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Community Perspectives on Buffer Zone for Protected Areas: A preliminary study

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Abstract

Local community gives impact to the Buffer Zones (BZ) and vice-versa. Their input in terms of criteria for delineation of BZ is important and may reduce the conflict of interest between livelihood of the people and conservation objectives of the Protected Areas (PA). This paper describes the preliminary findings of researchers' informal interviews and observations on the local communities. The findings shows that most of them understand the basic concept of BZ, support its potential delineation and agreed on its benefits and possible uses of support-activities in BZ to the local communities.

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1. Introduction

Many Buffer Zones (BZs) constitute a geographical expansion of the state authority beyond the boundaries of the Protected Areas (PAs) and into the rural communities and economic entities (man's land) in which the establishment of BZ resulted in a 'new form' of management intervention and restrictions on land use activities. Thus, defining the boundaries of BZ will eventually ease the

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management intervention. However, few studies incorporate the opinion or agreement of the local communities based on their knowledge, experiences and rights about the site towards the delineation of the BZ. From protecting the crops and people from the animals leaving the PA, to the ‘dual-purpose’ of the BZ, it is remain necessary to the conservation and local people. Even after approximately 50 years of BZ evolvement, today’s de facto delineation of the boundary of BZs, and their great importance to local community suggest that this reality and their opinion and agreement to develop the BZ should be explicitly translated into the form of criteria for the delineation and thus, recognizing the ideal mutual understanding of the local communities.

Studies (Che Bon, Jamalunlaili & Jasmee, 2012a; Stræde & Treue, 2006) have proven that activities around the PAs such as rubber and oil palm plantations, aquaculture farms and over harvesting of natural forest products could increase the pressure and provide significant impacts to the latter. Thus, the effective management of the BZs has long been one of the most important mechanisms. The areas serve as dual-purpose buffering: accommodating the conservation objectives and the socio-economic benefits–‘win-win situation’.

Although the requirement of BZs for PAs is mentioned in various conservation and development policy including, in the case of Malaysia, National Physical Plan II and the National Policy on Biological Diversity, it does not explicitly mention the criteria of BZ. On the other hand, in some cases, the aspect that may be considered in establishing the BZ for PA is that its width for example, is usually the same size all around the PAs (Thorell & Götmark, 2005) and does not vary with the importance of the influences in the different sections around the PAs (Sinun, 2011). As a result, more than one BZ prescription (criteria) may be needed for a PA.

Furthermore, not many PAs in Malaysia takes into account the opinion and agreement of the local communities when deciding on policies including delineation of BZ (i.e. Tasek Bera) (Che Bon, Jamalunlaili & Jasmee, 2012b; Wetland International, 1999).

2. Study area and purpose of study

Krau Wildlife Reserve (KWR) (Figure 1) is a typical PA in Malaysia which has been listed under the International Union for Conservation of Nature (IUCN) category. It is located partly in the district of Temerloh, Bentong and Raub in the state of Pahang, Malaysia and covers approximately 62,000 hectares. KWR is almost surrounded by forested land consisting of Permanent Reserve Forests and State Land Forests. Although KWR is almost intact, the forested areas surrounding it had considerably declined due to the changes of land use activities. Furthermore, the existence of stakeholders and local community, especially indigenous people has contributed to its complex system as well. Their activities in these areas have always had a great impact on the KWR and the surrounding areas (Che Bon, Jamalunlaili & Jasmee, 2012a).

The purpose of this study is to gauge an opinion of the local communities on BZ for PAs, to determine who the communities’ stakeholders are and to identify their opinion and agreement on the potential delineation and possible support activities that may benefits the communities.

