

## CHAPTER VI

### UTILIZATION OF WILD PLANTS BY KAREN WOMEN

Wild plant species known by Karen people were obtained from walks together with them. After that they were interviewed about the usefulness of each plant and the local name. Questions were asked about the species utilized in their daily life including patterns and sources of wild plants collection and quantities. The quantities of wild plants collected by Karen people in one year could be estimated from the amount of collected each time.

#### 6.1 Wild plants for household consumption and utilisation

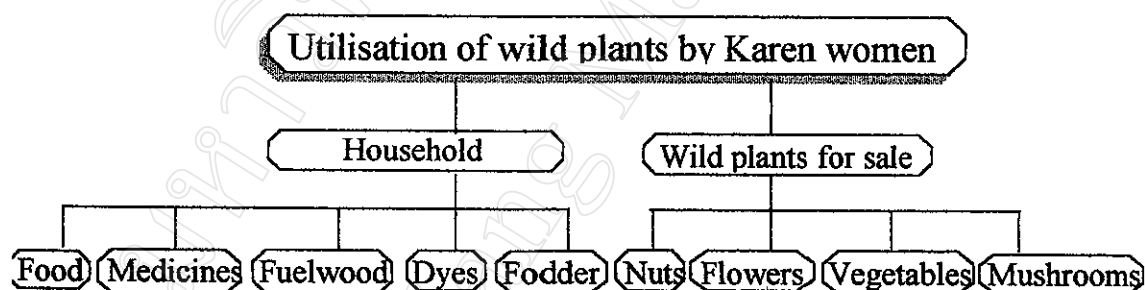


Figure 13. Wild plants utilisation in Karen women's livelihood systems.

Wild plants utilisation by Karen women can be separated in two kinds: household use and sale. Household utilisation includes food, medicine, fuelwood, dyes, and fodder. Wild plants for sale are nuts, flowers, mushrooms, and vegetables

(Figure 13). From the survey in the forests about 2-5 kilometres from the villages at least 203 wild<sup>3</sup> plant species were known and used by the villagers from Chan, Den, and Nong Jet Nuai villages (Appendix A). The wild plant species used in Karen daily life were much less than all the species in the forest. Some wild plant species were collected as they were accidentally found. They still knew which plants could be used and their use. For example, they went to the forest to collect some wild plants and on the way they collected other plants that they saw. Wild plants used in Chan, Den and Nong Jet Nuai villages were about 111, 136, and 138 species, respectively. Women from these three villages collect more wild plant species than men. They collected 85, 119, and 122 wild plant species, respectively. While men from Chan, Den and Nong Jet Nuai villages collected these plant 61, 65, and 62 species, respectively (Table 10).

Wild plant species collected by Karen can be grouped to 11 groups. The main groups include food, fodder, dyes, medicine, and fuelwood. Some species can be used for more than one purpose, such as food-fodder, food-dyes, food-medicine, food-fuelwood, dyes-fuelwood, and medicine-fuelwood. Wild food plant species are more numerous than other species. Table 10 summarizes the number of wild plant species used by Karen people from Chan, Den and Nong Jet Nuai villages.

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<sup>3</sup> Many plant species utilized by Karen, even though they are not cultivated and are sometimes found "wild" in disturbed forested areas, are not native. Due to many generations of familiarity with these species, Karen consider them to be native, but in actuality they are established naturalized introduced species. See Appendix A for more botanical details. I am indebted to J.F. Maxwell, by botanical advisor, for explaining this situation to me. Stating that these naturalized species are wild is not correct, Thus they have been included along with actual native species as "forest" plant.

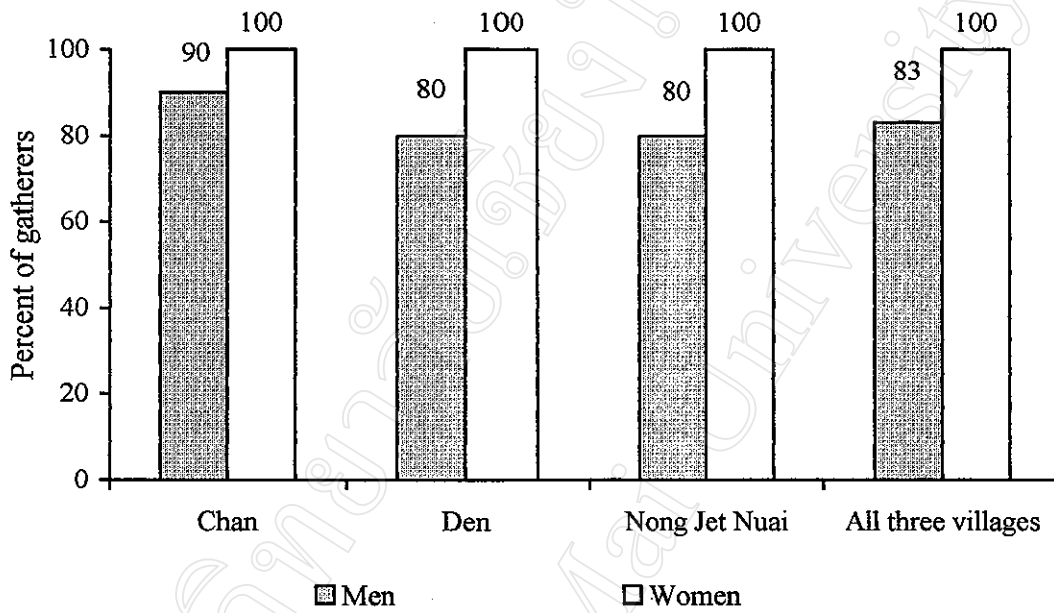
**Table 10.** Number of wild plant species which are used in the daily life of Karen people in Chan, Den, and Nong Jet Nuai villages.

	Number of species							
	Chan		Den		Nong Jet Nuai		All 3 villages	
	Men	Women	Men	Women	Men	Women	Men	Women
Food	26	42	24	70	25	73	47	109
Fodder	2	5	3	2	5	3	5	7
Dyes	2	8	0	5	1	7	3	9
Medicine	26	17	28	29	19	17	46	39
Fuelwood	5	8	7	4	11	12	10	14
Food – fodder	0	2	1	4	0	3	1	4
Food – dyes	0	1	0	1	0	1	0	1
Food – medicine	0	1	1	3	0	3	1	4
Food – fuelwood	0	1	0	0	0	1	0	1
Dyes – fuelwood	0	0	0	0	0	1	0	1
Medicine – fuelwood	0	0	1	1	1	1	2	1
<b>Total</b>	<b>61</b>	<b>85</b>	<b>65</b>	<b>119</b>	<b>62</b>	<b>122</b>	<b>115</b>	<b>190</b>

### 6.1.1 Food

A traditional Karen dish contains rice, chilli, salt, and green vegetables. Green vegetable food plants that come from annuals, trees, and shrubs are in every meal. These greens are consumed both fresh and processed. Since cooking is the women's duty, wild food plants gathering is their direct responsibility. These green vegetables come from three sources: planting, buying, and gathering from the forest. Leaves and fruits from forest are the highest proportion of these sources because Karen have lived in the forest areas for a long time so they know about edible plants. These are important foods, especially in the dry season when cultivated plants in the fields and gardens are dry.

Palatability and ease to find are the reason for gathering wild food plants. All of the women interviewed from Chan, Den, and Nong Jet Nuai villages gathered wild food plants. Ninety, ninety and eighty percent of men from Chan, Den, and Nong Jet Nuai villages gathered these plants (Figure 14).



**Figure 14.** Percent of wild food plant gatherers from Chan, Den, and Nong Jet Nuai villages.

All men from three villages who did not gathered wild food plants came from wealthy families. While women from all status gathered wild food plants (Figure 15).

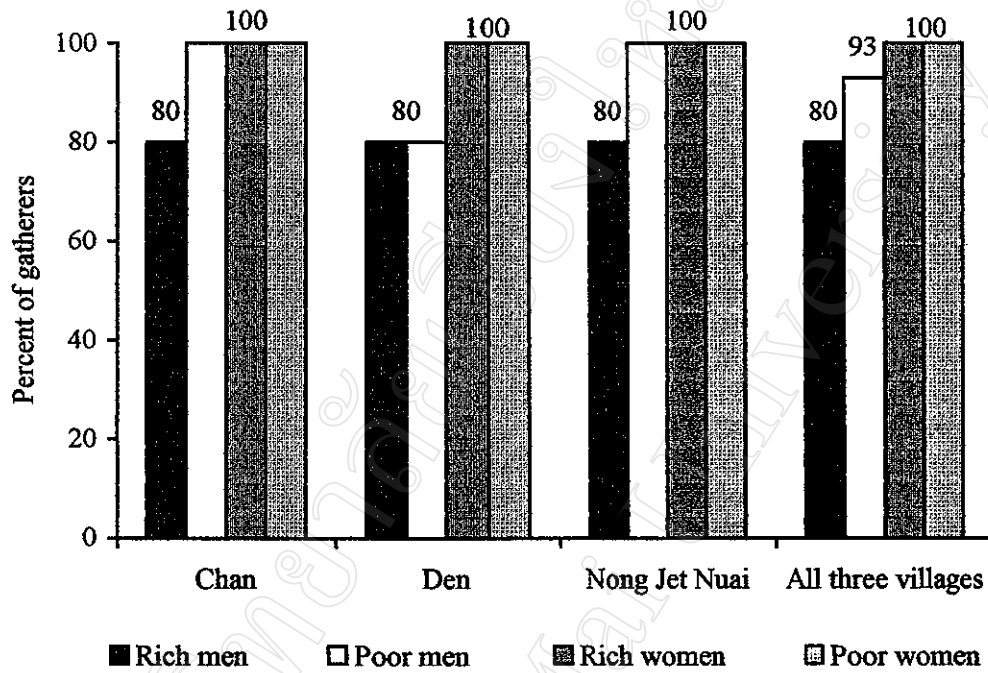


Figure 15. Percent of wild food plants gatherers by economic status.

From the study, it was found that at least 49, 76, and 78 wild plant species were gathered by women from Chan, Den and Nong Jet Nuai villages, respectively. Chan village Men also gathered wild food plants, but less than women. Men from Chan, Den and Nong Jet Nuai villages gathered 26, 26 and 25 species, respectively (Figure 16).

