Chapter 2

ISLAND ECOTOURISM IN BRUNEI DARUSSALAM: ITS ROLE IN BIODIVERSITY CONSERVATION AND ENVIRONMENTAL EDUCATION

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ABSTRACT

Islands are among the most visited tourist destinations in the world. They are exposed to all kinds of risks with often inadequate resources and fragile ecosystems. The prospect of ecotourism development in tropical islands are enormous, since most islands host distinctive flora and fauna with some endemic species, colourful coral reefs and marine ecosystems, as well as unique environmental features and appealing land- and seascapes. Brunei Darussalam has 33 islands spread across its shores, which are largely uninhabited. Among them is Selirong Island, an island dominantly covered by mangrove forests, which has been developed as an ecotourism destination. This chapter begins with a historical overview of the development of Selirong Island as a forest production site and now as an ecotourism attraction, and later examines how interpretation can be used as a tool for the conservation and preservation of its rich

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biodiversity, as well as for the environmental education of tourists and visitors to the island.

**INTRODUCTION**

As a new player to the tourism sector, Brunei Darussalam manages to capture a slight but growing percentage of the global tourism market. Brunei Darussalam carves the smallest slice of tourism pie received in Southeast Asia with only 0.23% of total tourist arrivals in the region in 2012 (World Travel and Tourism Council, 2014). Tourist arrivals in the country account for 224,904 tourists in 2013, with an average of 185,513 annually over the last ten years (Tourism Development Department, 2014). Brunei Darussalam is not particularly well-known among tourists as a potential destination, compared to other neighbouring countries such as Malaysia, Indonesia, Singapore or Thailand. Tourism development has been progressing rather slowly in Brunei Darussalam, even though it has already established some of the support facilities and services necessary for tourism, such as accommodation, banking, communications, transport, and visitor attractions.

Ecotourism has been singled out as one of the tourism products that has the potential to be developed in Brunei Darussalam. The country’s long-term development plan listed several projects to further develop its tourism-related infrastructure, which include the developments of Ulu Temburong National Park, ecotourism destinations, forest recreational parks and marine parks (Government of Brunei Darussalam, 2007). A new tourism master plan designed to steer the country’s tourism direction for the period 2011 to 2015 explicitly declared natural assets as one of the clusters it will be focusing on. The Ministry of Industry and Primary Resources, which is responsible for tourism policy and development in Brunei Darussalam, is working closely with relevant stakeholders in the private sector in producing ecotourism packages and promoting the country as an ecotourism destination (Too, 2014).

With 78% of the country’s 5,769 square kilometres of land still covered in primary forest, and 55% of the total land area being dedicated as forest reserves and permanent forest estates under its National Forestry Policy (Thien, 2010), Brunei Darussalam has interesting and unique natural areas that can be offered as ecotourism sites.

As a coastal nation, Brunei Darussalam owns 33 islands altogether, most of which are located in the inner Brunei Bay or major rivers, whilst only two of them are found offshore. Only three of these islands are inhabited and the
remaining majority are still unspoiled. The uninhabited islands are covered with pristine primary forest, although several areas have been cleared for agriculture. Most of the islands support few flora and fauna, but some have become homes to endangered species (Agbayani et al., 1992).

Figure 1. Selirong Island (Inset: Location of Selirong Island in Brunei).

Selirong Island or *Pulau Selirong* is one of the uninhabited islands located in the Brunei Bay on the northern end of the Temburong District (refer to Figure 1). In the local language, *Pulau Selirong* literally means „Mosquito Island”. Selirong Island was gazetted as a Forest Reserve in 1948 (Gazette Notification 99/1948) under the Forest Act of 1934. Selirong Island is now classified as a Forest Recreational Park, as it has the potential for ecotourism and for recreational, educational and research purposes. The island has a total area of 2,566 hectares, with approximately 2,409 hectares or 94% of the surface area covered in mangrove forests, whilst the remaining 157 hectares
are water areas (Zamora, 1987). It is estimated that 18,418 hectares or 3.2% of the country’s total land surface is made up of mangrove forests (Anderson & Marsden, 1984). Thus, Selirong Island accounts for approximately 13% of the Brunei Darussalam’s mangrove forests.

