Possibility of Segaliud Lokan Forest Reserve (SLFR), Sandakan As Nature Tourism Attraction

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Abstract. The tourism sector in Sabah is rapidly developing as the state has high biodiversity resources. The state needs to diversify its natural tourism destinations to increase the number of tourists because tourism is one of the sector that give some contribution to the economic state. Segaliud Lokan Forest Reserve which located in Sandakan district is a newly discovered conservation area that has the potential to be a natural tourism area as this area is rich in biodiversity of flora and fauna as well as attractive landscapes. The objective of the study is to identify the natural resources found in the SLFR that can be the tourist attraction. The Criteria for Assessing Natural Tourism Potential based on National Ecotourism Plan of Malaysia (Guideline for Sabah State) was used in this study. This study shows that the SLFR area has the potential to be a nature tourism attraction but recommends to have some management mechanism in place to precede any development of tourism activity.

1. Introduction

Nature was made up from the living things and non-living things that occurred naturally on the Earth. It also encompasses the physical environment and biologically interacts with each other and has a high scientific and aesthetic values. The existence of nature treasures comprising a variety of unique, interesting and unspoiled forms such as flora and fauna, aquatic environments and attractive landscapes play an important role in the development of nature tourism in certain areas. The World Tourism Organization state that tourism a social, cultural and economic phenomenon that needed the movement of people (tourist) to another countries or places outside their usual environment for personal or professional matter. World Tourism Organization (WTO) stated tourist is the people that travel to and stay in places outside their usual environment for more than 24 hours and not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited. Tourism can be divided into several types of tourism and among others is nature tourism. Nature tourism is one of ecotourism service product [1].

Nature tourism is any kind of tourism that relies on attractions that are directly related to the natural environment. This types of tourism’s activities are an activity that enables tourist to approach and enjoy the nature, art and culture of the area. Through this activity, it is able to raise awareness to the general public about the importance of nature as well as to enhance the country’s economy as this activity will attract more tourists to come into the country. Other than that, there were many terms had
been used to define this type of tourism. For example, nature tourism can be define as green tourism [2]. In this 20th century, the definition for this tourism have been renewed. Nature tourism is often associated with the conservation of biodiversity of flora and fauna that are often addressed in recent years. For example, nature tourism is one type of tourism that offer products and services is developed around an attraction to nature and shaped by values of sustainability [1]. Nature tourism can be concluded as a tourism activity that enjoys nature environment as a natural phenomenon that are not disturbed by any process which can be damaged to the tourism area. However, there are only certain location that can be chosen to carry out this type of tourism.

According to Sabah News Today report on 2018, around 3.8 million tourists was visiting Sabah from January until December on that year and tourists from China contributed the largest in this amount. The Sabah Tourism Board (STB) had begun promoting Sabah in international level to attract tourist from Europe to come to Sabah and STB believes that branding in East Coast of Sabah such as Sukau, Sepilok in Sandakan and Danum Valley in Lahad Datu is of the main attraction of tourists to come to this state. However, there are area in this state which has the potential to attract tourist attention to come but still unknown to public. Among these areas are the Segaliud Lokan Forest Reserve which is located in Sandakan district. The main objective in this study was to identify the possibility of nature attraction that can be found in this area.

2. Description of Study Area
The study area is located at Segaliud Lokan Forest Reserve (SLFR), which is situated in Sandakan district and under the management of KTS Plantation Sdn Bhd. The forest reserve forms the second part of Forest Management Unit No. 19 which is FMU19 (B) with a total area of 57,247 ha. SLFR was constituted as Commercial Forest Reserved in 1995 with a land covering 163,169 ha. The extended from Sungai Muanad to the North, the Sekong Bay to the Northeast, and the boundary of Supu Forest Reserve along Sungai Kinabatangan to the East. The natural climax vegetation is tropical rainforest and much of this is lowland dipterocarp forest. Within the lowland dipterocarp forest, different forest types can be recognized and by far the most important of these in this area are the Parashorea tomentella / Eusideroxylon zwageri type. SLFR covers an area of more than 2,600 km2 and it is built of sandstones and mudstones of Eocene age and is dissected by the Sungai Lokan in the North, Sungai Tabalion in the South and Sungai Rawog in the centre. In the Eastern part, the land is gently undulating but in the west relief is severe, with step slopes and amplitudes up to 300 m. This forest area occupies part of the basin formed by three rivers which is Sungai Lokan to the North, Sungai Rawog Besar and Sungai Tabalian Besar to the South. Sungai Rawog flows East and into Sungai Lokan which, in turn, flows South to meet the Kinabatangan River. All these three rivers form part of the upper Kinabatangan river system.