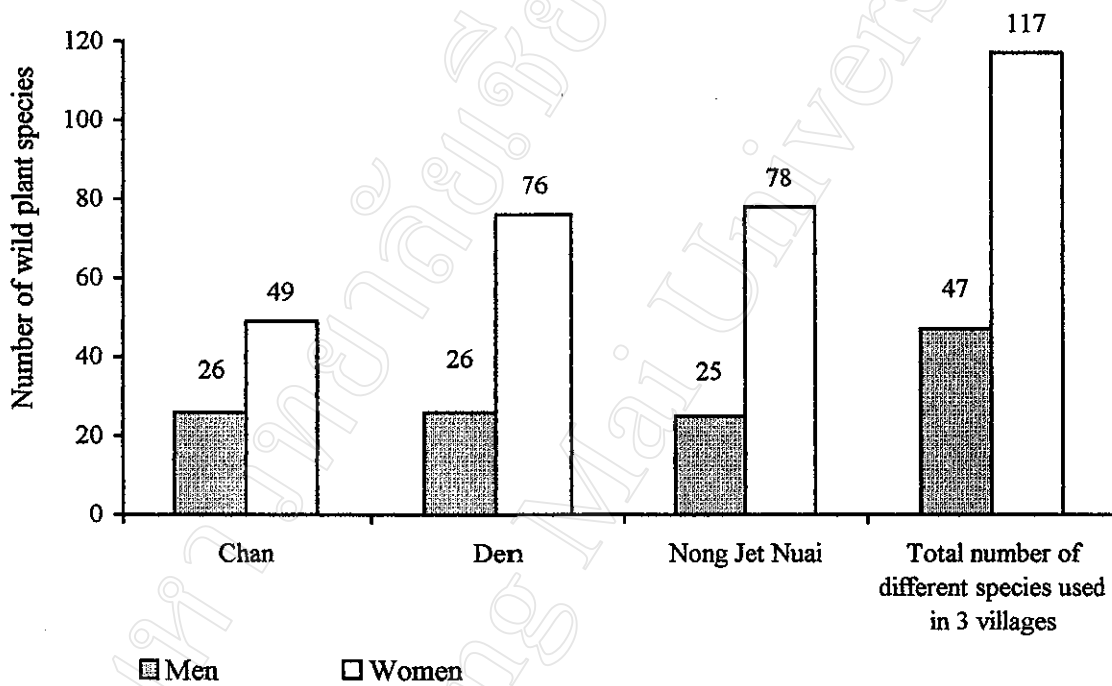
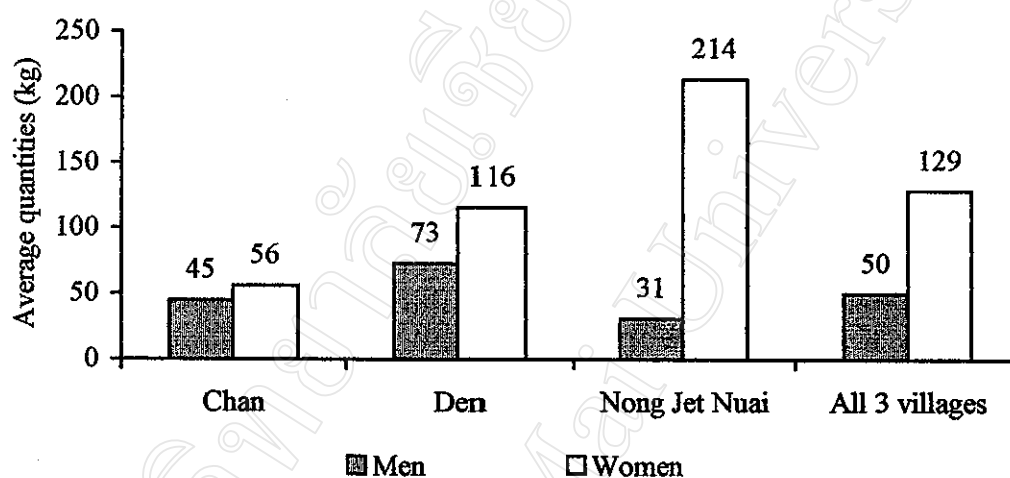


Figure 16. Number of wild food plant species gathered by Karen in the study area.

The average quantities of wild food plants that Karen women gathered per year per person was about 56, 116, and 214 kilograms in Chan, Den, and Nong Jet Nuai villages, respectively. Compared with men, women gathered more wild food plants than men. The average quantities of wild plants that men from Chan, Den, and Nong Jet Nuai gathered per year per person was about 45, 73 and 31, respectively (Figure 17)



**Figure 17.** Average quantities of wild food plants gathered by Karen in Chan, Den, and Nong Jet Nuai villages per person per year.

Almost all people in the study area prefer the same wild food plant species. Ten species were very popular among women and most of them collected these species. The most popular wild food plant species collected by women are in Table 11.

Table 11. The most popular wild food plant species collected by Karen people in the study area.

Species	Family	Local name	Average quantities per person per year (kg)					
			Chan		Den		Nong Jet Nuai	
			Men	Women	Men	Women	Men	Women
<i>Lithocarpus fenestratus</i> (Roxb.) Rehd.	Fagaceae	เต่า	0	6.4	0	3.6	0	11.2
<i>Brassiopsis ficifolia</i> Dunn	Araliaceae	หอยหลอด	0	9	0	3.6	1.8	5.2
<i>Smilax perfoliata</i> Roxb.	Smilacaceae	ชอกชอก	2	3.2	0	3.6	0	3.5
<i>Monochoria hastata</i> (L.) Solms	Pontederiaceae	โหม้เต้า	3.5	6.3	5	7.9	6.2	9.7
<i>Clerodendrum paniculatum</i> L.	Verbenaceae	ช็อคช็อค	0	5.3	0	4.2	0	11.4
<i>Oenanthe javanica</i> (Bl.) DC.	Umbelliferae	พะอืดพะอิด	0	5	6.7	6.2	0	3.5
<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	โปดโปดเต้า	0	5	3.9	7	5.5	10
<i>Houttuynia cordata</i> Thunb.	Saurauiaceae	ต่าเนอซีเต้า	2	4.2	0	4	5.6	10.2
<i>Meliosma simplicifolia</i> (Roxb.) Walp.	Sabiaceae	เสตาคชเต้า	2	3.7	6.7	4.3	0	5.8
<i>Lasia spinosa</i> (L.) Thw.	Araceae	ห่อตือโปด	0	3	0	5.8	0	11
<i>Centella asiatica</i> (L.) Urb.	Umbelliferae	ชวักชวักชวักเต้า	16.7	3	14.2	10.2	3.2	23.7
Total			26.2	54.1	36.5	60.4	22.3	105.2



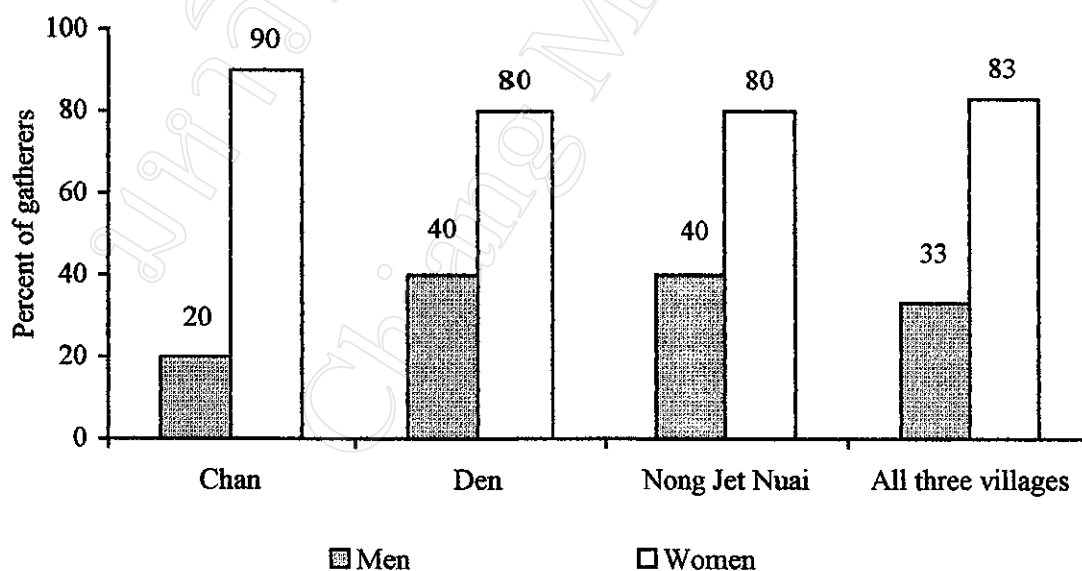
**Table 12.** Uses of wild food plant species by Karen

Species	Collecting time	Part used	Preparation
<i>Lithocarpus fenestratus</i> (Roxb.) Rehd.	Oct.-Nov.	Fruits	Roast (snack)
<i>Brassiopsis ficifolia</i> Dunn	Mar.-Nov.	Young leaves	Fresh/boil
<i>Smilax perfoliata</i> Lour.	Apr.	Flowers	Soup/boil
<i>Monochoria hastata</i> (L.) Solms	All year round	Leaves, stem, flowers	Fresh/boil
<i>Clerodendrum paniculatum</i> L.	All year round	Leaves, flowers	Boil
<i>Oenanthe javanica</i> (Bl.) DC.	Apr.-Nov.	Leaves	Fresh/fried
<i>Diplazium esculentum</i> (Retz.) Sw.	All year round	Young leaves	Soup/fried/fresh
<i>Houttuynia cordata</i> Thunb.	All year round	Leaves	Fresh/spice
<i>Meliosma simplicifolia</i> (Roxb.) Walp.	Apr.-Nov.	Young leaves	Soup/fried/fresh
<i>Lasia spinosa</i> (L.) Thw.	Apr.-Dec.	Young leaves	Soup/boil
<i>Centella asiatica</i> (L.) Urb.	All year round	Leaves, stem	Fresh/boil

*Note:* Karen usually consume fresh and boiled plants with chili sauce

### 6.1.2 Fodder

Popularly raised domestic animals among Karen besides dogs are pigs, poultry, and cattle. Ninety six percent of interviewed households raised pigs because they provide food and income. Women and girls take care of them. Pig food is from vegetables and bran. These vegetables come from two sources: planted and from the forest. Poultry are not fed much because people let them find food themselves. Cattle are kept in the forest near the village throughout the year or for at least 3-5 months during the rainy season. Therefore, fodder in this study was that for pigs only. Eighty percent of women interviewed from Den and Nong Jet Nuai villages gathered wild plants for fodder while in Chan village it was 90 percent. For men, 20, 40 and 40 percent from Chan, Den, and Nong Jet Nuai villages, respectively did this activity (Figure 18).



**Figure 18.** Percent of fodder gatherers from Chan, Den, and Nong Jet Nuai villages.

Considering the wealth status, it was found that more than 80 percent of women from any status in Chan, Den, and Nong Jet Nuai villages gathered fodder. Men from any status in Chan village, and rich men from Den and Nong Jet Nuai villages did this activity in the same percent. Poor men from Den and Nong Jet Nuai villages participated more in fodder gathering more than those in other economic status in their village (Figure 19).