The mangrove forests in Selirong Island are dominated by *Rhizophora apiculata* (a common mangrove species) or *Bakau* trees, which normally grow up to 7 metres in height and 10 centimetres in diameter. However, in Selirong Island these mangrove trees have grown to reach greater heights of 30 metres and diameter of 60 centimetres (Kashio, 2002). The colossal character of the island’s mangrove trees is attributed to the conservation initiatives and policy implemented by the government at Selirong Island, as well as other forest reserves in the country. As such, the pristine mangrove ecosystem in Selirong Island is understood to be exceptional in this part of the world (Kashio, 2002). Therefore, Brunei Darussalam can be said to possess the best preserved mangrove forests in the region, which can provide a platform to offer them and Selirong Island as a distinctive ecotourism destination.

**HISTORICAL USE OF MANGROVES**

The mangrove forests play an important part of the traditional life of the population in the country. In the past, Brunei Darussalam’s mangroves were a major source of wood for the charcoal industry. The *Bakau* trees also yield cutch - a dye extract used in tanning leather and caulking boats. The wood chips were utilised in making textile, paper and the very popular food flavouring, monosodium glutamate. Mangrove charcoal is also traditionally used by Brunei women for post-natal treatment. The local women believe that after giving birth, a mother should stay near the charcoal fire to warm herself, as the heat accordingly helps to contract the muscles of the womb. The fuelwood was likewise used for ironing and daily cooking.

The Forestry Department under the Ministry of Industry and Primary Resources is authorised to manage Selirong Island. To a greater extent, the Forestry Department controlled the activities carried out in forest reserves. In the case of Selirong Island, a Mangrove Working Circle Plan was introduced for the period 1958 to 1967, which also covered the Labu Forest Reserve, an area located on the north of Temburong District, adjacent to Selirong Island. The detailed working plan prescribed the areas that were to be felled each year, and the methods to be adopted in growing new crops (Government of Brunei Darussalam, 1958).
It was reported that some adjustments to the Working Circle Plan were made in the mid-1960s, particularly for the use of the mangrove products. Originally, it was drafted in the plan that the mangrove trees were required for firewood. In 1966, it was identified that the mangrove forests were demanded for piling poles and charcoal. With the large amount of new building undertaken in towns throughout the country, this generated a heavy demand for *Bakau* piling posts. It was also realised that the mangrove forests needed to be carefully managed, in view of the increasing pressure on them owing to the recently aroused interest in mangrove chips for rayon fibre and charcoal for export (Government of Brunei Darussalam, 1966).

Overall, the 1958-1967 Working Plan for the mangrove forests of Selirong Island had been adhered to. In 1967, a survey was conducted in the areas declared to be worked out, and as suspected, it was found that exploitation had followed the waterways without any real depth of penetration. The plan was closely monitored to ensure permit holders were to adopt some means of mechanical extraction in order to fully exploit the areas (Government of Brunei Darussalam, 1967).

According to the Forestry Department, seven compartments of Selirong Island had so far been given concession for felling, dating as far back as 1962 and as recent as 1996. As a type of forest management approach, clear felling normally involves the practice of completely felling and removing a stand of trees, which is quickly followed by the replanting of the cleared area. At Selirong Island, clear felling was adopted in three compartments. In some of the compartments designated for felling at Selirong Island, the practice of selective felling was also involved. It has been observed that rapid regeneration has since taken place in all these compartments, producing dense and young population of *Rhizophora* trees. Today, logging in Selirong Island is not permitted to complement its protected area status.

**TOURISM DEVELOPMENT AT SELIRONG ISLAND**

Since the designation of Selirong Island as a Forest Recreational Park, the Forestry Department has undertaken several initiatives to develop the island as an ecotourism and recreational site. In 1994, they built a 2 kilometre-long elevated boardwalk from Mataing River to Palu-Palu River. The walkway enables visitors to walk through the park and observe the enormous mangrove trees with overgrown roots.
In 1999, a guard house was constructed at the park to assist visitors entering the island. The guard house which serves as a control post is located at Tanjung Puan at the mouth of the Mataing River. Visitors to the park have to register at the guard house, before they are allowed to proceed with their tour around the island. Every group of visitor to the park will be escorted by a ranger from the Forestry Department and an armed officer throughout the visit. This is to ensure the safety and security of every visitor to the island as it is in close proximity to the border of Sarawak, Malaysia.

There are several visitor facilities built at the park, including an observation tower located along Selirong River in the mid-section of the boardwalk, as well as resting huts along the route of the boardwalk. These facilities provide convenience for visitors to break their tour of the island and enjoy the sights and sounds of the mangrove atmosphere. There is no on-site tourist accommodation built at the park, because of the relatively small area, remote location, and the need to minimise development within the fragile environment. There are also interpretive signs posted along the elevated boardwalk to inform visitors of the distinctive flora and fauna and to educate visitors on the growth process of the mangrove trees at the park. These interpretive signs form a crucial component of ecotourism, whereby tourists are able to learn and understand the unique features found at the island. The Forestry Department further plans to develop the country’s first mangrove centre, consisting of research laboratories and interpretive facilities at Selirong Island (Masli, 2010). This would enable students and scientists to carry out research and education on the mangrove environment, as well as tourists to learn more about the wetlands ecosystem.

