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Assessment of the Environmental Awareness of Local People Living in and around Forests in Myanmar: A Case Study in Yaedashae and Pauk-kaung Townships



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သစ်တောများ အတွင်းနှင့် အနီးပတ်ဝန်းကျင်တွင် နေထိုင်ကြသော ဒေသခံပြည်သူများ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ နိုးကြားထကြွသည့် အသိစိတ်ဓါတ် ရှင်သန်မှု အခြေအနေကို လေ့လာခြင်း

အင်ကြင်းခိုင် (ဦးစီးအရာရှိ) ၊ သစ်တောဖွံ့ဖြိုးရေးဌာနခွဲ ၊ သစ်တောသုတေသနဌာန၊
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စာတမ်းအကျဉ်း

ယနေ့အချိန်တွင် တိုးတက်လာသော လူဦးရေနှင့်အညီ ထိုလူဦးရေ၏ အခြေခံလိုအပ်ချက်နှင့် သစ်တောများမှ ရယူတည်မှီမှု ၊ တစ်ဖက်မှလည်း အဆိုပါ သစ်တောများကို ကာကွယ်နိုင်ရေးအတွက် တင်းကျပ်စွာ စီမံအုပ်ချုပ်မှုသည် သစ်တောများကို စနစ်တကျနှင့် အကျိုးသက်ရောက်မှုရှိစွာ ထိထိရောက်ရောက် စီမံအုပ်ချုပ်နိုင်စေရန် အတွက် ထည့်သွင်းညှိနိုင်း ဖြေရှင်းရမည့် စိန်ခေါ်မှုတစ်ရပ်ဖြစ်ပါသည်။ ဤလေ့လာချက်၏ အဓိကရည်ရွယ်ချက်မှာ သစ်တောများ ပတ်ဝန်းကျင်တွင် မှီခိုနေထိုင်သော ဒေသခံပြည်သူလူထု၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နိုးကြားထကြွသည့် အသိစိတ်ဓါတ် ရှင်သန်မှု အခြေအနေတို့ကို လေ့လာဖော်ထုတ်ရန်ဖြစ်ပါသည်။ လေ့လာတွေ့ရှိချက်များအရ လက်ရှိ ဒေသခံပြည်သူလူထုသည် ပတ်ဝန်းကျင်တွင် ပြောင်းလဲဖြစ်ပေါ်နေမှုကို သိရှိသော်လည်း သဘာဝ ပတ်ဝန်းကျင်ဆိုင်ရာ နိုးကြားထကြွသည့် အသိစိတ်ဓါတ် ရှင်သန်မှု အခြေအနေမှာ မြှင့်တင်ရန် လိုအပ်နေကြောင်း တွေ့ရှိရပါသည်။ Likert analysis အရ သစ်တောထွက်ပစ္စည်းထုတ်လုပ်မှု ၊ တိရစ္ဆာန်များ စားကျက်ချခြင်းမှ သစ်တောအပေါ် သက်ရောက်မှု၊ အသုံးမလိုသောအမှိုက်များ စွန့်ပစ်မှုဆိုင်ရာ အသိပညာများကို မြှင့်တင်ရန်လိုအပ်ကြောင်းနှင့် အသိပညာပေးဟောပြောပွဲများနှင့် လုပ်ဆောင်ချက်များတွင် ပူးပေါင်း ပါဝင်ဆောင်ရွက်မှု နည်းပါးနေသေးကြောင်း လေ့လာတွေ့ရှိရပါသည်။ ပတ်ဝန်းကျင်ဆိုင်ရာ ကာကွယ်ထိန်းသိမ်းရေး လှုပ်ရှားမှုများတွင် လူထုပါဝင်ဆောင်ရွက်မှုသည် ပတ်ဝန်းကျင်ဆိုင်ရာ အသိပညာနှင့် တိုက်ရိုက်ဆက်သွယ်မှု (positive correlation) ရှိကြောင်း ဖော်ထုတ်သိရှိရပါသည်။ လေ့လာတွေ့ရှိချက်များအရ ထာဝစဉ်တည့်တံ့စေမည့် သစ်တောစီမံအုပ်ချုပ် လုပ်ကိုင်မှုအတွက် အရေးပါသော ဒေသခံပြည်သူလူထု၏ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နိုးကြားထကြွသည့် အသိစိတ်ဓါတ် မြှင့်တင်မှုနှင့် ထိရောက်သော ပညာပေးဟောပြောပွဲများနှင့် လှုပ်ရှားများ အရှိန်အဟုန်မြှင့် လုပ်ဆောင်ရန်လိုအပ်ပါကြောင်း လေ့လာတင်ပြအပ်ပါသည်။

