WAY OF THE ELDERS

CONSERVING INDIGENOUS HEALING KNOWLEDGE AND MEDICINAL PLANTS

AN ACTION RESEARCH

CONDUCTED IN

BANG SHAU VILLAGE

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SAI SAM HKAM

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ABSTRACT

Myanmar is a country rich in biodiversity and culture. From the snow-capped mountains of the north to the tropical coral islands of the Andaman sea to the South, it harbours diverse ecoregions, flora and fauna. Culturally, Myanmar's 138 different ethnic groups possess colourful cultures and languages. Strategically bridged between politically and culturally powerful nations – China and India, Myanmar is enriched by these two civilisations while maintaining its own unique identity. At present, Myanmar is is in the process of political transition. Myanmar is not an exception to the manipulative forces of economic globalisation, as manifested by the demand for natural resources from China and other neighbouring countries and the construction of massive hydropower and natural gas pipeline projects.

This study looks at the conservation situation of the healing knowledge of the people of Bang Shau Village, in the Northern Shan State of Myanmar, taking into account transfer of this knowledge between generations and the medicinal plants themselves. Following the tradition of action research, this study questions the power dynamics and tries to find ways to empower collective community action.

This study outlines;

1. the situation of knowledge transfer from the older to the younger generation,
2. the situation of medicinal plants - collected both for export to China and for domestic use,
3. the participatory community action plan to ensure the survival and sustainability of medicinal plants and the healing wisdom.
4. a summary of the widely used medicinal plants for common diseases

This study highlights the need to analyse how the discourse of conservation is constructed, not simply to focus on what activities we are going to do for conservation or copy the policy and actions of advanced countries. This study encourages policy and decision-makers to seriously consider inclusion processes in policy making and implementation, and to look at the relations and linkages bewtween health, education and social issues such as poverty and its alleviation.

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CHAPTER 1

INTRODUCTION

1.1 Myanmar and Her Hill People

Myanmar, formally known as Burma is the largest of the Southeast Asian countries. Myanmar is bordered by Laos and Thailand to the east, China to the northeast, India to the northwest, Bangladesh to the west, the Bay of Bengal to the southwest and the Andaman Sea to the south. The total area of Myanmar is 261,218 square miles, stretching 1,295 miles from north to south and 575 miles from east to west. Lower Myanmar comprises the Irrawaddy delta and the coastal regions of the Bay of Bengal and the Andaman Sea. The Upper Myanmar consists of the Irrawaddy and Salween basin, the central arid zone and the mountainous regions - foothills of the Himalaya. Mount Hkakabo Razi (19,295 feet), the highest peak in Southeast Asia, rises in the very northern tip of Myanmar.

The Irrawaddy, Salween, Chindwin and Sittang are major rivers that have shaped Myanmar civilization. The Irrawaddy and the Salween are snow-fed rivers born from the glaciers of Himalaya: both flow from north to south into the Bay of Bengal. The Irrawaddy (1,300 miles) is vital to rice-based agriculture and fishery and it creates an extensive fertile delta known as the "rice bowl of Myanmar". The Salween (1,740 miles) emerges from the Tibet Autonomous Region in China, where it is called Nu Jiang, and flows through mountainous Shan Plateau to join the Andaman Sea.

Like the climate of other Southeast Asian or South Asian countries, Myanmar climate follows a monsoon pattern. Consequently, Myanmar enjoys three seasons: hot and dry (March-May), hot and wet (June-October), warm and dry (November-February). Generally, the hilly northern, northeastern and northwestern part of Myanmar enjoy climate with milder temperatures and reasonable rainfall, whereas central Myanmar is hotter and drier and lower Myanmar is hotter with more rain. Myanmar has 49% forest cover[1], with such vegetation types as alpine, subalpine and montane forest in the places

[1] FAO (2007). "*State of the world's forests 2007".* FAO, Italy.

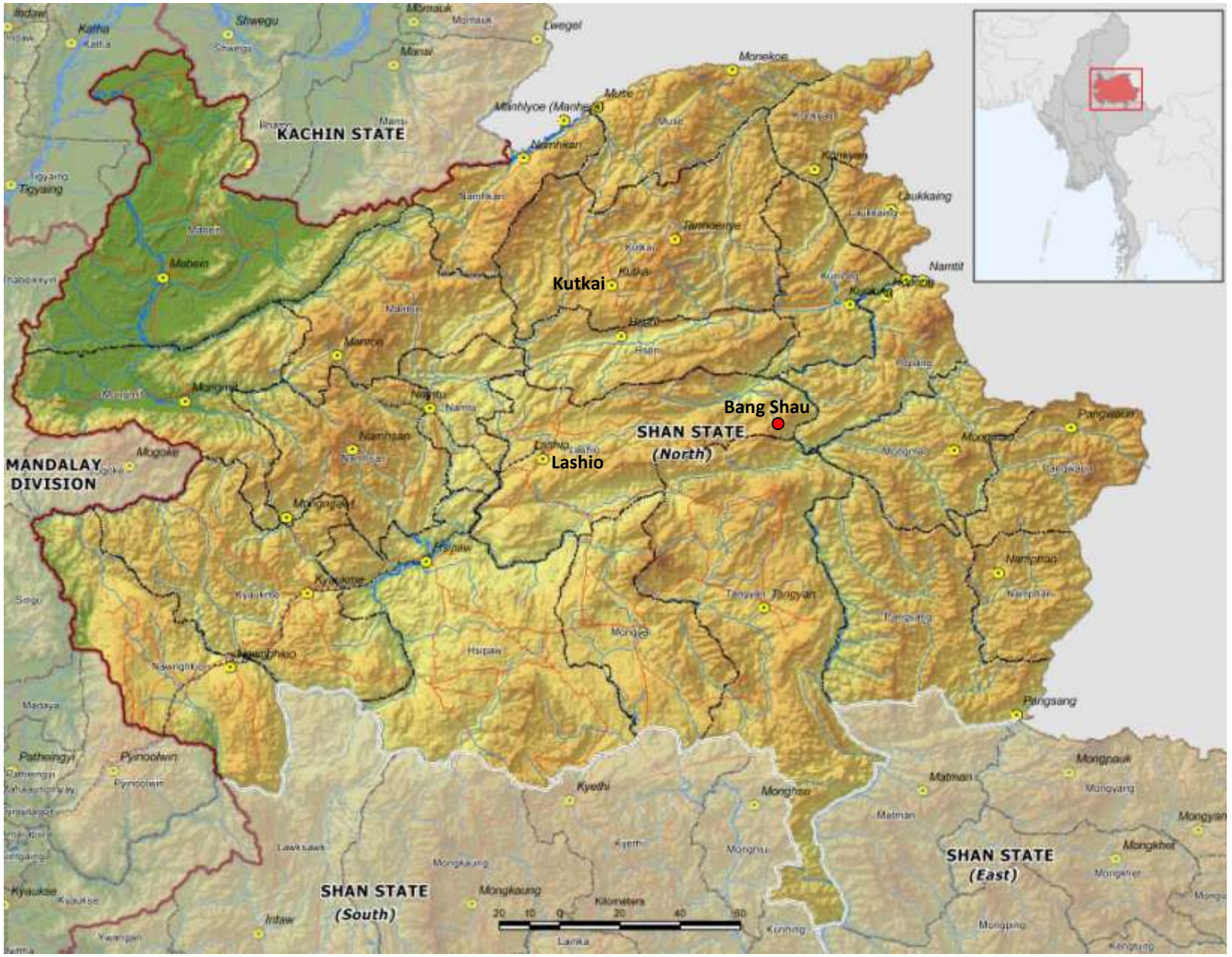

Figure 1.1: Map of Northern Shan, Myanmar . (Map credit: Myanmar Information Management Unit, 2009)

with higher altitude, evergreen mountain forest, mixed deciduous, deciduous, tropical evergreen, savanna and coastal mangrove forests. Myanmar's biodiversity is enriched by the Indo-Himalaya, Sino-Himalaya and Malayan flora and fauna. The principle species of the animal kingdom include Asian Elephant *Elephas maximus*, Asian One-horned Rhinoceros *Rhinoceros sondaicus,* Indochina Tiger *Panthera tigris,* Irrawaddy Dolphin *Orcaella brevirostris,* Pink-headed Duck *Rhodonessa caryophyllacea,* Gurney's Pitta *Pitta gurneyi,* Siamese Crocodile *Crocodylus siamensis,* Burmese Star Tortoise *Geochelone platynota,* etc.[2]. The status of critically endangered or endangered species of the plant kingdom is very little known or studied. Nevertheless, many important native species including timber producing plants such as teak, *Tectona grandis,* Rosewood, *Dalbergia oliveri,* many species of Dipterocarps and a range of medicinal plants are now overexploited to critical extent.

According to 2007 estimates, the Myanmar population is about 49.1 million[3] . The population is divided across the administrative 7 States and 7 Divisions; where the majority of the population in the Divisions are ethnic Burman (68% of the total population), whilst other ethnic minorities like the Shan, Karen, Mon, etc. make up the majority of the population in the States. Myanmar is home to 135 ethnic races that speak distinct languages and have their own unique cultures. Most of these ethnic groups reside in the mountainous regions and borders and are known to the Burman majority as "Taung Por Tha"- Hill People. Centuries of isolation in hilly terrain characterised by difficulties in transport and communication have helped forge a unique indigenous wisdom among the different groups of hill people. This knowledge has served them well in the struggle to survive against all odds throughout the time recorded in oral history. It has become an invaluable resource for resilience and living sustainably. These 'children of nature' hold special knowledge about the language of nature and the healing properties of plants. Throughout the length and breadth of Myanmar, the hill peoples are renowned for their traditional herbal medicines.

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[2] Birdlife International, (2005). "*Myanmar: Investment opportunities in biodiversity conservation".* Birdlife International, UK.

[3] UNDP (2009). "*Human Development Report 2009".* New York, UNDP.

1.2 Myanmar Flora

From the temperate Himalayan foothills of the north to the tropical Andaman Sea of the south, Myanmar is host to a diversity of ecoregions. Myanmar's diverse flora thrives in the many unique niches, ranging from alpine vegetation to tropical rain forest. Myanmar has been known for her Teak forests since British colonial times and still harbours remnants of the once splendid South and Southeast Asian Teak forests.

Indeed, if we look at history, Myanmar has her fate sealed with her plants. She fell as one of the many victims of British botanical imperialism. The first Anglo-Burmese war (1824-1826), when the British invaded and colonized lower Burma, was fuelled by the dispute with the Bombay-Burmah Trading Corporation over teak logging concessions. The ambitious British scheme to monopolize rice, timber and mineral resources, disguised by political pretext lead to the second Anglo-Burmese war in 1852, followed by British occupation of upper Burma. For almost a century, as a colony of the British Empire, Myanmar contributed her riches to the accumulation of Great Britain's wealth. In their book, "An Empire of Plants: people and plants that changed the world", the author Will and Toby Musgrave wrote,

"*… plants have dominated trade between countries for centuries. They sustained the power and influence of empires from the Mediterranean to Asia and the Far East, and were integral to the colonial expansion of Europe in the last 300 years. … Profit was the engine that drove European powers beyond their own shores, and crops such as tea, cotton, sugar, rubber and tobacco changed the destinies of regions where they were grown. As territorial claims were established, plant products also became a focus for tensions between the mother country and increasingly restive settlers, challenging their traditional relationship and the tariffs and controls through which it was expressed* [4]"

This commercial ambition lead to the making of generations of famous plant hunters, allbeit some with more focus on garden plants. Though seen as legendary successes at the time, such attempts as Robert Fortune's famous smuggling of tea from China and

[4] Musgrave W. and Musgrave T. (2000). "*An Empire of Plants: people and plants that changed the world".* Cassell & Co, UK.

Robert Spruce's illegal collection of cinchona from Ecuador[5] might nowadays be regarded as biopiracy. Like India and Malaysia, Myanmar became an extensive farm of the British Empire and plantations of Cinchona, Tang Oil Tree, Tea etc. were established.

Being treated as part of British-India, the flora of Myanmar has been extensively collected and recorded by British botanists and plantsmen, among them perhaps the most famous of them all, Sir Joseph Dalton Hooker, .author of the renowned seven-volume "Flora of British-India".

Advanced trade and exploration enabled a massive introduction of exotic culture and glamorous plants from foreign lands. Exotic plants of especially alluring and mysterious beauty captured the hearts of Europeans to the extreme as exhibited in orchidmania and tulipmania. During the Victorian and Edwardian era, many explorations into the forests of Myanmar were made. These explorations were propelled by commercial interest and increasing demand from the Europeans' frenzied love affair with exotic plants. A vast array of plants were introduced from Myanmar including the orchids, primroses and rhododendrons which now adorn English gardens.

The renowned British plant hunter and naturalist Frank Kingdon-ward called Myanmar a "Plant Hunter's Paradise". Over many years, he extensively explored and collected plants in the Himalaya: Assam and Manipur in India, Sichuan in China, Kachin and Chin State in northern Myanmar. He wrote many books about his experience as a plant hunter in Myanmar including "Burma's Icy Mountain" and "Return to the Irrawaddy". Despite his season-long onsite-stationed collections, Myanmar flora did not ceased to surprise him. In the preface of his book "Burma's Icy Mountain", he asserted,

"*... to the modern scientific explorer it is virtually unexplored and what we already know of its fauna and flora is only enough to tantalize us about what remains to be revealed.*
In particular, we know very little indeed of its flora, beyond the bare fact that it is one of the richest regions of its size in south-east Asia, if not in the world.
Although I have made four major expeditions into the mountains at the sources of the Irrawaddy, I am fully conscious that I have only skimmed the surface of the flora[6]*."*

[5] Musgrave W. and Musgrave T. (2000). "*An Empire of Plants: people and plants that changed the world".* Cassell & Co, UK.

The first list of Myanmar angiosperms and gymnosperms was published by by H. G. Hundley and U Chit Ko Ko in 1961. 42 years passed before this list was checked, updated and republished in 2003 by the "Botanical Exploration in Myanmar Project", supported by the Smithsonian Institute This was the result of a 7 year collaboration involving the US National Herbarium, Yangon University and Myanmar Forestry Department. Although this effort achieved wonderful results, we should not allow ourselves to conclude that the complete list of Myanmar plant species has been done.

1.3 Biodiversity Conservation

Myanmar's rich biodiversity is under constant threat from overexploitation driven by global market forces. Conservation International IUCN has defined 25 biodiversity hotspots which are home to highly endemic species but likely to lose more than 70% of their habitats. Myanmar has been included in two hotspots: The South-west China Hotspot - covering temperate and alpine ecoregions; and The Indo-Burma Hotspot - covering tropical Asia. The flora and fauna of the Indo-Burma hotspot are not fully documented and new species continue to be discovered[7]. Kingdon-Ward's insightful prediction, made 61 years ago, has proved to be true. Myanmar and other countries around Eastern Himalaya have been confirmed as treasure troves of biodiversity: no less than an inspiring 353 new species were discovered between 1998 to 2008[8]. The discoveries include 2 mammals, 2 birds, 14 fishes, 16 reptiles, 16 amphibians, 61 invertebrates and 242 plants. One of the most amazing discoveries must surely be the Leaf Dear (*Muntiacus putaoensis*), the world's smallest deer species standing just 2 feet tall and weighing just 11kg, found in Northern Myanmar. Other interesting new species from Myanmar include the Naung Mung scimitar-babbler (*Jabouilleia naungmungensis*), the emerald green pitviper (*Trimeresurus gumprechti*), Zaw's wolf snake (*Lycodon* zawi) and a 100 million year old gecko (*Cretaceogekko burmae*) preserved in amber.

In recognition of the significance of ecoregions for conservation of global biodiversity, WWF produce a list of ecosystems called Global 200. Of the Global 200, Myanmar entirely or partially harbours the following ecoregions:

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[6] Kingdon-Ward F. (1949). "*Burma's Icy Mountain"*. Jonathan Cape, UK.

[7] Marinelli J. Edt. (2004). "*Plant"*. Dorling Kindersley Limited, UK.

[8] Thompson C. (2009). "*New Species Discoveries: Eastern Himalaya- Where worlds collide".* WWF.

1. Northern Indochina Subtropical Moist Forests,
2. Kayah-Karen/ Tenassserim Moist Forests,
3. Naga-Manipuri-Chin Hills Moist Forests,
4. Eastern Himalayan Broadleaf and Conifer Forests,
5. Eastern Himalayan Alpine Meadows,
6. Mekong River,
7. Salween River,
8. Lake Inle[9].

The economic growth of countries like China, India and Thailand has put huge pressure on these ecoregions. Increasing demand for commodities from regional and international trade, habitat degradation and loss due to population growth, agricultural expansion, urbanization and infrastructure development (road/dam construction) are among the increasing waves of threats that might drive the majority of species to the verge of extinction.

All the great cultures of the world evolved through the interaction of people and places; places in a sense that includes all its interrelated and interconnected plants and creatures. Systems of spiritual belief, philosophy, production/livelihood and governance are greatly nurtured by their immediate environment and nature. Plants especially play very important roles in every culture. Losing just one species means loss of part of our culture and loss of the treasure trove of indigenous wisdom accumulated through centuries. Threat to biodiversity implies threat to colourful and vibrant cultures that the world cannot afford to lose.

1.4 Bang Shau Village

My study site, “Bang Shau Village”, is situated 45 miles east of Lashio, capital of Northern Shan State, which is part of the Shan State - the largest among the administrative 7 states and 7 divisions. Northern Shan State is home to the ethnic minorities Shan, Kachin, Wa, Palaung, Lisu, Lahu, Akha and Miaozi. These ethnic groups have unique knowledge about the wild plants in the forests, especially their healing properties. But the region is under

[9] Marinelli J. Edt. (2004). “*Plant*”. Dorling Kindersley Limited, UK.

enormous pressure from modernization and economic development projects, for instance, damming major rivers such as the Salween.

Bang Shau is situated 45 miles east of Lashio, capital of Northern Shan State. It is located between 23˚ 02̍ North Latitude and 98˚ 21 East Longitude, at an altitude of 2,800 feet above sea level. Bang Shau is home to Long Vo, La Chit and Zai Wa (sub tribes of the Kachin tribe) with their distinct language and tradition. Nearby villages are inhabit by Shan, Palaung, Lisu and Miaozi tribes. Loi Kham (about 6,000 feet) is the highest peak near Bang Shau. The vegetation types are subtropical, moist, evergreen forests and montane oak forest at higher altitudes. Its population is about 880 from 175 households. Their livelihood includes lowland and upland rice cultivation, shifting cultivation, cattle-rearing, logging, collecting non-wood products from the forests, trading farm and forest produce and working as wage labour. The villagers are members of Baptist and Catholic churches. Traditionally they practised Shamanism but were converted to Christianity from Shamanism by western missionaries. However, shamanistic beliefs subtly blended into their tradition and are still important in their everyday life.

Bang Shau has been affected by relocation of nearby villages to its area in 1990, at the peak of the civil conflict and ethnic politics, creating tension between the locals and the newcomers over resource management. In the past decades, growing opium poppy has become part of their livelihood. Despite providing cash income, it also created a myriad of social problems including addiction, catalysing a vicious cycle of poverty and oppression. The opium poppy ban in 2003 created widespread threats to food security in Northern Shan, including Bang Shau. Collecting non-wood forest products, mainly medicinal plants, edible mushrooms and bamboo shoots to sell to China is a vital strategy for local people coping with food shortages. Of the many families found in these forests, including orchidaceae, zingiberaceae and liliaceae, to name just a few, various species are threatened to the point of local extinction because of this overexploitation.

The Metta Development Foundation, a Myanmar NGO dedicated to relief, recovery and community development, began working with these communities in Northern Shan in 2004. As a social worker working with Metta, I have come to know Bang Shau through working together in the food for work, farmer's field school, community nursery and

community forestry, community managed healthcare, and small livelihood projects. In 1996, Metta supported a community managed healthcare project in Bang Shau, where women from the community were trained in basic healthcare skills for work in a conventional healthcare practice. They learned to treat common diseases by oral medication, to be able to diagnose and refer to the hospital for complicated cases and illnesses, to assist women in childbirth and to advise in preventive care. After the training, they established a village dispensary.

In August 2007, I went to Bang Shau to conduct an environmental conservation and community forestry workshop. 30 participants attended the workshop. I was amazed by their knowledge about the medicinal plants they showed me during our forest walk. The village elders told of their sadness about the reluctance of young people to learn traditional herbal knowledge. They feel this ancient healing wisdom is gradually dying out. 'Educated' young people see traditional herbal medicine as backward compared to western medicine which is perceived as modern and superior. Meanwhile, wild medicinal plants are facing the enormous pressure of unsustainable harvesting as since the poppy ban, people rely more heavily on the forests for their living.

The relationship I have build up with the land and the people throughout these years has instilled me an immense appreciation on the indigenous knowledge they have held, meanwhile, gave rise to a genuine interest and empathy on the peoples' efforts in coping with the challenges wielded from the internal and external factors. There were questions I kept asking myself. What is the situation of medicinal plants? What is the situation of knowledge transfer from the older to the younger generation? What kind of collective action can we plan and carry out to ensure the survival and sustainability of the medicinal plants and the traditional healing wisdom? How could this existing herbal knowledge be recorded and integrated into mainstream practice in the community managed healthcare project? Since that time on, these questions have haunted me whenever I think about Bang Shau.

CHAPTER 2

LITERATURE REVIEW

2.1 Medicinal Plants: a lucrative commodity

Trade in medicinal plants can be traced back to ancient times. Even today, despite conventional healthcare becoming more advanced and accessible, 80% of the global population depends on traditional medicine for their primary healthcare[10] according to World Health Organization (WHO) estimates. Traditional herbal remedies are making a comeback as complementary or alternative to conventional medicine. In the US alone, the number of people using herbal medicines increased from 2.5 percent in 1990 to 37 percent in 2000[11]. The Annual global market for medicinal plant-based products is over 60 billion USD and growing at the rate of 7% per annum. Estimated turnover of the fast growing herbal drug industry in South Asia for 1999 was about 500 million USD[12]. According to a consultancy report by McAlpine Thorpe and Warrier in 1992, annual sales of herbal medicine in Germany were 1.2 billion USD[13]. Revived public interest has re-instated herbal medicine to its well deserved place in public health care services. However, this surge in global demand has put severe pressure on the wild plant population, which is still the main source of medicinal plants. According to the IUCN Medicinal Plant Specialist Group, more than 50,000 of the world's plants species are used in medicine, and more than 70% of these species are collected from the wild[14]. Only 289 medicinal plant species are listed by the "Medicinal Plants Significant Trade Study Project" of the Convention on International Trade in Endangered Species of Wild Fauna and Flora CITES[15]. An analysis of the 2008 IUCN Red List stated that insufficient data are

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[10] World Health Organization (2008). "*Traditional medicine. Fact sheet No. 134. Revised December 2008".* WHO, USA.

[11] http://www.worldwildlife.org/wildlifetrade/faqs-medicinalplant.html . Accessed at 20 October 2010.

[12] Acharya S. P. (2005). "*Developing medicinal and aromatic plant based livelihood options for traditional gathering communities: A case study of western part of Nepa"l.* Ministry of local development, Nepal.

[13] Hamilton A. (1992)."*International trade in medicinal plants: conservation issues and potential roles for botanic gardens". A*vailable at http://www.bgci.org/congress/congress_rio_1992/hamilton.html. Accessed at 20 October 2010.

[14] IUCN (2008). "*Species: Newsletter of the species survival commission, volume 49".* IUCN, Switzerland.

[15] IUCN (2002). "*Interpretation and implementation of the convention- other themes and issues: Trade in traditional medicines (CoP 12 Doc 64)".* IUCN, Chile.

available to produce a meaningful Red List Index for medicinal plants - only 109 species (0.7%) of medicinal plants have Red List assessments available for the years 1997 and 2008[16]. Overexploitation, habitat loss, unregulated trade, climate change and other pressures on medicinal plants implies that wild collected medicinal plants are a seriously threatened resource worldwide.

So what is the current situation of medicinal plants in Myanmar? How important is medicinal plant trade to the Myanmar economy and how much is it contributing to the country's GDP? These are questions easier asked than answered, as precise statistics are not available and this area of study has received very little attention from academics and practitioners alike. Nevertheless, table (2.1) shows that within one week - 19-25 May 2010[17], the medicinal plant trade at two border trade stations near the Myanmar-China border had a total value of 1.6 million USD,. This figure reflects the legal transactions conducted through Muse 105 mile and the Ching Shwe Haw border trade stations.

