

SUSTAINABLE TOURISM: A MULTI-STAKEHOLDER INVOLVEMENT IN CORAL REEFS CONSERVATION IN MALAYSIA

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Abstract:

This study was conducted to assess three stakeholders' level of involvement in coral reef conservation activities in Perhentian Island. The stakeholders participated in this study encompassed of the Besut District Department of Marine Parks (Terengganu), local entrepreneurs and tourists. A total of 200 respondents were selected to answer the survey questionnaire. The chi-square test results found a difference in the level of involvement among stakeholders with the Besut District Department of Marine Parks (Terengganu) and local entrepreneurs has the highest level of involvement, while there was low involvement with the tourists. The majority (40 %) of the Besut District Department of Marine Parks (Terengganu) staff were involved in the coral reef conservation at the rate of one to three times a year. Similarly, for the entrepreneurs, the majority (44 %) of them also involved in the coral reef conservation at a rate one to three times a year while the majority of tourists (72 %) never involved in the conservation of coral reefs. In terms of types of coral reefs conservation activities, most stakeholders have experiences in beach cleaning activities and education about coral reef conservation (21 % for both). Overall, this study conclude with suggestion to improve the level of stakeholders' involvement in coral reefs conservation in order to achieve the aims of sustainable tourism in the future.

Keywords: Coral reef conservation, involvement, stakeholders, Malaysia

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Introduction

Coral reefs are one of the vital components of the coastal ecosystem in Malaysia. Coral reefs provide important ecological services that extend far beyond their area of coverage (Wagner, 2004). Coral reefs are also fish habitat and a healthy coral can produce 5 to 15 tons of fish and seafood per square kilometer a year (Newton, et al. 2007). A total of 110 countries around the world have coral reefs (Smith, 1987). Malaysia is a coral reef rich country, therefore fishing activity on coral reefs is the major source of livelihood in Malaysian islands (Ho, 1992). The living coral reefs in Malaysia are now fully protected under the Malaysian Fisheries Act 1985.

Besides the advantages to the ecosystem, coral reefs also contribute to the marine tourism industry in Malaysia and becomes an invaluable asset due to its unique attractiveness. In general, marine tourism involves the movement of tourists around coasts and/or islands while ultimately promoting the concept of conservation and preservation of the natural environment. Since the mega diversity impetus of the 1980s, Malaysia's marine tourism sector has seen rapid growth and expansion. The increase in the number of tourists from within and outside the country has brought negative repercussions on the integrity and well-being of coral reef ecosystems around Malaysia's coasts. Massive destruction of coral reefs undoubtedly happens not only from inappropriate human activities through marine tourism, but also from effects from the change of natural climate. Wilkinson (1999) stated that about 58 to 70 % of coral reefs are threatened globally. The decline of coral reefs occurs because they are very sensitive to their surroundings. Interference either by nature or through human action kills the zooxanthellae (which produces pigment and supplies nutrients to the coral) and causes discoloration of the coral reefs (Glynn, 1996).

The negative impacts brought by marine tourism and climate change now demands for various parties initially involved in the industry to take responsibility and devise coral reef conservation measures immediately. Conservation actions among stakeholders are essential in order to prevent further damage, death and subsequent coral extinction. In addition, the stakeholders' involvement in coral reefs conservation are very important to minimize activities that threaten coral reef ecosystems and instill them with the importance of actions that are aimed at conserving the well-being of coral reefs. All stakeholders need to have an influence in every process of planning and decision-making of the ecotourism development projects. The most

important part is how “sustainable tourism” can be implemented not only on the paper, but also in the real conservation efforts. Therefore, this study will specifically examine the involvement level of stakeholders in coral reefs conservation in Malaysia.

Coral Reef Bleaching Status in Perhentian Island, Malaysia

There are numerous previous studies that focused on ecotourism, stakeholders and coral reef issues. These three elements are interrelated and have a similar interest to be looked after. Most of the previous studies emphasized the importance of stakeholders as agents that determine the ups and downs of the ecotourism industry. At the same time, sustainable tourism activities conducted on the ongoing basis also cause negative impacts on marine ecosystems, particularly coral reef. Contrary to its potential to promote and enhance environmental conservation, it is ironic that tourism through its emphasis on nature-related activities can also result in negative impacts on the natural environment (Mathieson and Wall, 1982). Various activities offered by the marine tourism such as diving and snorkeling have also placed an enormous amount of pressure on coral health and are now seriously threatening sensitive and complex coral species. According to Burke et al. (2002), coral reefs in Southeast Asia are increasingly threatened by human activities such as overfishing, coastal development and also climate change.

