Rodi. (Refer voice recorder dated 15<sup>th</sup> April 2007; 12:38 – 23:05). 'Good site' is also a general term for the *Semelai* which they identify with such as being an earth mound, near a stream/ lake/ swamp, or close to the relatives as examples. However, a bad site may be an estuary, a meeting point of two rivers, under shades/ shallow/ hill, near an earth mound/ hill, or door/ stairs oriented to the west side as examples. Apart from myths, Tasek Bera has historical significance being located on an ancient trade route known as Jalan Penarikan literally translated as "Pulling Route". Tasek Bera is located mid-way between the Straits of Malacca and South China Sea on the Peninsular. This historical significance is evidenced

in the discovery of several Ming ceramics and pots which were passed down through generations among the *Semelai*.

Another example is *Tarian Balai* (*Balai Dance*). This dance will be only performed for special events such as wedding ceremonies and associated with circumcision in the *balai* under certain rules and customs. In the *balai*, there are rules and guidelines to be followed. *Semelai* men and women are not permitted to mix in private spaces. However, there is an exception in the *balai*, if they are together dancing where they can be seen by the public. If the ceremony or event has already started, any person is permitted to just step over the *penelar/ jerejak* (joist) (railing) of the *balai*, but to be inside or otherwise is considered to be rude to the rest of the audience. Normally, one should use the stairs to join the crowd in the *balai*.

## 7.5 Ethnobotanical Evidence in the Built Environment; the *Semelai*'s Settlement.

The *Semelai* were resettled into fortified settlements, Fort Iskandar (Pos Iskandar) by the British government during the Malaysian Emergency period (1948-1960). This policy strategy was executed for administrative purposes to delimit the communist insurgency. The British administratively regrouped the *Semelai* community villages under the *Rancangan Pengumpulan Semula Iskandar, Bera* (RPS Iskandar Bera) (Iskandar, Bera Regroupment Plan). This plan resulted in the re-settlement of whole villages along Jalan Pelawan-Gau (Pelawan-Gau road), which connects Pos Iskandar and Tasek Bera to the main Jalan Bahau-Tembangau. The Jalan Pelawan-Gau links the FELDA Tembangau and villages in Pos Iskandar to other towns such as Bahau. Presently, most of the houses are oriented facing this road due to the function of the road as the main mode of transportation. Despite this, a few houses still face the Lake reflecting their historical main mode of transportation. Since the implementation of this plan, the re-settled *Semelai* reside in 12 settlements that have been grouped into five main villages by the government surrounding Tasek Bera, being Kampung (Kg) Putat, Kg Baapak (Pa'apa), Kg Gau, Kg Keruing (Kg Lengut & Kg Kuin is one area) and Kg Genderek (Refer Appendices Drawing MS/2009/DWG/1). Of these, only five main villages have *Batin* (Chiefman), while the other villages share their *Batin* with these 5 villages. Pos Iskandar is the administrative center for Tasek Bera which has a few administrative buildings such as the JHEOA office, the SABOT's office, hall, school, clinic, kindergarten and *surau* (prayer room). Refer series of photographs next page.



Source: Author  
**Photograph 17: Abandon Community Hall at Pos Iskandar**  
Date Photograph Taken 10<sup>th</sup> February 2007



Source: Author  
**Photograph 18: JHEOA Office at Pos Iskandar**  
Date Photograph Taken 10<sup>th</sup> February 2007



Source: Author  
**Photograph 19: Surau (Prayer Room) at Pos Iskandar**  
Date Photograph Taken 10<sup>th</sup> February 2007



Source: Author  
**Photograph 20: A missionary office at Pos Iskandar**  
Date Photograph Taken 10<sup>th</sup> February 2007



Source: Author  
**Photograph 21: A kindergarten at Pos Iskandar**  
Date Photograph Taken 17<sup>th</sup> March 2007



Source: Author  
**Photograph 22: Rumah Sigai was built at the rear of their newly gifted house by the Government (the PPRT house)**  
Date Photograph Taken 17<sup>th</sup> March 2007

Unfortunately, the RPS that was planned and designed for the *Orang Asli* on Peninsular Malaysia was not really successful. The villagers were provided with a few concrete houses under the *Projek Perumahan Rakyat Termiskin* (PPRT) (Poor Citizen's Housing Project) which applied a standard template design for all poor people throughout Malaysia. This house template is very different from traditional *Semelai* homes. These newly constructed houses were also not fully occupied initially due to heating problems. As a consequence, the *Semelai* often built a second home at the rear of the new house known as *Rumah Sigai*. Refer Photograph 22. The standard layout size was also not conducive for generalisation to all *Semelai* families without adjustments to suit family members which limited their socializing abilities.

According to Williams-Hunt's empirical investigation, there are four (4) main types of *Semelai* settlement (H. M. Salleh, 1974a). Each is described in terms of the people who live in each settlement and their relationship to their surroundings. The first type is shifting cultivators who reside adjacent to one another for a couple of years. The second type is people who work in rubber and fruit plantations and do yearly *ladang* / work in fields for an additional source of income. The third type is those who live as indentured labourers adjacent to *Malay* kampongs/villages. The fourth type is those who exist in wandering hunting communities with no *ladang*. These four types of settlements indicate different relationships to environment, which is valuable and important to understand when constructing permanently-based settlements (H. M. Salleh, 1974a). These relationships will eventually determine and characterise the settlement pattern of a community. These types of settlement can no longer be clearly identified or divided into four as suggested earlier, due to socio-cultural changes. Based upon interviews and observations undertaken, the researcher has concluded that since shifting cultivation is no longer being practiced, the first type of settlement no longer exists as a type. However, evidence still exists of the *do'oh*, a small farm shelter-cum-house for the villagers to stay in overnight when they undertake farming. Refer Photograph 23.

