

The Kampung Kuantan Firefly Reserve

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INTRODUCTION

Malaysia is comprised of 13 federal states with Kuala Lumpur as the federal capital situated in the Federal Territory. Eleven states are in West Malaysia (also known as Peninsular Malaysia) and two states are situated in Borneo Island.

Selangor is one of the most highly developed and urbanized states in Malaysia. However, there are still large areas of forested lands scattered throughout the state either under forest reserves, owned by the state, private companies or private landowners.

Since the beginning of civilization rivers have been the most important source of food, water resources and transportation. In Malaysia, human settlement always related or concentrated along the rivers. Sungai Selangor (Selangor River), is one of the main rivers in the state of Selangor. The headwater of Sungai Selangor originates from the highland area of the Titiwangsa Range, which is part of the Main Range, the backbone of Peninsular Malaysia. It is an important source of water supply for domestic and agriculture use and fishing industries for people living along the riverbanks. Sungai Selangor flows mainly through oil palm estates and small villages and it does not pass through any major towns. Thus the riparian vegetation along the riverbanks is still intact. According to a report prepared by the Department of Environment, Sungai Selangor river basin is listed as one of the two cleanest rivers in Selangor (Environmental Quality Report, 1996).

This river is highlighted here not because of its important food and water resources but of its ecotourism factor.

An approximately 20km stretch upstream from the mouth of Sungai Selangor is covered with mangroves. This area is the remnants of a once large area of mangrove forest before it was converted for urbanization and agriculture. This riverine mangrove forest, however, was not given any fundamental protection status owing to its low economic value especially in terms of timber production.

The mangrove forests in this area have been identified as having a potentially high value for wildlife conservation and ecotourism. Interestingly this riparian mangrove is also home to large colonies of fireflies that glow in the dark thus providing a brilliant illumination at night. Findings from a study of the ecology of fireflies stated that the low-lying vegetation especially the long blades of some grass species is the main resting areas for fireflies in the daytime (Kumar, 1980). Therefore low-lying vegetation along the hinterland of the mangrove fringe should be conserved for this ecological role.

Kampung Kuantan, located on the southern bank of Sungai Selangor is about 18 km upstream from the estuary. The village covers an area of approximately 1,383 ha and has a population of about 2,000 people (District Office, 1997). The village is governed by an elected headman

who chairs the local Village Development and Security Committee (JKKK) which is made up of representatives from local villagers. The JKKK's main responsibility is to ensure the general security and upkeep of the village. The committee reports directly to the Kuala Selangor District Officer.

Kampung Kuantan is essentially an agricultural village surrounded by orchards, small farms and oil palm plantations. Most of the dwellings are traditional wooden "kampung" type houses with large garden space. The village is serene and quiet except during the nighttime especially on weekends when tourists and visitors come to watch the luminescent fireflies.

Kampung Kuantan is equipped with basic amenities such as municipal water supply, electricity and telephone lines. Seventy percent of the land area is covered with oil palm plantations (estates as well as smallholders) while the remaining 30% comprise of coconut plantations and mixed orchards. This village is situated approximately 22 km from Kuala Selangor town and 56 km from capital city, Kuala Lumpur.

THE CONTEXT

Kampung Kuantan Mangroves

At present *Sonneratia caseolaris* or known locally as 'Berembang' is the most abundant and dominant mangrove species along the riverbank of Kampung Kuantan, which extends up to 18 km downstream and 8 km upstream. Berembang trees grow well in areas of low salinity (10% or less).

This mangrove tree attracts a species of fireflies (*Pteroptyx tener*) which is known to emit some form of luminescence at night. The fireflies produce a synchronized flashing pattern, which resemble twinkling lights of a decorated Christmas tree. The behavioral pattern of these fireflies and the ecology of mangroves in Kampung Kuantan have been studied and documented by many researchers both from local and international institutions. Studies have shown that *Pteroptyx tener* live in big colonies and each colony inhabits the trees with young leaves preferably in areas of minimal human intervention.

Generally the mangroves play an important role in controlling flooding and soil erosion but in Kampung Kuantan the Berembang tree is the only known mangrove species to have an ecological role as an habitat for fireflies to dwell on during the night.