Due to the coral bleaching problems, the fading phenomenon of coral reefs, from gray to white – an indication of gradual coral death, the Department of Marine Park Malaysia was forced to close 12 diving locations around Malaysia for 122 days starting from October 2010. Coral reef bleaching occurred in many different islands in three states, namely Pahang, Terengganu and Kedah. The level of discoloration of the coral at about 60 % to 90 % is very dangerous and exposes the coral to the risk of death. However, between all the locations listed, coral reefs in Perhentian Island Terengganu has the highest discoloration percentage – 90 %. Although the coral bleaching reached high discoloration percentages, marine tourism activities such as scuba diving and snorkeling are still conducted on the islands. It is an undeniable fact that marine tourism activities have brought negative impacts to the coral reefs through pollution, direct contact of tourists, anchor damage and sedimentation from coastal erosion and over-development (Diedrich, 2007). However, coral reef conservation activities in these three islands are only focused on the actions taken by the Department of Marine Park Malaysia. In fact, there are still

many among the stakeholders that are obscure on the significance of coral reef conservation. Therefore, with the increased pressure on coral reefs, all stakeholders must involve actively in the coral reefs conservation activities in order to protect the nature, especially coral reefs for the sustainable tourism in the future.

Literature Reviews

In the 1970s, the world started to be concerned about the environment and this eventually led to the concepts of sustainable development and sustainable tourism, which continued to expand throughout the century (Gilmore and Simmons, 2007). Very briefly, sustainable tourism can be understood as the level of tourism activity that can be sustained on the long term due to its benefits to the socioeconomic, natural environment and culture of the area in which it takes place (Stoddard et al. 2008). Furthermore, sustainable tourism aims to optimize the local economic benefits by protecting the natural environment and at the same time provides a high quality experience for tourists (Bramwell & Lane, 1993). Sustainable tourism also plays a vital role in improving the local residents' quality of life. There are a number of sustainable tourism available such as agrotourism, green tourism and ecotourism. In Malaysia, ecotourism has now caught the attention of stakeholders and it is gaining popularity among them. Badan & Bhatt (2005) pointed out that the main goal of ecotourism is to provide the experience of nature, environmental education and action towards sustainability among travelers.

On the other hand, there has been a growing interest of tourism research on stakeholders' engagement in successful tourism development and planning since the past 25 years (Hall, 1999). Local residents, tourists, business owners and the government are identified as the major stakeholders in tourism (Andereck & Vogt, 2000; Brunt & Courtney, 1999). Various definitions exist for stakeholders. Freeman (1984) in his book - "Strategic management: A stakeholder approach" exhibited stakeholders as an organization, group or individual who can affect or affected by the organization's objectives. Savage et al. (1999) defined stakeholders as individuals or groups who have an interest in actions towards the organization. Stakeholders are identified as a key driver of the tourism industry. In the context of this study, stakeholders are justified as individuals or groups with a particular interest in the tourism industry on Malaysian islands.

By contrast, there are numerous previous studies which focused on human destruction towards coral reefs. Tan (2000) and Chan (2009) in their research found a negative impact on