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ABSTRACT

Nowadays, the intensive management and huge pressure from human population have become a great challenge for one another for the efficient forest management. The dependence of local people on the surrounding forest is increasing with the poverty. But lack of awareness and participation of local people can lead to deforestation and such kinds of cases have been found during the recent years. Therefore, the purpose of this study is to give the required information relating to the current environmental awareness level of local people living in and around forests with the aim to support the sound environmental management. The main objectives of this study are to investigate the current environmental awareness level of local people living in and around forests and to find out suitable mass media that help to contribute the level of awareness of local people. Three main focuses that are emphasized in this study are local people's opinion on the changes in surrounding conditions, environmental knowledge and local people's participation. The assessment of the environmental awareness by Likert scale and Likert data analysis pointed out that the respondents knew about the changes in their surrounding conditions but the environmental knowledge of the respondents was poor. Likert data analysis showed that upgrading the environmental awareness was needed especially for collection of forest products, impacts of grazing on forest and throwing waste materials. Moreover, participation in extension programs and activities was weak although most of the respondents were interested in extension programs and activities. By gender analysis, the awareness level between male and female was not significant ($P < 0.05$). Among mass media, radio can be considered as the most suitable media for contributing environmental education. Furthermore, participation in environmental conservation programs showed positive correlation with the level of environmental knowledge of forest dependent community at $P = 0.01$.

This study pointed out that the awareness of the local people, extension programs and public-based activities should be upgraded for sustainable forest management.

Keywords: Local people's opinion, Environmental knowledge, Extension program, Public-based activities, Gender, Mass media.

CONTENTS

1. Introduction

The basic idea of sustainable forest management is that forests must be utilized in a way that continuity of timber supply (economic aspect), biological diversity and resilience (ecological aspect) are maintained simultaneously, while non-timber forest products and multiple use of forests (social aspect) are also maintained at the same time (Ministry of Environmental Conservation and Forestry 2012). On the other hand, the principal capitals for sustainable livelihood are (1) natural capital (natural resources and environmental services), (2) social capital (networks, social claim, affiliations, association, etc.), (3) physical capital (infrastructure, production equipment, etc.), (4) economic or financial capital (capital base) and (5) human capital [skill, knowledge, labour (good health and physical capability)] (Morse et al. 2009). Therefore, the sustainable livelihood system and the sustainable forest management are interrelated essentials for each other and social development plays one of the foremost components for sustainability.

Environmental awareness can be defined as knowledge and motivation of environmental concern and sensitivity towards the environment and its problems whereas environmental knowledge can be considered as the basic understanding of the environment and its problems. One of the goals of environmental education by intergovernmental conference on environmental education is to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas (Intergovernmental Conference on Environmental Education 1977). Lack of knowledge and information about ecosystem and failure to use adequate information have been the major constraints for effective ecosystem management (MEA 2005). There have been so many evidences of deforestation caused by human activities and even the climate has been influenced by human activities (IPCC 2013). Human can make the climate to be better or worse than before.

When environmental awareness is combined with external situations and the opportunities to do, the state of environment of that area will improve directly or indirectly by doing a kind of manner (Olgyaiova et al. 2005). Moreover, higher education is associated with higher level of environmental awareness (Olli et al. 2001).

Globally, about one-third of the earth's inhabitants are depending directly on tropical resources for economic and subsistence needs (Vance and Iovanna 2006). Thus, if the local inhabitants are lack of environmental awareness, they can't do environmentally friendly manner for extracting forest resources. In Pakistan, the lack of awareness, motivation and institutional support has been found as the major factor that hindered the pace of forest conservation (Jan 2011). Additionally, the environmental awareness has a significant relationship with attitude (including both perception and behavior) of people (Omoogun and Odok Anthony 2013). Consequently, lack of the environmental awareness can lead to deforestation and forests degradation.

The intensity of impacts can be stronger and stronger when the rural population living in and around forests is larger and larger. In Myanmar, about two-thirds of the populations are rural people who ~~are~~ depend~~ing~~ on the forests for their livelihoods (Ministry of Forestry 2010; Zin 2009). Moreover, the population rate has been increasing year by year and the total population of Myanmar has reached about 58.4 million (UNESCO 2013) with an annual growth rate of 1.29% at the national level according to the survey conducted in 2009 (Ministry of Health 2013). Additionally, poverty in rural areas was a major problem in Myanmar affecting 29% of the population, and rural

poverty contributes to 84% of total poverty (IHLCA project technical unit, Myanmar 2011).

Under these circumstances, most of the rural people have relied solely on forest resources for their survival (National Commission for Environmental Affairs 2009). However, unsystematic uses of forest resources without having environmental knowledge and awareness will lead to deforestation and forest degradation. So, upgrading environmental awareness of forest dependent community is crucial for sustainable forest management in Myanmar.

Although policy and legal framework has been in place in Myanmar for public participation in environmental management, studies on the status of their awareness and participation in this aspect are still limited. Thus, the information relating to this field is still sketchy. In this context, this study mainly focuses to assess the current environmental awareness status of the local people to provide base-line information for sound forest management.

