Indigenous Community Forest Management in Northeastern Thailand: Biodiversity Conservation through Rural Development

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Abstract Deforestation which causes the forest area decreasing and lead to the global environmental change through biodiversity loss and emissions of greenhouse gases is one of the most of important environmental problems faced by developing countries like Thailand. Forest management is the one of an important strategy in biodiversity conservation and carbon mitigation. The aim of this study was to investigate the suitable strategy for forest management in local community of Northeastern Thailand based on the community participation. Plant biodiversity in Khon Kaen local community forest 200 Rai (6.25 Rai = 1 hectare) was surveyed during 2008-2009. Focus Group Interview and SWOT analysis was used as a tool to find out the sustainable strategy for forest management. The results found that forest biodiversity was rich. Ninety-four plant species were found in this study area. Indigenous community forest management such as traditional, cultural, local commitment and believe was found to be the most suitable strategy in managing this community forest. The outcome of this project in long term would be beneficial for biodiversity conservation, carbon mitigation and sustainable rural development.

INTRODUCTION

Thailand has been experienced the most rapid deforestation in the last 40 years. Their forest in 1961 occupied about 27 million hectares and by 1989 has come down to 14.3 million which is only about 28% of the country. Since 1998, the forest area has been increasing up to 32.66% in 2004 (Royal Forest Department, 2004). The National Forest Policy wants the forests to be about 40% of the land area of the country. The actions taken by the government so far to remove further threat to the forests include cancellation of the contracts with the concessionaires, stoppage of green felling in the forests, some decentralization to involve the villagers in developing and protecting forests. Thailand tries to find new ways of forest management to deal with the danger of forest loss. Community forests are one solution discussed very broadly in the Thai public as well as in Thai forestry. Participation of local people in the management of forest resources seems to be a promising way to conserve remaining forest areas (Kebler, 1998).

In the northeastern region of Thailand, the forest concession of 1968-1987 caused about 87% of the total regional land area in a degraded condition and has lead to new forest settlements. In 1995 to 1999, the trend of forest land in the Northeast was decreased (Office of Agricultural Economics, 2002). Causes of deforestation and forest degradation in the Northeast of Thailand include the farmers' need to improve productivity for better economic conditions leading to the expansion of agricultural land, rural poverty are including that of disadvantaged and landless people and population growth and mitigation, resulting in increased population in forest areas, etc (Kashio, 1955, Jantakad and Gilmour,

1999). About the main problem of this study area is that the Community forests and public lands have been destroyed for cultivation.

This study is thus aimed to investigate the suitable strategy for forest management in local community base on the indigenous community participation. The investigation divided in 2 parts, i.e., (1) surveying plant diversity and (2) studying attitudes of people in Yang-Kam Sub-district and the stakeholders by using focus group interview in order to motivate them to realize the important role of forest and further environmental conservation so that it would help maintain ecosystems and also reduce global warming.

MATERIALS AND METHODS

Study Area

The study area is located at zone 48Q; UTM coordinates 1817395 N and 237902 E at the part of Yang-Kam sub-district, Nong-Reu district, Khon Kaen Province, Thailand. The total of study area is covering about 200 rai and close to the conservative forest (Fig.1). But recently in this area is still of the forest area about 174 rai cause of some local people were encroached. So, the forest communities' concept was set up by the local people and TOA of Yang-Kam for intrusion prevention and forest conservation.
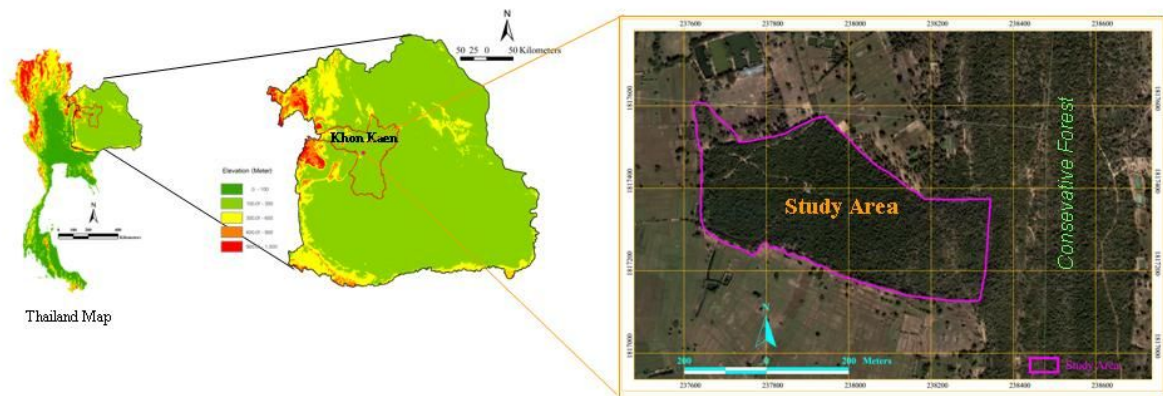

