

Conservation Awareness on Community Use Zone (CUZ) by Local Communities in Crocker Range Park, Sabah, Malaysia

Andy R. Mojiol^{1*}, Maureen J. Tapuong², Walter Lintangah¹,
Ludi Apin² & Jephte Sompud¹

¹ Forestry Complex, Faculty of Science and Natural Resources, Universiti Malaysia Sabah, Jalan UMS, 88400, Kota Kinabalu, Sabah, MALAYSIA.

² Sabah Parks, Lot 45 & 46, Level 1-5, Blok H, Signature Office, KK Times Square, Coastal Highway, 88100 Kota Kinabalu, Sabah, MALAYSIA.

*Corresponding author. E-Mail: andy@ums.edu.my; Tel: +60-88-320000; Fax: +60-88-320876.

Received: 5 April 2016
Revised: 20 April 2016
Accepted: 12 May 2016
In press: 20 May 2016
Online: 30 June 2016

Keywords:
Community Use Zone (CUZ);
Community Livelihood;
Conservation; Awareness;
Crocker Range Park

Abstract

The Parks Enactment 1984 prohibits any human activities in the parks' area as to conserve the natural ecosystem, but in fact, there is the existence of some community living inside the area and practicing cultivation. Community Use Zone (CUZ) is a management option in an attempt to strike a balance between the conservation priorities of the park and the livelihoods of the local communities who depend on the forest for survival. This study determined the relationship between crops planted within the CUZ area and its contributions to the local communities' livelihood. Furthermore, also determined the perception and conservation awareness of local community. The data was collected by face-to-face interview with closed and open-ended structured questions. Information was also obtained through field observations. Percentage, mean and range were used to summarize the results. The major crops identified are permanent crops such as rubber trees and fruit trees. Cash crops such as vegetables, cocoa and coffee trees were cultivated as sources of income of the farmers in Kg. Mongool Baru Ulu Senagang, Keningau/Tenom. Rubber trees contributed the highest revenue followed by fruit trees (such as durian, langsung, rambutan), cocoa, and vegetables. The study showed that the local communities of the village highly agree with the existence of issues that related to the forest conservation. The CUZ area is identified as a management tool that integrates the survival and livelihood of the local communities. It is therefore highly recommended to be practiced, but also need further research to enhance the management approach of CUZ.

© Transactions on Science and Technology 2016

Introduction

Crocker Range Park (CRP) is surrounded by human settlement on all corners of its boundary. The local communities still rely on the natural sources of the forest such as plants for food, medicinal plants, firewood, and hunting wild animals (Noweg *et al.*, 2003). The Park was gazetted in 1964 with the exact area was designated on the map with precise coordinates. Based on the map and coordinates, the approximate boundary on the ground was demarcated by the Park Rangers using hand-held compasses. It is not accurate, but the local communities took the marked boundary to be precise and permanent. The local communities then started to subdivide, cultivate and develop the areas which at that time was 'outside' the marked boundary (Dumbong, 2004). In 1984, the Parks Enactment 1984

was executed with amendment to the initial area designated as Kinabalu Park (Anonymous, 1984). Based on the new set of coordinate, the Park started ground surveying the exact and legal boundary, contracted to licensed surveyors. Massive discrepancies with the old boundary surfaced, with many cultivated, developed or even inhabited land by the villagers turn to be inside the proper and legal Park boundary (Nais, 1996). This has become the main source of dispute between the Park and the surrounding communities.

Community Use Zone (CUZ) defined as “areas where existing cultivation and forest resource collection are found to occur inside the Parks and where traditional human activities will be allowed to continue under the supervision of the Parks authority” (Apin & Miki, 2013). In addition, CUZ is a zonation of community use areas which was accepted as the most reasonable short-term strategy to address land use management issues inside the CRP. This option incorporates traditional cultivation zones of the Zoning Plan. As such, traditional cultivation will be allowed inside CUZ with the condition that these activities are controlled by Sabah Parks (Miki *et al.*, 2014). After the establishment of CUZ, other management options, such as land swap, may be considered. However, the procedure of executing this land swap may be complicated due to managing the balance of the local communities right with the laws of the park (Harada *et al.*, 2001), and by considering the options for resettlement or status quo. This option depends on the settlement history (Kiko, 2006). CUZ will be applied to other Park’s areas, once it is established. There has been no comprehensive study on CUZ inside the Park areas. This study attempts to identify how the CUZ contributed to the conservation awareness among the local communities and its income contribution based on the identified crops planted in the survey area.