No.	Raw medicinal plant parts	Volume (ton)	Price/ton (USD)	Amount(USD)
1	Nehle seed (*Psoralea corylifolia*)	25.85	15,000	387,750
2	Malar rhizomes (*Curcuma spp.*)	41.03	14,500	594,935
3	Migyaung Kun Hpat seed (*Hygrophila phlomoides*)	17.99	18,000	323,820
4	Mon Le U rhizomes (*Polygonatum kingianum*)	11.1	14,000	155,400
5	Myauk U tuber (*Amorphophallus spps.*)	10.82	2,600	28,132
6	Taw Jin rhizomes (*Curcuma spps.*)	8	2,380	19,040
7	Dayin Kauk rhizomes (*Pteridium spp.*)	18	4,500	81,000
8	Ohn Tone bark (*Litsaea glutinosa*)	20	1,350	27,000
	Total	**152.79**		**1,617,077**

Table 2.1: Trade on medicinal plants at two border trade stations, 19-25 May 2010. (compiled from the Commerce Journal, Vol. 10/ no. 20.)

This figure might not necessarily reflect actual transactions since it cannot record the illegal trading that is common along this porous border. One can assume that the actual figue is higher. Even so, this figure highlights the importance of wild medicinal plants in

[16] Vie, J.-C., Hilton-Taylor, C. and Stuart, S. N. (eds.) (2009). "*Wildlife in a changing world- an analysis of the 2008 IUCN Red List of threatened species".* IUCN, Switzerland.

[17] Aung M. M. (2010). "*Situation of trade on raw material of Myanmar medicinal plants at the Muse 105 Mile and Ching Shwe Haw Border Trade Stations".* Commerce Journal, Vol. 10/ no. 20, Myanmar.

the export earnings of the Myanmar economy. It also calls attention to the urgent need for sustainable sourcing of wild medicinal plants which is vital to income generation for the majority of rural population. Not only is the conservation of “medicinal plants” vitally necessary but conservation also of its inseparable counterpart, “traditional herbal knowledge”. Here, I would like to go through some literature related to conservation, local knowledge and the livelihood of the people who live and rely on the forest.

2.2 Conservation: interests and interpretations

The word “conservation”, like “green”, is regularly over-used and abused. Some simple questions must be asked in order to see the politics of conservation clearly: how is conservation interpreted, what has been selected to be conserved, what is the purpose, who benefits, how effective is it, etc..

Forest conservation in many Asian countries, especially in India and Myanmar, is the colonial legacy of commercial forestry, where forests, rivers and mountains were seen only as resources to be exploited for the benefit of human beings. During the British occupation, national parks, protected areas and wildlife sanctuaries were established in Myanmar, to ensure the long term commercial exploitation of teak and other timbers, while providing entertainment in the form of game-hunting to the British rajas. However, the idea of “conservation” is not static. It is constructed and has been reconstructed throughout history and Myanmar is no exception. Generally speaking, Myanmar Forestry Law focuses on protection of forests as productive state property, though wellbeing of the ecosystem and people is the primary goal.

Dr. Pinkaew Luongaramsari, a professor from the Faculty of Social Science, Chiang Mai University, Thailand, has done an extensive study on how the idea of nature conservation is constructed and reconstructed in Thailand. In her painstakingly written doctoral dissertation, she reveals how the idea of nature conservation arose together with the making of Thai modern state, how it created unjust power structures between lowland Thai (represented by the Thai government and its agencies) and the marginalized hill tribes, how the hill tribes, particularly the Karen tribe, fought back and how Karen’s local

knowledge could contribute to the formulation of just and meaningful conservation policy[18].

Dr. Luongaramsari's critical analysis provides profound insight into the modern conservation paradigm as defined by the contemporary entities (ie. states, agencies, institutions). Though it is based on the specific experience of Thailand, it reflects how conservation policies are constructed and implemented by the neighbouring countries and beyond.

Establishing of national park systems in Thailand, with the guidance of FAO, coincided with the desire to be seen as a modern civilized nation state, writes Dr. Luongaramsri. Highlighting how developing countries followed the western model of development, she argues:

"*National parks are a post-war product of modern development ideology adopted by developing countries like Thailand. The ideal model, and the assistance for development based on such model, came from developed countries, especially the United States. ..... Economic development and natural resource management were major aspects of the development model derived from the US."*

The foresters and the urban middle-class, who supported the idea of national parks, assumed that formal education is a pre-requisite for the appreciation of beauty and aesthetic sensibility. Thus, national park systems in Thailand have been predominantly class differentiated since their inception. The discourse of "education" has been used as a powerful mechanism to disqualify and exclude participation of undesired groups of people in resource management. She asserts,

"Such discourse functions as a tool not only to undermine the pre-existing connection between local livelihood and forest, but also to provide legitimacy and justification to the outside urban middle class over local people in their relationship with these particular forest areas."

[18] Luongaramsri, P. (2001). "*Redefining nature: Karen ecological knowledge and the challenge to the modern conservation paradigm".* Earthworm Books, India.

This exclusion and impractical policies have lead to breaching of the forestry and conservation related laws. To reinforce the law and protect state-owned property (ie. forest), the Thai forestry department has acted like a paramilitary organisation and thus conducted undeclared war against the marginalized hill. Dr. Luongaramsri has questioned who is wrong: people who breach the law, or those who impose unjust laws on others. Control of access is accepted as a feature of scientific forestry and practised across fellow South-east Asian countries. In her study on resource control and resistance in Java, Indonesia, Nancy Lee Peluso argues that *"peasant resistance to state control of the forests derives from the progressive criminalization of customary rights of forest access*[19]*."* Thus, a common theme of state conservation policies becomes legitimizing structural control over nature and forest dwellers thereby creating enemies and threats.

In the case of Thailand, the resistance from the people against this structural violence has emerged as a community forestry movement. The Karen has taken up community mapping as a tool to initiate dialogue with the state agencies and claimed their customary rights of access. Dr. Luongaramsri explains that hill people have challenged the homogeneity of the protected area system and repudiated the state perception of community forest by counter-mapping and redefining community forest in their own context. The community forestry movement has created a participatory resource management framework by effectively integrating the scientific forestry instruments and tools with local knowledge. Local knowledge, asserts Dr. Luongaramsri,

"... is not just people's cognitive experience and wisdom passed down from ancestral generations and born out of their interaction with nature in their locality. Indeed, in a constant dialogue with the superior authority of modern scientific knowledge, local knowledge represents local people's learning to unveil the dominating truth and to manipulate the rules for determining its construction."

Yos Santasombat from the Regional Center for Social Science and Sustainable Development, Chiang Mai University, has extensively studied the indigenous knowledge of 13 ethnic groups in Northern Thailand for 7 years. He states that indigenous knowledge is a repertoire of situated experience evolved in particular physical and

[19] Peluso, N. L. (1994). *"Rich forests, poor people: resource control and resistance in Java".* University of California Press, UK.

cultural contexts with intimate interaction between people and nature. In order to highlight the dynamic nature of local knowledge and involvement of power relations, he claims:

"Knowledge production should be seen as a process of social negotiation involving multiple actors and complex power relations and must therefore be understood in terms of change, adaptation and dynamism[20]*."*

Professor Santasombat points out that local knowledge is holistic and can be seen as interrelated layers: food and medicine, production and resource management systems, belief and ritual and mode of thought. He has seen that as we come to understand the roots of the inadequacy of our discourse, a more sensitive system of contemporary resource management and conservation policies can be developed. He believes local knowledge has a vital role to play in developing a more integrated, community-based management policy.

Professor Luongaramsri and Professor Santasombat both agree that the construction of conservation ideas and policy in Thailand has created a deep divide between those with power and those without power, with a severe negative impact on the latter. All three researchers, Luongaramsri, Santasombat and Peluso, have seen great potential in community forestry or social forestry as a more inclusive and practical resource management system. All of them acknowledge that local knowledge or understanding the complex layers of power structures, production and resource management systems, ritual and belief, is critical in developing socially just conservation policies. Though there are similar features and scenarios related to resource management and conservation, shared among Southeast Asian countries, each individual country has unique contexts and experiences. Now, I would like to draw attention to where Myanmar's policies and circumstances are leading us.

Myanmar is a signatory to The Convention on Biological Diversity and thus has reformulated and adopted new policies and legislative measures: Protection of Wildlife

[20] Santasombat, Y. (2003). *" Biodiversity, local knowledge and sustainable development".* Regional Center for Social Science and Sustainable Development (RCSD), Faculty of Social Science, Chiang Mai University, Thailand.

and Wild Plants and Conservation of Natural Areas Law in 1994, Myanmar Forest Policy in 1995, etc. Community Forestry Instructions were issued in 1995 to promote community participation in forestry. Six imperatives have been identified in Myanmar Forest Policy, one of which is to satisfy the people's basic needs for timber for firewood, food, shelter and recreation. For conservation of biodiversity, mangrove forest and fragile mountain ecosystems, about 23 sanctuaries and 5 parks have been established under the Protected Areas System,[21] including the world largest tiger reserve in Northern Myanmar created with the assistance of the Wildlife Conservation Society. In 1997 Myanmar acceded to the Convention on International Trade in Endangered Species CITES[22]. These are remarkable milestones in the effort to safeguard the biodiversity and the varied ecosystems that sustain Myanmar and gave birth to her unique culture. However, there is still a long journey ahead.

Drawing from the experience of Myanmar's neighbours, as discussed above, it is crucial to include all stakeholders in developing nature conservation policies because of the complexity of resource management and the intricacy of power interactions involved. We especially need to pay attention to the voices of grassroot communities who are at the bottom of the power structre; and to those who interact or utilize the resources on a day to day basis, unless we want national parks and protected areas to exist only on the map. The need for effective communication of policy across formal and informal structures and the enforcement of legislation issued is vital. When it comes to participation of all stakeholders in policy development - especially those without power, communication and sensitivity to all concerned and law reinforcement Myanmar has huge room for improvement. Moreover, like professor Luongaramsri, we should question the underlying philosophy and purpose of conventional conservation and economic forestry – legacies of the colonial era..

To look at nature only from a utilitarian, anthropocentric, extrinsic and reductionist perspective is too parochial and is the fundamental flaw of the conventional conservation idea. Nature conservation should be redefined so that it is contextual, inclusive and fair

[21] Commission on Sustainable Development, (2002). *"Myanmar: Country Profile- summarized for the World Summit on Sustainable Development, Johannesburg, South Africa." United Nation Environment Programme.*
[22] Birdlife International, (2005). "*Myanmar: Investment opportunities in biodiversity conservation."* Birdlife International, UK.

to everyone involved, including all life forms, the mountains and rivers that support lives... Conservation should not be a mere instrument to serve the interests of the affluent societies and powerful institutions. Ecosystems and biomes cannot be effectively conserved by dissecting the earth into pieces, into so called protected areas and parks. We should acknowledge the intrinsic value of all life forms, realising our interconnectedness and interdependency with each other, giving rise to a sense of the wholeness of nature of which the human is just a part.

2.3 Conservation of Medicinal Plants and Indigenous Healing Wisdom

Although conventional, western style healthcare is now widely accepted, medicinal plants and traditional healing systems play a fundamental and indispensible role in the healthcare of Myanmar people. Thus preserving medicinal plants and indigenous healing wisdom is vital to ensure a healthy and resilient society in a rapidly changing world.

In acknowledging the value and effectiveness of centuries long traditions of indigenous medicine, the Myanmar government has established the University of Traditional Myanmar Medicine and traditional medicine hospitals. In addition, 2 Biomedical Research Centers have been founded, where biomedical properties of Myanmar medicinal plants are identified and documented. Myanmar Agricultural Services, a government agency, has recently reprinted “Myanmar Medicinal Plants”, which lists commonly used medicinal plants, their properties and usage, with pictures, vernacular and botanical names.

Dr. Kyaw Soe, former professor of Botany in the University of Yangon, has extensively studied Myanmar medicinal plants for over 40 years, and recorded over 2000 species of medicinal plants through field trips across the length and breadth of Myanmar[23]. In collaboration with Tin Myo Ngwe, former associate professor, he has published “Medicinal plants of Myanmar: Identification and uses of some 100 commonly used species”, intended to serve as a reference for identification. He has supervised a series of

[23] Soe, K., Ngwe, T. M. (2004). *“Medicinal plants of Myanmar: Identification and uses of some 100 commonly used species, series (1)”*. Forest Resource Environment Development and Conservation Association FREDA, Myammar.

morphological, phytochemical and pharmacognostic studies of medicinal and non-medicinal plants for a number of postgraduate students. Understandably, the majority of studies on medicinal plants have focused on analysing phytochemical properties and identifying the active substances of the plants.

If we look at the Asia region, there are some publications on conservation of medicinal plants under such popular themes as “conservation of non-timber-forest-products” or “linking conservation with livelihood options”, etc.. This research work attempts to enquire into the links between conservation and community development. The underlying conclusion is that participation of the community or the users of the resources is critical in conservation or sustainable resource management.

A considerable number of Ethnobotany studies have been conducted in Asia. Perhaps the Chinese are very advanced, especially in documenting medicinal usage of plants by various ethnic groups from Yunnan and other provinces. Among contemporary publications on the ethnobotany of Southeast Asia, a remarkable piece of work is by Dr. Edward F. Anderson from Whitman College, USA. His brilliant ethnographic and botanical account of the people and plants of Northern Thailand is the fruit of 9 years of hard work. With great appreciation and respect he sampled and documented plants used by six hill tribes, a large portion of which are medicinal plants[24]. With regard to biodiversity and cultural conservation, his perspective is quite an inspiration for me.

Nevertheless, as I have already made clear, healing wisdom and plants that heal are strongly interdependent of each other. Hence, my enquiry into the status of medicinal plants and knowledge passing from the older to the younger generation considers biodiversity and culture as inseparable. Consequently, the main focus of my study is biodiversity and cultural conservation based on a platform for community development. My aim is,

5. to find out the situation of medicinal plants- collected for both local use and trade,

[24] Anderson, E. F. (1993). *“Plants and people of the golden triangle: Ethnobotany of the hill tribes of Northern Thailand”*. Dioscorides Press, US.

6. to observe the situation of knowledge transfer from the older to the younger generation,
7. to develop a participatory community action plan - to ensure the survival and sustainability of medicinal plants and the healing wisdom.
8. to record the widely practised herbal knowledge used for local common diseases and to find ways to integrate it into the conventional healthcare practices of a community managed healthcare project.

CHAPTER 3

METHODOLOGY

3.1 Action Research: constructing collective autonomy and responsibility

Action research has drawn interest from a multitude of disciplines, despite the hostility and criticism of established academic institutions. It is understandable when a new paradigm emerges that it should collide with the old order, the established way of thinking - so well established that it has become static and stagnant.

According to conventional opinion, research can be seen as a process of generating *knowledge*, where the knower and the known are thought of as "detached" and thus objective knowledge is acquired. Individual experience and the uniqueness of the phenomenon are dismissed as merely secondary qualities of a subjective nature. This classical Cartesian dualism has been the foundation of modern science, politics and conventional knowledge construction. By contrast, in the action research perspective, research involves a participatory approach to *knowing*, where the researcher is an intrinsic part of the inquiry. In this sense, knowledge is dynamic and hermeneutic in nature and the unique experiences of the individual are not neglected.

Peter Reason and Hillary Bradbury have stated that action research is emancipatory and leads not just to new practical knowledge, but to new abilities to create knowledge[25]. They argue that action research is a participatory, democratic process, concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview. Action research is a hugely varied field and there are all kinds of choices to be made in practice, acknowledge Reason and Bradbury, but meanwhile they have drawn five broadly shared interdependent features which characterize action research (Figure 3.1).

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[25] Reason, P. and Bradbury, H. (2010). *"Introduction: Inquiry and participation in search of a world worthy of human aspiration", in "The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

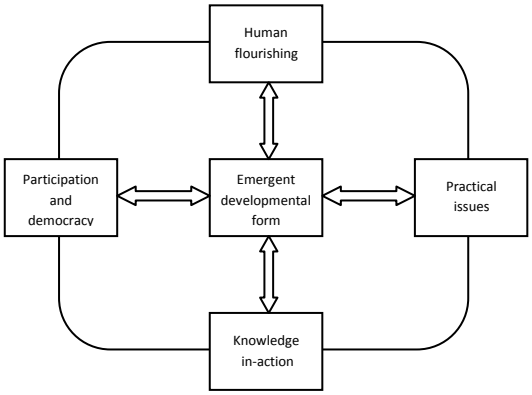


Figure 3.1: Characteristics of action research[26].

Reason and Bradbury assert that the primary purpose of action research is to generate practical knowledge applicable to people in the everyday conduct of their lives whilst a wider purpose is,

"... to contribute through this practical knowledge to the increased well-being – economic, political, psychological, spiritual – of human persons and communities, and to a more equitable and sustainable relationship with the wider ecology of the planet of which we are an intrinsic part[27]*."*

In his paper "Knowledge and Participatory Research", Peter Park argues that basic and applied social science research and participatory research differ in terms of people's involvement in the research process, integration of action with research and the practice-based nature of the knowledge that is entailed. In order to bring about changes and improvements in their lives, Park points out that people who employ participatory research engage in three distinct activities:

"*... inquiring into the nature of the problems by understanding its causes and meanings; getting together by organizing themselves as community units; and mobilizing themselves for action by raising their awareness of what should be done on moral and political ground. For this reason, gathering and analysing necessary information, strengthening*

[26] Reason, P. and Bradbury, H. (2010). *"Introduction: Inquiry and participation in search of a world worthy of human aspiration", in "The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.
[27] Reason, P. and Bradbury, H. (2010). *"Introduction: Inquiry and participation in search of a world worthy of human aspiration", in "The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

community ties and sharpening the ability to think and act critically emerge as three main objectives of participatory research, requiring three different kinds of knowledge[28]*"*

Park argues that we need to expand existing epistemological horizons to create new kinds of emancipatory knowledge. Table 3.1 summarizes Park's argument about the constitution and contribution of these three kinds of knowledge and their correlation to three dimensions of power.

Form of Knowledge	Constitution	Contribution	Correlated power dimension
Representational: functional	Portrayal of a thing, a person, an event or an experience as being related as a variable to some other variable or variables in a functional manner.	- enables to make predictions by showing antecedent events leading to probable consequences, thus possible (in theory) to produce desired events or to prevent undesirable ones.	Competence
Representational: interpretive	Understanding of meaning where the knower come as close to the to-be-known as possible. This means taking backgrounds, intentions and feelings involved both in understanding human affairs and textual into account.	- enables understanding of texts, persons, events and situations. - changes both the knower and the known, in coming to an understanding, since it produce something new and unexpected, a new experience.	Competence
Relational	Bringing people together in empathy and making it possible for them to know one another as human beings, affectively and cognitively.	- serves as basic foundation of relationship, bonding, solidarity and community. - its most sublime form, love, in which people become one with each other in a union, which transcends and transforms the individuals involved.	Connection
Reflective	Conscientizing people, which captures both cognitive and normative processes and enables people to critically analyse and evaluate questions of morality and values relating to their life conditions and the proper action to take.	- empower people to act with determination, confidence and resourcefulness that is made possible by, and expressed in, the interaction and interdependence embedded in human communities. -creates collective autonomy and responsibility. - enables people to modify structures and social patterns to emancipate the oppressed segment of society, hence change the world.	Confidence

Table 3.1: A summary of the constitution and contribution of three kinds of knowledge and the correlated three dimensions of power.

[28] Park, P. (2010). *"Knowledge and participatory research", in " The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

Park asserts that knowledge and power are intimately linked. Drawing from the feminist activist, Starhawk's concept of power (*power over, power with and power from within*), Park interpretes these three terms to mean power to control objectifiable reality, power of being in solidarity with others and power to act on moral values. Subsequently, he briefly points out the knowledge-power relation;

"Representational knowledge clearly provides the cognitive basis for building the competence needed for controlling our world, including our social environment. It is with relational knowledge that people come to feel that they are not alone but are part of a larger whole that sustains them as connected social beings. This is the power of solidarity. And finally, reflective knowledge builds up the normative foundation that gives actors value standards and the self-confidence to engage in social change activities. In short, these three forms, or dimensions, of power might be called power of competence, connection and confidence, respectively.[29]*"*

Park points out that if power is exercised in a comprehensive and liberating sense, which embraces solidarity and moral courage as well as control, then we can change both ourselves and our social institutions.

Action research has been a powerful tool in bringing about positive change in our society. It has been adopted and adapted by many Myanmar civil societies – local nongovernment organizations, faith-based community services, small community-based organizations. Building self-reliant and peaceful societies is the shared common theme of many civilian societies in Myanmar since the country is rebuilding herself from the detrimental impact of prolonged civil conflict and a complicated political bottleneck. At present, Myanmar is in the process of becoming a democratic country, and hence, empowering the people, enhancing democratic practices in the community and educating civil rights and responsibilities has become critical for Myanmar. Myanmar has been known to the outside world as one of the most repressive countries, however, I would like to argue that *internalized oppression* – a term coined by Paulo Freire – is the most subtle, insidious and deleterious to Myanmar society. In order to liberate oneself from internalized oppression, one should raise a critical awareness of the micro and

[29] Park, P. (2010). *"Knowledge and participatory research", in " The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

macro socio-political environment and the landscape of the inner-self – *conscientization* as named by Paulo Freire – and then, plan and take action to liberate oneself and the interrelated community. Action research, with its renowned emancipatory tradition and pedagogy of liberation, is well suited to the socio-political context of Myanmar, to nurturing politically, socially and ecologically responsible citizens. Hence, I have seen Action Research as a suitable approach for my study, since the construction of knowledge and power is by the people, with the people, and for the people and a wider community including beings other than human.

3.2 PRA: Methods and Tools

Participatory Rural Appraisal PRA is an ambiguous term in itself, since use of PRA is not restricted to the rural, nor need it be an appraisal. PRA, made popular by Robert Chamber, is also known as Participatory Learning and Action PLA. It is a widely used methodology in social research, community development and social movements.

Participatory methods have significant strengths for being inclusive, empowering and holistic. There are, however, many threats to quality and personal integrity to be aware of when participatory methods like PRA are used. Britha Mikkelsen has stated that the most important principle is to put behaviour and attitudes before methods. In her view, critiques of participatory research tend to be made from one or more of the following positions:

- those broadly sympathetic to the participatory movement, aiming to improve rigor and range,
- those who radically criticise proponents' claims that PRA represents a new form of popular empowerment,
- those who favour the predominance of orthodoxy, manipulation and enforcement over authentically participatory realities, and

- those who point out that blindness to context may lead to mechanistic applications of participatory techniques and the neglect of power differentials within communities[30].

She highlights technical concerns with PRA tools which could allow it to become manipulative and tyrannous if,

- it is used to legitimize an agenda where there is hidden interest,
- it raises expectations that cannot be fulfilled in either the short or long term,
- it is done in an extractive manner, to suit the need for a particular output,
- the personal security of participants, particularly in conflict and faction-ridden locations, is not seriously considered[31].

A number of PRA methods and tools are employed in my study.

1. Review of secondary sources

In 2006, a community dispensary was established in Bang Shau by the village health committe. The dispensary is lead and managed by community health workers trained in a community-based healthcare programme supported by the Metta Development Foundation. The community health workers provide basic healthcare, oral medication for common diseases, safe childbirth practices and referral services. They keep treatment records to which the village health committee has kindly allowed me access to analyse data for the most common diseases and their impact on village people. To maintain ethical integrity and respect for the privacy of people concerned, individuals' names are not used in the database analysis that follows.

2. Direct observation

From the first village meeting till my departure from the village, direct observation is an important means to get to know the people, their culture, livelihood and power

[30] Mikkelsen, B. (2006). *"Methods for development work and research: a new guide for practitioners, 2nd Edition."* Sage Publications, India.
[31] Deshingkar, P. , James, A. J. (2001). Cited in Mikkelsen, B. (2006). *"Methods for development work and research: a new guide for practitioners, 2nd Edition."* Sage Publications, India.

structure. It allows me to experience the village in its authentic wholeness, as the unity of diversity emerges in simple daily interactions.

3. Interviews

Semi-structured interviews are an important means to obtain information as well as to get to know the people. My ability to speak the common local language, *Jing Hpaw*, is a simple yet vital gateway to communication with the *Long Vo* and *Zai Wa* tribes. Another common local language, *Shan,* is used to communicate with the *Palaung* tribe. I have employed key person interview, focus group interviewsand simple questionnaires.

4. Workshop

A week long workshop is conducted. An outline of the workshop design is presented at a preliminary village meeting when villagers give their comments and input to develop the plan of action. This includes agreeing on appropriate dates and duration, venue, objectives, design, participant selection and most important, organizing lunch! Agreeing on the date and duration is important in order to avoid taking up important time when villagers are busy with rice transplanting, weeding or harvesting. In this study, rice transplanting is delayed due to a late monsoon and our first agreed date has to be postponed. Lunch is organized by village women with abundant contributions of locally produced leaf, fruit and root vegetables from villagers.

