Recreational Risks: Human and Wildlife Conflicts at Johor National Parks, Malaysia

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Abstract: National parks are significant ecotourism destinations providing various nature attractions in a form of biological, physical and/or historical resources. However, risk issues associated with recreational activities in national parks are becoming more pertinent and crucial as safety and threats to humans and wildlife can occur. This study was conducted to identify the risks for human and wildlife for visitors at tropical rainforests, marine parks, and coastal mangroves of Johor National Park. It is a qualitative study and data was collected through semi structured interviews with the National Park Managers, Former National Park Managers, and Instructors of Johor National Park. The study found that snakebite is the main concern for tropical rainforest and coastal mangroves category of national parks while hazardous marine species are the main risk for marine parks. The findings have shown that the risk of human and wildlife conflicts exist at all these three categories of national parks. Visitors’ negligence with the existence of dangerous wildlife may cause serious injury if no preventive measures are taken. The risk of human and wildlife conflict should be managed smartly to reduce the risks and ensure the sustainable development of the national parks.

Keywords: Human and Wildlife Conflict, National Park, Sustainable Development

1. Introduction

In many countries, national parks are significant ecotourism destinations providing various nature attractions in a form of biological, physical and/or historical resources (Simoni, 2013). Nonetheless, as an in-situ conservation approach, the main functions of the national parks are for preservation and rehabilitation of these natural resources which are important to sustain ecotourism industry for a country (Samdin, Aziz, Radam, & Yacob, 2013). With well-planned and managed ecotourism activities, national parks are also as a great place for people to enjoy aesthetical and spiritual values by participating in outdoor leisure experiences in a protected area (Chun, Lee, Kim, & Heo, 2012). Biodiversity values are significant in visitors’ attitudes to ecotourism and sustainable development (Xu & Fox, 2014). The most important attraction in the national park is not only the resources available but the visitors’ experience and the satisfaction in the national park (Azlizam et all, 2018). Nature attractions coupled with naturalness can influence the experience of visitors to national parks which in turn can positively affect their attitudes towards the environment (Kil, 2016; Wu, 2013).
However, besides positive experiences, risk issues associated with recreational activities in national parks are becoming crucial as safety and threats can occur to both human and native animals (Dickson & Gray, 2012). Participating in recreational activities in a natural setting means exposing oneself to the potential risks (Sidi, 2019) which may cause injuries or death (Soule, Lefevre, & Boutroy, 2017) as a result of abiotic (e.g. difficult terrains and little explored areas) and biotic factors (wild animal encounters). From the perspectives of both human and wildlife welfare, wildlife management is often controversial and may be heavily influenced by public interests (Liordos, Kontsiotis, Georgari, Baltzi, & Baltzi, 2017).

Human-wildlife conflict and resource management is important for a sustainable development in ecotourism for national parks (KC, Min & Serenari, 2021). National parks often comprise large, protected areas where many critical habitats are preserved for wildlife. Recreationists travel into these protected areas to enjoy the wild animals’ uniqueness while others simply want to have their outdoor recreational activities in a natural setting. Chances of human and wildlife conflict occurrence are higher when both are sharing the same space. The recreationists entering forest areas that rich with wildlife are exposing themselves to such risks related to the environment which includes the human and wildlife conflicts. Recreationists are highly expose with the risk in the protected areas of outdoor nature wilderness setting (Sidi, 2019).

The decline of numerous species and human death has been attributed to the human-wildlife conflict (Nyhus, 2016). Hence, research focusing on human and wildlife conflicts keep on increasing (Anand & Radhakrishna, 2017). In the national parks, the risks of human-wildlife encounters are potentially higher and in addition, wildlife attacks are very unpredictable. Potential encounter with venomous snakes would result in an attack that could be fatal. Snakebites are significant with morbidity and mortality worldwide, many of which happened in natural areas (Bhat et al., 2013). On the other hand, there are also encounters that are of low or moderate risk such as feeding monkeys or birdwatching. Nonetheless, feeding wild animals may be associated with other problems such as the transmission of zoonotic diseases which should not be overlooked. The risks of human and wildlife conflicts not only can occur in forested areas, but also in any natural settings such as marine parks in which divers may be exposed to poisonous or venomous animals in the ocean (Ihama et al., 2014). Prevention and mitigation measures of the human and wildlife conflict should be implemented with emphasis on both human health and safety issues (Fagerstone, Miller, Killian, & Yoder, 2010). Visitors’ safety is the priority for the recreational protected areas (Gstaettner et all, 2019). Safety concerns are a major focus of a protected area to enhance the sustainability development of ecotourism (Reihanian et all, 2015). Hence, the risks of human and wildlife conflict are one issue that should be given attention.

The focus of this study was to identify the risks for the visitors participating in outdoor recreational activities in a national park. The site of the study are three national parks in the state of Johor, Peninsular Malaysia with different recreational resources and experiences, namely tropical rainforests, marine parks, and mangroves.