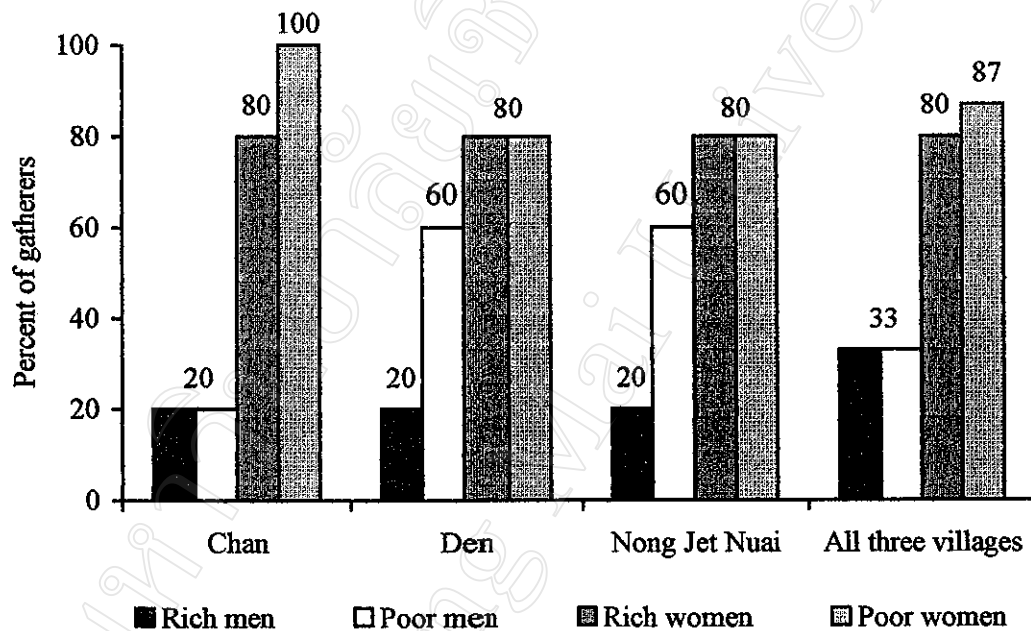
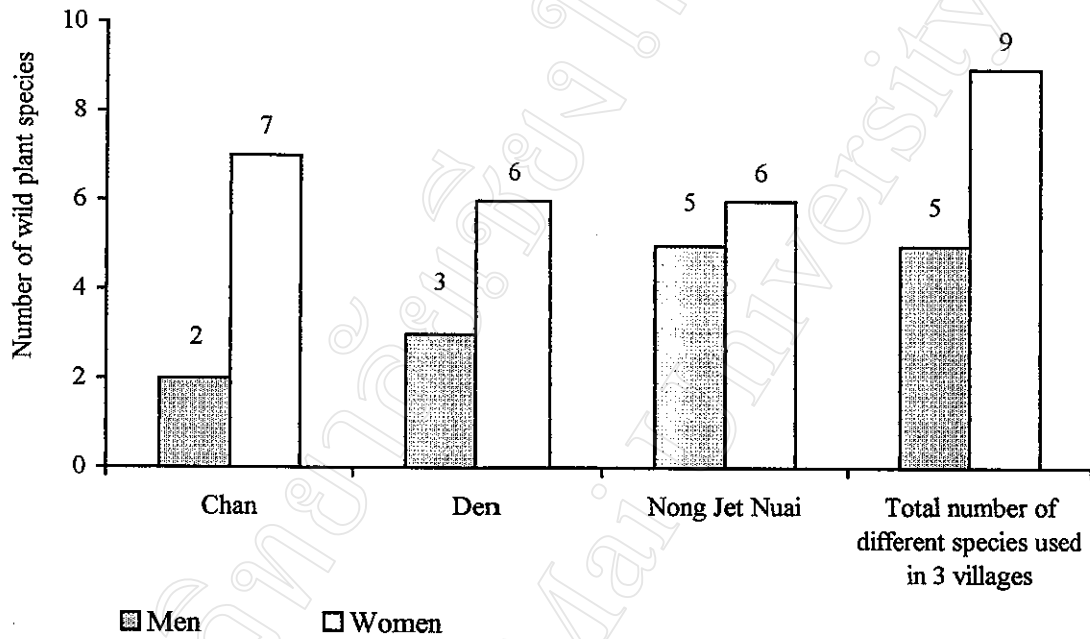


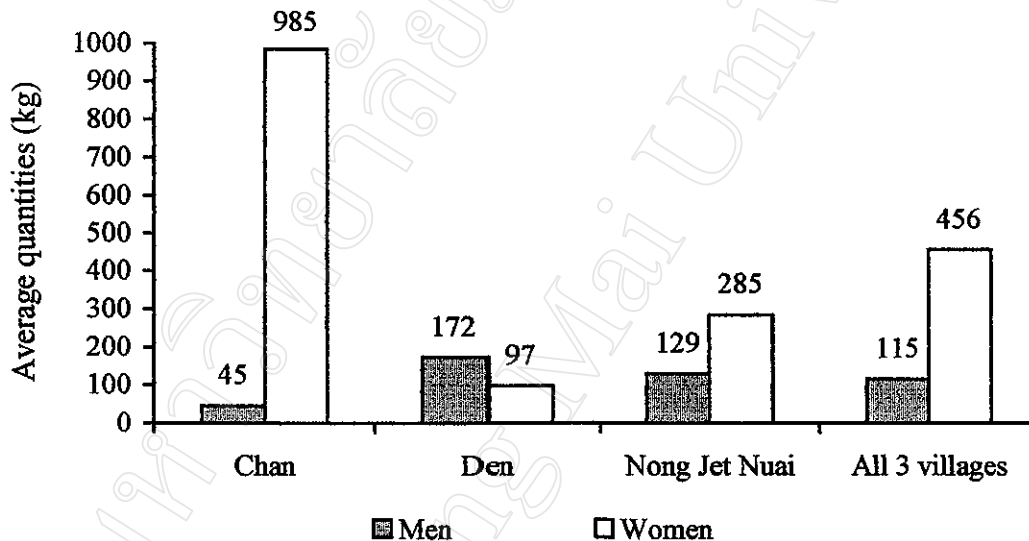
Figure 19. Percent of fodder gatherers by economic status.

It was found that at least 7, 6, and 6 species of wild plants were gathered to feed pigs by women from Chan, Den and Nong Jet Nuai villages, respectively. Men from Chan, Den and Nong Jet Nuai villages gathered 2, 3 and 5 species of these plants, respectively (Figure 20).



**Figure 20.** Number of wild plant species gathered to feed pigs by Karen in the study areas.

Fodder was collected in baskets and carried back home with 5-20 kilograms in one basket for each plant. Women from Chan, Den, and Nong Jet Nuai villages gathered about 985, 97, and 285 kilograms per year per person of wild plants for fodder, respectively. For men, the average quantity was about 45, 172, and 129 kilograms per year per person from Chan, Den, and Nong Jet Nuai villages, respectively. Average quantities of fodder collected by women in Chan village more than other people because they collected *Alocasia odora* (Robx.) C. Koch more than other species. This specie is more heavy than other, heavy stem (Figure 21).



**Figure 21.** Average quantities of wild plants gathered for fodder by Karen in Chan, Den, and Nong Jet Nuai villages.

The most popular plant species that most women from the three villages collected for fodder are listed in Table 13.

Table 13. The most popular plant species used as fodder in the study area.

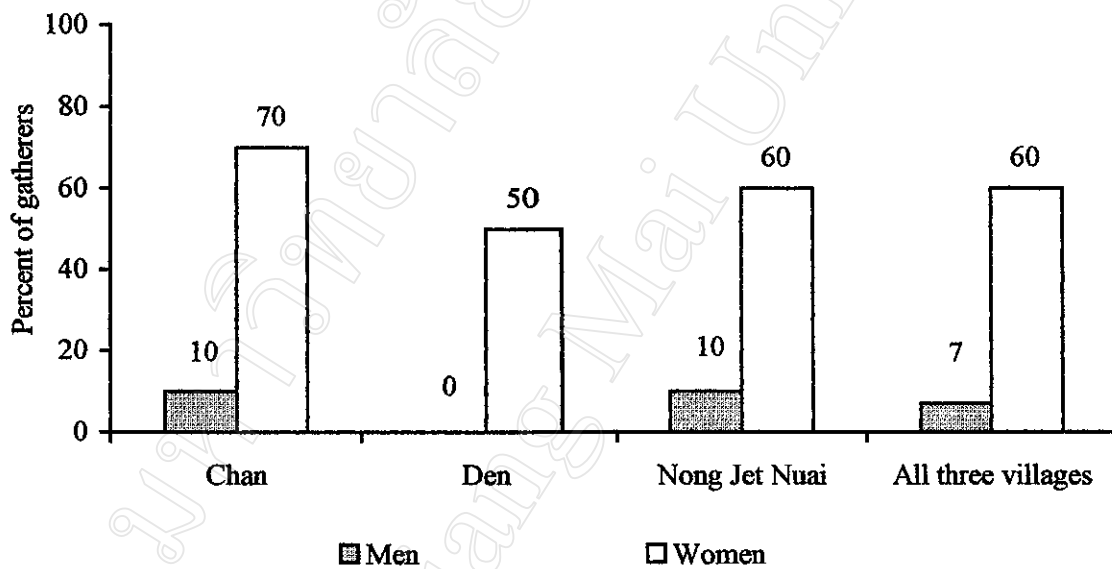
Species	Family	Local name	Average quantities per person per year (kg)					
			Chan		Den		Nong Jet Nuai	
			Men	Women	Men	Women	Men	Women
<i>Alocasia odora</i> (Robx.) C. Koch	Araceae	ฝ้ายใบ	35	161	145	40	•	194
<i>Crassocephalum crepidioides</i> (Bth.) S. Moore	Compositae	หนามยี่	•	131	•	38	70	60
Total			35	292	145	78	70	254

• = not popular

### 6.1.3 Dyes

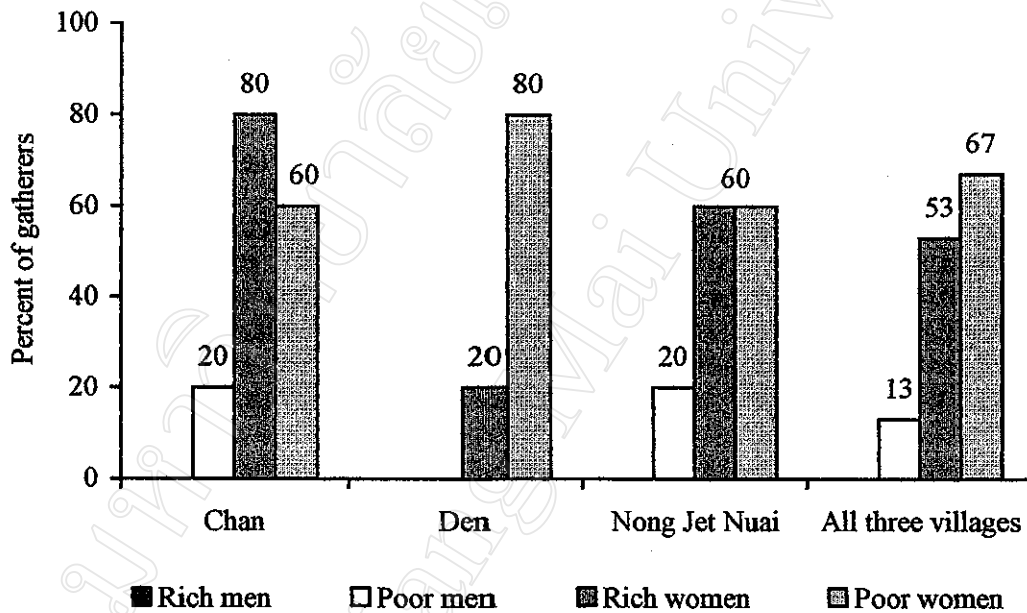
Weaving is a cultural skill that every Karen women has to learn, while men never do it. Cotton thread has many colours which come from plant dyes. Many plants can be used as dyes and provide different colour tones from chemical colours.

