

Loss of Food Plants Knowledge and Identity among Indigenous Peoples in Malaysia

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ABSTRACT

Culture and Identity are inextricably linked, and Food knowledge, especially traditional food knowledge, is one important part of culture and identity among Indigenous peoples. While much of this knowledge has been disappearing over the last centuries among North American and other Indigenous peoples, it has been disappearing dramatically fast in newly industrializing countries in South America and Southeast Asia within just the last one or two generations due to the rapid spread of large-scale plantation cultures and the globalizing of trade. Building on these facts, the present study among Indigenous communities in Malaysia reports on efforts to document and preserve this traditional knowledge and identifying barriers and facilitators (e.g. role of knowledge keepers) toward preserving and transferring traditional food and dietary habits across generations. As methods were used a critical literature review as well as ethnographic-style open-ended semi-structured interviews with Indigenous scholars and members of Indigenous communities. The difficulties of Malaysia's Indigenous peoples presented here are instructive with regard to the global struggle of Indigenous peoples for food sovereignty. This paper reports on a building study, discussing aspects of Indigenous identity and plant knowledge within global food security, some specifics of changing Indigenous cultural knowledge and practices regarding food plants, the situation in some Peninsula and East Malaysian Indigenous communities, as well as some methodological and procedural details of our study.

Keywords:

Traditional knowledge, food plants,
ethnic community diet, Sarawak,
Malaysia

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1. Introduction

The relationship between cultural continuities and inescapable personal and cultural changes and, more specifically, how this dynamic connection plays itself out for the Indigenous peoples in a newly and rapidly industrializing Malaysia are of interest. Chandler *et al.*, [1], in their research on youth suicide among Canada's Indigenous peoples, have pointed out that personal, social, and cultural changes are common occurrences in the times of our lives; usually, changes are reigned in by our intuitions of personal continuity across time, allowing us as individuals and groups to assess,

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and react to, changes in the first place. There are many factors that can be seen to count towards a sense of personal and cultural continuity in a given community, for example, the existence of schools or health services in the hands of Indigenous communities, or the repertoire of traditional songs, stories, and spiritual practices. But perhaps no factor is more central and more fundamental than the food that we must grow, harvest, store, prepare, and eat in order to survive.

Where all of this matter, is that many Indigenous communities in Malaysia have lost most of their traditional knowledge within just the last one to two generations. Only few communities are left where, however, knowledge keepers have begun to document their communities' traditional knowledge for its own sake as well as in an effort to attract tourism and related financial supports to these communities. Thus, our interest in how much change may perhaps be too much to maintain at least some modicum of personal and cultural continuity, specifically with regard to plant foods, is meant to offer up both serious warning signals as well as examples of alternatives. Overall, this interest can be seen as part of the much larger concern for food security, not only for this or that Malaysian Indigenous community, but for the very survival of our human species. This paper reports on a building study, drawing it its first part ("Scholarly Background") on a literature review and our interviews with local Indigenous scholars, detailing some aspects of identity and Indigenous plant knowledge within global food security, some specifics of changing Indigenous cultural knowledge and practices regarding food plants before reporting, in the second part of this paper, ("Local Indigenous Practices") some of our observations from interviews with members from Peninsula and Eastern Malaysian Indigenous communities, and laying out plans for further research.

Part 1: Scholarly Background

2. Review of Literatures

Initially, various literatures on traditional knowledge especially related to food plants used by the rural Indigenous communities around the world were searched to understand the background information on these aspects on a global scale, as well as within various rural Indigenous communities in Malaysia.

2.1 Global Food Security

Global and Local Food Security intersect, even in remote Indigenous villages in Malaysia where inhabitants may travel large distances to the next larger city to purchase much needed staples. However, global food security is facing a global crisis: our world population continues to grow at an exponential rate and will reach 9 billion by the year 2050 while we are losing biodiversity almost as fast; and the sources of our nutrition come from an ever-decreasing number of species. Now, wheat, maize, and rice provide the calories that feed about 60% of the planet, and only 120 plants make up 90% of all plant nutrition. The typical response is to try to increase the yields of the major crops yet again. By contrast, centers such as the "Crops for the Future Research Centre" at University of Nottingham Malaysia Campus) propose to focus on the about 7,000 other plant species that have been used in agricultural history, and to study these underutilized plants for their potential benefits – plants that may well be growing in your backyards.

Food crises have inflicted various parts of the human world throughout much of its history [2]. What is new, however, is the global spectre that recent warnings of such crises have evoked, with regards to the increasing growth of our world population. The stresses of growing populations and insufficient food supplies have already been felt, and will be felt even more so in the future, in areas such as Sub-Saharan Africa, Pakistan, India, Bangladesh, and South Asia. At this time, Asia already has

twice as much of the world population for the amount of arable land [3]. By mid-century, an additional 900 million people will need to be fed in South Asia alone. As the British Guardian put it, "Too much people, not enough food"[4].