Travelling to Selirong Island can be arranged through charter tours by means of commercial motorised boats. These tours normally include boat transfer, box lunch and an experienced wildlife guide. Other options for visitors would be to hire water taxis from the city which will take them to the island. The direct trip takes approximately 45 minutes, but can be much shorter during high tide.

The tourism infrastructure developed and planned for Selirong Island complements the wealth of biodiversity, wildlife and vegetation found at the park, which makes the island suitable to be promoted as an ecotourism destination. The island is appropriate for day visitors, as well as nature-lovers, ecotourists, wildlife researchers and students. The island’s environment is a nursery for a variety of aquatic organisms such as fish, crabs, shrimps, prawns, cockles and barnacles, as well as shore and water birds such as storks, egrets, plovers, herons, kingfishers, sandpipers, terns, redshanks and hornbills. There
are about 40 species of birds and various species of reptiles and fishes inhabiting Selirong Island, including estuarine snakes, green turtles, estuarine crocodiles, mud skippers and monitor lizards (Charles, 2002). The island is also home to interesting mammals including proboscis monkeys, crab-eating macaques, silvered langurs, flying foxes, fruit bats, flying lemurs (colugos), plantain squirrels and small-clawed otters. Proboscis monkeys are endemic to the island of Borneo, and there are several populations of these primates in Selirong Island. Flying lemurs or colugos are uncommon in a mangrove forest (Charles, 2002), and hence their presence in the mangrove island place Selirong Island in an exceptional and potential position as an ecotourism site. This is coupled by the fact that the island’s undisturbed mangrove trees have been well-preserved and developed unusually larger than those found elsewhere.

Aside from the wealth of biodiversity in the park, visitors to Selirong Island will also appreciate the local community that reside in the surrounding waterways. On route to Selirong Island, visitors will observe socio-economic marine activities, particularly small-scale traditional and artisanal fishermen harvesting their catch around the island. Brunei Bay and the estuaries provide the core fishing ground in the country for artisanal fishermen who use traditional gears such as tidal funnel bag net, simple bottom set gillnet, cast net, drifting gillnet, fish trap, crab trap and palisade trap for their daily fishing activities. It is, however, disturbing to note that this fishing ground also attracts fishermen from Sarawak, Malaysia, and there could possibly be illegal fishing carried out in Brunei Darussalam’s side of the border (Ibrahim, 2002). If left unchecked, this could create a potential conflict between the two countries, and a detriment to the mangrove ecosystem of the Selirong Island.

Visitor statistics at Selirong Island has been fluctuating over the years from 1996 to 2014 (refer to Figure 2). Tourist number has been significantly reduced particularly from 1997, because the Forestry Department has curbed the visitor intensity to the park in order to minimise the negative impacts generated by the visitors. It is estimated that the maximum number of persons permissible at the park is 640 persons or visits per day (Ahmad, 2002). Based on the visitor statistics, it can be deduced that current visitation to Selirong Island is well under the carrying capacity of the park. For example, the year 2011 has received among the highest number of visitors over the period, reaching 962 people, which therefore amounts to only about 2.6 visitors per day. From these data, it can be concluded that current visitation trends to Selirong Island have not exceeded the capacity of the park. Due to the low
visitation, it can also be inferred that tourism has not presented much adverse impacts on the physical environment of the island.

Figure 2. Visitor statistics at Selirong Island (2014 data until October 2014 only).

CONSERVATION AND EDUCATION THROUGH ECOTOURISM

By 2020, The World Tourism Organisation (WTO) predicts that there will be 1.6 billion international tourist arrivals and tourism receipts will reach US$2,000 billion globally. Nature tourism is estimated to generate 7% of all international travel expenditure (Ceballos-Lascuráin, 1996). In general, tourism has been growing at 4% annually, whereas nature travel has been increasing between 10% and 30% annually (Reingold, 1993). Similarly, WTO (1998) indicates that ecotourism and all nature-related forms of tourism account for approximately 20% of total international travel. These statistics demonstrate that the ecotourism sector is progressing fast and it is becoming a significant activity that contributes substantially to the world’s economy and to global travel and tourism industry.
Ceballos-Lascuráin defines ecotourism as “travelling to relatively undisturbed natural areas with the objective of admiring, studying, and enjoying the scenery and its wild plants and animals, as well as any cultural features found there” (1991, p. 31). The International Ecotourism Society’s definition of ecotourism is responsible travel to natural areas that conserves the environment and improves the well-being of local people (Lindberg & Hawkins, 1993). Weaver (2005) further identifies three components that differentiate ecotourism with other nature-based tourism products and attractions, namely the inclusion of culture in the natural areas, provision of learning opportunities and experiences, and sustainable planning and management of the ecotourism products.