Methodology

Study area

The village of Kg. Mongool Baru Ulu Senangang is located between the border of Keningau and Tenom district and was included under the CUZ area since 2004. The village is located inside the CRP area where the local communities are engaged in cultivation and collecting of the forest natural resources. Hitherto, this village has been occupied since 1974 by a few people migrated from Kg. Salalir, Kg. Tagol and Kg. Mongool Pensiangan of the Nabawan’s district. The villagers are predominantly Murut ethnicity and work as a farmer. According to Kiko (2006), the land-use occupancy of the CUZ at Kg. Mongool Baru Ulu Senangang can be divided into settlement and cultivation site with an estimated area of 187.96 ha.

Socioeconomic Survey

The socioeconomic survey was conducted by distributed close and open-ended questionnaire to the owners of the cultivated land. The questionnaires are divided into five main sections; (i) Part A: Information about the study area; (ii) Part B: Respondent background; (iii) Part C: Information on land cultivation; (iv) Part D: Valuation of products; and (v) Part E: Conservation, perception and

awareness. Interviews were conducted with the local communities who cultivated the land within the Park areas, with the list of the farmers provided by the Sabah Parks. A 100% survey sampling was used to identify the utilization of land, the communities' awareness and their perception towards forest conservation.

Economic Valuation of Crops at CUZ

The economic valuation of cultivated crops within the CUZ area was determined based on the income earned by the local community. The market price of the sold products was used to calculate the gross of revenue generated. According to Sathirathai (1998) & Mojiol *et al.*, (2013) when the products are used for subsistence purposes, the gross income will be estimated based on surrogate prices for which two kinds of approach may be applied.

Local direct use value = Net income generated for local use = $\sum \{P_i Q_i - C_i\}$ (Sathirathai, 1998; Mojiol *et al.*, 2013). Whereas P is the prices of *i*, *Q_i* denotes the amount of product *i* being collected, and *C_i* is the costs involved in the collection of product *i*.

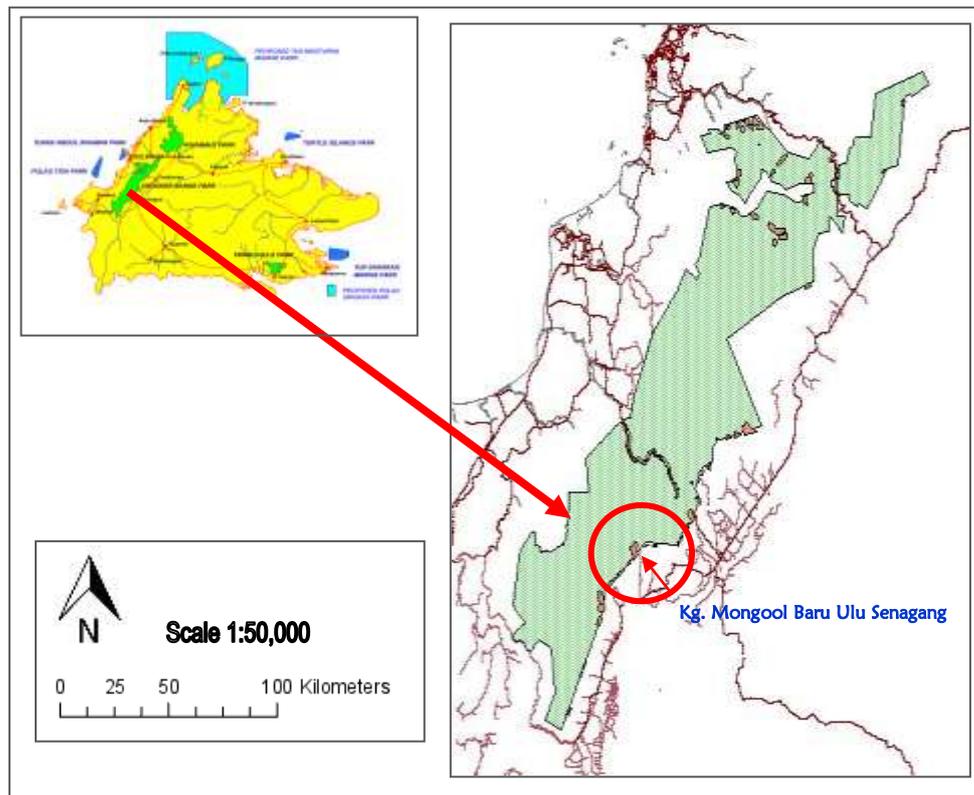


Figure 1. Map of CUZ at Kg. Mongool Ulu Senangang, Keningau

Conservation Awareness

The study on conservation awareness identified the patterns and relationships that exist amongst local community in CUZ areas. The steps involved were as follow:

- i) Preparation of data collection during pre-assessment.
- ii) Information gathering during the assessment, on-site observations, and interviews.

- iii) Collaborative analysis and strategies.

The steps of (i) and (ii) were carried out during socioeconomic survey and observation, while (iii) was conducted using the data analysis outcomes.

Result and discussion

There were forty-seven of respondents (100%) interviewed in Kg. Mongool Baru Ulu Senagang. They are the local communities who live within the Park areas.

Table 1. Respondent Background

VILLAGE	RESPONDENT	AGE	JOB	INCOME (RM)
Kg. Mongool Baru			Farmers 85%	
Ulu Senagang,	47 people	21 to 85 years old	Government 11%	150.00-2000.00
Keningau/Tenom			Private 4%	

Crops Contribution to the Community Livelihood

Two types of crops contributed to the socio-income of the local communities at Kg. Mongool Baru Ulu Senagang are permanent crops and seasonal crops. Most of the crops were planted since 1980's to 1990's, which included rubber trees, cocoa, and others fruiting trees as shown in Table 2. Rubber trees contributed to the major income of the local communities of Kg. Mongool Baru Ulu Senagang with an average of 7,000 kg per annum and the estimated average income of RM36,480.00. This product was also recorded the highest price among eight species listed. This followed by Cocoa, which contributed to an average of 800 kg with estimated average income of RM9,550.00. Most of the farmers grow rubber trees surrounding their housing compound. Cocoa and coffee trees were also found to be cultivated around the community's house. Seasonal crops such as durian contributed 200 kg with the value recorded at RM1,190.

The numbers and types of crops planted are related to factors identified as; i). Population growth - The population growth increased the tendency to grow cash crops and determine the availability of land to support the community livelihood. ii). Employment - Majority of the local community do not have good jobs, this encourage them to concentrate on agriculture activities. iii). Market demand - More farmers are concentrating on commercial crops such as rubber trees and vegetables to gain higher economic return and iv). The increased standard of living - The local communities want to improve their quality of living. They need more income for education, purchasing goods and payment for transportation, electricity and others.

Other factors that could contribute to the species selection to be planted by the local community are road accessibility, availability of potential market, the outcome of the final product to be

harvested, the size of land owned by the community, and the physical characteristic of lands such as soil types, terrains, and local weather conditions (Lintangah *et al.*, 2009; Mojio *et al.*, 2016).

Table 2. Crops contributions of Kg. Mongool Baru Ulu Senagang (Per Annum).

PRODUCT/ CROP	SCEINTIFIC NAME	PRICE OF PRODUCT (RM/KG)	AMOUNT OF PRODUCT BEING COLLECTED (KG)	COST INVOLVED IN COLLECTION OF PRODUCTS (RM)	INCOME (RM)
Rubber/Getah					
- (kepingan)	<i>Hevea</i>	5.80	5,000	60.00	28,940.00
- (kentalan)	<i>brasiliensis</i>	3.80	2,000	60.00	7,540.00
Koko*	<i>Theobroma</i> <i>cacao</i>	1.20 – 2.80	800 x 13person's	50.00	9,550.00
Langsat*	<i>Lansium</i> <i>domesticum</i>	1.50 – 2.00	300 x 9person's	10.00	2,090.00
Durian*	<i>Durio</i> <i>zibethinus</i>	1.00 – 3.00	200 x 2person's	10.00	1,190.00
Rambutan*	<i>Nephelium</i> <i>lappaceum</i>	0.80 – 1.70	200 x 4person's	10.00	990.00
Kopi	<i>Coffea robusta</i> <i>Coffea liberica</i>	4.50	80	50.00	310.00
Cempedak	<i>Artocarpus</i> <i>champeden</i>	3.00	40 fruits	10.00	110.00
Kelapa	<i>Cocos nucifera</i>	0.50	50 fruits	10.00	15.00
TOTAL		0.50 – 5.80	8,580 kg 90 fruits	270.00	50,735.00

Note: * per Individual

Perception and Conservation Awareness

The perception and awareness on conservation were based on the community's concern towards forest conservation. Table 3, shows the results of the local community's perception towards the Sabah Parks and conservation of the park.