The perceived cultural importance of trees can also be seen by the naming of their new settlements at Pos Iskandar, which were based upon trees found in those areas, such as Kampung *Putat* represent *Putat* tree (*Eugenia spp*), Kampung *Pelawan* (*Tristania merguensis* Griff.), Kampung *Paya Kepong* (*Shorea ovalis*) and Kampung *Keruing* (*Cryptocarpus keruii*). This nomenclature gives character and uniqueness to the places which blend and tie the cultural adaptation as well as physical environment.



Source: Author

**Photograph 23: "Do'oh" farm shelter in rubber plantation during cultivation yearly period of padi huma/ swidden rice**

Date Photograph Taken: 17<sup>th</sup> March 2007



Source: Author

**Photograph 24: Resin at Keruing Tree (*Dipterocarpus kerrii*)**

Date Photograph Taken: 12<sup>th</sup> February 2007

Area: Taman Herba, Kampung Pathir

### 7.5.1 *The Settlement Pattern of Semelai Community in Tasek Bera*

Specific knowledge of the ethnobotany and ethnoecology of the *Semelai* is used in this thesis to interrogate and understand the *Semelai*'s existing pattern of settlement, as well as to in proposing guidelines to better design and plan their future pattern of settlements which will better sustain and embrace the quality of their traditional living styles. This settlement analysis would be useful to the JHEOA as well as to other government and non-governmental organizations.

Modernisation has changed the overall landscape of the *Semelai* villages especially around the wetlands. The whole Pos Iskandar area should be revived to become a more distinctive *Semelai* settlement which sustainably uses their surrounding natural landscape and becomes part of the overall important national cultural heritage and asset for Malaysia. The current settlement pattern at Pos Iskandar, which has gradually changed due to changing socio-economic activities, demonstrates that modernisation has made a strong impact upon *Semelai* tribal customs and their original culture. Approximately 70% of the secondary forest area embracing their traditional lands has been converted to permanent intensive agricultural land such as rubber plantation, oilpalm and fruit farms under the care of the *Semelai* people as shown in Drawing MS/2009/DWG 1 ( Refer Appendices A).

Based upon observations made on site, each village is sub-divided into clusters of houses as an example shown in Drawings MS/2009/DWG/3 and MS/2009/DWG/4 (Refer Appendices A). This traditional pattern demonstrates that the *Semelai*'s settlement pattern is strongly based upon family. Each cluster is composed of a few houses sheltering immediate family members. They are also reflected in the common sharing of resources among family members. Extended families which originally located their houses near their main family have now moved out and sited their house near their new open farms. This change is deteriorating the traditional and unique human culture of the *Semelai*, and may erode the essential family relationships that bind the *Semelai*. Therefore, the researcher strongly concludes that some kind of heritage law should be drafted and enacted proposing a form of shared land policy to convert the current problematic situation and damaged landscape into a Prime Heritage area that attracts tourists from everywhere.

These types of family clusters pattern were inherited from their ancestors before the British administration regrouped the *Semelai*. All buildings which are intended to be used by the *Semelai* should provide spaces that enable easy access and flexibility to accommodate their original custom and culture.

It is acceptable that minds and symbol systems are applied into nature by biophysical nature, human symbolic and material culture (Fox, 2007). The theoretical explanation as greatly discussed among environmental scholars is the environmental ethics that involves values, norms and standards inter-human or inter-god relationships and socio-behavioural which involves not only the physical external environment (wildlife, ecosystems) but also the socio-cultural systems and development that most people live within (industrialized, urbanized, political influences etc.). Comparatively, the traditional *Semelai* architecture and modern contemporary architecture have a few similarities as tabulated in Table 13. In contrast, modern contemporary architecture is very much individual-focused. These clusters are not clearly observed in current practice due to recent landscape and socio-economic changes.

Each cluster normally has a *balai* (a resting shelter) that is traditionally constructed as a communal space or venue. The *Semelai* spend most of their spare time in the *balai*. They even entertain their guests in the *balai* instead of inviting their guests inside their house thereby functioning as a 'meeting place'; thus common versus private space. However, due to the lack of resources and modernisation, some family clusters today share their *balai* with extended families. Some of these family clusters have collapsed and manage their ancestors' land even though those lands are quite far from their home and village.

The settlement pattern of *Semelai* that have been inherited from their ancestors are strongly demarcated by the surrounding natural landscape which consists of three main elements; *ladang* (domesticated land), *hutan* (forest land) and *lubuk* (wetland rich with natural resources such as fish). In terms of the *Semelai*'s traditional land use practices, for example, *Tunyu' Kراسي*, is the practice done before selecting *ladang*, an area for farming. This is one example that demonstrates that the *Semelai* are sensitive in determining suitable land or areas and that they will not simply clear any land for

themselves without a logical reason. The *Semelai* have to wait for a dream before any decision can be made. In contrast a negative event can occur for those who confidently choose a site without waiting for a dream, being the practice among the *Semelai*. This is called *Pawang Rampas*, where *Pawang* means “Shaman” and *Rampas* means “to confiscate; to seize; to capture or to hijack”.

Based upon interviews with Pakcik Sabu, dated March 10<sup>th</sup>, 2007, in deciding to build a house, the *Semelai* normally undertake *kelakar* (to stake a post) or clear the area as if reserving that site. If they get a good dream that night, they will proceed to build a house on the site and *vice versa*. Examples of good dreams vary and include dreams of a graveyard pointing to the paddy (rice) spirit where the area is cool and also when they dream of a meeting with *Malays* it is a good sign to open a farm. However, if they have bad dreams, they definitely will not choose the site for farming. Examples of bad dreams include killing animals; meeting with an Indian or *Hantu Hitam* (Black Ghost); meeting with an Englishman who they called *Hantu Batu* (Stone Ghost) and meeting with Chinese, *Hantu Tinggi*, a “Tall Ghost”.



