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The importance of Ulu Sat Forest Reserve to socio-economic activity of local community

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Abstract. Kelantan state has rich natural landscapes and interesting geological features, which has excellent potential to be developed. Ulu Sat Forest Reserve is one of the important forest reserves that available in Kelantan. It functions as a water catchment area make it very significant to the local community nearby. The study's aim is to explore the significance of Ulu Sat Forest Reserve to socio-economic of local community. The qualitative approach was executed via focus group discussion and in-depth interview technique with the leader and local communities. This study has found out that Ulu Sat Forest Reserve has played a significant role in the local community livelihood in the context of income resources, traditional medicine resources, water resources, and a preferable recreational place for family. Besides that, this article also discussed a brief background of the local community living near the Ulu Sat Forest Reserve. Discussion on the local community's demographic is essential to understand their socio-economic activities related to Ulu Sat Forest Reserve. This study indicates that the local community is still dependent on the forest reserve ecosystem and services in their livelihood. The disturbance of the Ulu Sat Forest Reserve ecosystem will cause an indirect negative impact on the tranquillity of the local community.

1. Introduction

Ulu Sat Forest Reserve is a tropical rainforest in the region of Kelantan, Malaysia. The total area of Ulu Sat Forest Reserve is 14,432 hectares. It located under the eastern territory administration of Kelantan Forest Department. It has a humid (> 0.65 p/pet) climate and classified as a tropical wet, with a tropical moist forest biozone. The land area is not cultivated, where most of the natural vegetation is still intact and covered with closed to open broadleaved evergreen or semi-deciduous forest [1]. This native forest is considered a significant reserve of biodiversity that supports its ecological functions [2].

More than 50 villages surround ulu Sat Forest Reserve. These villagers have believed they rely upon the forest reserve for their livelihood. According to Karjalainen et al. [3], forests provide enormous possibilities to improve human health and socio-economy. Forest food offers a safety net for the most vulnerable population groups in developing countries, and healthy forest ecosystems may also help regulate infectious disease. A valuable starting point for considering such dependence is to use an ecosystem services perspective to categorise human uses of the natural environment [4]. The Millennium Ecosystem Assessment (MEA) has categorised goods and services humans obtain from the natural environment into four supporting, provisioning, regulating and cultural services. Therefore,



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this article will discuss the importance of Ulu Sat Forest Reserve to the local community's socio-economic.

2. Methodology

This study has used primary and secondary data. Primary data was collected from villagers, and secondary data was collected from the District Land Office of Machang. These data were triangulated to explain the socio-economic activity of the local community related to the Ulu Sat Forest Reserve.

2.1. Study area

More than 50 villages are available around the Ulu Sat Forest Reserve under the Machang district administration. However, only five checkpoints were set up for data collection.

2.2. Data collection

2.2.1. Focus group discussion (FGD). Focus group discussion is frequently used as a qualitative approach to understanding social issues [5]. The method aims to obtain data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population. In this study, FGD has been employed to collect data from the local community that live nearby Ulu Sat Forest Reserve. FGD has conducted five (5) sessions based on the location of the villages. Each session consists of 10 respondents who are consist of the local community from different background. The purpose of FGD in this study is to explore the socio-economy activity of the local community related to Ulu Sat Forest Reserve.

2.2.2. In-depth interview. In-depth semi-structured interviews are applied to gather information from the potential respondents. Interviewees were selected based on their position in the community and experiences. For semi-structured interviews, several questions are prepared to cover the intended scope of the interview [6]. According to Saunders et al. [7], a semi-structured interview would allow the researcher to explore the answer more deeply during the interview. Moreover, in-depth semi-structured interviews are conducted with a fairly open framework which allows for focused, conversational, two-way communication. It can be used both to give and receive information. Semi-structured interviewing can guide and provides a platform for a new direction for the interviewer [8].

2.3 Data analysis

In this study, interpretation has been conducted during a focus group discussion and in-depth interview to explore the socio-economic activity of the local community. Besides that, reflection has also been conducted to generalize the information gathered. The generalization of the data obtained from the fieldwork is significant to avoid bias. All the data obtained from the interpretation and reflection will be analysed in-depth using a content analysis approach. Researchers have widely used the content analysis approach to analyse qualitative data [9]. Content analysis is a process of categorization and classification of the information and data according to the themes. Identifying the theme is crucial in the content analysis to achieve the research objectives at the end of the study [10]. In this study, content analysis will be conducted after reflection and interpretative analysis to investigate the relationship between the socio-economy activity of the local community with Ulu Sat Forest Reserve.

3. Result and Discussion

3.1. Land use in Ulu Sat

Ulu Sat is located under the administration of Machang district since 1951, which is known as Kuala Krai District previously. Ulu Sat is bordering with Labok district at northern part, Terengganu state at southern part, Pasir Putih district at Eastern part, and Panyit district at western part. Ulu Sat Forest Reserve consist of several rivers, and the most significant river is Hulu Sat River, where how the name Ulu Sat is derived. Ulu sat has a total area of 22,869 hectares, consisting of different land-use like

plantation, building and others (Table 1). Most of the area of Ulu Sat is forest reserve (64.6%) followed by plantation (30%). Only 2.4% of the area is used as a build area for the residential and commercial area. A total of 63 villages available in Ulu Sat with a total area of 6,961 hectares.