I am concerned with two principle questions: what is the situation for medicinal plants and what is the situation for knowledge transfer from older to younger generations. An important task is to collect and record commonly used medicinal plants alongside descriptions of their usage.

The workshop is designed using the *four noble truth*s approach, ie.,

1. What is the current situation or issue? Where does it lead to?
2. What are the root causes?
3. What is the desired state or vision?
4. How can the vision be realized? What are the means to reach the desired state?

The workshop comprises three phases; i) getting to know the context, ii) situational analysis, iii) community action plan. For phase one, getting to know the context, PRA tools such as community mapping, seasonal calendar and Venn diagram are used. For phase two, situational analysis, PRA tools such as role play, simple questionnaires, focus group discussion and trend analysis are used. For phase three, community action plan, focus group discussion and simple planning tool are used.

To collect field data of commonly used medicinal plants, PRA tools are adapted to conduct "Rapid Ethnobotanical Appraisal"[32]. Participants are organized into three groups: each group is comprised of one person as leader, one person to record data and one person to tend to sample plants. The leader is the most experienced in herbal usage, leads the way, oversees the process and manages the time. The person recording data, who can read and write local dialect, records entry numbers, names and ecological locations for each plant in a register book. The person tending the sample plants labels the newspaper bags in which the plants are stored with the entry numbers and names of the plants collected. The three different groups collect plants from three different places; on the uphill, in the forest near the village and in the village and in the scrubland and swamp at the lower slope of the village. This activity lasts a whole morning. After reflection on the collection process and shared experience, the sample plants are displayed and their medicinal properties shared among the groups. Then collected plants are photographed with their names as a further record. Unfortunately, due to time constraints and lack of appropriate instruments, we were unable to collect herbarium specimens.

After the workshop, participants and I present our findings and proposed action plan to the wider community, including members of the community forest committee, health committee and villagers.

Triangulation and commonsense is used to verify the data and information collected, throughout my study.

[32] Martin, G. J. (2007). *"Ethnobotany: a method manual – people and plants, conservation series".* Earthscan, UK.

Since the first meeting, ethical and equitable issues such as biopiracy and rights related to indigenous knowledge, and my role and responsibilities as a researcher have risen to the fore.

5. Video documentation

Video documentation is done whenever conditions are favourable. Some key person interviews, field data collection, forms of livelihood and cultural practices are documented with the permissions of persons involved.

CHAPTER 4

FINDINGS AND DISCUSSION

4.1 Bang Shau: Getting To Know The Context

Bang Shau is beautifully situated on a plateau, where jagged grassy topped mountains tower in the north. The plateau descends abruptly into an alluvial valley created by the Nam Leng Stream, a tributary of the Salween River. The spectacular red cliffs of Pha Leng Mountain Range in the south mark a boundary for the Nam Leng Valley. Bang Shau thus has most of its paddy fields in this little valley with small swidden farms on the slopes above and around the village. The majority of the residents are from the Kachin tribe: a mixture of Jing Po, Long Vo, La Chik and Zai Wa people, each with their distinct culture and dialect. The nearby villages are inhabited by the Palaung, Li Su, Miaozi and Shan, also each with their unique culture and language.

Figure 4.1: Kachin men and women of Bang Shau village.

The Shan are predominantly paddy growers and occupy the most fertile lowlands while the other tribes prefer the higher slopes, each making different choices in preferred livelihood. This diversity has sustained mountain people for centuries, weaving a complex network of interconnecting and interdependent trading and production systems.

Bang Shau has seen the golden days of the Shan rulers (*Tsao Pha)* and Kachin chieftains (*Duwa)*. Moreover, Bang Shau has survived occupation by the British and Japanese, the Kumingtan invasion, the imposition of Communism and prolonged ethnic armed conflicts. Bitter experiences of conflict have instilled a spirit of camaraderie in the community, as they have had to learn how to rebuild from the ashes their lives, their families and their community. From generation to generation, from era to era, this capacity for survival and resilience has complemented existing indigenous knowledge.

Life in Bang Shau is closely tied to the land and natural surroundings and governed by the changing patterns of seasonal cycles. Unique forms of knowledge, culture and tradition have evolved from intricate interaction and intimate dialogue with nature. For instance, if we look at the clan names of the Long Vo people, we find the *Kanaw* – Partridge - clan, the *Vaw nay* - Red Boar - clan and the *Long Gyaw* - Eagle clan - descriptive clan names which indicate a closeness to nature. To live close to nature requires knowing when and how to forage in the forests for nutritious vegetables, fruits and mushrooms, when and how to collect appropriate timber for construction and making other artefacts, when and how to gather and use medicinal plants. It means being able to interpret the language of nature – that is, understand the behaviour of birds and other creatures, read the signs of natural phenomena, and anticipate events.

This intimate relationship with the land is reflected in **community maps** drawn in the workshop. Two separate maps by the men and women, were drawn. These maps show the natural environment, ecosystem, village boundaries, nearby villages, infrastructure, social services and farming systems.

The map drawn by the men clearly shows the village boundaries, within which they have their customary rights of access for foraging mushrooms, vegetables and fruits, collecting medicinal plants, extracting timber and firewood, hunting and farming. These boundaries have been demarcated by their ancestors and are well recognized by their neighbours.

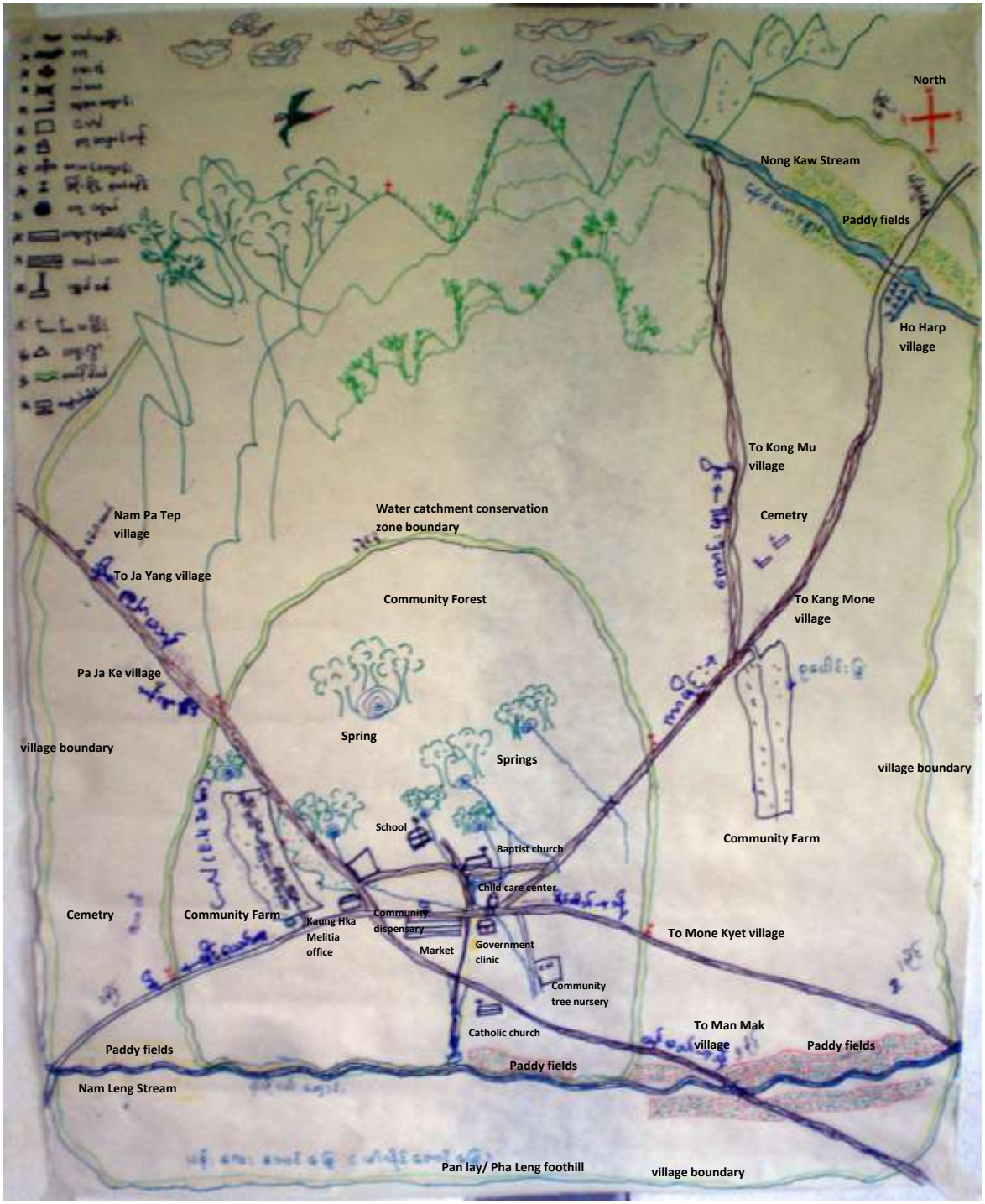


Figure 4.2: Community map drawn by the men.

According to the men, "O*ur territory is about 1 mile along the road to Mone Kyet village, about 3 miles along the road to Man Mak, about 3 miles along the road to Mone Yaw and about 6 miles along the road to Kang Mone."* This description of their territory shows how easily the men can travel – indeed they travel frequently to other villages and elsewhere, attending social functions, extracting timber, hunting, etc..

Figure 4.3: Community map drawn by the women.

It is interesting to see how the maps created by the men and women complement each other - like Yin and Yang. Men selected *portrait* for their map layout, whilst women chose *landscape*. Whilst the men are concerned with territory, the women show more concern with productive activities which reflect their role as universal providers and life-givers. They show how places relate to their daily activities and what the land provides for them. They show:,

- swamps – pastures, where to dig the tubers of ground orchids' and where to collect firewood,
- hills – where to dig for medicinal roots and collect orchids,
- scrublands and rocky places – where to collect firewood.

Though both groups show paddy fields, women particularly note the locations of their swidden farms. This highlights women's role in such farms. While the villagers themselves say that swidden farming is one of the reasons for deforestation, we should not underestimate the contributes of this centuries old tradition to the diversity of species cultivated, its nutritional importance and its role in the conservation of local cultivars and preservation of biodiversity. It is deeply interwoven into the role of women as mothers and providers for their families, since it is mainly women who have the knowledge for planning and selecting species to grow depending on the weather, soil fertility, and humidity. This is an invaluable contribution to the dynamic and progressive construction of local knowledge.

Both groups describe sacred mountains - they put a cross on the mountain top, declared a sanctuary and place of prayer for Christians. There are two sacred mountains, one for the Baptists and one for the Catholics. Likewise, two churches are depicted, indicating the presence of two denominations of Christianity.

Both maps highlight the physical and social infrastructure of the village; school, childcare centre, community dispensary, government clinic, drinking water tank, small hydropower station, community tree nursery and community farms. We might take for granted the local infrastructure and social services, but the villagers of Bang Shau put these on the map with great pride, since enormous collective effort and action went into achieving

and acquiring them. For a good 20 years, village elders have been persistently asking the township health department to set up a clinic in the village and provide for a permanent health worker. Finally, after the community dispensary was established, the public health department granted a clinic and assigned a residential health worker to Bang Shau. The drinking water supply and hydropower stations are also the fruits of community action and were installed a few years ago.

Two community farms with the themes of permanent and mixed farming are also shown on the map. This indicates villagers' awareness of the changes and trends which affect their livelihood and their efforts to cope with change. Change here means change in the population, land availability, natural resources, agricultural practices, the competitive nature of markets, etc..

As we can see from the map, collective action to protect the forests is remarkable. Forest preservation according to its economic, ecological and spiritual significance has long been a tradition for all the hill people, if only because forests are the major provider of life for them, both philosophically and practically. Conservation of forests in terms of spirited forests, ancestral forests, watershed forests and sacred mountains has been practised since time immemorial. However, the relentless forces of the market economy weaken the local economy, undermine local governance and thus contribute to overexploitation and encroachment of traditionally protected areas. Nevertheless, as seen on the map produced by the men, the forest on the foothills serves as head water for the streams the villagers are dependent on for drinking water, for hydroelectric power and for water-powered traditional mills. Hence, the villagers put a 1.5 mile protection zone around this forest - no cutting of trees or burning is permitted, only the collection of non-wood-forest-products. From the village to the hills above the village, about 4 miles are designated as community forest. This collective action could not have been achieved without unity among the villagers. In other words, it indicates the impressive potential strength of their social fabric.

The presence of the Kaung Hka Militia office and guard post are relics of the armed conflict ignited by the struggles and revolution of the ethnic hill tribes. Since the peace agreement and their transformation into a local militia, they have participated in

community development and have assisted in construction of roads, school buildings and prevention of encroachments into the protected area. These sincere efforts should be acknowledged but not seen as justification for the heavy extraction of natural resources they once intensively promoted.

The market place serves as a gathering place for trading local farm produce, forest products, farm tools and other basic household goods. Imported luxuries such as clothing, medicine, cigarettes and beers, etc. are also sold. Processed foods from China, such as instant noodles, pickles and soft drinks are becoming very popular. Medicinal plants like orchid tubers and stems are also collected by Chinese vendors, who resell to Lashio (capital of Northern Shan State) from which they were exported to China. Many areas in Shan State have this practice of the Market Fair, where people gather and trade every other five days. A system of linked market fairs are consecutively organized from one village, or even from one small town to the next. This has been a strong feature of the local economy and is a centuries old practice. Generally, the expert rice-growing Shans sell their surplus rice to the Kachin and Palaung tribes, and buy bush meat, medicinal plants, bamboo mats etc. from them. This time-tested economic system has sustained intricate social structures and shaped the unique cultures of hill people.

Another PAR tool, the **seasonal calendar**, also helps us to look and to see how people's lives are closely connected to nature and the seasonal cycle. It depicts the weather or patterns of the seasons, the cyclical nature of farming and the interesting links between labour needs, income and food security. Table 4.1 is an excerpt from the more descriptive and illustrative seasonal calendar drawn by the villagers.

The seasonal cycle is greatly shaped by the monsoon pattern. It can generally be said that there are six months of hot and rainy weather while the monsoon advances and six months of dry and cold weather while the monsoon recedes. The main livelihoods of Bang Shau, lowland and upland rice farming and cultivation of corn, follow the monsoon pattern thus grasping suitable moisture levels and temperatures for their crops. Paddy farms or lowland wet rice farms are a precious and rare possession in hilly regions, to be enjoyed by only a handful of families. The majority of them practice swidden farming where, upland dry rice and corn are the main cereals cultivated. Rice is life and the major

staple food. Corn is grown extensively but mainly for animal feed and as a major cash crop.

		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Weather	Tempe -rature	very cold	warm	hot	very hot	hot	hot	hot	hot	warm	warm	cold	very cold
	Sun	sunny	sunny	sunny	sunny	sunny intervals	sunny intervals	sunny intervals	sunny intervals	sunny intervals	sunny	misty	misty
	Rain	dry	dry	dry	dry	light shower	heavy rain	heavy rain	heavy rain	light shower	sparse shower	dry	dry
Lowland rice		trashing drying	storing		Land preparation	sowing seedlings	ploughing	transplanting	weeding	water management	water management	harvesting/ piling	trashing, drying
Upland rice			land clearance	burning	Land preparation	sowing	weeding	weeding		harvesting	piling	trashing/ drying	storing
Corn		milling, selling	land clearance	burning	Land preparation	sowing	weeding	weeding			harvesting	drying	selling
Labour requirement (scale from 1 to 10)		3	1	2	4	8	9	10	1	3	5	10	5
Income (scale from 1 to 10)		10	9	7	3	1	1	1	4	4	5	8	10
Food security (scale from 1 to 10)		10	10	8	8	7	5	4	5	6	8	9	10

Table 4.1: An excerpt from the seasonal calendar drawn at the workshop.

Cattle raring is another important feature of farming in Bang Shau. Upland cattle are short and stout and adapted to the mountain topography and climate. They roam freely to graze in the forest, meadows and grassland around the village. The owners provide salt to familiarize and tame them. This free grazing practice is a legacy of the prolonged civil conflict where cattle were frequently robbed if they are kept at home. As a consequence of free grazing, crops are frequently destroyed by the roaming cattle. It is still the greatest unresolved threat to people's livelihood, especially widowed mothers with young children are most vulnerable since they cannot erect strong fencing.

Figure 4.4: A Palaung woman, working as a casual labourer, transplanting rice in the lowland paddy field. The majority of Palaung people practice upland rice farming and work as casual labourers for others.

Labour requirements, again, are closely related to farming activities. The busiest months for Bang Shau villagers are May, June and July – the beginning of the cultivation season, when land preparation, sowing and transplanting are done - and November – when harvesting and post-harvesting activities are carried out at the end of the cultivation season.

Obviously, income of the families is directly linked to selling their farm produce, especially cash crops like corn, soybeans and vegetables. In addition to this, the forests generously provide bountiful seasonal products such as various kinds of mushroom, bamboo shoots, fruits, vegetables, medicinal roots and barks, lac, edible insects and occasional bush-meats. These are consumed in the household, but are a main source of cash to most families. Barking deer (*Muntiacus spp.),* hornet larvae, mushrooms and some medicinal plants fetch very high prices, hence they are the most exploited, to a

point beyond natural replenishment. Livestock such as local bred pigs, chicken and cattle served as cash reserve for most families. Working as casual farm labour is known as *Khun jang* in local dialect, which also provides the main cash income for underprivileged populations. Remittance from family members, who work as migrant workers inside the country or abroad, is also an important source of income for some families. According to the seasonal calendar, we see there is good income from November to March, while income is low in April to September.

Hunger is what most people, including other creatures, fear the most. Living with nature requires knowledge and ability to cope with the expected and unexpected challenges nature may pose and to make the most of what nature has to offer. Living in a close-knit clan system and a caring community might be a vital strategy to face hunger. On the other hand, hunger might be what makes people stick together, care for and love each other - this might be the humane face of hunger, the relationship builder.

Generally speaking, it is in the period from April to August, when people see hunger knocking at their door, twitching their stomach, when the stocks of foods harvested the previous November are dwindling and fresh cultivation only just beginning. Food aid agencies such as the World Food Programme called this the lean period. Reducing food intake might be a healthy option for the affluent and the adult but it is clearly not for babies, children, pregnant women and lactating mothers. People cope with hunger by reducing the amount of food consumed at any one meal, skipping meals, mixing the preferred staple food "rice" with other cereals such as corn or sorghum, or foraging for forest foods such as yam and taro. When some vegetables like the gourd and pumpkin are available in August, they become versatile ingredients for every dish on the menu; soup, stir-fried or simply boiled. Some early upland rice and sweet corn may be ripe for harvest by the end of September. Wa Dim Tang Gun, my host from Bang Shau, tells me a popular Shan proverb: "*Lon sam par pha, lon kau par khao"*, which translates: "As the guest of others you had better bring blankets in January and rice in September". This proverb highlights on the one hand, that September brings food shortages, and on the other hand, recalls the need for empathy and consideration of others. Hill people tend to laugh at what life throws at them. Humour has been their best medicine to heal the traumas inflicted by violent war and the hardships of life.

For the Kachin people, there is the clan system and with it the system of relationships between clans. Between clans, there are three categories of relationship;

- *Mayu*: whereby the sons of your clan are acknowledged as worthy to marry the daughters of another clan,
- *Dama*: whereby the daughters of your clan are acknowledged as worthy to marry sons of another clan,
- *Kahpu Kanau*: where members of your clan are acknowledged as brothers and sisters of another clan but marriage between them is not allowed.

Although there is flexibility, mediated and negotiated by the Committee of culture and tradition, marriage outside the accepted system generally provokes resentment. Organising the different clans as relatives in different forms, this system has brought unity, love and care for each other. It is a vital social structure which has enabled communities to counter hunger and other threats by providing a strong social safety net.

A striking feature of the community reveals itself when we cross check the interrelated rows of the seasonal calendar. Generally, there are severe food shortages or lean periods for many communities from May to August. However, the seasonal calendar shows the food security situation in Bang Shau is fairly good even for that period, despite the fact that cereal crops are still growing and income is very low (see table 4.1). I asked them if there are deviances or errors, but they replied that,

- The majority of the food they consume is available from their home gardens and swidden farms and not necessarily bought.
- The forest, the universal provider, gives foods like mushroom, bamboo, and various greens particularly in this rainy period.
- Relatives, clans and friends can still be relied upon. They happily share, give away or lend their rice which can be returned after harvest. In addition to this, some families are members of the rice bank where they can borrow rice at a very low interest rate.

Thus cash income is not a decisive factor in food security, although it is important to cover expenses for education of their children, access to healthcare, transportation, and buying imported household goods.

A **Venn diagram** is drawn to understand what organizations are present, how they relate to each other and how they influence the lives of people from Bang Shau (Figure 4.4). The size of the set reflects the villagers' impression of how powerful the organization is. Solid lines indicate internal and dotted lines indicate external organisations. Within the boundary of Bang Shau, there are three main organizations, which have to negotiate and coordinate in governance and administration matters. They are the Village Peace and Development Council, VPDC, appointed by the Myanmar Government, the Kawng Hka Militia (formerly the Kachin Defence Army), and the Village Elders' Committee (known as *Ma Re Salang Komite* in local dialect).

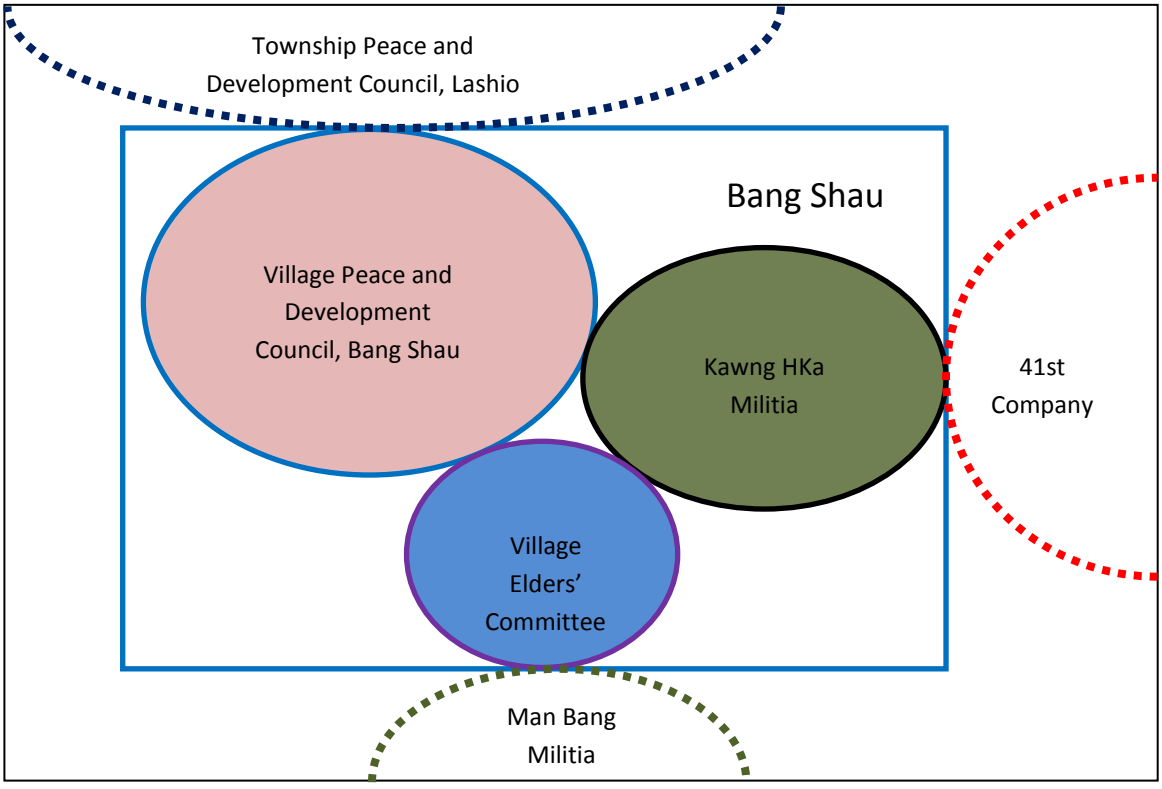


Figure 4.5: A Venn diagram showing the existing organizations in Bang Shau and their relationship.