Table 13: Cross-comparison of Traditional and Contemporary Architecture

Aspects	Traditional Semelai's Architecture	Contemporary Re-settlement Architecture
Settings: Location, Topography	<ul style="list-style-type: none"> <li>• Located in between matured trees and original landscape setting.</li> <li>• Minimal intervention on original landform</li> </ul>	<ul style="list-style-type: none"> <li>• On well-modified flat landform area in normally in a bigger piece of land</li> </ul>
Associated Building & Landscape	<ul style="list-style-type: none"> <li>• Based on natural resources availability</li> <li>• Internal-external relationship</li> </ul>	<ul style="list-style-type: none"> <li>• No standard guideline</li> <li>• Center of community</li> </ul>
Scale: Size (approximately m2), Orientation	<ul style="list-style-type: none"> <li>• Maximum 31x10meter = 310m2. Any direction according to sign which normally get from dreams by the owner</li> </ul>	<ul style="list-style-type: none"> <li>• 10m x 10m = 100m2</li> <li>• Orientation refers to the main road and accessibility. a standard template design for all poor people throughout Malaysia.of the existing PPRT (Poor Citizen's Housing Project)</li> </ul>
Layout and Composition	<ul style="list-style-type: none"> <li>• Rumah Sigai (located at rear of each house; an extension of a house)</li> <li>• <i>Balai</i> is shared among a small group of families as common place for gathering or even meeting place for guest</li> </ul>	<ul style="list-style-type: none"> <li>• Square shape with 2 rooms and one toilet inside</li> </ul>
Form and Material	<p>Semelai construction methodology is based upon timber structures and materials. From observations, the researcher found that most of the time Semelai people use less-valued hardwood timber that can last for a longer period before it needs to be replaced. This is due to the techniques they normally use to protect the timber from decay.</p> <p>Combination of simple square and rectangular shape layout arrange in line.</p> <p>The usage of hardwood material only for the structure and medium-strength wood for the other parts of the building</p> <p>The usage of plants and part of plants widely as material. However, the material used are only durable for a shorter period than the Malay traditional architecture due to their previous living styles which is foragers and semi-sedentary. However, nowadays the assimilation with more modern living style requires them to re-adapt to more durable choice of material structure.</p>	<p>Square with solid concrete block walls</p>
Roof Profile	<p>Combination of pitch roof and monopitch roof arrange in single-line of Fan Palm leaves</p>	<p>Single pitch roof using zink or asbestos</p>
Room Types & Function	<p>Well-define spaces for specific function</p> <p>Balai Remol (Male area); Kedor( female area); Keloch (living area); Lambur (intermediate space/ wet kitchen); Selasar (Dry kitchen/storage area); Pantat Gajah (kitchen)</p>	<p>Minimal interior spaces: Living area;n Kitchen; Bedroom; Toilet. The size is too small</p>
Ritual Division of Spaces/ rooms	<p>Public, semi-public and private Based on space hierarchy</p>	<p>Nil</p>
Room Number	<p>Normally 2 rooms</p>	<p>1 or 2 rooms</p>

### 7.5.2 The Semelai's Traditional Houses

The traditional housing patterns of the *Orang Asli* in general are similar to the *Malay* kampongs which are normally found in the rural areas of Peninsular Malaysia (Pala, 1997). This research thesis records the spatial and physical forms of *Semelai* houses, and documents their types of settlements. It is hoped that this ethnographic study will provide a wealth of contextual, social, historical background information to better inform more robust and ethnobotanically-informed settlement planning. However, the classification of re-settlements based upon the social and historical understanding of every settlement cannot be applied nationally in Malaysia (Memmott & Moran, 2001a).

*Semelai* culture directly reflects the layout of *Semelai* traditional buildings. *Semelai* traditional house can be divided into a few main spaces characterised by the main living room or *Balai Remol* (Main hall/room) (*Balai Besar*). Refer Drawing MS/2009/DWG/5 in Appendices A. This is the main common space for entertaining guests and is mostly dominated by male occupancy. In contrast, female guests will occupy the *Balai Kedor* (small hall/room) (*Balai Kecil*) which is separated from the main hall with walls and with separate access. This room is relatively smaller than the main hall and functions as a secondary reception area for females. The *Keloch* (*Ibu Rumah*) or family room is the family gathering area which traditionally comprises a hall and two *Selasar* (bedrooms) on both wings. This space is strictly for family privacy and is segregated by walls.

*Lambur* can be translated as wet kitchen and is a space for the preparation of food and serving as a wet area. This room is normally open, without a roof and can be accessed through stairs. *Dapur* (Dining room) is attached to *Pantat Gajah* (kitchen), an enclosed space to store cooking ingredients such as rice, salt, sugar and spices. The wash area, where they normally put *skol* (drinking vase), is called *Selasar Gantung*. The other side of the dining room is *Selasar*, a dry storage area. From the researcher's observation, the traditional house layout possesses some similarities with the traditional *Malay* house. For example, there is segregation between male and female spaces that demonstrates the influence of Islamic practice which most probably has been adapted from the *Malay* Muslim culture. The spatial layout also demonstrates that the *Semelai* are a family-oriented society as they share spaces with family members in a compact space.

### 7.5.3 Traditional House Construction

Predominantly, *Semelai* construction methodology is based upon timber structures and materials. From observations, the researcher found that most of the time *Semelai* people use less-valued hardwood timber that can last for a longer period before it needs to be replaced. This is due to the techniques they normally use to protect the timber from decay. *Semelai* people will frequently smoke their house to scare away mosquitoes as well as bad spirits according to their beliefs. This technique is known to prolong the life of even very young hardwood timber for more than four years. The *Semelai* traditional house can also be deemed a temporary and light structure as a result of their way of life which was originally shifting cultivators. Traditionally, the *Semelai* lived in together with their extended families, two or three households in one place only for a few years and then moved to another farm normally building their *do'oh* every two years. Therefore, less valuable hardwood timber was selected as the *Semelai* will only select light timber that will last based upon their anticipated years of occupancy. Tying methods instead of using nails and bolts and nuts also demonstrates that this form of temporary structure can easily be dismantled when the *Semelai* want to shift.