The challenges, as laid out by Dr. Thompson [3], international agricultural researcher and Senior Fellow at the Chicago Council on Global Affairs, are formidable and multifold. The questions include whether we will be able to maintain the security, quality, nutrition, and distribution of food. Since the availability of new arable lands is dwindling rapidly, and environments are under threat (e.g., cutting down of forests, loss of biodiversity and wildlife habitats), and climate change has begun to affect the world, current food production can only be increased through achieving better yields, and food distribution needs to be improved through more comprehensive trade agreements. However, the hopes of developing a global, sustainable, and equitable food system are further complicated as worldwide agribusiness is controlled by a limited number of companies that are driven by global market speculation, commodities futures, profit margins, and shareholder returns [5]. These global economic interests often conflict with individual populations' local concerns and are often hardest felt by the world's rural poor, particularly in developing countries.

The world's Indigenous peoples appear to be affected worst, having already lost their traditional habitats due to colonization, and having been forced to settle and resettle in typically poorly arable areas. In contrast to the instrumental, market-oriented goals of global agricultural businesses and trade, many Indigenous peoples' food practices are informed by complex cultural beliefs and cosmologies. These involve an assumed interdependence between "the land," i.e. local ecologies of plants, crops, wildlife, and other features, and beliefs about personal, social, and environmental health and identity [6-13]. In response to their disenfranchisement, Indigenous peoples have organized, together with local peasant movements, urban-based social movements, and other non-governmental organizations (NGOs), in global grass-roots movements such as La Via Campesina ("peasants' way"; [14]), or its Asian counterpart, "People's Caravan for Food Sovereignty" [10]. These movements have begun to advocate for equitable "food sovereignty" [14], opposing the commodification of food by market forces, and stressing instead a recognition of "the social connections inherent in producing, consuming, and sharing food" [10].

Arguably, one of the most important sources of plant knowledge is in the minds, memories, and backyards of Indigenous peoples. Indigenous peoples have a millenia-old knowledge of food plants [15-17]. However, there is the imminent danger that Indigenous peoples are losing the entirety of this knowledge, due to the economic pressures, agricultural globalization, and dislocation from their traditional lands, in Southeast Asia's newly industrializing countries. Building on this research, the present study will be reporting in its second part on efforts in Malaysia to document and preserve this traditional knowledge and identifying barriers and facilitators (e.g. role of knowledge keepers) toward preserving and transferring traditional food and dietary habits across generations.

2.2 Food Plants and Human Affairs

Ethnobotanists Michael Balick [15] have noted that "the relationship between plants and people is profound, affecting nearly every aspect of our lives." Since the beginnings of humankind, "plants have deeply influenced the human condition" (p. 208). Many cultures have been imagining analogies between plant and human lives, even at the level of the body: as 16th-century Julien Offray de La Mettrie suggests as some of many examples, human lungs can be seen as analogous to the leaves of plants (p. 19), and an ovum as a seed that has not yet been pollinated (p. 23). Such close relationships are reflected in our daily language use: we speak of humans "taking root" (or losing them), "branching out," "blossoming," "flourishing," being "deflowered," "ripening," and "withering"; to name one

more example; philosophers Deleuze and Guattari proffer the analogy of human societies as non-hierarchical “rhizomes,” in contrast to the hierarchies suggested by trees, with their roots, trunks, and branches.

Arguably the most important source of plant knowledge and uses are the world’s peasants, smallholders, and Indigenous peoples [15,18]. In studies of Indigenous peoples, the relationships between plants and people, the links between cultivation and consumption, and the uses of plants for different purposes, are more directly observable; Indigenous peoples often have more comprehensive knowledge of sensitive ecosystems; and Indigenous peoples have preserved plant knowledge that Western people have already lost. Thus, as ethnobotanist Michael Balick notes, “Indigenous knowledge systems can guide the development of new crop varieties” [15]. In many places, however, including Malaysia, Indigenous knowledge itself is in danger of being lost, or has already been lost.

Traditional Indigenous knowledge of plants and their uses itself has generally been systematic and empirical. Over many generations, Indigenous peoples - whether they have been (semi)nomadic hunters and gatherers, or farmers, or have become more or less urbanized - have consistently observed and verified the uses and benefits of plants. This knowledge has been handed down through long lines of oral knowledge; recently, bioscientists, botanists, pharmacists, anthropologists, and other researchers have begun to extensively document Indigenous knowledge and uses of plants [15,16,19]. Any knowledge, however, also of plant and crop usages, is cultural; in Western knowledge forms, plants are “extracted” and studied according to bio-botanical science, and plant foods used as mainly instrumental commodities: we are often unconcerned where our (plant) foods have originated from, many of which may have been transported long distances around the world. Indigenous peoples’ knowledge and uses of plants are differentially cultural, often embedded in “connective” understandings of local ecological environments, of each environment’s unique interrelationships between seasonal climate, local flora, and fauna, and of the roles, respect, and responsibilities of humans towards “the land,” including its plants, enacted and embodied in specific cultural practices – where they still exist. For example, as Andaya [20] notes, Malaysian Indigenous Temuan adolescents were able (in the 1970s) to identify several hundred plant species in their environment. A move to another environment would “demand an almost impossible task of relearning a great number of unfamiliar types” [11]. Moreover, the harvesting of plants involves a mastery of cultural practices to facilitate the search and placate the spirits of the plants involved, requiring special forms of communications in the process [11]. Within Indigenous traditions, this plant knowledge and its associated cultural knowledge can be seen to constitute a comprehensive, experiential language of interacting with the environment. Like any language, this ecological language constitutes an organic whole; it does not lend itself to easy extractions, for example, of bio-botanical knowledge. In addition, the relative importance of this language explains the deleterious effects of displacement that become apparent when Indigenous peoples are forced (directly or indirectly) to resettle in other environments: an effect that is not unlike having to learn a new language. Unfortunately, this is a common, even repeated experience in Peninsular Malaysia where Indigenous peoples, having no title to their ancestral lands, are removed to make room for the growing oil palm plantations.