3. Methodology
The forest area can only be promoted as a nature tourism area if there is existence of a potential tourist attraction. To assess this potential, specific and quantifiable criteria are needed. Based on a proposal by The National Ecotourism Plan of Malaysia (Guideline For Sabah State) and WTO/UNDP [3], cited from Stecker [4] and Zulhazman et al. [5], criteria’s for assessing the Segaliud Lokan Forest Reserve area as a potential nature tourism was formulated. Data had been compiled and grouped into four categories:

i. Flagship Attractions.
ii. Complementary and Supporting Attractions.
iii. Accessibility and Regional Infrastructure.
iv. General Political and Social Framework.

The checklist can be used by relevant tourism agencies and also tourism operators or entrepreneurs to decide either the surrounding of Segaliud Lokan Forest Reserve area have nature tourism activities
potential or not. Two trails in SLFR were choose and general observation of the natural environment include physical assessment and biological resources assessment along the trails.

4. Results And Discussion
From the finding, the nature attraction at Segaliud Lokan Forest Reserve (SLFR) could be categorized into 3 main categories. Table 1 shows the criteria for judging the suitability of the Segaliud Lokan Forest Reserve as tourism attraction.

| Criteria | Results |
|----------|---------|
| i. Flagship Attractions (Attractive Natural Features) | + |
| • Uniqueness of species and natural elements of the landscapes | + |
| • Manifold landscapes (forest types, rivers, mountains) | + |
| • High biodiversity (flora and/or fauna) | + |
| • Easily observable animals | + |
| ii. Complementary and Supporting Attractions (Natural, Cultural and Artificial Features) | - |
| • Opportunities for outdoor and adventure activities (hiking, jungle trekking, fishing) | + |
| • Indigenous culture (ethnic groups, villages, handicraft, folklore) | - |
| • Visitor centre (exhibitions, museum, lectures, library) | - |
| • Accomodation / catering facilities in different pricing | - |
| • Tourist guides and porters | - |
| iii. Accessibility and Regional Infrastructure | - |
| • Access (roads, domestic flight) | - |
| • Communication facilities / medical care | - |
| • Other interesting natural and / or cultural attractions in vicinity | - |
| • Interesting landscapes en route | + |
| iv. General Political and Social Framework | - |
| • Stable political / social structure in the state / country region | - |
| • Conflict of land use | - |
| • Acceptance of tourism by local communities | - |
| • Promotion and advertisement | - |

Source: The National Ecotourism Plan of Malaysia (Guideline For Sabah State), WTO/UDNP (1992), Stecker (1996) and Zulhazman et al., (2004)

+ = Existing, favouarable, high, positive;
- = Lacking, unfavourable, low, negative

4.1 Flagship Attractions
Flagship attractions in nature tourism area refer to distinctive elements of natural heritage that can be found in such area. Its mean that this attractions are the best characterize in the area and become the main reason for tourist to visit that place [5].

The presence of endemic species in the two trails of SLFR can be considered as flagship attractions for tourists. The endemic species that growth in this area are Kawang Jantung tree (Shorea machropylla) and Kawang Burung tree (Shorea mecistopteryx). Both of them are endemic species in Borneo and come from Dipterocarpaceae. These species can be found in trail 6 and trail 12 in SLFR area which is both of trails have the presence of many species big trees such as Urat Mata Beludu tree (Parashorea tomentela, Dipterocarpaceae family), Tampalang tree (Barringtonia machrostachya, Lecyhtidacea family), Selangan Batu Biabas tree (Shorea leptoderma, Dipterocarpaceae family), Tualang tree (Koompassia excelsa, Fabaceae family), Gaharu tree (Aquiliria malaccensis,
Thymelaeaceae family), Seraya Timbau tree (Shorea smithiana, Dipterocarpaceae family), Keruing Putih tree (Dipterocarpus caudiferus, Dipterocarpaceae family), Belian tree (Eusideroxylon zwageri, Lauraceae family) and this tree (Belian) abundance in trail 12.