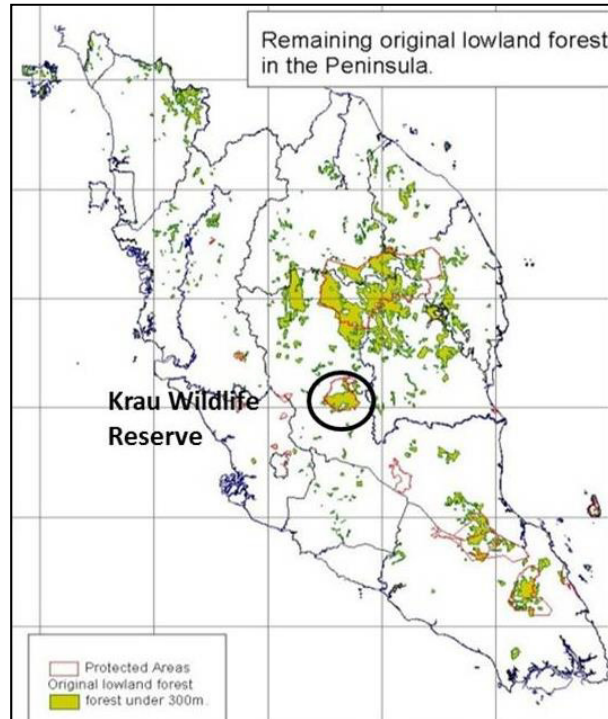


Fig. 1. Location of Krau Wildlife Reserve, Malaysia

3. Methodology and limitation of study

This study suggested the perspectives of the local community around the KWR (Figure 2) regarding the overall concept of BZ, opinion and agreement on the criteria of delineation, potential implementation and possible uses of support-activities in the BZ areas. It involved researchers' observations at site, informal interviews with local community and discussion with parties involved directly in the development and wellbeing of the indigenous community including Department of Wildlife and National Park and Jabatan Kemajuan Orang Asli. The result is very preliminary, with the intention to gain some broad ideas and background information regarding the topic which will be used for further research in the near future.

4. Result and discussion

Generally the local communities who live around KWR are Malay who is the majority of the population, and indigenous people comprising of Jah Hut, Chewong and Temuan. Jah-Hut and Temuan mostly lives around KWR while Che Wong mostly lives inside the KWR (Figure 2). Malay community lives permanently in their settlement areas while some of the indigenous community has moving from one settlement to another due to a few factors including marriage and source of food. Each group of community appears to have their own agenda and seemed to interact with people in their own group. It is suggested that the Malay community (FeLDA settlers), (Figure 2) besides recreational interest, have relatively little to do with forest, being supported by their work on the estate which bordering the KWR. Indigenous community to varying degrees remains dependent on the forest for food, materials and

produce for sale. Excluding the Malay community, the more numerous Jah Hut and Temuan are more dependent on agriculture while less numerous Che Wong are understood to depend on the forest.

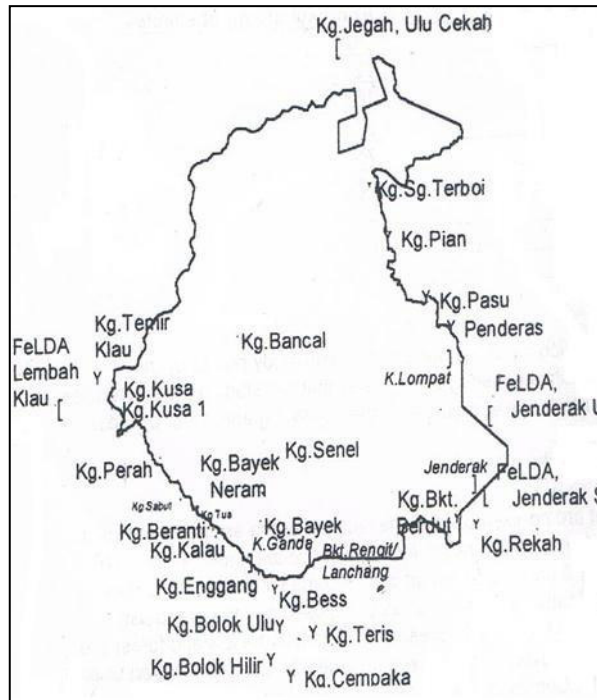


Fig. 2. Settlement around Krau Wildlife Reserve
 Source: Department of Wildlife and National Park (2010)

Figure 2 shows the location of current settlements. Apart from the small Che Wong settlements at Bayek, Senel and Bancal, and the Jah Hut border settlements at Berdut, all settlements are outside KWR. However, their use of KWR and BZ are not random, but controlled by mutual recognition between the communities, of the boundaries of their areas of exclusive exploitation. The lost of considerable amount of traditional forest to outsiders who did not comprehend their system of land occupation and use. The forest once used by Berdut, Rekah and Penderas community was taken and cleared by FeLDA, and occupied by people from other areas.