I found that 70, 50, and 60 percent of women from Chan, Den, and Nong Jet Nuai villages, respectively, collected wild plants used as dyes, while men rarely do it. Only 10 percent of men from Chan and Nong Jet Nuai villages did this activity, while men from Den village never did it (Figure 22).



**Figure 22.** Percent of dye plant gatherers from Chan, Den, and Nong Jet Nuai villages.

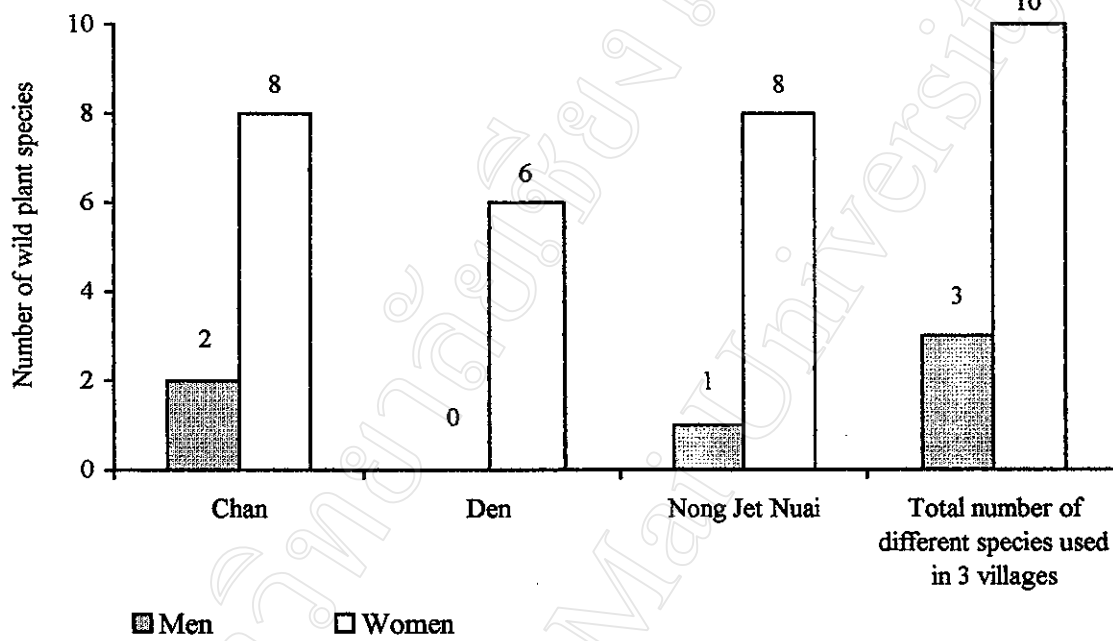
Considering economic (wealth) status, it was found that a higher percentage of poor women from Den village gathered these plants than rich people. In Chan village, the rich people did this activity more than in other villages because the Queen's Project is there and it is their main activity. The percent of women gatherers in Nong Jet Nuai village from both economic status was the same. For men, only 20 percent of the poor men from Chan and Nong Jet Nuai villages collected dye plants (Figure 23).



**Figure 23.** Percent of dye plant gatherers by economic status.

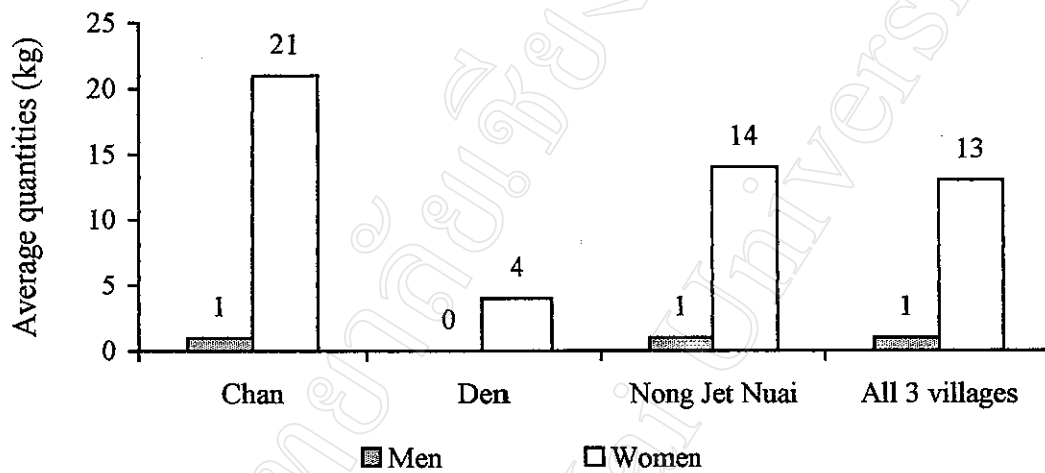


Women from Chan, Den, and Nong Jet Nuai villages collected 8, 6, and 8 species, respectively, of dye material. Men in the households studied from Chan and Nong Jet Nuai villages collected 2 and 1 species, respectively. Men from Den village did not collect these plants (Figure 24).



**Figure 24.** Number of wild plant species used as dyes gathered by Karen in the study area.

For average quantities, women from Chan village collected these dye plants more than women from the other villages. Women from Chan, Den, and Nong Jet Nuai villages gathered about 21, 4 and 14 kilograms per year per person, respectively. Men from Chan and Nong Jet Nuai villages gathered about 1 kilogram per year per person (Figure 25).



**Figure 25.** Average quantities of wild plant species used as dyes gathered by Karen in the study area.

The most popular wild plant species used as dyes in each village are shown in Table 14.

Table 14. The most popular plant species used as dyes in the study area.

Species	Family	Local name	Average quantities per person per year (kg)					
			Chan		Den		Nong Jet Nuai	
			Men	Women	Men	Women	Men	Women
<i>Buchanania lanzan</i> Spreng. <sup>1</sup>	Anacardiaceae	ขมิ้น	*	7.5	*	1.5	1	•
<i>Ternstroemia gymnanthera</i> (Wight & Arn.) Bedd. <sup>2</sup>	Theaceae	หูก	*	7	*	*	*	*
<i>Lithocarpus fenestratus</i> (Roxb.) Rehd. <sup>3</sup>	Fagaceae	เหียง	*	*	*	2	*	*
<i>Clerodendrum glandulosum</i> Colebr. ex Lindl. <sup>4</sup>	Verbenaceae	หัดดอกค้ำ	*	•	*	•	*	6
<i>Phyllanthus emblica</i> L. <sup>5</sup>	Euphorbiaceae	สีสุก	*	3	*	*	*	5
<i>Quercus vestita</i> Rehd. & Wils. <sup>6</sup>	Fagaceae	เทศมด	0.5	•	*	•	*	•
<i>Diospyros kaki</i> Thunb. <sup>7</sup>	Ebenaceae	เกตุเม	0.5	*	*	*	*	*
Total			1	17.5	0	3.5	1	11

Note: For brown use bark of spp. 1 and 7

For red-brown use bark of spp. 3 and 6

blue use leaves and flowers of sp. 4

dark green use bark of sp. 5

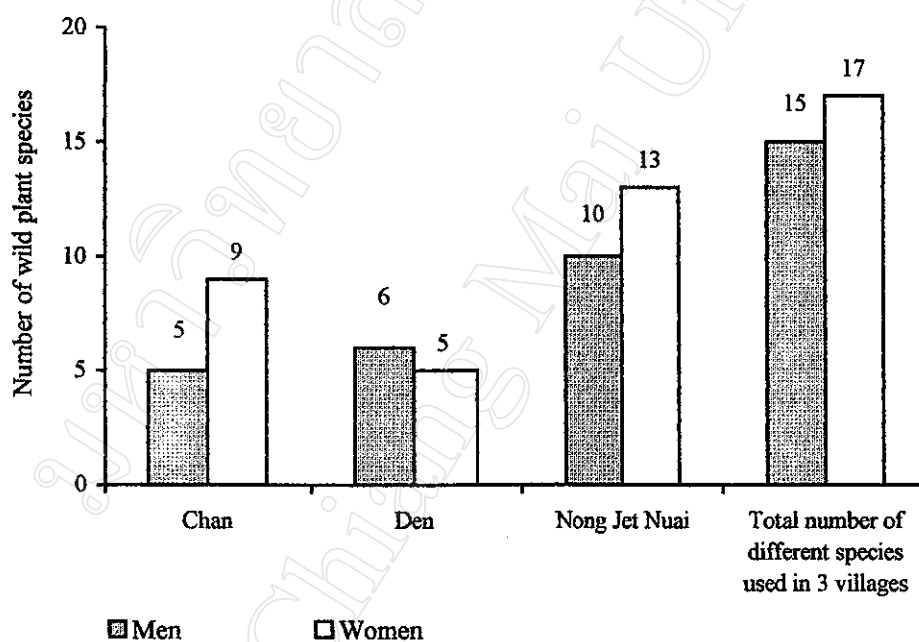
• = not popular

dark brown use bark of sp. 2

\* = not collected

#### 6.1.4 Fuelwood

All families in the households studied use fuelwood for cooking and heating. It was found that 9, 5, and 13 species were gathered for use as fuelwood by women from Chan, Den, and Nong Jet Nuai villages, respectively. They collect fuelwood more often than men. It takes an average of 1-2 hours to collect one basket (= 15 kilograms), for women, 160 times per year per person. For men, they collect only 5 times per year. Men usually gather fuelwood and carried it back home in a small pick up truck. Five, six, and ten species were gathered in basket by men from Chan, Den, and Nong Jet Nuai villages, respectively (Figure 26).



