

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

Pham Thi Phuong Thai¹, Nguyen Thi Hong Vien², Mai Thi Lan Anh³, Pham Anh Nguyen⁴, Lu Me Mu⁵

^{1,2,3,4,5}Thai Nguyen University of Sciences, Thai Nguyên University.

ABSTRACT: Indigenous knowledge plays a vital role in the life and production of ethnic minorities. Due to their long association with available resources, including forest resources, the Ha Nhi people in Ka Lang House, Muong Te district, Lai Chau province, Vietnam, have diverse experience in exploiting and using forest resources. Indigenous knowledge plays an essential role in people's lives. Initial research results have shown that the knowledge of Ha Nhi people in exploiting and using forest resources is quite rich. The Ha Nhi exploit various forest products, including timber, firewood, non-timber forest products, and wild animals. People use them for a lot of different purposes. However, the problem of people's exploitation and use of forest resources could be more sustainable due to the rapid population growth. The decline of forest resources and the traditional experiences transmitted orally, yet to be documented, has led to a situation where knowledge is increasingly being lost.

KEYWORDS: Indigenous knowledge, Ha Nhi ethnic group, forest exploitation and use, Muong Te district, Vietnam

1. INTRODUCTION

Indigenous knowledge plays an essential role in the life and production of ethnic minorities, especially the communities of ethnic minorities in remote areas. Indigenous knowledge is characterized by its narrow scope of use [1]. It is suitable for the cultural, customs, natural, and socio-economic conditions of particular localities and sometimes not for the locality. Indigenous knowledge includes many experiences adapted to the natural conditions and social characteristics of each locality where indigenous knowledge is formed [1,2]. In Vietnam, ethnic minority communities in mountainous areas often live near forests and water sources such as rivers and streams. The life of these ethnic communities depends quite a lot on available resources, including forest resources [3,4]. Over time, a system of knowledge and experience in exploiting and using forest resources has been formed. This knowledge system includes elements of forest protection and biological resources. The management, protection, and development coupled with efficient exploitation and use of forest resources are now considered essential orientations in ethnic minority areas with unique difficulties in Vietnam. To successfully carry out the task of managing forest resources, it is necessary to have the active participation of the local community. With the characteristics of living near the forest, each ethnic group has its indigenous knowledge system for exploiting and using forest resources. Studies on indigenous knowledge systems of each ethnic group in different localities are urgently needed. The maintenance and preservation of the indigenous knowledge system is the basis for effectively exploiting and using forest resources and sustainable management.

The Ha Nhi in Vietnam is distributed mainly in Lai Chau, Lao Cai, and Dien Bien provinces [5], Vietnam. The population of Ha Nhi people as of April 1, 2019, is 25,539 [6]. The Ha Nhi people in Lai Chau live mainly in Muong Te district (Mu Ca, Ka Lang, Thu Lum, Ta Ba, Can Ho communes) and Phong Tho district. Ka Lang commune is a mountainous commune in the Muong Te district, with 91.24% of Ha Nhi people (90.25% of households). Most people have low educational attainment, are uneven, and their lives are still tricky [7]. Like other ethnic minority groups in Vietnam, the Ha Nhi people have a prosperous indigenous knowledge system. In particular, due to their long-standing association with available resources, including forest resources, the Ha Nhi people have diverse experience in exploiting and using forest resources. It plays an essential role in people's lives and forest protection. Stemming from that practice, this study was conducted to contribute to documenting the indigenous knowledge of Ha Nhi people in exploiting and using forest resources in Ka Lang commune, Muong Te district, Lai Chau province, Vietnam. From there, they created a premise for research to improve the effectiveness of community-based forest resource management at the study site.

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

2. RESEARCH METHODS

2.1. Methods of analyzing and synthesizing documents

To conduct this study, the authors collected some secondary documents from the People's Committee of Ka Lang Commune website, the People's Committee of Muong Te District, Lai Chau Province, the statistical yearbook of Lai Chau Province, and many studies on indigenous knowledge. The documents focus on some natural, residential, and social characteristics of Ka Lang commune, the traditional culture of Ha Nhi people, and methods of studying indigenous knowledge. This is the basis for building an overview and determining research methods.