natural resources and degradation that occurred in Perhentian, Redang and Tioman Islands due to ecotourism. Liew et al. (2001) carried out surveillance for three months in Pulau Redang and found that most people (62 %) had kicked and touched diver reef diving fins. Spait (2001) studied about marine parks in Sabah and found that there are plenty of challenges in the management of the marine park such as coral bleaching due to El-Nino phenomenon in 1997, high number of tourists, fishing with bombs and poison, sewage pollution, contaminated water, sedimentation and limited water resources. Zakai & Furman (2001) in their study discovered that continuous diving in the northern Red Sea in Eilat, Israel resulted in two major effects on coral reefs, which are external skeletal damage and internal tissue damage. Similarly, Ramadas & Rajeswari (2011) in their study at Palk Coast, India found that removal of diesel oil and waste from industrial fishing boat into the sea caused coral death. The study conducted by Wagner (2004) in Tanzania mentioned that the use of speedboats between Zanzibar and Dar es Salaam has agitated the soil sediment in the sea causing reef damage. However, some previous studies also found coral bleaching related to climate change such as Obura (2005), whom found that climate change is a major factor of coral bleaching in Western Indian Ocean, while climate change caused seawater temperatures to rise, resulting in thermal stress to the coral reefs. An immense management tool and guideline for mitigating the impacts of climate change by conservation agencies were addressed. Baker et al. (2008) also indicated that coral bleaching happened since 1980 due to ocean warming resulting from El Niño-Southern Oscillation (ENSO) phenomenon. Bleaching consequently caused the decline of coral health, changing the coral community structure and caused the loss of coral in certain areas particularly in the Indian Ocean.

With a serious case of coral reefs bleaching, coral reefs conservation is utterly vital to be conducted. Generally, conservation can be understood as the management of the biosphere that can produce excellent sustainability for present generations while maintaining the existing potentials for the benefit of future generations (IUCN / UNEP / WWF, 1980). Coral reef conservation is one of the pivotal nature conservation activities to overcome the degradation and prevent the future extinction of coral reefs (Bengen, 2002). The existence of Marine Protected Areas (MPA) can also be considered as one of the coral reef conservation efforts (Hixon, et al., 2001). Therefore, coral reef conservation activities in this study include the establishment of marine protected area besides beach cleanup program, awareness campaign, implementation of

legislative acts and the use of ceramic artificial reef. According to Roberts & Polunin (1993), coral reefs conservation has been the subject of debate among scholars since 1980 until now. Kaza (1988) explained coral reefs conservation as an effort to conserve coral reefs from further damage, death and extinction. Stakeholders' involvement in coral reef conservation is very important because understanding and involvement will create further commitment among them. Teh et al. (2007) assessed the role of the private sector as stakeholders in realizing the coral reef conservation efforts in Sabah, Malaysia. The private sector includes non-governmental organization (NGOs), individuals and communities. The author found that the private sector helped the authorities in solving the financial problems in Marine Protected Areas (MPA). Tongson & Cola (2007) in their study at the Tubbataha Reefs, Philippines indicated four main stakeholders namely the government, private sector, non-governmental organization (NGOs) and research institutions had played a unique role in the coral reefs conservation activities. Nur Hafizah & Rahimah (2010) had conducted a research in Langkawi Geopark and found that Community Fisheries Resources Management (KPSP) was also involved in the conservation activity by building artificial reefs in that area. Norzaini et al. (2010) in their study in Langkawi Geopark of five stakeholders namely chalets and resort operators, tourists, local community and school. They found that the level of awareness and understanding about the importance of heritage conservation Geopark must be increased through public education and awareness programs such as training and learning based on real experience. Patterson et al. (2008) found that education through information and communication technologies (ICT) play an important role in improving the level of literacy and awareness about coral reef conservation among fishermen in the Mannar Gulf, India. Sehgal (2006) suggested the needs to strengthen the regional authorities' no-take areas (NTA) and set the size of the ship, arrests, time and place of catch suitable for fishermen.

Purpose of the Study

The primary purpose of this study was to indicate whether the ecotourism in Perhentian Island has been conducted according to the concept of sustainable tourism. The involvement of stakeholders in coral reefs conservation activities among three different stakeholders namely the staff of Besut District Department of Marine Parks (Terengganu), entrepreneurs and tourists will be accessed. In short, this study seeks to examine three major aspects:

1. The involvement level among all stakeholders in coral reefs conservation activities.
2. The types of coral reefs conservation activities among all stakeholders.
3. The difference level of involvement among all stakeholders in coral reefs conservation activities.