2. Materials and Methods

2.1. Study area and site description

The survey was carried out in ten villages which are situated in Bago Yoma region, Myanmar. The Bago Yoma is situated between N 16º 50' and 19º 29', E 94º 41' and 97º 13'. It includes Bago (East) and Bago (West) areas, covering an extent of 38,672.49 km^2. It is an ideal place for teak. Elevation is fairly lower than 1000 m forming undulating mountain ranges.

The forests in Bago Yoma region have been managed by the Forest Department of the Ministry of Environmental Conservation and Forestry. The different forest types and dense forest cover contribute to the biological diversity and enhancement of ecosystem services including carbon sequestration capacity in particular. However, the closed forest area was reduced from 428,663 ha in 1995 to 384,629 ha in 2007. Hence, the net reduced close forest area was 44,035 ha during the period from 1995 to 2007 (NCEA 2009). One of the major factors of deforestation has been poverty in this region. About eighteen percent of the population in Bago Division was in poverty level in 2010 (IHLCA project technical unit 2011).

Therefore, the intensive conservation and management efforts have been taken in this region. In addition, the initiative activities of the reducing emission from deforestation and forest degradation, promoting conservation, promoting sustainable forest management and enhancing forest carbon stocks (REDD+) for mitigation of climate change impact have been operated in this area (Forest Department of Yaedashae 2012; Forest Department of Pauk-kaung 2012).