Hardwood timber is only selected for particular purposes such as materials for house columns and dugout canoes that require good quality timber. Therefore, the *Semelai* sustain the timber resources to be used for the future generations. According to Makcik Kop, during an interview dated 14<sup>th</sup> February 2007 at Kg Putat; the *Chengal* wood (*Neobalanocarpus hemi*), which is considered good quality hardwood, can last up to more than 12 years whereas *Kayu Melantai* (*Shorea macroptera*) and *Rambai* (*Baccaurea motleyana*) can last for approximately four years. This pattern, reinforced in the interview might also be associated with premature harvesting because the matured size of those species are quite durable and can last longer than four years. This practice is undertaken to ensure that all resources are sustainably used for a longer period.

Generally, the traditional house building of the *Semelai* can be divided into three types of construction methods: *Takah Rakit*, *Takah Parak Labuk* and combination of *Takah Rakit* and *Takah Parak Labuk*. Each method and its materials have their own words and descriptions in the *Semelai* language of which some are quite similar to traditional *Malay* architecture. Refer *Glossaries*.

### I. *Takah Rakit*

The word *Takah* means 'structure' or 'method of construction' and *Rakit* means 'raft'. This type of construction relates to the method normally practiced to build a raft that is also applied to house construction. In this type of construction, floor boards, which are normally covered with a woven bamboo floor, are laid perpendicular to the main entrance stretching the width of the space. The *gereggar* (joist) is laid in line with the entrance and stretches the length of the space. The *gereggar* are supported by *penangkas* (beams) that are fixed to the columns of the building. In between the main columns there are additional columns named *teladuk* which connect to bearers called *seradik*. The purpose of *teladuk* and *seradik* are to support the whole floor area, especially in the middle, from settling down. On top of all floors is placed *benul* (edge beams) which hold the floor structure to the columns and become the main support for the *tunyuke langit* (king post) or *tunjuk langit* in Malay language. The king post is the main column that supports the roof structure on both ends of the building. Refer Drawing MS/2009/DWG 6 in Appendices A.

### II. *Takah Parak Labuk*

The word *Parak* in *Semelai* language means 'shelf' or 'rack' and *Labuk* means 'gourd'. This method of construction requires more delicate craftsmanship as well as good quality wood. Floorboards are laid in line with the main entrance and stretch the length of the space. *Gereggar* (joists) are then laid perpendicular to the entrance stretching the width of the space. Joists are supported by *penangkes* which are placed in line with the floorboards. These beams, *penangkes* and *penangkes gantung*, are all tied together with *benul* on top which are fixed to the columns of the building. *Teladuk* are located at certain intervals along the beam in between the main columns. Refer Drawing MS/2009/DWG 7 in Appendices A.

### III. Combination of Takah Rakit and Takah Parak Labuk

*Semelai* people are very sensitive to their living environment and resources. Due to limited resources at certain times of the year they will often use this combination technique to build their houses. In this type of construction, the floorboards are laid perpendicular to the main door and entrances followed by joists that are positioned in line with the doors. The *penangkes* (beams) are called *penangkes atas* (upper beams) and *penangkes bawah* (lower beams). The use of two beams is an advantage because it is easier to find small sized timber in contrast to *Parak Labuk* where big sized beams are needed. This method allows the *Semelai* to reduce the size of the floor structure and also reduce the amount of rattan that is needed to tie the beams and joists. The upper beams are basically not tied up but will be held together by lower beams that are fixed straight to the columns. Refer Drawing MS/2009/DWG 8 in Appendices A. The only respondent whom managed to explain this type of construction was Pakcik Laman who is a house builder. Refer voice recorder dated 7<sup>th</sup> April 2007.

Roof structures for all types of building in *Semelai*'s traditions use the same construction method. The main columns of the building will hold wall plates called *Halang* along the top perimeter of the building frame. The principal rafters, *Kasau Jantan* (same in *Malay* language), are tied to the top and bottom ridge beams than being connected to the king post, *Tunyuke Langit*, on both ends. The *Semelai* normally use *Kayu Paang* (*Meranti*) (*Shorea spp*) for *Kasau Jantan*. *Kasau Daun* (roof battens) are tied on top of the roof main frame at approximately 150-200mm gaps. Thatch roofs, which are constructed from Fan Palm leaves, or locally known as *Rengwoi* (*Licuala spp*) or *Regeng* (*Livistonia chinensis*), are slotted into each batten. *Regeng* is considered to be hardier than *Rengwoi*. However due to the availability and difficulty of having to go deeper into the forest to find *Regeng*, the *Semelai* will now only use *Rengwoi* requiring that they replace it every few years. Additional or secondary roofs are also common in *Semelai* building construction. They consist of *Kasau Jantan* (the principle rafter) and *Kasau Daun* (roof battens) that are connected to the columns wherever necessary. Refer Drawing MS/2009/DWG 9 in Appendices A.

All walls are connected to the horizontal beams that are tied to the columns called *Adan*. The lower beams or hand rails are called *Adan Bawah*. The *Adan Atas* are the upper beams that can be turned into upper window frames called *Adan Atas*. The vertical structure, that holds horizontal beams other than column, are called *Jerijak*. These *Jerijak* can become window frames if desired. Traditional wall material is made from tree bark which is normally taken from *Pelawan* tree (*Tristania merguensis*.Griff) or *Merawan* tree (*Hopea mengarawan*).