2.2. Practical survey method

This method was combined in sociological surveys in 3 villages: Lo Ma, Me Giong, Tu Na, and Ka Lang commune. The survey content covers the exploitation and use of forest resources by Ha Nhi people, focusing on many essential forest products such as firewood, some non-timber forest products, and hunting wild animals. The objective of the observation: Detect the relationship in the management, protection, exploitation, and use of forest resources.

2.3. Methods of sociological investigation

The sociological investigation method is implemented through an open-ended questionnaire combined with the actual survey method. The primary method used in conducting the research is the interview. This is the method of talking directly to the subject with open-ended questions. Each village interviewed (according to a set of pre-prepared questions) 20 people, mainly the elderly in the village.

The content of the interviews focused on the exploitation and use of forest resources: Types of forest products harvested, methods of exploitation and use, exploitation and transportation of forest products, customs and practices affecting forest resources, and other activities affecting forest resources.

3. RESEARCH RESULTS

3.1. Indigenous knowledge in logging and the use of wood and firewood

Ha Nhi people believe that forests and forest animals and plants have souls like humans. The forest god (a po sa kha) is a blessing but also severely punishes those who destroy forest trees and wild animals. When sowing seeds for a new crop, The Ha Nhi people always have to pray to the tree's spirit and the forest god. When going to the forest to collect wood and firewood, the Ha Nhi people always make offerings to the forest god and ask the forest god for permission [8]. Wood is often harvested to make houses, furniture (tables and chairs, beds), production tools, cattle sheds, or for sale. Wood for building houses is harvested for two to many years before it can accumulate enough wood. The logging is usually done by men between 18 and 50 years old. Women only participate in transportation. The Ha Nhi people exploit forest timber in their leisure time. The amount of exploitation is flexible, depending on the purpose of use. The primary method of exploitation is using axes to chop down, then cut branches and the tops of the tree. Trees are sawn into boxes or temporarily processed and then carried or pulled. In addition, some other tree species are exploited for fruit, branches, and leaves for food and firewood.

In addition to exploiting and using wood to build houses and utensils, people also harvest firewood for cooking and heating in winter. According to the survey results, all households in the commune have a tradition of using firewood for cooking and heating. Some households collect firewood to sell or exchange goods. However, many households have switched to using gas stoves and electric appliances, so the percentage of households taking firewood to sell has decreased.

Table 1: Some species of timber trees are harvested and used

No.	Species		Uses	Exploitation methods
	Local name	Scientific name		
1	Má la á pố	<i>Ford - Manglietia fordiana (Hemsl.) Oliv.</i>	Building house	Cut trees, branches, tops
2	Sư nhi á pố	<i>Erythrophleum fordii Oliver</i>	Building house	Cut trees, branches, tops
3	Lát	<i>Chukrasia</i>	Building house	Cut trees, branches, tops
4	Trụ sì á pố	<i>Lithocarpus ducampii Hickel et A.camus</i>	Building house, furniture and cooking	Cut trees, branches, tops
5	Cọ phèn	<i>Protium serratum</i>	Building house, furniture and cooking	Cut trees, branches, tops

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

6	<i>Nghiến</i>	<i>Burretiodendron hsienmu</i>	Building house, furniture and cooking	Cut trees, branches, tops
7	<i>Trám</i>	<i>Canarium album</i> , <i>Canarium tramdeum</i>	For fruit	Cut trees, branches, tops

The Ha Nhi people in Ka Lang commune often collect firewood in their families' natural forests and abandoned fields, not in other families' fields. The type of firewood taken is usually dry, such as dead branches and trees. The firewood collection season is usually the dry season, from September to November of the lunar calendar. However, in their leisure time, people also go to the forest to collect firewood or after farming. The object of firewood harvesting is mainly women of all ages, usually from 13 to 60 years old. The form of transportation is usually tied into bundles and then carried, carried, or dragged home.