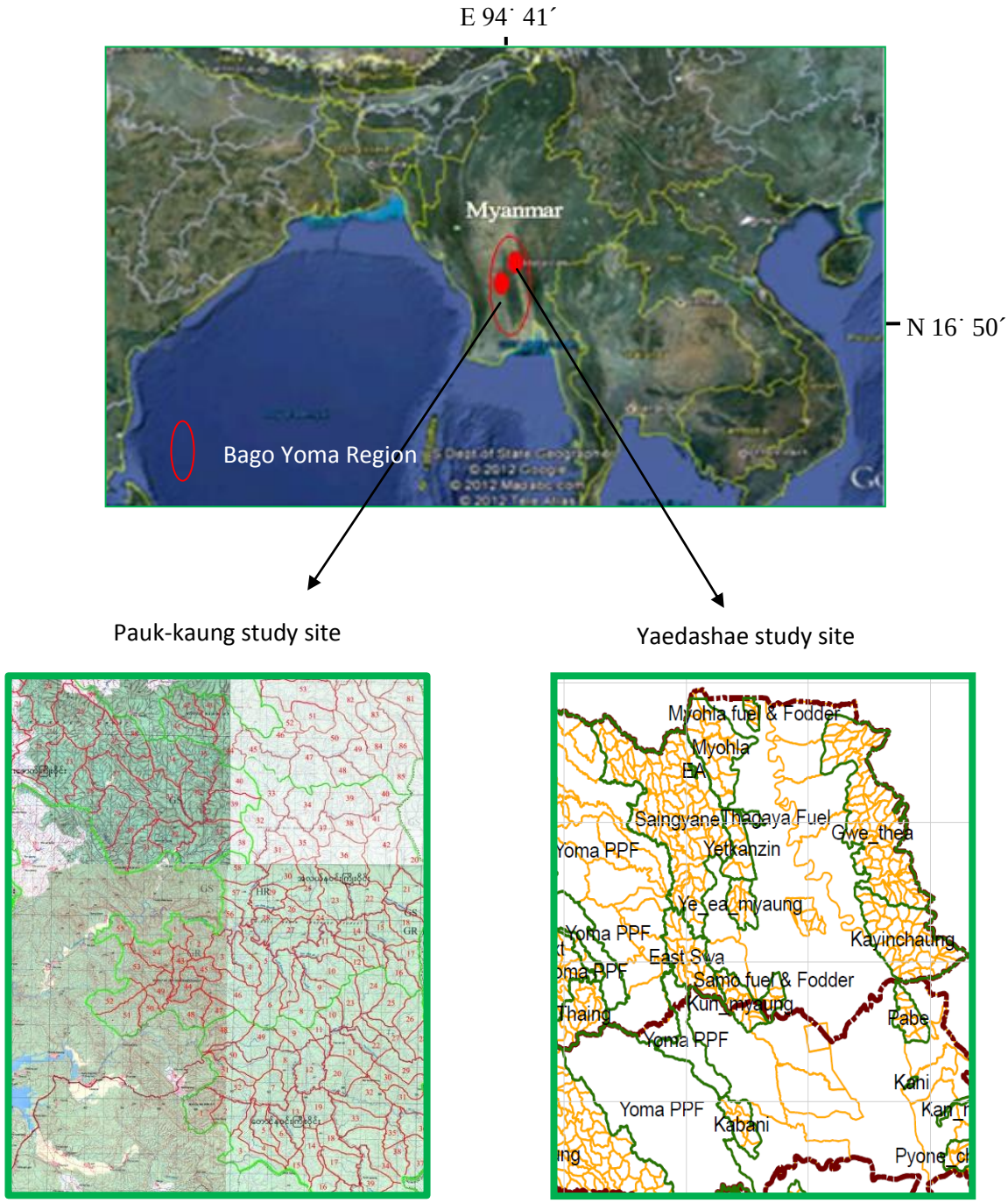

Figure 1. Location of study area of Bago Yoma region in Myanmar

The survey was carried out in both eastern and western parts of the Bago Yoma region that stretches from north to south. Five villages ("20-household", "6 mile", "9 mile", "7 mile" and "Zayepauk") of Yaedashae Township in the eastern part of Bago Yoma and five villages ("Nyaung-won", "Gonmin-gone", "Pawlangyi", "Sinwine" and "Sintagone") of Pauk-kaung Township in the western part, where the number of households in each village ranged from 26 to 139, were selected to cover the region. The people of these villages depend on forest and agriculture for their livelihoods. The location of the study site can be seen in Figure 1.

2.2. Sampling design

The choice of the villages was based on the specific criteria: similar socio-economic status, more or less equal size of village, and living around the forests. The sampling was based on practical guidelines by Department of Economic and Social Affairs, United Nations, 2005 and the sample size was 20% of the total households. Firstly, all ten villages were visited for collecting secondary data, the familiarities of local people and accessing the wealth strata of these villages. Then, based on households' property, types of houses and household income, the wealth status was classified into three groups. Different characteristics of wealth strata in the investigated villages are shown in Table 1.

Table 1. The characteristics of wealth strata of the study areas.

No.	Description	Wealth strata		
		Better off	Medium	Poor
1	Type of house	Galvanized iron sheet roofing, timber pole or post, timber or plank floor, plank wall	Thatch roofing, timber pole or post, timber or plank floor, bamboo wall	Thatch roofing, bamboo pole, bamboo floor, bamboo wall
2	Household's possessions	Television, VTR or VCR, radio, motorcycle, generator,	Television, radio	Radio or none
3	Income per month (Kyats, ks) 1 $ = 967 ks	>150000 ks	90000 ks < ≤ 150000 ks	90,000 ks ≥

The respondents were stratified into three layers: poor, medium and better off as a triangle form of normal distribution. For the sampling size of 20% of each stratum, the respondents from each stratum were selected at random within each stratum. One hundred and sixty-nine respondents were selected among 833 households of all investigated villages.

2.3. Questionnaires survey

Structured interview method was used and the questionnaires were set out as both closed ended and open ended questions. All the 20 percent of the households (169 households) were surveyed by face-to-face interviews. The advantages of face-to-face interviews are getting the highest response rates, permitting the longest questionnaires and allowing the interviewers to observe the surroundings and to use non-verbal communication with visual aids (Becker and UBA-team 2011). Besides, face-to-face

interviews could eliminate the problems of incomplete questionnaires or misunderstanding of the questions by respondents (Neuman 2006). For gender analysis, the ratio of male and female of total 169 respondents in each village was set as 1:1.

The questionnaires were set out by dividing four sectors: opinion on the changes of local surrounding condition (sector 1); environmental knowledge (sector 2); participation (sector 3); and factors (mass media) that help to contribute to the level of awareness of local people (sector 4). The five point Likert scale method was used for questionnaires of all sectors. Figure 2 shows the structure of environmental awareness survey. In the figure, FPs means forest products and NWFPs means non wood forest products. For all sections, both Likert type analysis and Likert scale analysis were specifically done by different way of statistics to get relevant results (Boone and Boone 2012; Bertram 2012). Mann-Whitney U test was used for individual item analysis. SPSS and SAS software were applied for data analysis.