It is accepted knowledge that Indigenous peoples have the broadest and most detailed background in the knowledge and uses of plants, even though this knowledge may have already disappeared in some communities, due to the effects of resettlement. With regard to Malaysia, what has been documented so far in excellent ethnobotanical research, often supported by Malaysian biodiversity institutes and centers, are some of the botanical species and specifics of plants used by some of the local Indigenous peoples, with a focus on plants’ medicinal effects [16]. What is very

poorly understood and has so far not been systematically documented, with regard to Malaysian Indigenous peoples, are their knowledge systems regarding food plants, encompassing the types of plants they gather and/or grow, the uses of these plants, and the social practices, cultural knowledges, and sacred rituals involved in the planting, growing, harvesting, storing, trading, preparation, and consumption of these plants.

Malaysia is listed as harbouring one of the planet's twelve mega-biodiversities. But as cursory explorations of Malaysia's Indigenous peoples show, Indigenous knowledge is indeed in danger of disappearing [11]. Nevertheless, among the peoples who are losing this knowledge, some local experts can still be found who act as "knowledge keepers" – keepers of a botanical and cultural knowledge that may be crucial not only for the survival of Indigenous peoples but that of humanity as a whole. This broader knowledge of plant food and associated culture has so far been kept mostly orally by the local knowledge keepers where it still exists. However, this knowledge is often not handed down anymore. Therefore, it seems crucial to document this knowledge in a systematic, scientific form, both in its botanical and cultural applications, in order to stem both the loss of biodiversity and the loss of plant knowledge that has been seen worldwide, in order to preserve not only Indigenous people's knowledge but the knowledge of our human cultural commons.

Our following lists, collected in part from an interview with noted Indigenous scholar Patrick Nuek, in part from the scholarly literature, provide some of the plants that are commonly gathered or grown and consumed by the Bidayuhs in the Singai area of Sarawak, Borneo, to some extent quite representative of the staples of many of Malaysia's Indigenous peoples:

Wild Plants for food

- a. Pekuh biasa
- b. Pakuh sibok/pakuh singow (can induce plenty of breast milk after child birth)
- c. Tiekas (midin)
- d. Tungguon reis (for ulam)
- e. Dewon singasug (ulam)
- f. Dewon sinke (ulam)
- g. Pigaga (ulam)
- h. Dewon buan (ulam)
- i. Dewon ubi kayu (vegetable)
- j. Ubi kayu (banok)
- k. Biis
- l. Sagu (Sago, substitute for rice during WWII Japanese occupation)
- m. Kuduk bitawi
- n. Tungguon paya
- o. Kangkong piin
- p. Sigomok
- q. Rumut piin paya (ulam)
- r. Tipu kirieng
- s. Tipu Bidayuh
- t. Dewon dedap
- u. Dewon sira`at (daun sabung in Iban)
- v. Nyanyat (growing on newly burnt hill paddy farm land)
- w. Dewon siperuh (ingredient for cooking leafy vegetable in sup, having taste of ajinomoto)
- x. Bamboo shoots (tering, abu, puti, buru kapung)
- y. Palm shoots (coconut, enjok, sagu, parai, nibong dered, kijatau, baai)

- z. Tiung piit (small size round white and green-coloured wild brinjal)

Popular Tuak varieties in Singai (Nuek, personal communication)

- a. Tuak nyuok
- b. Tuak Tepui
- c. Tuak tebuch

Selected Crop plants

- a. ubi kayu (Cassava = Tapioca)
- b. ubi keledak (Sweet potato)
- c. ubi keladi (Cocoyam)
- d. lobak (Radish)
- e. sengkayang (Yam bean)
- f. lobak merah (Carrot)
- g. ubi kemili (Yam)
- h. lada sulah (black pepper)
- i. serai (lemon grass)
- j. cili merah (chili)

Selected Native fruits (e.g., Soepadmo [21])

- a. Durian
- b. Mangosteem
- c. Langsat
- d. Duku
- e. Dokong
- f. Rambutan
- g. Pulasan
- h. Cempedak (Jack fruit)
- i. Salak

There are also lots of introduced fruits (e.g., water melons, pineapples) and cash crops: e.g., rubber, and oil palm.