Methodology

This study was conducted in the most devastated island with coral bleaching problem, which is Perhentian Island, Terengganu. The objective of this study was to assess the stakeholders' level of involvement towards coral reefs conservation in Perhentian Island. There were three different stakeholders in this study, namely the staff Besut District Department of Marine Parks (Terengganu) as the authority in Perhentian Island, the entrepreneurs of tourism industry in Perhentian Island that consist of operating chalets, hotels and resorts, shops and restaurants, as well as recreational activities center such as diving and snorkeling, and finally the tourists, both local and international. In order to meet the target of the study, a survey was conducted by distributing questionnaires to all three stakeholder groups in both small and large Perhentian Island. The survey method was selected due to its suitability to involve a high number of respondents (Sekaran, 1992). Additionally, the use of questionnaire has been proven to be an easier way in obtaining the needed cooperation from respondents as it guarantees the confidentiality and raises the possibility for more honest responses, as well as providing higher reliability standards (Azizi Yahaya, et al. 2007). For this research, a total of 200 respondents have been selected which comprised of 20 Besut District Department of Marine Parks (Terengganu) staff members, 80 local entrepreneurs and 100 tourists. As the research samples consist of three specific categories, the determination of the number of respondents was then made based on purposive sampling. The selection of the sampling method was made based on the account of Burn (1995), whereby the author had stated of its ability to represent the research's objective that is relevant to a specific phenomenon. The sample calculation was made based on the number of respondents' statistical formula produced by Yamanae (1973).

Results

The first section would discuss on the respondents' profile as shown in Table 1. Based on the total of 200 respondents, the majority of the respondents, which accounts for 85 participants (42.5 %) were at the age between 25 to 32 years old. In terms of origin, the east coast of

Malaysia (Pahang, Kelantan and Terengganu) was recorded with the highest number of respondents with a total number of 106 participants (53 %). However, for the foreign tourists, the majority of them that consists of 39 respondents (19.5 %) were from Europe. As for the education level, the majority of the respondents were determined to have the secondary education level with a total of 73 participants (36.5 %). Finally, the working experience for the majority of respondents was found to be in the range between one to three years with a total of 57 participants (28.5 %).

Table 1. Respondents' Profile

Variables	Number (person)	Percentage (%)
Age		
17-24	70	35.0
25-32	85	42.5
33-40	28	14.0
41-48	10	5.0
49-55	4	2.0
56 and above	3	1.5
Origin		
Southern Region Malaysia	9	4.5
Central Region Malaysia	21	10.5
Northern Region Malaysia	14	7.0
Borneo (Sabah & Sarawak)	4	2.0
East Coast Region Malaysia	106	53.0
Europe	39	19.5
Philippines	1	0.5
United States	4	2.0
South Africa	1	0.5
Thailand	1	0.5
Education Level		
Primary School	11	5.5
Secondary School	73	36.5
Diploma	57	28.5
Bachelor Degree	39	19.5
Master / PhD	20	10.0
Working Experience		
<1 year	35	17.5
1-3 years	57	28.5
4-6 years	52	26.0
>7 years	56	28.0

The Stakeholders Involvement in Coral Reefs Conservation Activities

As shown in Figure 1 below, 75 % of the Besut District Department of Marine Parks (Terengganu) staff members and the entrepreneurs had been involved in coral reef conservation activities in Perhentian Island. Only the remaining 25 % of both groups had never been directly involved in the conservation of coral reefs. In contrast, only 27 percent among the tourists who have been involved in the conservation of coral reefs and the other 73 percent had never involved in coral reef conservation.