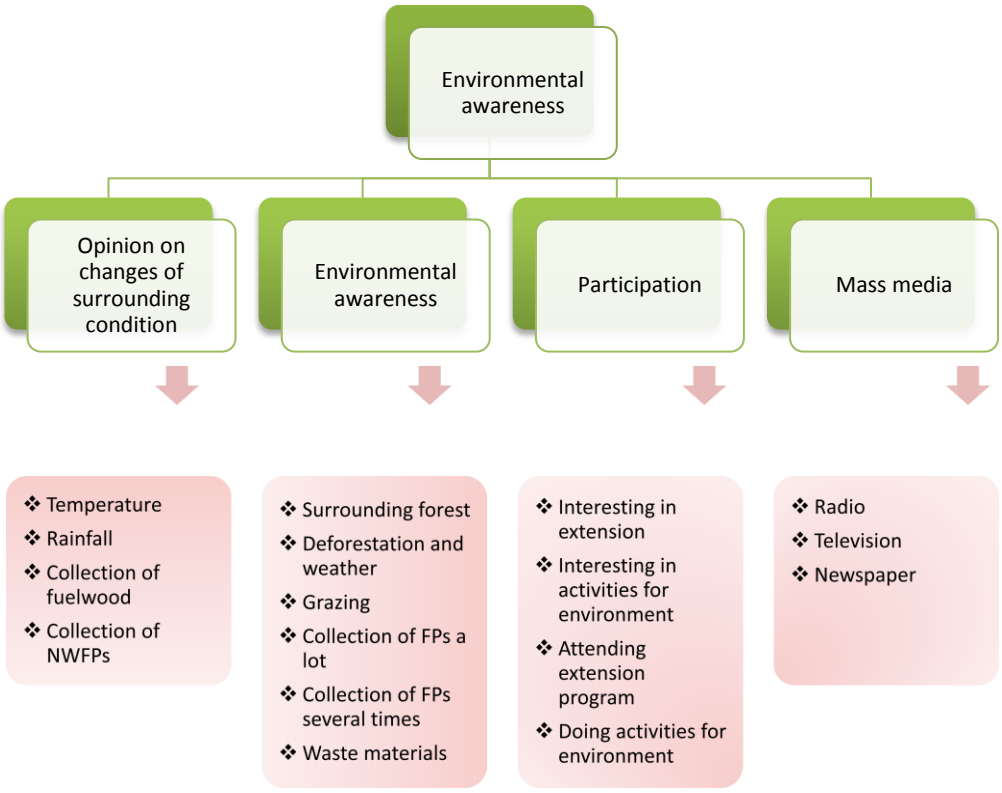

Figure 2. The structure of environmental awareness survey. FPs = forest products, NWFPs = non-wood forest products

3. Results and Discussion

3.1. Opinion on changes in local surrounding condition

The knowledge and awareness of the people are important for environmental conservation. Therefore, upgrading environmental awareness of the forest dependent communities is an essential tool for successful forest conservation. The first step of upgrading environmental awareness is to reveal the current awareness level of the communities. During the recent years, educational extension programs and environmental conservation activities by people participation have been emphasized by Ministry of Environmental Conservation and Forestry as one of the critical tools for forest conservation in Myanmar (Ministry of Environmental Conservation and Forestry 2012). So, this study revealed the current awareness level of the forest depending communities.

To know the changes in surrounding conditions is one of the fundamental factors for having good awareness. In this study, the mean value (± SD) of the opinion on changes in local surrounding conditions (4.27 ± 0.25) by Likert scale analysis indicated that the respondents in the study area noticed well about the changes in their surrounding environmental conditions. Almost all the respondents (about 95%) knew their surrounding conditions well by the results. The similar finding was found by Kumar 2013 that about 75% of respondents knew about the surrounding environmental condition of Hamirpur District in India.

Table 2 shows the mean value for local people's opinion on changes in surrounding condition by scale analysis. Among ten villages, the opinion on changes in local surrounding condition was stronger in "Zayepauk", "6 mile", "Nyaung-won", "7 mile" and "9 mile" villages. "Zayepauk" village had the highest mean value and "Sinwine" village had the lowest mean value among investigated villages. Overall, the villages situated in the eastern site of Bago Yoma had higher mean values than the villages situated in the western site of Bago Yoma.

Table 2. The mean values for local people's opinion on changes in surrounding condition by scale analysis.

No.	Village	Mean value
1	Zayepauk	4.3667 [a]
2	6 mile	4.3571 [a]
3	Nyaung-won	4.3519 [a]
4	7 mile	4.3462 [a]
5	9 mile	4.3333 [a]
6	20-household	4.2500 [ab]
7	Sintagone	4.1923 [ab]
8	Pawlangyi	4.1607 [ab]
9	Gonmin-gone	4.1591 [ab]
10	Sinwine	4.0833 [b]

Different letters indicate a significant difference at $P < 0.05$ by Duncan's Multiple Range Test.

The statistical results for classifying the opinions of local people among different variables for changes in surrounding condition can be seen in Table 3. There were no significant evidences on the opinions across gender.

Table 3. Statistical results for the classification of the opinions of local people among different variables.

Item No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
1	Temperature	4	4	1	1	55.0
		5				45.0
2	Rain	5	5	1	1	56.0
		4				43.8
3	Collection of fuelwood	4	4	2	0	89.3
		3				9.5
		5				1.2
4	Collection of NWFPs	4	4	2	1	63.3
		5				25.4
		3				11.2

3.2. Environmental knowledge

The Forest Department of the Ministry of Environmental Conservation and Forestry was emphasizing the distribution and upgrading the environmental knowledge of local people especially in forest dwelling communities (MOECAF 2010). Soe and Yin (2009) highlighted that most of the local people had limited or lack of knowledge about environmental problems such as global warming, biodiversity loss. In this survey, the overall results showed that the respondents in the investigated areas were weak in environmental knowledge which had a mean value of 3.17 ± 0.33(± SD). This finding was similar to the finding of Kumar (2013) that there was less knowledge about the renewable resources and biodiversity conservation. Even though all the villages showed weakness in knowledge, “20-household” and “6 mile” villages had the high mean values among these ten villages (Figure 3).