**Figure 26.** Number of wild plant species used as fuelwood by Karen in the study area.

One hundred percent of the women from Chan village collected fuelwood while it was 90 percent in the other two villages. Compared with men, who gathered fuelwood in baskets, the male gatherers from Chan village were more than in Den and Nong Jet Nuai villages, *i.e.* 80, 20 and 30 percent, respectively. Even male gatherers in Chan village were more than in other villages, but they did not gather much (Figure 27).

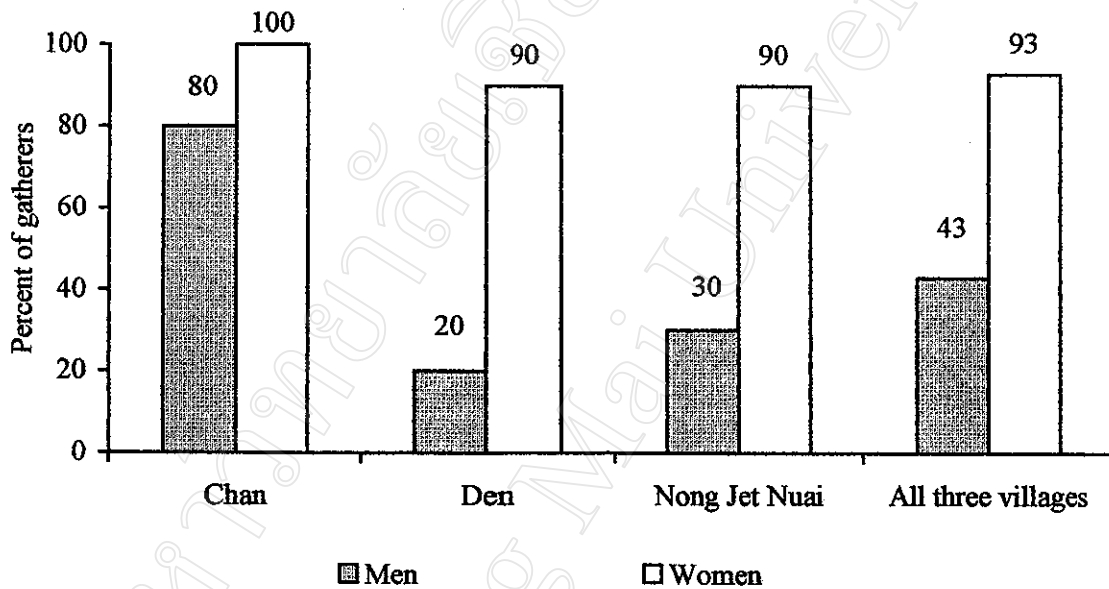


Figure 27. Percent of fuelwood gatherers from Chan, Den, and Nong Jet Nuai villages.

With regard to economic (wealth) status, it was found that women of all status from Chan village and the poor ones from Den and Nong Jet Nuai villages had higher percentages of fuelwood gatherers. The percent of poor male gatherers from Chan and Nong Jet Nuai villages were more than for wealthy men. The economic status did not affect fuelwood collecting by men from Den village (Figure 28).

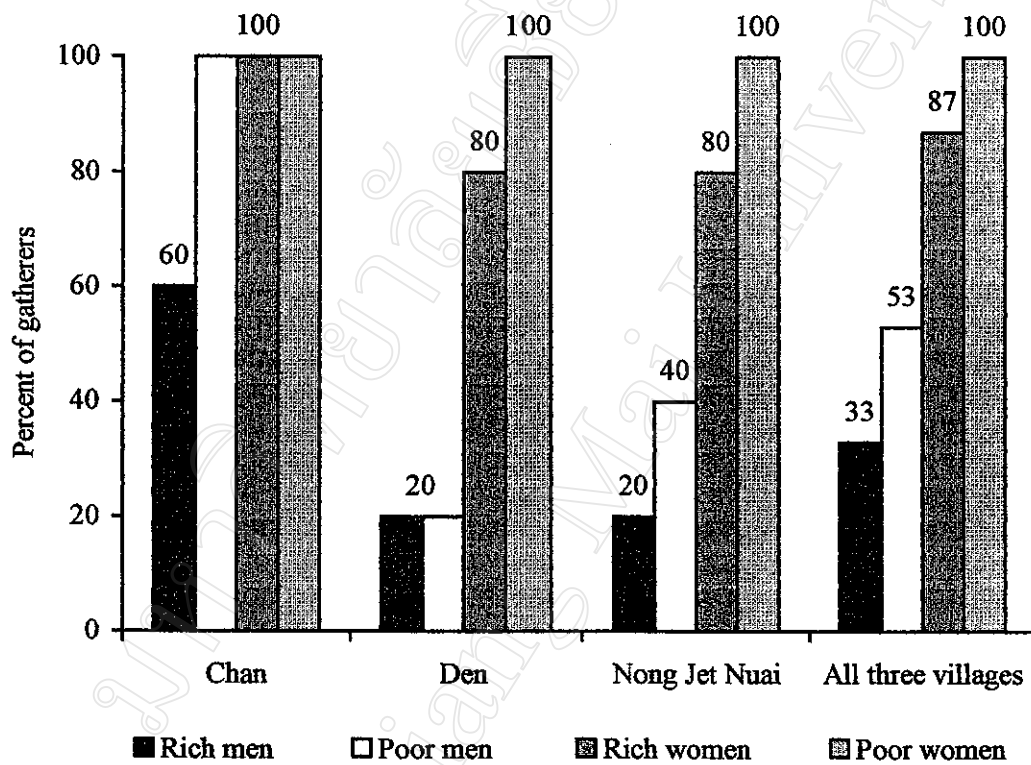
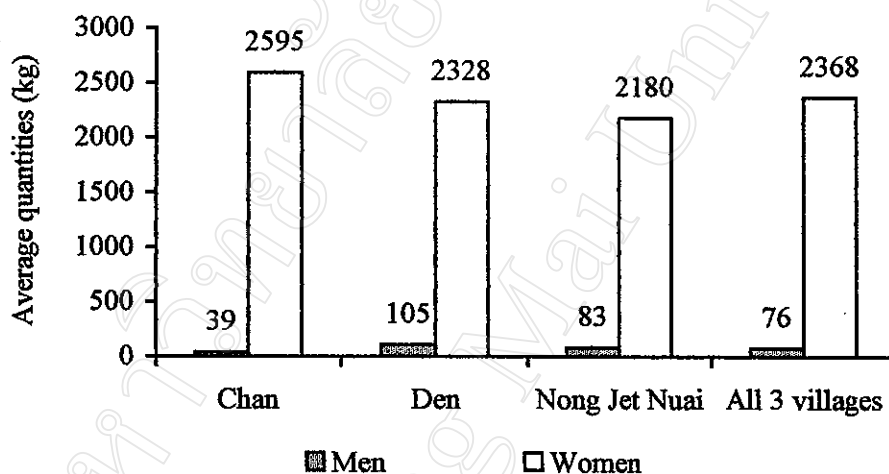


Figure 28. Percent of fuelwood gatherers by economic status.

The average quantity of fuelwood collected in baskets by women from Chan, Den and, Nong Jet Nuai villages was 2,595, 2,328 and 2,180 kilograms per year per person, respectively. Men from these three villages collected less fuelwood in baskets than women. Men gathered about 39, 105, and 83 kilograms per year per person, respectively, for this type of fuelwood collection (Figure 29). This backload fuelwood transportation was done only 40 percent of Karen households. Almost 50 percent of the households transported fuelwood by using small trucks (Shinawatra and Krummel, 1997).

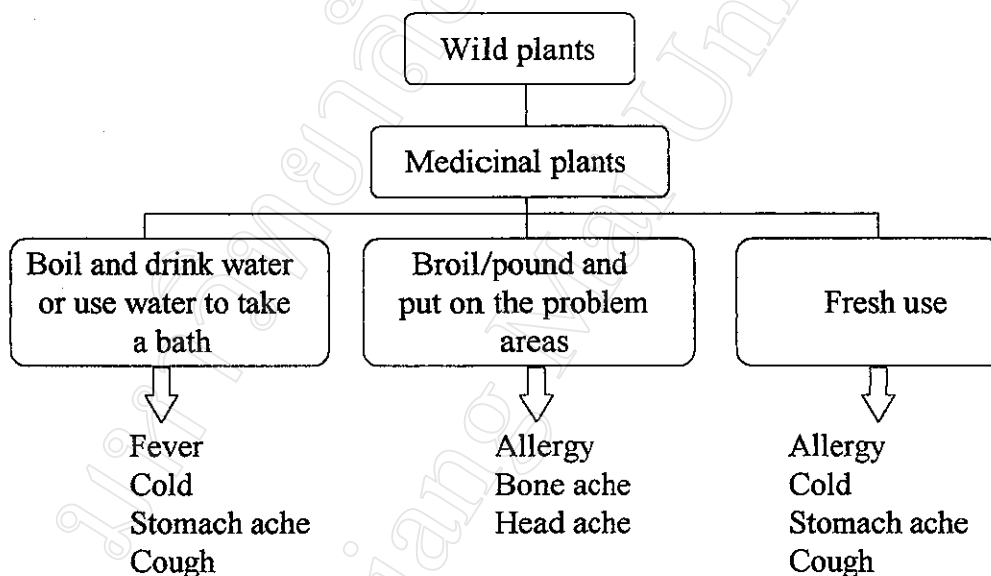


**Figure 29.** Average quantities of fuelwood gathered by Karen in Chan, Den, and Nong Jet Nuai villages.

The most popular of wild plant species used as fuelwood were *Pinus kesiya* Roy. ex Gord. (Pinaceae) which most interviewed people collected and almost of them also collected *Shorea obtusa* Wall. ex Bl. (Dipterocarpaceae). This study did not focus on the average quantities of each species. The total volume of fuelwood collected by the people interviewed were considered as one unit.