As reported by the villagers, organizations within the village boundary have established mutual respect and a good practice of coordination. They regard this as a strong point for

Bang Shau, and give it as the reason why collective social initiatives such as the community forest and small hydropower project can be successfully implemented.

Beyond the village boundary, there are three organizations which have relationships with Bang Shau; the Township Peace and Development Council, TPDC – a government administration agency, the 41st Company and the Man Bang Militia – a powerful and aggressive local militant group recognized by Myanmar government. TPDC has direct influence on policy implementation and decision making of the VPDC. Kawng Hka Militia has long been present in the region as a Kachin ethnic armed revolution group called Kachin Defense Army KDA. They have made peace with the Myanmar government since 1991. Under military and political pressure, they recently agreed to transform from an ethnic armed force into a local militia. The 41st Company- a Myanmar military unit, has been in more frequent communication with them since they became a local militia. They occasionally conduct joint missions such as anti-drugs campaigns, or drive to control other armed forces that have been declared illegal organizations. Man Bang Militia sometimes forces Village Elders' Committee to provide unpaid labour and occasionally food.

In terms of social structure within the village, they have set up several organizations:

- Education Committee
- Early Childhood Care and Development Committee
- Health Committee
- Drinking Water Committee
- Hydroelectric Power Committee

and with support from the UN and NGOs:

- Food Distribution Point Committee (supported by UNWFP and Metta)
- Community Nursery and Community Forestry (supported by Metta and Oxfam Novib)

- Rice Bank Committee (supported by Metta and Oxfam Novib)
- Micro Credit Union (supported by Karuna Myanmar Social Services)

In addition to this, there are other very active groups organized under each Christian denomination such as women, men and youth groups.

The PRA tools, community mapping, seasonal calendar, Venn diagram and direct observation, have enabled me to see the community in context, while participants gain an awareness of the physical and social resources they possess, their options for earning a living and the complex power structures influencing their lives.

After presenting this first phase – understanding the context, I would like to present the second phase of my presentation. This is a situational analysis for understanding illness and healing, common diseases, knowledge transfer and medicinal plants.

4.2 Illness and Healing: A Kachin Perspective

Before analysing the situation of knowledge transfer and medicinal plants, I would like to bring to light how illness and healing is understood by the Kachins and what are the prevalent illnesses.

First, I would like to look at the epistemology of “illness” and “healing” as understood by the Kachins. N-hkum Hkam Awng is a respected Kachin healer and an active contributor to the Traditional Medicine Study Group, organized by the Men Committee of Shan State Kachin Baptist Association SGZ. N-hkum’s clan is well known among the Kachin as the healer clan. His daughter N-hkum Bawk Hkawn has helped me to communicate with him and hear his invaluable insights. A woman healer from Bang Shau, N-hkum Nang Bang has also kindly contributed her indispensable healing knowledge.

Depending on the situation, “illness” is categorized as follows by the Kachin:

- *“Nga n-pyaw ai”* which means, “not feeling well”; this category includes general and mild feelings of unease.

- *"Hkum n-pyaw ai"* which can be directly translated as "body not well"; this category includes minor or common sickness like colds, diarrhoea, etc..

- *"Ma chyi ai"* which can be directly translated as "feeling painful"; this category includes severe illnesses and diseases.

When a patient comes, the healer asks how the patient is feeling. After observing the symptoms and listening to how the patient is feeling, the healer asks a few diagnostic questions to seek the possible cause of illness. There are various causes of illness as understood by the Kachin:

- *"Shut ai"* or "have done wrong to" is a very important belief related to illness. It is believed that illness prevails because of the misconduct of the patient towards eitherthe creator, parents, ancestors, friends or neighbours.

- Causes related to the universe – earth, water, air and trees are regarded as sentient living beings. Doing wrong to them may cause illness, since people are expected to respect ethical customs such as: avoid urinating or defecating near the headwater or into a stream; old trees are to be respected and not cut without paying respect or asking permission, etc.. It is also believed that there are dark forces in them too – some places, or areas of ground are considered bad earth, *"Ga Mang",* and stepping into them will cause illness; walking through cold, suspended mist at dawn and dusk is also considered bad for your health; some trees are regarded as toxic and walking underneath the boughs of these trees may cause irritation and illness.

- Causes related to state of mind – the current relationship of the person with family, friends, neighbours and colleagues is thought to affect the person's state of mind, and an unhappy mind may cause illness.

- Causes related to food and drink and your behaviour – this is a straightforward idea and is known in Kachin language as *"lu shut, sha shut ai*- wrong in eating and drinking*"*. *"Hka shin shut ai"* is a well known phrase, which could be directly translated as "wrong in bathing", meaning bathing or taking showers when you

are feeling cold, when you have just arrived from outside feeling the excessive heat of the sun.

- Causes from infection like malaria, typhoid – this is obviously an idea adopted from conventional western medicine.

After diagnosis, the healer prays for the patient, holding the patient's hand and chanting the *"Mangala ga*- blessing". Then the healer goes to where the medicinal plant related to the patient's illness is growing. There, an important ritual, called *"Tsi lagaw gang ai* – asking medicine", is conducted. The healer recites,

"Oh the creator lord, the great universe, the sun, the moon, the guardians of mountain, valley and medicine plants, your daughter Hkawng Yang has got a painful swelling on her left calf. I ask your kindness with great respect. Please allow me to take this medicine plant to cure her. You have helped me to cure your daughters and sons so many times. Please show your kindness this time too, and help cure your daughter. Please help it to be a quick healing for Hkawng Yang, with your power of healing." (Translated from the ritual performed by Nhkum Nang Bang - a medicine woman from Bang Shau.)

The sun is emphasized if it is a major case of illness and the moon is emphasized if it is a minor case. The sun deity *"Jan Nat"* is regarded as the one who taught the art of healing to humankind. It is very important to call out the name of the patient, the illness and the part of the body that is suffering, since the healing is particular to that patient alone.

Kachin healers believe in intuitive knowing and interpretation of signs and symbols. It is believed that after the ritual of "asking medicine", the medicine plant shows signs. The healer needs to closely observe the plant to see the signs. The signs are interpreted as follows:

- There will be a fresh hole recently bored in one of the leaves, not caused by insects. This indicates:
    - if the hole is at the tip, then the cause of illness is situated at or attacking the head,

  - if the hole is in the middle, then the cause of illness is situated at or attacking the trunk,
  - if the hole is at the base, then the cause of illness is situated at or attacking the lower part of the body.

- If the medicine plant has shed its leaves, out of season, then the cause of illness is the patient's misconduct to the creator, the ancestors, the parents or the elders.
- If the leaves of the medicine plant are unseasonally dry, then the illness is related to the patient's state of mind.
- If the leaves of the medicine plant are unusually red, then the illness is already very severe.
- If the shoot or tip of the medicine plant is broken or withered, then the illness is in a terminal state.

After interpreting the signs, the healer scatters rice around the plant, before taking the required part or the whole plant as needed. Rice is equated with life, and scattering rice is a symbol of giving back the life to the plant that gives its life to cure people. All Kachin healers believe that if this ritual is not done, if the medicine plant is not properly asked, it will inevitably bring calamity upon the healer and the family.

If the healer is taking the great medicine or *"madung tsi",* only the amount needed must be taken. Taking extra or throwing away the great medicine is believed to bring bad luck to the healer, so it is strictly avoided. "*Madung tsi"* are powerful medicine plants of which use is handed down only to the family members or the intern to whom the healer has decided to hand over the healing secrets.

If the cause of illness includes wrongdoing, either towards the elders, parents, ancestors, neighbours, the earth, the water or the trees, a ritual of asking forgiveness has to be done before taking the plant medicine. If the cause of illness includes the mental state of the patient because of their relationships to others, the healer would mediate to resolve the issue or dispute.

Figure 4.6: N-hkum Nang Bang, medicine woman from Bang Shau: performing the ritual of *"Tsi lagaw gang ai"*, asking medicine from the guardians of mountain, valleys and medicine plant.

The plant parts used for the first dose of the cure must be kept to perform another ritual. After the patient is cured, the plant parts retained have to be returned, along with the presents like rice, meat and a small amount of money depending on the status of the patient. The ritual of *"Tsi sa ai* - returning the medicine" requires sticky rice, a piece of cloth and a pointed ritual knife. The plant part is wrapped in the cloth, put into a hole which is made in the ground with the ritual knife and then the plant part wrapped in the cloth is buried, as a symbol of burying the illness and contamination. After that, words of gratefulness to the creator, the sun, the moon, the universe, the guardians and the medicine plant are recited. Then blessings to the patient are also said, thus closing the cycle of healing.

If we look at the three categories and five causes of illness, we will see how illness is understood by the Kachin. The Kachin's construction of illness demonstrates their deep understanding of interrelated webs of relationships. Thus illness, for the Kachin, is not just something which exists by itself. It is an expression of imbalance or disruption of relationships in the life forces of the patient, family members, clans and relatives, neighbours, the community and the elements of the universe.

Hence the Kachin's practice of healing is not just to cure the disease. Its primary goal is to heal the patient and then to restore harmony to the life forces of the patient, family, neighbourhood and the universe. In his study of local knowledge related to tribal healing in Northern Thailand, Dr. Santasombat concluded,

"Local healing systems are, by nature, integration of beliefs, methods, forms and various stages of treatment: the local healers usually combine various methods of treatment together. The aim of treatment is to cure the person, the family and relatives, including readjustment of unbalanced relationships within the community[33]."

In this sense, the Kachin's healing is holistic: shedding a light on the position of each of us as participants in the web of life, the *anima mundi*, the universe. This ancient way of approaching healing in wholeness deserves great attention, especially to heal the

[33] Santasombat, Y. (2003). *" Biodiversity, local knowledge and sustainable development".* Regional Center for Social Science and Sustainable Development (RCSD), Faculty of Social Science, Chiang Mai University, Thailand.

wounds of modern day society caused by social fragmentation, lost of spiritual values and purpose of life, and the anthropogenic climate crisis. In his book Radical Healing, Rudolph Ballentine asserts,

"Holistic healing requires, however, that the way we achieve wholeness not only makes us more complete as individuals but also reintegrates us into the whole of nature. The unique value of medicinals made from natural substances is that they weave us back into our place in the body of the earth. But there is an even more profound dimension to the deepest healing: it's also spiritual.

... From this more complete, holistic perspective, illness is not an interruption of life, but a crucial and valuable effort to reach for more wholeness of spirit. ... Such illnesses and ailments are critical components of spiritual life. Crises of the body are ultimately expressions of underlying crises of the spirit[34]*."*

This wholeness of healing arises from the tradition of deep understanding of nature and living a simple life fully embedded in nature. N-hkum Nang Bang is a fourth generation healer from Bang Shau. She has been practising N-hkum way of healing for over 30 years, which her aunt N-hkum Ja Hkawn handed down to her. She tells the following myth of how the N-hkum clan has learned healing:

"In the time of this story, there is a courageous N-hkum young man. All the maidens in his village want to marry him because he is known for his prowess in hunting.

One day, while he is hunting, he finds a huge wild boar with frightful white tusks foraging. He kills it with a single fatal shot from his musket. He then cuts one of its shins from the hind leg and puts it into his shoulder bag, to make sure it cannot run away in case it should be revived again. After that, he cuts vines, twigs and leaves from nearby plants and covers his quarry, before he goes back to call his men to carry the dead boar to the village.

On his way back, he sees the great fortune-teller from the village. A mischievous idea to test the reputation of this famous man sparks in his head. He asks him if there will be meat on his dining table for that day. The fortune-teller, after holding his clear white

[34] Ballentine, R. (1999). *"Radical healing- paperback edition"*. Three Rivers Press, US.

crystal ball for a while, replies that he will not have any meat for his dinner. Pulling out the bony shin of the boar from his shoulder bag, he mocks at the fortune-teller's wrong prediction. With great embarrassment, the fortune teller laments "Oh crystal, you have been helping me to foresee things so clearly on countless occasions. But today, how come you deceive me and cause me this painful shame. Let's just go our different ways from this day on."

He throws away his crystal and follows the young man to carry the boar. When they arrive there, to their amazement they find no boar but just a pile of vines, twigs and leaves. They find only the hoof-prints of the boar which has run away three-legged. So after all, the crystal had shown what was really going to happen.

The disappointed companions try to make sense of what has happened. Finally, they come to the conclusion that the vines, twigs and leaves must be powerful medicine plants. They decide to bring back the plants and use them to cure ailments in their village.

The plants they bring back include Tinospora vine and boneknit, which have proven to be effective cures for so many ailments. This newfound ability in healing instills great respect from other clans who call them Tsi-hkum or Medicine N-hkum from that time on."

Learning from nature and wildlife is a recurring theme in the myths of discoveries of a cure and is current in local healing practices. The N-hkum claim that they learned the use of a very potent tonic and immune booster vine called "*Lah Gan or Sharaw Ngun* – Tiger Tonic", from a Tiger: legend says that after chewing this vine, the tiger quickly recovered from exhaustion. The legendary antidote for snake bite and other poisons, *Mashaw,* is widely used by the Kachin and its discovery myth says a hunter learned it from observing a snake chewing it to counteract the deadly bite from a fight with another snake.

For the Kachin, healing is empirical knowledge learned from nature and perfected through trial, error and experience. It is improved through a dynamic process of adapting the old knowledge and adding and adopting new knowledge and practices. Since the knowledge is dynamic and many contribute to the process of knowledge construction, it is regarded as common property. Healing knowledge is passed on to either a family

member or an apprentice, whom the healer trusts as being capable of carrying on the tradition and following strict ethical principles.

The healer teaches the methods of diagnosis, the medicinal properties of plants and the rituals to an apprentice. However, for working practice, it is necessary to be initiated as a fully recognized healer by the mentor. Since healing involves dealing with another person's life, it carries heavy responsibilities. Thus healers are socially controlled by moral norms. This is the reason why usage of some important medicine plants is passed on only to a trusted apprentice. When the apprentice is ready to be initiated as a fully recognized healer, therefore, depends on the assessment of the mentor whether the trainee is mature and morally strong enough, in addition to having gained skills of healing. Traditionally, it is believed that without initiation, the apprentice's knowledge of medicinal plants is only as good as their knowledge for identifying weeds.

N-hkum Hkam Aung asserts that the most important part of healing is the relationship between the healer and the patient. The medicine is potent only if the patient has faith in the healer and the medicine. If not, the medicine is only good as a placebo. His thoughtful words reflects the famous Myanmar verse,

When there is truthfulness and integrity

The essence of the earth arises, then

Every tree, grass and vine, will turn into medicine.

4.3 Common Diseases

Workshop participants produce a list of common diseases in Bang Shau, including malaria, diarrhoea and dysentery, coughs and colds, measles, chicken pox, hypertension, etc. After this, Pair-wise ranking, a relational PRA tool, is used to identify the most common diseases in Bang Shau. The participants identify malaria, diarrhoea and dysentery, and coughs and colds as the most common ones. This is quite closely mirrored in the analysis of the treatment record of the community dispensary.

As the participants from the workshop make clear, malaria is the most prevalent illness, representing 50% of total cases; it is worth looking at detail since it is severe and the most frequent disease. Malaria is followed by coughs and colds, 23%. Diarrhoea and dysentery is identified in the workshop as the third most common disease, although it ranks fourth in terms of cases admitted, 8%, behind general weakness, 9%. This fact does not alter the ranking of the workshop. People prefer the effective remedy using herbs for diarrhoea and dysentery; we will see this later in the medicines of preference for the most common diseases.

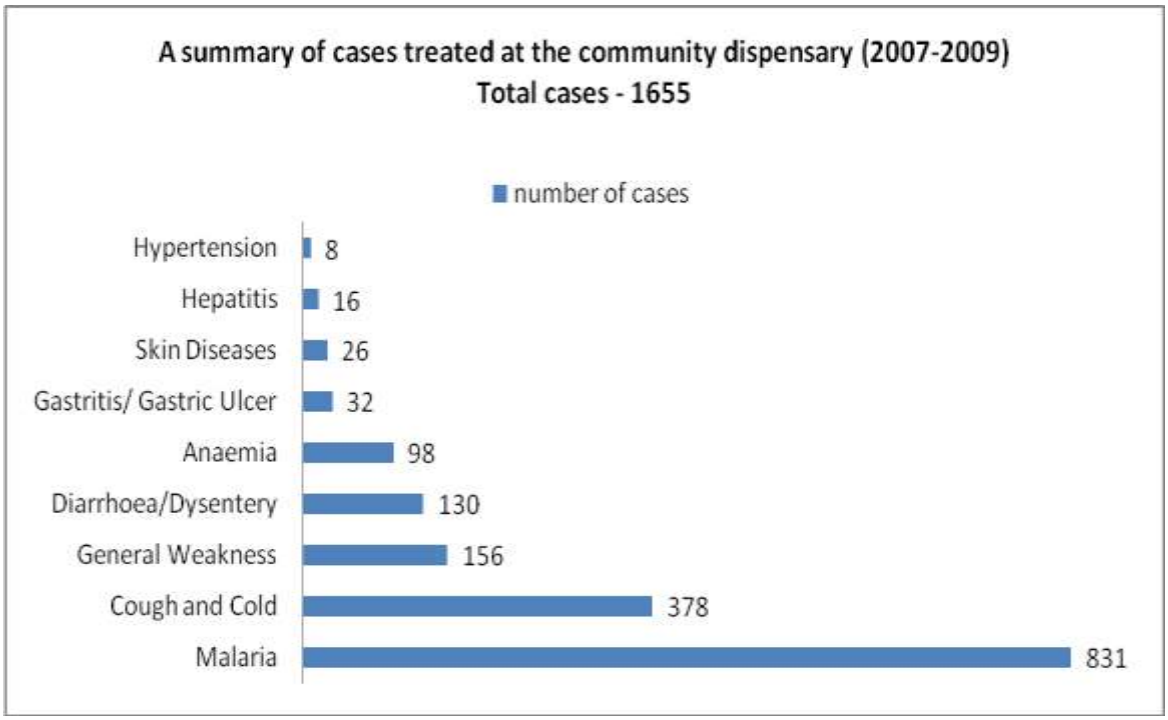


Figure 4.7: A summary of cases treated at the community dispensary between 2007 and 2009.

However, the prevailing general weakness and anaemia were not mentioned during the workshop. Some possible reasons why they did not surface during the workshop might be, people did not acknowledge these conditions as illness or people are not familiar with the terms. Anaemia and general weakness might be two faces of the same coin; people might just reckon them as feeling tired or weak. Generally, anaemia might be common for the women, especially the pregnant women.

Moreover, anaemia and general weakness might have a direct link with the malaria, since malaria parasites affect the number of red blood cells by directly destroying red blood cells and also by accelerating the destruction through causing enlargement of the spleen – where worn red blood cells are destroyed. Another possible reason for anaemia and weakness might be due to iron deficiency or malnutrition. According to the participants and as agreed by the government health-worker, cases of other major diseases like tuberculosis and AIDS are quite rare.

4.3.1 Malaria

Malaria is still one of the most fatal diseases globally and developing countries are the most affected. According to the World Health Organization (WHO) it killed 863,000 people in2008, 88% of whom were children under five. It infected 243 million more[35].

In Bang Shau, 831 cases were treated, which constituted 50% of the cases admitted to the community dispensary within 3 years (2007-2009). This figure does not even include cases admitted to the Bang Shau government clinic, to the Mone Yaw general hospital, those treated by private health-workers or those who use herbal medicine.

Malaria is a disease caused by a parasite transmitted by the female *Anopheles* mosquito. The parasites are from the genus *Plasmodium* – of which only four species can cause malaria. Maran Nang Mai, the government appointed health-worker, told me that *Plasmodium falciparum,* and *Plasmodium vivax* are found in the blood of the patients who are admitted to the Bang Shau government clinic. In her experience, *Plasmodium falciparum* is more frequent, causes the most severe form of malaria and is also known to cause cerebral malaria.

The swamps around Bang Shau are serving as mosquito breeding grounds and, yet few people opt to sleep with a mosquito net. These two factors alone might trigger the widespread occurrence of malaria in Bang Shau.

As malaria is directly linked with the mosquito, we can generally conclude that if there are more mosquitoes, there will be more malaria cases. Mosquitoes need water for

[35] Perry, A. (2010). *"Battling a scourage".* The Time Magazine, Vol. 175, No. 25, Hong Kong.

breeding, hence, they breed more and become abundant in the wet season. Therefore, we can generally say that malaria is more widespread when there is more surface water.

The swamps around Bang Shau are brimming with water from the monsoon rains from June till September. They retain water throughout the cold and dry season from October till January, although the amount of water gradually recedes. There is very little water during the hot and dry season, from February to May. This pattern in the water cycle is reflected in the distribution of malaria cases across the months for 2007 and 2008 (figure 4.8).

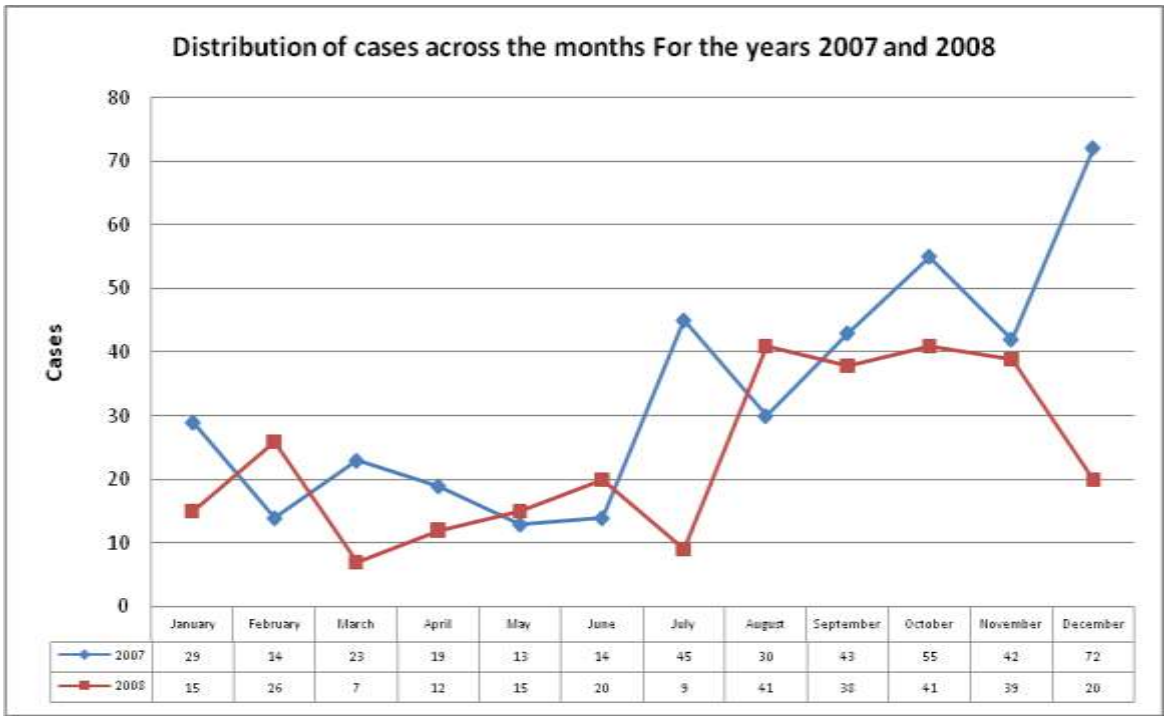


Figure 4.8: Distribution of cases treated at the community dispensary in Bang Shau across the months for 2007 and 2008.

After the first monsoon in June, the number of cases of malaria rises sharply starting in July. There is a deviance in the graph of 2008. This is because the community dispensary operated for only 3 days in June of that year. Both graphs are flat during the hot and dry months, from March to May, and are also flat at the beginning of the rainy season in June.

Unfortunately, children are the major victims of this fatal disease worldwide. In Bang Shau, children aged 5 and under comprise 25% of the malaria patients treated at the

community dispensary. Those who can be considered as schooling age, (from primary to high school level), aged 6 to 20, comprise 26%. The productive age groups, between 20 and 60, comprise 34% of the total cases treated.