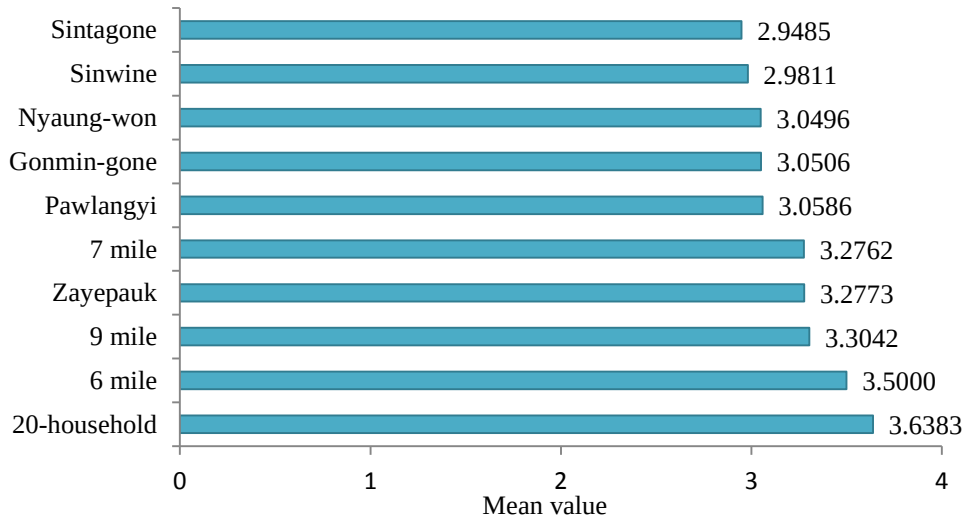

Figure 3. The mean values for environmental knowledge among ten villages.

Sub-analysis of Likert type data showed that most of the respondents were lack of knowledge about the damage to the stream by throwing waste materials into streams (Item 10). Only 16.6% of respondents knew not to throw away the waste materials into the stream. Similar result was found in the Item 9 (Collection of forest products in continuous and several times are harmful to forest.) that only 11.8% of respondents knew the harm to forests by collecting forest products in continuous and several times whereas 66.9% of respondents did not know the damage to forests by doing this way. The median value of both item 9 and 10 was found as "2", and this meant that most of the respondents disagreed about the damage by doing item 9 and most of the respondents thought that there was no adverse impacts by throwing waste materials into streams (Item 10) (Table 4).

Table 4. Statistical data of Likert-type for environmental knowledge.

Item No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
5	Decreasing forests	4	4	3	0	79.9
		3				11.2
		2				4.7
		5				4.1
6	Deforestation and unseasonal weather	3	3	3	1	51.5
		4				29.0
		2				16.6
		5				3.0
7	Grazing and species regeneration	3	3	2	1	55.0
		4				24.9
		2				20.1
8	Collection of a lot of forest products	4	4	3	0	85.2
		3				10.1
		5				4.1
		2				0.6
9	Collection of forest products several times	2	2	2	1	66.9
		3				21.3
		4				11.8
10	Waste materials	2	2	2	1	58.6
		3				24.9
		4				16.6

Relating to deforestation and unseasonal weather pattern, and grazing, over fifty percent of the respondents could not decide the impacts to forests although they heard some information relating to these fields. But more than 75% of the respondents accepted the decrease of forests and knew the damage to forest by collection of a lot of forest products only in one area. Table 4 shows the statistical analysis of these six items under environmental knowledge of respondents. The rural people's ways of collection forest products were essential for forest management because careless activities of local people

caused the vulnerable negative impacts on forest and environment. Therefore, it is needed to raise the awareness of rural people about the consequences of their careless manners that become adverse environmental impacts.

Besides, the research checked whether the environmental knowledge among the items had significant difference by gender or not. According to the results, there was no significant difference in environmental knowledge between male and female. The result was similar with the finding by Arunkumar (2012) that the level of environmental awareness by gender analysis showed no significant difference with regard to the gender. But depending on the sight of behaviors that destroy the forests, male can be considered as primary destroyers of forest whereas female can be considered as secondary users of forest (Omoogun and Odok-Anthony 2013).

3.3. Participation

Two types of variables, local people's interests and activities, were set for the assessment of local people's participation.