Most *Semelai* men can build their own houses but not all are authentic and accurate as the traditional methods enabled. Therefore, during the course of the research there were a few discrepancies in statements from respondents regarding floor construction of buildings. This variation demonstrates that the traditional knowledge has been diluted among the *Semelai*. Refer voice recorder dated by *Noriah, Pakcik Laman and Pakcik Engkok*, dated 17<sup>th</sup> March 2007, 7<sup>th</sup> April 2007 and 6<sup>th</sup> April 2007 respectively.

Above all, *Takah Rakit* is generally considered as the easiest and most popular building construction methodology among the *Semelai* due to the short lengths of timber needed for floorboards and beams, and the ease to find this raw timber. In contrast, *Takah Parak Labuk* is the hardest to build and needs considerable hard work to source suitable long and big sized wood for beams and also to straighten the long bamboo for the floors. However, the combination of these two methods seems increasingly to be most favoured because it is easier and more flexible.

In conclusion, the choice of construction depends upon the availability of resources which determines the type(s), length and durability of the timber or wood. The vast knowledge of the *Semelai* in identifying and understanding types of wood for durability is evidence of how the *Semelai* have practiced sustainability in their culture. Their ethnobotanical knowledge of these plants, used in construction activities, demonstrates how sensitive the *Semelai* are with their environment. This respect also is observed in how the *Semelai* treat these resources.

#### 7.5.4 Customary land

Song map and foot trails by hunters-gatherers are just one of the ways Indigenous communities map and determine their boundaries, rights and ownership which is totally different from Westernized culture (Roseman, 1998, p. 106). The researcher had an open discussion among Chief men (*Batin*), and a few villagers, who can identify and point out their customary land based upon their knowledge of the layout plan of Tasek Bera that the researcher prepared. In *Semelai* society native customary land traditions were passed on from mouth-to-mouth. However these respondents managed to identify areas that they believed belonged to their ancestors. Customary lands are shared among them because they came from the same cultural origins.

Generally, Tasek Bera can be divided into two significant landscape customary lands that can be gazetted as Heritage Lands. The first is land that belongs to their ancestors that can be sub-divided into seven *Moyang* (great-great grandfather) or names which are *Moyang Chemie Pegawai*, *Moyang Bentong*, *Moyang Tempunai*, *Moyang Balang*, *Moyang Miken* and two unidentified names that are associated with two other *Batin* who were absent during the above-mentioned discussion. The areas that were mutually agreed upon, that belong to their great-great grandfathers, are as follows;

1. *Moyang Chemie Pegawai*, which covers the whole Pos Iskandar and Kg Gebendereng localities;
2. *Moyang Bentong*, which covers the whole Kg Gendereq and Kg Lengoch localities;
3. *Moyang Tempunai*, which covers Kg Putat, inclusive of Lubuk Gendereq;
4. *Moyang Balang*, which covers Kg Kuin, Kg Ramasan, Kg Buyong and Bukit Kuang, inclusive Lubuk Badong, Lubuk Rugoch and Lubuk Tokongan; and
5. *Moyang Miken*, which covers Kg Bapak, Kg Tetuak, Kg Rapak, Kg Terentang, and Bukit Mayan.

These configurations of inherited land are shared by entire families under the same route of kin. In the past, they used this land for swidden cultivation. However, presently, there is a problem managing the land due to the increasing numbers of family members. The

researcher found that these problems could be resolved with a more detailed guideline or law that could ensure the sustainability of the whole Tasek Bera ecology.

The second type of *Semelai* Heritage Land is the virgin forest which is considered forbidden by the *Semelai* people to do anything on or to modify this land. Refer Drawing MS/2009/DWG/10 in Appendices A.. The respondents identified 14 areas around Pos Iskandar that they still remember as being forbidden for them, as follows:

1. Hulu Prong Bangkok;
2. Nibong Benarek;
3. Paya Belino;
4. Pulau Pa'ret;
5. Pulau Bedaling;
6. Pulau Bersilang;
7. Terusan Darat;
8. Bukit Randak;
9. Bukit Petai;
10. Pulau Jatohan;
11. Pulau Langkap;
12. Paya Pasir;
13. Pulau Bertam; and
14. Bukit Kuwau – Chongka Wong.

These lands are shared by the entire community. In the past the *Semelai* used these areas as sacred places such as grave yards. Unfortunately some of these areas have today been cleared and encroached upon for agricultural land and illegal logging. Therefore this considered high risk sites such as disturbed and sacred grounds need to be urgently identified, analysed based on their landscape resources potentials and constraints, in order to conserve Indigenous qualities that still exists. Refer Drawing MS/2009/DWG/11 in Appendices A. The researcher has concluded that if all these areas, identified by the *Semelai* people, can be sensitively maintained, the Tasek Bera will be renourished, water levels will be increased and the biodiversity of the wetland landscape will become richer. All cultural wetland activities would become re-established thereby



reducing the need for the *Semelai* community to open new agricultural areas for production. Conversations between the researcher and the *Semelai* community indicate that they are not happy to work in the agricultural lands compared to what they and their ancestors did before. Therefore, conservation of so-called 'forbidden forests' is vital for the survival of the *Semelai* tribe as a whole. The respondents recorded that when they entered the forest their experience is now analogous to outsiders entering shopping malls or shops. This demonstrates how important the forest is as the source of food and needs for the *Semelai* people.

The third element which strongly characterises *Semelai* settlement patterns is the wetland. The *Batin*, who leads particular villages, has authority to protect natural landscapes which belong to these villagers. Statements given by various *Batin*, indicate that originally all wetland areas in Tasek Bera had been divided into several niches that they called *Lubuk*. *Lubuk* is a wetland where abundant fish can be found. Each *Batin* was assigned to protect their own *Lubuk* and become the 'owner' for the benefit of the whole being the relevant chief man. Generally these *Lubuk* have been divided into four areas under individual *Batins* as indicated in the Table 15.