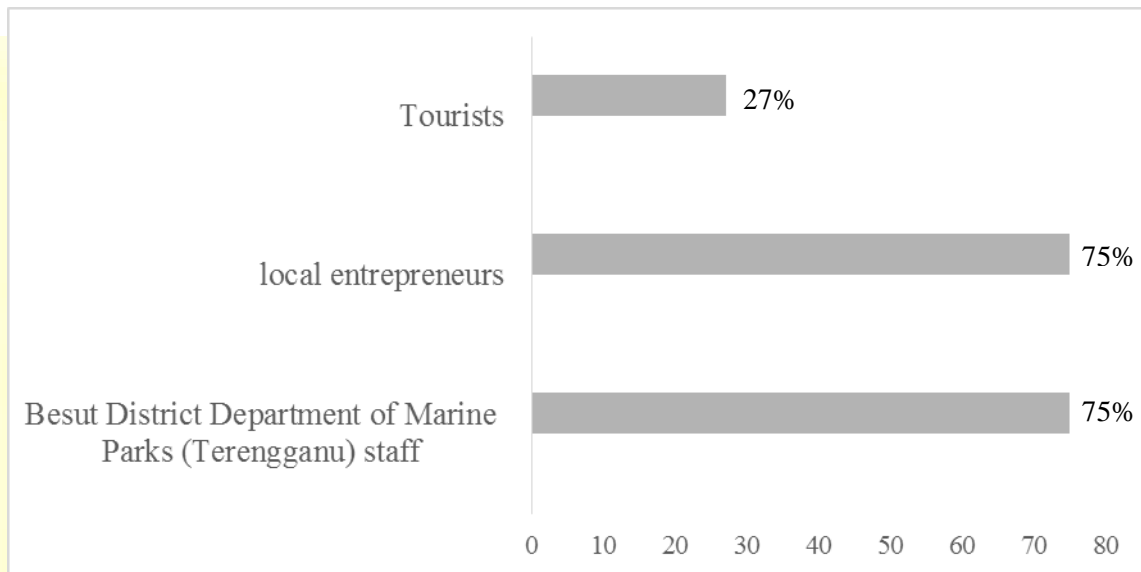


Figure 1: Overall percentage of stakeholders' involvement in coral reef conservation

Level of Stakeholders Involved in Coral Reefs Conservation Activities in a Year

Based on Figure 2 below, the staff of Besut District Department of Marine Parks (Terengganu) and the entrepreneurs were highly involved in the conservation of coral reefs, with the majority (40 %) of the former involved in the coral reef conservation at the rate of one to three times a year. Similarly, for the entrepreneurs, the majority (44 %) of them were also involved in coral reef conservation at a rate one to three times a year. In contrast, the majority of tourists (72 %) never involved in the conservation of coral reefs and placed them in the category of very low involvement.

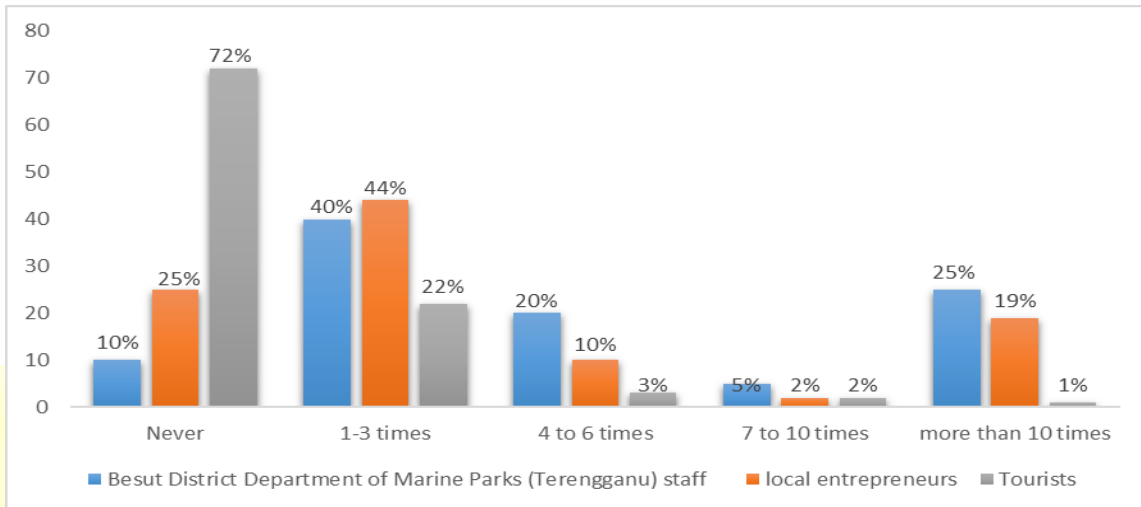


Figure 2: Level of stakeholders' involvement in coral reef conservation

Types of coral reef conservation activities among stakeholders

As illustrated in Figure 3, the results showed that nearly half of the stakeholders (47 %) never involved in any of the coral reef conservation activity. However, most of the stakeholders had experiences in beach cleaning (21 %) and education about the coral reef conservation (21 %). Examples of education about the coral reef conservation are reading the information on the conservation of coral reefs through the media or formal education in the educational institutions. In addition, 6 % of the stakeholders involved in the coral reef conservation campaign, while only 5 % were involved in the replanting of artificial reefs in Perhentian Island.