The provision of learning opportunities and experiences can be obtained from interpretation that is available either inside or outside of the natural areas visited. Weiler and Davis define interpretation as “an educational, illustrative and entertaining activity which aims at providing the visitor with an insight into the interrelationships of the various resources and systems comprising the natural environment by first-hand experiences” (1993, p. 93). On-site interpretation can be in static form such as interpretation centres, and self-guided walks using information signs or displays, or it can also be personalised through guides providing information. Off-site interpretation can come in the forms of guidebooks, photographs, internet, promotional videos, virtual reality, or word of mouth. Interpretation in ecotourism is equivalent to, or often interchangeably known as, environmental education which serves to provide learnings about species and the associated ecology of an area, and learnings about the sensitive nature of environmental areas and how to minimise tourist and other impacts. It also involves learning about the local community, its socio-economy and culture. In other words, interpretation can provide learning opportunities and understanding about the natural as well as cultural attractions of the area visited.

Orams writes that “an effective interpretation programme may be a means by which nature-based tourism can truly become ‚ecotourism‘” (1996, p. 92). An interpretation programme can only be effective if it is able to change visitors’ knowledge of the natural area, and affect their attitudes and values towards the environment, leading towards a greater appreciation of the natural environment and a positive influence in their behaviour (Madin & Fenton, 2004).
At Selirong Island, interpretation or environmental education is provided both on-site and off-site. On-site interpretation at the park includes brochures, display boards, briefings by park rangers and information signs. The Forestry Department, with the support of Universiti Brunei Darussalam and Ramsar Centre of Japan, has produced brochures for visitors containing information on Selirong Island and its wildlife, including the flying lemurs or colugos, as the island’s primary attraction (refer to Figure 3). The brochure on the colugos features important facts about the behaviour or characteristic of a colugo, in terms of where it can be found, what it eats, or how to distinguish it from a flying squirrel. Such brochures serve to educate tourists and visitors about the
wildlife species and the mangrove ecology of Selirong Island. Apart from imparting knowledge onto visitors about the island’s rich biodiversity, the Forestry Department also produces brochures that inform visitors on the importance of conserving wildlife and remind them of the various offences that breach wildlife protection laws with the aim of averting destruction on the wildlife and the island environment (Ibrahim & Ahmad, 2002).

There are display boards erected at the guard house, which also present information on the wildlife found at the park, including those on the various mammals such as the flying fox, flying lemur or colugo, and long-tailed macaque (refer to Figure 4). The unusual root system of the mangrove trees which comes in several forms including knee, creeping, stilts, plank, respiratory and aerial roots, are also shown in one of the display boards. This highlights the rare and resourceful ways of natural adaptation developed by the mangrove trees in the island. The display boards are informative and contain useful material for visitors to understand the mangrove ecosystem in the island. The Forestry Department used stainless steel for the display boards, which made them resilient against the humid condition of the island.

Figure 4. A Display Board on Mammals at Selirong Island.
Along the elevated boardwalk, there are signs or labels placed on trees to inform visitors of the local and scientific name of the trees (refer to Figure 5). These tree labels are simple, yet they are helpful to tell visitors of the diverse mangrove trees that inhabit the island. The role of this interpretation is to enable visitors to learn the local language and stimulate interest on the medicinal property and local use of the various tree species, which are normally shared by the park rangers who accompany the visitors.
An on-site interpretation is also provided to visitors through briefings by park rangers. Upon arrival at the guard house, all visitors would receive an explanatory session on the history and background of the park and Selirong Island (refer to Figure 6). The session would normally include an introduction to the flora and fauna of the island as well as the unique features that can be found at the park. Following the introductory briefing, the park rangers would accompany the visitors throughout their tour around the island, and share vital and specific information about the wildlife species available.