Table 1. Land use of Ulu Sat area.

Type of Land Use	Area (ha)
Plantation (Rubber tree/ paddy field/ orchards/ etc)	7,463 (33.0%)
Building (Houses/ commercial center)	621 (2.4%)
Forest reserve	14,800 (64.6%)
Total	22,884 (100%)

3.2. Demographic profile of Ulu Sat community

The total population in Ulu Sat is 35,880 people, which consist of 5,847 families. Table 2 shows that most of the Ulu Sat's population is Malay and followed by Chines, Indian, and other ethnicities. The majority of the population is Muslim. Therefore, ten (10) prominent mosques and more than 50 small mosques are available in Ulu Sat. Moreover, Ulu Sat has plenty of Islamic schools known as Madrasah. A total of 78 Madrasah available in the Ulu Sat district. Table 3 shows that Ulu Sat has three (3) educational institutions: a primary school, secondary school, and higher education institution (Universiti Teknologi Mara), which depict the level of education among the population good.

The statistic from table 1 indicates that majority of the Ulu Sat's population are a farmer. There are several types of plantation available in ulu sat, such as rubber plantation and paddy field. There are some of the villagers who have local fruit orchards. The commercial area of Ulu Sat is minimal as compared to the plantation area and other areas. This statistic shows that there are very limited villagers is working in the commercial area and factory. This study also found that several villagers working outside the Ulu Sat area have a better opportunity, such as Kota Bharu city centre. The Ulu Sat population's second-largest occupation is government servants such as teachers.

Table 2. Ethnicity in Ulu Sat.

Ethnic	Percentage (%)
Malay	92%
Chinese	7%
Indian	<1%
Others	<1%

Table 3. Type of School & Education Institution in Ulu Sat.

Type of school/institution	Number
Madrasah	78
Primary school	9
Secondary School	6
Higher Institution	1

3.3. Socio-economic activities related to Ulu Sat Reserve Forest

The main socio-economy activity of the villagers in Ulu Sat is farming. According to Ritchie et al. [11], farming activity depends on natural resources like water and pollinators. Therefore, farmers in Ulu Sat is significant to depend on the natural resources provided by the Ulu Sat Forest Reserve like groundwater, diversity of insects for pollination. Moreover, the forest plays a crucial role in maintaining the local area's climate [12]. In the context of sensitive plantation like paddy will get affected by the impact of climate change. Therefore, the paddy farmers in Ulu Sat rely upon the Ulu Sat Forest Reserve to maintain the climate of the Ulu Sat area to ensure their paddy farming sustainability.

Besides that, this study also found out that there some villagers are traditional medicine practice. They are using the root of wood and wild herb that only available at Ulu Sat Forest Reserve.

According to Sen and Chakraborty [13], the use of traditional medicine has been increased significantly in the past few years. Therefore, some villagers have commercialized their traditional medicine product into the local market and online market. However, one of the respondents has pointed out his anxiety regarding the future of Ulu Sat Forest Reserve because it will affect his family income. He believes that the wild herb available at Ulu Sat Forest Reserve is unique and different from the herbs plant in the garden. Abas et al. [14] also have found out that the wild herb is better than the commercial herb.

Moreover, some villagers collect forest products like local fruit (petai, salak, and others) and honey for sale in the local market. Most of the respondents have highlighted that all the knowledge about forest product and traditional medicine were gathered from generation to generation. They also have emphasized that the young generation is not interested in learning local wisdom from Ulu Sat Forest Reserve.

This study found that some of the villagers still have a unique interaction with Ulu Sat Forest Reserve because this forest reserve provides sentimental value, especially for recreational areas. Ulu Sat Forest Reserve has three (3) prominent recreational parks: Bukit Bakar recreational park, Jeram Linang recreational park, and Lata Tujuh recreational park. These recreational parks have beautiful scenery with a waterfall. Most respondents admit that they love to visit these parks every weekend with their family for relaxation and recreation activity. There is some of the villagers take the opportunity to sell food at the recreational park. According to Thornock et al. [15], the recreational park is crucial and contributes to numerous positive family outcomes and plays a vital role in developing good health and social strength among the family member.

4. Conclusion

This study revealed that the Ulu Sat Forest Reserve play a significant role in the socio-economic of the local community. Therefore, all parties, including the local community, government and non-government agencies, should be mobilized to ensure the preservation and conservation of the Ulu Sat Forests Reserve. The participation of stakeholders in preserving and conserving the Ulu Sat Forests Reserve needs to be examined to inculcate good governance practice. The good governance practice of stakeholders to manage the Ulu Sat Forest Reserve could be insight towards sustainable forest management.

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