Socio-econ-environmental impacts of rural ecotourism development in Tun Sakaran Marine Park, Sabah, Malaysia

a Chia Kei Wei, b Ahmad bin Shuib, c Sridar Ramachandran, d Syamsul Herman bin Mohammad Afandi

a,c&d Institute of Tropical Forestry and Forest Products, Universiti Putra Malaysia, Malaysia
b Institute of Agricultural and Food Policy Studies, Universiti Putra Malaysia, Malaysia

Malaysia is located in the Coral Triangle of the South China Sea, with extraordinary reef coverage of approximately 3,600 km²; it is rich in marine biodiversity. The gazettlement of the Marine Park and establishing the park as a rural ecotourism site are aimed at protecting the fragile marine resources from the impacts of human activities. Tourism activities in Marine parks, if not properly managed, may destroy the natural resources which it depends on, and thus diminish the quality of experience. At the same time, local communities may depend on the very same resources for their livelihood. These human activities may affect the sustainability of tourism in the future. Thus, a sustainable tourism development requires a balanced environmental management and the balance should be measured before the critical level is reached. The main objective of this paper is to explore some of the significant issues faced by the management of Marine Parks in Malaysia, particularly to the Tun Sakaran Marine Park based on socio-cultural, economics, and environmental perspectives and to propose some recommendations to the management of Marine Park.

Keywords: Malaysia, rural, marine parks, resources, impacts, sustainability
INTRODUCTION

Being one of the world’s twelve mega diversity countries, Malaysia is home to many uniquely rich and diverse biodiversity. Natural environment, with its distinctive biodiversity and geographical features, are the valuable natural assets. Highlands, rivers, National Parks, Marine Parks, wetlands, estuaries and islands are highly valued commodities to generate income and conservation purposes. In Malaysia, nature-based activities are recognized as fastest growing tourism products; with an estimated 10% of the tourism income was from ecotourism (Marzuki, Hussin, Mohamed, Othman, & Som., 2011). It was found that foreign tourists chose to spend 15% of their stay in rural areas when they travel to Malaysia (Loganathan, 2010). However, tourism development may exert some negative impacts and affect the entire direct or indirect tourism industry. As a result, environmental protection is important since it provides benefit to tourism industry (Huybers & Benetts, 2002).

As tourism is one of the key areas under National Key Economic Areas (NKEAs), efforts were made by government to transform the country into a high-income nation by 2020 through introducing The Economic Transformation Programme (ETP) and Tenth Malaysia Plan (10MP). Under the 10MP, government enhances forest and wildlife conservation, ecological assets conservation, and ensures equitable and sustainable utilisation of resources.

Much of the debate about rural change in Southeast and East Asia has made little reference to Malaysia, in part because of the lack of relevant published research during
the past two decades. It is therefore particularly necessary to consider the extent to which changes in rural Malaysia are comparable to those occurring elsewhere in other part of the world. Although sporadic studies on various aspects of tourism have been conducted previously, there are gaps in existing knowledge on rural tourism in Malaysia, particularly in Marine Protected Areas. Thus, there is a need to review these studies and evaluate their impact.

**Marine Protected Area (MPA) in Malaysia**

According to The International Union for Conservation of Nature (IUCN), a protected area is ‘‘a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values’’ (IUCN, 2012). Scuba diving and snorkelling are the popular recreation activities in MPA (Needham, Szuster & Bell, 2011, Kaur, 2006). Thus, MPA appears to be one of the popular ecotourism sites (Yacob et al. 2008) in Malaysia. However, too many tourists travel to MPA may cause negative impact. As a result, some of the islands in Peninsular Malaysia were gazetted as Marine Park under Fisheries Act 1985, under Part IX – Marine Parks and Marine Reserves (Sections 41 – 45) to protect the marine biodiversity.

Marine Park is one of the main attractions in Malaysia and managed according to National Ecotourism Plan (NEP) guidelines for sustainable tourism. In Malaysia, Marine Park is one of the ecotourism sites being promoted to protect from human impacts in
order to achieve conservation purposes. Therefore, activities such as fishing, collecting of sand or rubble, collecting or capturing any marine resources whether dead or alive, stepping on or breaking off the corals, polluting and littering and fish feeding are strictly prohibited in Marine Parks as these activities have potential to destroy the richness of marine biodiversity (DMPM, 2012a). Thus, activities that can disrupt the stability marine biodiversity are strictly prohibited (DMPM, 2012a, Salleh et al., 2011). Currently, there are more than 50 islands in five States are gazetted as MPAs and 6 Marine Park Centres are established.