Table 1. Settlements and tribes/races outside and inside KWR

<i>Settlements (outside KWR)</i>	<i>Settlements (inside KWR)</i>	<i>Tribes / Races</i>
FeLDA, Lembah Klau		Malay
FeLDA, Jenderak Utara		Malay
Kg. Tengah, Ulu Cegah		Malay
FeLDA, Jenderak Selatan		Malay
Kg. Pian		Jah Hut
Kg. Teris		Malay

Table 1. Settlements and tribes/races outside and inside KWR (cont'd)

<i>Settlements (outside KWR)</i>	<i>Settlements (inside KWR)</i>	<i>Tribes / Races</i>
Kg. Pasu		Jah Hut
Kg. Temir Klau		Temuan
Penderas		Jah Hut
Kg. Bolok Hilir		Malay
Kg. Bolok Hulu		Malay
Kg. Cempaka		Malay
Kg. Bess		Temuan
Kg. Rekah		Jah Hut
Kg. Bkt. Berdut		Jah Hut
Kg. Sg. Terboi		Jah Hut
Kg. Enggang		Che Wong
	Kg. Kusa 1	-
	Kg. Senel	Che Wong
	Kg. Bancal	Che Wong
Kg. Kalau		Che Wong
Kg. Perah		Che Wong
Kg. Enggang		Che Wong
	Kg. Bayek	Che Wong
	Kg. Bayek Neram	Che Wong
	Kg. Kusa	-
Kg. Beranti		Che Wong
Kg. Tua		Che Wong
Kg. Sabut		Che Wong

Source: Department of Wildlife and National Park (2010)

4.1. Understanding the concept of buffer zones

In general, most of the local community understands the overall concept of BZ - to protect the PAs, from the negative impact came from the surrounding activities. This includes land clearing for agriculture and settlements. They are also aware that KWR has been gazetted for wildlife conservation which requires an intact ecosystem and habitat and BZs help to build local and regional supports for conservation programs. Nonetheless, their activities including collecting of natural resource product and hunting for self-use are permitted in KWR. Furthermore, it is understood that under the conservation objectives, BZ is an alternative in terms of extraction of natural resources, to PAs or in other words those activities should be shifted from KWR to BZ areas.

However, most of the local communities do not understand the current significant development in BZ concepts which have been accepted globally such as:

- The principle of 'Integrated Conservation and Development Projects' - to alleviate human impacts on conservation region whereby through the project, it has to take into the consideration the historic use and future pressures of the BZs and can't be isolated from the surrounding land - bringing problems

such as agricultural fertilizer run-off or local people grazing livestock and cutting wood (Lynagh and Urich, 2002).

- It is also widely applied in solving problem in the increasing global awareness of biological and ecosystem value and from resulted of increasing pressure on nature reserve (Ebregt & Greve, 2000).
- Presently, BZs are to serve the dual purpose of 'extension buffering', or an extension of core habitat areas, and 'socio buffering' to provide goods and services to humans (Jotikapukkana, et al., 2010).

4.1.1. *The benefits and implication of buffer zone to people*

Buffer zones are particularly valuable to indigenous community. They depend on it for economic resources such as agricultural and tourism sectors and collecting natural resource product. Thus, it's required a clear demarcated boundary, to avoid illegal hunting, harvesting the natural resource products, and pollution can be minimized by the power of enforcement and authority. Being the community who has lived in the area for more than 600 years, their knowledge and experience about the site should not be under estimated and they should be given a power to perform their daily activities and manage the site.

Although they basically agreed with the BZ concept, they are more concern on their source of basic needs for a living such as food and shelter, and income to certain communities when restriction is imposed to the areas. Even though, they have a restriction on harvesting of local product, they have the right to extract it for self-use.

The Chewong and Jah-Hut possess a unique knowledge of the use of forest plants such as rattan. There is no exemption to the fact that indigenous community who lives around or in the KWR are allowed to collect rattan for subsistence and sale. It has been traditionally a primary source of cash income for both communities. Even though there are many other forest products they can collect, it would be unlikely to pose a problem for the biodiversity of rattan if the indigenous community were to only use rattan for their own subsistence.

Surprisingly, commercial collection of rattan in the BZ area is also unavoidable. Excessive harvesting is carried out by Jah Hut community due to the fact that their belief and respect to nature (take what you need only) is less compare to Che Wong community. Entrepreneurial mind tend to be higher among the Jah Hut as compared to Che Wong community.

4.1.2. *Criteria for delineation*

Perception of the local community is crucial for the management of KWR in order to come out with the criteria to be used for the delineation.