When there is no electricity and gas, the amount of firewood used and exploited daily by households is about 10 to 20 kilograms per day on average. Depending on the purpose of exploitation, if both use and sale are combined, it can be up to 30 kilograms per day. With such a large amount of use, more than dry branches and dead trees are needed to provide firewood when the population increases. People cut down fresh trees for a while to dry them and bring them back. Some households cut down small and medium-sized trees along rivers and streams and then release them to follow the water back home.

The exploitation of firewood at a reasonable level, in the condition that the population has not grown too high, has a positive impact on forest resources. It is considered a technical measure of forest hygiene and sanitation, avoiding pests and contributing to preventing forest fires. Today, when the population is overgrowing, the excessive exploitation of timber and firewood has become one of the essential causes of forest resource depletion.

3.2. Indigenous knowledge in non-timber forest products exploitation

The Ha Nhi people exploit various non-timber forest products from natural forests for use or trade, including bamboo shoots, bamboo, vegetables, and medicinal plants...

Table 2: Non-timber forest products exploited and used by the Ha Nhi people

No.	Non-timber forest products	Knowlegde about the Non-timber forest products properties for exploitation	Using purpose
1	<i>Schizostachyum aciculare</i> , <i>Bambusa nutans</i> , <i>Maclurochloa sp.</i>	Picking shoots	Food and trading
2	<i>Phrynium placentarium</i>	Collecting leaves (not too old or too young)	Traditional cake covers and trading
3	<i>Diplazium esculentum</i>	Harvesting young green leaves	Food and trading
4	<i>Ficus auriculata</i>	Collecting light red leaves	Food for human and animals
5	Forest Banana (<i>Musa acuminata</i>)	Exploiting the trunk of a big tree	Pig and duck feeding
6	<i>Thysanolaena latifolia</i>	Collecting flowers, worms, stems	Flowers and stems used as brooms. Worms soaked in wine for madecine, trading or making swob
7	<i>Medicinal herbs</i>		Making medicine
8	<i>Aganonerion polymorphum</i>	Collecting vines and small leaves	Food
9	Mushrooms: Shiitake mushrooms (<i>Lentinula edodes</i>), Fungies (<i>Auricularia auricula</i>)...	Harvesting mainly 2 types: Shiitake mushroom, Fungies mushroom where there are many large rotten trees.	Food

Bamboo shoots are used by 100% of households and are mainly exploited from Nua (*Schizostachyum aciculare*), Vau (*Bambusa*

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

nutans), Giang (*Maclurochloa sp.*). People in Ka Lang commune exploit bitter bamboo shoots in March and April every year and in June and July every year for daily food needs and trading. The exploitation of bamboo shoots is not under the control of the government. The harvesting method is simple, and people use knives and hoes to dig and chop bamboo shoots, then bring them back to use.

Bamboo species play a significant role in the lives of local people. The survey results and interviews with local people show that 100% of households use materials in the forest (bamboo, cork, rattan) to make their house tools for daily use, such as baskets, baskets, coffee tables, tables, chairs etc. These activities mainly serve the needs of the family and the community. The experience of exploiting and using bamboo species is described as follows: Choosing large, dark green trees, cutting the whole tree, and using it to build houses, wicker, and water pipes, wicker, garden fences, and cook. Rattan chooses trees with an average length of about 80m, with thorny petioles, and dark green skin, regenerated after 5 to 7 years, cut down the whole tree, used as a binding material, knitting materials for tables, chairs, mats, baskets... and used for cooking.



Picture 1: Shoots for food and trading

There are many kinds of vegetables that Ha Nhi people get from the forest. Forest bananas are also a type of non-timber forest product that people exploit a lot. Wild bananas are exploited to make food for pigs and ducks. On average, Ha Nhi people take once every 2 days, from 1 to 4 plants each time. Local people also take forest banana leaves to wrap cakes, banana flowers to make food and sell but in small quantities, and a species of fern; People also use many types of mushrooms for food, such as shiitake mushrooms, fungus mushrooms...