2. Methodology:

The state of Johor holds several popular national parks in Malaysia that are offer a variety of outdoor recreational activities from extreme to casual types of leisure activities. This study was conducted at the Johor National Parks (JNP) from February to April 2018 at a few selected JNPs which can be separated into different categories, namely, Gunung Ledang (GL) as the tropical rainforest category, Sultan Iskandar (SI) Marine Park as a marine park and Tanjung Piai (TP) as a coastal mangrove. After research approval was granted from the Johor National Park Corporation, the data collection process via semi structured interviews was conducted separately at all three study sites. Purposive sampling was used as the respondents were stakeholders and experts who are very familiar with the above-mentioned national parks and could offer better insights. The interviewees comprised the three National Park Managers, three Instructors and the three former National Park Managers for each national park. All collected data were recorded using the audio recorder and was transcribed for analysis. The data was transferred into the Nvivo10 for qualitative analysis.
3. Findings & Discussion:

The findings from the interviews are discussed according to the themes that emerged from the interviews and arranged according to the types of the national parks. Findings from the study would suggest that the issue of wildlife conflict exists in the GL tropical rainforest national park. The three interviewees from tropical rainforest expert and stakeholders mentioned about the existence of the snake issue that could potentially attack the hikers while they are enjoying the hiking activities. Although the cases of bitten by the snake are not common but the existence of the snakes and any venomous species may create the potential risks for this national park.

Table 1: Human-Wildlife Conflict in Tropical Rainforest

| Risks               | Type of National Park: Tropical Rainforest | Interviewee 1                                                                 | Interviewee 2                                                                 | Interviewee 3                                                                 |
|---------------------|------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Venomous bite(s)    |                                          | “The risk of being bitten by animals also exists, such as by snakes, centipedes and hornets. Although the frequency for it to occur was not common, the consequence of the bite was still severe for those people” | “Yes, the possibility of animal bites is also here, such as snakes or any venomous species of animals or insects. Even though the possibility for this risk is low, but this is still the risk in this forested area. We cannot expect when they (the animals) appear, sometimes if they feel that they are in trouble (danger), they will attack the hikers, unexpectedly” | “Even this risk category did not frequently happen, it does happen sometimes. I’m saying that this is a risk because if they (visitors) were bitten by snakes or any other insects, it will definitely cause injury. We are worried about snake attacks, because it may be fatal” |

Other than the risk in the tropical rainforest, the same opinion was obtained in the marine park category. It is shown that the risk of being attacked by the hazardous marine species is one of the important risks involved the human and wildlife conflict in the SI marine park. Some marine species do not welcome the divers or snorkelers in their habitat. They may attack the divers or snorkelers and it is the risk for those who are enjoying the water-based activities at this marine park. A few types of fishes are dangerous and may cause injury to them. The issue of limited vision while using mask under the water is also risky. While divers and snorkelers are wearing the snorkeling gears, the mask give them limited vision. In the water sometimes they are not aware of the existence of the hazardous fishes surround them. While swimming or diving to the specific interesting areas, they may accidentally touch the hazardous species and it may cause injury to them.
Table 2: Human-Wildlife Conflict in Marine Park

| Risks                  | Type of National Park: Marine Parks |
|------------------------|-------------------------------------|
|                        | Interviewee 4                       | Interviewee 5                       | Interviewee 6                           |
| Hazardous attacks      | “During the diving activity in the water, the risk being attacked by the hazardous marine species also exists” | “Even though the marine ecosystem is nice and beautiful, at the same time they are also facing the risk of being attacked by some fishes or any marine species that do not welcome the divers. A few starfish species is also known to be venomous and may cause injury to the divers such as ‘clown of thorn’ (starfish) and ‘ikan lepu’ (lionfish). The sting is very dangerous and it can be fatal.” | “The divers should be alert at all times because the vision when using mask in the water is very limited. Sometimes they do not realize when the hazardous marine species came by and may accidentally touch some of the hazardous species, or fish species, which may attack them” |

For coastal mangrove category, visitors are coming to coastal mangroves of TP national park for casual and leisure activities, but at the same time they are also facing the risk of human and wildlife conflict in this national park. The topographical location of this national park is the main risk factor of the human and wildlife conflict. The coastal mangrove forest is also habitat of the monkeys (e.g., Long-tailed Macaques). Despite most visitors enjoy feeding the monkeys as part of their leisure activities, some monkeys are not docile when it comes to feeding. Some monkeys are aggressive because they may attack the visitors if the visitors are holding food but are not willing to give the food to them. In this case, food identified as a factor of this conflict because it can easily attract the monkeys. On the other hand, another conflict involved snakes especially during night activities for those staying overnight at the campsites. Snakes are active at night, and this is risky for the visitors who take the night walk package. Snake is the risk factor as they are active at the railing part of the boardwalk at night. This is the risk to visitors when passing through the boardwalk at night.
### Table 3: Human-Wildlife Conflict in Coastal Mangrove