Local communities suggested that they must be given a mutual recognition of the ownership (unique rights) of the areas and activity permitted (i.e. allowed use) and a clear demarcation of the boundary (i.e. width) which include:

- BZ will be an overlapping use by both wildlife and human. It is found that for all purposes, the surrounding Permanent Reserve Forests and State Land Forests are performing these functions. However, it has to be recognized and included into the planning document of the relevant agencies.
- The size of the BZ should be covering the surrounding Forest Reserves, agricultural areas and rivers and can be considered as natural BZ for KWR.
- For areas that are bordering FeLDA, alienated land, state land and indigenous people areas, there should be a restriction on the use of the BZ area.

4.2. Potential implementation of buffer zones

The management of what people do and the effects they create is relatively straightforward. The management body, which consist of collaborated parties has the power to control over the BZ must be given, and ensuring all activities within is compatible with the management objectives of the BZ.

Local communities around KWR, has been recognized as the important element for the development of BZ and the survival of KWR. The diverse communities contributed to the various needs, concerns, problems and opportunities. Local communities and the land they use cannot be approached as separate issues. The direct and indirect dependency of these local communities requires special attention in order to achieve a sound management of the BZ. It is believed that local community involvement in the management and decision making process could minimize the threats to the BZ areas through community organization rather than just merely full control by the government agencies. Some of the support activities suggested by the local communities that may be suitable to be carried out in the BZ including:

- Community forest
- Agro-forestry activities
- Indigenous people – craft
- Ecotourism activities
- NTFP harvesting
- Animal husbandry
- FeLDA settlers cooperative

These activities and its association could be potential for development of a more meaningful and extensive local community involvement in the future.

5. Conclusion

This study in general has proven that the local communities understand the concept of BZ for PAs. Their positive perception on the potential delineation shows that they support the conservation of the KWR and at the same time keen to contribute in the related activities to improve their socio-economic level. As different group and land use activities already exist around KWR (i.e. plantation schemes, state owned forested land, individual/private land ownership etc.) these areas may have to act as BZ and the criteria (i.e. width) will vary according to the agencies/activity.

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References

- Che Bon, A., Jamalunlaili, A., Jasmee, J. (2012a). Proceedings from *ASIA Pacific International Conference on Environment-Behaviour Studies: Community activities around protected areas and the impacts on the environment at Krau Wildlife Reserve Malaysia*. Giza, Egypt.
- Che Bon, A., Izzarul Hafni, M. A., Jamalunlaili, A. and Jasmee, J. (2012b) Stakeholders' Perception on Buffer Zone Potential Implementation: A Preliminary Study of Tasek Bera, M'sia. *Procedia - Social and Behavioral Sciences*, 50, 582-590.

- Cai, M., & Wang, Y. M. (2012). Low-carbon tourism: A new mode of tourism development. *Economy and Management*, 1.
- Wetlands, I., - Asia, Pacific (1999). Integrated Management Plan - Tasek Bera Ramsar Site. D. o. W. a. N. Park, Wetlands International - Asia Pacific.
- Department of Wildlife and National Parks Malaysia. (2005). *Integrated management plan of Tasek Bera*.
- Ebregt, A. a. G., & Pol De. (2008). *Buffer zones and their management: Policy and best practices for terrestrial ecosystems in developing countries*.
- Jotikapukkana, S., Berg, A., & Pattanavibool, A. (2010). Wildlife and human use of buffer-zone areas in a wildlife sanctuary. *Wildlife Research*, 37(6), 466-474.
- Khoi, D. D., & Murayama Y. B. (2010). *Delineation of suitable cropland areas using a GIS based multi-criteria evaluation approach in the Tam Dao National Park Region, Vietnam*.
- Lynagh, F. M., & Urich, P. B. (2002). A critical review of buffer zone theory and practice: A Philippine case study. *Society and Natural Resources*, 15, 129-145.
- Phua, M. H., Tsuyuki, S., Furuya, N., & Lee, J. S. (2012). Detecting deforestation with a spectral change detection approach using multitemporal Landsat data: A case study of Kinabalu Park, Sabah, Malaysia. *Journal of Environmental Management*, 88(4), 784-795.
- Semlitsch, R. D., & Jensen, J. B. (2001). Core habitat, not buffer zone. *National Wetland Newsletter*, 23(4).
- Sinun, W. (2011, February 8). South-East Asia Rainforest Research Programme.
- Thorell, M., & Götmark, F. (2005). Reinforcement capacity of potential buffer zones: Forest structure and conservation values around forest reserves in southern Sweden. *Forest Ecology and Management*, 212(1–3), 333-345. Retrieved from doi: 10.1016/j.foreco.2005.03.028