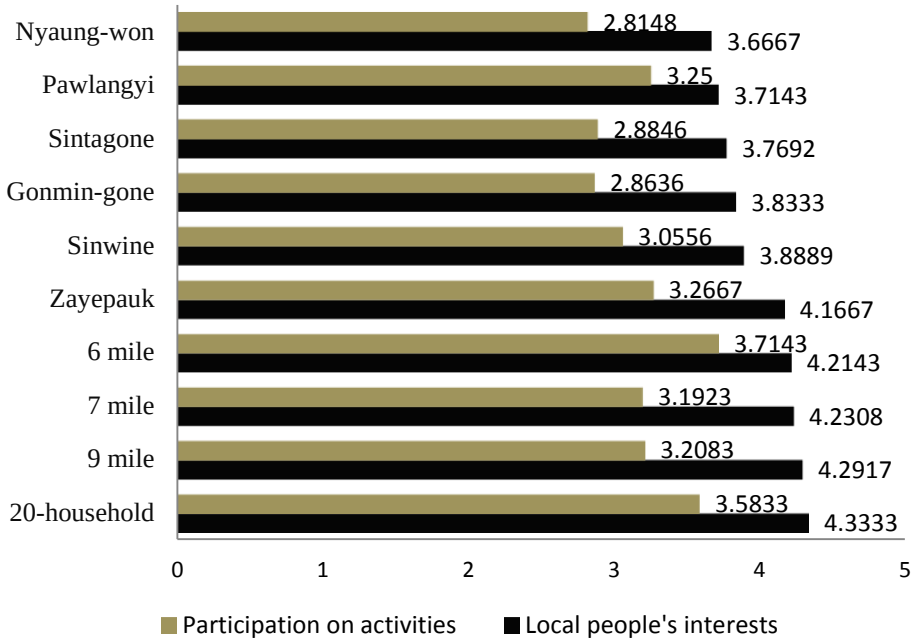

Figure 4. The mean value for local people's interests and participation on activities among ten villages: (1) Local people's interests (Mean value: 1 = uninterested; 2 = little interested; 3 = a little interested; 4 = interested; 5 = so very interested); (2) Participation on activities (Mean value: 1 = never; 2= sometimes; 3 = often; 4 = usually; 5 = always).

The mean value (± SD) of local people's interests (3.9679 ± 0.43) showed that the respondents were interested in environmental conservation activities. But for assessing their participation on programs and activities, the result (3.1065 ± 0.59) showed that they attended the extension programs and activities often. The classification system was explained in the materials and methods section. The local people's interests and participation in activities among investigated villages are shown in Figure 4.

Moreover, Likert type data analysis showed that most of the respondents (75.1% of total respondents for Item 11 and 69.8 % of total respondents for Item 12) were interested in extension programs and in doing things that help to protect the environment. But the percentage of respondents who are very interested in extension programs was higher than the percentage of respondents who are very interested in doing activities. The results indicated that the levels of interest were in a range of "a little interested" to "very interested". The level of interest of local people and the percentage of local people in each level of interest can be seen in Table 5.

For local people's participation in extension programs and activities, 45.6% of the respondents often participated in extension programs and 44.4% of the respondents usually participated in such programs. Most of the respondents who usually and often attended preferred getting souvenirs, using multimedia in the extension programs. However, most of the respondents did not usually participate in doing things that helped to protect the environment. Only fifteen percent of the respondents usually participated in such activities (Table 5).

Table 5. The level of interest and participation of local people in the study areas.

Item No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
11	Interest in extension program	4	4	2	0	75.1
		5				17.8
		3				7.8
12	Interest in activities	4	4	2	0	69.8
		3				23.7
		5				6.5
13	Attending extension program	3	3	3	1	45.6
		4				44.4
		2				8.3
		5				1.8
14	Participation in activities	3	3	2	1	50.9
		2				33.7
		4				15.4

The result also pointed out that the level of people's participation was not significantly different between male and female at 95% confidence level ($F = 0.40$, $P = 0.53$ for their interest level; $F = 2.83$, $P = 0.09$ for attending extension program and activities). Similar findings were obtained in India by Kaur and Kaur (2009) and Mondal and Mete (2010) that gender was not a factor for affecting environmental awareness in rural area.

3.4. Factors (mass media) that help to distribute the awareness to local people

Mass media are one of the effective tools that help to distribute and upgrade the level of awareness of local people (Sudarmadi et al. 2001; Kumar 2013). Generally, most of the rural people listened to the radio programs in Myanmar. Because of the big difference of rural and urban economic development, poverty was mostly found in rural areas and the poverty level was higher in the rural areas where the villages were situated in the remote areas.

According to this survey's results, most of the respondents in the study areas were poor. Hence, most of them did not have televisions and so if they wanted to see some programs that were broadcast on television, they gathered and went to the house that had television. Among radio, television and newspaper, most of the respondents usually listened to the radio although they watched television programs sometimes.

Table 6 shows the distribution of mass media among population in the investigated areas. The results revealed that 70.4% of the respondents usually listened to the radio. Although 56.2% of the respondents sometimes watched television, 39.1% of the respondents watched television rarely. Electricity and poverty were the major problems in the investigated areas. In India, also, television and radio were the most preferred mass media as information tools (Kapoor 2011). Thirty nine point five percent and twenty six percent of respondents preferred television and radio, respectively.