Picture 2: Wild bananas

Medicinal herbs are exploited to sell or make medicine for the family. The target of exploitation is usually the mature leaf. The number of people who know medicinal plants is minimal. Some common medicinal plants that are known by people for their uses are as follows:

Bitter leaf plant – “Pà Kha” (*Gymnanthemum amygdalinum*): Ha Nhi people often use it to treat intestinal diseases, alcohol, and high blood pressure. This is a drug that can be used as a food that people often use to cook with pig's blood.

Tam That (*Panax pseudoginseng*): It is a perennial herb with long roots with many nodes and scars left by annual stem loss. Stems slender, 10 to 20 centimetres tall, up to 50 centimetres, often withering in the dry season. It has compound leaves with propellers, growing round 3 to one, bearing 3 to 7 thin, hairless compound leaves, margin with shallow or deeply lobed double teeth. Flowers are greenish-white arranged from 20 to 30 flowers in a single canopy on an axis from 15 to 20 centimetres long at the top of the

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

stem, the flower stalk is about 1 cm. The berries, when ripe red, contain 1 to 2 seeds. Wild sage root is used to stop bleeding of all kinds of wounds and hemorrhages. It is also used as a tonic for anemia, pallor, and emaciation, especially for women after childbirth, and is also effective in treating infertility.



Picture 3: Bitter leaf plant - Pà Kha



Picture 4: Tam That (*Panax pseudoginseng*)

Bleeding wounds treatment: Apply the leaves of stonebreaker (*Phyllanthus urinaria L.*) with crushed lime to the wound.

Treatment of colds: “*cừ pho pạ khà*” is used with bamboo leaves, pomelo leaves, and lemongrass. This medicine is used to incubate with a fever-reducing effect.

Stomach treatment, dysentery: According to people's experience, using “*nhúy kha á pạ*” - A tuberous vine weighing 2 to 3 kilograms; chopped tubers, dried when boiled water, can cure stomach diseases and dysentery for humans and animals.

Cough treatment: Using the roots of plant that named “*nhù xạ*” to boil with water and drink. The medicine smells like buffalo vapor but works very well.

Treatment of snakebites: Crushing the leaves and stalks of *Alocasia odora (Roxb) C. Koch* and apply to the snake bite.

Headache treatment: Using wormwood leaves (*Artemisia vulgaris*) to treat headaches, can be mentioned in 3 popular ways: Take 1 handful of fresh wormwood leaves, wash and drain, then put in a hot pot, roll made wormwood Heat into small rolls and then heat between forehead and eyebrows, do about 6 - 7 times; Wormwood is washed, cut into small pieces and put in a pot of yellow stars, put wormwood in a cloth bag and cover it on the head until it is not hot, repeat 3-4 times; Wormworms are washed and put in a pot (it is recommended to use an earthen pot) and roasted with salt until the wormwood turns yellow, then wrap this mixture in a thin towel and then gently apply it to the head, forehead and temples until the heat is gone. Besides, we can eat the leaves of *Artemisia vulgaris* by cooking with chicken eggs.

The knowledge of using medicinal plants of Ha Nhi people in two Ka Lang communes is quite rich. However, due to limited time, the research could not thoroughly investigate the knowledge and experience of the people in using medicinal plants. Another reason is that people use the local language for medicinal plants, making it difficult for the research process to understand and gather information about this knowledge and experience.

Population growth leads to an increasing volume of non-timber forest products being harvested. Along with the situation of forest resources being degraded, many non-timber forest by-products are currently in a state of depletion, such as wild bananas, medicinal plants, wild shiitake mushrooms, and some wild vegetables.

3.3. Indigenous knowledge in wildlife exploitation

Wildlife is a critical and indispensable factor in the forest ecosystem. The existence of animal species shows the relationship between the area, reserve, forest quality, and exploitation and use situation of local people.

The Ha Nhi people in Ka Lang commune exploit wild animals to serve their daily food needs, make medicine, make ornamental plants, or sell them in the market. They hunted and used a variety of animals in the area. In addition to the food and medicinal value, people also sell their parts such as skin, bones, honey, stomach, etc.