In the past, villagers in Kampung Kuantan depended on the river for food, transportation and subsistence. Back then fishing was carried out on a sustainable and traditional basis and threat due to over-fishing was almost non-existent. Over the years, with more land clearance and development upstream and pollution from nearby areas have resulted in the loss of large mangrove areas, and fish resources have become scarce. The new and younger generations of the village have opted for more secure and stable jobs such as working in the factories or plantations near by.

Tourism Development

The fireflies of Kampung Kuantan have generated worldwide interest. Although fireflies are present throughout the Sungai Selangor, synchronizing aggregation and flashing of the

fireflies is restricted to areas along the riverbank where there are prominent *Sonneratia* (Berembang) stands.

Before the late 70s, the natural phenomenon of the glowing fireflies was virtually unknown, except to the villagers of Kampung Kuantan and a few scientists.

Knowing the potential tourism attraction to the area, Malayan Nature Society (MNS), a conservation non-governmental organization, prepared a draft Working Plan for ecotourism development for Kuala Selangor District Office. In view of the increasing number of visitors, it was decided that the local authority was the best agency to manage the area. The Working Plan was handed over to the district office with the hope that ecotourism potential will be tapped in a sustainable manner. But the local authority's lack of knowledge and manpower on this new concept resulted in a general lack of interest to pursue activities in this area.

A local villager took an interest in this and took the opportunity to venture into an ecotourism business. The Malayan Nature Society (MNS) helped to promote the area through friends and society members.

Mr. Jalaluddin, who once worked for MNS, started a small venture to promote firefly-related tourism. He started the tourism venture initially with only four rowing boats without proper jetty facility. His daughter and son run his small business and for several years he received little support from fellow villagers or the local authority. In 1990, during the Visit Malaysia Year Campaign, Kampung Kuantan was given promotion by the government and thus attracts more visitors. Jalaluddin was given financial support from the Ministry of Arts, Culture and Tourism to expand his business. Currently he owns 24 rowing boats.

Today, this village attracts over 2,000 visitors a month, of whom more than half are Malaysian. It generates income to a majority of the villagers either directly as boat operators and tour guides or indirectly from the sale of local handicrafts and food. The revenue from tourism become a good side income to the people and to this end have contributed towards improving the financial status and lifestyle of the village.

In addition to the firefly attractions, The Kuala Selangor Nature Park, which is approximately 15 kilometers from Kampung Kuantan, is another attraction to Kuala Selangor. Comprising of secondary mangrove forest, this area is currently managed by MNS for its bird-watching activities and the large numbers of mammals including silvered leaf monkeys and otters have added to the attraction. Both the Nature Park and Kampung Kuantan village has attracted many local and foreign visitors to Kuala Selangor District.

THREATS TO CONSERVATION

Land-ownership

The Constitution of Malaysia stated that all land matters come under the jurisdiction of respective State Governments. In each State, government agencies such as the Forestry Department, Drainage and Irrigation Department, Fisheries Department and Agriculture Department are responsible for the management of each sector, i.e., forests operations, river management, fisheries activities and agriculture practices respectively. These types of sectoral management have had good impact in the management of natural areas including the

mangrove region in Kampung Kuantan.

The Water Enactment (1920) provides protection for 50 feet wide riparian zone or better known as river reserve, but only if it is specifically gazetted. In the case of riverine mangroves in Kampung Kuantan, which is a habitat for the fireflies, it is unfortunate that this area is not yet been given any protection status. Most of the land in Kampung Kuantan is alienated for individuals and this give rise to further complication because of its status as Malay Reserve land. Until early this year, Malaysian law under National Land Code prohibits the acquisition of Malay Reserve land by any other party including the government. But with the new legislation, it is therefore possible for the District Office to acquire land at least up to 20 meters from the river's edge and to gazette the area as a River Reserve area. Currently, the Selangor State Government has engaged Malaysian Nature Society (MNS), to undertake a study entitled "Ecotourism and Development in Kuala Selangor" which also aims to identify areas in Kuala Selangor in need of legal protection for conservation purposes.