Other than that, this area also have the abundance of medicinal and ornamental plant. The species included are Senduduk Paksa species (Melastoma malabathricum, Melastomataceae family), Tongkat Ali species (Eurocyma longifolia, Simaroubaceae family), Pandan species (Pandanus amaryllifolious, Pandanaceae family), Sarsaparilla species (Smilax ornata, Smilacaceae family), Ganda Rusa species (Justicia gendarussa, Acanthaceae family), Mempelas species (Tetracera indica, Dilleniaceae family), Rota species (Calomea sp., Arecaceae family), Selasih Dandi / Rumput Tahi Babi species (Ageraratum conyzoides, Verbenaceae family) and many others. This is showed that this area were rich with species that have many uses. In trail 12, there were abundance of fern species which is it produced beautiful landscape and it can attract tourist to visit that place.

The presence of wildlife also can be one of flagship attractions in SLFR area because all two trails in this area are main path of wildlife. The main species of wildlife that can be easily found is Borneo Elephant (Elephas maximus borneensis, Elephantidae family) and Bornean Bearded Pig (Sus barbatus, Suidae family). This area also rich with the presence of bird species. The bird species that can be easily found are Bushy-Chested Hornbill species (Anorrhinus galeritus, Bucerotidae family), Chestnut-Breasted Malkoha species (Phaenicophaeus curvirostris, Cuculidae family), Brown Fulvetta species (Alcippe brunneicauda, Leiotrichidae family), Blue-Headed Pitta (Hydrornis baudii, Pittidae family), Sooty-Capped Babbler species (Malacopteron affine, Pellorneidae family), Purple-Throated Sunbird (Leptocema sperata, Nectariniidae family) and many others. These wildlife and bird species have been found during the assessment executed.

4.2 Complementary and Supporting Attractions
Complementary attractions in nature tourism area are also refer to natural or cultural heritage that can be found in such an area but it is not possess with the same degree of relevance or singularity as flagship attractions. This type of attractions provide added ecotourism value to a site, also give contribution to the visitor to a tourism experience of greater richness and variety, inducing the tourist to stay longer in the respective area, offering tourists the possibility of carrying out additional activities, contribute to the avoidance of excessive concentrations of tourists in one single place but in the same time, they could encourage displacement of visitors over a number of sites within the area [6]. Besides, supporting attractions is one of the artificial elements that can provide to the tourists with different satisfactions and also they can give the support and service to tourism but they never be the main reason for the tourists to come to the area.

SLFR area has three main rivers which is Sungai Lokan, Sungai Tabalion and Sungai Rawog. The most attractive river among the three of them are Sungai Rawog because it is located in the centre of SLFR area. This river give a nice view to the visitor and also suitable place for water-based activities such as fishing and rafting. But tourist cannot easily do fishing activities without the accompany of tourist guide because Sungai Rawog had been stated as a conservation area. Besides that, there is an area in compartment 26 in SLFR has a presence of waterfall that called as Toluh waterfall. It’s named as Toluh because it has 3 levels of waterfall and Toluh come from the local language. Along the trail to reach the waterfall, there are abundance of medicinal plants such as Tongkat Ali species. It is suitable for education of plants. Jungle trekking activity also suitable in this trail because it can be considered as hill forest.

4.3 Accessibility and Regional Infrastructure
Sandakan district are very easily to access by any type of car but to reach into the SLFR area, only the specific type of car can be access such as four wheel car. It is because before reaching to the checkpoint, visitors will be pass through the palm oil station path around 30 minutes to 1 hour because the road are not in good condition. After the checkpoint, the road also not in good condition because
the road is not paved and also got high hills. Other than that, SLFR also not available for mobile network. Only certain area are available but it still in poor condition of mobile network.