2.3 Indigenous Food Knowledge and Cultural Identity in Malaysia

As noted earlier, for most Indigenous populations in Malaysia, the world has been understood as being filled with spirits, each life form inhabiting its own spirit, down to each leaf of grass. Humans cannot know the totality of all the spirits, nor plant spirits, but used to know the spirits of the plants that they consume (Nuek, personal communication). Among the Kelabit of Borneo, the forest and the plants growing in it - independent of human control - are home to a family of spirits originating from *lalud*, a powerful life force, coming from a Creator Deity; from this “wild” area later developed the farmed areas and crops that grow under human control, especially rice, belonging to a spirit family and life force, *ulun*, that is associated with, and in part even created by, human [22, p. 40]. However, rice meals would typically be eaten together with forest “wild” plants so that the life forces of *lalud* and *ulun* would complement another [22]. Traditionally, Indigenous peoples were able to identify thousands of plants in their environment [20], and the lists below includes only a small selection of wild food plants common among Western Borneo’s Bidayuh. Crops, on the other hand,

include the many members of the tuber family, native fruits, and introduced crops (including cash crops such as rubber and oil palms) and fruits (water melons, pineapples).

Rice stands out among the many plants and, in the following, we would like to touch very superficially on some of the cultural knowledge, social practices, and sacred rituals associated with rice. As Jensen [23] notes, for the Borneo Iban, rice is at the very core of existence and to be treated with utmost reverence and respect; in fact, it is imagined to have human sensitivities like a human soul, its spirit soul being like the human soul; small grains being like children (p. 163); and, after death, humans becoming absorbed into rice (p. 162). It is forbidden to offend the feelings of rice, nor to kick, strike, beat, or break rice except in the sacred acts of reaping, treading out the ears, threshing or milling (p. 162). Every step of the cultivation of rice is accompanied by rituals, from consulting dreams in the selection of a new field to grow rice, to sacrificial offerings before harvest (p. 163), prescribed ways of harvesting rice (to be cut at a certain angle only; Dowell, personal communication), offering a sampling of the newly reaped rice to dogs in case it might be tainted by evil spirits [23, p. 163], to enjoying the very first dinner made from the new crop of rice, and opening a “sacramental season when every action was imbued with religious awareness, abiding veneration for the rice spirit and faith that rice would prove generous in return”.

Similarly, Nuek [24] emphasizes that, among the Bidayuh people, the importance of rice cannot be overstated. Here, too, rice is treated with respect, “as if it had a life and soul”; leftover rice could not be simply tossed away, for example, thrown through a door or window (as could be done with fruit) (p. 9). Rather, leftover grains of rice had to be dropped carefully through the floor planks so that rice would not feel shocked, fearing separation from the farmer’s family – which might lead to a poorer harvest the next year. As Bidayuh Shaman scholar Boniface Dowell notes, in an interview with us, rice is not believed to grow without performing a complex rite. Certain altars need to be made, stacked with eight sacrifices (“sadis”), not seven, since that would be inviting demons (though not all demons are bad). Then the spirits, spiritually called “fertilizers”, are invited, “Please come down to help us with the planting season.” The altar is aligned east west; meanwhile groups of women Elders are sitting on a swing all day, facing north, chanting songs to appease the spirits (four are on the swing, taking turns with four others who are resting). All these rites are just examples of a complex system, and we have so far only mentioned rice; much more could be said about rice, and all the other plant spirits.

Following is an excerpt of one chant, related by Shaman scholar Boniface Dowell to us, that serves to appease the spirits and seek an auspicious season:

Paem Pi Gunyed from Kg. Segong Bau (oran Puot),1966
Takar nyaa nai sipotih (Dayung de Boris sija)

*Altar facing the east and west erected (position of the sun)
Followed by various recitals, including seeking permission, clearing all obstacles and obstructions, get rid of pests, mending the broken and integrate them, not casting bad omens*

Dah murah dah jadi
Dah kosang dah tanduk
Rawan batak tu nyaa tu rattus
Takar bikaban dah ku rumak bakat
Mo sinung mun bukut kanoh rabak
Kanoh tripang pungu
Distiun di dadoh

(Pari pisen sangar eh duoh pisen tajur togug eh)
*recital, 2 communication lines pointing to east and west
now the last demon leaves and #8 comes in, the good spirit*

1, 2, 3, 4, 5, 6, 7, duoh 8
pisen tajur togug ku
ngan ku kadi umang, kadi sosah, kadi susah
kadi saat, kadi kurat, kadi tikiyung
dah motas dah buu dah tirigien dah tikiod
ke torok ke puran
topat dasan eh . . .