### 6.1.5 Medicine

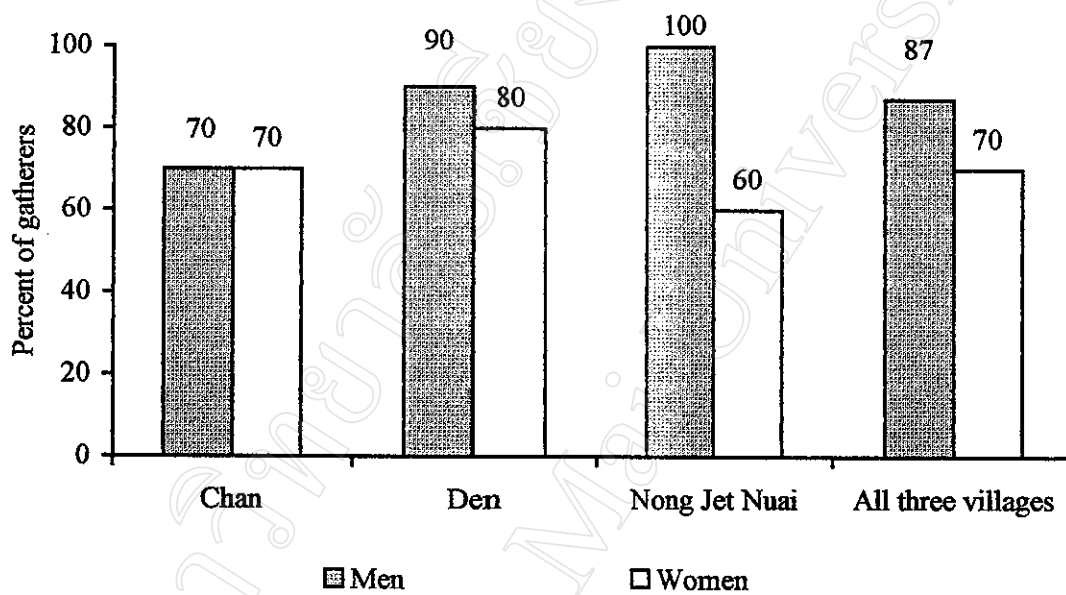
Karen use some plants to treat some minor ailments by simple methods such as boil and drink the water, broil or pound and put on the affected area, and taking fresh. They use medicinal plants in two ways, *viz.* mixing with other plants and using a single plant. They use these plants to treat seven symptoms including fever, colds, stomach ache, head ache, bone ache, allergies, and coughs. Beside this, they use these plants to treat other problems such as wounds and digestion/egestion. They also used some plants for cosmetic purposes (Figure 30).



**Figure 30.** Basic methods of using medicinal plants to treat minor problems by Karen.



Female medicinal plants gatherers from Den village were more numerous than from the other villages while male gatherers from Nong Jet Nuai village was the highest. The percentage of female gatherers from Chan, Den, and Nong Jet Nuai villages were 70, 80, and 60, respectively, while male gatherers were 70, 90, and 100 percent respectively (Figure 31).



**Figure 31.** Percent of medicinal plants gatherers from Chan, Den, and Nong Jet Nuai villages.

The percent of female gatherers from poor families were more than from wealthy ones except from Den village where status did not effect the gatherers. More poor men also participated in this activity than the wealthy ones except gatherers from Nong Jet Nuai village, where status was not important (Figure 32).

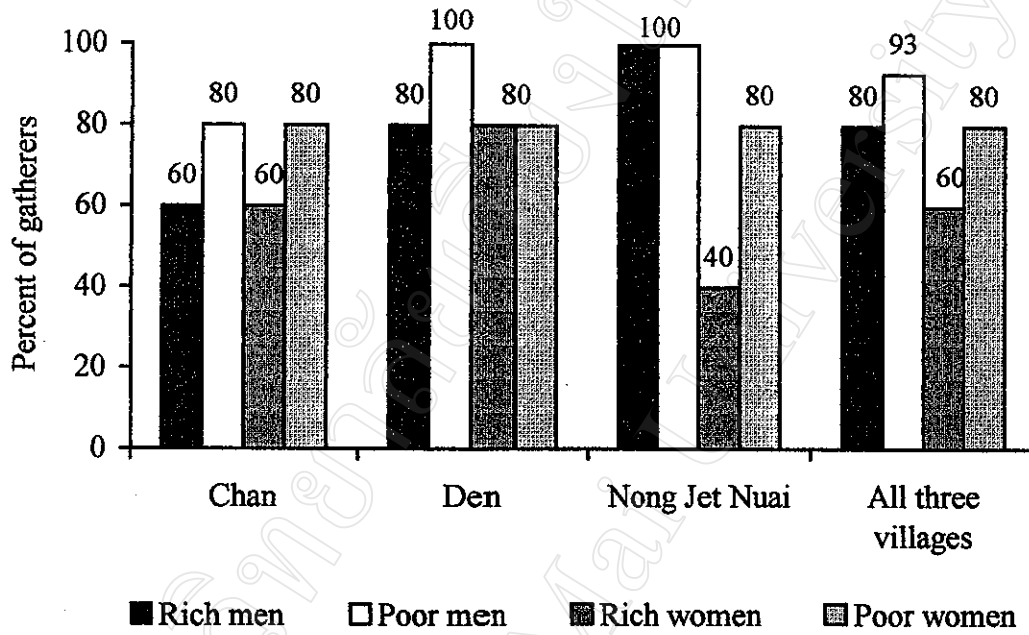
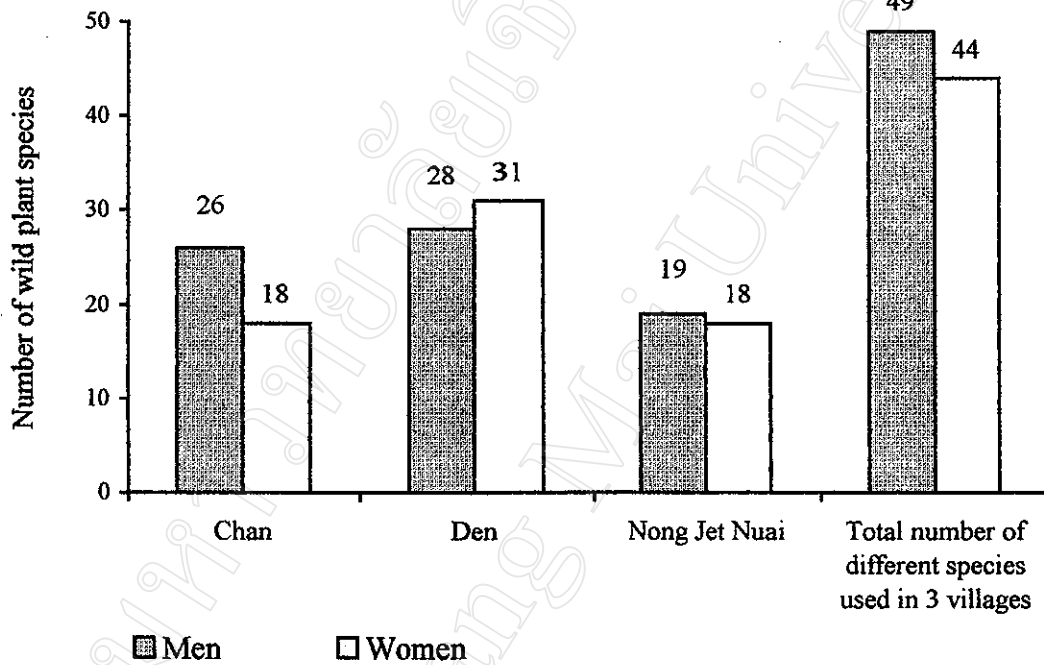


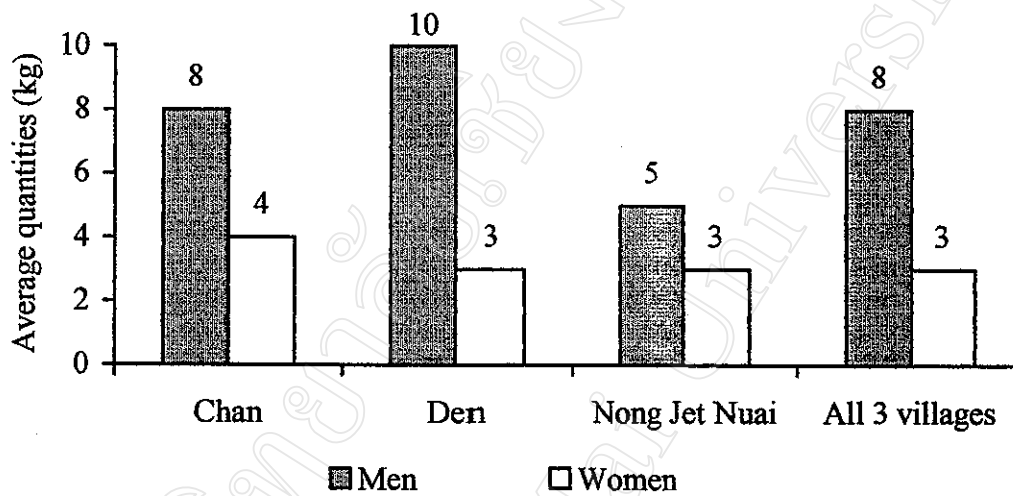
Figure 32. Percent of medicinal plants gatherers by economic status.

Normally, men know more about medicinal plants than women, particularly species available only deep in the forest. I found that men used medicinal plants more than women except men from Den village. Women gathered 18, 31 and 18 species of medicinal plants from Chan, Den, and Nong Jet Nuai villages, respectively. Men from Chan, Den, and Nong Jet Nuai villages gathered 26, 28 and 19 species of medicinal plants, respectively (Figure 33).



**Figure 33.** Number of wild plant species used as medicine by Karen in the study area.

More quantities of medicinal plants were collected by men than women. The quantities collected was highest by men from Den village. Women from Chan, Den, and Nong Jet Nuai villages gathered these plants about 4, 3 and 3 kilograms per year per person, respectively. Men from these three villages gathered about 8, 10 and 5 kilograms per year per person, respectively (Figure 34).



**Figure 34.** Average quantities of forest medicinal plants gathered by Karen in Chan, Den, and Nong Jet Nuai villages.

The most popular medicinal plant species collected by men and women are listed in Table 15.

Table 15. Most popular of medicinal plants collected and utilized by Karen people in the study area.