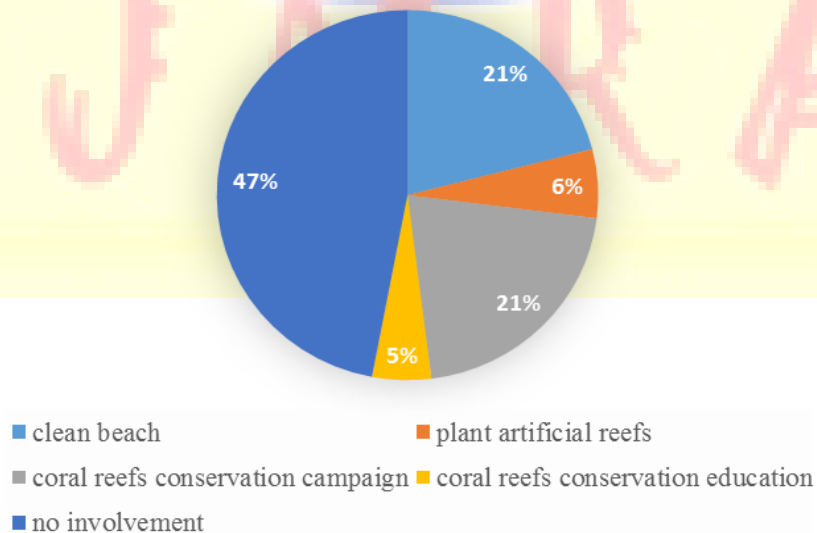


Figure 3: Types of coral reef conservation among stakeholders

The Differences of Involvement Level among Stakeholders

Chi-square test was conducted to test the difference level of stakeholders' involvement in the coral reef conservation in Perhentian Island. Chi-square test results showed the presence of different levels of involvement between stakeholders in the conservation of coral reefs in Pulau Perhentian, with the chi-squared value of 60.135 and $p = 0.000$ as shown in Table 2 below.

Table 2: The differences between the levels of involvement of stakeholders in the coral reef conservation

Stakeholders	1-3 times	4-6 times	7-10 times	>10 times	Never	Total
Besut District Department of Marine Parks (Terengganu) staff	8	4	1	5	2	20
Entrepreneurs	35	8	2	15	20	80
Tourists	22	3	2	1	72	100
Total	65	15	5	21	94	200

Chi-squared value=60.135 and significant level=0.000

Discussion

In general, in facing the seriousness of coral reef bleaching at the rate as high as 90 %, coral reef conservation is undeniably very important to ensure the survival of this organism for not to extinct. Kaza (1988) explained coral reefs conservation as an effort to conserve coral reefs from further damage, death and extinction. Previous scholar like Tongson & Cola (2007) also indicated that the continuous coral reef conservation activities can increase again the reef populations. The overall results of this study showed that the involvement pattern of stakeholders in coral reef conservation is not uniform. The Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs are two of the most involved groups in the conservation of coral reefs and the tourists were involved in the coral reef conservation throughout a one-year period. This involvement patterns in general indicated that the Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs are able to practice sustainable tourism concept. Clearly, tourists are more preferred to just travel and involved less in conservation

activities. Although only tourists have a very low of involvement, yet the emphasis on the importance of the coral reef conservation should not only focus on the tourists alone. The Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs also need to improve their involvement level of the coral reef conservation activities. This is because the collective involvement of stakeholders in the conservation of coral reefs will create their commitment on the conservation effort (Kaza, 1988). This is in line with the recommendations of the second principle of Eber (1992), which emphasized on the community's involvement in the development of sustainable ecotourism. Therefore, stakeholders' involvement in coral reef conservation is very important because of the understanding and involvement that will create further commitment among them.