(pisen bauh)

Translation:
I hope you reproduce in abundance
You spread more branches and more fruits
For all the crowd so that you have enough
When you have lots of children you will last forever, you produce a lot more

*Recital, 2 communication lines pointing to east and west
now the last demon leaves and #8 comes in, the good spirit*

*good blessing, good health, good life (turn to east)
and repeat (turn to west)*

There are many ways of eating rice, but one stands out: romang. Here, glutinous rice is mixed with coconut milk, wrapped in a banana leaf, filled into a bamboo stem, and brought to a boil over a fire. Once cooked, the banana leaf and rice are extracted from the bamboo stem and cut into pieces like large sushi.

These are some of the data drawn from our literature review and our ethnographic-style interviews with Indigenous scholars Patrick Nuek and Boniface Dowel, providing us with a broad cultural background for our interview study with some of Malaysia's Indigenous peoples about their evidence of local changes in culture and identity, related to local changes in their flora, particularly their food plants, and their knowledge of their food plants.

Part 2: Some Local Indigenous Practices

3. Some of our Study Sites

Malaysia consists of 13 states and three federal territories separated by the South China Sea into two similarly sized regions, Peninsular Malaysia and Malaysian Borneo (states of Sarawak and Sabah). It has a multi-ethnic, multicultural, and multilingual society. About 22.6 million population out of

28.33 million (2010 census) are living on the Peninsula. Malays¹ make up 50.4% while other *Indigenous bumiputera*² constitute another 11%. Those of Chinese descent comprise

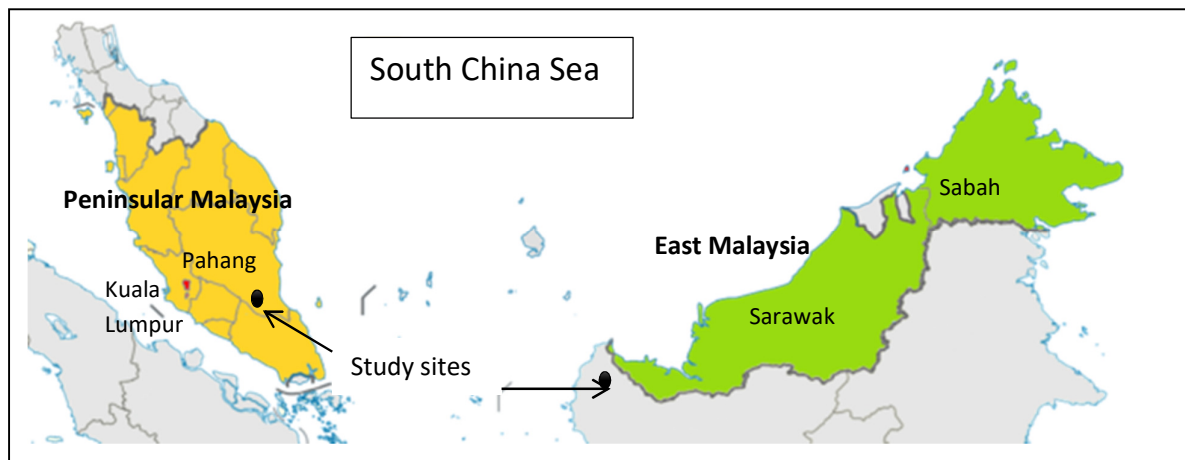


Fig. 1. Map of Malaysia showing the Study sites in Pahang (Peninsular) and Sarawak (East Malaysia)

23.7%, and people with Indian ancestry amount to 7.1%. The peninsular aboriginal groups comprise 18 tribes, collectively referred to as “Orang Asli” – but make up only 140,000 persons (0.5%). The ethnic distributions are quite different in East Malaysia; of its roughly 5 to 7% millions inhabitants, 50% are Indigenous in Sarawak and 60% in Sabah.

Malaysia’s original culture including diet of the area stems from Indigenous tribes that inhabited it, along with the Malays. Since the early days of seafaring trade, substantial influence exists from Chinese and Indian cultures as well as other cultural influences which include the Persian, Arabic, Portuguese, Dutch, and British. With regard to our research, Malaysia is famed for its biodiversity, including an abundance of forests and rainforests – although most of the latter have been logged so as to clear the lands for oil palm plantations. Habitat destruction has adversely Malaysia’s flora and fauna. In the following we will review the relative importance of Malaysian flora, especially its food plants Sarawak is one of two Malaysian states on the island of Borneo, the other is Sabah. In general, it has seven major ethnic groups namely Iban, Chinese, Malay, Bidayuh³, Melanau, Orang Ulu⁴, and “others” forming more than 40 sub-ethnic groups, each with its own distinct language, culture and lifestyle

3.1 Data Collection

The study, part of a building study, was undertaken in two groups of Indigenous rural communities, in Peninsula Malaysia’s Western states and in Eastern Malaysia. Since our interviews touch in part on the conditions of Indigenous peoples, and since these conditions can be quite

¹ According to constitutional definition, Malays are Muslims who practice Malay customs and culture. They play a dominant role politically.