**Table 14: Division of Areas under *Batin*'s Authority**

<b><i>Batin</i></b>	<b>Areas under his Authority</b>
<i>Batin Kg Gabendering and Jelawat</i>	<i>Lubuk Jelawat, Tasek Damparan, Lubuk Gendereq</i>
<i>Batin Kg Gau-Pelawan</i>	<i>Lubuk Dato', Lubuk Bikong</i>
<i>Batin Kg Bapak</i>	<i>Lubuk Tetuak</i>
<i>Batin Kg Buyung Remasan, Padang Jatuhan</i>	<i>Lubuk Ibarek, Lubuk Tokongan, Lubuk Ragojh, Lubuk Badong</i>

**Source:** Fieldwork February 2007- April 2007, Author

Any curatorship approach should address both physical form as well as human resources among the *Semelai* people. The most important impact that might result in considerable improvement to the physical landscape character of Pos Iskandar could be by empowering Indigenous character to the place. Since *Semelai* relate with *Keruing* and *Tampoi* trees, re-introducing these two types of forest species into the settlement setting would be beneficial. As mentioned earlier, the *Semelai* people are not comfortable with the nature

and pace of modernisation that happened at Pos Iskandar but recognise the need to engage with change and modernization.

As a result of this investigation, the researcher has concluded that the *Semelai* are very sensitive to their surroundings. As mentioned earlier, Indigenous people's land ownership issues should also include their ritual lands, hunting sites, and burial grounds within the ambit of native customary land. Any development or change to their living environment will drastically impact upon their customs and culture directly or indirectly. The *Semelai* also have what they call *Adat* (custom) which is like a 'law' for them. With changes to the surrounding landscape the custom needs to be changed to conserve strong bond among family, the hierarchy of the family and tribal structure and the resources which they are dependent upon.

One method that could be used to retain and conserve this unique culture is to protect their surroundings as well as better organising the socio-economic structure of *Semelai* communities. Protecting the surrounding landscape through traditional family bond arrangement will strengthen and enable much easier control by respected personal in each family. In this scenario, the culture will have the opportunity to be slowly by practiced again among the community.

Since *Semelai* people have their own *ladang* (domesticated land) it could be zoned or gazetted as a compulsory zone in which to erect traditional buildings. Other areas can be set aside under this system, for forms of traditional settings that enable a mix of modern building materials still characterised by carefully managed heritage landscape surroundings. In a practical and aesthetic sense, the unwanted modern house can be effectively camouflaged by enhancing the traditional surrounding landscape. Therefore, Pos Iskandar or other villages, as a matter of policy, should be characterised by the traditional *Semelai* heritage landscape setting. An interview undertaken with a representative of the *Jabatan Perhilitan* (Wildlife Department) recorded that some of the Ramsar sites are also part of these 'forbidden forests'. Thus, it may be exceedingly beneficial in enabling the maintenance of these allied to the maintenance of the *Semelai* heritage. Ramsar management has so far gazetted land under '*Hutan Simpan Negeri*' (States Reserve Forest) which enables monitoring by this international wetland body.

## 7.6 Cultural Assimilations With Malays

Assimilation with *Malay* culture can generally be seen in *Semelai* culture. The Semelai are basically described by the Malaysian government, as being similar to the *Malay's* in terms of their customs and traditions which also influences their attitudes and behaviours towards themselves and their future such as being shy towards outsiders, non-violent and possessing a strong bond with their ancestors or community (Baer, et al., 2006, p. 94). There are synonyms in their respective belief systems which have been inherited from their ancestors who were once Muslims. There are also spiritual and material linkages and connections between *Malay* culture and their technologies to these tropical forests (H.Din & Awang, 2006). However, due to geographical barriers and waning interest from Muslim *Malays* to continuously encourage and inform these communities the number of practicing Muslim *Orang Asli* or specifically *Semelai* is questionable.

An example of similarities, the *Malay* handicraft and artwork demonstrates this assimilation now in commonalities in motifs in mat weaving. Most of the motifs crafted by *Semelai's* women can be seen in *Malay* motifs in mats and other handiwork. The *Semelai* tradition of marriage is another interesting and unique system compared to the *Malays* equivalent. For the Semelai, marriage starts with the engagement between two parties. The customs of engagement and gift exchange such as *Sireh Junjung* (decoration of piper betel leaves), garments and ring is also analogues to the system in the *Malay* culture. In Semelai tradition, engagement also requires cash money of RM22.50 and a penalty is imposed upon those who break the promise as it is culturally viewed as an offence. This system is also practiced in *Malay* culture although it is not compulsory. The wedding costumes that the Semelai use today are similar to the *Malays*. Refer Themes; Traditional Wedding Ceremony in Appendices B. The result of exposure from individuals and organisations who manage their local products to be brought and sell to the outside communities often serving as middlemen, is also influencing knowledge transfer and culturalization. The transition of the *Semelai* from a semi-sedentary society to their recent venture into eco-tourism has increased the impact of the outside world (Kenny@Matt Salleh, 2005).

## CHAPTER EIGHT: THE CONCLUSIONS and RECOMMENDATIONS

### 8.1 Conclusions

In conclusion, based upon the findings from this ethnographic research, it has been firmly concluded that plants and environment play a significant role and function in the *Semelai* community which determines and shapes their lifestyle and relationship to their environment and landscape. Ethnobotanical knowledge and practices are embedded in the place, their natural environment, in the *Semelai*'s culture and in their place-making. The summary of quantitative analysis of each village is tabulated in Table 15a, b and c. Traditional living quality can be enhanced and continued by introducing and conserving ethnobotanical values into the daily practices. The *Semelai*'s Indigenous knowledge of ethnobotany and ethnoecology, as part of a landscape analysis approach, can determine the *Semelai*'s pattern of settlement, as well as be integrated into future recommendations for landscape settlements of this community. This will better sustain and embrace the Indigenous living qualities of the *Semelai* which is also beneficial for any government and non-governmental related agencies.