**Evaluation of Interpretation Programme at Selirong Island**

To date, no survey among visitors of Selirong Island has been conducted to evaluate the interpretation provided at the park. Hence, in order to gauge the effectiveness of interpretation at Selirong Island in delivering environmental education as well as providing an enjoyable and meaningful experience to the visitor, a survey was carried out among visitors to the island. The survey serves to examine visitor satisfaction and experience with the interpretation variables including both on-site (display boards, leaflets and guides) and off-site interpretation (guidebook, internet, tourism agency, media, and friends and relatives). The outcome of the survey provides useful insights on the level of effectiveness of delivery of the conservation messages through interpretation provided at Selirong Island. The survey focuses on assessing the relationship between satisfaction of visitors with interpretation and its ability to affect visitor values to the environment.

**Methodology**

A small survey was carried out over a brief period between October to November 2014. The survey questionnaire was comprised of two main parts, the first of which collects information on visitor profiles, including gender, age, place of residence, education, employment, membership to environmental, conservation or outdoor organisation, number of park visit, and sources of pre-visit information. The second section of the survey examines the tourists’ experience of visiting the island. This includes questions on the levels of visitor satisfaction with each interpretation product (display boards,
leaflets and guides or staff), reasons for visiting the island, and the extent to which the interpretation stimulated visitors to think about issues presented and develop deeper meaningful connections with the island.

The survey questionnaires were distributed to visitors of Selirong Island, through the assistance of the Forestry Department. The survey questionnaires were handed out by staff of the Forestry Department to visitors at the end of their visit, and to be returned immediately after the survey was completed. As a result of the lack of return of the survey through this approach, a different method was adopted. The latter involves creating an online survey via Survey Monkey, and distributing the survey questionnaire online to a targeted group of visitors to Selirong Island. This group of visitors was searched through social networks and websites including Facebook, Twitter, Instagram, Pinterest, Tumblr, 500px, Flickr, Tripadvisor and Wanderlust, based on their posts of visits to Selirong Island. As a result, a greater number of respondents was obtained from the online survey. The survey only considers respondents who made their visits to Selirong Island from 2007 onward, in order to reduce the dissimilarity with the interpretation settings at the Selirong Island between different years.

The data collected through the surveys were then coded for entry into the Statistical Package for Social Sciences (SPSS). Methods of analysis employed to interpret the data include descriptive statistics, frequencies and cross-tabulations.

**RESULTS**

During the survey period, Selirong Island received a very low visitor count. This explains the lack of return of completed survey questionnaires from visitors that were distributed through the Forestry Department. As shown in Figure 2, the number of visitors to Selirong Island for the year 2014 is 257 with only one visitor in October, which indicates the low visitation, and thus, the difficulty in getting a high response rate. The online survey approach has collected data from 24 respondents, and the results presented in this chapter are obtained from this small sample.

The survey received an equal number of female and male respondents. The most common age group recorded is the 25-34 years age group (50%). There is also quite a high number of respondents aged between 15 and 24 years (33%). The majority of the respondents reside in Brunei Darussalam (88%), with 63% of them coming from Brunei-Muara district while the rest...
are from Tutong (13%), Kuala Belait (8%) and Temburong (4%). Respondents residing overseas only account for 13%, mainly from the United Kingdom and France.

In terms of the respondents’ level of education, 42% and 38% of them obtained a bachelor degree/diploma and a postgraduate qualification, respectively, as being their highest level of education. Only few respondents have completed technical (13%) and secondary schooling (8%). More than half (54%) of the respondents are currently employed in full-time work and 21% are students.

With regard to their membership to environmental, conservation or outdoor recreation group, only 33% of the respondents said that they belong to one, which varied from Brunei Nature Society, BruWILD and National Youth Volunteers. In addition, most of the respondents (71%) indicated that it was their first time visiting Selirong Island. However, 67% of the respondents have visited other recreational parks less than six times in the past year. Although a substantial proportion of the respondents are first-time visitors to Selirong Island, they are regular visitors to protected areas or nature-based areas in the country.

An analysis of the pre-visit information reveals that 46% of the respondents obtained information about Selirong Island from friends and relatives, which is the highest among other sources (refer to Table 1). This is followed by Brunei Forestry Department website (25%), Selirong Island brochure and guidebook (13%), and internet site (13%). None of the visitors surveyed used other media such as radio, television, newspaper and magazine as well as tourism travel agency or company. Interestingly, 25% of the respondents visited Selirong Island without obtaining any prior information about the destination.