² *Bumiputera* status is also accorded to certain non-Malay Indigenous peoples, including ethnic Thais, Khmers, Chams and the natives of Sabah and Sarawak. The Indigenous tribes are the oldest inhabitants of Malaysia. They account for about 5 percent of the total population, and represent a majority in East Malaysia of Sabah and Sarawak

³ In Sarawak, the dominant tribal groups are the Dayaks, who are either Iban, Bidayuh, or Orang Ulu. The Iban form the largest of all Indigenous groups, numbering over 600,000 (30% of Sarawak’s population). The Bidayuhs, numbering around 170,000, are concentrated in the southwestern part of Sarawak. They, together with other Indigenous groups in Sarawak make up over half of the state’s population

⁴ Orang Ulu is a term coined officially by the government to identify several ethnics and sub-ethnics who live mostly at the upriver and uphill areas of Sarawak. Most of them live in the district of Baram, Miri, Belaga, Limbang, and Lawas. The various Orang Ulu ethnics together make up roughly 6% of Sarawak’s population. Some of the major tribes making up the Orang Ulu group include: Kenyah, Kayan, Lun Bawang, Kelabit, Penan, and Bisaya

precarious in Peninsula Malaysia with its traditional system of agents of the State overseeing Indigenous affairs even at local levels of communities, we are held to protect the identity of participants and have removed the names of villages, informants, and Elders. In Eastern Malaysia, the lives of Indigenous peoples are less regulated and interviews were granted much more easily. In any case, all interviews were covered by ethics protocols. The interviews were ethnographic-style as used in Indigenous research [25], based on interview guides that allowed for semi-structured interviews with open-ended questions, documented by digital recorder, photography of plants for documentation purposes, all aided by interpreters that were familiar with and trusted by the participants and/or communities visited. In our analyses of the interviews, we were guided by thematic data analytic methods such as Kohler-Riessman [26].

In Sarawak State, initial data were obtained from the Bau-Jagoi Bidayuh⁵ communities within the Bau District, located in the westernmost part of the state (Map 1).

In Bau District, there are 78 Bidayuh villages. These villages can be broadly grouped into five clusters namely Serumbu, Krokong, Jagoi, Bratak, and Singai. In each village, 10 household heads were randomly picked whereby interviews were undertaken. Questions asked revolved on their knowledge of food plants, first with just naming plants that are edible such as foliage/leaves, flowers, pulp/hearts, twigs/stems, fruits/nuts, barks, and roots/tubers taken directly for food as vegetables, food additives or enhancers etc. Then the frequency of consuming food plants, composition of their dishes, and the like. Observations on the food plants planted in the informants' home gardens and farms.

3.2 Ongoing work in peninsular and east Malaysia (Sarawak)

In the following, we would now like to report from our ongoing work in Peninsular and Sarawak, located in Malaysian Borneo. For historical, religious, and cultural reasons, the conditions for Indigenous peoples are quite different in the two parts. As noted earlier, In Malaysia, Indigenous peoples make up less than one percent of the population; in East Malaysia (states of Sarawak and Sabah) they form about 50% or even more of the population.

3.2.1 Change and continuity in Peninsula Malaysia: Loss of traditional plant knowledge

The situation in one Indigenous community in Western Malaysia is quite representative for the rampant loss of cultural and plant knowledge occurring in the peninsular region. The community, close to the ocean, has seen much change within the last decade as Malaysia's expanding oil palm plantation cultures have fully enclosed this community, right to the inhabitants' huts. Oil palms require much fertilizer and pesticides to grow well. Therefore, traditional hunting, fishing, gathering, and growing foods outside of the immediate village is no longer possible and even discouraged by local authorities, given the exorbitant pollution of the grounds and water. Some of the inhabitants still grow some plants within the village for food consumption but the collection of traditional plants outside the village has become impossible. Since the knowledge of traditional plants has been conveyed in an oral manner and not written down, the knowledge of these plants has been

⁵ The Bidayus represented 8% of Sarawak's population of 2.4 million (2010 Census) with villages in the rural areas of Lundu, Bau, Padawan, Penrissen, and Serian districts; mainly in the basin of the Sarawak River and hilly to mountainous forest, traditionally worked by rotational agriculture- and hunting-based around farms populated from parent villages situated on the hills for protection. Today, almost all villages are connected by roads and there is some plantation agriculture and a reduced emphasis on the growing of hill-rice. They are also exposed to modernity including educational and health facilities.

disappearing. Instead, the young people of the village have taken up work as day laborers in factories on the mainland. Here they come into contact with young people from some of Malaysia's other ethnicities, where many are introduced to drinking and drugs, buying mopeds, and becoming involved in accidents. We inquired with the local medicine man, who at the time also was the community's headman, about the relative importance of traditional knowledge and practices, including plant knowledge, in an obvious context of rapid cultural and personal change. He noted that he would be the last one with traditional knowledge in this community and that there would be no one for him to pass his knowledge as medicine man on to. He lamented that more than half of the community's young men drink beyond acceptable levels and even those who drink on a more socially acceptable level could not be entrusted with the emotional balance, mental stability, and ethical foundation to carry out traditional Indigenous medicine. For when not applied carefully, traditional medicines can seriously harm. When we pointed out seemingly similar difficulties among Canada's Indigenous peoples, he showed himself well-informed, pointing out that, despite all their difficulties, Canada's Indigenous peoples have formed political organizations that raise their voice in negotiations with the Canadian government. He noted that there was no future for Indigenous peoples in Peninsula Malaysia, given its complex religious, ethnic, and political circumstances, except assimilation into mainstream society.