Unfortunately, from the observations drawn in this fieldwork, the *Semelai* ethnoecological knowledge is considered as being endangered from advancing cultural evolution and assimilation of surrounding cultures into their living styles. The *Semelai* knowledge and skills in their community are dependent upon the maintenance of current practices in their culture which has been greatly influenced by modern adaptations to their traditional lifestyles. The exception is that the *Semelai* still maintained some of their traditional lifestyles, especially when it relates to ritual and spirituality. Their family ties and bonds still remain strong. However, the *Semelai* are also participating in the deterioration of their Indigenous lifestyles as they will continue to adapt modern lifestyles into their culture. The *Semelai* community's dependency upon forest plants is decreasing. This is due to reducing of forested area that used to be their 'supermarket'. Landscape alteration recorded in satellite images and aerial photos in previous literature is very significant in recording physical disturbance and deterioration, though it needs more detailed on-ground investigation to understand the local socio-cultural pattern that influences those transformations. Encroachment of agriculture land by the Federal Land Development Authority (FELDA) is significantly deteriorating the natural resources. Approximately, about 70% of the secondary forest area embracing the *Semelai*'s traditional lands has been converted to permanent intensive agriculture which is rubber and oil palm plantations.











24.4.07	Yuhanif	A specific callendar for the whole year have been practiced by Semelai for ages. As an example, the terms <i>Kawong</i> or <i>Chour</i> -means locate new farm area normally done on april. <i>Periantan nebas</i> means land clearing also done on april. <i>Bulan selatan burung</i> on May considered a month of all wild birds taking their bath after laying eggs or stay quite sometimes in their nest. <i>Periantan Ga'gok</i> - Felling Season done in the month of May. <i>Chor</i> means burning season is at the month of june. <i>Periantan Nugal</i> means planting of hillrice will be done at the month of july. <i>Periantan Penonggoyan</i> means waiting season before harvesting which normally at the month of september, october and november. <i>Periantan rakmuk</i> means harvesting will be happen at the month of November, December and January. <i>Lemir</i> is the terms that refers to fish breeding seasons where most of the fish species will lay their eggs during these period which are at the month of february, march and april.												
25.4.07	Pakcik Rodi	Entering to the forest to find out ways of Semelai people survive in the forest and cook their meals using available resources such as <i>Daun Palas</i> ( <i>Licuala Spinosa</i> ), <i>Bamboo</i> ( <i>Bamboosa</i> sp) etc.												
26.4.07	Makcik Kalsom	This interview find out a lot of historical evidence through photo collection which keep in very good condition. The most important photo that derive from her collection is the beautiful lake scenery at the year of 1933, 1945, and 1970. The scenery shows a lot of different in terms of natural resources such as water levels, flora and fauna.												

undertaken in order to understand the cultural patterns of a specific culture. Socio-economic activities change with modernisation, increasing the number of population to be accommodated in the overall landscape of the *Semelai* villages especially around the wetlands. Yet the *Semelai* traditional lifestyle is also being increasingly influenced by outside developments that provide better alternatives for finding daily food and household resources. Therefore, this dependency on forests needs to be gradually reduced without compromising the level of association of the environment through preservation and conservation projects, as well as by reintroducing and replanting of Indigenous plant species and planting schemes to educate younger generations. Conservation of traditional living styles requires the maintenance of plant use. Therefore, the future This is based on observations made using aerial photographs and satellite images that demonstrate that landscape changes that can be used in the first phase of research for an overview. However, as described before on-ground research needs to be utilisation of plants by the *Semelai* depends mostly upon the conservation of their living culture.

The majority of traditional knowledge and skills among the *Semelai* are held by elderly people and specific experts with limited opportunities to pass this knowledge and these skills onto the next generation. If this estrangement from the forest is prolonged, younger generations might totally lose their ancestral knowledge. Therefore, enhancing traditional living quality needs to be ensured to enable quality conservation of Indigenous knowledge and skills.

The association between environmental factors with population densities and economic formation changes and alterations will also affect the cultural landscape of the place. Therefore, landscape ethnographic approach is a valuable alternative research methodology that can reinvent the outcome of analysis into a robust framework for preservation, conservation or restoration, rather than a specific proposal to create something different. Recognition of the heritage of Indigenous people's should be a major focus of any landscape conservation effort. This thesis reads landscape as being bounded by space for signs of the times, past, present and hopefully for a better future. This is also in line with the suggestion made by Treib (2001) that in order to preserve an Indigenous landscape, the landscape must succeed in the social provision, construction intelligence, aesthetic interest and with combining the past with the new voices.

Indigenous heritage landscape includes the settlement(s), cultivation area(s) and also native customary lands, which associate with the land management of these communities. Plants and

environmental management knowledge and traditional regimes are integral to the success of this objective or policy. Traditional land management regimes that have been practiced by this community could offer lessons to better and more creatively manage landscapes of the nation today. The 'untouchable forest', which was previously the buffer between modern areas and the natural landscape, will not succeed as a concept unless a holistic approach is taken to maintain it.

Therefore Indigenous heritage landscapes as a land concept designation should be gazetted under the Malaysian Federal Heritage National Forest Park legislation to enable better and more effective control of this land from damage being made to the forests. Conservation methods which involve *in-situ* and *ex-situ* conservation, buffer zones, research, education and training, should be implemented and founded at a comparable with the National and local level, including tourism industry. Integrated sustainable eco- and cultural-tourism industry could be introduced at Pos Iskandar. The tourism sector could be the backbone to the socio-economic reformation of Tasek Bera and could directly involve local communities in the planning and implementation of ecological and cultural tourism. Indirectly, this could increase the sensitivity of local communities to their environment as well as giving an excellent advantage to the nation's eco-tourism profile and to the global economy in general. However, not all Indigenous products such as crafts will gain a demand in the market which requires extensive production and marketing research.