<table>
<thead>
<tr>
<th>Table 1. Sources of Information on Selirong Island</th>
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<tbody>
<tr>
<td>Sources</td>
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<tr>
<td>Friends/relatives</td>
</tr>
<tr>
<td>Brunei Forestry Department website</td>
</tr>
<tr>
<td>Selirong Island brochure/guidebook</td>
</tr>
<tr>
<td>Internet site</td>
</tr>
<tr>
<td>Radio/TV/newspaper/magazine</td>
</tr>
<tr>
<td>Tourism travel agency/company</td>
</tr>
<tr>
<td>Did not obtain any information</td>
</tr>
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</table>
Using cross-tabulation analysis between age, level of education and source of information, it was found that sources via friends and relatives as well as Brunei Forestry Department website are mostly preferred by respondents aged between 25 and 34 years (64% and 67% respectively) who had obtained higher level of education including bachelor degree/diploma (46% and 33% respectively) and a postgraduate qualification (36% and 67% respectively). On the other hand, younger respondents (aged between 15 to 24 years) tend to visit the island without seeking any pre-visit information (50%). The latter finding is not surprising since the younger respondents went to Selirong Island as part of their educational field trip planned by their schools, and could not bother to find information from other sources (as shown in Table 1), aside from their teachers. The survey also received comments from respondents on the quality of the information on Selirong Island. Some of the positive comments reflect visitors’ satisfaction with the quality of conveyed information and expressed it as good and useful. On the other hand, negative comments received from visitors mainly focused on the limited information about the island, and lack of marketing and promotion of the island. Some respondents also highlighted the lack of availability of printed information and insignificant internet information about the island. The island was not well-advertised, and hence not all respondents realise its existence.

In order to identify visitor motivations for visiting the island, survey respondents were asked to rate a list of reasons according to how important they were for them to visit.

Table 2. Reasons for Visiting Selirong Island (Percentage)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Level of Importance</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Not Important</td>
</tr>
<tr>
<td>Rest and relax</td>
<td>4</td>
</tr>
<tr>
<td>See the sights</td>
<td>-</td>
</tr>
<tr>
<td>Be with family or friend</td>
<td>5</td>
</tr>
<tr>
<td>Close to nature and enjoy nature</td>
<td>-</td>
</tr>
<tr>
<td>Physically active</td>
<td>9</td>
</tr>
<tr>
<td>Engage in recreational activities</td>
<td>-</td>
</tr>
<tr>
<td>Learn about native plants and animals</td>
<td>-</td>
</tr>
<tr>
<td>Alone</td>
<td>40</td>
</tr>
</tbody>
</table>
As can be seen from Table 2, more than 40% of the visitors considered it as very important and somewhat important to be close to nature and enjoy nature, to learn about the native plants and animals, and to rest and relax. This is followed by the need to engage in recreational activities (39%), and to see the sights (35%) and to be with family and friends (36%), while the least important reason to visit the island is to be alone. Some visitors commented specific reasons for visiting Selirong Island, including photo outing organised by photographic club, industrial university placement and university field trip. Visitors also highlighted that they were anticipating to be involved in organised environmentally-related physical activities rather than merely walking along the walkways, but there were none offered when they visited the island.

The survey also elicited visitors’ level of satisfaction on the various interpretation variables provided at Selirong Island, namely display boards, leaflets or brochures, and guide services (refer to Table 3). Interpretation through the display boards, in terms of use, size and information conveyed, received the highest percentage (37%-38%) of satisfied responses. It is also observed that there is a relatively high proportion (33%) of respondents that are neither satisfied nor dissatisfied with the display boards. Similar responses are also obtained for other interpretation, namely leaflets (33%) and information on the leaflets (37%), as well as for assistance from guides and staff (35%).

An analysis of the performance of different market segments (age, education level and frequency of visit) with satisfaction scores for interpretation variables generates an interesting result. The majority of the respondents who are satisfied with the display boards at Selirong Island are those who had obtained degree or diploma (>22%) and postgraduate (44%) qualifications, aged between 25 and 34 years (>56%) and were first-time visitors (>50%). More than 60% of those who are neither satisfied nor dissatisfied with the leaflets or brochures on Selirong Island are those aged between 25 and 34 years, with a degree or diploma qualification (>40%) and were first-time visitors (>57%) to the island.

When further asked whether the visitors felt that the interpretive experience stimulated them to think and develop connections with Selirong Island, it was found that they are likely to have been provoked by the interpretation to think about the issues being presented and potentially make lasting connections. More than half of the visitors agreed that the interpretive experience made them think (58%), want to know more (63%) and/or intrigued them (54%). However, many visitors also felt rather neutral when
asked whether the interpretive experience made them curious (54%) and talk about what they heard (50%).