A total of 91% of the respondents aware of the Sabah Parks existence. They agree on the fact that activities such as cultivation and gathering of forest products inside Sabah Park area are prohibited. All respondents (100%) agreed of had seen the signs of Sabah Parks boundary. Ninety-six percent (96%) were aware of the prohibition of land utilization for cultivation and collecting forest products in the Park.

The community indicated their understanding on the importance of forest (98%) and agree on the conservation of the forest. They were also supportive of any conservation activity in the park. This demonstrates that the villagers agree on the preservation of their environment. The respondents equally agree and disagree on forest clearing for agricultural utilization that may cause forest destruction. This is considered as they depend on the forest for their daily lives.

Table 3. Perception and Awareness of Local Communities on Forest Conservation.

STATEMENT	PERCENTAGE (%) KG. MONGOOD BARU
1. Do you know the existence of Sabah Parks?	
YES	91
NO	9
2. Have you ever seen the signs of the Sabah Parks boundary or warning boards?	
YES	100
NO	-
3. Do you know it is prohibited to use land for agricultural purpose and gather forest products within Sabah Parks?	
YES	96
NO	4
4. Do you understand the importance of forest?	
YES	98
NO	2
5. Do you understand what is conservation?	
YES	96
NO	4
6. Do you want your surroundings to be conserved?	
YES	100
NO	-
7. Do you want to be involved in conservation activities?	
YES	100
NO	-
8. Forest clearing for agricultural purpose may cause forest destruction.	
AGREE	51
DISAGREE	49

Table 4 shows the conservation awareness which emphasizes on soil fertility and the purpose of land cultivation. During the first exertion of cultivation, 94% of the respondents agree that the soil was fertile. However, comparing with nowadays, only 30% of the respondents agree that the fertility of the soil remains while 68% of respondents indicated the fertility had fallen to little bit fertile. Twenty-three percent (23%) of respondents use fertilizers, which could result in the increase of crops production.

The main reason of the initial land cultivation had been for self-consumption as indicated by 87% of the total respondents. Nowadays, 47% of the respondents selling their products as a source of income, and only 9% indicated cultivation for self-consumption. There were 44% who indicated the cultivation for both self-consumption and source of income. With 79% of people cultivating new crops, is an indication of cultivating more varieties of crops as compared to the previous time.

Table 4. Conservation Awareness of Local Communities on Forest Conservation.

STATEMENT	PERCENTAGE (%) KG. MONGGOOL BARU
1. The first time you cultivate inside the Park areas, was the soil fertile?	
NOT FERTILE	-
LITTLE BIT FERTILE	6
FERTILE	94
2. How about nowadays, is the soil still fertile as before?	
NOT FERTILE	2
LITTLE BIT FERTILE	68
FERTILE	30
3. Do you use any fertilizer for your cultivation?	
YES	23
NO	77
4. When you first started cultivation, what was the reason?	
SELF-CONSUMPTION	87
ECONOMIC SOURCE	9
BOTH	4
5. If you are still active doing cultivation, what is the purpose?	
SELF-CONSUMPTION	9
ECONOMIC SOURCE	47
BOTH	44
6. Is there any difference between type of crops cultivated nowadays and the previous time	
YES	79
NO	21

In term of awareness, the local communities show a high level of attentiveness towards protected areas. They relatively agree on forest felling may cause forest destruction, which may relate to their activities within the Park. The usage of fertilizer among the community is still at a low level (23%). The use of fertilizers is due to the poor soil fertility of the cultivated lands. Land becomes scarce and limited, and the piece of land that continuously cultivated for paddy, pineapples, vegetables lead to leaching, erosion and reduces the natural fertility of the soil (Mojjol *et al.*, 2010). The large proportion of respondents who disagree on agricultural activities as threats to biodiversity and environment suggest a low priority given to environmental impact among the community.