However, this area also have extra ordinary landscape features such as its have logged forest areas or it’s also called as production zone by the management. This area also is a virgin forest which is rich with the diversity of flora and fauna species. This area also has the abundance of Nephentes species at the trail 12. Trail 12 consisted of Kerangas forest and of the main attraction that produced interesting landscape are the Nephentes species. This trail have more than one of type Nephentes species such as Nephentes ampularia and Nephentes grasilis. The environment also very humid and there are many beauty spot that suitable for photographing activity.

5. Recommendations
The areas recommended to be considered such as:

i. Establish a permanent research centre for the primary, logged and regenerating forests to be managed by the relevant universities, Forestry and Wildlife Departments, parks, and private tourism sector supported by the federal government.

ii. To develop sustainable tourism efforts with the participation of local people by private tourism sector.

iii. Management offered job opportunities to public especially to the local people such as tourist guide, porter, clerk and other simple position.

iv. Management appoint agency that can be trusted in order to promote SLFR area to public.

v. To develop a complex for tourism only.

vi. To do frequent scientific researches by universities and produce inventory for the areas identified.

vii. Establish recommended carrying capacity on tourist’s arrival (visits).

For supporting attractions, there are certain issues should be considered are as follows:

i. There were some beauty spot had been found in trail 6 which is nearest to the river bank. Management team can built the fence barrier in that area for the sake of tourist safety.

ii. Small island had been found in the trail 11. It is also one of the attraction at there. So that, the pit stop can be built at the front of the island. The tourists can take a rest while enjoyed the view.

iii. To construct hides and towers for observation of flora and fauna, developing appreciation of the environment with photography.

iv. To establish a centre for exhibition and information centre.

v. To establish accommodations such as kiosks, chalets (for upper clientele) and dormitory standard (for students).

vi. To organize guiding service and porters to make available for tourists including general transportations.

vii. Management team should establish guided trail in trail 12 because a path in the trail a bit confusing.

6. Conclusion
A short study has been conducted in the SLFR area to look the potential of the area as the new nature tourism place in Sabah. From the study, SLFR area looked as one of the area that has a potential as a nature tourism place because this area is rich with the diversity of flora and fauna species. Not only that, there is also has a presence of endemic species in certain trails. The study had been created some further interests on this area and in the future may be there are many organizations that will cooperate with the management team to do further research in this area, for sure this place can be comparable with the other famous nature tourism place in Sabah such as Danum Valley.

In order to identify the potential of nature tourism, one thing that should be realized is to highlight some issues and should be concerned about the impact towards the conservation area especially in regards to the environment. This is because there is a benefits in the long terms for economic
justification. In the other words, nature tourism offered some opportunities to diversify and develop expansion in the economic value while it also can stimulated the growth in rural area that was isolated.

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References
[1] Diana Milena Lara & Jorge Ivan Velasquez-Tibata 2017 Nature Tourism (In book: Biodiversity 2016. Status and Trends of Colombian Continental Biodiversity, Chapter 408). Research Institute of Biological Resources Alexander von Humboldt.
[2] Lane B 1990 Spreading the tourist load, The Observer, Travelwatch. 4 February: 4.
[3] WTO/UNDP 1992 Guidelines: The Development of National Parks and Protected Areas for Tourism. WTO/UNDP Joint Publication, Madrid. 53p.
[4] Stecker B 1996 Ecotourism: Potential for Conservation and Sustainable Use of Tropical Forests. Deutsche Gesellschaft Fur Technische Zausammenarbeit (GTZ), Eschborn. 72p.
[5] Zulhazaman H, Mohd Fairus J, Fatimah S and Maryati M 2004 Suitability of Keningau-Kimanis Road and Surroundings as Tourism Attractions. In: Maryati, M.
[6] Danny T W, Chew and Zulhazman Hamzah 2010 The Lojing Highlands: A Potential Nature Tourism Attraction.Universiti Malaysia Kelantan.