Upstream Development

The Jabatan Bekalan Air (Water Works Department) is currently proposing to divert the upper reaches of Sungai Selangor to meet the demand of water supply for both domestic and industrial purposes in the state. The demand for domestic water supply especially drinking water from Sungai Selangor has increased in recent years due to an increase in population and rapid urbanization in the state. Pollution problems in other rivers that are currently supplying drinking water are also another contributing factor

Direct impact from the river diversion project will be a decrease in freshwater flushing downstream and subsequently increasing salinity in Kampung Kuantan. As a result, the Berembang trees may not be able to survive, which in turn will have disastrous consequences on the firefly populations. In the past, any proposed river diversion project involving water supplies were considered essential and important to the state and therefore would be carried out. Most of the villagers around this area including Kampung Kuantan are not aware of the impact and consequence of a project of this nature. Wetlands International has raised this issue to the Ministry of Science, Technology and the Environment and recommended that the project should continue only after a thorough Selangor river basin management program has been prepared.

There has also been an increase in land clearing activities at the catchment area of Sungai Selangor, which resulted in an increase of sediment levels in the water. Effluents and run-off from large agricultural areas and agricultural-based industries are other contributing factors that lead to poor water quality. These may account for the decrease of Berembang trees over the years.

Threat from tourism activity

A local villager, Mr. Jalaludin, started the firefly-watching tourist operation on a small scale family business. The company is called Kelip-Kelip Trading. Being a veteran tourist operator in Kampung Kuantan, he was fully aware of the dependence of the firefly population for his business. Therefore he conducted his business in a sustainable manner by ferrying tourists strictly using rowing boats and constantly seeking assistance from conservation experts both from local environmental agencies and NGOs to ensure the firefly populations and the

Berembang trees are not affected by tourist activities or other external factors. His efforts are commendable and supported by the visitors. Until today, with basic understanding and knowledge of the firefly ecology, he operates with little disturbance to the habitat.

In promoting the tourism potential of fireflies in Kampung Kuantan, in 1995, the Selangor State Government through the District Office has provided some financial assistance to enhance the administration and infrastructure of the Visitor's Center. Approximately RM 700,000 was allocated for development of a proper visitor's complex complete with ticketing booth, handicraft and exhibition center, food stalls, public toilet and parking area. The cost of maintenance of these facilities was borne by the state government but in an effort to promote active involvement of local communities, the management of the entire operation and the facilities were contracted to the local Village Development and Security Committee (JKKK) of Kampung Kuantan in October 1996.

Kampung Kuantan, which was once a quiet village has turned into a popular tourist spot and this has resulted in economic benefits and infrastructure improvements for the village. However, a conflict started in mid 1996 when the newly appointed headman of Kampung Kuantan who chairs the JKKK committee requested a percentage of Jalaludin's income be given to the committee. The justification for this was to provide funds to JKKK to undertake events pertaining to the village activities and other relevant issues. The profits from Kelip-Kelip Tradings (the company owned by Jalaluddin) from tourism activities was questioned by the headman.

As a pioneer in the tourism based operation, Kelip-Kelip Trading believes that every villager has a right to be involved in the tourism industry, but only hard work and dedication will bring success and generate income. He feels that the committee should work to produce income and not take advantage of other people's profit.

The District Officer was informed about the dispute and the matter was brought to the attention of the Selangor State Economic Planning Unit (SEPU). Following this, an informal directive was given by SEPU to the District Office implying that Jalaludin and the headman have to solve the problem amicably as soon as possible.

The matter was not solved due to a disagreement between the two parties. At the same time, JKKK requested permission from the District Office to impose an entrance fee of RM 1.00 on each tourist and the collection will be channeled to fund the JKKK. At that point, several villagers who are members of the JKKK had also decided to start their own boat operation to ferry tourists to watch the fireflies.

The new developments were taken positively by Jalaludin. He understands that the villagers should equally share the tourism activities in Kampung Kuantan. However, another problem arise when the villagers greedily wanted to gain much profit in a short duration had opted to use motorized boats instead of sampans (rowing boats) and this has resulted in unhappiness among the visitors, tourists, sampan rowers and other concerned citizen. It also created problem and disturbances to the fireflies and the tranquility of the mangroves areas.