Cited from Google Earth (2009)

**Fig. 1 Study area at Yang-Kam sub-district, Nong-reu district,
Khon Kaen province, Thailand**

Forest Survey

The survey was conducted along 2 main trails and surrounding of the study area covering almost 200 rai of the Yang-Kam community forest. The survey was done and worked together by the leader of forest scientist, farmer specialist on herb, local governors and villager.

Focus Group Interview and SWOT Analysis

Focus Group Interview was used including stakeholder interviews (those who reside adjacent to community forest), direct participant interviews and key person interviews. In focus group interview, information on the matters of community forest utilization and a taught of setting organization and practical administration of Yang-Kam community forest for efficiently sustainable forest resources management were requested. SWOT analysis was employed to identify the strengths, weaknesses, opportunities and threats of the community.

RESULTS

The community forest inventory indicated that, the Yang-Kam community forest is dipterocarp forest consisting of 94 plant species. Of this figure, 72 species are tree (from list No 1 to 72), 22 species are medicinal herb (from No.73 to 94). All of them are shown in Table 1.

Table 1 List of plant species were found in the study area

No.	Scientific Name	No.	Scientific Name
1	*Antidesma ghaesembilla Gaertn.*	48	*Morinda tomentosa Heyne ex Roth*
2	*Artocarpus lakoocha*	49	*Ochna integerrima Merr.*
3	*Atalantia monophylla Correa*	50	*Parinari anamense Hance*
4	*Azadirachta indica var. siamensis Valeton*	51	*Pavetta tomentosa Roxb. ex Smith*
5	*Bauhinia saccocalyx Pierre*	52	*Peltophorum dasyrachis Kurz*
6	*Beilschmiedia gammieana King ex Hook. f.*	53	*Phyllanthus emblica Linn.*
7	*Berrya mollis Wall.ex Kurz*	54	*Pterocarpus macrocarpus Kurz.*
8	*Bridelia retusa (L.) A. Juss.*	55	*Randia wittii Craib*
9	*Buchanania lanzan Spreng.*	56	*Salacia chinensis Linn.*
10	*Canarium sublatum Guill.*	57	*Schleichera oleosa (Lour.) Oken*
11	*Cansjera rheedei J.F. Gmel.*	58	*Shorea siamensis Miq.*
12	*Canthium parvifolium Roxb.*	59	*Shorea obtusa Wall.*
13	*Casearia grewiaefolia Vent.*	60	*Sindora siamensis Teijsm. ex Miq.*
14	*Cassia garrettiana Craib*	61	*Stereospermum fimbriatum (Wall. ex G.Don) A.DC.*
15	*Cordia dichotoma Forest. f.*	62	*Strychnos nux-vomica Linn.*
16	*Cratoxylum formosum Dyer*	63	*Symplocos racemosa Roxb.*
17	*Dalbergia nigrescens Kurz*	64	*Syzygium cumini (L.) Skeels*
18	*Dehaasia suborbicularis Kosterm.*	65	*Terminalia alata Heyne ex Roth*
19	*Dendrolobium triangulare Schindl.*	66	*Terminalia chebula Retz.*
20	*Dillenia obovata (Blume) Hoogland*	67	*Terminalia corticosa Pierre ex Laness.*
21	*Dioecrescis erythroclada (Kurz) Tirveng.*	68	*Urobotrya siamensis Hiepko*
22	*Diospyros coaetanea Fletch.*	69	*Vitex peduncularis Wall. ex Schauer*
23	*Diospyros ehretioides Wall.*	70	*Walsura trichostemon Miq.*
24	*Diospyros montana Roxb.*	71	*Xylia kerrii Craib & Hutch.*
25	*Dipterocarpus obtusifolius Teijsm. Ex Miq.*	72	*Zizyphus cambodiana Pierre*
26	*Dipterocarpus tuberculatus Roxb.*	73	*Acacia craibii Nielsen*
27	*Elipanthus tommentosus Kurz.*	74	*Aporosa villosa (Lindl.) Baill.*
28	*Erythrophleum teysmannii (Kurz) Craib*	75	*Asparagus racemosus willd.*
29	*Flacourtia indica Merr.*	76	*Canthium berberidifolim Geddes*
30	*Garcinia cowa Roxb.*	77	*Dillenia obovata (Blume) Hoogland*
31	*Gardenia obtusifolia Roxb.*	78	*Dioecrescis erythroclada (Kurz) Tirveng.*
32	*Gardenia sootepensis Hutch.*	79	*Dipterocarpus tuberculatus Roxb*
33	*Gomphia serrata Kanis*	80	*Dispyros ehretiioides Wall. ex G.Don*
34	*Grewia elatostemoides Coll. et Hemsl.*	81	*Elephentopus scaber L.*
35	*Heterophragma sulfureum Kurz*	82	*Enkleia siamensis Nervling*
36	*Hibiscus glanduliferus Craib*	83	*Gardenia sootepensis Hutch.*
37	*Irvingia oliveri Pierre*	84	*Gluta usitata (Wall.) Ding Hou*
38	*Lannea coroman delica (Houtt)Merr*	85	*Helicteres angustifolia L.*
39	*Litsea glutinosa (Lour.) C.B. Robinson*	86	*Hibiscus gladuliferus Craib*
40	*Lophopetalum duperreanum Pierre*	87	*Ixora cibdela Craib*
41	*Mangifera griffithii Hook.f.*	88	*Lannea coroman delica (Houtt)Merr*
42	*Melanorrhoea usitata Wall.*	89	*Maerua siamensis (Kurz) Pax.*
43	*Melientha suavis Pierre*	90	*Randia dasycarpa Bakh.f.*
44	*Memecylon scutellatum Naud*	91	*Rothmania wittii (Craib) Bremek.*
45	*Millettia leucantha Kurz*	92	*Strychnos plumosa*
46	*Mitragyna rotundifolia*	93	*Stychnos nux-vomica L.*
47	*Morinda elliptica Ridl.*	94	*Walsura villosa Wall.*