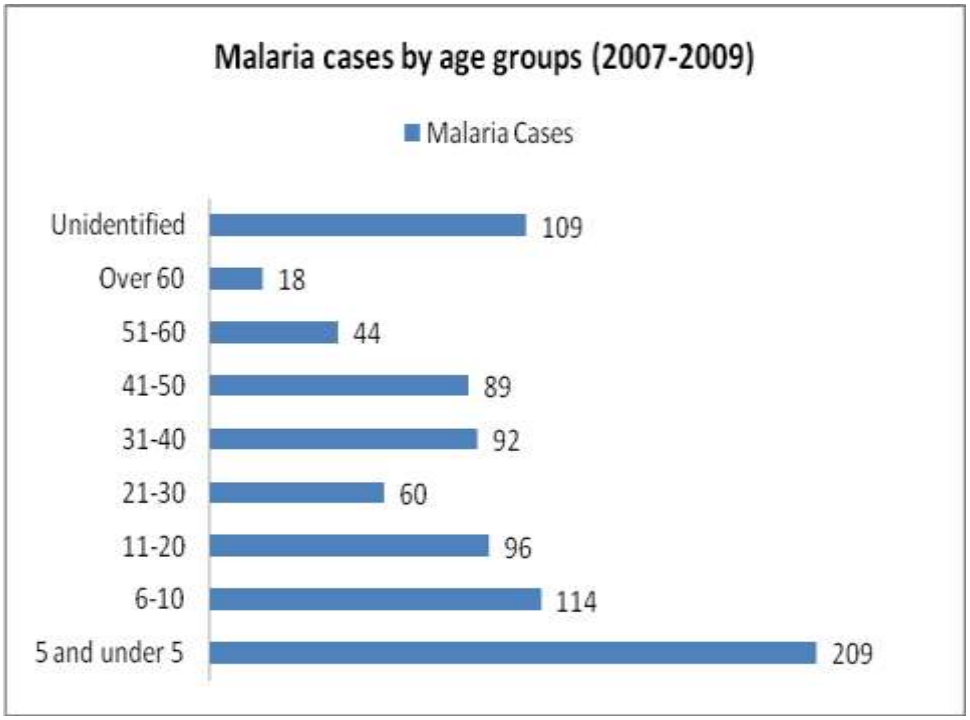


Figure 4.9: Malaria cases by age groups, 2007 – 2009, treated at the community dispensary in Bang Shau.

During my visit to the government clinic, two little girls, still in their school uniforms - white tops and green skirts, lay limp on the beds, each with a saline drip attached to their arms, the treatment for malaria. Health-worker Maran Nang Mai told me that malaria treatment and prevention is one of the major focal points of the public health department, hence there are sufficient supplies of medicine and related materials. Malaria is one of the imperatives of the Three Diseases Campaign being conducted in Myanmar and supported by the Myanmar government and international agencies. These antimalarial efforts are having significant impact in reduction of infections and fatalities in Myanmar, but the situation in Bang Shau highlights there is still a long way to go.

4.3.2The costs of illness: economic and social dimensions

In addition to the fatalities, malaria can have severe after effects if not properly treated. It can affect physical and mental development in children, cause chronic weakness, and

in the case of cerebral malaria, it might lead to coma and permanent brain damage in the infected person.

Figure 4.10 demonstrates the estimated economic losses caused by illnesses between 2007 and 2009, based on the cases treated by the community dispensary in Bang Shau. The losses are calculated as a combination of treatment expenses and loss of income. Children and student age groups, that is children under 5 and from 5 to 20, are excluded from estimates of loss of income caused by disease.

It is important to note that these are estimates only, based on average treatment expenses and loss of income calculated according to the average rest period needed for each type of illness. However, such estimates enable us to project the potential impact of illness on the local economy. Thus the total economic cost of illness over three years is estimated at about 38,000 USD, roughly 70 USD per household per annum. This is a significant amount of spending on healthcare for the households affected, whose subsistance lifestyles do not generate much income.

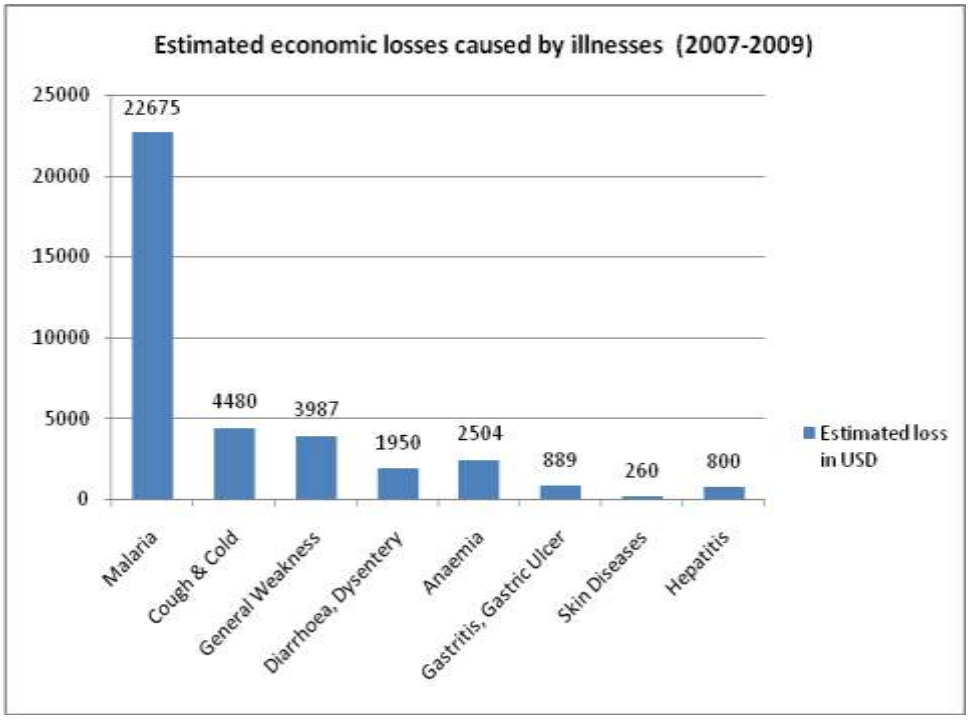


Figure 4.10: Estimated losses – treatment expenses and losses of income (excluding children and students), caused by illnesses treated in Bang Shau, community dispensary, (2007-2009).

Malaria accounts for 60% of the total estimated losses for the 3 years, roughly 760 USD per annum for Bang Shau and about 43 USD per annum per household. This estimate is based on the treatment record of the community dispensary alone. The figure would be noticeably greater if combined with cases treated at the government clinic and in private practices. Although such an estimate is not strictly complete and concise statistically, we can get a rough idea how illness impacts the economic life of the people of Bang Shau and the severe effects of malaria on the local economy.

In addition to the impact on the economy, malaria has social implications for the people of Bang Shau too. The most marginalized people of the village and so the most vulnerable, children and fatherless families suffer most. Students affected by malaria may have difficulties in learning because of missing school for days, even weeks, depending on the quality of their treatment and nutritional intake. When adults are ill, children have to take care of family chores and hence cannot go to school. In some severe cases, when it is not treated properly, malaria becomes a chronic ailment which cripples both the physical and mental development of the infected person. When adults contract malaria, family income drops and the family may find itself thrown into the vicious cycle of debt and poverty.

In short, malaria is a disease detrimental to the social and economic situation of Bang Shau, and more effective means of education, prevention and treatment are critically needed.

4.3.3 Preference of treatment

After looking at common diseases, a brief account of malaria cases and the impact of illness on people's lives, I would like to draw attention to preferences for treatment. During the workshop, participants list malaria, diarrhoea and dysentery and coughs and colds as the prevailing diseases in Bang Shau. Following this, participants are asked to respond to a short and simple questionnaire. The aim is to see what tradition of medicinal remedies they prefer; western medicine or herbal medicine or both. The following charts demonstrate their treatment preferences.

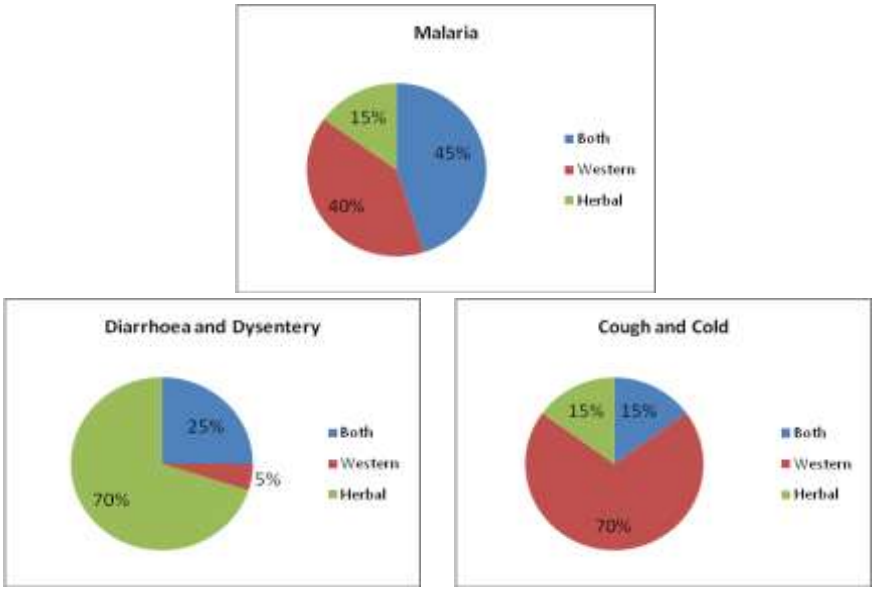


Figure: 4.11: Preference of treatment for common illnesses, based on information provided by 20 workshop participants.

Apparently, for the most prevalent and severe illness, malaria, treatment with western medicine is preferred over herbal remedies alone. But 45% of the respondents use both means of treatment indicating trust in local herbal remedies for malaria.

For diarrhoea and dysentery, local remedies have proven highly effective, as shown by 70% of the respondents preferring herbal treatments.

Interestingly, for coughs and colds, 70% of respondents prefer western medicine. It is ridiculous to see how the advertisement and marketing of cold tablets, which are very popular and easily available in Myanmar, have conquered even in Bang Shau. It is widely accepted there is no known cure for a cold – a general term used by the villagers for common colds and influenza - but in Myanmar, the majority of people take cold tablets like popcorn. Cold tablets appear to reduce symptoms of a cold, such as sneezing and a runny nose, but the active compound phenylpropanolamine, which is a constituent of most cold tablets sold in Myanmar, is now considered hazardous to human health.

This analysis shows western medicine is widely accepted, yet the traditional herbal remedies still play an important role in healthcare in Bang Shau.

4.4 Knowledge Transfer: Walking The Way Of The Elders

Many Indigenous cultures, languages and knowledge are at the brink of extinction globally, including the knowledge of plants and their healing properties. Elders commonly express their worries over the gradual vanishing of the old ways. When we look at the history of our cultures, we see the nature of culture is not static. It is a dynamic process. When new practices are introduced into an existing culture there will be acceptance and resistance, leading to trials, assessments and finally either acceptance or rejection. If a new idea or practice is accepted, it is gradually assimilated into existing practices.

Historically, we see construction of knowledge passing through similar processes. But what if the introduction of change is just too fast and immense for an existing culture to adapt and assimilate? Then change can be overwhelming. This is how I feel, given my trivial 30 years of living experience and witnessing of colossal waves of speedy changes in my culturally rich and diverse native place.

So what is happening to the healing knowledge of the Kachin? What is the experience of Bang Shau villagers? Definitely there are general worries that this treasure of knowledge is gradually dying out, as I was once told during the forest conservation workshop in 2007. But knowledge is intangible and in many cases, there is no obvious instrument or institution of knowledge dissemination in a village setting. How can we know what is really happening? My attempt to catch the wind is twofold: to see both the quality and quantity in the situation.

4.4.1 A question of “What”: the situation of knowledge transfer

In the workshop, after common diseases have been identified, a simple questionnaire is prepared to get a glimpse of how many herbal remedies people have learned to use, for how many illnesses. Six illnesses are described as common: malaria, diarrhoea, dysentery, cough and cold, hypertension, weakness. The first question is what herbal cures are used for these illnesses. The second question, how the remedies are prepared, is just to check whether respondents really know the plant and how to use it.

The time taken to do the test, 10 minutes, is limited for two reasons: firstly to see what people are very familiar with and commonly using, and secondly to limit the amount of

data collected and allow for quick analysis. The test is taken in the Kachin language. Their herbal knowledge is assessed by looking at how many medicinal plants they can identify and the range of illnesses they can recognise, in breadth and in depth. The result of the test is presented in the following chart (see figure 4.12).

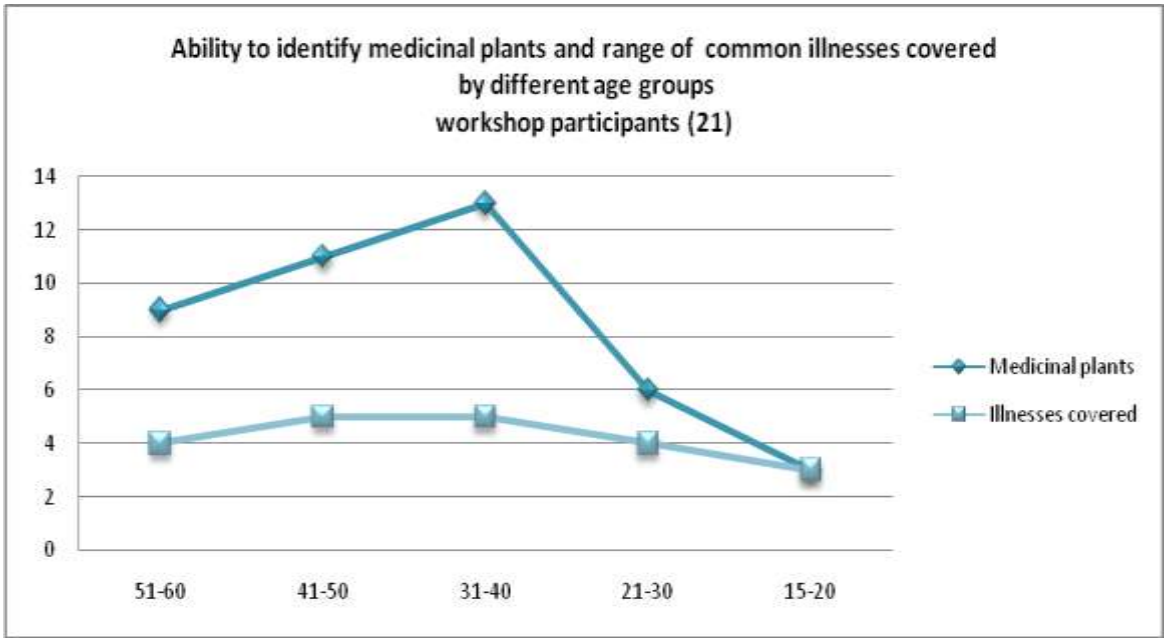


Figure 4.12: Result of the herbal knowledge test, as taken by 21 workshop participants, showing ability to identify medicinal plants and range of illnesses covered according to age group.

The graph is quite straightforward. It shows a sharp drop in ability for the under 30 and under 20 age groups, both in the number of medicinal plants they can identify and the range of illnesses they can cover. The age group under 40 has the highest score for identifying an average of 13 medicinal plants and covering an average of 5 illnesses. On average, the groups over 30 can identify 11 plants and cover 5 illnesses, while the groups under 30 can only identify 5 plants and cover 3 illnesses.

There are some exceptions I would like to highlight: one woman participant aged 38 identified 21 medicinal plants for all 6 illnesses, and one male participant aged 22 identified 10 plants for all 6 illnesses. The two groups under 60 and under 50 got lower scores than the under 40 groups mainly because some of the elderly women cannot

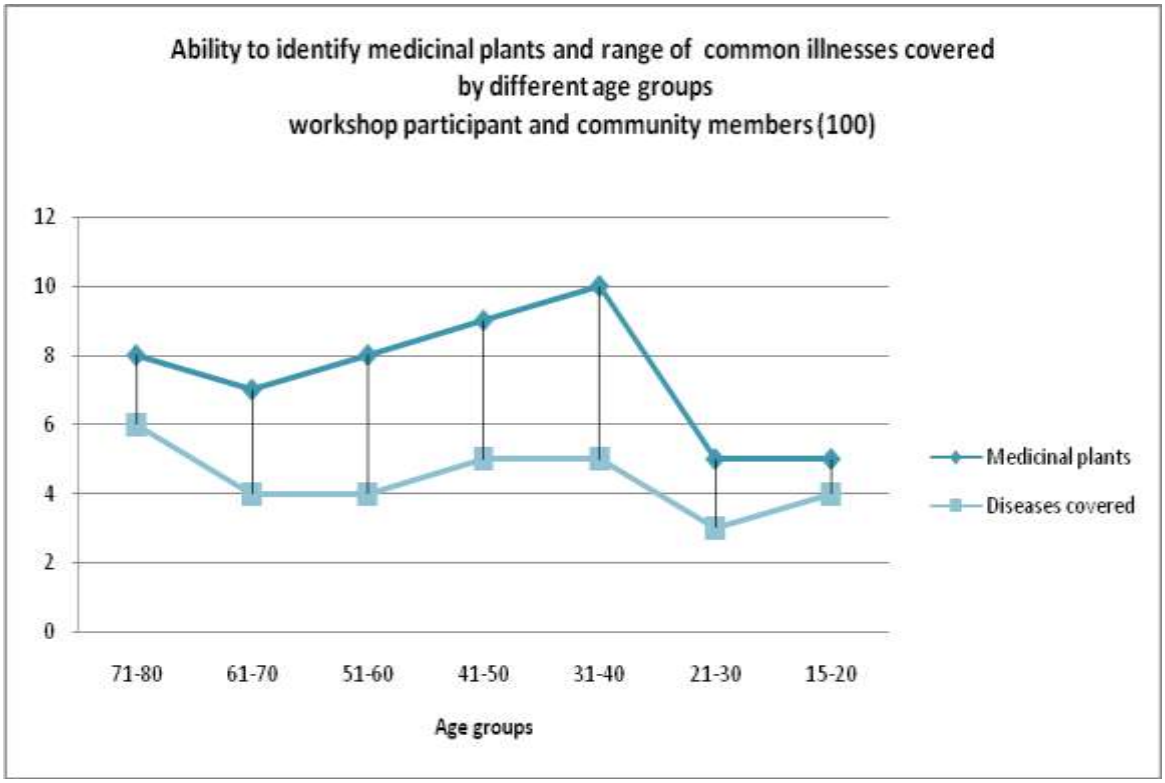
write quickly, within the time limit. This is one limitation of the writing test. Average education level for those over 30 is grade 4 and for those under 30 is grade 7. Those under 30 were born in relatively peaceful times and received a good education, yet they do less well than those over 30, who were born and raised in conflict-ridden times and had less access to education. Education level does not determine test scores. The 2 young high school graduates got the lowest scores because they can identify only 1 herbal remedy.

It is important to remember that this test is not intended to indicate the situation of specialized professional healing knowledge, but to look at the common herbal knowledge used by common people and embedded in the wider community.

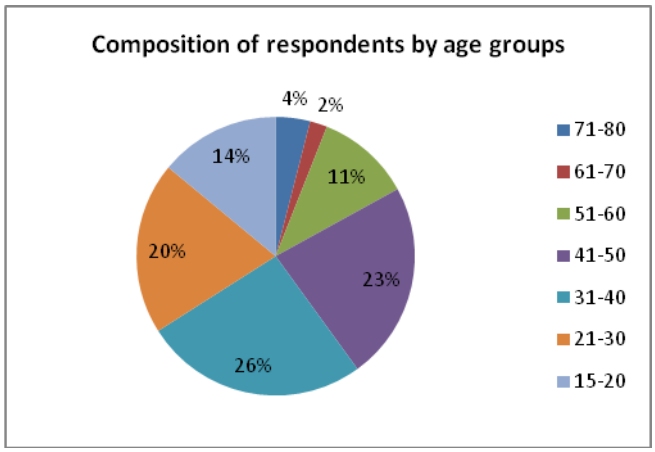
The next step is to conduct the test in the wider community. After presenting the result to the workshop participants, the purpose of the test and the process are discussed with them. Together we develop guidelines to improve effectiveness of the test, we look at how the questions can be better worded in the Kachin language, how the representation can be improved to include people from all age, gender and ethnic groups and we emphasise how important it is to keep to time – this last has proved to be the most difficult rule to follow for hill people who have a different idea of “Time”.

To overcome the difficulties of writing – which is more prevalent among the elders of the community, middle aged and young workshop participants who can write well volunteer to conduct the test. In Figure 4.13 (A), community test scores are combined with workshop participants’ scores to illustrate the herbal knowledge transfer situation of Bang Shau.

The separate analysis of the community test result (which is not presented here) also shows consistency with the initial result from the workshop participants; 8 is the average number of medicinal plants identified by those over 30, 5 by those under 30. This average figure of their repertoire of medicinal plants recurs in the combined result which represents Bang Shau involving 100 respondents (Figure 4.13).



(A)



(B)

Figure 4.13: (A), Results of the herbal knowledge test, taken by 80 community members and 20 workshop participants: the combined result giving an overview of the community in general. (B) Composition of respondents by age groups.

The graph of the final result indicates that the younger generation, those under 30, know fewer medicinal plants and recognise cure for fewer illnesses than the older generation.

In short, this result can be taken to show that the dissemination of healing knowledge from the older to the younger generation is declining.

Further indications of this decline become obvious if we keenly observe how younger people responded to the test. They lacked confidence and were embarrassed to take the test in the workshop. After the community test results were collected for the first round, of the 60 participants, very few were of the younger generation. The volunteers who conducted the community tests explain that most of the young people they approached were reluctant to take the test and in some cases refused to take the test at all. Since we wanted to see young people well represented, we all decided to take the second round and to add 20 young respondents.

Here, I would like to highlight the group who got the highest score, the under 40s. They are the unique middle generation. On the one hand, they have had the opportunity to learn local knowledge from parents and grandparents, despite growing up during the hard time of intensifying civil conflict. On the other hand, they also had the opportunity to access education, as the “dark-age” began gradually to retreat and peaceful times to return. Thus they hold knowledge of the two worlds and are in a position to make the most of it. Will they be those who walk the way of the elders? Will they be able to transfer what they have learned to the next generation? Time will be the best judge.

Before looking at the reasons for this decline in herbal knowledge and transfer of it between generations, I would like to highlight limitations in this way of testing what people know whilst putting forward an honest justification for doing it this way. First of all, the written test method does not reveal the totality of people’s knowledge, like many other ways of testing people’s knowledge. Secondly, healing knowledge is not just limited to the use of medicinal plants, since there are other dimensions in traditional healing. Thirdly, this approach is reductionist by nature, since the aim is to quantify the situation thereby neglecting the uniqueness of each person. Finally, since many villagers themselves became those who executed the research, it is very difficult to know whether the research has been conducted consistent with the agreed guidelines. It can be argued it in some ways reflects how scientific rationalism is challenged when faced with the participative nature and complexity of a real human situation.

In an attempt to avoid biases in data collection, emphasis was placed in the guidelines on good time-keeping and the need to refuse the help of interested bystanders, well intentioned though it might be. Hill people, like other indigenous communities, have a different idea of time: different in terms of how time is divided and the value and importance attached to each period of the day. As for the issue of "help", why not help your friends and relatives, when they are bombarded with silly questions? Being fully aware of these limitations, however, I would like to say the result of the test at least shows us the general trend and the general repertoire of each age group.

4.4.2 A question of "Why": the nature of knowledge transfer and reasons for its decline

To answer the question "Why is traditional herbal knowledge declining, especially amongst young people?", I would like to look into both local and global factors. Before digging into specifics, I would first like to discuss the nature of knowledge transfer more generally.

Healing knowledge, unlike for instance general local knowledge of farming, requires a specialized skill set, like hunting and dispute resolution. Thus, there will be just a few recognized and respected healers in a village. This specialized healing knowledge carries considerable power and, inevitably, profound ethical responsibilities. Thus, this professional level healing knowledge has its own process of knowledge transfer, as this is briefly discussed in section 4.2.

However, in a community setting, healing knowledge is not a property which solely belongs to the professionals. On the other side of the same coin, there is a widespread healing knowledge practised at individual and household levels, though the remedies might be limited to common and less severe diseases. But in terms of the healthcare it offers to the most marginalized communities it is a vital knowledge both literally and practically – where remoteness, lack of money, and the power to bargain with existing institutions and structures limit their access to public healthcare services.

With regard to professional healing knowledge, the nature of knowledge transfer has a pattern or procedure to follow, which might include;

- selecting the successor,
- teaching the beliefs, rituals, practices, incantations, medicinal plants, and ethic,
- constant assessments of skills, maturity and moral merits, and
- the rite of initiation as a fully recognized healer.

This process of knowledge transfer generally takes years of learning and assisting the mentor.