Another important issue that needs attention, which was observed through this investigation, is the language of publication. Most recent ethnobotanical publications have been written in languages that were not spoken or are secondary to the subject societies, whereby local languages deserve more attention (McClatchey & Winter, 2005). Unfortunately, the *Semelai* language is an unwritten language. Therefore, academically and politically, this procedurally justifies why the *Semelai* language has not been chosen as the language of first choice. Moreover, the status as an independent researcher is also a strong reason to minimise bias in ethnographic research. However, in addressing the issue of the primary beneficiary of research, which is a factor determining how research results should best be disseminated; the *Semelai* language is best understood only by *Semelai* communities. Therefore, the oral language of the *Semelai* can be recorded as voices's or narrative stories expressing and describing the Indigenous knowledge but should be written in other languages. A possible future plan for a thesis to be enlightened and extended to the local communities is by documenting this knowledge into the closest written language and supporting it by oral recordings. This written

language needs to be understood by the majority in this community as to encourage involvement and wisdom of knowledge among the *Semelai*.

In conclusion, whatever information described and interpreted in this thesis has been obtained from the fieldwork and interviews undertaken. However there is other information gained through the literature review that has not been incorporated into the discussion as it was not mentioned or alluded to by the respondents. Therefore, the researcher hopes to bring diverse voices to planning dialogues about resources, interpretation of cultural meaningful to the local inhabitants and it's use as a planning tool. These findings should provide background for subsequent detailed re-settlement projects in Malaysia in future.

## **8.2 Recommendations**

These recommendations serve as guidelines that have been formulated based upon the fore-going analysis. There are a few recommendations prepared to give general ideas and perspectives arising from the landscape ethnographic approach.

### **8.2.1 Promotion and Recognition of Indigenous Rights**

- i. The promotion and recognition of Indigenous rights is the first step in addressing any issues and problems of Indigenous communities. This will help to guide the National government and other development partners in improving future interventions to recognize, promote and protect rights of these Indigenous communities. Therefore, further inventory, assessment and monitoring are needed to be done when dealing with Indigenous communities.

### **8.2.2 Conservation of Traditional Lifestyles**

- i. Conservation of traditional lifestyles can be made by creative modification of contemporary living styles that manifest and conserve the Indigenous knowledge and skills. Accessibility to modern facilities should be availed to this community but it needs certain rules and guidelines to sensitively integrate modernisation with their traditional qualities.

### **8.2.3 Inherited Land Initial Landscape Policy**

- i. Native customary land needs to be identified and documented in order to articulate proof and evidence to fight for land rights;
- ii. The researcher has concluded that there must be an allocation of approximately 30% of the *Semelai*'s inherited land to be planted with hill rice (*padi huma* as their traditional cultivated plant) at a single season. This will ensure that the rest of the area is fully recovered for the next season of swidden cultivation. This percentage will also allow a minimum of 20-30 years maturity period for the land before it is re-occupied again;
- iii. Further inventory and planting conservation practice needs to be undertaken on other identified significantly Indigenous plants that may highlighted the Indigenous qualities of the community;
- iv. High risk sites such as disturbed and sacred areas need to be urgently relocated and studied in terms of landscape features and plants species composition in detail;
- v. Integrated development is crucial in planning settlements for the *Semelai*. However, it is not practical to impose *Semelai* ethnic law/custom, regardless of increasing family numbers, if this integrated development is not undertaken.

### **8.2.4 Planning and Analysis Tools**

- i. Landscape methodological analysis needs to be done prior to whatever tools that may enable efficiency and quality in the process of inventory.
- ii. Association with technical tools and software such as GIS, aerial photo and satellite image should encourage and enlighten the accuracy of the analysis. Therefore, lack of knowledge and resources to take over the technology such as GIS-based data (GIS interface) should depends on scientific expertise and negotiation with private interests.
- iii. Detailed information on community needs to be established to increase the ability to capture all relevant data about community and settlement which may strengthen their confidence and readiness to meet with local authorities to support their negotiations. This will ensure that the *Semelai* can take control of their resources and data management by themselves.

- iv. An updated vegetation inventory map is needed for the Tasek Bera catchment based upon relatively recent aerial photography.

#### **8.2.5 Sustainable Tourism Industry:**

- i. The identification and development of *niche* pockets of villages that can resemble *Semelai's* traditional living quality that can be developed into a living museum which does not affect their traditional living styles, are needed in integrated sustainable tourism industry. Tourists who come will have to accommodate themselves within the routine of these families and witness their activities and responses to their lives.
- ii. To encourage partnership between traditional healers (*Bomoh, Puyang* and *Midwife*) with the commercial agencies;
- iii. Charging fees for tourism activities such as fishing, which is one solution for biodiversity conservation as well as generating a source of income to the local community. The program could also instill confidence and self-esteem to the community.

#### **8.2.6 Utilisation of Modern Technologies:**

- i. Utilisation of modern technologies could prolong the lifespan and durability of natural materials such as wood. In terms of building materials and building structure design, it is ideal to have these as close as possible to their original traditional patterns but this may be impractical due to unreliable strength of materials. This might be resolved by applying modern building technologies that can still preserve the original and natural materials, such as treated timber and termite control systems at building foundations.

As to a conclusion, this knowledge is not a theory or a philosophical statement that is only significant and relevant to certain fields or disciplines. This process could be integrated into any future planning and decision-making on this particular site and may involve this particular community. However, these recommendations should be adapted into other Indigenous communities following a further detailed ethnographic understanding.

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