Based on the Focus Group Interview, it was found that the members of community have long been using the community forest in various forms of products, e.g., fuel wood, wood for fencing, animal ranging, non-timber products and medicinal herbs.

Besides, it was agreed among community members to formally establish Yang Kham Community Forest by the reason that it could help protecting this forest not being depleted from the present size (174 rai). The community members proposed that the organization for management should be the combination of cooperation between government sector and local community. The regulation for community forest management must be shared by people participation process and publicly inform to Yang-Kam Community.

The SWOT analysis was used to analyze the possibility of Yang-Kam community forest installation were found that the internal factor (Strengths and Weaknesses) and external factor (Opportunities and Treats), its effect to the success of the community forest setting and sustainable of community forest. SWOT analysis indicated that the local leaders, the members of Tambol Administration Organization (TAO) are rather strong to foster their community forest, but the weaknesses are that of lacking of knowledge base and understanding in sustainable forest management. Furthermore, focus group members were mutually agreed that the opportunity to sustainably and continuously utilize this community forest is by the cooperation of related government sectors. This is due to the threats stemmed from intrusion of those people residing around this community forest gradually.

DISCUSSIONS AND CONCLUSIONS

Forest biodiversity in Yang Kham Community Forest was rich. Ninety-four plant species were found in this study area. There were 72 species of tree and 22 species of herb. Most of the tree there were 10-15 years old. The original forest area was around 200 rai but now only 174 rai. If there is no activity on the forest management, deforestation would occur. From the focus group interviews, indigenous community forest management such as traditional, cultural, local commitment and belief was found to be the most suitable strategy in managing this community forest. This strategy is called the applied forest management. The outcome of this project in long term would be beneficial for biodiversity conservation, carbon mitigation and sustainable rural development which the same study was found with the case study of community forest management in Mexico (Klooster and Masera, 2000). In Thailand, the knowledge and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity should be respected. There is interest in learning more about traditional ecological knowledge and how it can be integrated into forest biodiversity conservation.

ACKNOWLEDGMENTS

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