Table 3. Visitors’ Satisfaction with Interpretation Programmes at Selirong Island (Percentage)

<table>
<thead>
<tr>
<th>Types of Interpretation</th>
<th>Very Dissatisfied</th>
<th>Dissatisfied</th>
<th>Neither</th>
<th>Satisfied</th>
<th>Very Satisfied</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of display boards</td>
<td>-</td>
<td>21</td>
<td>33</td>
<td>38</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Size of display boards</td>
<td>-</td>
<td>13</td>
<td>33</td>
<td>37</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Information on display boards</td>
<td>-</td>
<td>13</td>
<td>33</td>
<td>37</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Leaflets</td>
<td>-</td>
<td>17</td>
<td>33</td>
<td>13</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Information on leaflets</td>
<td>-</td>
<td>13</td>
<td>37</td>
<td>13</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Assistance from guides/staffs</td>
<td>4</td>
<td>9</td>
<td>35</td>
<td>22</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

DISCUSSION

The market segment identified comprises of equal amount of male and female, mainly aged below 35, well-educated and have higher status occupations compared to the general population. The findings on the Selirong Island market segment are similar with other surveys carried out in other international parks such as those found by Griffin and Archer (2001), Wearing et al. (2008) and Kaltenborn et al. (2011). Although, a small sample is captured in this chapter, it is an important indicator that Selirong Island is recognised as a place to visit for ecotourism and recreational activity. The main recorded reason for making a trip to Selirong Island is to be close to nature and learn about the native flora and fauna. Selirong Island is well-known for its pristine mangrove ecosystems and a home to a diverse array of wildlife. The respondents in the survey confirm this impression placing a very high emphasis on enjoying nature and learning about the native wildlife. Many visitors also placed importance on relaxation and rest as their purpose of visiting Selirong Island. Its relative isolation makes Selirong Island an ideal destination for those who wish to be away from civilisation and enjoy a moment of peace and tranquil amidst nature.
However, its isolation and remoteness also gives Selirong Island anonymity, and thereby lack of information and visitation. Hence, the survey conducted among visitors to the island only managed to capture a small sample. Selirong Island is not a common place to visit. It is notable that Selirong Island is not highly promoted or publicised to the general public. Finding information about the island in preparation for visit is problematic as expressed by the respondents. Many found that printed information about the island is rare and information on the internet is limited. Instead, Selirong Island is widely exposed through friends and relatives as discovered in the survey. This indicates the importance of word of mouth to publicise Selirong Island as an ecotourism and recreational destination. Beside friends and relatives, the next preferred source is Brunei Forestry Department website. Most of the respondents who sought information about the island prior to their visit are those who aged between 25 and 34 years, and had obtained either a degree, diploma or postgraduate qualification. This indicates that these market segments tend to make a research and learn more about the island in preparation for their visit.

Visitors who participated in the survey expressed a mixed response on the level of satisfaction with the interpretation variables including display boards, leaflets and assistance from guides and staffs at Selirong Island. Among all the variables, a high degree of satisfaction is rated for display boards. Many are satisfied with the use of display boards, the size of the displays and the information contained in the boards. On the other hand, leaflets and guides did not have any implication to the visitors, as these variables are mostly rated as neither satisfied nor dissatisfied. The findings suggest that visitors aged between 25 and 34 years, had higher qualifications and were first-time visitor, tend to be satisfied with the display boards but felt neither satisfied nor dissatisfied with the leaflets and guides. Based on these findings, it is concluded that display boards are more preferred interpretation for visitors to extract information compared to leaflets and guides. A similar survey conducted by Ahmad (2008) revealed similar findings where 69% of the park visitors in Brunei Darussalam used information signs or displays, 15% employed guide services, 11% made use of the interpretation centre, and only 6% drew from park guidebooks and brochures. This indicates the popularity of information signs or display boards as a tool to educate visitors about the natural and cultural environment at a park.