At many other villages visited across Peninsula Malaysia, we found that traditional knowledge had all but disappeared. Often, our questions were received with the outcry that we should have come, for example, eight years ago as by now, all elders with knowledge had died. Generally, when inquired about traditional stories, only their first lines were remembered if at all. Peninsula Malaysia's Indigenous young people find themselves in a difficult situation. They often can attend the first six grade of school, living in boarding schools if their communities are too remote, or being bussed in to the local schools in the vicinity. However, it is much more difficult for them to attend higher schools or university.

While schooling provides them with a basis to become assimilated into Malaysian mainstream society, sixth grade alone cannot secure them any jobs beyond day labor work. Having come into contact with the western epistemology of Malaysia's school system, they find themselves at odds with their traditional Indigenous epistemologies – epistemologies that traditionally had been handed down orally. No longer persuaded by the authority of traditional knowledge, but not able to gain an education sufficient to find a future in Peninsula Malaysia's mainstream society, these young people seem to have nowhere to go.

They find themselves swept away in the maelstrom of Malaysia's rapid industrialization, with no traditional knowledge to hold on to. Change is all-pervasive, continuity hardly existing anymore. Recently, growing rubber has become attractive again, is being grown as individual plants or in small plantations, and has become an avenue to earn money, and buy some of the amenities of mainstream life. In many villages, the hope is expressed that schooling may provide young Indigenous peoples with a better life – a life assimilated into Malaysia's mainstream. Assimilation of its Indigenous peoples is Peninsula Malaysia's explicit goal – the seeming benefits, however, betrayed by the difficulties of many young Indigenous peoples to negotiate the limelight of the big cities.

One more aspect complicates the problematic transition of Peninsular Malaysia's Indigenous population: They have no titles to their lands and when they are removed or relocated from their traditional lands, to make room for another oil palm plantation, they often find themselves in different environments, having to learn the language of their new local ecology, plants, and animals. For this knowledge is like a language: For example, having grown up on their traditional lands, young Indigenous peoples in Peninsula Malaysia's Pahang state used to be able to identify thousands of plants, including all the associated social practices, cultural knowledge, and sacred rituals that used

to go hand in hand with the knowledge, growing, harvesting, preparation, and eating of plant foods. For Malaysia's Indigenous peoples, plants used to be not only botanical or agricultural resources of nutrients, but a systematic Indigenous registry of ecological knowledge and practices. Once you are removed from your traditional lands and resettled into a different environment, it is like learning a new language, the language of your new ecology. But how many new languages can you learn? And competently pass on? In Peninsula Malaysia, the odds for preserving any cultural continuity in a context of change, resettlement and encroaching industrialization on traditional lands, are dim at best.

For a number of historical reasons, the situation is quite different in Eastern Malaysia, in the two states of Sarawak and Sabah in the north of Borneo. Here, cultural and historical changes have also occurred, but spread out not just over the last one or two generations, but over the last 150 years.

3.2.2 Change and continuity in Malaysian Borneo: Sample communities (Bidayuh, Sarawak, Borneo): Documenting traditional plant knowledge in the midst of change

Bau District, in the State of Sarawak, has 7,800 households coming from 78 villages which generally be grouped regionally in five Bidayuh communities namely Krokong, Bratak, Jagoi, Serumbu, and Singai with. Composition of food plants in the Bidayuh's diet and traditional knowledge in Bau District is part of the multidisciplinary studies in all Bidayuh communities except for Krokong had just started some six months ago. However, data on Krokong Community by Biluh [27] are frequently referred for comparison and substantiate findings from our present study.

So far, only 44 households from five villages in the Serumbu community have been surveyed. Initial result shows that there are changes in the composition of food plants in the Bidayuh's dishes from 60 to 70% some 50 years ago [27] to almost half. The sources of the plant food had also changed: previously they were directly obtained from the forest to presently either bought from stalls or cultivated in farms and home gardens.

The study also revealed that traditional knowledge on plants and their uses were passed down orally from their forefathers, very much similar to other cultural and social knowledge such as rituals, foraging, fishing, hunting, folklores, dances and music. In these areas, the medicine men were mainly composed of those above 70 years. They mentioned that they acquire the knowledge by following their grandfathers into the forest gathering various non-timber products including food and medicinal plants they encountered. None of these encounters, however, was preserved in any form of documentation especially in writing. Neither was there any written record made on the preparation of the plants for food nor for medicinal purposes. With the absence of documentation, the transferring of this knowledge depend on the memory of not only those youths who followed their grandparents during the trips but how well those elders can remember the species themselves. There are various reasons as to why younger ones lacked this knowledge.