Nevertheless, the result also showed that most of the respondents never read newspaper. Eighty-two point two percent of the respondents never read newspaper and the rest 17.8% read newspaper rarely. In Indonesia, only about five percent of the community read magazine almost every day (Sudarmadi et al. 2001).

Table 6. Mass media (radio, television and newspaper) among population.

Item No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
15	Radio	5	5	2	1	70.4
		4				28.4
		3				1.2
16	Television	3	3	2	1	56.2
		2				39.1
		4				4.7
17	Newspaper	1	1	1	0	82.2
		2				17.8

Among the ten investigated villages, all the respondents in "20-household" and "Sinwine" villages usually listened to the radio although most of the respondents in all villages usually listened to the radio. There were no respondents in all ten villages who usually watched television. Of the ten villages, six villages, namely "20-household", "9 mile", "Nyaungwon", "Gonmin-gone", "Sinwine" and "Sintaegone" had no respondent who watched television usually {Table 7(a) and 7(b)}.

Table 7(a). Mass media distribution (radio) among ten villages.

No.	Village	Radio (%)		
		Sometimes	Often	Usually
1	20-household	-	-	100.0
2	6 mile	-	14.3	85.7
3	9 mile	-	25.0	75.0
4	7 mile	-	26.9	73.1
5	Zayepauk	-	40.0	60.0
6	Nyaung-won	3.7	40.7	55.6
7	Gonmin-gone	-	36.4	63.6
8	Pawlangyi	7.1	35.7	57.1
9	Sinwine	-	-	100.0
10	Sintaegone	-	15.4	84.6

Table 7(b). Mass media distribution (television and newspaper) among ten villages.

No.	Village	Television (%)			Newspaper (%)	
		Rarely	Sometimes	Often	Never	Rarely
1	20-household	33.3	66.7	-	66.7	33.3
2	6 mile	35.7	35.7	28.6	71.4	28.6
3	9 mile	41.7	58.3	-	91.7	8.3
4	7 mile	19.2	73.1	7.7	76.9	23.1
5	Zayepauk	53.3	40.0	6.7	73.3	26.7
6	Nyaung-won	66.7	33.3	-	88.9	11.1
7	Gonmin-gone	27.3	72.7	-	93.9	6.1
8	Pawlangyi	35.7	57.1	7.1	78.6	21.4
9	Sinwine	44.4	55.6	-	88.9	11.1
10	Sintaegone	38.5	61.5	-	69.2	30.8

Out of the six study villages, four are located in the western part of Bago Yoma. Newspapers were read rarely and about one-third of the respondents in every village did not read newspapers. The percentages of respondents who never read newspapers were higher in villages in the western part of the Bago Yoma region than those in the eastern part. The distribution of radio and newspaper were the same across gender but there was a significant difference in watching television across gender at $P < 0.01$. The female respondents watched television more than male respondents.

3.5. Relationship between local people's participation and environmental knowledge

This study revealed the relation among environmental knowledge, local people's interest and their participation. It also searched whether knowledge had the significance influence of age or not. The statistical results showed that the environmental knowledge, local people's interest and their participation had a significant correlation at 0.01 level. However, the age did not show any significant correlation with environmental knowledge at P = 0.05 (Table 8). The reason was because of giving several times of the extension activities to local people during the recent years in the investigated area. The young respondents could get the knowledge from such activities and so the level of knowledge did not differ between the age classes. The results highlighted that a person's behaviour generally depended on the attitude of that person and that attitude was based on the knowledge of that person. Kaiser et al (1999) also found out that knowledge and attitude of local people influenced behavior of local people.

Table 8. Pearson correlation analysis of environmental knowledge.

No.	Variable	Environmental knowledge	P value
1	Local people's interest	0.37**	0.000001
2	Local people's participation	0.27**	0.000383
3	Age	0.07	0.396

**Correlation is significant at 0.01 level.

4. Conclusions

Careless activities of local people can cause vulnerable negative impacts on forest and environment. Environmental awareness is a basic overwhelming component to act in the right manner. Thus, assessment of the environmental awareness of the local people is critical for forest management.

According to the results of environmental awareness survey, the current environmental awareness level of the respondents in the study area was poor. Most of the respondents were interested in extension programs and activities. But the results indicated that they could not attend extension programs and could not participate in the extension activities usually. The reason was that they spent most of their time in the forests to collect forest products for their livings. Extension programs and activities should be scheduled only after visiting the target village and discussing with the community. There were no significant differences of opinion on the surrounding condition, knowledge and participation across gender. However, the environmental knowledge and local people's participation had positive correlation. Among the investigated villages, the environmental awareness of the five villages in the eastern part of Bago Yoma was higher than that of the five villages in the western part of Bago Yoma.

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