In particular, the species often hunted or trapped to provide food are common deer (*Cervus unicolor Cuv.*), roe deer (*Cervus nippon Temminck*), chamois (*Capricornis sumatraensis*), porcupines (*Hystrix hodgsoni*), the squirrels (*Sciuridae*), civets (*Arctictis binturong*), wild boars (*Sus scrofa*), wild chickens (*Gallus*), birds, etc. Several species are hunted simultaneously for food and medicine, including yellow-cheeked skunk (*Rhizomys sumatrensis*), *Rhizomys pruinosus*, Civet (*Viverricula indica*), wildcat (*Felis silvestris*), conifer (*Centropus*), snakes, monkeys, etc. Birds are often caught or trapped for ornamental purposes. In particular, in the past, people in Ka Lang commune also hunted many rare animals such as deer, gaur, fire fox, fire leopard, tiger, and gold cash chicken for food, medicine, and ornamental purposes. However, through interviewing some older adults who know about mammals and examining the remains of household items such as skins, honey, horns, and claws, these species are now all no longer found in nature.

In the past, wildlife hunting took place regularly. People's hunting tools are homemade flintlocks, crossbows, and traps. Before 2000, an average of 3 households in the commune had one house with a shotgun and two with a crossbow and trap. Since 2000,

Indigenous Knowledge in Exploiting and Using Forest Resources of the Ha Nhi People in Ka Lang Community, Muong Te District, Lai Chau Province, Vietnam

hunting wild animals has decreased significantly due to the dissemination of the law and the harmful effects of indiscriminate hunting. Currently, hunting wild animals has been banned. In the commune, no household has entered the forest to hunt large and rare animals. In addition, the number of wild animals has decreased and is almost exhausted, so hunting has decreased significantly. Since then, the indigenous knowledge of exploiting and using wild animals has gradually disappeared.

4. CONCLUSION

The research results show that the knowledge of Ha Nhi people in Ka Lang commune, Muong Te district, Lai Chau province in exploiting and using forest resources is quite rich. Currently, population growth leads to some potentially unsustainable factors in forest exploitation and use. Over time, traditional experiences were transmitted orally, not documented; the degradation of forest resources has led to the loss of traditional knowledge. Systematization and documentation of traditional knowledge are essential and create a basis for preserving and promoting sustainable factors in the Ha Nhi community's exploitation and use of forest resources in Ka Lang commune, Muong Te district, Lai Chau province, Vietnam.

ACKNOWLEDGE

The research in the Article is under the project "Building a livelihood model associated with preserving traditional culture for communities of some ethnic minorities with difficult conditions in the region. Northern mountainous region," funded by a ministry-level scientific research mission. Code: ĐCB.UBDT.05.22-24.

REFERENCES

1. Nguyen Thi Hong Vien (2006), Indigenous knowledge of Thai people in sloping land cultivation in the periphery of Son La town, Master thesis, Hanoi University of Sciences, Vietnam National University, Hanoi.
2. Vietnam Academy of Forestry Science, Center for Research on Forest Ecology and Environment (2001), Methods of Collecting and Using Indigenous Knowledge, Agriculture Publishing House, Hanoi.
3. Do Dinh Sam (2002), Indigenous knowledge survey on management and development of forest resources of some mountainous village communities in northern Vietnam.
4. Tran Huu Son (2013), Indigenous knowledge of Ha Nhi people in Vietnam on forest protection, Lao Cai Department of Culture, Sports and Tourism.
5. Institute of Ethnology (1978), Ethnic Minorities in Vietnam (Northern provinces), Social Science Publishing House, Hanoi.
6. General Statistics Office of Vietnam (2019), 2019 population and housing census results, Statistical Publishing House, Han.
7. Muong Te district web portal (2020), <https://laichau.gov.vn/danh-muc/tong-quan-lai-chau/cac-dan-toc/dan-toc-ha-nhi2.html>, access date 06/04/2023.
8. Chu Thuy Lien (2004), Understanding Ha Nhi ethnic culture in Vietnam, Ethnic Culture Publishing House, Hanoi.