| Risks               | Type of National Park: Coastal Mangrove |
|---------------------|-----------------------------------------|
| Dangerous encounter | Interviewee 7: “Firstly, the risk faced by the visitors is the conflict with monkeys. A lot of monkeys plays around at Tanjung Piai National Park, because this is their original habitat and we have to accept it. We also consider the monkeys as a visitors’ attraction, even though the monkeys created conflicts but it had become activities for the visitors to feed the monkeys and that was a part of visitors’ recreation experiences when they are here” |
|                     | Interviewee 8: “For the children who are holding food in their hands, the monkeys are easily attracted to the food, so the monkeys will come to them to snatch the food away” |
|                     | Interviewee 9: “The risk is, snakes are active at night. We can see snakes on the railing part of the boardwalk, a lot of snakes are roaming around at night. These snakes are dangerous and it is very risky, as the venom of these snakes may cause a serious injury and be fatal.” |
| Venomous bite(s)    | Interviewee 7: “Firstly, the risk faced by the visitors is the conflict with monkeys. A lot of monkeys plays around at Tanjung Piai National Park, because this is their original habitat and we have to accept it. We also consider the monkeys as a visitors’ attraction, even though the monkeys created conflicts but it had become activities for the visitors to feed the monkeys and that was a part of visitors’ recreation experiences when they are here” |
|                     | Interviewee 8: “For the children who are holding food in their hands, the monkeys are easily attracted to the food, so the monkeys will come to them to snatch the food away” |
|                     | Interviewee 9: “The risk is, snakes are active at night. We can see snakes on the railing part of the boardwalk, a lot of snakes are roaming around at night. These snakes are dangerous and it is very risky, as the venom of these snakes may cause a serious injury and be fatal.” |

The human-wildlife conflict is one of the risk factors when conducting activities in the JNPs. Human-wildlife conflict was present in all the three categories of national parks. The presence of wild animals, insects or any other organisms is normal in the wilderness areas because these are their original habitats and the visitors to the national parks are the ones who are entering into their space to experience the nature and outdoor recreation activities. Conflict between the human and wildlife could happen at any time within the national parks, and it is inevitable and unexpected.

For the tropical rainforest category, although the occurrence of the risk is not frequent and seasonal, but the severity of such a risk is still detrimental. Even so, such risk is something important to be
investigated. It is shown that the possibility to get injury and to be stung by animals such as insects is possible in a natural forest area. The potential to cause a serious injury and even death from these incidents is high if proper actions or treatment is not taken in time. Nonetheless, it is said that many outdoor recreationists in the forest had experienced a systemic immune reaction after being stung by insects of the order Hymenoptera such as bees and wasps (Yumeko et al., 2014).

Similarly, conflict between human and marine life can also present in the coastal environment (Neff, 2012). As mentioned by the interviewees from the SI Marine Park, the issue of human-wildlife conflict is one of the risks for the scuba divers. There are possibilities for the divers to be attacked by the venomous fishes or any marine species during scuba diving activities. Limited visibility range of underwater vision due to the diving masks can be a contributing factor as the divers may not realize the arrival of any hazardous species. The possibility of being attacked by the wild fishes is high when divers are entering their territory. Currently, the life-threatening incidents involving jellyfish stings is more frequently reported compared to earlier decades (Gershwin, De Nardi, Winkel, & Fenner, 2010).

The conflicts between the human and wildlife do exist in the coastal mangrove areas of the national park. The risks include monkey attacking the visitors to snatch food from them and the possibility of snakebites during the night activities in the park. Even though the visitors to TP national parks are mainly for leisure recreation activities without any extreme outdoor activities being offered, the risk still exists since the location of such activities is near the coastal habitats in which these animals are found.

Human and wildlife conflicts were found to be detrimental and can be inevitable between the two in the protected areas and such conflicts could compromise human safety (Peterson, Birckhead, Leong, Peterson, & Peterson, 2010). Similarly, the possibility to be attacked by snakes and any other animals in the wild, and the risk of being attacked by marine life the JNPs support the fact that human injuries and death attributed to the wildlife are among the challenges faced by the management of protected areas (Karanth & Kudalkar, 2017).

Figure 1 Human Wildlife Conflicts in Johor National Parks
4. Conclusion

The conflict with wildlife that includes the terrestrial animals, insects and marine species is one of the risk factors for all categories of national parks in Johor, Malaysia. Even though the national parks are separated into the different categories and locations, but such conflicts can still be present which may result in injuries to the visitors and/or to the national parks’ management team. A better and more comprehensive management of human and wildlife approach is needed to deal with this conflict in the national parks with considerations given on prioritizing the visitors’ safety while enjoying their recreational experiences in the national parks. At the same time, the comprehensive management practice should include this human-wildlife conflicts as part of the important element for sustainable development in the national parks management. The management team of the national parks should manage this human and wildlife conflict carefully to ensure the visitors’ safety are well taken care of whereas wildlife and its habitats are also well protected.

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