This went on for several months until concerned tourists and NGOs brought the issue to the attention of the SEPU. Realizing the danger and potential negative impact to the firefly population, the use of motorized boats was banned by the state authority. At the same time,

the dispute between Jalaludin and the headman was not resolved and Jalaludin, who was also a member of the committee, was asked to leave the committee. Failure to reach a mutual understanding between Jalaludin and the headman resulted in interference by the District Office.

Since the matters cannot be resolved, the District Office through its implementing agency i.e. The District Council has taken over all matters pertaining to tourism operation by controlling all the activities and increasing fees for visitors.

Other threats to the firefly population are the ignorance of human encroachment, which may have adverse effect on this habitat. Several 'sampan' rowers have been allowing tourists to collect fireflies despite strict restrictions and regulations imposed on tourists not to collect fireflies.

4. Involvement of Various Stakeholders

The Government of Malaysia is currently implementing the Seventh Malaysia Plan (1996-2000), a 5-year national development plan. The chapter on environment as stated in this document discusses the importance of environmental conservation and sustainable use. It also recognizes that natural environments are becoming potential ecotourism sites, and in line with this, proper planning of ecotourism development in the country for natural ecosystems should be implemented. The Seventh Malaysia Plan emphasizes proper development of passive recreation activities nationwide. Subsequently, in late 1996, the Ministry of Arts, Culture and Tourism prepared the National Ecotourism Plan.

Involvement of environmental NGOs mainly in the form of technical assistance, particularly with regard to advice on conservation and management issues, dissemination of information and circulation of awareness materials and the provision of basic English language training.

The Malayan Nature Society (MNS) is currently undertaking a project to identify ecotourism development potential in this area, while the World Wide Fund for Nature Malaysia (WWF) provided management proposals as part of their involvement in developing the state-wide conservation strategy for the Government of Selangor.

Wetlands International-Asia Pacific has provided support in developing information and education materials and training with the help of financial assistance from Hongkong Bank Malaysia (HKBM), a local bank that is actively involved in conservation programs throughout the region. In 1995, Wetlands International Asia-Pacific conducted training courses for boatman and villagers involved in the tourism operation in Kampung Kuantan. This short course was intended to raise the awareness and educate the villagers on the importance of conserving the mangroves and its ecological role with the fireflies.

List of Stakeholders in Kampung Kuantan tourism industry

Stakeholders	Interest in tourism development	Capacity to assist in process
Federal Government	Ecotourism development is a major component in the 7 th	Provision of fund

	Malaysia Plan	
Selangor State Government	Tourism development is considered a priority by all state governments. Considered one of the main revenue earner.	Provision of fund and monitoring overall tourism development
Selangor State Economic Planning Unit	Focal agency responsible for the economic planning of the state. Tourism industry is currently providing many economical benefits to the state.	Providing advice on overall economic planning involving tourism development in the state. Directly responsible for tourism development in the district level
Kuala Selangor District Office/District Council	Local authority responsible for the development of the Kuala Selangor District. Tourism industry in Kuala Selangor will attract other related developments.	Directly involved in the coordination and monitoring of the tourism industry. Providing the link to the higher authority
Jawatankuasa Keselamatan dan Kemajuan Kampung (JKKK) or The Village Security and Development Council/ Villagers	Villagers council responsible for the development and security of the village, fire-fly watching activities provides income and also provides infra-structural development to the village.	Direct involvement in tourism activities and are able to determine the sustainability of the mangroves which relates to the fire-fly
Kelip-Kelip Trading Sdn. Bhd. (Jalaludin)	Dependant on the firefly watching activity for income.	Key player in Kampung Kuantan tourism activities. Help for the sustainability of the mangroves

Results and Analysis

When the ecotourism potential of the firefly watching in Kampung Kuantan was first realized, the threat to the natural environment was very little compared to what is happening today. The traditional tourism activities carried out by Jalaludin, with technical advice from NGOs such as MNS and Wetlands International, produced sustainable and manageable ecotourism in that area. But the dispute between Jalaludin and the JKKK forced the intervention from the local District Council who is responsible for the monitoring and management of tourist operations in Kampung Kuantan. This has led to a new arrangement in the operation of tourism activities there.