In addition, the beach cleaning and education on the coral reef conservation are the two majority choices among all three stakeholders as these two activities do not require high cost and easier to join. Typically, the Besut District Department of Marine Parks (Terengganu) will be hosting a beach cleaning activity around Perhentian Island and all information will be publicized widely through their official website or media. In fact, there is also the role of non-governmental organization (NGO) who also organized the beach cleaning activities like Ecoteer Malaysia that successfully organized clean-up activities around Perhentian Island. Similarly, taking part in the coral reef conservation education is fairly easy to begin with. The Besut District Department of Marine Parks (Terengganu) often provides free education on coral reef conservation like "Environmental Education from Rainforest to Reef" in collaboration with Reef Check Malaysia (RCM) and the UN Development Program (UNDP). The education about coral reef conservation is in line with the recommendations of Chapter 36 of Agenda 21 which emphasized on the importance of education in creating a sustainable development. However, the involvement of stakeholders is relatively low in the coral reef conservation campaign (6 %), as well as the replanting of artificial reefs activities (5 %). This situation should not occur because an awareness campaign is one of non-formal education that is very vital to stakeholders. Through awareness campaigns like "1Malaysia Green, 1Malaysia Clean", all stakeholders not only will obtain a pivotal information about the importance of conserving coral reefs but also get an opportunity to involve directly in replanting artificial reefs activities. The replanting artificial reefs has been popularized over the past decade (Precht, 2006) and has been developed as the technology in dealing the damage of coral reefs (Harriot & Fisk, 1988). Therefore, replanting

artificial reefs must be done by all stakeholders because it can increase the population and survival of coral reefs by 50 to 100 % (Harriot & Fisk, 1988).

Overall, this study found a difference of level involved in the coral reef conservation among stakeholders on Perhentian Island. Tourists have been recorded as the lowest contributor in coral reefs conservation activities. It is very clear that the time constraint among the tourists becomes the main reason of their less involvement in the coral reef conservation activities compared to the Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs. Usually, both local and international tourists will spend a limited amount of time, for example in 3 to 5 days for their holiday. In contrast, the Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs are indeed local residents in Perhentian Island, which have more time and opportunity to involve in the coral reef conservation. Even the Besut District Department of Marine Parks (Terengganu) often organizes and host coral reef conservation activities. It is in agreement with the previous literature such as Jackson (1991), whom stated that 36 % of travelers are facing a lack of free time and it is due to too much work; moving here and there, and allocate more time to take care of the children (Putnam , 2000). However, the factor of lack of time cannot be continuously used as an excuse by the tourists to be less involved in the coral reef conservation because it is the responsibility of all stakeholders and tourists have no exception in the mission to achieve the aims of sustainable tourism.

Limitations and Future Research

This study generally focused to only three groups of stakeholders, namely the Besut District Department of Marine Parks (Terengganu) staff, the entrepreneurs and the tourists. Therefore, it will be great if the future study could also incorporate other stakeholders such as fishermen, researchers and local residents. More research on stakeholders will allow comparisons of findings to be made, as well as the expansion to the scope of the existing studies. The future study can also be expanded to other islands in Malaysia especially to those that are suffering from serious coral bleaching such as Payar Island and Redang Island. In addition, future researchers can also take account of the natural effect by climate change and global warming as an important factor in their study. From these suggestion, they will be expected to provide further details on the coral reefs conservation activities for the future of sustainable tourism.

Conclusion

In summary, all stakeholders especially the tourists need to improve their involvement in the coral reef conservation activities in Perhentian Island. The coral bleaching will not be reduced and eventually threatened and lead to the extinction of coral reef if all stakeholders ignore the importance of the coral reef conservation. Coral reefs need to be preserved because these organisms play an important role in providing ecosystem services, particularly as a protective agent to the coastline from erosion and provides habitat for fish and millions of other organisms (Appeldoorn, 2009). Tourists need to be aware of their role and responsibility, which not only touring the island but they also need to contribute to the well-being of the island. In the meantime, the Besut District Department of Marine Parks (Terengganu) staff and entrepreneurs must also increase their level of involvement from 75 % to the maximum. Without a doubt, if all stakeholders are able to perform their respective functions, the problem of coral bleaching can be overcome and eventually the ecotourism industry in Perhentian Island can be carried out in a sustainable manner.

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