Common healing knowledge, practised widely among community members, knowledge transfer is from elder members of the immediate family or relatives to the younger generations; parents to children, grandparents to grandchildren, or aunt to niece, etc. The nature of knowledge transfer of this kind is different from professional knowledge transfer, in terms of

- occasional teaching based on illnesses or injuries which occur in the family or when a medicinal plant is found during weeding on the swidden farm, etc.; it would generally not be on a regular basis
- rite and rituals might not play an important role as in the professional training
- light nature of the training, as it does not need to carry the burden of responsibility as in the other
- remedies that are taught might be for a more general and mild ailments.

People in the communities in Myanmar like Bang Shau, still largely live in extended families, where grandparents, aunts, uncles and their respective families live together. Grandparents, as they are not as busy as the parents, are closer to the young ones and are those who teach ethics, manners, belief systems and other local knowledge, including local medicines. Myths and stories play an important role in their teaching, and listening to the storytelling of the elders is a common and popular mode of learning.

Since healing knowledge is regarded as common property it is widely shared among community members, between different villages and different ethnic groups. Although

each tribe has unique characteristics in their practice, their healing knowledge is acquired through adapting old traditions and adopting new methods learned from others. Shan and the Palaung people's healing practices are influenced by Buddhist traditions and the related Ayurvedic tradition, while Lisu and Miaozi people practise the Chinese medicine tradition. The Kachin have apparently borrowed and adopted some methods and cures from these traditions while maintaining their own identity. Their healing system even survived the suppression of animistic elements in their culture by European Christian missionaries, with a twist of inviting God or saying a prayer. The construction of healing knowledge is dynamic and participatory, hence, transferring this knowledge involves everyone in the community.

There are processes of transferring healing knowledge, for both professional and common ones though there is neither formal structure nor institution who take the responsibility. Yet, why is healing knowledge declining, especially among the young people?

During the workshop, a brainstorming session was conducted with 4 groups of participants, examining why herbal knowledge is declining among young people. The following reasons are identified;

- herbal medicine is considered outdated and inferior
- young people are more interested in chasing after so-called modern education
- because they attend schools in the city (there is only a primary school with extended classes for up to grade 8, in Bang Shau), young people spend very little time with parents and grandparents - sometimes only the summer holidays. Now, even during summer, young people are busy having private tuition in English and/or Computer skills.
- western medicine is widely accepted and western pills are easily available whereas seeking local medicinal plants and preparing some traditional remedies takes time. Though professional healthcare is available now in Bang Shau, buying and taking medicine including prescription drugs, from the shops in the market fair, is still the most common practice.

- there are no structures or initiatives to encourage the learning of traditional medicine
- though the elders know the herbal traditions, there are no written documents for interested young people to learn from

The reasons identified by the villagers reveal a recurrent theme around education. How do we define education? What has the structure and content of modern education done to traditional knowledge, traditional ways of learning and the worldview of young people?

Modern education was introduced to Myanmar by western missionaries during the days of British colonialism. It brought new ways of learning, new worldviews and new structures and systems into the field of education. Traditional means of acquiring knowledge, traditional systems of learning and institutions have come into existence and developed as part of our ancient civilizations. These traditional education systems have been gradually dismantled and replaced by modern western education, even after Myanmar gained independence from the British. It is not surprising that the winner's or conqueror's system of education is considered superior. To become a powerful nation like the developed industrialized countries requires a new system of education; a good rationale for a post-colonial, newly emerged country like Myanmar. The now-well-established modern education system requires structures like schools, colleges and universities, to produce educated citizens. Hence in Myanmar, education is inevitably understood as going to school where professionalized educators will take care of the rest. The less glamorous, non-professional teaching of grandparent and elders in the community and other ways of learning become irrelevant and trivial. This is one reason why we are losing our local knowledge, including our knowledge of traditional medicine - our construction of the discourse of education.

Another cause of the loss of local knowledge lies in the structure of education itself. Modern education is structured in "layers": primary, secondary and tertiary. These are supported by physical infrastructure - schools, colleges and universities - and a hierarchy of administrative and management structures - township, state, national level education departments and a ministry. Access to modern education is designed like a stairway:

from villages to towns or cities, from primary schools to high schools and finally to colleges and universities. Moving away from your place to where you can access it is built into modern education. It has the advantage of opening up whole new worlds and invaluable new experiences for the student. However, and especially for those people from a village, education means going to schools, college or university for at least 15 to 16 years, with at least 11 years away from home. These long years of being separated from family have profound impacts on the student, the family, and on the maintenance of local knowledge. Local knowledge arises from the interaction of people and place and thus is bound to the land. Moving away to a new land means there is a need to learn new sets of skills and new knowledge. Learning the old ways becomes irrelevant.

I have seen many young people educated in cities, living away from home for most of their time and faced with constant struggle. They are like uprooted trees, transplanted to a strange land. They do not thrive to their full potential in this strange land, yet they no longer fit in their own land, when they return after graduation. Of course this is a generalisation and of course there are exceptions, like U Thant who came from a small village in the Irrawaddy Delta and went on to become UN Secretary General. In Bang Shau, violent armed conflict has accelerated parents' determination to send their children away from home to attend schools in the city. This is their attempt to avoid forced recruitment of their children to become child soldiers for the different warring factions. Moving away from the villages to settle in town, city or even other countries has become a mark of success. One of my elder friends has brought up five children, but now, her house is empty: two sons have settled in the US, another two live in a distant town and her youngest is studying at a college in the city. Sadly she shows me the various fruit trees she has grown for her children, the fruits of which now feed flocks of bulbuls and squirrels. Many villages are following this pattern, becoming villages occupied only by old people. Local knowledge cannot survive if there is no one to carry on the traditions.

Lastly, the content of modern education, or perhaps the rationale underlying modern education, the doctrine of scientific rationalism, the perception of science as source of absolute authority, the assumption that logical thinking is the only valid means to acquisition of knowledge, this is effectively wiping out traditional knowledge by instilling a different worldview in young people. This scientific worldview brings young people to

see their own traditional beliefs and practices as illogical, irrational and backward. It leaves an imprint of cultural inferiority in their young minds. With this sense of inferiority in their minds, it is easy for them to accept whatever seems modern or a product of the modern world. This is why they easily accept western medicine as being superior to traditional medicine. In addition to this, curriculum development in Myanmar is centrally controlled by the Ministry of Education, which means that the curriculum taught across the country is a general curriculum designed and produced only by the Ministry of Education. If we want invaluable local knowledge to survive, there is a need to give space for locally defined curriculum content - content that is relevant to the local context, local forms of livelihood and local culture. This said, with regard to traditional medicine, the Ministry of Education has established University of Traditional Myanmar Medicine and has created traditional medical hospitals. Nevertheless, more efforts are needed to study the medical practices of ethnic minorities, and to promote traditional medicine among young educated people.

In conclusion, the decline of herbal knowledge amongst the young people is due to complicated layers of interrelated reasons: education, political background and the changing socio-economic situation. When asked to say something to the young people, the woman healer N-hkum Nang Bang said,

"I would say happiness for me is when there is enough food to eat, a caring family and a healthy life. What else do you need? You may be very rich in terms of materials, but will you be happy if you are not healthy? Our medicinal knowledge has a long tradition of caring and healing others. I would like to encourage young people to learn it. Try your best for the well being of yourself and others."

4.5 Medicinal Plants: Generous Gifts From Nature

For food, clothing, shelter and medicine, known to Myanmar as the four basic needs, plants are the universal provider; engendering and nurturing an intricate web of interdependent living beings. Plants have been the primary source of medicine to cure all kinds of human ailments since time immemorial. Medicinal herbs have been found in a

Neanderthal burial place[36] some 60,000 years old. Our ancestors have handed down precious knowledge of medicinal plants from generation to generation. Great medicine men and women use healing plants to take away the pain and restore the well being of those who suffer. Medicinal plants, invaluable gifts from nature, are documented in numerous books and by famous philosophers and medicine men such as Theophrastus and Dioscorides[37]. These books are indeed books of life. About 53,000 species of plants are used as medicine[38] in various part of the world.

The lush green forests and the diverse ecological niches around Bang Shau provide a diverse array of medicinal plants. Medicinal plants are collected to use in traditional healing, to treat injuries, to treat illness in domestic animals and to earn income by selling them.

4.5.1 A significant source of income

Cattle rearing and growing crops, including lowland rice, upland rice and upland swidden farming have been major livelihood options for the people of Bang Shau. Collecting and selling non-wood-forest-products is also an important means of income for the majority of the villagers. This activity provides a quick income, especially in the rainy season when the cultivated crops have not yet provided either food or income.

Medicinal plants are collected from the forests all year round and sold at the local market fair. Collecting medicinal plant is more frequent in the dry season, due to easier travel and access to the forest, whilst there is very little farming work done during this time. Compared to other non-wood-forest-products, collecting and selling medicinal plants is a more significant means of income.

The following chart shows how many households from Bang Shau are dependent on the income from collecting and selling medicinal plants at various levels (Figure 4.14). From the total 175 households, 70% earned income from the medicinal plants trade, where 7% are trading medicinal plants, 7% rely heavily on medicinal plants for their income and a

[36] Bhuner, S. H. (2002). *"The lost language of plants: the ecological importance of plant medicines to life on earth".* Chelsea Green Publishing, US.
[37] Pavord*, A. (2005). "The naming of names". Bloomsbury Publishing, UK.*
[38] Marinelli J. Edt. (2004). "*Plant"*. Dorling Kindersley Limited, UK.

significant 56% earned part of their income (sometimes even a considerable chunk) from medicinal plants. For only 30% of the total households is there no involvement in the collection or trading of medicinal plants.

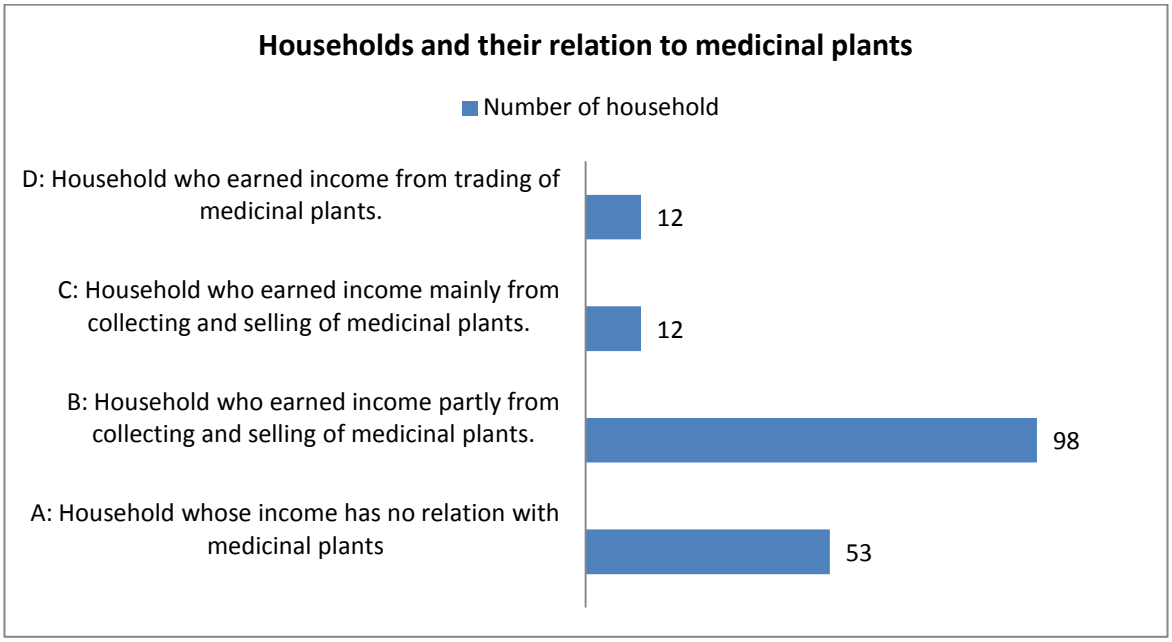


Figure 4.14: The income dependency of households from Bang Shau to the medicinal plants.

The chart somehow reflects the general economic and social status of the households. The traders constitute the majority of the elite group in the village. They have more wealth, knowledge and power compare to the majority of the villagers. By contrast, the households heavily reliant on income from collecting and selling medicinal plants represent the most underprivileged group. The significantly large number of villagers whose income is earned partly from medicinal plants are members of the village middle class. Those whose income does not involve medicinal plants are mainly members of the professions such as teachers, soldiers, the clergy and those who are rich and powerful by inheritance such as the descendents of local *Duwa* – the former feudal lords.

In short, medicinal plant trade is a significant source of income for the majority of the villagers of Bang Shau. This pattern is mirrored across almost all villages in the highlands of Northern Shan State.

4.5.2 A question of "What": the situation of medicinal plants exported to China

Various kinds of medicinal plants are collected and traded in Northern Shan State. They are almost exclusively exported to China. The species of medicinal plants traded differ according to ecosystems, seasons and market fluctuations. Various species of orchids are traded, especially from the genera *Dendrobium, Blettila, Bulbophyllum, Geodorum, Eulophia, Anoetochilus, Nervilia, Flickingeria,* and *Gaeleola.*. Other medicinal plants collected and traded from Northern Shan State are from the genera *Amorphophallus, Polygonatum, Paris, Curcuma,* and *Asparagus.* Table (4.2) shows the list of medicinal plants collected from Bang Shau for export to China. A total of 22 species of plants are in the medicinal plants trade. See appendix (1) for more information.

No.	Vernacular Name	Part Used	Condition	Botanical Name	Family
1	Kawng San Si	root	dried	*Paris polyphylla*	Trilliaceae
2	Jaba pawt	whole	dried	*Hypoxis aurea*	Liliaceae
3	Ngaw gawng	rhizome	dried	*Polygonatum kingianum*	Lil.
4	Ho Sam Sip	tuber	dried	*Asparagus spps.*	Lil.
5	Muk	tuber	dried	*Amorphophallus spps.*	Araceae
6	Pan Sha	tuber	fresh	(epiphytic Arum)	A.
7	Jaba pawt labra	rhizome	dried	*Blettila spps.*	Orchidaceae
8	Jaba pawt adin	rhizome	dried	*Blettila striata*	O.
9	Parn Se pawt	pseudobulb	dried	*Bulbophyllum spps.*	O.
10	Mo Loi	whole	dried	*Nervilia spps.*	O.
11	Je Chau	whole	fresh	*Dendrobium devonianum*	O.
12	Kwan Ze Chau	whole	fresh	*D. gratiotissimum*	O.
13	Hpyin Htu Chau	whole	fresh	*D. crystallinum*	O.
14	Waw Chau	pseudobulb	fresh	*D. primulinum*	O.
15	Shway Chau	pseudobulb	fresh	*D. aphyllum*	O.
16	Xiao Huan Chau	pseudobulb	fresh	*D. dixanthum*	O.
17	Ta Huan Chau	pseudobulb	fresh	*D. fimbriatum*	O.
18	Sang Gyen Pan	pseudobulb	fresh	*D. chrysotoxum*	O.
19	Htang Kaw Chau	pseudobulb	fresh	*Flickingeria spps.*	O.
20	Hpun Shanam	bark	dried	*Cinnamomum spps.*	Lauraceae
21	U Lun Hpun	bark	dried	*Litsaea glutinosa*	Lau.
22	Wa Jamoi Ru	root	fresh	-	-

Table 4.2: Medicinal plants collected in Bang Shau to sell to China.

4.5.2.1 Highlight of some exported medicinal plants

Orchids: Orchids are collected all over Myanmar as the major export of medicinal plants. There are 13 species recorded in table 4.2. However, the name *Jaba* Pawt, may also be used for the tubers of other ground orchids like *Eulophia, Geodorum* and *Phajus.* Those names of orchids which end with *Chau* are Chinese names used in local markets. Though there are no proper records of the amount exported, legally and illegally, decrease in their population has been very significant, especially of the *Dendrobiums*. In his book "Orchids and their conservation", Harold Koopowitz, a renowned orchidologist, has extensively discussed the use of orchids in traditional medicines around the world. Among many other genera of orchids, he discusses the widely accepted use of *Dendrobium* and *Blettila* in Traditional Chinese Medicine[39]. Among the 81 species of *Dendrobiums* found in the Shan State[40], several species are collected for export to China.

Dendrobium devonianum fetches the best market price, thus it is most sought after. It grows in the high altitude forests because it prefers the cold and humid environment. It was once an abundant species but is now becoming very rare. *Dendrobium gratiotissimum* got the second highest price. Although other *Dendrobiums,* such as *D. Dixanthum, D. Aphyllum, D. Crystallinum,* etc. need to be processed before export to China, *D. Devonianum* and *D. Gratiotissimum* are exported fresh.

The drying process of medicinal plants is a highly energy consuming process. It can take 24 hours to dehydrate 1.5 Kg of *Dendrobium* canes and 162 cubic feet of firewood may be consumed to dry 150 Kg of fresh orchid tubers. Since it is an arduous process, orchids are now just sold fresh in Bang Shau. The drying process is nevertheless done somewhere, before the orchids cross the border for sale.

Like many other medicinal plants, orchids are also prone to changes in market demand and price fluctuations. Thousands of orchid plants are frequently found abandoned at the markets or near the roadsides, either because local middlemen stopped buying it since

[39] Koopowitz, H. (2001). *"Orchids and their conservation".* B. T. Batsford Ltd., UK.
[40] Smithsonian Institute (2003). "*A checklist of the Trees, Shrubs, Herbs, and Climbers of Myanmar".* Available at http://botany.si.edu/myanmar. Accessed at 3/September/2010.

Chinese traders suddenly stopped their purchase for that particular species, or the villagers have brought the wrong species.

(A)

(B)

(C)

(D)

Figure 4.15: Orchids in the medicinal plant trade. (A) Desiccation process of orchid tubers, including the genera *Blettila, Eulophia* and *Geodorum*. (B) The dried tubers, ready for export. (C) *Dendrobium devonianum.* (D) Processed stalks of various *Dendrobiums*.

A species of *Bulbophyllum*, locally called *Mork Parnsay,* is a very much loved plant because of its lovely fragrant flowers. This fabled plant frequently appears in the stories of local folklore, folk music and many hill villages are named after it. It is called *Shang Hua Ko* by Chinese traders who started to collect it in 2008 and offered 0.13 USD/kg for fresh pseudobulbs. Then the purchase abruptly stopped in 2009. Access to information is difficult in hill areas and very few people noticed this information. Consequently, countless *Bulbophyllum* pseudobulbs, stripped from the trees, have been shamefully wasted. In 2010, it was collected again and the traders offered about 2.33 USD/kg for

fresh pseudobulbs. This wasteful and irresponsible harvesting of a single orchid species has undoubtedly caused severe damage to its population and genetic diversity, all the more so given that the orchids are collected all over Myanmar. For how many species, how frequently and for how long, the destruction has and will continue is not known. In addition to this, innumerable specimens of *Dendrobium crepidatum, D. cariniferum, D. parcum, Spathoglottis pubescens, etc.* are thrown away for two reasons: the novice collectors do not know that these species are not purchased, or the seasoned collectors try to cheat the traders by deliberately mixing these “wrong “species with the valuable species.

Paris: *Paris polyphylla* is a perennial herb from the family Trilliaceae. It can grow up to 3 feet. The brown coloured rhizome is a famous ingredient in traditional Chinese medicine. It is known as *Chong Lou* in China and *Satuwa* in Nepal, where it is also collected extensively to sell to the Chinese. The Kachin people from Bang Shau call it *Kawng San Tsi*. In Bang Shau, traders started to collect *Paris* in 1997. In 2010, it fetched 33.33 USD per kilogram.

Figure 4.16: Processed rhizomes of *Paris polyphylla.(photo taken in 2007)*

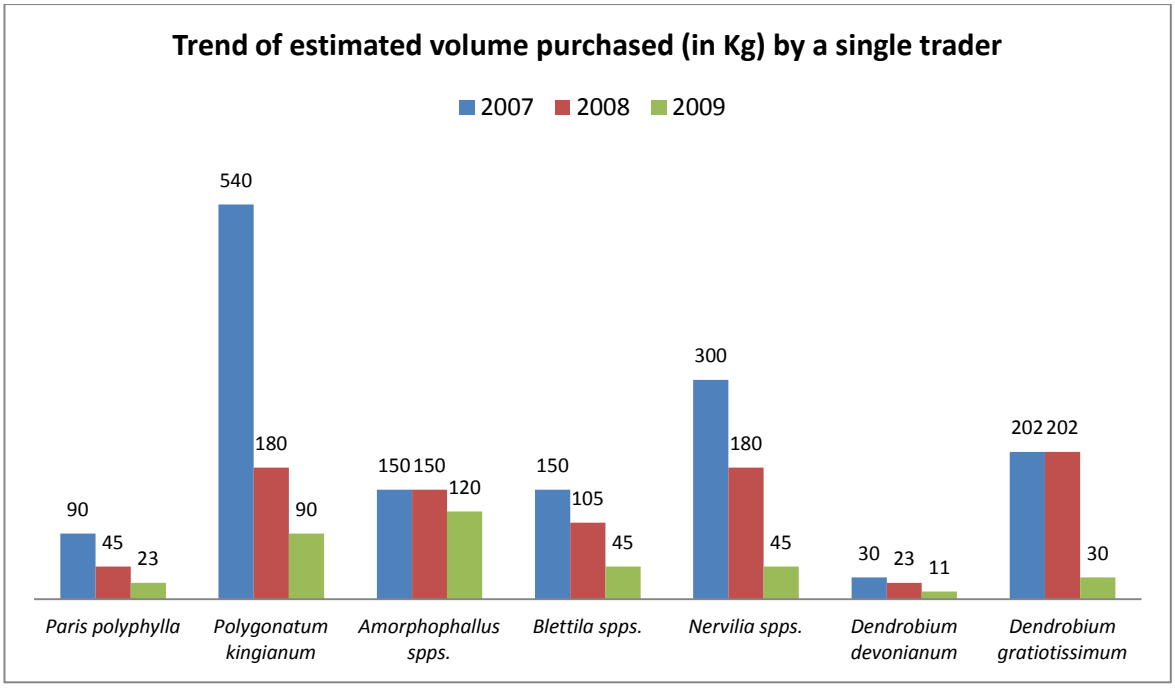
4.5.2.2 Trends in estimated volume of medicinal plants collected by individuals and market prices

To understand the current situation concerning medicinal plants collected for export to China, the trends in volume purchased or collected, and the market price are examined. Data are collected during the workshop. In addition to this, I have visited and interviewed a long acquainted friend who is a prominent local trader. During my visit to Bang Shau in 2007, they explained to me how the trade works. Again this time, their family kindly provided me with a list of the medicinal plants they purchase to export to China and with other important information about the volume purchased and the price fluctuations.

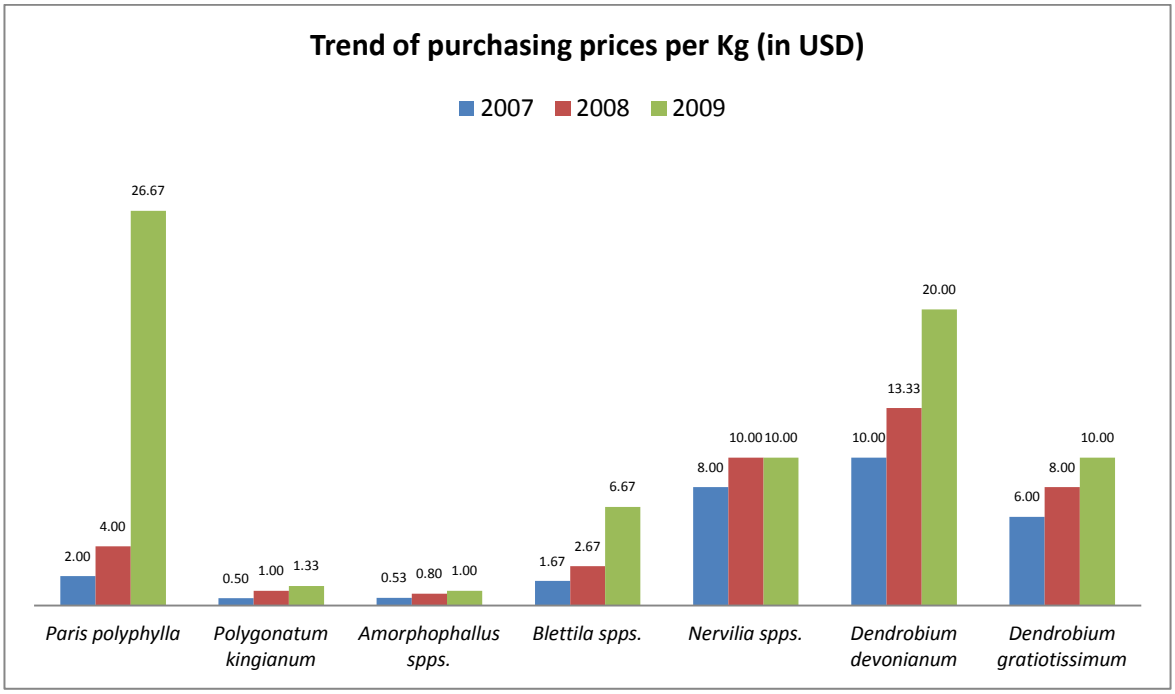
Although it is apparent trade in medicinal plant is active in the region, exact information is not available at all levels; from village, township, state to national. The local traders generally do not have a systematic record of their trade, intentionally do not keep records, or avoid scrutiny from others since income is a personal and sensitive issue.