<table>
<thead>
<tr>
<th>Year</th>
<th>Kedah</th>
<th>Terengganu</th>
<th>Pahang</th>
<th>Johor</th>
<th>Sabah</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>97,572</td>
<td>207,709</td>
<td>212,680</td>
<td>66,973</td>
<td>29,396</td>
</tr>
<tr>
<td>2010</td>
<td>96,097</td>
<td>216,404</td>
<td>233,923</td>
<td>59,731</td>
<td>9949</td>
</tr>
<tr>
<td>2009</td>
<td>102,866</td>
<td>170,126</td>
<td>194,392</td>
<td>63,374</td>
<td>4400</td>
</tr>
<tr>
<td>2008</td>
<td>96,071</td>
<td>151,824</td>
<td>191,929</td>
<td>68,664</td>
<td>N/A</td>
</tr>
<tr>
<td>2007</td>
<td>110,629</td>
<td>151,397</td>
<td>149,000</td>
<td>66,656</td>
<td>N/A</td>
</tr>
<tr>
<td>2006</td>
<td>112,648</td>
<td>135,098</td>
<td>215,936</td>
<td>56,333</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: Department of Marine Park Malaysia (2012b); Sabah Parks (2012)

Table 2 demonstrates the total of visitors in Marine Park Malaysia from year 2006 to year 2011. From the table above, total of visitors in Marine Park Malaysia has increased from time to time. High visitation may exert pressure on the resource which it depends on.
Study area:

Tun Sakaran Marine Park (TSMP), also known as Semporna Islands Park, located off the east coast of the state of Sabah in Malaysia. TSMP is selected as the study site for few reasons. First, it is a newly established Marine Protected Area and there are many issues to be addressed. Second, it is unique in term of geology as the islands made of volcanic rock and is the only marine park in Malaysia to include local communities within its boundaries (Ho & Kassem, 2009). Third, most of the studies carry out in TSMP are largely based on biodiversity and study in tourism field remains scarce. Because of its rich biodiversity and scenic beauty, it has attracted tourists from various countries such as those of Europe and Asia Pacific. More importantly, TSMP poses issues affecting the tourism industry.

TSMP was gazetted as the Sabah seventh park on 22 July 2004, and it is the largest Marine Park includes private land. There are currently 8 islands (i.e. Pulau Bodgaya, Boheydulang, Tetagan, Selakan, Sebangkat, Maiga, Sibuan and Mantabuan) under TSMP (see Figure 1).
Figure 1. Map of Tun Sakaran Marine Park

The resources in TSMP provide economic value to local communities and generate the income for the state government, incentive for conservation, promote environmental awareness, as well as education (Wood, 2001). The area has the largest concentration of reefs recorded in Malaysia. Variety of birds, reptiles, insects, small mammals, and rich biodiversity can be found here. The richness of fish species recorded in Semporna area is in the top five sites within Coral Triangle. There are over 520 species of fish, 255 species of coral and 140 species of sponge have been recorded. A number of endangered marine turtle species: Leatherback turtles, Olive ridley turtles, Green turtles, and Hawksbill turtles can be found in the surrounding water in Malaysia. Thus, it attracted about 5 million of tourists to Marine Parks in the past 10 years (DMPM, 2012b). Unfortunately,
the population of these marine turtle has plummeted and on the brink of extinction (WWF, 2011).

Table 1 Tourist arrivals to Tun Sakaran Marine Park, Semporna from year 2009-2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Malaysian</th>
<th>Non-Malaysian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>663</td>
<td>3,737</td>
<td>4,400</td>
</tr>
<tr>
<td>2010</td>
<td>2,039</td>
<td>7,910</td>
<td>9,949</td>
</tr>
<tr>
<td>2011</td>
<td>6,505</td>
<td>22,891</td>
<td>29,396</td>
</tr>
</tbody>
</table>

Source: Sabah Parks (2012)

Table 1 demonstrates the tourist arrivals to Tun Sakaran Marine Park, Semporna from year 2009-2011. The number of tourist arrival to TSMP shows a positive growth (Sabah Parks, 2012). In 2010, the tourist arrivals increased almost 120% (5,549) compare to 2009. This number of tourists, increased tremendously to almost 200% in 2011 (19,447). As the number of visitors increase, tourism activities will exert high pressure on resources in TSMP.