Among the reasons are lacking time and opportunity to follow foraging trips into the forest while dropouts were either not keen to learn as it entails roaming the forest which are tedious and strenuous work with little income. Others feared being labeled as outdated apart from the difficulties in memorizing names of those resources and locations where they were found. Reasons that various food (cultivated / domesticated and manufactured) are readily available in nearby shops and stores, and thus no necessity for foraging was the most common answer. Some mentioned that the sources are depleting caused by logging followed extensive agricultural developments. Similar reasons for medicine as clinics which provide medical care just within easy reach while counter medicines are relatively cheap and packaged and thus need no preparation. Only a few common plants were domesticated.

Such situations are not isolated among the Bidayuhs as shown in experiences with other Indigenous ethnic groups in rural Sarawak where more use of the forest resources will be expected [28]: the Berawan and Penan subtribes of the Orang Ulu in the middle Baram River basin [29-30] as well as Penan and Kenyah communities, sub-tribes of the Orang Ulu in the upper Baram River Basin. Although we observed that the composition of plant food or jungle-source food in the Orang Ulu's diet (30 - 50%) seem to be higher than the Bidayuhs (25 - 40%), similar situations in terms of medicine men's age, reasons for lack of traditional knowledge among youths were encountered.

With the current trend of diminishing traditional knowledge among the communities especially the youths, it is likely that this knowledge will also fade out when the present elderly medicine men are gone. The present projects in the four Bidayuh communities are some of the efforts to slow down this loss. Similar efforts were being undertaken by some institutions such as the Sarawak Biodiversity Center [28].

4. Conclusion

Our building studies in both peninsular and eastern Malaysia are showing dramatic losses of cultural knowledge, also with regard to plant food knowledge and food culture, in just a few generations. This insight is not new; Christensen has made the same observations as well [16].

With absence of traditional knowledge documentation, such knowledge is eroding very fast among them with very few acquiring it. Percentages of plant-based food are much less in their dishes compared to olden days, and the percentage seem to increase with shorter distant to access. The same trend is also found with cures for ailments: medicines for common sicknesses such as headaches, stomachache, and fever are obtained from shops and clinics.

The communities lament the fear that these losses of such knowledge can cause losses of their culture among the younger generations. Modernity such as easier access to food and medical supplies, lack of time for foraging as youths are busy with pursuits for education or paid jobs, and so forth seem to be the main reasons for the losses in traditional knowledge although logging and extensive agricultural development are sometimes blamed for lack of sources of these resources.

For some, these developments can be seen as reason for grave concern as in other countries such cultural losses among Indigenous peoples have led to all kinds of social ills, including drinking and drug abuse, poor health, and increased suicide. Others, however, argue that the loss of traditional knowledge has reduced beliefs in superstition and might help Malaysia's Indigenous peoples become assimilated into "modern" society. Indeed, as we have learned from our interviews, many of the youth and young adults struggle how to situate themselves between the different knowledge systems they are being exposed to, that is, between their traditional Indigenous knowledge, and the Western-style knowledge promoted in a country's schools.

5. Recommendations

Malaysia is listed as harbouring one of the planet's twelve mega-biodiversities. But as cursory explorations of Malaysia's indigenous peoples show, indigenous knowledge is indeed in danger of disappearing [11]. Nevertheless, some local experts can still be found who act as "knowledge keepers" so far been kept mostly orally still exists. However, this knowledge is often not handed down anymore. Therefore, it seems crucial to document this knowledge in a systematic, scientific form, both in its botanical and cultural applications, in order to stem both the loss of biodiversity and the loss of plant knowledge that has been seen worldwide, in order to preserve not only Indigenous people's knowledge but the knowledge of our human cultural commons.

Even while the present study is on-going, it is recommended that a more detail ethnographical/botanical study covering a few select communities in Sarawak be undertaken to understand these issues better, to document the uses and knowledge of Indigenous food plants in local environments, as well as the local knowledge about nutritious values of these food plants. Thus, we hope to carry out these future aims in our building study:

In the participating communities, to document and understand the cultural, social, and sacred knowledge associated with Indigenous food plants.

To document and understand current plant food transitions and concomitant cultural transitions in the lives of these communities, relative to the diminishing means of preserving a sense of cultural continuity.

All of these goals lead to two main goals, understanding the lives and cultures of our Indigenous peoples, and to translate plant knowledge between Indigenous and Western knowledge systems so that we can exchange knowledge and best practices to ensure our future food security.

Overall, these objectives are hoped to help identify barriers and facilitators (e.g., role of knowledge keepers) towards preserving and transferring traditional food and dietary habits across generations and different cultures. Consequently, better approaches can be undertaken not only to slow down the erosion of the knowledge but to increase it amidst the vast amount of biodiversity within our forest.

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