Species	Family	Local name	Average quantities per person per year (kg)					
			Chan		Den		Nong Jet Nuai	
			Men	Women	Men	Women	Men	Women
<i>Phyllanthus emblica</i> L. <sup>1</sup>	Euphorbiaceae	สียาใต้หมอง	2	0.5	2.6	1	1.4	1
<i>Sambucus javanica</i> Reinw. ex Bl. <sup>2</sup>	Caprifoliaceae	เตอส์ก้าง	1.4	1	0.3	0.2	0.3	0.1
<i>Imperata cylindrica</i> L. <sup>3</sup>	Gramineae	เกอฮี่	1	1	0.3	0.7	0.1	0.2
<i>Equisetum debile</i> Roxb. ex Vauch. <sup>4</sup>	Equisetaceae	กือซอปลอคา	0.5	0	1	0	1.3	0
<i>Alpinia malaccensis</i> (Burm. f.) Rosc. <sup>5</sup>	Zingiberaceae	เพาเกาที่	0.5	0	1	0	0.6	0
<i>Eupatorium odoratum</i> L. <sup>6</sup>	Compositae	หึโมเกาะ	0	0.1	0	0.1	0	0.2
<i>Tithonia diversifolia</i> (Hemsl.) A. Gray <sup>7</sup>	Compositae	พอนอ้ง	0	0.6	0	0.3	0	0.2
Total			5.4	3.2	5.2	2.3	3.7	2.7

Note: Aliment / plant part used / application

1. Cough, sore throat      branch      boil and drink water
2. Bone ache      leaves      broil and put on the problem area
3. Kidney problem      root      boil/ together with *pinus kesiya* seed and drink water
4. Abdominal ache      tuber      boil and drink water
5. Pustule or abscess      tuber      boil and put on the problem area
6. Wound      leaves      squeeze the leaves and put on the problem area
7. Rash      leaves      boil and use water to take a bath

### 6.1.6 Cultural use

Besides these 5 main groups of wild plant utilization (food, fodder, dyes, fuelwood, and medicine), some wild plant are also used in their culture. They believe that some wild plants can prevent them and their families from bad omens such as devils, theives, enemies, and diseases. They also use some wild plants to protect their crops, especially rice. Most wild plants used in Karen's spiritual belief are rare. Knowledge of these plants has passed through many generations. These wild plants were collected from dense forests and planted in front of their houses. Some of these spiritual plants are dried and carried with them wherever the go. Sometimes, designs of these plants are tattooed on their bodies which are needed to protect and encourage them. Karen have some rules for using these plants, for example, women are not allowed to touch species which are used to protect families from evil spirits and devils. Others plant species are also used in their culture such as *Caesalpinia digyna* Rottl. (Leguminosae, Caesalpinioideae), which is used for respecting and apologizing to spirits and elderly people when someone does something wrong. *Lygodium flexuosum* (L.) Sw. (Schizaeaceae), is used to respect field spirits so that bumper crops are produced. *Hyptis suaveolens* (L.) Poit. (Labiatae), is used for prevent dampness and rat. Young leaves of *Eugenia Fruticosa* (DC.) Roxb. (Myrtaceae), are used by Karen in Buddhist Temple ceremonies in offerings to monks.

## 6.2 Patterns and sources of wild plants collection

### 6.2.1 Patterns of wild plants collection and utilisation

Wild plants collecting depends on the collector's purpose. Sometimes one plant can be used for many purposes such as food and medicine. In the Karen language, there is a word to identify the usable part of plants. For example, any plant which uses leaves, people add "dau" to the end of the plant name, "sah" for fruits, "jaw" for young leaves, "paw" for flowers, and "bay" for bark. The usable part of most plants that are utilised in Karen daily life do not differ much with each other. Patterns of wild plant collection are shown in Figure 35.

#### 1) Food

Leaves, including the young ones, shoots, flowers, and fruits are collected for household consumption. These plant parts were normally consumed with chilli sauce and since Karen preferred fresh food more than processed food. Some are used in soup. The plants which are used as flavouring are dried before use such as *Brassica oleracea* L. (Cruciferae).

#### 2) Fodder

For big trees, people collect only its leaves. The most popular plant for pigs is banana "stem" and is used in every household interviewed. Beside wild plants, Karen women also use other cultivated plants such as papaya and pumpkin. These plants are mixed together and boiled before feeding pigs.

### 3) Dyes

Dye materials come from bark, fruits, and leaves. These materials are boiled, and mixed with alum to prevent bleaching. After that cotton thread is soaked in the liquid.

### 4) Fuelwood

Women collected only branches because they have to carry the load (15 kg) back home in baskets. Men, with small truck, cut down trees. Fuelwood is stored under the house or in the barn.

### 5) Medicine

Stems, roots, leaves, and bark are used as medicines. The medicinal plants used depend on the people's ailments.

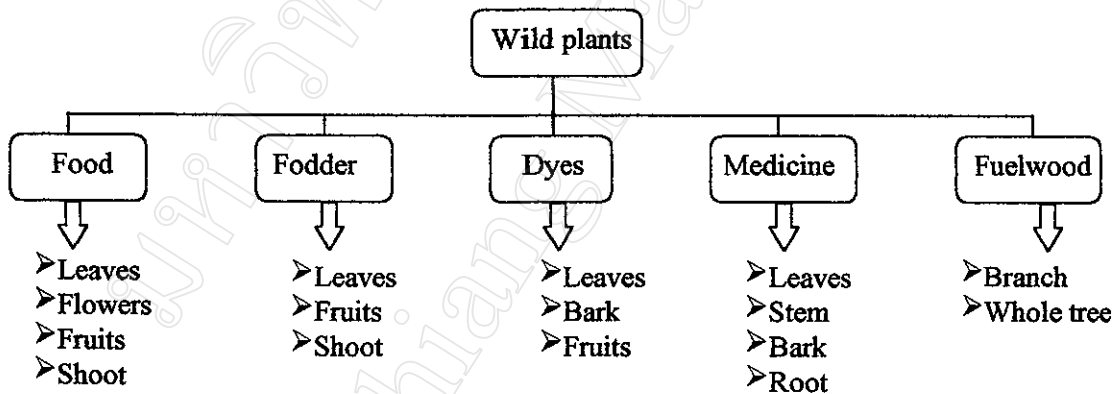


Figure 35. Uses of wild plant parts.



### 6.2.2 Sources of wild plants collection

I found that Karen went to gather wild plants from about 140 places in the forest. This study focuses on the main locations where most people interviewed went. These locations had high species density, high quantities, and were not far from the village. Almost all wild plants are near streams, especially wild food plants. The distance to go to each location was measured from the Buddhist temple (*Wat Chan*) at Chan village. The details of wild plants sources are described below.

#### 1) Food plants

Men and women from the three villages gathered most wild food plants from evergreen hardwood mixed with pine forest such as *Mu Jae Glok* SSW 700 m from *Wat Chan*, *Pheu Do Glok* 2150 metres SSE of *Wat Chan*, *Saw Khare Glok* 3250 metres west of *Wat Chan*, and *Taa Loo Kho* 1025 metres WNW of *Wat Chan*, deciduous dipterocarp mixed with pine forest such as *Poe Tee Glok* 175 metres ESE of *Wat Chan* and *Shor Law Blurk Glok* 2275 metres WSW of *Wat Chan*, and rice field such as *Klo Glok* 1550 m west of *Wat Chan*, *Nor Mur Glok* 1250 metres WNW from *Wat Chan*, and *Dere Law Glok* 375 metres west of *Wat Chan*.

#### 2) Fodder

People from the three villages go to gather wild plants for pigs from fields and forest. Women especially from Chan village, often go to gather fodder from paddy fields around their village. Both men and women from Den village go to evergreen hardwood mixed with pine forest such as *Taa Loo Kho* and *Pheu Do Kee* more often than the other places. Deciduous dipterocarp mixed with pine forest such as *Shor Law Blurk Kee* is the most popular place for Karen people from Nong Jet Nuai village.

### 3) Dyes

Women from the three villages collected wild plants for colour dying from evergreen hardwood mixed with pine forest such as *Taa Loo Kho* and *Pheu Do Glok*. They also collected these plants from deciduous dipterocarp mixed with pine forest such as *Poe Tea Glok* and *Phor Ka Glok*.

### 4) Fuelwood

Women go to collect fallen branches for use as fuelwood and carry them back home in baskets. They usually go collecting not too far from their village. Men also go to collect fuelwood, but they go further than women because they often use a truck to carry it back home. Women usually go to evergreen hardwood mixed with pine forest such as *Taa Loo Kho* while men always go to deciduous dipterocarp mixed with pine forest such as *Huai Thong*.

### 5) Medicine

Men do more medicinal plant gathering than women. They know the medicinal plants better than women and can go deeper in the forest to find these plants. Women usually collect medicinal plants in their villages. For other locations, women from all of the three villages gathered medicinal plants in the same place as they gathered wild food plants, evergreen hardwood mixed with pine forest such as *Moo Jae Glok*, and *Beu So Glok*, deciduous dipterocarp mixed with pine forest such as *Shor Law Blurk Glok*, and rice fields such as *Klo Glok* and *Nor Mur Glok*.

Men utilise timber to construct houses, make fences, and poles. The main location where men from all three villages go to cut trees is at evergreen hardwood mixed with pine forest such as *Khor Paa Glok* 1875 metres WNW of *Wat Chan*, *Ser*

*Ya Tha* 1400 metres north of *Wat Chan*, *Pheu Do Glock*, and *Toe Sae Soo Glock* 950 metres, deciduous dipterocarp mixed with pine forest such as *Poe Tea Glock* and *Phor Ka Glock* 750 metres NW of *Wat Chan*,

Table 16 summarises the main locations of wild plant collecting and the distances from *Wat Chan* to each place. Figure 36 show the locations where almost people interviewed went to collect wild plants.

**Table 16.** Main locations of wild plant gathering.

Forest type	Location (English)	Location (Karen)	Direction	Distance (m)	uses
Deciduous dipterocarp mixed with pine	Poe Tea Glock	ไปทีโกล๊ะ	ESE	175	1,5
Deciduous dipterocarp mixed with pine	Shor Law Blurk Glock	ชอลลอบลอคอะ โกล๊ะ	WSW	2275	1,2,5
Deciduous dipterocarp mixed with pine	Huai Tong	ห้วยทอง	WNW	2500	4
Deciduous dipterocarp mixed with pine	Phor Ka Glock	พอกะโกล๊ะ	NW	750	5
Evergreen hardwood mixed with pine	Saw Khare Glock	ซอแคโกล๊ะ	W	3250	1
Evergreen hardwood mixed with pine	Beu Soe Glock	บือโสโกล๊ะ	WSW	3500	1,5
Evergreen hardwood mixed with pine	Khork Paa Glock	เคาะปาโกล๊ะ	WNW	1875	5
Evergreen hardwood mixed with pine	Toe Sae Soo Glock	โตเสอูโกล๊ะ	NW	950	5
Evergreen hardwood mixed with pine	Mu Jae Glock	มุเจโกล๊ะ	SSW	700	1,5
Evergreen hardwood mixed with pine	Sir Ya Tha	เซอะญ่า	N	1400	5
Evergreen hardwood mixed with pine	Taa Loo Kho	ตาหลูโข	WNW	1025	1,2,3,4
Evergreen hardwood mixed with pine	Pheu Do Glock	ฟือโดโกล๊ะ	SSE	2150	1,2,5
Rice field	Klo Glock	โกลโกล๊ะ	W	1550	1,3,5
Rice field	Nor Mur Glock	นอหม่อโกล๊ะ	WNW	1250	1,3,4,5
Rice field	Dare Law Glock	แดลลโกล๊ะ	W	375	1,4,5
Rice field	Na Bore Tee Glock	นาบอเตโกล๊ะ	WSW	450	3