**Tourism Impacts**

Tourism activities in MPAs may destroy the natural resources and diminish the quality of experience. These negative drawbacks may affect the future ecotourism sustainability. Thus, the establishment of MPAs in Malaysia is an encouraging sign to protect the marine resources and has attracted a great number of visitors to explore the marine life, consequently promote ecotourism (DMPM, 2011a). It was found that uncontrolled tourism activities and development have exerted negative environmental impacts in most
of the MPAs in Malaysia (Kaur, 2006). Studies demonstrated that the degradation of coral reefs, interference with local ways of life, economics leakage, loss of environmental quality, over-exploitation of natural resources, deforestation, disturbance of terrestrial habitats and loss of biodiversity are due to the development and human activities (Kaur, 2006; Wood, 2001). Some irresponsible business operators allow divers to have illegal practices such as touching the corals, taking away corals as souvenirs (Wilson & Garrod, 2003). The situation become worst as high visitation to a tourist destination, inevitably, leads to the decline of environmental quality, resulting in disturbance or damage to a destination (Kaur, 2006; Marzuki et al., 2011; Honey & Krantz, 2007). Thus, marine parks are established to conserve the resources, recreational use, and scientific research (Kaur, 2006).

**Economic impact**

The economic impacts of tourism development have been well documented in the literature. There is no doubt that tourism development has major effect on the economies of destination areas either positively or negatively. In Hawaii, 90% of the local residents agreed that tourism brought the community more investment and more local business (Liu & Var, 1986). However, economic benefits of tourism may not be as always positive as tourism may bring negative economic impacts such as providing unskilled and low paid jobs (Tosun, 2002), increased cost of living (Faulkner & Tideswell, 1997; Lawson, Williams, Young, & Cossens, 1998; Liu & Var, 1986; Tatoglu, Erdal, Ozgur, & Azakli, 2002), and increased costs of land and real estate (Liu & Var, 1986). Mbaiwa (2005)
revealed that tourism in Okavango Delta, Botswana does not benefit local people and usually benefit the outsiders.

In TSMP, seaweed farming and fishing are currently the main source of income for local communities. However, since the park has been gazette as MPA, fishing is prohibited within the park and locals have received less income. In addition, most of the jobs in TSMP belong to outsiders, probably illegal immigrants. This may cause economic leakage within the park. Currently, many of the locals live under poverty line and dependant on harvesting or extracting natural resources, such as fishing. In the future, economic benefits relating to tourism will be dominant. With the development of tourism, it is hope that tourism will improve their standard of living by providing tourism jobs such as tour guide, boatman, tour operator and so forth.

**Social impact**

Social cultural impacts of tourism occur from the interaction between hosts and guests. Since TSMP is still a new MPA and receive less tourist arrival, the social impact may not that significant. However, the number of tourist will increase from year to year in the future and may cause negative social impact.

Since gazettement, local fishermen and islanders had lost their income and livelihoods. This is because fishing is prohibited within the protected area and local fishermen and
islanders have to find other source of income, such as seaweed farming, or even work at mainland. Some of the cited social impacts on local people include crime and interference with traditional ways of life (Wood, 2001). There are quite a number of illegal Filipino and Indonesian immigrants staying and working within the park area. Local communities are also concerns about the security but these illegal immigrants are dynamic and hard to control. There may be also loss of visual beauty and serene qualities of the Islands due to presence of possibly large numbers of people.

Environmental impacts

In Sabah, the awareness on conservation is quite low among the tourists and native communities, particularly to those fishermen who are not see their actions has caused negative impacts (Kaur, 2006). Tourism may cause biodiversity loss because of human activities (Hall, 2010). Tourism activities may put enormous pressure on an area and lead to impacts such as: soil erosion, increased pollution.

In TSMP, environmental impact is a major concern in the development of tourism projects. The drawback of tourism development can gradually destroy the environmental resources on which it depends. Unfortunately, the condition of the reefs is at alarming stage. A recent Semporna Marine Ecological Expedition, a collaboration study between WWF-Malaysia with Universiti Malaysia Sabah and NCB Naturalis (Kassem, Hoeksema, & Affendi, 2012) recorded the richness of marine biodiversity and coral reef health within the park. There were 26 stations being evaluated based on the reef status but none
of them (0%) fall under category of ‘Excellent’ and 73% categorised as "fair" and "poor", only 23% is considered as "good". In term of live coral cover, only 14 stations have live coral cover more than 30%. These imply that the condition of reef status is at critical level. Furthermore, 23 stations (88.5%) in Tun Sakaran Marine Park Reef area reported a maximum percentage of coral population bleaching of 10.0 ± 0.0 SE each. On top of that, global climate change, for example, sea level rise can be witnessed in Pulau Selekan. Therefore, the impacts of climate change on TSMP should not be overlooked.