Surprisingly, some quoted that leaflets and guides are not applicable at Selirong Island. This could be explained by the absence of printed leaflets and the lack of experienced guides to assist visitors to learn about the island.
Ahmad (2015) writes that guides or staff at the island gave very little information or advice to visitors at Selirong Island. They did not possess inherent knowledge about the wildlife species found in the park and, they also appeared to be lacking in interest in appreciating the mangrove environment and its wildlife (Ahmad, 2015). The uneven level of satisfaction with the interpretation at Selirong Island revealed in the survey may suggest a low quality experience for most of the visitors. This is unfortunate for both visitors and park managers as the opportunity to have an enjoyable learning experience and disseminate environmental conservation messages can be hampered through low impact interpretation at Selirong Island. The survey conducted by Ahmad (2008), which ascertains that 89% of park users suggest for more environmental education programmes to be provided at the protected areas, implies that visitors to natural areas are interested in the conservation aspects of the parks. Selirong Island should take the opportunity to improve its interpretation programmes and ensure its effectiveness in providing environmental education to visitors. Park managers need to review and upgrade the interpretation programmes, which may include the provision of adequate number of informative leaflets and trained guides and staffs. In a study done by Walker and Moscardo (2014), it was highlighted that staff expertise and staff dedication, the ability of staff to provide security, to assist people to make personal connections and to elicit participant trust is important for most of the cruise passengers. Guides can potentially exert more influence on the visitors as they can incorporate active delivery of messages with a multi-sensory, complex social interaction when communicating with visitors (Hughes and Morrison-Saunders, 2005; Munro et al., 2008). Previous research also suggested that successful interpretation encourages positive conservation attitudes among visitors (Jacobs and Harms, 2014; Walker and Moscardo, 2014).

Ham (2007) advocates that there is a link between interpretation and behavioural influence based on the extent to which visitors identify with the interpretation material and how they are provoked to think along the themes presented, which in turn may influence beliefs, attitudes and ultimately, behaviour. From the survey conducted among visitors of Selirong Island, this chapter found that over half of the visitors are likely to have been provoked by the interpretation to think about the issues being presented, and the experience made them want to know more and fascinated them. However, it is worth noting that over half of the visitors felt rather neutral that the experience made them curious and talk to others about what they learnt or heard during the visit. It would appear that, based on these findings, current provisions of
interpretation did not necessarily have a strong impact to the visitors. As suggested before, park managers may need to revise their strategy in providing an effective interpretation featuring a strong conservational theme. Ham (2007) finds that interpretation with compelling presentations of strong and relevant themes would stand the greatest chance of having enduring impacts on their audiences.

Further research is needed in terms of robust studies to facilitate the development of a clear understanding of interpretation programmes’ influence on visitor behaviour in Selirong Island as well as other protected areas and ecotourism destinations in Brunei Darussalam. There are several limitations with this chapter that would need to be addressed if this area was to be further researched. It was uncertain that interpretive variables affect visitor’s environmental values and attitude since the survey only focused on one experimental group. Future research should employ control and experimental groups in order to evaluate interpretive influences on visitors. Assuming other variables are not significantly different and the two groups differ primarily in exposure to interpretation, the impact of the interpretive variables can be assessed by comparing the findings between the control and experimental group (Munro et al., 2008; Jacobs and Harms, 2014). Other important factors to ensure the validity of the research include adequate sample size as well as post-experience follow up. Sample size must be adequate and statistically valid and this can be achieved through a longer time frame survey. Post-interpreative experience follow ups as recommended by Munro et al. (2008) are to determine if any changes in knowledge, attitudes or behaviour recorded immediately after the experience are transient or more permanent.

**CONCLUSION**

Isolation is often considered a drawback to those trading products around the globe, but for tourism, it may be a benefit in that it tends to make the destination more attractive and exotic, especially in the case of small islands. In addition, d’Hauteserre writes that “islands are the second most important holiday destination after the category of historic cities” (2003, p.49).

In the ecotourism context, education and interpretation can serve two different roles, that of fulfilling visitor information needs and of visitor management. The ethics and behaviour of tourists are changing, and tourists are now demanding for more environmentally responsible services and products as well as information. Tourists want to learn about the environments
they visit as well as understand their associations with a broader environment. Hence, education and interpretation carry out a central role in ecotourism. Through education and interpretation, ecotourists can gain a better understanding, awareness and appreciation of the natural and cultural environment.

It is important to evaluate interpretation programmes to ascertain whether management goals are being met. This chapter identified the market segment of the Selirong Island, visitors’ satisfaction levels with the interpretations at the island and how their experience stimulates them to think and develop connections with the island. While display boards are the most desired educative tool for visitors to learn about the environment, leaflets and guides at Selirong Island received a poor impression by visitors. Although the interpretive experience made the visitors think about the issues presented, they would not necessarily talk about the issues to others. The findings, hence, suggested that most of the visitors did not necessarily have a high quality experience with the existing interpretation and that conservation messages are not effectively conveyed by park managers at the island. Selirong Island has the potential to become an ecotourism and a recreational tourism destination, and a platform where conservation and environmental education can be imparted, but this will require a massive effort from the park managers to make it happen.

REFERENCES


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