Note: 1=food plant 2=fodder 3=dye 4=fuelwood 5=medicinal plant

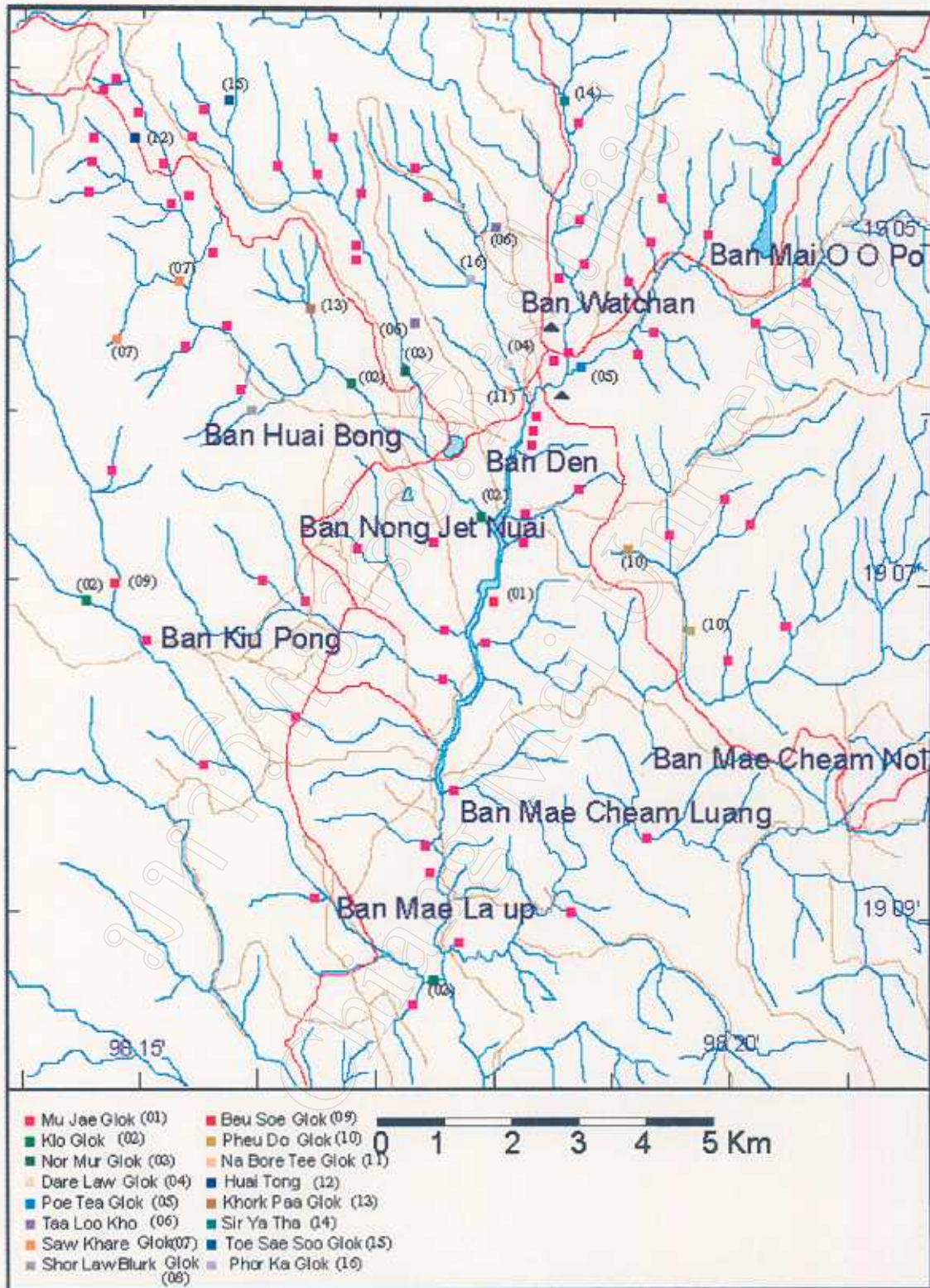


Figure 36. The locations where people collect wild plants.

### 6.3 Sale of wild plants

Wild plants are gathered for household use and some households interviewed sold the surplus. More wild food plants and flowers were gathered to be sold than other plants because they had buyers. In 1998 people had income from selling wild food plants and flowers about 148 and 391 *baht* per year, respectively. The total income from selling wild plants by people in Den, Chan, and Nong Jet Nuai villages was about 593, 1093 and 130 *baht*, respectively. Income from selling wild plants depended on the quantities that they could collect. Almost all wild plants sold in the study area were done by women. Forty percent of women sold plants while only 16 percent of men did it. I found that women participated in collecting and selling all plants. Men also participated in this activity, particularly, vegetables collecting and selling. Women collected vegetables for household consumption while men collected them for sell. Table 17 summarises the average price of wild plants, the average income per household from selling wild plants, and the percent of people who sell, according to gender.

**Table 17.** Average income per household from the sale of wild plants, 1998.

	Price <i>baht/kg</i>	Income/household			%HH selling		
		Den	Chan	NJN	Den	Chan	NJN
Nuts	8	193	50	110	30 w	20 w	30 w
Flowers	30	498	283	0	40 w	30 w	0
Mushrooms	11	402	150	0	10 w	20 w	0
Vegetables*	20-50	0	110	20	20 m	20 m	10 m
Total		1,093	593	130			

*Note:*

HH = Household

w = Collected and sold by women

NJN = Nong Jet Nuai

m = Collected and sold by men

\* Price depends on species

One day (eight hours), wage rate in the study areas is 60 *baht*. When compared by hours working, the gathering cost was about 7.5 baht per hour. The gathering cost consisted of travelling time and gathering time. The cost would higher when took longer time to travel and gather.

#### **6.4 Effects of declining wild plant abundance on household consumption**

Data of species which decline in abundance were obtained from households interviewed because they use wild plants in their daily consumption. To find out the declining abundance of wild species, an arbitrary criteria of 2 kilometers was used. Villagers were asked about abundance of wild plants that could be collected within 2 kilometers from the village, and to specific those that have begun to decrease. From the households interviewed, I found that 21 wild plant species have decreased in abundance within the last five years. The species that decreased were divided into three groups. The first group, 4 species, have very seriously declined in abundance and are not available around the villages. The next group, 6 species, decreased seriously, but are still available in the forest near the village. The last group, 11 species, has begun to decrease everywhere (Table 18). From the most popular food plants collected by Karen people (Table 11 and 12), it was found that 4 species have very seriously decreased, 2 species are seriously decreased, and 3 species have begun to decrease in abundance.

Increasing population and habitat destruction are the main reasons why wild plants are decreasing. Drought is another reason that is making wild plants decrease. Cattle, fire and deforestation have also reduced wild plant habitats. The last reason is from toxic chemicals used by farmers when they grow cash crops. Since Karen's

fields are in the forest all, pesticides that they use to protect their crops can damage wild plants, for example, small plants near their plots and aquatic plants in streams which pass throughout their fields.

Decreases in wild plants has had a direct effect on Karen people since they have to go further and spend more time to collect plants. Some Karen have realised the effect of wild plant decline and have started to domesticate them.

**Table 18.** Plant species with decreasing abundance in the study area.

Species	Family	Local name	Uses	Phenology
<b>Very seriously decreased</b>				
<i>Monochoria hastata</i> (L.) Solms	Pontederiaceae	โหนดี้	Food	A
<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	โปล้แปลเคี้ยว	Food	P
<i>Houttuynia cordata</i> Thunb.	Saurauiaceae	ค่านอซีเคี้ยว	Food	A
<i>Brassiopsis ficifolia</i> Dunn.	Araliaceae	ห่อเบลยอ	Food	P
<b>Seriously decreased</b>				
<i>Clerodendrum paniculatum</i> L.	Verbenaceae	ช่อคอเคี้ยว	Food	P
<i>Lasia spinosa</i> (L.) Thw.	Araceae	ห่อคือโปล้	Food	P
<i>Mentha cordifolia</i> Opiz	Labiatae	พอซีหม้อ	*	A
<i>Sagittaria sagittifolia</i> L.	Alismataceae	โหนด้อช่าเคี้ยว	Food	A
<i>Ludwigia hyssopifolia</i> (G. Don) Exell	Onagraceae	คาง่าเคี้ยว	Food	A
<i>Celastrus paniculatus</i> Willd.	Celastraceae	เคี้ยวตีเบลละเคี้ยว	Food	P
<b>Decreased</b>				
<i>Oenanthe javanica</i> (Bl.) DC.	Umbelliferae	พะอ่าเคี้ยว	Food	A
<i>Acacia megaladena</i> Desv. var. <i>megaladena</i>	Leguminosae, Mimosoideae	โพชวีเคี้ยว	Food	P
<i>Gluta obovata</i> Craib	Anacardiaceae	เต้คากอเคี้ยว	Food	P
<i>Rorippa dubia</i> (Pers.) Hara	Cruciferae	เซอระบะโรเรเคี้ยว	Food	A
<i>Centella asiatica</i> (L.) Urb.	Umbelliferae	ชวีโพคอกล่อเคี้ยว	Food	A
<i>Eryngium foetidum</i> L.	Umbelliferae	ค้อโปะกอลา	Food	A
<i>Sauropus androgynus</i> (L.) Merr.	Euphorbiaceae	ค่างอเคี้ยว	Food	P
<i>Piper betel</i> L.	Piperaceae	ห่อทึหล่า	*	P
<i>Cissus repens</i> Lmk.	Vitaceae	โพคูเคี้ยว	Food	P
<i>Spilanthes paniculata</i> Wall. ex DC.	Compositae	ฮอต่อมีเคี้ยว	Food	A
<i>Ocimum sanctum</i> L.	Labiatae	ห่อวอ	*	A

Note: A=Annual

P=perennial



### 6.5 Cultivation of wild plants

The reason for propagation of wild plants is for food and is most important for every household. The next reason is for other purposes such as decorations, wrappings, and for cleaning tools. All plants brought from the forest are planted in their home gardens. Chapter 7 has more details about Karen home gardens.

Besides gathering wild plants, especially wild food plants, women also catch fishes, shell, crabs, frogs, and tadpoles. These animals are always collected along with wild plants. Hunting is a favourite activity of men, but now the forest lacks big animals to hunt. Small animals, which are still available in the forest around the village are hares, birds, rats, squirrels, forest fowls, and flying squirrels. Rats and birds are hunted more than other animals (Table 19).

**Table 19.** Wild animals hunted by men from Chan, Den, and Nong Jet Nuai villages.

Forest animal	Percent of hunters		
	Chan	Den	Nong Jet Nuai
Birds	50	40	50
Rats	50	50	40
Squirrels	0	20	20
Hares	10	10	0
Forest fowls	0	10	0
Flying Squirrels	0	10	0
Pangolins	0	0	10