Tourism may lead to the extinction of species (Gössling, 2002) if tourists buy or collects the corals, shell, or even products from threatened species. Some studies reported that tourism brings more littering and waste problems (Brunt & Courtney, 1999; Lankford & Howard, 1994). This can degrade the physical appearance, water and coastal shoreline and cause the death of marine life. In TSMP, solid waste affects the physical appearance of beaches, threat to marine species (turtle) and growth of coral reefs. There are also physical damage to reefs from ‘trampling’ by inexperience snorkellers and divers. Nevertheless, water pollution and contamination of groundwater from sewage and other wastes generated by tourist development can be also found in TSMP. If not carefully managed and designed, the growth of tourism development and tourism activities can have adverse environmental impacts. As the attraction of TSMP is natural environment, any environmental degradation will shift tourists to other places.
**Recommendations**

AS one of the objectives for TSMP is to promote sustainable use of natural resources, tourism is appropriate in this context. If successfully managed, tourism could provide significant income and job opportunities to local people, promote conservation and cultural. Although tourism can bring benefits, it could bring drawbacks, if not managed properly. The potential impacts include degradation of coral reefs, disturbance of terrestrial habitats, inference with local way of life, economic leakages, loss of marine biodiversity, and degradation of pristine environment. Thus, controls over visitors need to be exerted, otherwise.

Within MPAs, many strategies have been proposed or implemented to minimise the impacts occurred. It is suggested that there is a need to limit the number of visitors from over using the resources in protected area in order to overcome crowding, and damage to the park (Wood, 2001). Thus, carrying capacity is one of the options. In Malaysia, carrying capacity is commonly used in protected areas. However, alternative framework technique such as Limits of Acceptable Change (LAC) or the Tourism Optimisation Management Model (TOMM), Visitor Impact Management (VIM) is not commonly used in protected areas (Hamzah, year). It is suggested that there is a need to limit the number of visitors from over using the resources in protected area in order to overcome crowding, and damage to the park (Wood, 2001). For example, only few dive organisations have the permit to operate, limit the size and number of boats allowed into the park, and limit the number of visitors per day. Other than carrying capacity, zoning is also important. The
park manager should also identify ecotourism activities that have low impacts on resources.

As TSMP is still a new MPA, the socio-cultural, economic, and environmental impacts of rural ecotourism development in TSMP should be examined in more detail. It was also found that the awareness on conservation issue among local communities still low. Therefore, more campaign regarding conservation should be put forward to educate the locals. Although there are guidelines proposed, it seems like the issues are yet to be solved (Kaur, 2005). Thus, rules and regulations must be complied so that TSMP will not appear to be a ‘paper park’. Nevertheless, more rangers should be recruited to patrol the park area in order to avoid illegal encroachment and ensure the safety.

**Significance of the Study**

This is study is significant because, to date, tourism studies, particularly in Marine Protected Areas have not been given substantial consideration in Malaysia. This research will be of interest to other businesses, park managers, governments, regions, national and international, business support organizations, and other parties, which are striving to address similar issues. The information in this study helps in understanding socio economic, and environmental impacts related to rural tourism in a MPA context, and will provide useful information in understanding stakeholder’s perceptions towards tourism impacts and its development. From the standpoint of government and tourism planners, it is therefore important to recognize the potential impact caused by tourism and lays plans
to overcome those identified adverse impacts. It is also hoped that the results can be incorporated into planning process. The impacts identified can be transformed into indicators that can assist decision makers to predict whether a destination is moving toward or away from sustainable paths.

**Conclusions**

It is apparent that tourism brought both good and bad impacts to MPA in three dimensions; economic, social, and environmental. To ensure long term success, parks manager should work to maximize tourism benefits and minimize tourism by-product by adopting sustainability tourism development approach. Thus, sustainable tourism development proposed for a balance approach for economic, social, and environmental development with all stakeholders’ concerted effort in understanding the best balance for marine parks. Large numbers of visitation to a destination may bring negative local impacts and may reduce the visitor's enjoyment (Hardiman & Burgin, 2010). Increasing visitation to marine protected areas challenges park managers to balance the resource protection and recreation provision. One of the ways is to propose a decision making framework that can control the high visitation and sustain the resources use. Thus, reducing the number of visitors requires an effective impact management to improve the environmental conditions and overcrowding (Kaur, 2006; Wood, 2001). Although this may affect the tourism income; there is a need for sustainable tourism for future generation.
With sustainable tourism development in mind and having known large number of problems marine parks faced, several actions should be taken to ameliorate the negative impacts and improved the management accordingly.

ACKNOWLEDGEMENTS

This work / research was partially funded by Ministry of Higher Education’s (Malaysia) Long Term Research Grant Scheme (LRGS) Programme [Reference No.: JPT.S(BPKI)2000/09/01/015Jld.4(67)].

Reference