The trade, as in other countries like India and Nepal, has a chain of local collectors, small traders and large traders who eventually do the export part of the business. Prices gradually rise from the villages and towns to the Myanmar-China border. For example a kilogram of *Paris* fetching 33 USD at village level may fetch 40 USD in the towns.

Figure 4.16 (A) shows the estimated amount of medicinal plants purchased between2007 and 2009 by a single trader. A total of 2.98 tons of medicinal plants are purchased within 3 years. The largest volume of medicinal plants purchased is of *Polygonatum kingianum* (similar to Solomon's Seal), which comprises 30% of the total purchase. It is followed by *Nervilia* (ground orchids with a single heart-shape leaf), 19%, *Amorphophallus* (Konjac Arum), 16%, *Dendrobium gratiotissimum* (epiphytic orchid), 16%, and *Bletilla* (rhizomatous ground orchid), 11% respectively. The highly prized *Dendrobium devonianum* (epiphytic orchid) and *Paris polyphylla* (smiliar to Trillium) comprises the least volume , 6% and 2% of the total volume, purchased within 3 years.



(A)



(B)

Figure 4.16: Trends of medicinal plants purchased in Bang Shau by a single trader between 2007 and 2009. (A) The estimated volume purchased. (B) The purchasing prices of exported medicinal plants.

Generally, there is a declining trend of volume purchased for each species of medicinal plants. For some species there is an abrupt and significant decline; for example the amount of *Polygonatum* purchased in 2009 is 6 times less than the amount purchased in 2007. The situation is the same for the purchase of *Nervilia* and *Dendrobium gratiotissimum.* On the other hand, the decline in the amount purchased is gradual for *Paris polyphylla, Amorphophallus,* and *Dendrobium devonianum.* However, the amount collected for *Paris, D. devonianum* and *D. gratiotissimum* in 2009 is alarmingly low.

The declining amount of purchase somehow signifies the decline of the wild population of the species, although there are other reasons to consider. Other reasons for the decline in purchased volume might be:

- decline in market demand or price,
- other traders competing to collect from the same source, the same villages,
- collectors have got more promising or profitable jobs, or are too busy with other activities.

Now, I would like to draw attention to related price fluctuations for the same 3 years (Figure 4.16 (B)). The purchasing prices reflect the prices at village level. Prices are quite uniform among village traders but depend on the quality of the commodity, for example, freshness for *D. devonianum,* moisture content or colour for *Nervilia* and Amorphophallus, etc.. As explained previously, *Paris polyphylla* and *D. devonianum* fetch the best price while *Amorphophallus* and *Polygonatum* got the lowest price.

In general, the trend in prices for each medicinal plant is increasing. The price for *Paris polyphylla* in 2009 increased exponentially ; it is 13 times higher than the price in 2007. Other price rises are more or less gradual, except for *D. devonianum* which has doubled in price within 3 years.

Comparison of these two charts, Figure 4.16 (A) and (B), has suggested a subtle correlation between these two phenomena; volume decreases and price rises. Generally, prices rises could signify scarcity or decrease in population of the species of medicinal plant. Again, it could be related to other reasons:

- increase in commercial demand,

- resource exhaustion, including sources in other countries,
- restriction or prohibition of particular species of medicinal plant in other countries.

Although being well aware of other possible contributing factors and circumstances, I would like to bring together the two points previously made about the wild collected species of medicinal plants. Decline in the amount purchased suggests a decline in population of the species, rising prices signify decreased populations of the species. I would like to elucidate this point by demonstrating both coherent and exceptional contrasting cases.

Here, I would like to highlight the case of *Paris polyphylla*, the most valuable medicinal plant (see Figure 4.17). In 2007, when it was collected for the first time in Bang Shau, the price was about 0.17 USD per kilogram for fresh rhizomes. Figure 4.17 shows the gradual price rises, 2 USD/kg in 2007 and 4 USD/kg in 2008 and an exponential increase in 2009, about 27 USD/kg. In 2010 the purchasing price offered by village traders is about 33 USD/kg, which will be sold to big traders in cities at around 40 USD/kg for the fresh rhizomes.

The price surge of *Paris* is related to its population decline and the impact of over-collection from its wild sources in response to popular commercial demands. Figure 4.17 reflects the decrease in population at local level. *Paris* is also a popular source of income for people in Nepal[41] and China[42], resulting in resource exhaustion in these countries. Figure 4.17 suggests the natural capacity of Paris to replenish its numbers around Bang Shau is declining.

[41] Acharya S. P. (2005). *Developing medicinal and aromatic plant based livelihood options for traditional gathering communities: A case study of western part of Nepal.* Ministry of local development, Nepal.
[42] Cunningham A. B. (2008). *"A Paris .....gone before we know it"*. Article from www.wwfcn.panda.org Accessed at 25/September/2010.

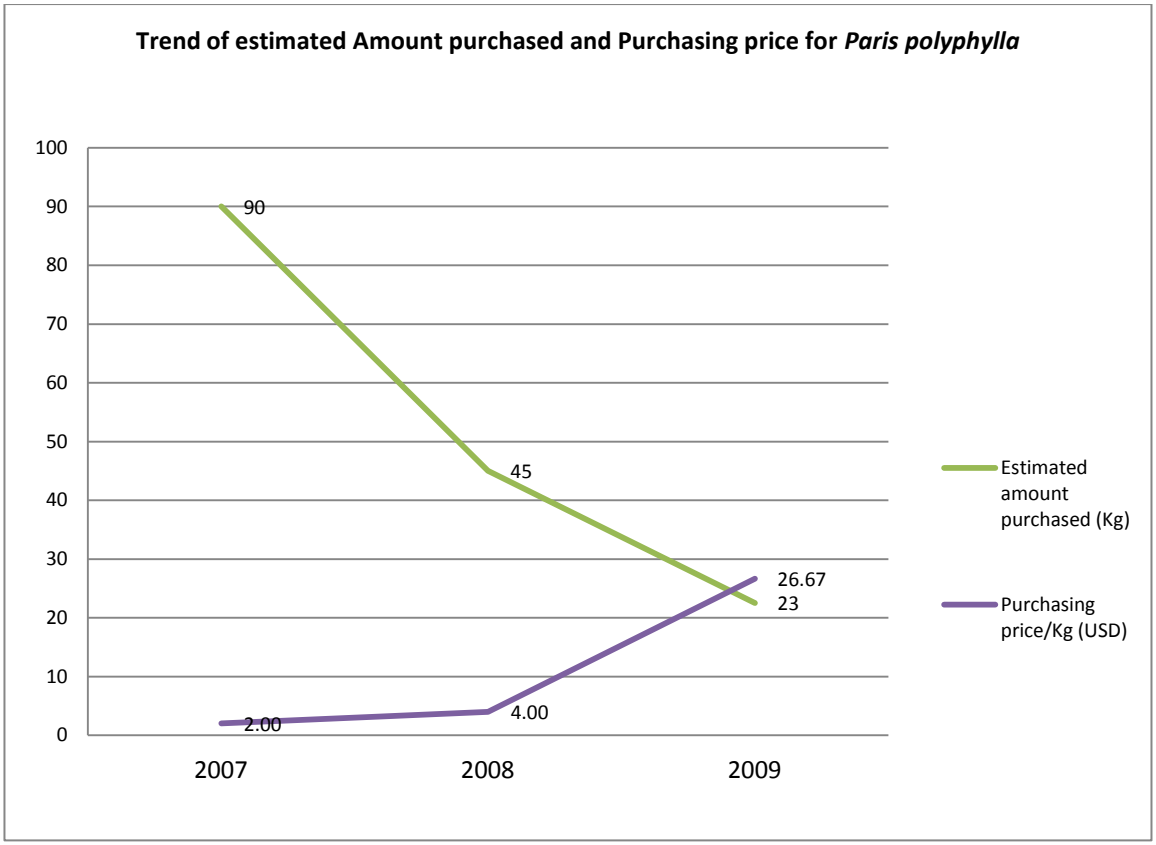


Figure 4.17: Trend of estimated amount purchased and purchasing price for *Paris polyphylla,* collected by a single trader between 2007 and 2009.

The case of *D. devonianum* is similar to the case of *Paris.* Collection of *D. devonianum* began in 1985, selling then at 0.05 USD/kg of fresh stalks. By 2009, after 24 long years of collection, the price has rises to 20 USD/kg. This species of orchid was by no means rare in the wild before 1995. However, after 24 years of exploitation, its population is decreasing alarmingly as suggested in Figure 4.17. Only 11 kilograms were purchased in 2009. It is now also one of the most threatened species of orchid in Laos[43].

By contrast, there are some exceptions evidenced in the two charts (Figrue 4.16 (A) and (B)). If we look at *Polygonatum* and *Nervilia,* despite the significant decline in the amount purchased - a sixfold decrease within 3 years, there is very little change in their prices. This phenomenon might suggest the dormant state of market demand for these species or there are other sources of supply.

[43] http://www.orchisasia.org/especes/d/dendev/dendev_en.html Accessed at 11/09/2010

However, these two contrasting cases, studied for the period between 2007 and 2009, can be reconciled by the data collected during the workshop. Two case studies of the trend of estimated amount purchased by a village trader and a local collector (see Table 4.3) are consistent with the trends from the data provided by the previous trader (Figure 4.16 (A)). The declining trends of estimated amount collected from 2005 to 2009 again signify alarming decline in the wild medicinal plant population.

Sr.	Medicinal Plant	Estimated Amount Collected (in Kg)					Total	Year Started
		2005	2006	2007	2008	2009		
1	*Nervilia spps.*	12,000	3,750	450	225	150	**16,575**	1986
2	*Blettila spps.*	16,500	12,900	7,545	300	0	**37,245**	1996
3	*Dendrobium spps.*	52,500	24,000	6,600	180	0	**83,280**	1987
4	*Amorphophallus spps.*	7,500	6,000	300	0	0	**13,800**	2000
5	*Polygonatum spps.*	900	300	120	75	0	**1,395**	1992

(A)

Sr.	Medicinal Plant	Estimated Amount Collected (in Kg)					Total	Year Started
		2005	2006	2007	2008	2009		
1	*Nervilia spps.*	45	38	30	15	8	**135**	1986
2	*Dendrobium spps.*	1,050	825	270	68	3	**2,216**	1987
3	*Amorphophallus spps.*	150	120	75	23	3	**371**	2000
4	*Polygonatum spps.*	1,200	600	15	0	0	**1,815**	1992

(B)

Table 4.3: Trend of estimated amount of medicinal plants purchased between 2005 and 2009. (A) By a village trader. (B) By a collector.

The village trader explained that she trimmed down her business in 2009 and quit the trade in 2010 due to increasing numbers of competitors, alongside the decline in medicinal plant numbers. She told me that in her early days of trading, she brought numerous bullock-cart loads of *Nervilia* and *Dendrobiums* to Mone Yaw village to sell to Chinese brokers. She said that during the 80s, she had purchased about 350 kilograms of *Polygonatum* every market fair (every other 5 days).

The village collector told me that it is difficult to collect medicinal plants nowadays. She said that *Nervilia* were so abundant a decade ago, she could collect about 7 kilogram a day: now it takes about a week to collect 1 kilogram. She also pointed out that the size of

the *Polygonatum* has decreased , where before it weighed up to 1.5 kilogram for a single clump of rhizome. Now they are becoming too tiny.

In conclusion, the charts and the anecdotal evidences indicate the general declining trend of medicinal plants collected for export to China. They not only signify the decrease in quantity but also in the quality of the species used in medicinal plant trades. It is not surprising to see these impacts after so many years of persistent exploitation; 24 years in the case of *Dendrobium devonianum,* the Devon's Dendrobium. In the worst cases, such as *Litsaea glutinosa* and *Cinnamomum spp.,* where barks are stripped off during collection, almost all the mature populations have gradually died, as a consequence. In the vicinity of Bang Shau, the impact has been so severe that no more cinnamon bark can be collected after just a single year of exploitation.

4.5.3 Commonly use medicinal plants of the Kachin people

The Kachin people of Bang Shau possess an extensive knowledge about the medicinal properties of plants growing around their village. This invaluable knowledge is recorded during the workshop with the contribution of all the participants. This knowledge represents the common knowledge widely practised among ordinary people in the community not the specialized knowledge practised by the professional healers. Healing knowledge is considered common property among village community members since the repertoire of healing is enriched by sharing among each other. Nevertheless, I am deeply touched by the Bang Shau villagers' generous sharing of their healing knowledge. This simple gesture of love and generosity resonates in the words of a woman participant during the workshop: "*Being healthy is the most precious thing in one's life. We would gladly like to offer our healing knowledge to everyone, ... our most precious gift."*

During the workshop, 20 participants took part in a three hour long medicinal plant collection activity. The participants, organized into three groups, collected the commonly used medicinal plants from different places, representing different ecosystems. After field collection, the sampled plants are displayed and presented among each other. A summary of the collection is shown in Table 4.4.

Sr.	Family	No. of species
1	Acanthaceae	1
2	Adiantaceae	1
3	Anarcardiaceae	1
4	Apiaceae	1
5	Apocynaceae	1
6	Araceae	4
7	Asclepiadaceae	2
8	Asteraceae	11
9	Balsaminaceae	1
10	Bignoniaceae	1
11	Bombacaceae	1
12	Cactaceae	1
13	Capparidaceae	1
14	Caprifoliaceae	1
15	Chenopodiaceae	1
16	Combretaceae	1
17	Convolvulaceae	1
18	Crassulaceae	1
19	Curcurbitaceae	3
20	Equisetaceae	1
21	Euphorbiaceae	4
22	Fabaceae	12
23	Lamiaceae	3
24	Lauraceae	1

Sr.	Family	No. of species
25	Liliaceae	6
26	Loganiaceae	1
27	Malvaceae	1
28	Menispermaceae	1
29	Musaceae	1
30	Myrsinaceae	1
31	Nyctaginaceae	1
32	Orchidaceae	5
33	Pandanaceae	1
34	Piperaceae	2
35	Plantaginaceae	1
36	Poaceae	2
37	Polypodiaceae	2
38	Rosaceae	2
39	Rutaceae	1
40	Sapotaceae	1
41	Scophulariaceae	1
42	Solanaceae	4
43	Utricaceae	1
44	Verbenaceae	4
45	Violaceae	1
46	Vitaceae	1
47	Zingeberaceae	3
48	Unknown	21

Table 4.4: A summary of genera and species of commonly used medicinal plants collected from Bang Shau during the workshop.

The three groups collected 154 sample medicinal plants, representing 121 species from 47 genera, though 21 species could not be identified. The strength of this activity is that within a short period, a lot of medicinal plants are collected with the collective contribution of various participants. However, ensuring participants stick to the collection guidelines is impossible. For example, participants are asked wherever possible to collect a complete sample. Instead, sometimes they focus only on the parts used as medicine, resulting in incomplete samples which are impossible to identify. Within such limited time, participants found it impossible to collect branches, leaves, fruits or flowers from a huge tall tree. Again, in many instances, the time of collecting the sample is not

necessarily appropriate, the plant may not be in its flowering or fruiting time. Another challenge of this activity is to take pictures of all samples before they have withered to unrecognizable shapes because of the tropical temperatures. In short, this rapid ethnobotany appraisal is just a quick preliminary study, which should be followed by a thorough and in-depth study. Nonetheless, their vernacular names and usage is recorded along with pictures of the sample plants collected.

If we look at the depth and breadth of their collection, i.e. the species and genera included, they have collected 121 species from 47 genera, so far as I could identify. There are obvious differences in the depth of each genus; 12 species from Fabaceae, 11 species from Asteraceae, 6 species from Liliaceae, but only 1 species represents each of the 31 genera (Table 4.4). The following list is for a quick impression of medicinal plants related to cures for the common diseases discussed in section 4.3.

Alstonia scholaris: oral decoction for Malaria; most popular antimalarial medicine.
Myriopteron spp: steam bath, in combination with other herbs, for fever in children.
Terminalia chebula: fresh fruit is eaten for cough and cold.
Eupatorium ordoratum: oral decoction prepared from leaves for severe cough, poultice of leaves for injuries.
Phyllanthus emblica: fruits pickled in honey is eaten for hypertension.
Euphorbia hirta: oral decoction of whole plant for dysentery.
Erythrina arborescens: oral decoction of barks for diabetes.
Asperagus acerosus: oral decoction of roots for tonic, especially for women.
Eleutherine plicata: oral decoction of bulbs for dysentery, poultice of bulbs for pustules.
Tinospora cordifolia: oral decoction of vine is used for malaria, coughing and tonic.
Geodorum spp.: poultice of the tuber for injuries.
Xantolis tomentosa: oral decoction of barks for tonic.
Datura stramonium: poultice of leaves for fractures.
Costus speciosus: diuretic.

The above mentioned medicinal plants may be used on their own or more often in combination with other medicinal plants. Their usage covers a lot of ailments, which are not mentioned during the workshop nor reflected in the treatment book of the

community dispensary, eg. Pustules, diabetes, chicken pox etc.. The interpretation and understanding of ailments are obviously diverse and differ from those of conventional medicine. The collection of medicinal plants also includes plants to cure ailments of domestic animals.

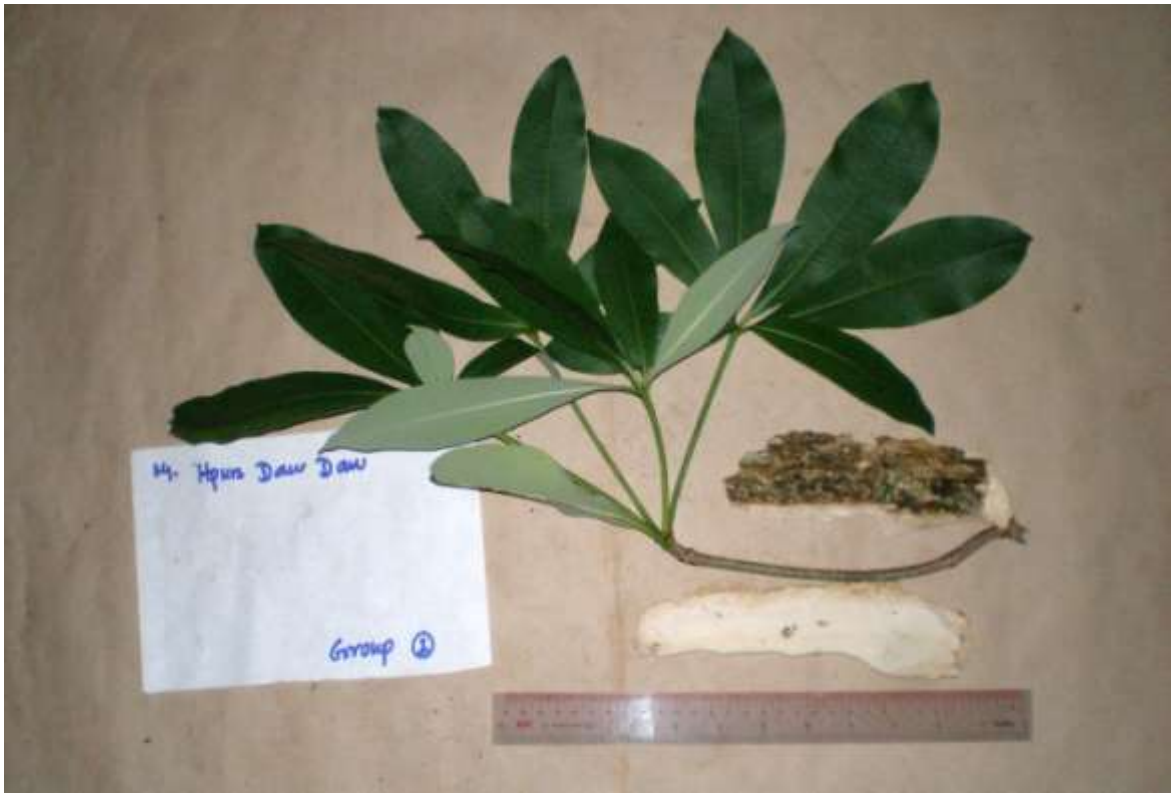


Figure 4.18: *Alstonia scholaris,* or *Hpun Daw Daw* as known to the Kachin, is a popular cure for Malaria.

Though the collection represents the Kachin's preferences in healing plants, their repertoire of medicinal plants also reflects some species commonly used in:

- Ayurvedic tradition, such as Amalla (*Phyllanthus emblica*, *Embelia ribes* and *Solanum indicum, Datura stramonium),* etc., and
- Traditional Chinese Medicine such as *Terminalia chebula, Blumea balsamifera, Polygonatum spp., Amorphophallus spp. etc..*

Medicinal plants used in traditional medicine are also under pressure from a number of factors such as deforestation, increases in agricultural land use, population growth etc..

However, the species represented in the collection of Bang Shau villagers differ in their prevalence, resilience, and preference of niches. *Eupatoruim ordoratum* is not only abundant but also highly invasive. By contrast, *Tinospora cordifolia, Xantolis tomentosa, Arisaema spp.* and *Platycerium spp.* are dependent on a forest ecosystem, while some species are cultivated plants or associated with human settlements. In short, the degree of threat to each species of medicinal plant is widely varied. Thus, in-depth study of important species should be conducted in the future, including their ecology, distribution and their medicinal properties and potential toxicities.

There are concerns among the villagers regarding threats to the medicinal plants they use. Workshop participants mentioned that nowadays they have to walk long distances to collect some medicinal plants such as *Gaw Maw* (local name of a species of Fabaceae) which were easily available in the past. Waje Nu Seng, a woman contributor to the collection of group 1, said "*If we lose our medicinal plants, we will lose our healing knowledge too. Since I am learning herbal medicine from my sister-in-law, I got worried when I found the forests where we collect our medicine are being cleared for farming. If we lose our healing plants and knowledge, how will our children learn a cure for when they get ill?*"

4.5.4 A question of "Why": causes of decline of the medicinal plants

Along with the rapidly diminishing forests, the medicinal plants population is in steep decline, especially those facing the pressures of aggressive market demand (see section 4.5.2.2). Although numerous studies related to species decline have been done, they are sporadic and fragmented in nature, thus it is difficult to draw coherent and meaningful conclusions. However, quantifying the decline of species has many intrinsic limitations and constraints: the scale of the issue, the size of the geographical distribution, the complexity of the species and their relationships to the ecosystem and the simple fact that there are unknown unknowns. In addtion to this, there is the other side of the same coin: decline in quality of a species – resilience, genetic diversity, etc.

During the workshop, villagers from Bang Shau have identified the following reasons as the causes of decline of medicinal plants;

- Population growth
- Deforestation/ forest fire
- Shifting agriculture
- Economic hardship
- Market economy
- Lack of unity among villagers/ increasing individualism and selfishness
- Lack of long term strategic vision in the leadership
- Lack of awareness and effort to conserve medicinal plants
- Weakness in education/ learning process

After peace is restored in the region and there are improvements in transportation, education, and access to healthcare, the population of Bang Shau is gradually increasing. Population growth puts strains on the forests and the environment around Bang Shau because farmed lands is expanded to cope with the increasing demand for food production. The majority of the villagers practise swidden farming that need clearing of the secondary forests every other 2 or 3 years. Though swidden farming has its own merits, the demand of this practice now exceeds the limited land and forest resources as the population increases.

Hardship is an inseparable component of human society and life. Like the polymorphic Proteus, hardship manifests itself in myriad shapes and forms at every corner of our society; for some people it might be a struggle for subsistence and for some it might be a desperate attempt to buy love and happiness. In Bang Shau, the prolonged civil war has crippled the local economy and local livelihood. After peace is restored, the market economy has found its way to this remote corner of the world. Turning medicinal plants into profitable commodities provides additional income and relief from the tension of food insecurity. However, it puts enormous pressure on the plant species involved, especially those with high market demand.