Based on discussions with the officer in charge in the State Economic Planning Unit, it is highly unlikely that the Selangor State Government will allow the villagers to further manage the tourism industry of that area. This decision could jeopardize the sustainability of the tourism activities as the State Government is planning to introduce new ideas into tourist development such as proposal to introduce battery-operated boats, building of chalets, etc. Although the environmental impact of such a move is not known as yet, without proper

planning it could be detrimental and pose a threat to the habitat where mangroves and the fireflies live.

The fact is that the cost of developing facilities to support tourism industry in Kampung Kuantan was borne by the State Government and therefore it has full jurisdiction over the area. The district office has no experience in handling management and conservation strategies for such a sensitive habitat, it is envisioned that the management of the area may be handed to the private sector.

Kelip-Kelip Trading has maintained a traditional style of tour operation, which has been able to conserve both the mangrove and firefly populations. However upstream development has affected the hydrology of the area and has resulted in erosion near riverbanks and this is beyond the control of the tour operator. Conservation of the mangroves and fireflies are the main objective of Jalaludin and his effort has been commendable and given support by NGOs, other conservation groups and research institutions.

There has also been a remarkable support and interest in the Kampung Kuantan fireflies by the public, the media and the corporate sector. The media has been helpful in highlighting the issue of indiscriminant use of motorized boats for firefly watching. The Hong Kong Bank Malaysia Berhad, has been supporting this conservation-based activities by providing funds to educate the villagers and promoting the local tourism industry.

CONCLUSION

The future of tourism industry in Kampung Kuantan very much depends on the objectives of the management body concerned. Should the new management be over-ambitious and solely profit- orientated, the firefly populations will be affected, mangroves areas will be reclaimed and the whole tourism industry will be in jeopardy. The villagers of Kampung Kuantan should be given the opportunity to develop and promote the tourism industry in their village without much interference from the local authority in terms of management and the running of their tourism activities. The authorities should only be involved in promoting and enhancing the growth of tourism activities by giving technical advice and support to ensure its smooth operations. The authority should only interfere or intervene when disputes and mismanagement occur among the villagers. As local residents and indigenous people of Kampung Kuantan, they should be in a better position to understand about the habitat and the behavior of the fireflies in their locality. Furthermore, when their income is dependent on the sustainability of the mangroves and the fireflies, they will have the commitment to ensure that the habitat is not threatened.

RECOMMENDATIONS

1. Unresolved management issues with regard to the tourism operation has had an indirect impact on the mangroves. This has to be dealt with by the local government. The government has to take into account the environmental factor in resolving the current issues of management over the area.
2. The increase in fees by the local authority should be fairly shared between operators and the agency and also a fund should be allocated for environmental purposes and the safe keeping of the habitat.

3. The local people should be encouraged to involve fully in the tourism business and efforts should be taken by the authorities to educate the local people in managing the mangroves and also the tourism activities.
4. The government has to ensure the people that the development project either at the sites or on the upper reaches of the river will not be detrimental to the river system.
5. There should not be any large development at the tourism area, i.e. no large-scale chalets or buildings, hotels or anything close by that will deteriorate the habitat and environment of the area.
6. The involvement of the local people should be encouraged not only in the tourism aspect but also in the caring and rehabilitation of the area where applicable.
7. People should not be allowed to over-exploit the tourism potential by promoting a larger-scale tourism activities than it is now, which is already sustainable for the area.
8. The state government should consider the whole stretch of the Selangor River to be gazetted as river reserve to prevent illegal encroachment
9. The local authority should play its role as a governing body to ensure the activities in the area really comply with the rules and regulations in order to safe-keeping the habitat and the fireflies in it.
10. The current traditional tourism activities are adequate to facilitate the visitors and it is suitable to sustain the ecological balance of the area.
11. The government should address the noticeable pollution in the river because it is due to the development of the upper reaches of the river and the local people cannot do much about it.

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