Conclusion

The population is increasing with the shrinking amount of available land for settlement and cultivation as the case occurred in Kg. Mongool Baru Ulu Senagang. The need to survive for a living and the education of children contributed to the local community's activities within the Park areas. The crops cultivated by the local communities that include permanent crops and seasonal crops

contributed monthly income to sustain their livelihood. The average range of revenue per annum by type of crops are rubber trees with RM36,480.00, Cocoa RM9,550.00, and fruits RM4,395.00, respectively. The community agrees on the vital importance of environmental preservation but disagrees with the Park's regulation to prohibit them from occupying the forest for cultivation and settlements. Overall, the CUZ can be one of the options as a management tool for the community use areas, which has been accepted as the most reasonable short-term strategy to address land use management issues inside the CRP. However, further research on the local communities' dependency on the forest, and social impact on the protected areas are necessary for conserving the forest. The established settlement and cultivation by the communities within the area for many years and the exposal for further development are thus be taken into account.

Acknowledgements

Gratitude is expressed to Sabah Parks officers especially to Mr. Yassin Miki (CRNP Manager) for his valuable contributions and support, Park Rangers and field assistants especially those stationed at Crocker Range Park, who sacrificed their time and energy during the research work.

References

- [1] Anonymous (1984). *Parks Enactment 1984*. The State of Sabah.
- [2] Apin, L & Miki, Y. (2013). Community Use Zone of Crocker Range Park, Sabah Malaysia. *1st Asia Park Congress*. 14-15 November 2013, Sendai, Japan,
- [3] Dumbong, A.G. (2004). *Final Report: The Study for Social Conflict Resolution and Policy Recommendation In and Around the Crocker Range Park*. Park Management Component, Bornean Biodiversity Ecosystem and Conservation Programme in Sabah (Unpublished).
- [4] Harada, K. (2001). *Traditional people and biodiversity conservation in Gunung Halimun National Park*. Bandung: Palmedia Citra.
- [5] Lintangah, W., Mojiol, A. R., Kodoh, J. & Solimun, M. (2010). An Assessment of Tree Plantation Activity among Smallholders in the District of Ranau, Sabah. *Modern Applied Science*, 4(9), 58-65.
- [6] Miki, Y., Laban, D., Maidin, N., Zainal, A. & Lakim, M. (2014). Crocker Range Park: Community Use Zone. *IUCN World Park Congress*. 12-19 November 2014, Sydney, Australia.
- [7] Mojiol, A. R., Guntabid, J., Lintangah, J., Ismenyah, M., Kodoh, J., Liew, K. C. & Sompud, J. (2016). Contribution of Mangrove Forest and Socio-Economic Development of Local Communities in Kudat District, Sabah Malaysia. *International Journal of Agriculture, Forestry, and Plantation*, 2 (February 2016), 112 - 129.
- [8] Mojiol, A.R., Adella, A.E., Kodoh, J., Lintangah, W. & Wahab, R. (2010). Common medicinal plants species found at burned and unburned areas of Klias peat swamp forest, Beaufort, Sabah Malaysia. *Journal of Sustainable Development*, 3(1), 109 - 115.
- [9] Mojiol, A. R., Sompud, J., Igau, O. & Yong, Y. S. (2013). Contributions of Kawang Forest Reserve to the Local Community. *Sepilok Bulletin Journal*, 17(1), 35 - 46
- [10] Nais, J. (1996). *Kinabalu Park and the Surrounding Indigenous Communities* (Working Paper No. 17). South-South Cooperation Programme on Environmentally Sound Socio-Economic Development in the Humid Tropics.
- [11] Noweg, T., Abdul Rashid. A. & Nidang, D. (2003). Forest Plants as Vegetables for Communities Bordering the Crocker Range National Park. *ASEAN Review of Biodiversity and Environmental Conservation* (ARBEC), January - March 2003, 1 - 18.
- [12] Kiko, K. K. (2006). *Crocker Range Park Management Plan*. Bornean Biodiversity Ecosystem and Conservation Programme in Sabah. JICA. ISBN 9832770114, 9789832770114.
- [13] Sathirathai, S. (1998). *Economic Valuation of Mangroves and the Roles of Local Communities in the Conservation of Natural Resources: A Case Study of Surat Thani, South of Thailand*. EEPSEA Research Report Series. Archiv 108378.