The market economy brings uncountable materials called consumer goods, which make life easy. But it instills in people's minds an indelible impression of the charms of materialism and the importance of money. Ego and individualism replace communal values, thus creating social division. Money and short term profits are becoming more

important than the unforeseeable future or long term benefits. When leaderships favour short term profits over long term benefits, it is easier for the external forces and encroachers to control the game. Natural resources are extracted on an unimaginable scale and at extraordinary speed. Timbers like Rosewood, Gmelina and Champak are logged and smuggled to China, from where they will turn into furniture or floorboards to adorn the living rooms of affluent societies. Nowadays, very few mature trees of these species can be found around Bang Shau.

Unbridled exploitation of the species is also one reason for the decline. Unsustainable harvesting methods and uninterrupted collection has forced some species into danger of extinction. There is virtually no resting period nor sufficient time for natural replenishment of the medicinal plants exported to China. Harvesting medicinal plants means total removal of the whole plant or its vital part such as the rhizomes, tubers etc.. But in the case of *Nervilia*, since the tuber is attached loosely to the plant, there is the great chance that the tubers remain in the ground when the plant is pulled out. Perhaps this is the reason why it withstands the 24 year exploitation, although its population is obviously in decline (see Table 4.3).

On the other hand, we do not yet know to what degree and scale anthropogenic climate change affects the phenology of particular species and the intricate web of ecosystems encompassing them. Dr. Tun Lwin, former director general of Myanmar Meteorology and Hydrology Department, believes that changing monsoon patterns in Myanmar is evidence of climate change[44]. The monsoon governs the pattern of the seasons and life on the Asian landmass. Hence, changes in the monsoon and other impacts of climate change definitely affect the flora and fauna of Myanmar. These changes might not only affect the medicinal plants but also their pollinators. We do not know what will happen to the medicinal plants if the temperature gradually rises; especially *Paris, Polygonatum* and other cool loving medicinal plants.

In conclusion, the decline of the medicinal plants is due to a number of contributing factors; economic, socio-politic, and educational. Aggressive demand pull from China is the most prominent cause while socio-political factors such as population, resource

[44] http://www.mmtimes.com/2010/news/534/news002.html Accessed at 27/08/2010.

management and weak governance are also significant. In addition, awareness and education in the need to conserve medicinal plants barely exist. Nevertheless, the factors influencing decline of medicinal plants are multifaceted, interrelated and closely tied to the global phenomenon.

4.6 A Question Of "How": Community Action Plan

After looking at the declining trends of traditional medicine knowledge transfer and medicinal plants, and the causes of the decline (section 4.4 and 4.5), the workshop participants discussed and developed a community action plan. The action plan tries to overcome these issues by addressing the root causes. The following actions are planned together during the third phase of the workshop.

1. Forming a steering committee.
2. Awareness raising:
    a. The steering committee will explain and present the workshop findings and the action plan to the women and men groups during their weekly meetings. They will also explain these to the Village Elders Committee.
    b. The findings and action plan will also be presented to the wider community. Arrangements to organise a traditional medicine workshop for young people will be discussed.
3. Setting up a traditional medicine committee:
    a. The Village Elder Committee, Village Peace and Development Council, youth group and Kaung Hka Militia will be invited to set up the traditional medicine committee.
    b. At least one young person must be represented on the committee.
4. Protection and conservation:
    a. Demarcation of utilization, buffer and conservation zones.
    b. Development of rules and regulations and reinforcement systems.
    c. After the traditional medicine committee and the community forest committee complete "a" and "b" outlined above, the draft will be presented to the wider community for suggestions, improvements and approval.

5. Trial planting: the traditional medicine committee will cooperate with the community forest committee to:
    a. Allocate a place for trial planting.
    b. Design and implement trial planting of medicinal plants, especially those in the trade with China, to see whether it is technically or economically feasible to cultivate the wild medicinal plants.
    c. Organize replenishing planting in the community forest area.
6. Encouraging the use of traditional medicine:
    a. Discussion with health-workers from the community dispensary to find ways to integrate traditional medicine practice into the current practice.
    b. Developing and producing herbal medicine for common diseases at an affordable price.
7. Capacity building:
    a. Selecting suitable youth candidates to attend the University of Myanmar to study Traditional Medicine.
    b. Information gathering and fund raising.
8. Continuous learning:
    a. To conduct summer youth workshops to raise awareness on traditional medicine.
    b. To carry on action research, documentation and learning.

Activities described in 4, 5 and 6 focus on conservation of the medicinal plants, while 7 and 8 are related to conserving healing knowledge, putting the main focus on youth capacity building and education.

After developing the community action plan, the participants elected the steering committee; by gender it comprises 3 women and 2 men, and by age there are 1 elder, 2 of middle-age and 2 young persons.

As the final closing activity, a community meeting is organized where the steering committee and I present our findings and the action plan we developed together in the workshop. In the community presentation, we incorporate the maps and charts which were developed during the workshop, and the medicinal plants we have collected.

Snippets of the video documentary are shown to visualize the process and activities of the workshop, field recording and collection of medicinal plants, farming and other reflections of daily life. About 100 villagers attended the community meeting; plus a troop of noisy of children. So far, we can say the activities of 1 and part of 2 have been successfully done.

The collective effort of developing the community action plan is the climax of the workshop as well as the action research. It is amazing to see how ordinary people pooled their imaginations, creativities, knowledge, social capital and other resources together to overcome the issues affecting all of them. In this case, the villagers are not merely the passive subjects of a research project and the researcher is not just a detached bystander. The villagers, the researcher and nature are inseparable partners in the process of co-creating a new knowledge, a knowledge that challenges the status quo and internalized oppression.

Such participation and willingness to contribute their best for the benefit of everyone in the community implies the presence of strong community spirit. This community spirit, in turn, has been born out of the togetherness which came to face bitter wartime experiences. Nu Dim is the woman elder who hosted me and helped me organize the research. She once told me "*Suffering....? .... must have been hardest during the time of armed conflict. Our village has been burned and two of my brothers faced the cruellest of deaths. My husband stepped on a land mine and had to stay months in the Lashio hospital. Luckily he just got injured and did not lose his limbs or his life. ... its just enough for us.... don't want to see or even hear of such violence anymore. We have suffered so much, that's why we know the value of peace. We learned to stick together and care for each other, ... learning from past experience, ... such a price to pay for such lessons."*

Many people told me their visions and dreams during my stay in Bang Shau. There are young girls who want to become a teacher, a nurse, a clergy woman or even a lecturer at Lashio University when they grow up. Dreams of the boys include becoming a doctor, a professional football player or a good farmer. An elderly woman told me that her vision is there will be more educated people in the village and people will learn and practice local

knowledge including herbal medicine. By contrast to the widespread hardship of the past and the present, their vision for the future is positive and full of hope.

Chaungze Za Hau, an active participant in our workshop and member of Community Nursery and Community Forestry Committee, showed me around their community forest. He told me "*Happiness, for me is when you are free to do what you planned to do and if your basic needs are met. I don't say money is not important but it is not everything. Look at this forest, it provides everything we need. That's why it is important for us to take care of the forest too."* Embracing his young son in his arms, he said "*This is the best thing a parent can do – the best gift we can give to our children and the generations to come."*

The community action plan demonstrates that ordinary people are capable of constructing collective autonomy and responsibility, by dealing with the issues affecting their lives and the well-being of the community. The action research not only creates new knowledge but also enables new social structure to carry out actions that embody the new knowledge. This emerging knowledge in-action shatters the popular form of internalized oppression – the socially constructed idea of "villager" who is being naive, illiterate, ignorant, incapable and powerless.

CHAPTER 5

CONCLUSION

5.1 Action-reflection: The Cyclical Process Of Engendering Knowledge

I recall the moment I arrived in Bang Shau to do the research. My friend Ja La and Bawm Kyang have brought me to the village, along the tedious, rugged, slippery, muddy, winding mountain roads on their motorbikes with broken front lights. It is already very dark when we arrive in Bang Shau. Externally, I feel completely exhausted and hungry. Internally, I am full of hope, anticipation and excitement for the coming exploration into the unknown, to discover what will be for me new knowledge. At the same time, I am anxious, taking this path into uncertainty and ambiguity. I have already experienced working with various communities using the participatory action research approach. The diverse processes and the outcomes always leave me with great surprise, awe inspiration. Experience of the power of community inspires me to believe that change is possible, inspires me to keep going as a social worker in Myanmar. However, when it comes to research for my dissertation, the thought that I am sharing control of the design and process with the community, which comprises a variety of people from a variety of backgrounds and with a variety of interests, makes me nervous. Self-suspicion and doubts spring up from nowhere and the word “What if?” persistently knocks at the door of my consciousness. The awareness of the deadline and other demands of life remind me of my limitations.

Finally, there I am, sitting with the villagers – both familiar and strange faces staring at me. I see my friends, alumni of the previous workshop, among others. I explain the purpose of my visit and the research, reconnecting with the dialogue we had together in the 2007 environmental conservation and community forestry workshop. There are friendly smiles and nodding heads in acknowledgment; the warmth of friendship is rekindled. I propose the draft agenda. The villagers start talking among themselves in the Long Vo dialect. The lively conversation and discussion continues for a while and finally my old friend Pastor Sau Ting summarises the discussion in Jing Po dialect for me. First

point: they are not available for my proposed time because they have to transplant rice later than usual because of the late monsoon. Apart from this they are very happy to help me with my inquiry. They suggest some topics they would like to include in the research. In addition to that, they come up with suggestions of who should participate and what are their limitations.

Although the planned workshop date has changed, I stay in the village, talk with many people and visit their farms. Again, despite my initial worries, my villager friends surprise and inspire me throughout the research with their immense knowledge about the plants, tales of their courageous struggles during the prolonged violent conflicts and their capacity and willingness to take collective action for the wellbeing of all. After all, they are part of this land as the land is an inseparable part of their lives. As Professor Santasombat poetically describes it:

"Local peoples are not simply a reflection of their ecological niche. On the contrary, many ethnic groups live in "cultural landscapes" that they help create. In this light, many wild or virgin forests are in fact cultural landscapes created or modified by local knowledge and traditional management systems. Local people have transformed valleys, hill terrain, forest patches and rivulets into a repertoire of knowledge[45]."

Guided by their vast repertoire of knowledge, the people of Bang Shau help me find the answers for my enquiry which in turn is also part of theirs; mine is a quest lead by my love of nature and sense of social responsibility, whilst theirs is a question of survival, human dignity, wellbeing and a dialogue with repressive power structures. Together, we uncover the situation of knowledge transfer and the medicinal plants. Moreover, the widely used medicinal plants for common diseases are recorded within a relatively short time and the community action plan to conserve herbal knowledge and medicinal plants is developed. In addition to this, a model for rapid ethnobotanical assessment is developed and video documentation is done. Though I am very much aware that this humble achievement is just an initial step which still has a long way to go, I am very satisfied with the outcome and process; so too are my villager friends.

[45] Santasombat, Y. (2003). *" Biodiversity, local knowledge and sustainable development".* Regional Center for Social Science and Sustainable Development (RCSD), Faculty of Social Science, Chiang Mai University, Thailand.

One might argue that the decline in knowledge transfer and medicinal plants reflects a common global trend. However, what my research attempts to ask is the question of why and how, besides the vaguely known what. For me, one of the inspiring components of action research is the fact that research itself becomes part of the action. During the research in Bang Shau, twenty people come to discuss, conduct community research with questionnaires, record medicinal plants, conduct village meetings to share their findings and propose the community action plan they have developed. Such research activities have already raised awareness among the villagers while the workshop participants have learned to use simple research tools.

After the achievements of the research are presented, I would like to highlight some inevitable challenges and areas that can be improved. As previously acknowledged, participatory methods have their own strengths and weaknesses. One of the challenges is controlling the quality of information when the workshop participants conduct community research using quantitative methods such as questionnaires. Another lesson learned for me is the need to be aware of the limitations of written tests, especially if the elders are expected to participate. The half-day field collection of medicinal plants, part of the rapid ethnobotanical assessment process, proved to be very effective in terms of number of species collected within a very limited time. However, this field collection should have taken more time for a more comprehensive collection and to allow more time for sharing. Although the vicious impact of malaria is generally understood, empirical evidence from the treatment records of the village dispensary is very alarming for me. Since this analysis is done after my field research, specific action against malaria is not included in the community action plan. Actions to address malaria should be reflected in the priority agenda of the community managed health care project. Nonetheless, malaria is one of the priorities on Myanmar's national health agenda. Lastly, one of the most challenging tasks for me is matching the vernacular names of medicinal plants with their related botanical names: deciphering the riddles of folk and Linnaean taxonomies. This said, as a plant lover, the joy of discovering the botanical names of the medicinal plants collected in Bang Shau is immense, since it opens up another level of understanding: highlighting links to international usage and the market

for different plants, eg. *Paris polyphylla.* Thus, I enthusiastically do my best within my limited botanical knowledge, references and internet access.

The cyclical process of action-reflection has been a vital tradition of action research and the generation of knowledge. The knowledge and action plan we engender in Bang Shau also needs to be periodically reflected upon and adapted. Gaventa and Cornwall write:

"..... while knowledge is not for its own sake, neither is action; rather, the process is an iterative one. Through action, knowledge is created and analyses of that knowledge may lead to new forms of action. ..... Thus, in action research, knowledge must be embedded in cycles of action-reflection – action over time (Rahman, 1991). It is through such a process that the nature of action can be deepened, moving from practical problem-solving to more fundamental social transformation (Hall, 1981: 12)[46].

If this humble attempt to do action research in Bang Shau is to solve practical problems, then the next step should be to look at the bigger picture of social transformation, taking into account livelihood options, resource management, power relations and good governance.

My experience in Bang Shau has irretrievably changed my worldview, my understanding about society: it has deepened my relation with community and nature. Likewise, it has changed the perspective of my villager friends too. Their understanding of research, local knowledge and education has changed through the process of knowledge generation, action-reflection. The idea that research is done for and by academics only is changed when they lead the research themslves and discover trends in knowledge transfer among their elders and young people. Their understanding of public education as something provided only by professionals and established education institutions is changed after commonly used medicinal plants are collected and knowledge about them shared among themselves. Many participants express their surprise, they never realised before how much they know about medicinal plants and how much they can learn from each other.

This experience reflects Park's interpretation of knowledge and power (see section 3.1 for details): noticing the changes and trends in knowledge transfer and of medicinal

[46] Gaventa, J. and Cornwall A. (2010). *"Power and Knowledge", in "The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

plants (representational knowledge, power to control objectifiable reality), understanding each other and nature with empathy (relational knowledge, power of being in solidarity), and coming together to conscientize and take action (reflective knowledge, power to act on moral values).

An ideal change would be threefold: personal, institutional and in policy. This learning generates profound personal change and some institutional change at village level (eg the forming of a traditional medicine committee). From a broader perspective, how we can inform policy making in the conservation and public health sectors and how we can enhance or change the education, health and forestry institutions will be the next challenge. This will again need a better understanding of:

- the interrelated connections between economy and power relations, between China and her neighbouring countries including Myanmar (regional context) and
- global lifestyle trends and market demands (global context).

If we consider the complexity and interconnectedness of factors affecting the livelihood of communities, traditional knowledge and understanding of medicinal plants, it is very obvious that action to improve the current situation should be holistic and should involve various actors from the local to the global.

Gaventa and Cornwall write:

"if power is shaped by discourse, then questions of how discourses are formed, and how they shape the fields of action, become critical for changing and affecting power relations[47]*."*

With what they say in mind, I would like to recommend the following towards conservation of healing knowledge and conservation of medicinal plants.

5.2 Suggestion

I believe that conservation is successful when we free ourselves from the fragmented and dualistic idea of nature against human and human against nature. Indeed, the

[47] Gaventa, J. and Cornwall A. (2010). *"Power and Knowledge", in "The handbook of action research, concise paperback edition" Reason, P. and Bradbury, H. (edt.).* Sage Publications, UK.

human is part of nature, so when we consider a conservation policy or action to protect nature, the human cannot be excluded. Obviously, nature shapes the appearance and lives of human beings whilst human beings mould the cultural landscape of nature.

In Myanmar, seemingly wild forests and mountains are the treasured homes of many ethnic tribes. However, as in the case of conservation of watershed in ethnic areas in Thailand which Professor Loungaramsri highlights, the ethnic hill people of Myanmar are never consulted or included in the process of conservation policy making. In Myanmar, natural resource management, as the very words imply, is still largely seen as the protection and management of natural resources. Timber production still accounts for a major proportion of Myanmar GDP. Thus, protection of forest resources is seen as the main task of the forestry department. However, excluding public in policy-making, poor public education, weak reinforcement of law and widespread corruption has left many protected areas shamefully denuded. Hence, my suggestion to the forestry department and policy-making institutions is to include in their decision making the people who will be affected by their policy and action. We should be acutely aware that all policy making has by definition its immanent centralising principle and the urge to control. However, participatory policy-making and planning will undoubtedly enhance conservation efforts since ownership and decision-making will be in the hands of the grassroots. In addition to that, close collaboration with the grassroots and law reinforcement will be an invaluable complement.

Community forestry movements across Southeast Asia are a good source from which Myanmar can learn. In Myanmar, there are many success stories about community forestry at grassroots level. However, it is still very early to generalize that the current model of community forestry is perfect. Public's interest in community forestry is complex and land ownership is often an important factor. Therefore, land tenure policies which ensure justice and the land rights of the people are an essential precondition to successful participatory resource management and conservation.

Land, rivers, lakes and forests have given birth to colourful cultures and inspired poems, songs and stories. Like *Sita* from the epic *Ramayana,* borne out of the womb of mother earth, Myanmar people's lives are also inseparably bound to the land and natural world.

Conservation policies which drive people away from designated protected areas are inhumane and iniquitous: as the National Park policies once practised in Thailand, which devastated many ethnic hill tribes such as the Karen and Hmong. Instead, protection of people's livelihoods should come hand in hand with conservation. Instead of looking at tribal communities from within the old paradigm, regarding them as illiterate and ignorant, we need to look at the great opportunities for learning from them. Not only have they survived what life has thrown at them, against all odds, but indeed, flourished gracefully within their limited resources and means. Their amazing capacity for resilience should be studied, especially in this time of worldwide economic uncertainty and political instability.

On the one hand, we need to consider further development in production and marketing of medicinal plants. This will be a great opportunity for communities facing food insecurity and chronic hardship. On the other hand, we need to consider the sustainability of healing knowledge and of medicinal plants. There are already myriad examples of how global demand and overexploitation can put a single species into extinction. In depth studies should be made of highly valued species such as *Paris polyphylla, Dendrobium devonianum,* to better understand their ecology, resilience and potential for domestication. Currently, Konjac Arum or *Amorphophallus konjac* have proven a success for domestication and become a popular export commodity.

To address conservation of essential healing knowledge, education is a fundamental area needing to be improved. Once again, I would like to recommend we seriously consider allowing development and integration of local curricula into government approved curricula. Informal education and adult education should be promoted, given that many Myanmar citizens have not had the opportunity to study, especially during the turmoil of violent armed conflicts.

Another area I would like to highlight is the healthcare sector. Here again, conventional healthcare and alternative healthcare should complement each other like the pond and the water lily. Despite differences in their discourses, both have their own time-tested merits and their shadows. The need for improvement in public health is a matter of huge concern in Myanmar. For decades, if not a century, villagers have been waiting for the

doctors to come who will tend their sufferings, wearing shining, white coats adorned with a stethoscope. Unfortunately, this dream is never fulfilled for most villages, since the best brains of this generation become doctors not with the aim to remain stranded in remote, poverty-stricken villages. There are myriad reasons and an underlying complexity to this scenario, however, and it is not my intention to argue with this situation. If we can accept the painful reality, we may need to look for other ways to go round and beyond it, we may need to look to the example from India: “The barefoot doctors”. As previously mentioned, malaria is still a fatal disease, crippling the potential of peoples and their communities. Though I acknowledge the invaluable efforts by the international communities, Myanmar government and Myanmar Public health department, I want to urge improvements in the delivery of services and public education processes. We need to acknowledge that malaria, like many other diseases, is not just a pathological infection alone. If we do not take other social factors such as poverty, malnutrition and social behaviour, into account, malaria will always get the upperhand. To deeply look into the effectiveness of local remedies and the potential to incorporate them into current practices is also worth a try.

Economic sanctions have been imposed on Myanmar by the countries of North America and Europe with good intentions: to promote positive, political transformation. But the endless debate on the pros and cons of sanctions has recently become louder and louder. Personally, I think the sanctions might to some extent do what they are supposed to do. However, I would also say, one of their impacts, possibly unintentional, is that humanitarian assistance to Myanmar has become highly politicised. The same is true regarding international assistance for nature and wildlife conservation in Myanmar. As in the case of humanitarian aid, support for conservation in Myanmar is nothing compared to that given her neighbours, Laos and Cambodia. During the mid-90s, I was visiting the Galeng Forests near my hometown. I was sailing among the amazing seas of white opium poppy flowers swaying in the breeze. Their immaculate beauty conceals their fatal curse on the people and this land. The surrounding tall forests were being felled to give way to opium cultivation. I was studying orchids at the time and I felt very sad to see orchids crushed among the fallen limbs of the trees which were going to be burned after they were dried. Such experiences led me to see the intricate links between orchids, trees,

forests and people. Bitterly I thought, where now are those conservation organizations I know from the books? Later I discovered that sanctions were a significant factor explaining why they were not there. Now, some few years later, there have been conservation initiatives launched as collaborations between the Smithsonian Institute and universities in Myanmar. These include efforts to conserve the golden deer of central Myanmar and the study of the lime karst bat species. These academic endeavours should be seriously encouraged. But, grassroots conservation projects must also be promoted. Myanmar has proudly announced the world's largest tiger reserve in Hukaung Valley, with the advocacy and support of WCS Myanmar. There are major practical difficulties in managing such a huge area effectively, where human settlement and active mining take place: the situation is controversial, but it highlights the issues and the need for species conservation in Myanmar. In short, the depoliticising of international assistance for effective conservation in Myanmar is an urgent and immense need. All the more so, given the fact that Myanmar is part of 2 biodiversity hotspots and 8 ecoregions listed in the Global 200.

Action to address such need on such a large scale cannot be achieved by Myanmar alone. While I place my emphasis on grassroots action, I am acutely aware of the need for international collaboration and the contribution of academic institutions. It is easy to blame China for the relentless demand that has lead to aggressive resource extraction across Southeast Asian countries, resulting in heartless destruction. However, it behoves us to remember that we are part of this global consumerism, we are equally responsible for this self-indulgence. As Thich Nhat Hanh writes beautifully in his poem "Call me by my true name", we need to reconcile our own inner dualism and our outer splits. There is no time to blame each other and insist on our different opinions in such times of global crisis and ecological breakdown. We, as sensible human beings, must look beyond the Darwinian knot of competition and use our innate cooperative nature and creativity. There are some collaborations between Myanmar conservation organisations and China conservation societies starting to happen which are truly inspiring. However, more collaboration is needed to face huge issues such as damming the Irrawaddy and Salween to feed China's insatiable hunger for electricity. To sum up, collaboration and cooperation, especially at the level of international policy is crucial, whilst promotion of

corporate responsibility in the business sector and of ecological awareness and action at individual level is essential.

In this critical time of political transition, how Myanmar and her people choose to shape the web of rural livelihood, natural resource management and economy will greatly affect the sustainability of indigenous knowledge and of medicinal plants. Choosing to act as conscious and responsible global citizens will contribute to making a difference.

After looking at external measures, I would like to conclude with turning my gaze inward. The Buddha says greed, anger and delusion are in the nature of all sentient beings, except the *Ariyas,* the enlightened ones. Global consumerism and the market economy bring material wealth and comforts to our society, but they also bring discontentment by effectively playing with our potential for greed. Moreover, the divide between the rich and the poor is getting wider and more social injustice prevails. The resulting discontentment gives rise to anger and delusion which is now manifest by antisocial behaviour, ranging from terrorism to war in the extreme.

In the wake of modernisation and economic globalisation, Myanmar has changed significantly. Traditional values give way to imported values. The sacredness of the nature we once revered is lost in the discourse of modernisation. Rivers, we used to call mother, are blocked and harnessed to serve the will of humans. However hard we try to solve our problems with whatever impressive technologies, unless we become aware that the destruction we inflict is driven by our inner discontentment, inferiority-complex and internalised oppression, we will find ourselves caught in the *Samsara* - the endless trap.

We need to bring back our sense of the sacredness of nature and adore its intrinsic value, not regard nature only from a utilitarian perspective, seeing only extrinsic value. We need to embrace the audacity of being simple, if we want to see the flourishing of this living earth. As my villager friend Za Hau put it, what more precious gifts would you like to give to the generations to come?

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